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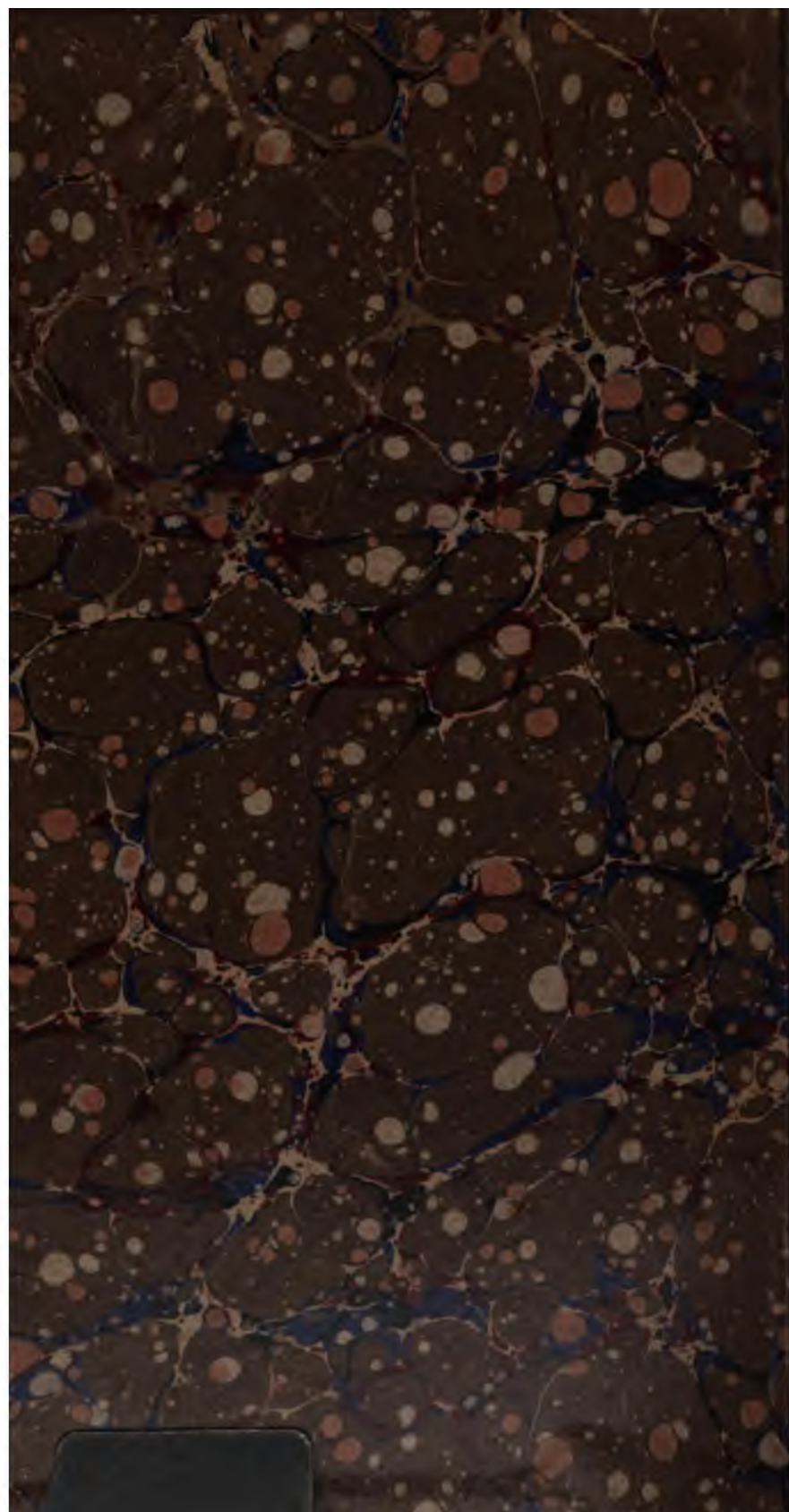
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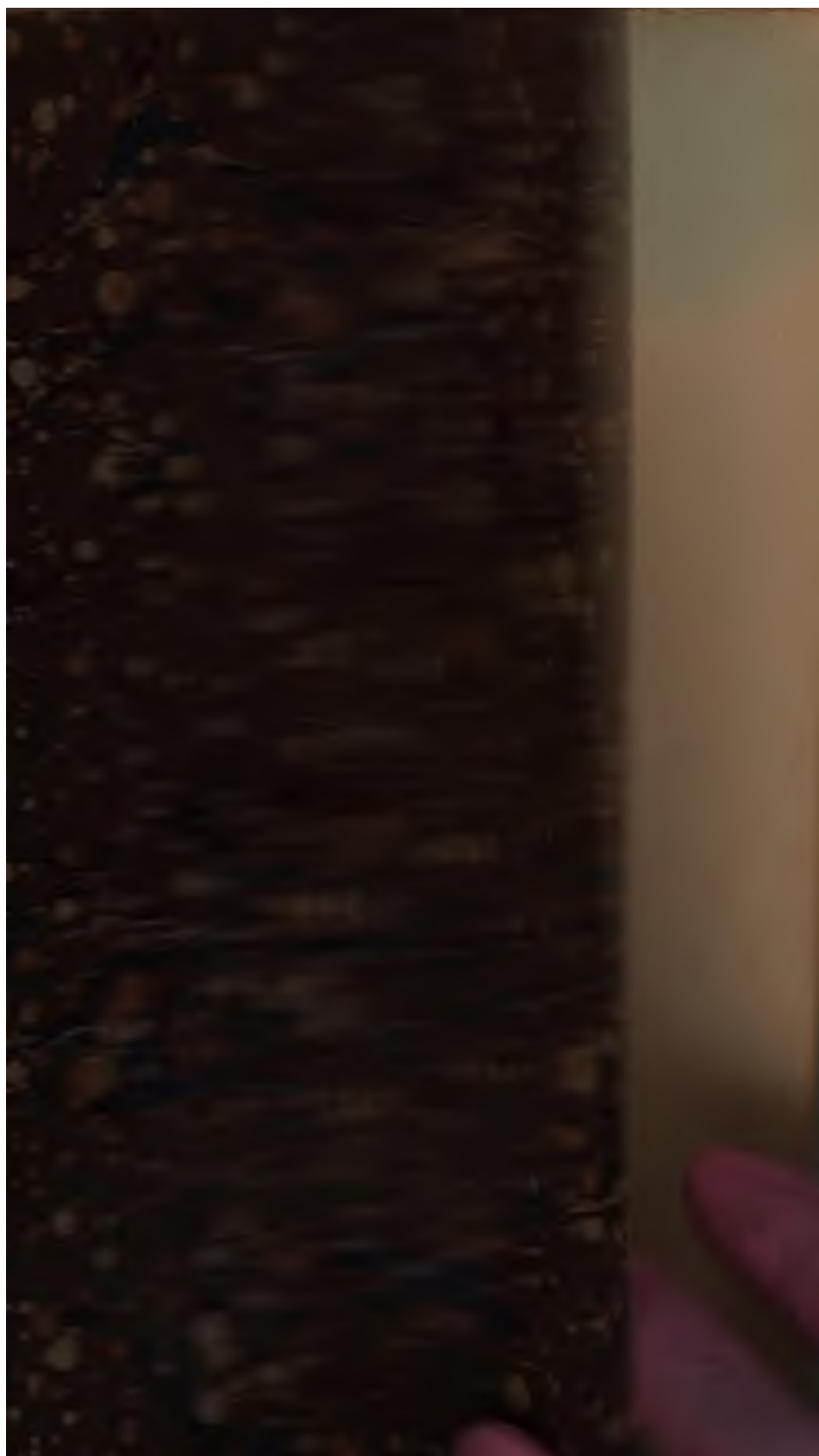
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TRANSACTIONS

OF THE

AMERICAN

ENTOMOLOGICAL SOCIETY,

AND

PROCEEDINGS

OF THE

ENTOMOLOGICAL SECTION

OF THE

ACADEMY OF NATURAL SCIENCES.

VOL. X.

PHILADELPHIA.

PRINTED BY THE SOCIETY.

1882—3.

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gender of the generic name, while others make the endings conform to the gender of the genus, and although many systematists with whom I have corresponded on this point strongly advise the recognition of the gender in the termination of the specific name, I have decided to follow the course adopted in nearly every list or catalogue of these insects which I have seen from Linneus down, and make use of the simple termination—*ana*, leaving it for those who prefer the other course to change the terminations given herein as follows:—The terminations of the specific names under *Lophoderus* and *Mellisopus*, to the masculine ending—*anus*, and those under *Teras*, *Ptycholoma* and *Proteoteras*, to the neuter ending—*anum*.

There are quite a number of species common to Europe and America, and of these I have given the synonymy in part from the valuable catalogue of the European fauna by Standinger and Wocke, but the greater part were verified by reference to the original works. The food plants of these species were taken from *Die Pflanzenfeinde aus der Klasse der Insecten* by Kaltenbach, *Die Kleinschmetterlinge* by August Hartmann, *Die Lepidopteren der Schweiz* by Prof. Frey, and the various systematic works to which I have had reference.

I have been much perplexed about the dates of some of the works referred to, more particularly Hübner's *Sammlung Europäischer Schmetterlinge*. In Illiger's edition of the *Systematische Verzeichniss von den Schmetterlingen der Wiener Gegend*, on the next page after the Vorrede of the first volume a short notice is given in which the statement is made that the second volume is already in press. Although both of these volumes are dated 1801 on their title pages, the Vorrede is followed by the date Jan. 1798, and the notice above mentioned is dated 1800. The second volume containing the Tortrices, has references to Hübner's *Sammlung*. *Tortrix*, as far as plate 30, fig. 194. If the volume was in press in 1800, the first 30 plates or 193 figures must have been issued before that time, and we should give the date to these not later than 1800, (see also *Ent. Mon. Mag.* London, vol. vi, p. 140). I am quite at a loss what precise date, if any, to give the remaining figures of Hübner's *Tortrix*.

ABBREVIATIONS.

- AN. & MAG. N. H.**—Annals and Magazine of Natural History, London.
BULL. BUF. SOC.—Bulletin of the Buffalo Society of Natural Sciences.
CAN. ENT.—Canadian Entomologist, London, Ontario.
CLEM.—Brackenridge Clemens, M. D.
CL. IC.—C. A. Clerck, Icones Insectorum. 1759-1764.
CURT. BR. ENT.—John Curtis, British Entomology. 1823-1840.
DEP. AG. REPT.—Report of the Department of Agriculture, Washington, D. C.
DON. N. H.—E. Donovan, The Natural History of British Insects. 1792-1813.
DUP. PLATY.—P. A. Duponchel, Histoire naturelle des Lepidopteres, vol. ix, Platyomides.
DUP. SUPPL.—P. A. Duponchel, Supplement à l'Histoire naturelle des Lepidopteres.
DUP. METH. CAT.—P. A. Duponchel, Catalogue Méthodique des Lepidopteres.
EMMONS, N. H. N. Y.—E. Emmons, Natural History of New York, Agriculture, vol. v.
EV. F. V. U.—Eversmann, Fauna Lepidopterologica Volgo-Uralensis.
FAB. SYS. ENT.—Fabricius, Systema Entomologiæ. 1775.
FAB. GEN. INS.—Fabricius, Genera Insectorum. 1777.
FAB. SP. INS.—Fabricius, Species Insectorum. 1781.
FAB. MANT. INS.—Fabricius, Mantissa Insectorum. 1787.
FAB. ENT. SYST.—Fabricius, Entomologia Systematica. 1793.
FITCH, N. Y. REPT.—Asa Fitch, Reports on the Insects of New York.
F. V. R.—Fischer von Röslerstamm, Abbildungen zur Berichtigung und Ergänzung der Schmetterlingskunde. 1838-1843.
FROL. EN. TORT. WURT.—A. G. Frölich, Enumeratio Tortricum Württembergæ. 1828.
GUEN. IND.—A. Guenée, Europæorum Microlepidopterorum Index Methodicus.
HARRIS, INN. INJ.—T. W. Harris, Insects Injurious to Vegetation.
HAW. LEP. BR.—A. H. Haworth, Lepidoptera Britannica. 1803-1829.
HEIN. SCHM.—H. von Heinemann, Die Schmetterlinge Deutschlands und der Schweiz.
H-S. SCHM.—Dr. G. A. W. Herrich-Schäffer, Systematische Bearbeitung der Schmetterlinge von Europa.
H-S. SUPPL.—Dr. G. A. W. Herrich-Schäffer, Illustrations to Systematische Bearbeitung der Schmetterlinge von Europa.
HUB. TORT.—Jacob Hübner, Sammlung Europäischer Schmetterlinge.
HUB. VOG. & SCHM.—Jacob Hübner, Vögel und Schmetterlinge.
HUB. VERZ. BEK. SCHM.—Jacob Hübner, Verzeichniss bekannter Schmetterlinge.
HUB. ZUTR.—Jacob Hübner, Beiträge zur Sammlung Exotischer Schmetterlinge.
JACQ. MISC.—N. J. von Jacquin, Phalæna Vitisana (Jacq. Collectanea). 1788.
LAR. TORT.—De la Harpe, Fauna Suisse, Partie vi, Tortricides.
LINN. FAU. SV.—Linneus, Fauna Suecica. 1761.
LINN. S. N. X.—Linneus, Systema Naturæ, edition x.
LINN. S. N. XII.—Linneus, Systema Naturæ, edition xii.

- MASS. AG. REPT.—Report of the Secretary of the Massachusetts Board of Agriculture.
- MOESCH.—H. B. Moescher.
- N. A. ENT.—North American Entomologist.
- PACK. GUIDE.—A. S. Packard, Jr., Guide to the Study of Insects. 1869.
- PROC. BOST. SOC. N. H.—Proceedings of Boston Society of Natural History.
- PROC. PH. AC. SC.—Proceedings of the Philadelphia Academy of Natural Sciences.
- PROC. ENT. SOC. PH.—Proceedings of the Entomological Society of Philadelphia.
- RATZ. FORST.—J. T. C. Ratzeburg, Die Forstinsekten.
- RILEY, MO. REPT.—C. V. Riley, Reports on the Insects of Missouri.
- ROSS.—C. T. Robinson.
- SC. ENT. CARN.—Scopoli, Entomologia Carniolica.
- SCHIFF. W. V.—Schiffermiller, Systematisches Verzeichniss der Schmetterlinge der Wiener Gegend.
- SODOFF. BUL. M.—Carl Sodoffsky, Bulletin de la Société Impériale des Naturalistes de Moscou.
- STEPH. ILL.—J. F. Stephens, Illustrations of British Entomology.
- STEPH. CAT.—J. F. Stephens, Catalogue of British Insects.
- STGR.—Dr. O. Standinger.
- STETT. ENT. ZEIT.—Entomologische Zeitung.—Stettin.
- TENSTR. BIDR.—Tengström, Bidrag till Finlands Fjäril-Fauna.
- TR. AM. ENT. SOC.—Transactions of the American Entomological Society.
- TR. ST. LOUIS AC. SC.—Transactions of the St. Louis Academy of Sciences.
- TREITS. SCHN.—Treitschke, Die Schmetterlinge von Europa.
- THUN. DISS. ENT.—Thunberg, Dissertatio Entomologica.
- WALK. CAT. LEP. HET.—Francis Walker, Catalogue of Lepidoptera Heterocera in the British Museum.
- WIEN. ENT. MONAT.—Wiener Entomologische Monatschrift.
- WILK. BR. TORT.—S. J. Wilkinson, The British Tortrices.
- WLSM. ILL.—Lord Walsingham, Illustrations of Typical Specimens of the Lepidoptera Heterocera in the British Museum, North American Tortricidæ.
- ZELL. BEITR.—P. C. Zeller, Beiträge zur Kenntniss der nordamerikanischen Microlepidopteren.
- ZELL. ISIS.—P. C. Zeller, Isis.
- ZELL. LEP. WENTK. AM.—P. C. Zeller, Lepidoptera der Westküste Amerika's.
- ZETT. INR. LAP.—Zetterstedt, Insecta Lapponica.

Family TORTRICIDÆ.

Subfamily TORTRICINÆ Mihi.

Genus **TERAS** Treitschke, Schm. viii, 1830.1. **T. effractana.**

- Pyralis scabrana* || *Fab.* Sp. Ins. No. 54. (1781).
Tortrix caudana || *Hüb.* Tort. fig. 232. (1800).
Tortrix caudana || *Haw.* Lep. Br. No. 46. (1811).
Tortrix effractana *Frdl.* En. Tort. Würt. p. 27, No. 30. (1828).
Teras effractana *Treits.* Schm. viii, p. 249. (1830).
Teras effractana *F. v. R.* p. 144, pl. 55, figs. 2, a, b. (1839).
Teras indecorana *Zett.* Ins. Lap. 989. (1840).
Tortrix (Teras) Effractana *H-S.* Schm. iv, p. 154. (1849).
Teras (Rhacodia) Effractana *Hein.* Schm. p. 12. (1863).

Habitat.—Europe; Vancouver Id. (*Zeller and Hy. Edwards*).*Food.*—In Europe, *Salix caprea*, (*Hartmann*).2. **T. peculiaris.**

- Teras (Rhacodia) peculiaris* *Zell.* Beitr. p. 4, pl. 8, fig. 1. (1875).

Habitat.—Texas.3. **T. subnivana.**

- Penthina subnivana* *Walk.* Cat. Lep. Het. xxviii, p. 376. (1863).
Teras deflectana *Robs.* Tr. Am. Ent. Soc. ii, p. 283, pl. 7, fig. 71. (1869).
Teras deflectana *Zell.* Beitr. p. 5. (1875).
Teras subnivana *Wlsm.* Ill. p. 1, pl. 61, fig. 2. (1879).

Habitat.—Nova Scotia, New York, Pennsylvania, Texas.4. **T. trisignana.**

- Teras trisignana* *Robs.* Tr. Am. Ent. Soc. ii, p. 282, pl. 7, fig. 69. (1869).

Habitat.—New York, Virginia.5. **T. scabrana.***

- Leptogramma scabrana* *Curt.* Br. Ent. (1833).
Acleris scabrana *Steph.* Ill. iv. 163. (1834).
Glyphiptera Ulmana *Dup.* Platy. p. 138, pl. 242, fig. 7. (1834).
Leptogramma Parisiana *Guen.* Ind. p. 8. (1845).
Tortrix (Teras) Parisiana *H-S.* Schm. iv, p. 153; Suppl. 4-6. (1849).
Oxygrapha scabrana *Wilk.* Br. Tort. p. 162. (1859).
Teras placidana *Robs.* Tr. Am. Ent. Soc. ii, p. 282, pl. 7, fig. 68. (1869).

Habitat.—Europe; New York, Pennsylvania.*Food.*—In Europe, *Ulmus campestris*; in America, *Salix*; (*Miss Murtfeldt*).

* This species has been proved in England to be the fall generation of *boscana* *Fab.*, (See Ent. Monthly Mag. vol. xiv, p. 160), but *boscana* *Fab.* is very closely allied to, if not identical with *trisignana* *Robs.*

6. T. niveana.

- Pyralis niveana* *Fab.* Mant. Ins. ii, p. 233. (1787).
Tortrix Treueriana *Hüb.* Tort. pl. 16, fig. 100. (1800).
Tortrix niveana *Fröhl.* En. Tort. Würt. p. 19, No. 7. (1828).
Tortrix treueriana *Treits.* Schm. viii, p. 93. (1830).
Glyphiptera Treveriana *Dup.* Platy. p. 135, pl. 242. (1834).
Glyphiptera Cerusana *Dup.* Platy. p. 532, pl. 264. (1834).
Teras Treueriana *F. v. R.* p. 43, pl. 25, figs. 2, a, b. (1838).
Tortrix (Teras) Treveriana *H-S.* Schm. iv, p. 151. (1849).
Teras niveana *Hein.* Schm. p. 22. (1863).

Habitat.—Europe; Ontario.

Food.—In Europe, Birch.

7. T. nigrolinea.

- Teras nigrolinea* *Robs.* Tr. Am. Ent. Soc. ii, p. 281, pl. 7, fig. 67. (1869).
Teras senescens *Zell.* Lep. Westk. Am. p. 9. (1874).

Habitat.—Maine, Ontario, Vancouver Island.

8. T. ferruginiguttana.

- Teras ferruginiguttana* *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Colorado.

9. T. brewsteriana.

- Teras brewsteriana* *Robs.* Tr. Am. Ent. Soc. ii, p. 283, pl. 7, fig. 73. (1869).

Habitat.—Maine, New York.

10. T. celiiana.

- Teras celiiana* *Robs.* Tr. Am. Ent. Soc. ii, p. 283, pl. 7, fig. 74. (1869).

Habitat.—Massachusetts, New York.

11. T. hastiana.

- Tortrix Hastiana* *Linna.* S. N. x. 532. (1759).
Tortrix Hastiana *Linna.* Fau. Su. No. 1328. (1761).
Pyralis Hastiana *Fab.* Sys. Ent. 650. (1775).
Pyralis Logiana *Fab.* Sys. Ent. 651. (1775).
Tortrix Scabrana *Schiff.* W. V. p. 130. (1776).
Pyralis Elevana *Fab.* Ent. Syst. 269. (1793).
Pyralis Borana *Fab.* Ent. Syst. 270. (1793).
Tortrix Hastiana *Fröhl.* En. Tort. Würt. p. 23, No. 18. (1828).
Teras scabrana *Treits.* Schm. viii, p. 255. (1830).
Peronea Hastiana *Wilk.* Br. Tort. p. 171. (1859).
Teras Hastiana *Hein.* Schm. p. 14. (1863).

The following varieties of this species, occurring in Europe, are given in the Catalogue of Staudinger and Wocke, (1871).

- a. *Coronana* *Thun.* Diss. Ent. i, p. 18, fig. 18.
b. *Buringerana* *Hüb.* Tort. 216; *Eximiana* *Haw.* Lep. Br. 413.
c. *Byringerana* *Hüb.* Vög. & Schm. 97; *Hüb.* Tort. 61; ? *Scabrana* *Dup.* Platy. pl. 243, fig. 1.
d. *Leprosana* *Fröhl.* En. Tort. Würt. No. 19; *Scabrana* *H-S.* Schm. 10, 11, 13.
e. *Scabrana* *Hüb.* Tort. 58, 169; *Sparsana* *Fröhl.* En. Tort. Würt. No. 12.
f. *Autumnana* *Steph.* Ill. iv, 155; *Obsoletana* *Steph.* Ill. iv, 156.

- g. *Combustana* *Hüb.* Tort. 234; *Steph.* Ill. iv, 155; *Cristana* *Fröhl.* En. Tort. Würt. No. 14.
- h. *Aquilana* *Hüb.* Tort. 235; *Fröhl.* En. Tort. Würt. No. 15; *Treits.* Schm. viii, 252; *Subcristana* *Steph.* Ill. iv, 155.
- i. *Radiana* *Hüb.* Tort. 177; *Haw.* Lep. Br. No. 58; *Ramostriana* *Steph.* Ill. iv, 154; ? *Crassana* *Dup.* Suppl. iv, pl. 61, fig. 9.
- k. *Divisana* *Hüb.* Tort. 198; *Steph.* Ill. iv, 153, pl. 34, fig. 1; *Crassana* *Dup.* Suppl. iv, pl. 61, fig. 10.
- l. *Apiciana* *Hüb.* Vög. & Schm. 49; *Hüb.* Tort. 87; *Treits.* Schm. viii, 271; x, 3, 135; *H-S.* Schm. iv, 7.
- m. *Psorana* *Fröhl.* En. Tort. Würt. No. 11.
- n. *Mayrana* *Hüb.* Tort. 335; *Scabrana* *H-S.* Schm. iv, 12.
- o. *Centrovittana* *Steph.* Ill. iv, 154.
- p. *Albistriana* *Haw.* Lep. Br. p. 412; *Steph.* Ill. iv, 154.

The following varieties have been found in North America.

- divisana* *Hüb., Robs.* Tr. Am. Ent. Soc. ii, p. 280, pl. 7, fig. 63. (1869).
- flavivittana* *Clem.* Proc. Ent. Soc. Ph. iii, p. 516, (1864); *Robs.* Tr. Am. Ent. Soc. ii, p. 280, pl. 7. (1869).
- perspicuana* *Robs.* Tr. Am. Ent. Soc. ii, p. 280, pl. 7, fig. 62. (1869).
- maculidorsana* *Clem.* Proc. Ent. Soc. Ph. iii, p. 516, (1864); *Robs.* Tr. Am. Ent. Soc. ii, p. 281, pl. 7, fig. 64. (1869).
- inana* *Robs.* Tr. Am. Ent. Soc. ii, p. 281, pl. 7, fig. 65. (1869).
- albistriana* *Wood*, 1069.
- ? *ptychogrammos* *Zell.* Beitr. p. 7. (1875).
- hudsoniana* (Teras) *Walk.* Cat. Lep. Het. xxviii, p. 290. (1863).
- caliginosana* (Teras) *Walk.* Cat. Lep. Het. xxviii, p. 309. (1863).

Habitat.—Europe. Throughout North America.

Food.—In Europe, *Salix caprea*, *aurita*, *acuminata*.

12. **T. pulverosana.** *

- Teras pulverosana* *Walk.* Cat. Lep. Het. xxviii, p. 291. (1863).
- Sciaphila implexana* *Walk.* Cat. Lep. Het. xxviii, p. 338. (1863).
- Teras pulverosana* *Wms.* Ill. p. 3, pl. 61, fig. 7. (1879).

Habitat.—St. Martin's Falls, Albany River.

13. **T. maccana.**

- Teras maccana* *Treits.* Schm. Suppl. x, 3, 133. (1835).
- Teras Erebana* *Guen.* Ind. p. 12. (1845).
- Tortrix* (Teras) *Maccana* *H-S.* Schm. iv, p. 149; Suppl. 14-6. (1849).
- Peronea maccana* *Wilk.* Br. Tort. p. 171. (1859).
- Teras Maccana* *Hcin.* Schm. p. 16. (1863).

Var. a. *Basalticola* *Stgr.* Stett. e. z. 1857, p. 268.

Habitat.—Europe; Maine, Oregon.

Food.—In Europe, *Vaccinium*.

14. **T. logiana.**

- Tortrix Logiana* *Schiff.* W. V. p. 130. (1776).
- Tortrix Tristana* *Hüb.* Tort. fig. 50. (1800).
- Tortrix Logiana* *Hüb.* Tort. fig. 64. (1800).

* This may yet prove to be a variety of *astiana* Linn.

Peronea Trigonana Steph. Ill. iv, p. 159. (1834).
Tortrix (Teras) Tristana H-S. Schm. iv, p. 142. (1849).
Tortrix (Teras) Logiana H-S. Schm. iv, p. 143; Suppl. fig. 24. (1849).
Peronea tristana Wilk. Br. Tort. p. 167. (1859).
Teras Tristana Hein. Schm. p. 17. (1863).

Var. a. *Logiana Hüb.* Tort. 217. (1800).

Tristana Haw. Lep. Br. p. 410. (1811).
Germarana Fröl. En. Tort. Wurt. p. 24, No. 22. (1828).
Boscana Steph. Ill. iv, p. 159. (1834).
Erutana H-S. Schm. iv, p. 143; Suppl. fig. 9. (1849).

Var. b. *Plumbosana Steph.* Ill. iv, p. 158. (1834).

The following varieties of this species occur in North America.

Viburnana Clem. Proc. Ph. Ac. Sc. 1860, p. 347; *Robb.* Tr. Am. Ent. Soc. ii, p. 281. (1869).
fanula Zell. Beitr. p. 8. (1875).

Habitat.—Europe; Massachusetts, New York, Pennsylvania.

Food.—Viburnum, Wild Cherry, (Clem).

15. **T. permutana.**

Glyphiptera Permutana Dup. Platy. p. 449, pl. 262. (1834).
Tortrix (Teras) Permutatana H-S. Schm. iv, p. 141; Suppl. 28. (1849).
Peronea permutana Wilk. Br. Tort. p. 174. (1859).
Teras Permutatana Hein. Schm. p. 19. (1863).

Habitat.—Europe; Maine, Illinois, California.

Food.—In Europe, *Rosa*; in America, *Willow*, (*Papilio* i, p. 30).

16. **T. nivisellana.**

Teras nivisellana Wlsm. Ill. p. 2, pl. 61, fig. 3. (1879).

Habitat.—Maine, New York, California, Oregon.

17. **T. schalleriana.**

Tortrix Schalleriana Linn. Fau. Su. No. 1339. (1761).
Tortrix Schalleriana Hüb. Tort. 288-9. (1800).
Tortrix Latifasciana Haw. Lep. Br. No. 65. (1811).
Tortrix Schalleriana Haw. Lep. Br. No. 73. (1811).
Teras schalleriana Treits. Schm. viii, 265. (1830).
Peronea latifasciana Steph. Ill. iv, p. 159. (1834).
Peronea Schalleriana Dup. Platy. p. 152, pl. 243. (1834).
Tortrix (Teras) Erutana H-S. Schm. iv, p. 143; Suppl. ix, 19. (1849).
Tortrix (Teras) Schalleriana H-S. Schm. iv, p. 144. (1849).
Peronea Schalleriana Wilk. Br. Tort. p. 165. (1859).
Teras Schalleriana Hein. Schm. p. 19. (1863).

Habitat.—Europe; Orono, Maine.

Food.—In Europe, *Symphytum*, *Salix*.

18. **T. ferrugana.**

Tortrix Ferrugana Schiff. W. V. p. 128. (1776).
Tortrix gnomania Haw. Lep. Br. No. 76. (1811).
Tortrix bifidana Haw. Lep. Br. No. 77. (1811).
Tortrix gilvana Fröl. En. Tort. Wurt. p. 24, No. 23. (1828).

- Tortrix ochreana* *Fröhl.* En. Tort. Würt. p. 25, No. 24. (1828).
Tortrix conspersana *Fröhl.* En. Tort. Würt. p. 28, No. 32. (1828).
Teras ferrugana *Treits.* Schm. viii, p. 263. (1830).
Glyphiptera Ferrugana *Dup.* Platy. p. 143, pl. 243. (1834).
Teras Ferrugana *F. v. R.* p. 40, pl. 23, figs. a-k; pl. 24, figs. a-h; pl. 25, fig. 1, a-c. (1838).
Tortrix modeeriana *Zett.* Ins. Lap. 979. (1840).
 ——— *longulana* *Ev. F. V. U.* 525. (1844).
Tortrix (Teras) Ferrugana *H-S.* Schm. iv, p. 146; Suppl. 407. (1849).
Paramesia ferrugana *Wilk.* Br. Tort. p. 178. (1859).
Teras Ferrugana *Hein.* Schm. p. 25. (1863).
Peronea gallicolana *Clem.* Proc. Soc. Ph. iii, p. 516. (1864).
Teras semiannula *Robb.* Tr. Am. Ent. Soc. ii, p. 282, pl. 7, fig. 70. (1869).
Teras ferrugana *Zell.* Beitr. p. 6. (1875).

Habitat.—Europe; Me., Mass., N. Y., Penna., Ohio, Mo.

Food.—In Europe, Beech, Birch and Oak, (Heinemann). In America, Inquiline in Galls of *Salicis strobiloides*, (Walsh).

19. ***T. simpliciana*.** *

Teras simpliciana *Wlsm.* Ill. p. 2, pl. 61, fig. 4. (1879).

Habitat.—New Hampshire, Oregon.

20. ***T. oxycoccana*.** †

Tortrix oxycoccana *Pack.* Guide, p. 334. (1869).

Habitat.—Maine, Massachusetts.

Food.—Cranberry.

21. ***T. cinderella*.** †

Tortrix Cinderella *Riley*, 4th. Mo. Rept. p. 46, fig. 22. (1872).

Habitat.—Missouri, Texas.

Food.—Leaves of Apple, (Riley).

22. ***T. malivorana*.** †

Tortrix malivorana *LeBaron*, 1st. Ill. Rept. p. 16. (1870).

Habitat.—Illinois.

Food.—Leaves of Apple, (LeBaron, Am. Nat. v, p. 209).

23. ***T. vacciniivorana*.** †

Tortrix vacciniivorana *Pack.* New or Little known Insects, (1870); Mass. Ag. Rept. p. 241. (1870).

Habitat.—New Jersey.

Food.—Cranberry.

24. ***T. minuta*.**

Tortrix minuta *Robb.* Tr. Am. Ent. Soc. ii, p. 276, pl. 6, fig. 49. (1869).

Teras variolana *Zell.* Beitr. p. 6. (1875).

Habitat.—Texas, Nevada.

* Probably a variety of the extremely variable *Teras ferrugana* Schiff.

† Prof. Riley thinks these four species are all one. (See Bull. Ent. Com. No. 6, p. 82), but surely *oxycoccana* Pack. must be distinct.

25. **T. foliana.**

Teras foliana *Wism.* Ill. p. 3, pl. 61, figs. 5 & 6. (1879).

Habitat.—California.

26. **T. fishiana.**

Teras fishiana *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Orono, Maine.

27. **T. chalybeana.**

Teras chalybeana *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Maine, New York.

28. **T. cervinana.**

Teras cervinana *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Massachusetts, Georgia.

29. **T. americana.**

Teras americana *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Massachusetts, California.

Genus **CACŒCIA** Hüb. Verz. bek. Schm. 1816.

30. **C. rosaceana.**

Lozotænia Rosaceana *Harris*, Ins. Inj. 1st. ed. (1841); 3d. ed. (1862).

Lozotænia rosaceana ? *Emmons*, Nat. Hist. N. Y. Pt. v, Ag. p. 250, pl. 6, figs. 8-11. (1854).

Lozotænia rosaceana *Fitch*, 3d. N. Y. Rept. p. 28. (1859).

Lozotænia Rosaceana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 347. (1860).

Teras vicariana *Walk.* Cat. Lep. Het. xxviii, p. 287. (1863).

Tortrix rosaceana *Robs.* Tr. Am. Ent. Soc. ii, p. 262, pl. 1, figs. 1-2 ♀, 3 ♂. (1869).

Lozotænia rosaceana *Pack.* Guide, p. 335, pl. 8, fig. 12. (1869).

Lozotænia gossypiana *Pack.* Guide, p. 335; (Glover's Cotton Ins. Pat. Off. Rept. 1853, p. 82, pl. 7, fig. 1). (1869).

Tortrix Arcticana *Mösch.* Stett. Ent. Zeit. 1874, p. 164. (1874).

Tortrix (*Cacœcia*) *rosaceana* *Zell.* Beitr. p. 9. (1875).

Habitat.—Maine to California.

Food.—Rose, Apple, Peach, Cherry, Yellow-birch, Plum, Cotton-plant, Clover, Honeysuckle, Beans, Strawberry, *Acer negundo*, *Cornus stolonifera*, *Cratægus*.

31. **C. purpurana.**

Lozotænia purpurana *Clem.* Proc. Ent. Soc. Ph. p. 136, ♂. (1865).

Tortrix purpurana *Robs.* Tr. Am. Ent. Soc. ii, p. 263, pl. 1, fig. 4, ♂. (1869).

Tortrix gurgitana *Robs.* Tr. Am. Ent. Soc. ii, p. 263, pl. 4, fig. 16, ♀. (1869).

Tortrix Lintneriana *Grote.* Tr. Am. Ent. Soc. iv. p. 424, ♀. (1873).

Tortrix (*Cacœcia*) *purpurana* *Zell.* Beitr. p. 9, ♂ ♀. (1875).

Habitat.—Maine, New York, Pennsylvania, Illinois, Wisconsin.

Food.—Geranium. (Dr. Hoy).

32. **C. infumata.**

Tortrix (*Cacœcia*) *infumata* Zell. Beitr. p. 10. (1875).

Habitat.—Missouri, Wisconsin.

Food.—Hickory.

33. **C. rosana.**

Tortrix *Rosana* Linn. S. N. x, 530. (1758).

Tortrix *Ameriana* Linn. S. N. x, 531. (1758).

Pyralis *Ameriana* Fab. Sys. Ent. 647. (1775).

Tortrix *levigana* Schiff. W. V. p. 129. (1776).

Pyralis *variana* Fab. Mant. Ins. ii, p. 231. (1787).

Pyralis *levigana* Fab. Ent. Syst. 253. (1793).

Tortrix *Oxyacanthana* Hüb. Tort. fig. 117, ♀. (1800).

Tortrix *Acerana* Hüb. Tort. fig. 118, ♂. (1800).

Tortrix *Rosana* Hüb. Tort. fig. 302. (180-).

Tortrix *branderiana* Haw. Lep. Br. No. 94. (1811).

Tortrix *fuscana* Haw. Lep. Br. No. 95. (1811).

Tortrix *rosana* Haw. Lep. Br. No. 96. (1811).

Tortrix *oxyacanthana* Haw. Lep. Br. No. 97. (1811).

Tortrix *Acerana* Fröhl. En. Tort. Wurt. p. 31, No. 38. (1828).

Tortrix *laevigana* Treits. Schm. viii, p. 62. (1830).

Loxotœnia *nebulana* Steph. Ill. iv, p. 74. (1834).

Loxotœnia *laevigana* Steph. Ill. iv, p. 74. (1834).

Tortrix *oxyacanthana* Dup. Platy. p. 74, pl. 238. (1834).

Tortrix *acerana* Dup. Platy. p. 76, pl. 239. (1834).

Tortrix *laevigana* F. v. R. p. 17, pl. 11, fig. 2, & p. 292, pl. 98. (1838).

Tortrix (*Loxotœnia*) *laevigana* H-S. Schm. iv, p. 159. (1849).

Loxotœnia *Rosana* Wilk. Br. Tort. p. 63. (1859).

Tortrix (*Cacœcia*) *Rosana* Hein. Schm. p. 34. (1863).

Habitat.—Europe; New York.

Food.—In Europe, Leaves of Apple, Elm, Willow, Birch, Wild Rose, Raspberry, Hazel, Linden, Aspen, Hawthorn, Currant, Gooseberry; in America, Currant, (James Angus).

34. **C. cerasivorana.**

Loxotœnia *Cerasivorana* Fitch, N. Y. Ag. Rept. p. 382, pl. 2, fig. 3. (1856).

Tortrix *cerasivorana* Robs. Tr. Am. Ent. Soc. ii, p. 275, pl. 6, fig. 47, ♂. (1869).

Tortrix (*Cacœcia*) *cerasivorana* Zell. Beitr. p. 11. (1875).

Habitat.—Maine, Massachusetts, New York, Missouri, Colorado.

Food.—Cherry, *Betula alba* var. *populifolia*.

35. **C. rileyana.**

Cacœcia *fervidana* Walk. Cat. Lep. Het. xxviii, p. 313. (1863).

Tortrix *rileyana* Grote, Tr. Am. Ent. Soc. ii, p. 121. (1868).

Tortrix *rileyana* Robs. Tr. Am. Ent. Soc. ii, p. 271, pl. 4, fig. 28, ♀. (1869).

Tortrix *Rileyana* Riley, 1st. Mo. Rept. p. 153, pl. 2, figs. 3 & 4. (1869).

Tortrix (*Loxotœnia*) *Rileyana* Zell. Beitr. p. 15. (1875).

Habitat.—Georgia, Missouri, Texas.

Food.—Hickory, Snowberry, *Vernonia fasciculata*, Walnut.

36. **C. parallela.**

Tortrix parallela *Robs.* Tr. Am. Ent. Soc. ii, p. 267, pl. 4, fig. 17. (1869).

Habitat.—Maine, Massachusetts, New York, Illinois.

364. **C. zapulata.**

Tortrix zapulata *Robs.* Tr. Am. Ent. Soc. ii, p. 264, pl. 1, fig. 7. (1869).

Habitat.—Illinois, Missouri.

37. **C. obsoletana.** *

Teras obsoletana *Walk.* Cat. Lep. Het. xxviii, p. 288, ♂. (1863).

Lozotænia vesperana *Clem.* Proc. Ent. Soc. Ph. v, p. 136, ♂. (1865).

Tortrix vesperana *Robs.* Tr. Am. Ent. Soc. ii, p. 266, pl. 1, fig. 12, ♂. (1869).

Lozotænia obsoletana *Wlsm.* Ill. p. 11, pl. 63, fig. 1, ♂. (1879).

Habitat.—Massachusetts, New York, Pennsylvania, Virginia, Texas.

38. **C. transiturana.** *

Cacœcia transiturana *Walk.* Cat. Lep. Het. xxviii, p. 312, ♀. (1863).

Tortrix sanbornana *Robs.* Tr. Am. Ent. Soc. ii, p. 265, pl. 1, fig. 8. (1869).

Cacœcia transiturana *Wlsm.* Ill. p. 8, pl. 62, fig. 4, ♀. (1879).

Habitat.—Massachusetts, New York, Pennsylvania, Florida, Texas.

39. **C. argyropsila.**

Retinia argyropsila *Walk.* Cat. Lep. Het. xxviii, p. 373. (1863).

Tortrix furvana *Robs.* Tr. Am. Ent. Soc. ii, p. 265, pl. 1, fig. 9. (1869).

Tortrix v-signatana *Pack.* Mass. Ag. Rept. p. 238. (1870).

Tortrix (*Loxotænia*) *furvana* *Zell.* Beitr. p. 13. (1875).

Cacœcia argyropsila *Wlsm.* Ill. p. 8, pl. 62, figs. 5 & 6. (1879).

Habitat.—Mass., N. Y., Ohio, Mo., Tex., Cal., Me.

Food.—*Æsculus californica*, (Null.). Prof. Riley wrote me that he had bred it on Rose, Apple, Hickory, Oak, Soft Maple, Elm and Wild Cherry.

40. **C. semiferana.**

Lophoderus ? *semiferanus* *Walk.* Cat. Lep. Het. xxviii, p. 336. (1863).

Tortrix flaccidana *Robs.* Tr. Am. Ent. Soc. ii, p. 277, pl. 6, fig. 53. (1869).

Tortrix (*Loxotænia*) *flaccidana* *Zell.* Beitr. p. 13. (1875).

Cacœcia semiferana *Wlsm.* Ill. p. 7, pl. 62, figs. 2 & 3. (1879).

(Robinson's fig. 48, pl. 6, Tr. Am. Ent. Soc. ii, is a male of this species).

Habitat.—Canada, Illinois, Indiana, Ohio, Texas.

Food.—"Various species of Oak, and a strongly marked variety on Hickory," (Miss Murtfeldt).

* I have never seen a female of *obsoletana*, and only males are reported; and I have never yet seen a male of *transiturana*. Walker reports his types as male and female, but all three are females. Robinson reports his as male and female, but neither the collection which he left to the Central Park Museum, nor the one he gave to the Ent. Soc. Phila., contains a male, so that he may have been mistaken, and had only females before him, and it may yet be proved that these are the sexes of one species.

41. **C. fervidana.**

Lozotænia fervidana Clem. Proc. Ph. Ac. Sc. p. 347. (1860).

Tortrix paludana Robs. Tr. Am. Ent. Soc. ii, p. 275, pl. 6, fig. 45, ♂. (1869).

Habitat.—New York, Pennsylvania.

Food.—Oak.

42. **C. georgiana.**

Retinia Georgiana Walk. Cat. Lep. Het. xxviii, p. 372. (1863).

Tortrix Georgiana Grote, Bull. Buf. Soc. i, p. 15, pl. 1, fig. 4. (1873).

Cacœcia georgiana Wlsm. Ill. p. 9, pl. 62, fig. 7. (1879).

Habitat.—Pennsylvania, Georgia, Texas; Brazil (?).

43. **C. fractivittana.**

Lozotænia fractivittana Clem. Proc. Ent. Soc. Ph. v, p. 136. (1865).

Tortrix fractivittana Robs. Tr. Am. Ent. Soc. ii, p. 265, pl. 1, fig. 10, ♂. (1869).

Tortrix fumosa Robs. Tr. Am. Ent. Soc. ii, p. 268, pl. 4, fig. 19, ♀. (1869).

Habitat.—Massachusetts, Virginia, Illinois, Ohio.

44. **C. grisea.**

——— *Abbott's* unpublished Ill. of N. A. Insects, pl. 174.

Tortrix grisea Robs. Tr. Am. Ent. Soc. ii, p. 268, pl. 4, fig. 18, ♀. (1869).

Habitat.—Ohio, Missouri, Texas.

Food.—*Rudbeckia*, (Abbott); White Oak, (Miss Murtfeldt).

Genus **LOXOTÆNIA** Steph. Ill. iv, 1834.

45. **L. afflictana.**

Sciaphila? afflictana Walk. Cat. Lep. Het. xxviii, p. 337. (1863).

Lozotænia fuscolineana Clem. Proc. Ent. Soc. Ph. v, p. 137. (1865).

Tortrix fuscolineana Robs. Tr. Am. Ent. Soc. ii, p. 266, pl. 1, fig. 11. (1869).

Lophoderus afflictanus Wlsm. Ill. p. 14, pl. 63, fig. 8. (1879).

Habitat.—Nova Scotia, Me., N. H., Mass., N. Y., Va., Cal.

Food.—Fir.

46. **L. musculana.**

Tortrix Musculana Hüb. Tort. fig. 98. (1800).

Tortrix trifasciana Haw. Lep. Br. No. 100. (1811).

Tortrix musculana Fröhl. En. Tort. Würt. p. 34, No. 49. (1828).

Sciaphila musculana Treits. Schm. viii, p. 175. (1830).

Sciaphila Musculana Dup. Platy. p. 381, pl. 255. (1834).

Tortrix (Lozotænia) Musculana H-S. Schm. iv, p. 168; Suppl. 53. (1849).

Lozotænia musculana Wilk. Br. Tort. p. 56. (1859).

Tortrix (Loxotænia) Musculana Hein. Schm. p. 39. (1863).

Habitat.—Europe; Oregon, (Walsingham).

Food.—In Europe, *Agrimonia*, *Genista*, *Solidago*, *Achillea*, *Stachys*, *Scrophulariu*, *Rubus*, *Betula*, *Salix*, *Galium*, *Quercus*, *Pyrus* and *Tilia*.

47. **L. virescana.**

Sinicrotes virescana Clem. Proc. Ent. Soc. Ph. v, p. 140. (1865).

Tortrix (Loxotænia) sescuplana Zell. Beitr. p. 14. (1875).

Habitat.—Maine, Ontario, Pennsylvania, Texas, California.

48. **L. glaucana.**

Lozotænia glaucana *Wlsm.* Ill. p. 13, pl. 63, fig. 6. (1879).

Habitat.—Southern Oregon.

49. **L. clemensiana.**

Tortrix (*Lozotænia*) *Clemensiana* *Fernald*, *Can. Ent.* xi, p. 155. (1879).

Habitat.—Maine, Massachusetts, New York, Wisconsin.

Genus **PTYCHOLOMA** *Steph.* Ill. iv, 1834.

50. **P. persicana.**

Crossia Persicana *Fitch*, *N. Y. Ag. Rept.* p. 357. (1856).

Ditula? *blandana* *Clem.* *Proc. Ent. Soc. Ph.* iii, p. 515. (1864).

Lozotenia fragariana *Pack.* *Guide.* p. 335. (1869).

Tortrix (*Argyrotoxa*) *conigerana* *Zell.* *Beitr.* p. 21, pl. 8, fig. 3. (1875).

Habitat.—Maine, New Hampshire, Massachusetts, New York.

Food.—Peach, Strawberry.

51. **P. melaleucana.**

Lophoderus melaleucanus *Walk.* *Cat. Lep. Het.* xxviii, p. 335. (1863).

Conchylis invexana *Walk.* *Cat. Lep. Het.* xxviii, p. 358. (1863).

Ptycholoma? *semifuscana* *Clem.* *Proc. Ent. Soc. Ph.* iii, p. 519. (1864).

Tortrix *melaleucana* *Robs.* *Tr. Am. Ent. Soc.* ii, p. 271, pl. 4, fig. 29. (1869).

Tortrix (*Ptycholoma*) *melaleucana* *Zell.* *Beitr.* p. 17. (1875).

Ptycholoma melaleucanum *Wlsm.* Ill. p. 10, pl. 62, fig. 8. (1879).

Habitat.—Me., Mass., N. Y., Penna., Va., Ohio.

Food.—*Trillium erectum*, *Polygonatum biflorum*.

52. **P. dissitana.**

Tortrix (*Ptycholoma*) *Dissitana* *Grote*, *N. A. Ent.* i, p. 29. (1879).

Habitat.—Maine, New York.

Genus **PANDEMIS** *Hüb. Verz. bek. Schm.* 1816.

53. **P. limitata.**

Tortrix *limitata* *Robs.* *Tr. Am. Ent. Soc.* ii, p. 264, pl. 1, fig. 6. (1869).

Habitat.—Pennsylvania, Missouri.

Food.—Oak, Sassafras, (*Miss Murtfeldt*).

54. **P. lamprosana.** *

Tortrix *lamprosana* *Robs.* *Tr. Am. Ent. Soc.* ii, p. 264, pl. 1, fig. 5. (1869).

Habitat.—Massachusetts, New York, Pennsylvania, Texas.

55. **P. albaniana.**

Teras albaniana *Walk.* *Cat. Lep. Het.* xxviii, p. 288. (1863).

Pandemis albaniana *Wlsm.* Ill. p. 11, pl. 62, fig. 10. (1879).

Habitat.—St. Martin's Falls, Albany River, Hudson's Bay, California.

* Lord Walsingham doubtfully refers this species to *albaniana* *Walk.*, of which he obtained specimens in California; but these do not agree with the type of *lamprosana*, so I prefer to keep them separate till we learn more about them.

Genus **LOPHODERUS** Steph. Ill. iv, 1834.

56. **L. ministrana.**

- Tortrix ministrana* Linn. S. N. x. 531. (1759).
Tortrix Ministrana Schiff. W. V. p. 128. (1776).
Tortrix Ferrugana Hüb. Tort. fig. 56. (1800).
Tortrix ministrana Haw. Lep. Br. No. 10. (1811).
Tortrix ministrana Fröhl. En. Tort. Würt. p. 42, No. 79. (1828).
Tortrix ministrana Treits. Schm. viii, p. 89. (1830).
Tortrix Ministrana Dup. Platy. p. 96, pl. 240. (1834).
Tortrix Ferrugana Dup. Platy. p. 478, pl. 261. (1834).
Lophoderus subfascianus Steph. Ill. iv, p. 144. (1834).
Tortrix (*Lophoderus*) *Ministrana* H-S. Schm. iv, p. 175. (1849).
Eulia ministrana Wilk. Br. Tort. p. 17. (1859).
Tortrix (*Lophoderus*) *Ministrana* Hein. Schm. p. 43. (1863).

Habitat.—Europe; Nova Scotia, Me., N. Y., Wis., Ill.

Food.—In Europe, *Betula*, *Rhamnus*, *Sorbus*.

57. **L. quadrifasciana.**

Lophoderus quadrifasciana Fern. Tr. Am. Ent. Soc. x. (1882).

Habitat.—Maine, New Hampshire, Massachusetts, New York.

58. **L. juglandana.**

Tortrix (*Lophoderus*) *juglandana* Fern. Can. Ent. xi, p. 155. (1879).

Habitat.—Massachusetts, New York, Ontario, Ohio, Wisconsin.

Food.—Hickory.

59. **L. triferana.**

Cacoecia triferana Walk. Cat. Lep. Het. xxviii, p. 314. (1863).

Tortrix incertana Clem. Proc. Ent. Soc. Ph. v, p. 138. (1865).

Tortrix incertana Robn. Tr. Am. Ent. Soc. ii, p. 278, pl. 6, figs. 57, 58. (1869).

Lophoderus triferanus Wlsm. Ill. p. 15, pl. 63, fig. 9. (1879).

Habitat.—Me., N. H., Mass., N. Y., Penna., Va., Ohio, Tex.

Food.—Cranberry, (Pack. Hayd. Surv. x, p. 523; Mass. Ag. Rept. 1870, p. 240); Elm, Soft Maple, Oak, Apple, Rose, Beans, *Gnaphalium polycephalum*, (Miss Murtfeldt).

60. **L. politana.** *

Tortrix politana Haw. Lep. Br. No. 229. (1811):

Tortrix sylvana Treits. Schm. viii, p. 109. (1830).

Sericoris pulchellana Steph. Ill. iv, p. 135. (1834).

Tortrix Sylvana F. v. R. p. 40, pl. 22, fig. 4. (1838).

Tortrix (*Lozotænia*) *Sylvana* H-S. Schm. iv, p. 162. (1849).

Tortrix (*Lozotænia*) *Lepidana* H-S. Schm. Suppl. 413. (1849).

Sericoris politana Wilk. Br. Tort. p. 271. (1859).

Tortrix (*Lophoderus*) *Politana* Hein. Schm. p. 41. (1863).

? *Tortrix* (*Lophoderus*) *politana* Fern. Dep. Ag. Rept. 1880, p. 264. (1881).

Habitat.—Europe; Me., N. H., Mass., N. Y., D. C.

* Prof. P. C. Zeller believes *lutosana* and *incertana* of Clemens to be identical with the European *politana*, and has identified *politana* above for me. After examining a large number of these insects, I do not feel quite prepared to unite them with *politana*.

Food.—In Europe, *Centaurea jacea*, *Potentilla*, *Ranunculus acris*, *Vaccinium*, *Myrtillus*, *Erica vulgaris*, *Myrica gale*; in America, *Pinus strobus*.

61. ***L. velutinana*.**

Cacocia ? *velutinana* *Walk.* Cat. Lep. Het. xxviii, p. 313. (1863).

Tortrix lutosana *Clem.* Proc. Ent. Soc. Ph. v, p. 138. (1865).

Tortrix lutosana *Robt.* Tr. Am. Ent. Soc. ii, p. 279, pl. 6, fig. 59. (1869).

Habitat.—Massachusetts, New York, Pennsylvania, Missouri, Texas.

Food.—Laurel Oak, Balsam Fir, Maple, (Miss Murtfeldt).

62. ***L. gloverana*.**

Lophoderus gloveranus *Wlsm.* Ill. p. 14, pl. 63, fig. 7. (1879).

Habitat.—New York, California.

63. ***L. coloradana*.**

Lophoderus coloradana *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Colorado.

64. ***L. mariana*.**

Lophoderus mariana *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Maine, Massachusetts, New York.

Food.—(Oak ?)

Genus **SCIAPHILA** Treits. Schm. viii, 1830.

65. ***S. osseana*.**

Tortrix osseana *Sc.* Ent. Carn. p. 238. (1763).

Tortrix Pratana *Hüb.* Tort. figs. 227-8. (180-).

Tortrix quadripunctana *Haw.* Lep. Br. No. 237. (1811).

Tortrix pratana *Fröhl.* En. Tort. Würt. p. 67, No. 153. (1828).

Tortrix pratana *Treits.* Schm. viii, p. 101. (1830).

Argyroptera Pratana *Dup.* Platy. p. 446, pl. 259. (1834).

Tortrix boreana *Zett.* Ins. Lsp. p. 980. (1840).

Tortrix (Ablabia) Pratana *H-S.* Schm. iv, p. 178. (1849).

Ablabia pratana *Wlk.* Br. Tort. p. 257. (1859).

Sciaphila (Ablabia) Osseana *Hein.* Schm. p. 54. (1863).

Habitat.—Europe; Labrador, (Christop. Stett. Ent. Zeit. 1858, p. 313).

Food.—In Europe, *Compositæ*, *Cruciferæ*, *Graminæ*.

66. ***S. niveosana*.***

Sciaphila niveosana *Pack.* Proc. Bost. Soc. N. H. xi, p. 55. (1866).

Habitat.—Labrador.

67. ***S. argentana*.**

Tortrix argentana *Cl.* Ic. ii, 14. (1759-64).

Tortrix Goiiana *Linn.* Fau. Su. p. 349. (1761).

Tortrix Gouana *Linn.* S. N. xii, 879. (1767).

Pyralis Gouana *Fab.* Sys. Ent. p. 651. (1775).

Tortrix Argentana *Schiff.* W. V. p. 127. (1776).

Pyralis Gouana *Fab.* Sp. Ins. p. 283. (1781).

* Wocke makes this synonymous with *osseana* *Sc.*, but it is certainly distinct.

- Tortrix Argentana* *Hüb.* Tort. fig. 86. (1800).
Tortrix Magnana *Hüb.* Tort. figs. 225-6. (180-).
Pyralis Margaratalis *Hüb.* Pyr. fig. 48. (180-).
Tortrix Gouana *Frdl.* En. Tort. Würt. p. 67, No. 152. (1828).
Tortrix gouana *Treits.* Schm. viii, 102. (1830).
Argyroptera Gouana *Dup.* Platy. p. 444, pl. 259. (1834).
Tortrix (Ablabia) Gouana *H-S.* Schm. iv, p. 177. (1849).
Sciaphila (Ablabia) Gouana *Hein.* Schm. p. 54. (1863).

Habitat.—Europe; California, (Walsingham); Nevada, (Morrison).

68. **S ? basiplagana.**

Sciaphila basiplagana *Wlsm.* Ill. p. 23, pl. 65, fig. 8. (1879).

Habitat.—Texas.

69. **S ? trigonana.**

Sciaphila trigonana *Wlsm.* Ill. p. 22, pl. 65, fig. 7. (1879).

Habitat.—California.

70. **S ? horariana.**

Sciaphila horariana *Wlsm.* Ill. p. 22, pl. 65, fig. 6. (1879).

Habitat.—Oregon.

71. **S. mœschleriana.**

Tortrix (Dichelia) Mœschleriana *Wocke, Stett.* Ent. Zeit. p. 45. (1862).

Tortrix algidana *Mœsch.* Wien. Ent. Mon. vi, p. 138. (1862).

Tortrix gelidana *Mœsch.* Wien. Ent. Mon. vi, pl. 1, figs. 9, 10. (1862).

Tortrix algidana *Robs.* Tr. Am. Ent. Soc. ii, p. 272, pl. 5, fig. 32. (1869).
Tortrix gelidana *Pack.* Guide, p. 334. (1869).

Habitat.—Labrador, White Mts., New Hampshire.

Genus **TORTRIX** Linn. S. N. x. 1758.

72. **T. alleniana.**

Tortrix alleniana *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Orono, Maine.

73. **T. pallorana.**

Tortrix pallorana *Robs.* Tr. Am. Ent. Soc. ii, p. 266, pl. 1, fig. 13. (1869).

Habitat.—Mass., N. Y., Penn., Ohio, Ill., Tex.

Food.—Cherry, *Silphium integrifolium*, *Verbena hastata*, (Coquillett).

74. **T. lata.**

Tortrix lata *Robs.* Tr. Am. Ent. Soc. ii, p. 266, pl. 1, fig. 14. (1869).

Habitat.—Massachusetts, Pennsylvania, Illinois.

75. **T. houstonana.**

Tortrix Houstonana *Grote,* Bull. Buf. Soc. i, p. 15, pl. 1, fig. 5. (1873).

Lozotænia retana *Wlsm.* Ill. p. 13, pl. 63, fig. 4. (1879).

Habitat.—Texas.

76. **T. quercifoliæna.**

Argyrolepia quercifoliæna *Fitch,* N. Y. Ag. Rept. p. 826. (1858).

Tortrix (Argyrotoxa) trifurculana *Zell.* Beitr. p. 20. (1875).

Habitat.—New York, Texas.

Food.—Oak.

77. **T. albicomana.** *

Xanthosetia albicomana Clem. Proc. Ent. Soc. Ph. v, p. 137. (1865).

Tortrix albicomana Robs. Tr. Am. Ent. Soc. ii, p. 273, pl. 5, figs. 41, 42. (1869).

Tortrix (Argyrotoxa) albicomana Zell. Beitr. p. 21. (1875).

Habitat.—Me., Mass., N. Y., Penn., W. Va., Ohio, Mo., Tex.

Food.—Rose, Oak, (Miss Murtfeldt); *Aquilegia canadensis* (Kellicott).

78. **T. bergmanniana.** *

Tortrix Bergmanniana Linn. S. N. x, 531. (1757).

Tortrix Bergmanniana Schiff. W. V. p. 126. (1776).

Pyralis Bergmanniana Fab. Ent. Syst. iii, p. 273. (1793).

Tortrix Rosana Hüb. Tort. fig. 137. (1800).

Tortrix Bergmanniana Hüb. Tort. fig. 340. (180-).

Tortrix Bergmanniana Fröhl. En. Tort. Würt. p. 76, No. 177. (1828).

Tortrix bergmanniana Treits. Schm. viii, p. 121. (1830).

Tortrix Bergmanniana Dup. Platy. p. 114, pl. 241. (1834).

Argyrotoxa Bergmanniana Steph. Ill. iv, p. 173. (1834).

Tortrix (Argyrotoxa) Bergmanniana H-S. Schm. iv, p. 170. (1849).

Crocia Bergmanniana Wilk. Br. Tort. p. 153. (1859).

Tortrix (Argyrotoxa) Bergmanniana Hein. Schm. p. 48. (1863).

Tortrix Bergmanniana Zell. Lep. Westk. Am. p. 11. (1874).

Habitat.—Europe; Vancouver Island, (Zeller).

Food.—In Europe, *Rhamnus*, *Rosa*.

79. **T. peritana.**

Smicrotes peritana Clem. Proc. Ph. Ac. Sc. p. 356. (1860).

Tortrix peritana Robs. Tr. Am. Ent. Soc. ii, p. 277, pl. 6, fig. 52. (1869).

Habitat.—Maine, New York, Pennsylvania, Texas.

80. **T. franciscana.**

Lozotænia franciscana Wlsm. Ill. p. 13, pl. 63, fig. 5. (1879).

Habitat.—California.

Food.—Wild Lupin?

81. **T. fucana.**

Lozotænia fucana Wlsm. Ill. p. 12, pl. 63, fig. 2. (1879).

Habitat.—Oregon.

82. **T. semicircularana.**

Tortrix semicircularana Fern. Tr. Am. Ent. Soc. x. (1882).

Habitat.—Colorado.

83. **T. alisellana.**

Tortrix alisellana Robs. Tr. Am. Ent. Soc. ii, p. 267, pl. 1, fig. 15. (1869).

Habitat.—Ohio.

83. **T. fumiferana.**

Tortrix? fumiferana Clem. Proc. Ent. Soc. Ph. v, p. 139. (1865).

Tortrix nigridia Robs. Tr. Am. Ent. Soc. ii, p. 268, pl. 4, fig. 20. (1869).

Habitat.—Me., Mass., N. Y., Penn., Ohio, Ill., Wis.

Food.—Spruce, Fir, Pine, Hemlock, Larch, *Taxus*.

* I much doubt if these are really distinct species.

84. **T. conflictana.**

Tortrix conflictana *Walk.* Cat. Lep. Het. xxviii, p. 323. (1863).

Heterogomon conflictanus *Wlsm.* Ill. p. 10, pl. 62, fig. 9. (1879).

Habitat.—Hudson's Bay, Maine, Massachusetts, Illinois.

Genus **AMORBIA** *Clem.* Proc. Ph. Ac. Sc. 1860.

85. **A. humerosana.**

Amorbia humerosana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 352. (1860).

Tortrix humerosana *Robs.* Tr. Am. Ent. Soc. ii, p. 275, pl. 6, fig. 46. (1869).

Habitat.—Maine, Massachusetts, New York, Pennsylvania, Ontario.

Food.—*Lindera Benzoin*, *Rhus Toxicodendron*, (L. W. Goodell).

86. **A. cuneana.**

Hendecastema cuneanum *Wlsm.* Ill. p. 4, pl. 61, figs. 8-10. (1879).

Var. *adumbratum*.

Habitat.—California.

Food.—*Arctostaphylos glauca*? (Lindl.).

Genus **SYNNOMA** *Wlsm.* Ill. 1879.

87. **S. lynosyrana.**

Synnoma lynosyrana *Wlsm.* Ill. p. 24, pl. 65, figs. 9, 10. (1879).

Habitat.—California.

Food.—*Linosyris viscidiflora*.

Genus **ÆNECTRA** *Guenée*, Ind. 1845.

88. **Æ. pilleriana.**

Tortrix Pilleriana *Schiff.* W. V. p. 126. (1776).

Pyralis Pilleriana *Fab.* Mant. Ins. ii, p. 227. (1787).

Pyralis Vitana *Fab.* Ent. Syst. iii, p. 249. (1793).

Pyralis Pilleriana *Fab.* Ent. Syst. iii, p. 251. (1793).

Tortrix Luteolana *Hüb.* Tort. fig. 136. (1800).

Tortrix Pilleriana *Hüb.* Tort. fig. 172. (1800).

Tortrix pilleriana *Treits.* Schm. viii, p. 83. (1830).

Tortrix Pilleriana *Dup.* Platy. p. 91, pl. 239. (1834).

Ænectra Pilleriana *Guen.* Ind. p. 8. (1845).

Ænophthira Pilleriana *Dup.* Meth. Cat. (1845).

Tortrix (*Lozotenia*) *Pilleriana* *H-S.* Schm. iv, p. 162; Suppl. 349. (1849).

Ænectra Pilleriana *Wilk.* Br. Tort. p. 40. (1859).

Tortrix (*Ænectra*) *Pilleriana* *Hein.* Schm. p. 50. (1863).

Habitat.—Europe; Texas, California.

Food.—In Europe, *Clematis vitalba*, *Stachys germanica*, *Iris foetidissima*, *Artemisia campestris*, and very destructive to *Vitis vinifera*.

89. **Æ. rudana.**

Ænectra rudana *Wlsm.* Ill. p. 16, pl. 64, figs. 1, 2. (1879).

Habitat.—Oregon, California.

90. **Æ. senecionana.**

Ænectra senecionana *Wlsm.* Ill. p. 17, pl. 64, fig. 3. (1879).

Habitat.—Oregon, California.

Food.—*Senecio*.

91. ***C. unifasciana*.***

Crocias? *unifasciana* Clem. Proc. Ent. Soc. Ph. iii, p. 516. (1864).

Tortrix puritana Robs. Tr. Am. Ent. Soc. ii, p. 271, pl. 5, fig. 30. (1869).

Tortrix (*Dichelia*) *puritana* Zell. Beitr. p. 23. (1875).

Habitat.—Maine, Massachusetts, New York, Pennsylvania.

92. ***C. xanthoides*.**

Begunna xanthoides Walk. Cat. Lep. Het. xxvii, p. 190. (1863).

Teras xanthoides Walk. Cat. Lep. Het. xxviii, p. 290. (1863).

Leptoris breviornatana Clem. Proc. Ent. Soc. Ph. v, p. 140. (1865).

Tortrix breviornatana Robs. Tr. Am. Ent. Soc. ii, p. 269, pl. 4, figs. 24 ♀, 25 ♂. (1869).

Cenopis? *xanthoides* Wlsm. Ill. p. 20, pl. 64, fig. 10. (1879).

Habitat.—Me., Mass., N. Y., Va., Canada W., Vancouver Id.

93. ***C. irrorea*.**

Tortrix irrorea Robs. Tr. Am. Ent. Soc. ii, p. 274, pl. 5, fig. 44. (1869).

Habitat.—Maine, Massachusetts, New York, Colorado.

94. ***C. inconditana*.**

Enectra inconditana Wlsm. Ill. p. 16, pl. 63, fig. 10. (1879).

Habitat.—California, Oregon.

95. ***C. violaceana*.**

Tortrix violaceana Robs. Tr. Am. Ent. Soc. ii, p. 271, pl. 5, fig. 31. (1869).

Tortrix (*Enectra*) *violaceana* Zell. Beitr. p. 23. (1875).

Habitat.—Maine, Massachusetts, New York.

96. ***C. flavibasana*.**

Enectra flavibasana Fern. Tr. Am. Ent. Soc. x. (1882).

Habitat.—Texas, Illinois.

Genus **CENOPIIS** Zeller, Beitr. 1875.

97. ***C. quercana*.**

Cenopis quercana Fern. Tr. Am. Ent. Soc. x. (1882).

Habitat.—New York, Missouri.

Food.—Oak, (Comstock); Cherry, (Miss Murtfeldt).

98. ***C. reticulatana*.**

Crocias? *reticulatana* Clem. Proc. Ph. Ac. Sc. 1860, p. 353. (1860).

Teras subauratana Walk. Cat. Lep. Het. xxviii, p. 289. (1863).

? *Teras directana* Walk. Cat. Lep. Het. xxviii, p. 309. (1863).

Tortrix reticulatana Robs. Tr. Am. Ent. Soc. ii, p. 272, pl. 5, figs. 33, 34. (1869).

Tortrix (*Batodes*) *reticulatana* Zell. Beitr. p. 27. (1875).

Var. *mecospila* Zell. Beitr. p. 27. (1875).

Habitat.—N. S., Me., N. H. Mass., N. Y., Penn., W. Va., Tex.

Food.—Oak, (buge Orange, Maple, Persimmon, Pear, (Miss Murtfeldt).

* Robinson suppressed Clemens' name because it was preoccupied in the genus *Tortrix* of Treitschke, but in breaking up this unnatural genus, the *unifascians* of Duponchel does not fall into the same genus with our species, and I therefore restore the original name of Clemens.

99. **C. pettitana.**

Tortrix Pettitana *Robs.* Tr. Am. Ent. Soc. ii, p. 269, pl. 4, figs. 21-23. (1869).

Cenopsis Pettitana *Zell.* Beitr. p. 34. (1875).

Habitat.—Me., Mass., N. Y., Canada W., Ohio, Ill., Mo., Tex.

Food.—Oak, Hickory, Rose, (Miss Murtfeldt).

100. **C. diluticostana.**

Cenopsis diluticostana *Wlsm.* Ill. p. 18, pl. 64, fig. 6. (1879).

Habitat.—"Eastern States of North America," (Wlsm.).

101. **C. groteana.**

Cenopsis groteana *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Ohio.

102. **C. testulana.**

Cenopsis testulana *Zell.* Beitr. p. 35. (1875).

Habitat.—Texas.

103. **C. cana.**

Tortrix cana *Robs.* Tr. Am. Ent. Soc. ii, p. 276, pl. 6, fig. 50. (1869).

Habitat.—New York, Pennsylvania.

Genus **DICHELIA** Guen. Ind. 1845.

104. **D. pulcherrimana.**

Cenopsis pulcherrimana *Wlsm.* Ill. p. 19, pl. 64, fig. 8. (1879).

Habitat.—Texas.

Food.—Leaves of *Celtis*, (Boll.).

105. **D. caryæ.**

Tortrix caryæ *Robs.* Tr. Am. Ent. Soc. ii, p. 270, pl. 4, fig. 26. (1869).

Habitat.—Pennsylvania, Illinois, Texas.

Food.—Hickory?

106. **D. sulfureana.**

Crœcia ? sulfureana *Clem.* Proc. Ph. Ac. Sc. p. 353. (1860).

Conchylis gratana *Walk.* Cat. Lep. Het. xxviii, p. 359. (1863).

Crœcia ? fulvroseana *Clem.* Proc. Ent. Soc. Ph. iii, p. 516. (1864).

Crœcia ? Virginiana *Clem.* Proc. Ent. Soc. Ph. iii, p. 517. (1864).

Crœcia ? gallivorana *Clem.* Proc. Ent. Soc. Ph. iii, p. 517. (1864).

Tortrix sulfureana *Robs.* Tr. Am. Ent. Soc. ii, p. 273, pl. 5, figs. 37-40. (1869).

Tortrix (Dichelia) sulfureana *Zell.* Beitr. p. 24. (1875).

Var. *Belfrageana* *Zell.* Beitr. p. 26. (1875).

Cenopsis gracilana *Wlsm.* Ill. p. 18, pl. 64, fig. 5. (1879).

Habitat.—Me., N. H., Mass., N. Y., Penn., Va., Ohio, Ill., Mo., Wis., Tex., Can.

Food.—Clover, (Comstock); *Vitis*, (Boll.); *Ranunculus acris* (Kellcott); Inquilines in the willow galls *Salicis strobiloides* and *S. brassicoides*, (Walsh).

107. **D. demissana.**

Cenopsis demissana *Wlsm.* Ill. p. 19, pl. 64, fig. 9. (1879).

Habitat.—Texas.

108. **D. californiana.**

Dichelia californiana *Wlsm.* Ill. p. 21, pl. 65, figs. 2, 3. (1879).

Habitat.—California.

109. **D. tunicana.**

Dichelia tunicana *Wlsm.* Ill. p. 20, pl. 65, fig. 1. (1879).

Habitat.—California.

Genus **AMPHISA** Curt. Br. Ent. 1828.

110. **A. discopunctana.**

Celostathma discopunctana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 355. (1860).

Tortrix discopunctana *Robs.* Tr. Am. Ent. Soc. ii, p. 276, pl. 6, fig. 51. (1869).

Tortrix (*Amphisa*) *discopunctana* *Zell.* Beitr. p. 28. (1875).

Habitat.—Me., Mass., N. Y., Penn., D. C., Mo., Tex.

Food.—Clover.

Genus **CAPUA** Steph. Ill. iv, 1834.

111. **C. furcatana.**

Dichelia furcatana *Walk.* Cat. Lep. Het. xxviii, p. 319. (1863).

Tortrix furcatana *Robs.* Tr. Am. Ent. Soc. ii, p. 279, pl. 4, fig. 27. (1869).

Tortrix (*Dichelia*) *furcatana* *Zell.* Beitr. p. 26. (1875).

Capua furcatana *Wlsm.* Ill. p. 21, pl. 65, fig. 4. (1879).

Habitat.—New York, Pennsylvania, Ohio.

112. **C. lentiginosana.**

Capua lentiginosana *Wlsm.* Ill. p. 22, pl. 65, fig. 5. (1879).

Habitat.—Texas.

Genus **PLATYNOTA** Clem. Proc. Ph. Acad. Sc. 1860.

113. **P. flavedana.**

Platynota flavedana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 348. (1860).

Tortrix concursana *Walk.* Cat. Lep. Het. xxviii, p. 324. (1863).

Tortrix flavedana *Robs.* Tr. Am. Ent. Soc. ii, p. 278, pl. 6, fig. 55 ♂. (1869).

Tortrix laterana *Robs.* Tr. Am. Ent. Soc. ii, p. 278, pl. 6, fig. 56 ♀. (1869).

Tortrix (*Platynota*) *flavedana* *Zell.* Beitr. p. 30. (1875).

Habitat.—Me., Mass., N. Y., Penn., D. C., Tex.

Food.—Clover, Rose, Sassafras, Maple, (*Miss Murtfeldt*).

114. **P. rostrana.**

Teras rostrana *Walk.* Cat. Lep. Het. xxviii, p. 290. (1863).

Teras restitutana *Walk.* Cat. Lep. Het. xxviii, p. 292. (1863).

Teras connexana *Walk.* Cat. Lep. Het. xxviii, p. 293. (1863).

Platynota rostrana *Wlsm.* Ill. p. 5, pl. 62, fig. 1. (1879).

Habitat.—Florida, St. Domingo, Venezuela.

Food.—Leaves of Orange.

115. **P. tinctana.**

Teras tinctana *Walk.* Cat. Lep. Het. xxviii, p. 289. (1863).

Habitat.—Texas.

116. **P. labiosana.**

Tortrix (*Platynota*) *labiosana* *Zell.* Beitr. p. 31. (1875).

Habitat.—Texas.

117. **P. exasperatana.**

Tortrix (*Platynota*) *exasperatana* *Zell.* Beitr. p. 32. (1875).

Habitat.—Maine, New York, Texas.

118. **P. sentana.**

Platynota sentana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 348. (1860).

Tortrix sentana *Robs.* Tr. Am. Ent. Soc. ii, p. 277, pl. 6, fig. 54. (1869).

Tortrix (*Platynota*) *sentana* *Zell.* Beitr. p. 29. (1875).

Habitat.—Me., Mass., N. Y., Penn., Md., D. C., Tex.

Food.—*Viburnum prunifolium*, *Sanguinaria*.

Subfamily CONCHYLINÆ Mihi.

Genus **IDIOPHAPHIS** Lederer, Wien. Ent. Monats. 1859.

119. **I. inopiana.**

Tortrix inopiana *Haw.* Lep. Br. p. 469. (1811).

Xanthoetia inopiana *Steph.* Ill. iv, p. 192. (1834).

Tortrix (*Euchromia*) *Centrana H-S.* Schm. iv, p. 205; Suppl. 373. (1849).

Halonota inopiana *Wlk.* Br. Tort. p. 100. (1859).

Idiographis centrana *Led.* Wien. Ent. Monats. iii, p. 246. (1859).

Tortrix (*Idiographis*) *Centrana Hein.* Schm. p. 38. (1863).

Tortrix Inopiana *Nolcken*, Stett. Ent. Zeit. 1869, p. 283. (1869).

Habitat.—Europe; Maine, New York, California.

Food.—In Europe, *Artemisia campestris*, (*Nolcken*, Stett. Ent. Zeit. 1869, p. 283).

120. **I. fulviplicana.**

Idiographis fulviplicana *Wlsm.* Ill. p. 25, pl. 66, fig. 2-3. (1879).

Habitat.—California.

121. **I. sgrana.**

Idiographis sgrana *Wlsm.* Ill. p. 26, pl. 66, fig. 4. (1879).

Habitat.—Oregon.

Genus **CONCHYLIS** Treits. Schm. viii, 1830.

122. **C. floccosana.**

Conchylis floccosana *Walk.* Cat. Lep. Het. xxviii, p. 358. (1863).

Tortrix confusana *Robs.* Tr. Am. Ent. Soc. ii, p. 274, pl. 5, fig. 43. (1869).

Idiographis floccosana *Wlsm.* Ill. p. 27, pl. 66, fig. 5. (1879).

Habitat.—Nova Scotia, Pennsylvania.

123. **C. vitellinana.**

Conchylis vitellinana *Zell.* Beitr. p. 37. (1875).

Habitat.—Maine, New Hampshire, Massachusetts.

124. **C. saxicolana.**

Conchylis saxicolana *Wlsm.* Ill. p. 29, pl. 67, fig. 1. (1879).

Habitat.—Oregon.

125. **C. sartana.**

Pharmacis sartana *Hüb.* Zutr. figs. 223, 224. (1822).

Conchylis bimaculana *Robs.* Tr. Am. Ent. Soc. ii, p. 285, pl. 8, fig. 78. (1869).

Conchylis bimaculana *Zell.* Beitr. p. 37. (1875).

Habitat.—Pennsylvania, Georgia, Texas.

126. **C. straminoides.**

Conchylis straminoides Grote, Bull. Buf. Soc. i, p. 16. (1873).

Habitat.—New York.

127. **C. scissana.**

Conchylis scissana Walk. Cat. Lep. Het. xxviii, p. 360. (1863).

Conchylis scissana Wms. Ill. p. 28, pl. 66, fig. 8. (1879).

Habitat.—Nova Scotia.

128. **C. smeathmanniana.**

Pyralis Smeathmanniana Fab. Sp. Ins. 278. (1781).

Tortrix Fabriciana Hüb. Tort. fig. 149. (1800).

Tortrix Fabriciana Haw. Lep. Br. p. 401. (1811).

Tortrix Smeathmanniana Fröl. En. Tort. Würt. p. 39, No. 71. (1828).

Conchylis Smeathmanniana Treits. Schm. viii, p. 274. (1830).

Conchylis Smeathmanniana Dup. Platy. p. 413, pl. 258. (1834).

Tortrix (Conchylis) Smeathmanniana H-S. Schm. iv, p. 185. (1849).

Tortrix (Conchylis) Stachydana H-S. Schm. iv, p. 185. (1849).

Lozopera Smeathmanniana Wilk. Br. Tort. p. 313. (1859).

Conchylis (Coceyx) Smeathmanniana Hein. Schm. p. 80. (1863).

Habitat.—Europe; Maine, California.

Food.—In Europe, Flower heads of *Achillea millefolium* and *Anthemis cotula*.

129. **C. kindermanniana.**

Conchylis Kindermanniana Treits. Schm. viii, p. 276. (1830).

Conchylis Kindermanniana Dup. Platy. p. 415, pl. 258. (1834).

Conchylis Kindermanniana F. v. R. p. 18, pl. 12, fig. 1. (1838).

Tortrix (Conchylis) Kindermanniana H-S. Schm. p. 184; Suppl. 68. (1849).

Conchylis (Coceyx) Kindermanniana Hein. Schm. p. 80. (1863).

Habitat.—Europe; California, (Walsingham).

Food.—In Europe, *Artemisia campestris*, *Pyrethrum corymbosum*.

130. **C. deutschiana.**

Tortrix Deutschiana Zett. Ins. Lap. p. 981. (1840).

— *Lutulentana* H-S. n. Schm. p. 5, fig. 35. (1856).

Conchylis Lutulentana Lak. Tort. p. 40, No. 83. (1857).

Conchylis Deutschiana Wocke, Stett. Ent. Zeit. 1862, p. 48; 1864, p. 204.

Lozopera? fuscostrigana Clem. Proc. Ent. Soc. Ph. ii, p. 417. (1864).

Conchylis chalcana Pack. Proc. Bost. Soc. N. H. xi, p. 56. (1866).

Habitat.—Europe; Labrador.

131. **C. rutilana.**

Tortrix Rutilana Hüb. Tort. fig. 249. (180-).

Tortrix rutilana Fröl. En. Tort. Würt. p. 74, No. 172. (1828).

Tortrix (Conchylis) Rutilana H-S. Schm. iv, p. 182. (1849).

Dapsilia rutilana Wilk. Br. Tort. p. 318. (1859).

Conchylis (Argyrolepis) Rutilana Hein. Schm. p. 78. (1863).

Dapsilia rutilana Riley, Dept. Ag. Rept. 1878, p. 247, pl. v, fig. 1. (1879).

Habitat.—Europe; Maine, New York.

Food.—In Europe and America, Juniper.

132. **C. dorsimaculana.**
Lozopera? angustana | *Clem. Proc. Ph. Ac. Sc.* 1860, p. 354. (1860).
Conchylis dorsimaculana *Robs. Tr. Am. Ent. Soc. ii*, p. 285, pl. 8, fig. 79. (1869).
Habitat.—Pennsylvania, Texas.
133. **C. promptana.**
Conchylis promptana *Robs. Tr. Am. Ent. Soc. ii*, p. 286, pl. 8, fig. 80. (1869).
Habitat.—Pennsylvania, Texas.
134. **C. fernaldana.**
Cochylis fernaldana *Wlsm. Ill.* p. 27, pl. 66, fig. 7. (1879).
Habitat.—California, Oregon.
135. **C. seriatana.**
Conchylis seriatana *Zell. Beitr.* p. 38. (1875).
Habitat.—Texas.
136. **C. intactana.**
Cochylis intactana *Wlsm. Ill.* p. 27, pl. 66, fig. 6. (1879).
Habitat.—California.
137. **C. angulatana.**
Conchylis angulatana *Robs. Tr. Am. Ent. Soc. ii*, p. 286, pl. 8, fig. 81. (1869).
Habitat.—Pennsylvania, West Virginia, Massachusetts.
138. **C. argentiimitana.**
Conchylis argentiimitana *Robs. Tr. Am. Ent. Soc. ii*, p. 287, pl. 8, fig. 82. (1869).
Conchylis argentiimitana *Zell. Beitr.* p. 36. (1875).
Habitat.—Massachusetts, Pennsylvania, Texas.
139. **C. parallelana.**
Cochylis parallelana *Wlsm. Ill.* p. 28, pl. 66, fig. 9. (1879).
Habitat.—California.
140. **C. transversana.**
Cochylis transversana *Wlsm. Ill.* p. 28, pl. 66, fig. 10. (1879).
Habitat.—California.
141. **C. labeculana.**
Conchylis labeculana *Robs. Tr. Am. Ent. Soc. ii*, p. 287, pl. 8, fig. 83. (1869).
Habitat.—Pennsylvania.
142. **C. lepidana.**
Argyrolepia? lepidana *Clem. Proc. Ph. Ac. Sc.* 1860, p. 355. (1860).
Conchylis lepidana *Robs. Tr. Am. Ent. Soc. ii*, p. 287, pl. 8, fig. 84. (1869).
Habitat.—Pennsylvania.
143. **C. interruptofasciata.**
Conchylis interruptofasciata *Robs. Tr. Am. Ent. Soc. ii*, p. 287, pl. 8, fig. 85. (1869).
Habitat.—Pennsylvania.

144. **C. bunteana.**

Conchylis bunteana *Robb.* Tr. Am. Ent. Soc. ii, p. 268, pl. 8, fig. 86. (1869).

Conchylis Bunteana *Zell.* Beitr. p. 39. (1875).

Habitat.—Pennsylvania.

145. **C. œnotherana.**

Conchylis œnotherana *Riley*, Tr. St. Louis Ac. Sc. iv, p. 316. (1881).

Habitat.—Missouri, Texas.

Food.—*Ænothera*.

146. **C. erigeronana.**

Conchylis erigeronana *Riley*, Tr. St. Louis Ac. Sc. iv, p. 316. (1881).

Habitat.—Texas.

Food.—Galls on *Erigeron Canadense*?

147. **C. latipunctana.**

Coehylis latipunctana *Wlsm.* Ill. p. 29, pl. 67, fig. 2. (1879).

Habitat.—California.

148. **C. dilutana.**

Coehylis dilutana *Wlsm.* Ill. p. 29, pl. 67, fig. 3. (1879).

Habitat.—Oregon.

149. **C. nana.**

Tortrix nana *Haw.* Lep. Br. p. 439. (1811).

Eupœcilia nana *Steph.* Ill. iv, p. 182. (1834).

Eupœcilia Carneana *Guen.* Ind. p. 60. (1845).

Penthina ochreolabana *Walk.* Cat. Lep. Het. xxviii, p. 375. (1865).

Habitat.—Europe; Nova Scotia, (Walker).

150. **C. campicolana.**

Coehylis campicolana *Wlsm.* Ill. p. 29, pl. 67, fig. 4. (1879).

Habitat.—California.

151. **C. parvimaclana.**

Coehylis parvimaclana *Wlsm.* Ill. p. 30, pl. 67, fig. 5. (1879).

Habitat.—Oregon.

152. **C. glaucofuscana.**

Conchylis glaucofuscana *Zell.* Beitr. p. 39. (1875).

Habitat.—Texas.

153. **C. dubitana**

Tortrix Dubitana *Hub.* Tort. fig. 82. (1800).

Tortrix dubitana *Fröhl.* En. Tort. Würt. p. 52, No. 108. (1828).

Coehylis dubitana *Treits.* Schm. viii, p. 283. (1830).

Coehylis Dubitana *Dup.* Platy. p. 420, pl. 258. (1834).

Eupœcilia dubitana *Steph.* Ill. iv, p. 183. (1834).

Tortrix (*Coehylis*) *Dubitana* *H.-S.* Schm. iv, p. 192. (1849).

Eupœcilia dubitana *Wlk.* Br. Tort. p. 298. (1859).

Coehylis (*Coccyx*) *Dubitana* *Hein.* Schm. p. 90. (1863).

Simethis albidana *Walk.* Cat. Lep. Het. xxxv, p. 1807. (1866).

Habitat.—Europe; Nova Scotia, (Walker).

Food.—In Europe, *Senecio*, *Picris*, *Hieracium*, *Cirsium*, *Centaurea*.

Subfamily GRAPHOLITHINÆ Mihi.

Genus **RETINIA** Guen. Ind. 1845.154. **R. frustrana.***Retinia frustrana* (Scud. mss.) *Comst. Dept. Ag. Rept.* 1879, p. 236. (1880).*Habitat.*—Massachusetts, New York, Virginia.*Food.*—*Pinus inops* and *rigida*.155. **R. rigidana.***Retinia rigidana* *Fern. Dept. Ag. Rept.* 1879, p. 237. (1880).*Habitat.*—New York.*Food.*—*Pinus rigida*.156. **R. comstockiana.***Retinia?* *Comstockiana* *Fern. Can. Ent.* xi, p. 157. (1879).*Retinia?* *Comstockiana* *Comst. Dept. Ag. Rept.* 1879, p. 235. (1880).*Habitat.*—New York, Maryland.*Food.*—*Pinus rigida*.157. **R. turionana.***Tortrix Turionana* *Hüb. Tort.* 220-1. (180-).*Tortrix Turionana* *Fröl. En. Tort. Würt.* p. 69, No. 158. (1828).*Coccyx turionana* *Treits. Schm.* viii, p. 137. (1830).*Coccyx Turionana* *Dup. Platy.* p. 233, pl. 247. (1834).*Tortrix turionana* *Ratz. Forst.* i, p. 207, pl. 14, fig. 3. (1839).*Tortrix* (*Coccyx*) *Turionana* *H-S. Schm.* iv, p. 222. (1849).*Retinia Turionella* *Wilk. Br. Tort.* p. 222. (1859).*Retinia Turionana* *Hein. Schm.* p. 94. (1863).*Habitat.*—Europe; Nevada, (Morrison).*Food.*—In Europe, Pine, Scotch Fir.158. **R. duplana.***Tortrix Duplana* *Hüb. Tort.* figs. 229, 230. (180-).*Coccyx duplana* *Treits. Schm.* viii, p. 138. (1830).*Coccyx Spadiceana* *Dup. Platy.* p. 524, pl. 263. (1834).*Coccyx duplana* *Ratz. Forst.* i, p. 209, pl. 14, fig. 5. (1837).*Tortrix* (*Coccyx*) *Duplana* *H-S. Schm.* iv, p. 222. (1849).*Retinia duplana* *Wilk. Br. Tort.* p. 221. (1859).*Retinia Duplana* *Hein. Schm.* p. 93. (1863).*Habitat.*—Europe; Oregon, (Walsingham).*Food.*—In Europe, Buds of *Pinus sylvestris*.159. **R. sylvestrana.**— *sylvestrana* *Curt. An. & Mag. N. H.* 2, v, 3. (1850).*Retinia sylvestrana* *Wilk. Br. Tort.* p. 220. (1859).*Habitat.*—Europe; Oregon, (Walsingham).*Food.*—In Europe, Buds of *Pinus picea*.160. **R. pinivorana.**? *Orthotænia Resinella* *Steph. Ill.* iv, p. 179. (1834).— *Pinivorana* *Zell. Isis*, 1846, p. 225. (1846).

Tortrix (*Coccyx*) *Pudendana* *H-S.* Schm. iv, p. 222; Suppl. 149, 150. (1849).

Retinia *Pinivorana* *Wilk.* Br. Tort. p. 219. (1859).

Retinia *Pinivorana* *Hein.* Schm. p. 95. (1863).

Var. *Coccyx* *Sciurana* *Tystr.* Bidr. p. 158. (1847).

Habitat.—Europe; Oregon, (Walsingham).

Food.—In Europe, Young shoots of *Pinus abies*.

161. **R? subcervinana.**

Retinia *subcervinana* *Wlsm.* Ill. p. 25, pl. 66, fig. 1. (1879).

Habitat.—Oregon.

Genus **EUDEMIS** *Hub.* Verz. bek. Schm. 1816.

162. **E. botrana.**

Tortrix *Botrana* *Schiff.* W. V. p. 131, No. 26. (1776).

Phalæna *vitisana* *Jacq.* Misc. ii, p. 97. (1788).

Asthenia *Reliquana* *Hüb.* Verz. p. 381. (1816?).

Cochylis *reliquana* *Treits.* Schm. x, 3, p. 146. (1835).

Tortrix (*Coccyx*) *Botrana* *H-S.* Schm. iv, p. 225. (1849).

Lobesia *reliquana* *Wilk.* Br. Tort. p. 280. (1859).

Endopiza? *Viteana* *Clem.* Proc. Ph. Ac. Sc. 1860, p. 359. (1860).

Penthina *vitivorana* *Pack.* Guide, p. 336, pl. 8, fig. 22. (1869).

Penthina *vitivorana* *Riley*, 1st. Mo. Rept. p. 133, pl. 2, figs. 29-30. (1869).

Penthina *vitivorana* *Walsh & Riley*, Am. Ent. i, p. 177. (1869).

Habitat.—Europe; Mass., N. Y., Penn., Ohio, Mo., Tex.

Food.—In Europe, leaves and fruit of grape vine; in America, Tulip, *Vernonia* and leaves and fruit of grape vine; "swollen stems of *Amorpha*," (Boll.); Wild Raspberry, Sassafras, (Clemens).

Genus **BACTRA** *Steph.* Ill. iv, 1834.

163. **B. lanceolana.**

Tortrix *Lanceolana* *Hüb.* Tort. 80. (1800).

Tortrix *Dibeliana* *Hüb.* Tort. 272. (180-).

Tortrix *pauperana* *Haw.* Lep. Br. p. 469. (1811).

Tortrix *expallidana* *Haw.* Lep. Br. p. 469. (1811).

Tortrix *egenana* *Haw.* Lep. Br. p. 469. (1811).

Tortrix *egestana* *Haw.* Lep. Br. p. 470. (1811).

Tortrix *plagana* *Haw.* Lep. Br. p. 470. (1811).

Tortrix *lanceana* *Fröl.* En. Tort. Würt. p. 98, No. 239. (1828).

Phoxopteryx *lanceolana* *Treits.* Schm. viii, 324. (1830).

Phoxopteryx *lanceolana* *Dup.* Platy. p. 239, pl. 253, fig. 1. (1834).

Bactra *egenana* *Steph.* Ill. iv, p. 124. (1834).

Bactra *pauperana* *Steph.* Ill. iv, p. 125. (1834).

Bactra *expallidana* *Steph.* Ill. iv, p. 125. (1834).

Bactra *egestana* *Steph.* Ill. iv, p. 125. (1834).

Bactra *plagana* *Steph.* Ill. iv, p. 125. (1834).

— *pauperana* *Curt.* Br. Ent. pl. 599.

Tortrix (*Aphelia*) *Lanceolana* *H-S.* Schm. iv, p. 243; Suppl. 317. (1849).

— *Signana* *H-S.* Suppl. 317. (1849?).

Bactra *lanceolana* *Wilk.* Br. Tort. p. 145. (1859).

Grapholitha (*Aphelia*) *Lanceolana* *Hein.* Schm. p. 134. (1863).

Var. *verutana* Zell. Beitr. p. 41. (1875).

Habitat.—Europe; Texas.

Food.—In Europe, *Juncus glomeratus*.

164. ***B. furfurana*.**

Tortrix furfurana Haw. Lep. Br. p. 466. (1811).

— *acutana* Ev. F. V. U. p. 529. (1844).

Phoxopteria lamana Zell. Isis, p. 257. (1846).

Tortrix (*Aphelia*) *Scirpana* H-S. Schm. iv, p. 243. (1849).

Tortrix (*Aphelia*) *Pauperana* H-S. Suppl. 302. (1849?).

Bactra furfurana Wilk. Br. Tort. p. 147. (1859).

Grapholitha (*Aphelia*) *Furfurana* Hein. Schm. p. 135. (1863).

Bactra furfurana Zell. Beitr. p. 41. (1875).

Habitat.—Europe; Massachusetts.

Food.—In Europe, *Juncus glomeratus*, *Scirpus lacustris*.

Genus **ECCOPSIS** Zell. Lepidoptera Microptera, 1852.

165. ***E. fagigemmnæana*.**

Exartema fagigemmnæana Cham. Can. Ent. x, p. 74. (1878).

Habitat.—Pennsylvania, Kentucky.

Food.—*Fagus sylvatica*, (Leaf buds).

166. ***E. nitidana*.**

Exartema nitidana Clem. Proc. Ph. Ac. Sc. 1860, p. 356. (1860).

Sericoris nitidana Clem. Proc. Ent. Soc. Ph. v, p. 133. (1865).

Habitat.—Pennsylvania?

167. ***E. ferrugineana*.**

Exartema ferrugineanum Riley, Tr. St. Louis Ac. Sc. iv, p. 317. (1881).

Habitat.—Missouri.

Food.—Plum leaves.

168. ***E. monetiferana*.**

Exartema monetiferarum Riley, Tr. St. Louis Ac. Sc. iv, p. 317. (1881).

Habitat.—Alabama.

169. ***E. sericorana*.**

Exartema sericoranum Wlsm. Ill. p. 36, pl. 68, fig. 7. (1879).

Habitat.—Pennsylvania.

170. ***E. zelleriana*.**

Exartema nitidanum Zell. Beitr. p. 64, pl. 8, fig. 15. (1875).

Habitat.—Maine.

Food.—Leaves of *Betula alba* var. *populifolia*.

171. ***E. permundana*.**

Exartema permundana Clem. Proc. Ph. Ac. Sc. 1860, p. 356. (1860).

Sciaphila Meanderana Walk. Cat. Lep. Het. xxviii, p. 341. (1863).

Sericoris permundana Clem. Proc. Ent. Soc. Ph. v, p. 134. (1865).

Exartema permundanum Zell. Beitr. p. 67. (1875).

Habitat.—Me., Mass., N. Y., Penn., D. C., Va., Mo.

Food.—Raspberry, Blackberry, Hazel, *Spiræa salicifolia*.

172. **E. olivaceana.**

Eccopsis olivaceana Fern. Tr. Am. Ent. Soc. x. (1882).

Habitat.—Massachusetts, Pennsylvania.

173. **E. concinnusua.**

Sericoris concinnana Clem. Proc. Ent. Soc. Ph. v, p. 134. (1865).

Sericoris fœdana Clem. Proc. Ent. Soc. Ph. v, p. 135. (1865).

Habitat.—Virginia.

174. **E. versicolorana.**

Exartema versicolorana Clem. Proc. Ph. Ac. Sc. 1860, p. 357. (1860).

Exartema appendiceum Zell. Beitr. p. 69. (1875).

Habitat.—Massachusetts, Pennsylvania?

175. **E. punctana.**

Sericoris versicolorana Clem. Proc. Ent. Soc. Ph. v, p. 136. (1865).

Exartema punctanum Wlsm. Ill. p. 37, pl. 68, fig. 8. (1879).

Habitat.—Massachusetts, Pennsylvania, California.

176. **E. atrodentana.**

Eccopsis atrodentana Fern. Tr. Am. Ent. Soc. x. (1882).

Habitat.—Ohio, Illinois, Texas.

177. **E. fasciatana.**

Exartema fasciatana Clem. Proc. Ph. Ac. Sc. 1860, p. 357. (1860).

Sciaphila decisana Walk. Cat. Lep. Het. xxviii, p. 340. (1863).

Sericoris fasciatana Clem. Proc. Ent. Soc. Ph. v, p. 134. (1865).

Exartema albofasciatum Zell. Beitr. p. 66, pl. 8, fig. 16. (1875).

Habitat.—Me., Mass., N. Y., Penn., Ohio, Ill.

178. **E. corylana.**

Eccopsis corylana Fern. Tr. Am. Ent. Soc. x. (1882).

Habitat.—New Hampshire, Massachusetts, New York, Missouri.

Food.—Hazel.

179. **E. exoleta.**

Exartema exoletum Zell. Beitr. p. 64. (1875).

Habitat.—Massachusetts, New York.

180. **E. inornatana.**

Exartema inornatana Clem. Proc. Ph. Ac. Sc. 1860, p. 357. (1860).

Carpocapsa clavata Walk. Cat. Lep. Het. xxviii, p. 395. (1863).

Sericoris inornatana Clem. Proc. Ent. Soc. Ph. v, p. 134. (1865).

Exartema quadrifidum Zell. Beitr. p. 62, pl. 8, fig. 14. (1875).

Habitat.—Massachusetts, New York, Pennsylvania, Texas.

Food.—Leaves of White Oak.

181. **E. malana.**

Eccopsis malana Fern. Tr. Am. Ent. Soc. x. (1882).

Habitat.—New York, Illinois.

Food.—Terminal buds of Apple trees. (Coquillett).

182. ***E. footiana*.**

Ecopsis footiana Fern. Bull. Buf. Soc. vol. iv. (1882).

Habitat.—New York.

Food.—*Hamamelis virginica*, (Kellicott).

183. ***E. ferriferana*.**

Sciaphila? *ferriferana* Walk. Cat. Lep. Het. xxviii, p. 343. (1863).

Sericoris graciosana Clem. Proc. Ent. Soc. Ph. v, p. 134. (1865).

Grapholitha (*Pœcilochroma*?) *usticana* Zell. Beitr. p. 87, pl. 9, fig. 26. (1875).

Exartema ferriferanum Wism. Ill. p. 37, pl. 75, fig. 4. (1879).

Habitat.—Virginia.

Genus **PENTHINA** Treits. Schm. viii, 1830.

184. ***P. intermistana*.**

Mixodia? *intermistana* Clem. Proc. Ent. Soc. Ph. v, p. 140. (1865).

Penthina tessellana Pack. Proc. Bost. Soc. N. H. xi, p. 58. (1866).

Habitat.—Labrador.

185. ***P. septentrionana*.**

Orthotania septentrionana Curt. App. Ross' 2d. Arctic Voyage, p. 77. (1831).

Sciaphila primariana Walk. Cat. Lep. Het. xxviii, p. 336. (1863).

Penthina fulvifrontana Pack. Proc. Bost. Soc. N. H. xi, p. 59. (1866).

Habitat.—Arctic America, Labrador.

186. ***P. frigidana*.** *

Penthina frigidana Pack. Proc. Bost. Soc. N. H. xi, p. 57. (1866).

Habitat.—Labrador, New Hampshire.

187. ***P. nimbatana*.**

Antithesia nimbatana Clem. Proc. Ph. Ac. Sc. 1860, p. 346. (1860).

Penthina contrariana Walk. Cat. Lep. Het. xxviii, p. 374. (1863).

Habitat.—Me., Mass., N. Y., Penn., Wis., Ill.

Food.—Rose.

188. ***P. consanguinana*.**

Penthina consanguinana Wism. Ill. p. 30, pl. 67, fig. 6. (1879).

Habitat.—California.

189. ***P. capreana*.**

Tortrix Capreana Hüb. Tort. fig. 250. (180-).

Penthina capreana Treits. Schm. viii, p. 27. (1830).

Antithesia Capreana Wilk. Br. Tort. p. 23. (1859).

Penthina Mœstana Wocke, Stett. Ent. Zeit. 1862, p. 52. (1862).

Grapholitha (*Penthina*) *Capreana* Hein. Schm. p. 106. (1863).

Habitat.—Europe; Labrador, (Moeschler).

Food.—In Europe, Birch, Willow.

190. ***P. dimidiata*.**

— *dimidiata* Sodoff. Bull. M. 1830, p. 73, pl. 7. (1830).

Penthina dimidiata Treits. Schm. x, 3, 46. (1835).

* Probably this was the species that Christoph. had before him as a new species near *sauciona*, see Stett. Ent. Zeit. 1858, p. 313.

- Penthina atropunctana* Zett. Ins. Lap. p. 977. (1840).
Penthina Ochromelana Guen. Ind. p. 18. (1845).
 Tortrix (Penthina) Dimidiana *H-S.* Schm. iv, p. 228; Suppl. 164-5. (1849).
Antithesia dimidiana Wilk. Br. Tort. p. 28. (1859).
 Grapholitha (Penthina) Dimidiana *Hein.* Schm. p. 109. (1863).

Habitat.—Europe; Missouri, (Riley mss.).

Food.—In Europe, *Betula*, *Alnus*, *Tilia*; in America, Wild Black Cherry. (Miss Murtfeldt).

191. ***P. hartmanniana.***

- Tortrix Hartmanniana *Linn.* Fau. Su. No. 1322. (1761).
 Tortrix Lineana *Schiff.* W. V. p. 131. (1776).
 Tortrix Scriptana *Hüb.* Tort. fig. 110. (1800).
 Tortrix scriptana *Fröl.* En. Tort. Würt. p. 57, No. 124. (1828).
 Tortrix hartmanniana *Treits.* Schm. viii, p. 91. (1830).
 Penthina Hartmanniana *Dup.* Platy. p. 201, pl. 245. (1834).
 Ditula scriptana *Steph.* Ill. iv, p. 86. (1834).
 Tortrix (Penthina) Hartmanniana *H-S.* Schm. iv, p. 227. (1849).
 Brachytenia Hartmanniana *Wilk.* Br. Tort. p. 19. (1859).
 Grapholitha (Penthina) Hartmanniana *Hein.* Schm. p. 106. (1863).

Var. *a.* nubiferana *Steph.* Ill. iv, p. 91. (1834).

Var. *b.* Penthina alboelana *Zell.* Beitr. p. 56. (1875).

Habitat.—Europe; Maine, Massachusetts, New York.

192. ***P. griseoalbana.***

- Exartema griseoalbanum *Wlsm.* Ill. p. 38, pl. 68, fig. 9. (1879).

Habitat.—Pennsylvania.

193. ***P. conditana.***

- Penthina conditana *Wlsm.* Ill. p. 31, pl. 67, fig. 7. (1879).

Habitat.—California.

194. ***P. hebesana.***

- Sciaphila hebesana *Walk.* Cat. Lep. Het. xxviii, p. 342. (1863).
 Carjocapsa inexpertana *Walk.* Cat. Lep. Het. xxviii, p. 394. (1863).
 Penthina Fullerea *Riley.* Journal of Horticulture. (1868).
 Penthina Fullerea *Riley.* Am. Ent. ii, p. 204, 371. (1870).
 Penthina hebesana *Wlsm.* Ill. p. 31, pl. 67, fig. 8. (1879).

Habitat.—Me., Mass., N. Y., N. J., Penn., Mo., Tex., Cal.

Food.—*Tigridia*, *Verbena*, *Antirrhinum*.

195. ***P. cyanana.***

- Penthina cyanana *Murt.* Am. Ent. iii, p. 14. (1880).

Habitat.—Missouri, Pennsylvania.

Food.—Rose.

196. ***P. interruptolineana.***

- Penthina interruptolineana *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Massachusetts.

197. **P. hemidesma.**

Euchromia hemidesma Zell. Beitr. p. 55, pl. 8, fig. 11. (1875).

Habitat.—Maine, Massachusetts, California.

Food.—*Spiræa salicifolia*.

198. **P. murina.**

Penthina murina Pack. Proc. Bost. Soc. N. H. xi, p. 60. (1866).

Habitat.—Labrador.

199. **P. osmundana.**

Penthina osmundana Fern. Can. Ent. xi, p. 156. (1879).

Habitat.—Maine, Massachusetts, Pennsylvania.

Food.—*Osmunda regalis*.

200. **P. malachitana.**

Grapholitha (*Pœcilochroma*) *malachitana* Zell. Beitr. p. 86, pl. 9, fig. 25. (1875).

Habitat.—Pennsylvania, Missouri, Texas, South America (?).

Food.—Persimmon.

201. **P. roseomaculana.**

Tortrix (*Penthina*) *Roseomaculana* H-S. Schm. iv, p. 229; Suppl. 163. (1849).

Grapholitha (*Penthina*) *Lienigiana* Hein. Schm. p. 111. (1863).

Habitat.—Europe; Labrador, (*Moesch. Stett. Ent. Zeit.* 1874, p. 165).

Food.—*Pyrola secunda*, (*Moeschler*).

202. **P. costimaculana.**

Penthina costimaculana Fern. Tr. Am. Ent. Soc. x. (1882).

Habitat.—Orono, Maine.

203. **P? chionosema.**

Penthina? *Chionosema* Zell. Beitr. p. 59. (1875).

Habitat.—Maine, New Hampshire, Massachusetts, New York.

Genus **SERICORIS** Treits. Schm. viii, 1830.

204. **S. nubilana.**

Sideria? *nubilana* Clem. Proc. Ent. Soc. Ph. v, p. 140. (1860).

Sideria? *nubilana* Pack. Guide, p. 333. (1869).

Habitat.—Pennsylvania? Wisconsin.

205. **S. vetulana.**

Sericoris vetulana Wlsm. Ill. p. 32, pl. 67, fig. 9. (1879).

Habitat.—Texas, California.

206. **S. auricapitana.**

Sericoris auricapitana Wlsm. Ill. p. 33, pl. 67, fig. 10. (1879).

Habitat.—Pennsylvania? New York.

207. **S. agilana.**

Endopiza? *agilana* Clem. Proc. Ph. Ac. Sc. 1860, p. 359. (1860).

Habitat.—Pennsylvania.

Food.—*Impatiens fulva*, (*Kellicott*).

208. ***S. albiciliata*.**

Sericoris albiciliata Fern. Tr. Am. Ent. Soc. x. (1882).

Habitat.—Orono, Maine.

209. ***S. chalybeana*.**

Sericoris chalybeana Wilm. Ill. p. 34, pl. 68, fig. 4. (1879).

Habitat.—Oregon, California.

210. ***S. cornucana*.**

Antithesia? *cornucana* Clem. Proc. Ph. Ac. Sc. 1860, p. 346. (1860).

Habitat.—Maine, New York, Pennsylvania.

211. ***S. argyroclana*.**

Sericoris argyroclana Zell. Beitr. p. 71. (1875).

Habitat.—New York.

212. ***S. constellatana*.**

Sericoris constellatana Zell. Beitr. p. 73. (1875).

Habitat.—Maine, Massachusetts, New York, Ohio.

213. ***S. rivulana*.**

Tortrix Rivulana Sc. Ent. Carn. No. 600. (1763).

Pyralis rivellana Fab. Sys. Ent. p. 654. (1775).

Tortrix Rivulana Schiff. W. V. p. 131. (1776).

Tortrix Conchana Hüb. Tort. fig. 106. (1800).

Tortrix conchana Haw. Lep. Br. p. 460. (1811).

Tortrix rivellana Fröl. En. Tort. Wurt. p. 62, No. 137. (1828).

Sericoris conchana Treits. Schm. viii, p. 148. (1830).

Sericoris Conchana Dup. Platy. p. 208, pl. 246. (1834).

Tortrix (Sericoris) Conchana H-S. Schm. iv, p. 213. (1849).

Sericoris conchana Wilk. Br. Tort. p. 266. (1859).

Grapholitha (Sericoris) Rivulana Hein. Schm. p. 123. (1863).

Habitat.—Europe; California, Oregon, (Walsingham).

Food.—In Europe. *Alnus*.

214. ***S. urticana*.**

Tortrix Urticana Hüb. Tort. fig. 65. (1800).

Tortrix urticana Haw. Lep. Br. p. 460. (1811).

Sericoris urticana Treits. Schm. viii, p. 145. (1830).

Tortrix (Sericoris) Urticana H-S. Schm. p. 215; Suppl. 209-210. (1849).

Sericoris Urticana Wilk. Br. Tort. p. 267. (1859).

Grapholitha (Sericoris) Urticana Hein. Schm. p. 126. (1863).

Habitat.—Europe; California, (Walsingham).

Food.—In Europe, *Betula*, *Lonicera*, *Rubus*, *Salix*, *Ulmus*, *Vicia*, *Epilobium*, *Vaccinium*, *Urtica*.

215. ***S. astrologana*.**

Sericoris astrologana Zell. Beitr. p. 75. (1875).

Habitat.—Texas.

216. ***S. puncticosana*.**

Sciaphila puncticosana *Walk.* Cat. Lep. Het. xxviii, p. 339. (1863).

Sericoris puncticosana *Wlsm.* Ill. p. 33, pl. 68, fig. 1. (1879).

Habitat.—Nova Scotia, California?

217. ***S. instrutana*.**

Exartema fuscitana "Var?" *Clem.* Proc. Ph. Ac. Sc. 1860, p. 357. (1860).

Sericoris instrutana *Clem.* Proc. Ent. Soc. Ph. v. p. 135. (1865).

Sericoris poana *Zell.* Beitr. p. 76. (1875).

Habitat.—Maine, Massachusetts, New York, Pennsylvania, Ohio.

Food.—Clover, (*Comstock*); *Æsculus glabra*, (*Claypole*).

218. ***S. turfosana*.**

Tortrix (*Sericoris*) *Turfosana* *H-S.* Schm. iv, p. 217; Suppl. 220-1. (1849).

Grapholitha (*Penthina*) *Turfosana* *Hein.* Schm. p. 114. (1863).

Habitat.—Europe; Labrador, (*Moesch.*); Orono, Maine.

219. ***S. campestrana*.**

Sericoris campestrana *Zell.* Beitr. p. 76, pl. 8, fig. 17. (1875).

Habitat.—Maine, Massachusetts.

220. ***S. fuscibana*.**

Sericoris fuscibana *Zell.* Beitr. p. 78, pl. 8, fig. 18. (1875).

Habitat.—Maine, Massachusetts, Ohio.

221. ***S. glaciana*.**

Sericoris glaciana *Moesch.* Wien. Ent. Monat. iv, p. 380, pl. 10, fig. 9. (1860).

Habitat.—Labrador, Ontario.

222. ***S. dealbana*.**

Penthina dealbana *Walk.* Cat. Lep. Het. xxviii, p. 374. (1863).

Sericoris dealbana *Wlsm.* Ill. p. 34, pl. 68, fig. 3. (1879).

Habitat.—Maine.

223. ***S. dilutifusca*.**

Sericoris dilutifusca *Wlsm.* Ill. p. 33, pl. 68, fig. 2. (1879).

Habitat.—Oregon.

224. ***S. bipartitana*.***

Antithesia bipartitana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 346. (1860).

Antithesia bipartitana *Pack.* Guide, p. 333. (1869).

Sericoris cæsiabana *Zell.* Beitr. p. 79, pl. 8, fig. 19. (1875).

Habitat.—Maine, New Hampshire, Massachusetts.

225. ***S. similisana*.**

Penthina similisana *Walk.* Cat. Lep. Het. xxviii, p. 373. (1863).

Habitat.—Hudson's Bay, Nova Scotia, Me., N. H., N. Y.

* The type of this species is from Massachusetts, and is identical with *Sericoris cæsiabana* *Zell.* In the collection of Dr. Clemens are three examples from Labrador, (see Proc. Ent. Soc. Ph. ii, p. 418), which he regarded conspecific with *bipartitana*. In my opinion, they are distinct, but are identical with *similisana* *Walk.* Until we have more positive evidence of their identity, I prefer to regard them as distinct.

226. **S? inquietana.**

Pædisca inquietana *Walk.* Cat. Lep. Het. xxviii, p. 378. (1863).

Mixodia? sp. *M Lachlan*, Jour. Linn. Soc. Zool. 14, No. 74, p. 116.

Habitat.—Arctic America, Grinnell Land.

227. **S. niveiguttana.**

Phæcasiophora? *niveiguttana* *Grote*, Bull. Buf. Soc. i, p. 91, pl. 2, fig. 15. (1873).

Habitat.—Massachusetts, New York, Pennsylvania, Missouri.

Food.—*Sassafras*, (Miss Murtfeldt); *Hamamelis virginica*, (Kellicott).

228. **S. schulziana.**

Pyralis schulziana *Fab.* Gen. Ins. 293. (1777).

Tortrix Pinetana *Hüb.* Tort. fig. 57. (1800).

Tortrix Ahrensiana *Hüb.* Tort. figs. 337-8. (180-).

Tortrix Bentleyana *Don.* N. H. x, pl. 357, fig. 1. (1801).

Tortrix Zinckenana *Fröl.* En. Tort. Würt. No. 64? (1828).

Sericoris zinckenana *Treits.* Schm. viii, p. 143. (1830).

Sericoris Zinckenana *Dup.* Platy. p. 225, pl. 247. (1834).

Sericoris Schulziana *Zett.* Ins. Lap. p. 983. (1840).

Tortrix (*Sericoris*) *Zinckenana* *H-S.* Schm. iv, p. 210. (1849).

Mixodia Schulziana *Wilk.* Br. Tort. p. 276. (1859).

Grapholitha (*Sericoris*) *Schulziana* *Hein.* Schm. p. 120. (1863).

Habitat.—Europe; Arctic America, (Curtis App. Ross 2d. Arctic Voy. p. 77).

Food.—In Europe, *Pinus sylvestris*.

Genus **PHÆCASIOPHORA** *Grote*, Bull. Buf. Soc. i, 1873.

229. **P. confixana.**

Sciaphila confixana *Walk.* Cat. Lep. Het. xxviii, p. 340. (1863).

Sciaphila? *perductana* *Walk.* Cat. Lep. Het. xxviii, p. 341. (1863).

Sericoris mutabilana *Clem.* Proc. Ent. Soc. Ph. v, p. 135. (1865).

Phæcasiophora mutabilana *Grote*, Bull. Buf. Soc. i, p. 90, pl. 2, figs. 4, 5, 6. (1873).

Phæcasiophora mutabilana *Zell.* Beitr. p. 70. (1875).

Phæcasiophora confixana *Wlsm.* Ill. p. 36, pl. 68, fig. 6. (1879).

Habitat.—New Hampshire, New York, Pennsylvania, Virginia.

Genus **PÆDISCA** *Treits.* Schm. viii, 1830.

230. **P. circulana.**

Eucosma Circulana *Hüb.* Zutr. figs. 363, 364. (1822).

Callimosema scintillana *Clem.* Proc. Ent. Soc. Ph. v, p. 142. (1865).

Callimosema scintillana *Pack.* Guide, p. 337. (1869).

Pædisca dodecana *Zell.* Beitr. p. 105, pl. 9, fig. 40. (1875).

Habitat.—Pennsylvania, Georgia, Texas.

231. **P. quinquemaculana.**

Conchylis quinquemaculana *Robs.* Tr. Am. Ent. Soc. ii, p. 284, pl. 8, fig. 76. (1869).

Habitat.—Pennsylvania.

232. **P. robinsonana.**
Conchylis Robinsonana Grote, Can. Ent. iv, p. 101. (1872).
Pædisca quintana Zell. Beitr. p. 98, pl. 9, fig. 35, and 34, var. *b.* (1875).
Habitat.—Georgia, Texas, Missouri, Illinois.
233. **P. bolanderana.**
Pædisca bolanderana Wlsm. Ill. p. 42, pl. 69, fig. 10. (1879).
Habitat.—California.
234. **P. agassizii.**
Conchylis agassizii Robs. Tr. Am. Ent. Soc. ii, p. 284, pl. 8, fig. 75. (1869).
Habitat.—Texas.
235. **P. ridingsana.**
Conchylis ridingsana Robs. Tr. Am. Ent. Soc. ii, p. 285, pl. 8, fig. 77. (1869).
Conchylis argentifurcatana Grote, Can. Ent. viii, p. 206. (1876).
Conchylis hipeana Grote, Can. Ent. viii, p. 207. (1876).
Habitat.—Ontario, Texas, Colorado.
236. **P. fernaldana.**
Pædisca Fernaldana Grote, N. Am. Ent. p. 98. (1880).
Habitat.—Kentucky, Colorado.
237. **P. crambitana.**
Pædisca crambitana Wlsm. Ill. p. 43, pl. 70, fig. 1. (1879).
Habitat.—California.
238. **P. monogrammana.**
Pædisca monogrammana Zell. Beitr. p. 107, pl. 9, fig. 41. (1875).
Habitat.—Texas.
239. **P. larana.**
Pædisca larana Wlsm. Ill. p. 43, pl. 70, fig. 2. (1879).
Habitat.—California.
240. **P. luridana.**
Pædisca luridana Wlsm. Ill. p. 44, pl. 70, fig. 3. (1879).
Habitat.—California.
241. **P. argentialbana.**
Pædisca argentialbana Wlsm. Ill. p. 44, pl. 70, fig. 4. (1879).
Habitat.—Texas.
242. **P. albiguttana.**
Pædisca albiguttana Zell. Beitr. p. 107. (1875).
Habitat.—Texas.
243. **P. atomosana.**
Pædisca atomosana Wlsm. Ill. p. 42, pl. 69, fig. 9. (1879).
Habitat.—California.
244. **P. agricolana.**
Pædisca agricolana Wlsm. Ill. p. 42, pl. 69, fig. 8. (1879).
Habitat.—California, Oregon.

245. **P. basipunctana.**
Pædisca? *basipunctana* *Wlsm.* Ill. p. 40, pl. 69, fig. 5. (1879).
Habitat.—California.
246. **P. subplicana.**
Pædisca? *subplicana* *Wlsm.* Ill. p. 41, pl. 49, fig. 6. (1879).
Habitat.—California, Oregon.
247. **P. primulana.**
Pædisca *primulana* *Wlsm.* Ill. p. 45, pl. 70, fig. 7. (1879).
Habitat.—California.
248. **P. cataclystiana.**
Pædisca *cataclystiana* *Walk.* Cat. Lep. Het. xxviii, p. 378. (1863).
Steganoptycha? *ochreana* *Clem.* Proc. Ent. Soc. Ph. iii, p. 520. (1864).
Steganoptycha? *ochreana* *Pack.* Guide, p. 337. (1869).
Pædisca *cataclystiana* *Wlsm.* Ill. p. 46, pl. 70, fig. 10. (1879).
Habitat.—Maine, Virginia, Texas, California.
Food.—*Ambrosia*, (Boll.).
249. **P. comatulana.**
Pædisca *comatulana* *Zell.* Beitr. p. 110. (1875).
Habitat.—Texas.
250. **P. occipitana.**
Pædisca *occipitana* *Zell.* Beitr. p. 109. (1875).
Habitat.—Texas.
251. **P. numerosana.**
Pædisca *numerosana* *Zell.* Beitr. p. 111. (1875).
Habitat.—Texas.
252. **P. giganteana.**
Pædisca *giganteana* *Riley*, Tr. St. Louis Ac. Sc. iv, p. 318. (1881).
Habitat.—Illinois, Iowa, Kansas.
253. **P. perdricana.**
Pædisca *perdricana* *Wlsm.* Ill. p. 49, pl. 71, fig. 6. (1879).
Habitat.—California.
254. **P. glomerana.**
Pædisca *glomerana* *Wlsm.* Ill. p. 49, pl. 71, fig. 8. (1879).
Habitat.—Texas.
255. **P. fulminana.**
Pædisca *fulminana* *Wlsm.* Ill. p. 50, pl. 71, fig. 9. (1879).
Habitat.—Texas, Illinois, California.
256. **P. irroratana.**
Pædisca *irroratana* *Wlsm.* Ill. p. 48, pl. 71, fig. 5. (1879).
Habitat.—California.

257. **P. bipunctella.**
Afa bipunctella Walk. Cat. Lep. Het. xxvii, p. 202. (1863).
Pædisca Worthingtoniana Fern. Can. Ent. x, p. 83. (1878).
Pædisca bipunctella Wlsm. Ill. p. 47, pl. 71, fig. 1. (1879).
Habitat.-- Illinois.
258. **P. grandiflavana.**
Pædisca grandiflavana Wlsm. Ill. p. 47, pl. 71, fig. 2. (1879).
Habitat.—California.
259. **P. subflavana.**
Pædisca subflavana Wlsm. Ill. p. 48, pl. 71, fig. 3. (1879).
Habitat.—Oregon.
260. **P. shastana.**
Pædisca shastana Wlsm. Ill. p. 46, pl. 70, fig. 9. (1879).
Habitat.—California.
261. **P. biquadrana.**
Pædisca biquadrana Wlsm. Ill. p. 45, pl. 70, fig. 8. (1879).
Habitat.—California.
262. **P. maculatana.**
Pædisca maculatana Wlsm. Ill. p. 48, pl. 71, fig. 4. (1879).
Habitat.—California.
263. **P. palpana.**
Pædisca palpana Wlsm. Ill. p. 54, pl. 72, fig. 8. (1879).
Habitat.—California.
264. **P. radicana.**
Pædisca radicana Wlsm. Ill. p. 53, pl. 72, fig. 5. (1879).
Habitat.—Oregon.
265. **P. passerana.**
Pædisca passerana Wlsm. Ill. p. 49, pl. 71, fig. 7. (1879).
Habitat.—California.
266. **P. canana.**
Pædisca canana Wlsm. Ill. p. 50, pl. 71, fig. 10. (1879).
Habitat.—California.
267. **P. culminana.**
Pædisca culminana Wlsm. Ill. p. 38, pl. 68, fig. 10. (1879).
Habitat.—California.
268. **P. rectiplicana.**
Pædisca rectiplicana Wlsm. Ill. p. 40, pl. 69, fig. 3. (1879).
Habitat.—California.
269. **P. terracoetana.**
Pædisca terracoetana Wlsm. Ill. p. 39, pl. 69, fig. 2. (1879).
Habitat.—California.

270. **P. juncticilliana.**
Rhyacionia juncticilliana *Wlsm.* Ill. p. 75, pl. 77, fig. 9. (1879).
Habitat.—Maine, Massachusetts, New York, California.
271. **P. pulveratana.**
Pedisea pulveratana *Wlsm.* Ill. p. 45, pl. 70, fig. 6. (1879).
Habitat.—Texas, California.
272. **P. nigralbana.**
Pedisea nigralbana *Wlsm.* Ill. p. 41, pl. 69, fig. 7. (1879).
Habitat.—Maine, California.
273. **P. abbreviatana.**
Pedisea abbreviatana *Wlsm.* Ill. p. 54, pl. 72, fig. 9. (1879).
Habitat.—Massachusetts, Pennsylvania, District of Columbia.
274. **P. constrictana.**
Pedisea ? *constrictana* *Zell.* Beitr. p. 99, pl. 9, fig. 36. (1875).
Habitat.—Texas.
275. **P. abruptana.**
Pedisea abruptana *Wlsm.* Ill. p. 53, pl. 72, fig. 6. (1879).
Habitat.—Texas.
276. **P. sollicitana.**
Grapholita sollicitana *Walk.* Cat. Lep. Het. xxviii, p. 387. (1863).
Halonota Packardiana *Clem.* Proc. Ent. Soc. Ph. ii, p. 417. (1864).
Pedisea tephirinana *Zell.* Beitr. p. 103. (1875).
Pedisea sollicitana *Wlsm.* Ill. p. 55, pl. 72, fig. 10. (1879).
Habitat.—Labrador, Nova Scotia, Me., N. H., Mass., N. Y.
Food.—*Betula alba* var. *populifolia*.
277. **P. transmissana.**
Penthina transmissana *Walk.* Cat. Lep. Het. xxviii, p. 375. (1863).
Pedisea transmissana *Wlsm.* Ill. p. 52, pl. 72, fig. 3. (1879).
Habitat.—Nova Scotia, Maine, Massachusetts, New Hampshire.
278. **P. strenuana.**
Grapholita strenuana *Walk.* Cat. Lep. Het. xxviii, p. 383. (1863).
Grapholita exvagana *Walk.* Cat. Lep. Het. xxviii, p. 383. (1863).
Steganoptycha flavocellana *Clem.* Proc. Ent. Soc. Ph. v, p. 138. (1865).
Grapholitha subversana *Zell.* Beitr. p. 112. (1875).
Pedisea strenuana *Wlsm.* Ill. p. 52, pl. 72, fig. 4. (1879).
Habitat.—Massachusetts, Pennsylvania, Missouri, Texas.
Food.—*Ambrosia*, (Boll.).
279. **P. hirsutana.**
Pedisea hirsutana *Wlsm.* Ill. p. 50, pl. 72, fig. 1. (1879).
Habitat.—California, Oregon.

280. P. trigeminana.

Spilonota trigeminana Steph. Ill. iv, p. 194, pl. 37, fig. 3. (1834).

Spilonota argyrana ♀ Steph. Ill. iv, p. 95. (1834).

Ephippiphora Pœcilana Guen. Ind. p. 43. (1845).

Tortrix (*Pœdisca*) *Pœcilana* H.-S. Schm. iv, p. 241; Suppl. 226. (1849).

Halonota trigeminana Wilk. Br. Tort. p. 94. (1859).

Grapholitha (*Pœdisca*) *Pœcilana* Hein. Schm. p. 152. (1863).

Habitat.—Europe; California, Oregon.

281. P. vertumnana.

Pœdisca vertumnana Zell. Beitr. p. 104. (1875).

Habitat.—New York, Texas.

282. P. celtisana.

Pœdisca celtisana Riley, Tr. St. Louis Ac. Sc. iv, p. 319. (1881).

Habitat.—Texas.

Food.—*Celtis*.

283. P. matutina.

Penthina matutina Grote, Bull. Buf. Soc. i, p. 92, pl. 2, fig. 9. (1873).

Habitat.—Texas.

284. P. illotana.

Pœdisca illotana Wlsm. Ill. p. 39, pl. 69, fig. 1. (1879).

Habitat.—Oregon.

285. P. scudderiana.*

Hedya Scudderiana Clem. Proc. Ph. Ac. Sc. 1860, p. 358, ♂. (1860).

Euryptychia saligneana Clem. Proc. Ent. Soc. Ph. v, p. 141, ♂. (1865).

Euryptychia saligneana Pack. Guide, p. 337. (1869).

Euryptychia saligneana Riley, 2d. Mo. Rept. p. 134, fig. 99. (1870).

Pœdisca affusana Zell. Beitr. p. 101, pl. 9, fig. 38, ♀. (1875).

Habitat.—Maine, Massachusetts, New York, Illinois.

Foods.—Galls of *Solidago*, (Can. Ent. x. p. 201).

286. P. desertana.

Pœdisca desertana Zell. Beitr. p. 100, pl. 9, fig. 37. (1875).

Habitat.—Texas, New York.

287. P. tripartitana.

Pœdisca tripartitana Zell. Beitr. p. 102, pl. 9, fig. 39. (1875).

Habitat.—Texas.

288. P. otiosana.

Monosphragis otiosana Clem. Proc. Ph. Ac. Sc. 1860, p. 354. (1860).

Pœdisca inclinana Zell. Beitr. p. 95, pl. 9, fig. 32. (1875).

Habitat.—New York, Illinois, Texas.

* Prof. Riley believes that this species is identical with the European *cynosbana* Fab., (see Tr. St. Louis Ac. Sc. iv, p. 320, footnote, and Bull. Ent. Com. No. 6, p. 57); but having compared my material with four males and six females of *cynosbana* Fab., I most certainly agree with Prof. Zeller in regarding them distinct.

289. **P. similana.**

- Tortrix*? *Similana* *Hüb.* Vög. & Schm. fig. 71. (1792).
Tortrix *Similana* *Hüb.* Tort. pl. 7, fig. 41. (1800).
Tortrix bimaculana *Don.* Nat. Hist. Br. Ins. xiii, pl. 459. (1808).
Tortrix *similana* *Fröl.* En. Tort. Würt. p. 47, No. 94. (1828).
Pædisca dissimilana *Treits.* Schm. x, 3, 103. (1835).
Pædisca Dissimilana *F. v. R.* p. 170, pl. 62, fig. 2. (1839).
 — *cervana* *Ev.* F. V. U. 507. (1844).
Tortrix (*Pædisca*) *Dissimilana* *H-S.* Schm. iv, p. 239. (1849).
Grapholitha (*Pædisca*) *Bimaculana* *Hein.* Schm. p. 145. (1863).
Pædisca bimaculana *Zell.* Beitr. p. 96. (1875).

Habitat.—Europe; Maine, Massachusetts.

Food.—In Europe, Hazel, Birch.

290. **P. dorsisignatana.**

- Pæcilochroma*? *dorsisignatana* *Clem.* Proc. Ph. Ac. Sc. 1860, p. 353. (1860).
Pæcilochroma? *similana* *Clem.* Proc. Ph. Ac. Sc. 1860, p. 353. (1860).
Carpocapsa distigmata *Walk.* Cat. Lep. Het. xxviii, p. 384. (1863).
Pædisca clavata *Zell.* Beitr. p. 97, pl. 9, fig. 33. (1875).
Pædisca graduatana *Wlsm.* Ill. p. 54, pl. 72, fig. 7. (1879).

Habitat.—Maine, Massachusetts, New York, Ohio, Texas.

Food.—Roots of *Solidago canadensis*, (Kellicott).

Genus **HYSTRICHOPHORA** *Wlsm.* Ill. p. 64. 1879.

291. **H. leonana.**

- Hystrichophora leonana* *Wlsm.* Ill. p. 65, pl. 75, fig. 2. (1879).
 Var. *aurantiana* *Wlsm.* Ill. p. 65, pl. 75, fig. 3. (1879).

Habitat.—California.

Genus **SEMASIA** *Steph.* Cat. 1829.

292. **S. radiatana.**

- Semasia radiatana* *Wlsm.* Ill. p. 55, pl. 73, fig. 1. (1879).

Habitat.—Nova Scotia, Maine, New York.

293. **S. olivaceana.**

- Grapholitha olivaceana* *Riley*, Tr. St. Louis Ac. Sc. iv, p. 320. (1881).

Habitat.—Illinois.

294. **S. formosana.**

- Ioplocama formosana* *Clem.* Proc. Ph. Ac. Sc. 1860, p. 360. (1860).
Grapholitha sagittana *Walk.* Cat. Lep. Het. xxviii, p. 386. (1863).
Ioplocama formosana *Pack.* Guide, p. 338. (1869).
Grapholitha stercoreana *Zell.* Beitr. p. 84. (1875).

Habitat.—Nova Scotia, Me., N. H., Mass., N. Y., Ont., Ill.

295. **S. corculana.**

- Semasia corculana* *Zell.* Lep. Westk. Am. p. 11, pl. 12, fig. 5. (1874).

Habitat.—Vancouver Island.

296. **N. aspidiscana.**

- Tortrix Aspidiscana* *Hüb.* Tort. fig. 256. (180-).
Tortrix aspidiscana *Fröhl.* En. Tort. Würt. p. 96, No. 231. (1828).
Grapholitha aspidiscana *Treits.* Schm. viii, p. 210. (1830).
Carpocapsa aspidiscana *Steph.* Ill. iv, p. 120. (1834).
Grapholitha aspidiscana *Dup.* Platy. p. 275, pl. 249. (1834).
Phoxopterus Dahlbomiana *Zett.* Ins. Lap. p. 987. (1840).
Tortrix (Semasia) Aspidiscana *H-S.* Schm. iv, p. 247. (1849).
Grapholitha (Semasia) Aspidiscana *Hein.* Schm. p. 172. (1863).

Habitat.—Europe; Oregon, (Walsingham).

Food.—In Europe, *Chrysocoma Linosyris*, *Solidago*, *Aster amellus*.

297. **N. ferruginana.**

- Semasia ferruginana* *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Maine, New Hampshire, Massachusetts.

298. **N. succedana.**

- Tortrix Succedana* *Schiff.* W. V. p. 129. (1776).
Tortrix Asseclana *Hüb.* Tort. pl. 194. (180-).
Tortrix decorana *Haw.* Lep. Br. 437, (var.). (1811).
Tortrix Ulicetana *Haw.* Lep. Br. 458. (1811).
Tortrix succedana *Fröhl.* En. Tort. Würt. p. 95, No. 224. (1828).
Grapholitha succedana *Treits.* Schm. viii, p. 211. (1830).
Grapholitha succedana *Dup.* Platy. p. 302, pl. 251. (1834).
Carpocapsa lanceolana *Steph.* Ill. iv, p. 121. (1834).
Tortrix (Carpocapsa) Succedana *H-S.* Schm. iv, p. 252. (1849).
Grapholitha (Grapholitha) Succedana *Hein.* Schm. p. 193. (1863).
 Var? *Gallicana* *H-S.* Schm. iv, p. 252. (1849).
 Var. *conjunctana* *Möesch.* Berl. Ent. Zeit. 1866, p. 140. (1866).
Habitat.—Europe; Oregon, (Walsingham).
Food.—In Europe, *Cysticus*, *Genista*.

299. **N? roessleri.**

- Grapholitha Roessleri* *Zell.* Beitr. p. 85, pl. 9, fig. 24. (1875).

Habitat.—California.

300. **N? vestaliana.**

- Grapholitha Vestaliana* *Zell.* Beitr. p. 80, pl. 8, fig. 21. (1875).

Habitat.—Texas, Colorado.

301. **N? elongana.**

- Semasia? elongana* *Wlsm.* Ill. p. 56, pl. 73, fig. 2. (1879).

Habitat.—Oregon.

302. **N. tarandana.**

- Grapholitha tarandana* *Möesch.* Stett. Ent. Zeit. 1874, p. 165. (1874).

Habitat.—Labrador, Oregon.

303. **N. artemisiana.**

- Semasia artemisiana* *Wlsm.* Ill. p. 56, pl. 73, fig. 3. (1879).

Habitat.—California.

304. ***S. argenticostana*.**
Semasia argenticostana *Wism.* Ill. p. 61, pl. 74, fig. 4. (1879).
Habitat.—Oregon.
305. ***S. spiculana*.**
Grapholitha spiculana *Zell.* Beitr. p. 83, pl. 9, fig. 23. (1875).
Habitat.—Texas.
306. ***S. striatana*.**
Anchylopera striatana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 349. (1860).
Pedisea albicepsana *Walk.* Cat. Lep. Het. xxviii, p. 379. (1863).
Grapholitha trivittana *Zell.* Beitr. p. 81, pl. 9, fig. 22. (1875).
Habitat.—Me., Mass., N. Y., Penn., Ill, Tex.
307. ***S. tenuiana*.**
Semasia tenuiana *Wism.* Ill. p. 59, pl. 73, fig. 10. (1879).
Habitat.—California, Nevada.
308. ***S. clavana*.**
Semasia clavana *Fern.* Tr. Am. Ent. Soc. x. (1882).
Habitat.—Massachusetts.
309. ***S. pallidicostana*.**
Semasia pallidicostana *Wism.* Ill. p. 62, pl. 74, fig. 6. (1879).
Habitat.—California.
310. ***S. griseocapitana*.**
Semasia griseocapitana *Wism.* Ill. p. 61, pl. 74, fig. 5. (1879).
Habitat.—California.
311. ***S. talcana*.**
Grapholitha talcana *Grote,* Can. Ent. x, p. 54. (1878).
Habitat.—Illinois.
312. ***S. perangustana*.**
Semasia perangustana *Wism.* Ill. p. 58, pl. 73, fig. 7. (1879).
Habitat.—California.
313. ***S. amphorana*.**
Semasia amphorana *Wism.* Ill. p. 63, pl. 74, fig. 9. (1879).
Habitat.—Oregon, Colorado.
314. ***S. decempunctana*.**
Semasia decempunctana *Wism.* Ill. p. 58, pl. 73, fig. 6. (1879).
Habitat.—Oregon.
315. ***S. helianthana*.**
Semasia helianthana *Riley,* Tr. St. Louis Ac. Sc. iv, p. 319. (1861).
Habitat.—Maryland, Texas.
Food.—Galls of *Helianthus*.
316. ***S. columbiana*.**
Semasia columbiana *Wism.* Ill. p. 57, pl. 73, fig. 5. (1879).
Habitat.—Oregon.

317. **S. scalana.**
Semasia scalana *Wlsm.* Ill. p. 57, pl. 73, fig. 4. (1879).
Habitat.—California, Oregon.
318. **S. signatana.**
Hedya signatana *Clem.* Proc. Ent. Soc. Ph. iii, p. 514. (1864).
Steganoptycha variaria *Clem.* Proc. Ent. Soc. Ph. iii, p. 520. (1864).
Grapholitha subnisana *Zell.* Beitr. p. 88. (1875).
Habitat.—Maine, Massachusetts, Pennsylvania, Virginia.
319. **S. argutana.**
Bactra? argutana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 358. (1860).
Grapholitha (Hedya) allutana *Zell.* Beitr. p. 89, pl. 9, fig. 27. (1875).
Habitat.—Massachusetts, New York, Pennsylvania, Texas.
Food.—Witch-hazel, Sumac, Blackthorn, Elm, (*Clemens*).
320. **S. lapidana.**
Semasia lapidana *Wlsm.* Ill. p. 58, pl. 73, fig. 8. (1879).
Habitat.—Oregon.
321. **S. sublapidana.**
Semasia sublapidana *Wlsm.* Ill. p. 59, pl. 73, fig. 9. (1879).
Habitat.—Oregon.
322. **S. parvana.**
Semasia parvana *Wlsm.* Ill. p. 60, pl. 74, fig. 1. (1879).
Habitat.—Oregon.
323. **S. stramineana.**
Semasia stramineana *Wlsm.* Ill. p. 60, pl. 74, fig. 2. (1879).
Habitat.—Colorado.
324. **S. minimana.**
Semasia minimana *Wlsm.* Ill. p. 60, pl. 74, fig. 3. (1879).
Habitat.—California.
325. **S. infusca.**
Semasia infusca *Wlsm.* Ill. p. 62, pl. 74, fig. 7. (1879).
Habitat.—California.
326. **S. refusana.**
Grapholita refusana *Walk.* Cat. Lep. Het. xxviii, p. 382. (1863).
Semasia refusana *Wlsm.* Ill. p. 63, pl. 74, fig. 10. (1879).
Habitat.—St. Martin's Falls.
327. **S. perstructana.**
Sciaphila perstructana *Walk.* Cat. Lep. Het. xxviii, p. 343. (1863).
Semasia perstructana *Wlsm.* Ill. p. 64, pl. 75, fig. 1. (1879).
Habitat.—St. Martin's Falls.
- Genus **EXENTERA** Grote, Can. Ent. ix. 1877.
328. **E. apriliana.**
Exentera apriliana *Grote,* Can. Ent. ix, p. 227. (1877).
Habitat.—New York, Colorado.

(Genus **PROTEOPTERYX** *Wlsm.* Ill. 1879.

329. **P. emarginana.**
Proteopteryx emarginana Wlsm. Ill. p. 68, pl. 76, figs. 2-6. (1879).
Habitat.—California.
330. **P. oregonana.**
Semasia? oregonana Wlsm. Ill. p. 62, pl. 74, fig. 8. (1879).
Habitat.—Oregon.
331. **P. cressoniana.**
Hedya Cressoniana Clem. Proc. Ent. Soc. Ph. iii, p. 514. (1864).
Habitat.—New York, Virginia.
332. **P. deludana.**
Hedya deludana Clem. Proc. Ent. Soc. Ph. iii, p. 513. (1864).
Habitat.—Pennsylvania, Virginia, Missouri, Texas.
333. **P. spoliata.**
Hedya spoliata Clem. Proc. Ent. Soc. Ph. iii, p. 513. (1864).
Habitat.—New York, Pennsylvania, Virginia, Georgia.
334. **P. resumptana.**
Penthina resumptana Walk. Cat. Lep. Het. xxviii, p. 376. (1863).
Pædisca resumptana Wlsm. Ill. p. 44, pl. 70, fig. 5. (1879).
Habitat.—Nova Scotia, Pennsylvania.
335. **P. costomaculana.**
Anchylopera costomaculana Clem. Proc. Ph. Ac. Sc. 1860, p. 349. (1860).
Batodes bipustulana Walk. Cat. Lep. Het. xxviii, p. 316. (1863).
Habitat.—Maine, Pennsylvania?

(Genus **PROTEOTERAS** *Riley.* Tr. St. Louis Ac. Sc. 1881.

336. **P. æsculana.**
Proteoterus æsculana Riley. Tr. St. Louis Ac. Sc. iv, p. 321. (1881).
Habitat.—New York, Missouri, Texas.
Food.—*Æsculus, Acer.*

(Genus **STEGANOPTYCHA** *Steph.* Ill. iv, 1834.

337. **S. incarnana.**
Tortrix incarnana Haw. Lep. Br. p. 435. (1811).
Tortrix dealbana Fvöl. En. Tort. Würt. p. 51, No. 107. (1826).
Penthina minorana Treits. Schm. viii, p. 48. (1830).
Anticlea incarnana Steph. Ill. iv, p. 115. (1834).
Penthina Minorana Dup. Platy. p. 573, pl. 265. (1834).
Penthina Dealbana F. v. R. p. 37, pl. 22, fig. 1. (1838).
Tortrix (Penthina) Dealbana H-S. Schm. iv, p. 232. (1849).
Hedya dealbana Wilk. Br. Tort. p. 120. (1859).
Grapholitha (Steganoptycha) Dealbana Hein. Schm. p. 207. (1863).
Habitat.—Europe; California.
Food.—In Europe, *Salix, Populus.*

338. ***S. fasciolana*.**

Anchylopera fasciolana Clem. Proc. Ent. Soc. Ph. iii, p. 511. (1864).

Penthina Blakeana (Robt. mss. , Grote, Bull. Buf. Soc. i, p. 91, pl. 2, fig. 8. (1873).

Habitat.—Maine, Massachusetts, New York, Pennsylvania.

339. ***S. lagopana*.**

Steganoptycha lagopana Wlsm. Ill. p. 71, pl. 76, fig. 10. (1879).

Habitat.—California.

340. ***S. liturana*.**

Steganoptycha liturana Wlsm. Ill. p. 71, pl. 76, fig. 9. (1879).

Habitat.—California.

341. ***S. purpuricilliana*.**

Steganoptycha purpuricilliana Wlsm. Ill. p. 72, pl. 77, fig. 2. (1879).

Habitat.—California.

342. ***S. salicicolana*.**

Hedya salicicolana Clem. Proc. Ent. Soc. Ph. iii, p. 514. (1864).

Habitat.—Illinois.

Food.—Willow galls, (*Salicis rhodoides*), (Walsh).

343. ***S. saliciana*.**

Hedya saliciana Clem. Proc. Ent. Soc. Ph. iii, p. 515. (1864).

Habitat.—Illinois.

Food.—Willow galls, (*Salicis brassicoides* & *S. strobiloides*), (Walsh).

344. ***S. crispana*.**

Steganoptycha crispana Clem. Proc. Ent. Soc. Ph. v, p. 137. (1865).

Habitat.—Maine, Massachusetts, Pennsylvania.

345. ***S. augustana*.**

Tortrix Augustana Hüb. Tort. fig. 205. (180-).

Grapholitha augustana Treits. Schm. viii, p. 221. (1830).

Tortrix Augustana Dup. Platy. p. 486, pl. 261. (1834).

Tortrix cruciana Zett. Ins. Lap. p. 981. (1840).

— Pullana Er. F. V. U. 512. (1844).

— Augustana Zell. Isis, 1846, p. 247. (1846).

Tortrix (*Grapholitha*) *Augustana* H-S. Schm. iv, p. 272; Suppl. 362. (1849).

Grapholitha (*Steganoptycha*) *Augustana* Hein. Schm. p. 219. (1863).

Sciaphila direptana Walk. Cat. Lep. Het. xxviii, p. 338. (1863).

Sciaphila vilisana Walk. Cat. Lep. Het. xxviii, p. 338. (1863).

Habitat.—Europe; Hudson's Bay, (Walk.); California, (Wlsm.).

Food.—In Europe. *Salix*.

346. ***S. pinicolana*.**

— Pinicolana Zell. Isis, 1846, p. 242. (1846).

Tortrix (*Ditula*) *Pinicolana* H-S. Schm. iv, p. 207; Suppl. 384-5. (1949).

Retinia occultana Wilk. Br. Tort. p. 223. (1859).

Grapholitha (*Steganoptycha*) *Pinicolana* Hein. Schm. p. 210. (1863).

Habitat.—Europe; New York, Wisconsin.

Food.—In Europe. *Pinus larix* and *P. cembra*.

347. **S. biangulana.**

Steganoptycha biangulana *Wlsm.* Ill. p. 71, pl. 77, fig. 1. (1879).

Habitat.—Oregon.

348. **S? nebulosana.**

Grapholitha nebulosana *Pack.* Proc. Bost. Soc. N. H. xi, p. 61. (1866).

Habitat.—Labrador.

Genus **TMETOCERA** Lederer, Wien. Ent. Monats. 1859.

349. **T. ocellana.**

Tortrix Ocellana *Schiff.* W. V. p. 130, No. 7. (1776).

Pyralis ocellana *Fab.* Mant. ii, 228. (1787).

Pyralis luscana *Fab.* Ent. Syst. 255. (1793).

Tortrix Comitana *Hüb.* Tort. fig. 16. (1800).

Tortrix luscana *Frdl.* En. Tort. Würt. p. 50. (1828).

Penthina ocellana *Treits.* Schm. viii, p. 40. (1830).

Penthina Luscana *Dup.* Platy. p. 203, pl. 245. (1834).

Tortrix (Penthina) Ocellana *H.-S.* Schm. iv, p. 233. (1849).

Hedya ocellana *Wlk.* Br. Tort. p. 118. (1859).

Tmetocera ocellana *Led.* Wien. Ent. Monat. iii, p. 368. (1859).

Penthina Pyrifoliana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 357. (1860).

Penthina oculana *Harris.* Inj. Ins. p. 482. (1862).

Grapholitha (Tmetocera) Ocellana *Hein.* Schm. p. 206. (1863).

Grapholitha oculana *Sounders.* Can. Ent. iii, p. 13, fig. 9. (1871).

Tmetocera Ocellana *Zell.* Beitr. p. 61. (1875).

Habitat.—Europe; Me., Mass., N. Y., Penn., Ont.

Food.—In America, leaves of Apple, Pear and Plum; Laurel Oak, (Miss Murtfeldt).

Genus **RHOPOBOTA** Lederer, Wien. Ent. Monat. 1859.

350. **R. vacuoliana.**

? *Sciaphila luctiferana* *Walk.* Cat. Lep. Het. xxviii, p. 342. (1863).

Anchylopera vacciniana *Pack.* Guide, p. 338, pl. 8, fig. 21. (1869).

Anchylopera vacciniana *Glover,* Depr. Ag. Rept. 1870, p. 85, figs. 50, 51. (1870).

Habitat.—Massachusetts, New York, California, St. Martin's Falls.

Food.—Cranberry.

Genus **PHOXOPTERIS** Treits. Schm. viii, 1830.

351. **P. mediofasciana.**

Anchylopera mediofasciana *Clem.* Proc. Ent. Soc. Ph. iii, p. 511. (1864).

Phoxopteris mediofasciana *Zell.* Beitr. p. 42, pl. 8, fig. 4. (1875).

Habitat.—Maine, Massachusetts, New York.

352. **P. nubeculana.**

Anchylopera nubeculana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 349. (1860).

Phoxopteris nubeculana *Zell.* Beitr. p. 43, pl. 8, fig. 5. (1875).

Phoxopteris nubeculana *Riley,* Depr. Ag. Rept. 1878, p. 239, pl. 2, fig. 3. (1878).

Habitat.—N. S., Me., Mass., N. Y., Penn., Wis.

Food.—Apple leaves.

353. **P. subaequana.**
Phoxopteria subaequana Zell. Beitr. p. 48, pl. 8, fig. 9. (1875).
Habitat.—Maine, Massachusetts.
354. **P. discigerana.**
Grapholita discigerana Walk. Cat. Lep. Het. xxviii, p. 384. (1863).
Habitat.—Nova Scotia, Maine, New York.
355. **P. semiovana.**
Phoxopteria semiovana Zell. Beitr. p. 44, pl. 8, fig. 6. (1875).
Habitat.—Maine, New York.
356. **P. murtfeldtiana.**
Phoxopteria murtfeldtiana Riley, Tr. St. Louis Ac. Sc. iv, p. 323. (1881).
Habitat.—Missouri.
Food.—Oak.
357. **P. lundana.**
Pyrallis lundana Fab. Gen. Ins. p. 294. (1777).
Tortrix Badiana Schiff. W. V. p. 126. (177-).
Tortrix Corylana Hüb. Vög. & Schm. fig. 63. (1792).
Tortrix Corylana Hüb. Tort. fig. 53. (1800).
Tortrix lundana Don. N. H. xi, pl. 374, fig. 1. (1804).
Tortrix lundana Haw. Lep. Br. 452. (1811).
Tortrix Lundana Fröhl. En. Tort. Würt. p. 99, No. 241. (1828).
Phoxopteria badiana Treits. Schm. viii, p. 243. (1830).
Phoxopteria Badiana Dup. Platy. p. 343, pl. 253. (1834).
Tortrix (Phoxopteryx) Badiana H. S. Schm. iv, p. 285. (1849).
Anchylopera Lundana Wilk. Br. Tort. p. 138. (1859).
Grapholitha (Phoxopteryx) Badiana Hein. Schm. p. 225. (1863).
Habitat.—Europe; Oregon, (Walsingham mss.).
Food.—In Europe. *Vicia, Trifolium, Orobus.*
358. **P. spiraeifolia.**
Anchylopera spiraeifolia Clem. Proc. Ph. Ac. Sc. 1860, p. 348. (1860).
Grapholita metamelana Walk. Cat. Lep. Het. xxviii, p. 385. (1863).
Grapholita discoferana Walk. Cat. Lep. Het. xxviii, p. 386. (1863).
Habitat.—Pennsylvania.
Food.—*Spiraea opulifolia.*
359. **P. laciniana.**
Phoxopteria laciniana Zell. Beitr. p. 47, pl. 8, fig. 8. (1875).
Habitat.—Massachusetts.
360. **P. burgessiana**
Phoxopteria Burgessiana Zell. Beitr. p. 46, pl. 8, fig. 7. (1875).
Habitat.—Maine, Massachusetts.
361. **P. dubiana.**
Anchylopera dubiana Clem. Proc. Ent. Soc. Ph. iii, p. 512. (1864).
Habitat.—Virginia.

362. **P. floridana.**

Phoxopterus floridana Zell. Beitr. p. 52. (1875).

Habitat.—Ohio.

363. **P. amblygona.**

Phoxopterus Amblygona Zell. Beitr. p. 53. (1875).

Habitat.—District of Columbia.

364. **P. comptana.**

Tortrix comptana Fröl. En. Tort. Wurt. p. 99, No. 242. (1828).

Phoxopteryx Comptana Dup. Suppl. p. 187. (1844).

Tortrix (Phoxopteryx) Comptana H-S. Schm. iv, p. 286; Suppl. 318. (1849).

Anchylopera comptana Walk. Br. Tort. p. 141. (1859).

Grapholitha (Phoxopteryx) Comptana Hein. Schm. p. 225. (1863).

Grapholitha conflexana Walk. Cat. Lep. Het. xxviii, p. 384. (1863).

Phoxopterus comptana Zell. Beitr. p. 51. (1875).

Habitat.—Europe; Nova Scotia, Maine, Massachusetts, California.

Food.—In Europe, *Potentilla opaca*, *verna* and *cinerea*, *Dryas octopetela*, *Poterium sanguisorba*, *Thymus serpyllum*, *Teucrium*.

365. **P. fragariæ.**

Anchylopera fragariæ Walsh & Riley, Am. Ent. i, p. 89, fig. 75. (1869).

Anchylopera fragariæ Riley, 1st. Mo. Rept. p. 142, fig. 80, and pl. 2, figs. 26, 27. (1869).

Anchylopera fragariæ Pack. Guide, p. 340, fig. 261. (1869).

Habitat.—Canada, Illinois, Missouri.

Food.—Strawberry leaves.

366. **P. angulifasciana.**

Phoxopterus angulifasciana Zell. Beitr. p. 50, pl. 8, fig. 10. (1875).

Habitat.—Maine, Massachusetts, Ohio.

Food.—Clover. (Fernald, Psyche iii, p. 88. 1880).

367. **P. platanana.**

Anchylopera Platanana Clem. Proc. Ph. Ac. Sc. 1860, p. 349. (1860).

Phoxopterus marcidana Zell. Beitr. p. 54. (1875).

Habitat.—Pennsylvania, Missouri, Texas.

Food.—Leaves of Sycamore.

368. **P. divisana.**

Grapholitha divisana Walk. Cat. Lep. Het. xxviii, p. 385. (1863).

Phoxopteryx divisana Wlsm. Ill. p. 73, pl. 77, fig. 7. (1879).

Habitat.—Nova Scotia, Massachusetts.

369. **P. apicana.**

Grapholitha apicana Walk. Cat. Lep. Het. xxxv, p. 1795. (1866).

Phoxopteryx apicana Wlsm. Ill. p. 73, pl. 77, fig. 5. (1879).

Habitat.—Nova Scotia, Massachusetts, Oregon.

370. **P. cornifoliata.**

Phoxopterus cornifoliata *Riley*, Tr. St. Louis Ac. Sc. iv, p. 324. (1881).

Habitat.—Massachusetts, Pennsylvania, Kansas.

Food.—*Cornus paniculata*.

371. **P. muricana.**

Phoxopteryx muricana *Wlsm.* Ill. p. 74, pl. 77, fig. 6. (1879).

Habitat.—Washington, D. C.

372. **P. uncana.**

Tortrix Uncana *Hüb.* Tort. pl. 13, fig. 76. (1800).

Tortrix geminana *Don.* N. H. xi, p. 29, pl. 370, fig. 1. (1804).

Tortrix uncana *Haw.* Lep. Br. p. 451. (1811).

Tortrix uncana *Fröhl.* En. Tort. Würt. p. 101, No. 247. (1828).

Phoxopterus uncana *Treits.* Schm. viii, 237. (1830).

Phoxopteryx uncana *Dup.* Platy. p. 235, pl. 252, 8. (1835).

Tortrix (Phoxopteryx) Uncana *H-S.* Schm. iv, p. 286. (1849).

Anchylopera uncana *Wilk.* Br. Tort. p. 137. (1859).

Grapholitha (Phoxopteryx) Uncella *Hein.* Schm. p. 224. (1863).

Habitat.—Europe; New Hampshire.

373. **P. biarcuana.**

Anchylopera biarcuana *Steph.* Cat. ii, p. 178. (1829).

Anchylopera cuspidana *Steph.* Ill. iv, p. 113. (1834).

Pædisca Crenana *Dup.* Platy. p. 334 and 518, pl. 252 and 263. (1834).

Tortrix (Phoxopteryx) Fluctigerana *H-S.* Schm. iv, p. 286; Suppl. 319. (1849).

Anchylopera biarcuana *Wilk.* Br. Tort. p. 136. (1859).

Grapholitha (Phoxopteryx) Biarcuana *Hein.* Schm. p. 223. (1863).

Habitat.—Europe; California, (Walsingham).

Food.—In Europe, *Salix caprea*.

374. **P. goodelliana.**

Phoxopterus goodelliana *Fern.* Tr. Am. Ent. Soc. x. (1882).

Habitat.—Maine, New Hampshire, Massachusetts.

375. **P. plagosana.**

Anchylopera plagosana *Nem.* Proc. Ent. Soc. Ph. ii, p. 417. (1864).

Habitat.—Labrador.

376. **P. pacificana.**

Phoxopteryx pacificana *Wlsm.* Ill. p. 73, pl. 77, fig. 4. (1879).

Habitat.—California, Oregon.

377. **P. cometana.**

Phoxopteryx cometana *Wlsm.* Ill. p. 74, pl. 77, fig. 8. (1879).

Habitat.—California.

378. **P. loricana.**

Phoxopterus loricana *Grote.* Can. Ent. xii, p. 218. (1880).

Habitat.—Ohio.

379. **P. tineana.**

Tortrix Tineana *Hüb.* Tort. fig. 81. (1800).

Tortrix (*Phoxopteryx*) *Tineana* *H-S.* Schm. iv, p. 284. (1849).

Grapholitha (*Phoxopteryx*) *Tineana* *Hein.* Schm. p. 223. (1863).

Anchylopera ocellana *Clem.* Proc. Ent. Soc. Ph. iii, p. 510. (1864).

Pandemis leucophaleratana *Pack.* Proc. Bost. Soc. N. H. xi, p. 56. (1866).

Habitat.—Europe; Labrador, Maine, Massachusetts.

Food.—In Europe, *Aspen*, (*Hein.*).

Genus **GRAPHOLITHA** Treits. Schm. viii, 1830.

380. **G. caryana.**

Ephippiphora Caryana *Fitch.* N. Y. Ag. Rept. vol. xvi, p. 459. (1856).

Grapholitha caryæ *Shimer.* Tr. Am. Ent. Soc. ii, p. 394. (1869).

Habitat.—Connecticut, New York, Illinois, Missouri, Texas.

Food.—Husks of Hickory nuts.

381. **G. prunivora.**

Semasia prunivora *Walsh.* 1st. Ent. Rept. III.

Habitat.—Illinois, Missouri.

Food.—Fruit of Plum; "Aphides that cause the cockscomb Elm-gall." (*Miss Murtfeldt.*)

382. **G. interstinctana.**

Stigmonota interstinctana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 351. (1860).

Dichrorampha scitana *Walk.* Cat. Lep. Het. xxviii, p. 413. (1863).

Grapholitha distema *Grote.* Bull. Buf. Soc. i, p. 92. (1873).

Grapholitha (*Ephippiphora*) *interstinctana* *Zell.* Beitr. p. 90, pl. 9, fig. 28. (1875).

Habitat.—Maine, Massachusetts, New York, Pennsylvania.

Food.—Clover seed, (*Comstock*, Dept. Ag. Rept. 1880, p. 254).

383. **G. bracteatana.**

Grapholitha bracteatana *Fern.* Dept. Ag. Rept. 1880, p. 265. (1881).

Habitat.—California.

Food.—Cone scales of Silver Pine.

384. **G. conversana.**

Grapholitha conversana *Wism.* Ill. p. 66, pl. 75, fig. 7. (1879).

Habitat.—Oregon.

385. **G. albimaculana.**

Grapholitha albimaculana *Fern.* Can. Ent. xi, p. 157. (1879).

Habitat.—Orono, Maine.

386. **G. lunatana.**

Grapholitha lunatana *Wism.* Ill. p. 66, pl. 75, fig. 8. (1879).

Habitat.—Oregon.

387. **G. tristrigana.**

Stigmonota tristrigana *Clem.* Proc. Ent. Soc. Ph. v, p. 133. (1865).

Habitat.—Massachusetts, Virginia.

388. **G. americana.**

Grapholitha americana *Wlsm.* Ill. p. 67, pl. 75, figs. 9, 10. (1879).

Habitat.—California.

389. **G. cœruleana.**

Grapholitha cœruleana *Wlsm.* Ill. p. 66, pl. 75, fig. 6. (1879).

Habitat.—Oregon.

390. **G. vitrana.**

Grapholitha vitrana *Wlsm.* Ill. p. 65, pl. 75, fig. 5. (1879).

Habitat.—Oregon.

391. **G. tautana.**

Halonota tautana *Clem.* Proc. Ent. Soc. Ph. v, p. 139. (1865).

Grapholitha perfluana *Zell.* Beitr. p. 93, pl. 9, fig. 30. (1875).

Habitat.—Virginia, Texas.

392. **G. gallæ-saliciana.**

Grapholitha gallæ-saliciana *Riley*, Tr. St. Louis Ac. Sc. iv, p. 320. (1881).

Habitat.—New York, Missouri, Texas.

Food.—Willow galls.

393. **G. trossulana.**

Grapholitha trossulana *Wlsm.* Ill. p. 67, pl. 76, fig. 1. (1879).

Habitat.—California.

Genus **ECDYTOLOPHA** *Zell.* Beitr. 1875.

394. **E. insiticiana.**

Ecdytolopha insiticiana *Zell.* Beitr. p. 60, pl. 8, fig. 20. (1875).

Habitat.—Massachusetts, District of Columbia, Colorado.

Food.—Borer in stems of Locust.

Genus **CARPOCAPSA** *Treits.* Schm. viii, 1830.

395. **C. pomonella.**

Tinea pomonella *Linna.* S. N. x, 538. (1758).

Tortrix Pomonana *Schiff.* W. V. p. 126. (1776).

Pyrallis pomana *Fab.* Ent. Syst. iii, p. 279. (1793).

Tortrix Pomonana *Hüb.* Tort. pl. 6, fig. 30. (1800).

Tortrix Pomonana *Haw.* Lep. Br. 457. (1811).

Tortrix pomonana *Fröhl.* En. Tort. Würt. p. 78, No. 183. (1828).

Carpocapsa pomonana *Treits.* Schm. viii, p. 161. (1830).

Carpocapsa Pomonella *Steph.* Ill. iv, p. 119. (1834).

Carpocapsa Pomonana *Dup.* Platy. p. 248, pl. 248. (1834).

Tortrix (*Carpocapsa*) *Pomonana* *H.-S.* Schm. iv, p. 251. (1849).

Carpocapsa Pomonella *Wilk.* Br. Tort. p. 236. (1859).

Carpocapsa Pomonella *Harris.* Inj. Ins. p. 484. (1862).

Grapholitha (*Carpocapsa*) *Pomonella* *Hein.* Schm. p. 194. (1863).

Habitat.—All parts of the world where Apples are grown.

Food.—Fruit of the Apple, Pear, Peach and Crab.

The habits of this insect and various remedies for preventing its ravages are given in the following works: Am. Ent. i, p. 112; Riley's Mo. Repts. i, p. 62, and iii, p. 101; N. A. Ent. p. 5; Pack's Guide p. 341; Fitch's N. Y. Rept. iii, p. 347; and numerous other Ag. Repts. and papers.

396. **C. saltitans.** *

Carpocapsa saltitans Westw. Proc. Ashmol. Soc. iii, p. 137. (1857).

Carpocapsa Deshaisiana Lucas, An. Soc. Ent. France, pl. 16. (1858).

Habitat.—Mexico.

Food.—Seeds of the Arrow weed, (Riley, Tr. St. Louis Ac. Sc. iii, p. 190, 1875).

397. **C. toreuta.**

Penthina toreuta Grote, Bull. Buf. Soc. i, p. 92, pl. 2, fig. 10. (1873).

Habitat.—Pennsylvania, Virginia.

Genus **MELLISOPUS** Riley, Tr. St. Louis Ac. Sc. 1881.

398. **M. latiferreana.**

Carpocapsa latiferreana Wlsm. Ill. p. 70, pl. 76, fig. 8. (1879).

Mellisopus latiferreana Riley, Tr. St. Louis Ac. Sc. iv, p. 322. (1881).

Habitat.—New Hampshire, Missouri, Texas, California.

Food.—Oak acorns.

Genus **PTHOROBLASTIS** Lederer, Wien. Ent. Monat. iii. 1859.

399. **P. texanana.**

Phthoroblastis texanana Wlsm. Ill. p. 70, pl. 76, fig. 7. (1879).

Habitat.—Texas.

Genus **DICHRORAMPHA** Guen. Ind. 1845.

400. **D. incanana.**

Halonota incanana Clem. Proc. Ph. Ac. Sc. 1860, p. 351. (1860).

Habitat.—Pennsylvania?

401. **D. simulana.**

Halonota simulana Clem. Proc. Ph. Ac. Sc. 1860, p. 351. (1860).

Halonota simulana Pack. Guide, p. 337. (1869).

Dichrorampha aurisignana Zell. Beitr. p. 113. (1875).

Habitat.—New York, Pennsylvania, Maryland, District of Columbia.

402. **D. alpinana.**

Grapholitha alpinana Treits. Schm. viii, p. 230. (1830).

Ephippiphora Alpinana Dup. Platy. p. 322, pl. 252. (1834).

Dichrorampha Politana Guen. Ind. p. 51. (1845).

Tortrix (*Grapholitha*) *Alpinana* H-S. Schm. iv, p. 271; Suppl. 155-6. (1849).

Dicrorampha politana Wilk. Br. Tort. p. 104. (1859).

Dicrorampha alpinana Wilk. Br. Tort. p. 105. (1859).

Dichrorampha (*Dichrorampha*) *Alpinana* Hein. Schm. p. 230. (1863).

Habitat.—Europe; Oregon, (Walsingham).

* Although not yet found within the territory to which I have limited myself, yet I have ventured to add it, as it has been taken so near the borders of California.

403. D. plumbana.

Tortrix plumbana *Sc. Ent. Carn. No. 592.* (1763).

Tinea Petiverella *Schiff. W. V. p. 136.* (1776).

Grapholitha zachana *Treits. Schm. viii, p. 217.* (1830).

Grapholitha Zachana *Dup. Platy. p. 282, pl. 250.* (1834).

Dichrorampha? *Ulicana* *Guen. Ind. p. 51.* (1845).

Tortrix (*Grapholitha*) *Blepharana H.-S. Schm. iv, p. 254; Suppl. 197-8.* (1849).

Endopisa Ulicana *Wilk. Br. Tort. p. 228.* (1859).

Dichrorampha (*Lipoptycha*) *Plumbana Hein. Schm. p. 239.* (1863).

Habitat.—Europe; California.

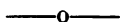
Food.—In Europe, Root-stalks of *Artemisia vulgaris*.

404. D. radicecolana.

Dichrorampha radicecolana *Wism. Ill. p. 75, pl. 77, fig. 10.* (1879).

Habitat.—Oregon.

Food.—*Scrophularia?*



I have been unable to determine what the following species are, from the published descriptions.

405. pulchellana.

Anchylopera pulchellana *Clem. Proc. Ent. Soc. Ph. iii, p. 511.* (1864).

Habitat.—Virginia.

406. fuscocilliana.

Anchylopera fuscocilliana *Clem. Proc. Ent. Soc. Ph. iii, p. 512.* (1864).

Habitat.—Virginia.

407. virginiana.

Anchylopera virginiana *Clem. Proc. Ent. Soc. Ph. iii, p. 512.* (1864).

Habitat.—Virginia.

408. lamiana.

Anchylopera lamiana *Clem. Proc. Ent. Soc. Ph. iii, p. 513.* (1864).

Habitat.—Maine.

409. retractana.

Teras retractana *Walk. Cat. Lep. Het. xxviii, p. 288.* (1863).

Habitat.—United States, (see *N. A. Ent. p. 36*).

410. vestitana.

Lophoderus vestitanus *Walk. Cat. Lep. Het. xxviii, p. 334.* (1863).

Habitat.—Nova Scotia.

411. destitutana.

Sciaphila? *destitutana* *Walk. Cat. Lep. Het. xxviii, p. 339.* (1863).

Habitat.—Hudson's Bay.

The type is too poor for determination.

412. **indivisana.**

Sciaphila indivisana *Walk.* Cat. Lep. Het. xxviii, pp. 344, 985. (1863).

Habitat.—Hudson's Bay.

The type is too poor for determination.

413. **parryana.**

Argyrotoza Parryana *Curt.* App. Ross' 2d. Arctic Voyage. (1831).

Grapholita Parryana *Walk.* Cat. Lep. Het. xxviii, p. 387. (1863).

Habitat.—Arctic America.

414. **sulphurana.**

Pyralis sulphurana *Fab.* Ent. Syst. vol. iii, part 2, p. 273.

Habitat.—"North America."

I have not yet been able to refer this species to any known to me.

The following species do not belong to the Tortricidæ :

415. **malana.**

Brachytænia malana *Fitch*, N. Y. Ag. Rept. 1855, p. 473.

This species has been referred to the Noctuidæ, (see Grote's Check List of the Noctuidæ, p. 15, No. 570).

416. **triquetrana.**

Brachytænia Triquetrana *Fitch*, N. Y. Ag. Rept. 1855, p. 476.

Prof. Riley, who has seen the type of this species, informed me that it is congeneric with *B. malana* Fitch.

417. **oculatana.**

Disodia oculatana *Clem.* Proc. Ph. Ac. Sc. 1860, p. 350.

This species belongs to the Thyridæ, and was redescribed by Grote and Robinson as *Platythyris fasciata*, in the Annals Lyceum Nat. Hist. N. Y. vol. viii, (see Tr. Am. Ent. Soc. ii, p. 86).

418. **margaritana.**

Disodia margaritana *Clem.* Proc. Ent. Soc. Ph. i, p. 137.

This species also belongs to the Thyridæ.

419. **luridana.**

Amphisa luridana *Walk.* Cat. Lep. Het. xxviii, p. 318. (1863).

Habitat.—Hudson's Bay.

This species belongs to the Choreutina.

420. **frigidana.**

Tortrix frigidana *Walk.* Cat. Lep. Het. xxviii, p. 323. (1863).

Habitat.—Hudson's Bay.

Sarrothripa sp? Referred to the Noctuidæ.

421. **scriptana.**

Tortrix scriptana *Walk.* Cat. Lep. Het. xxviii, p. 324. (1863).

Habitat.—Massachusetts.

Sarrothripa sp? Referred to the Noctuidæ.

422. **cretiferana.**

Conchylis cretiferana *Walk.* Cat. Lep. Het. xxviii, p. 359. (1863).

Habitat.—Nova Scotia.

Not a Tortricid. (A Noctuid?, Walsingham).

423. **procellariana.**

Pædisca procellariana *Walk.* Cat. Lep. Het. xxviii, p. 379. (1863).

Habitat.—Arctic America.

This species belongs to the Pyralidæ.

424. **tuberculana.**

Eucosma tuberculana *Geyer*, *Zutr.* figs. 733-734.

Habitat.—Georgia.

This species belongs to the Pyralidæ.

425. **lasciva.**

Tortrix lasciva *Morris*, Cat. Lep. N. A. p. 50.

This is an error, as no such species was published either by Hübner or Geyer.

426. **packardiana.**

Anchylopera Packardiana *Clem.* Proc. Ent. Soc. Ph. iii, p. 516.

This name was probably introduced by Dr. Clemens through some mistake, for no such species was ever published, nor is it represented in his Collection. The name should therefore be dropped from the Lists.

427. **lactana.**

Pyralis lactana *Fab.* Ent. Syst. vol. iii, part 2, p. 250.

Habitat.—"Georgia."

From the description I do not think this belongs to the Tortricidæ.

428. **sepulcrella.**

Tinea sepulcrella *Fab.* Ent. Syst. vol. iii, part 2, p. 316.

Pyralis sepulcrana *Fab.* Ent. Syst. Suppl. p. 480.

Habitat.—"America."

Probably not a Tortricid.

The statement that the following species occurs in North America needs confirmation.

429. **pruniana.**

Penthina pruniana *Hüb.*—Walker, Cat. Lep. Het. xxviii, p. 374; Packard's Guide, p. 333.

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ERRATA.

Page 2, 14th line, for Standinger read Staudinger.

Page 3, 25th line, for Fröl. read Fröl, and for Württembergæ read Württembergiæ; and 36th to 39th lines, for Hub. read Hub.

Page 4, 3d line, for Moescher read Moeschler, and 19th line, for Standinger read Staudinger.

Page 7, 32d line, for *Wlms.* read *Wlsm.*

Page 10, 18th line, for *Loxotænia* read *Loxotænia*.

Page 11, 9th and 11th lines, for *levigana* read *levigana*.

Page 18, 8th line, for 1757 read 1759.

Page 19, 24th line, for *Pilleriana* read *Pillerana*.

Page 24, 6th line, for *Wlms.* read *Wlsm.*

Page 33, 29th line, for 1860 read 1865.

Page 41, 2d line, for p. 194 read p. 94, and 29th line, for *Foods* read *Food*.

Page 43, 3d line, for *aspidiscana* read *aspidana*.

Page 48, 19th line, for *Penthina* read *Hedyu*.

Page 53, 28th line, for 1758 read 1759.

Descriptions of new species of TORTRICIDÆ.

BY C. H. FERNALD, A. M.

Teras ferruginiguttana n. sp.—Head, palpi, basal joints of antennæ, thorax and fore wings, light gray sprinkled with dark gray scales which are so arranged on the fore wings as to give a faint impression of an oblique central band and spots on the costa and outer border. Surface of the fore wings with the scales more or less tufted. A tuft on the fold near the base of the wing, an elongated streak through the oblique stripe on the cell, and a spot between this and the outer border, bright rust-red. Fringes lighter gray. Hind wings light yellowish, silky; streaked with irregular cross lines of light fuscous which run together more or less towards the apex. Fringes and abdomen above and beneath, very light straw yellow. Under side of all the wings very light yellow reticulated with fuscous. Costa and fringes of the fore wings reflecting the markings of the upper side. Legs light yellowish, tarsi ringed with fuscous. Expanse 28 mm.

Habitat.—Colorado. Described from one female.

Teras chalybeana n. sp.—Head, thorax and fore wings, light steel-blue. Palpi light steel-blue on the outside fading into cream color beneath and within. Face and under side of antennæ at base cream color. Thorax with a transverse black band behind the collar, extending across the patagiæ, and with some black scales at the posterior part which is untufted. Anterior wings and fringes concolorous with the head and thorax. A small black band extends from the costa at the base of the wing partially across, forming, when the wings are closed, a continuation of the transverse black band of the thorax. A costal spot extends on the costa from the basal third to a point three-fourths the distance from the base to the apex, and across the wing to the middle of the cell. This spot is formed by two parallel curved lines of black scales about one millimeter apart, more or less in tufts which start from the basal third of the costa, curve down and outward, and return to the costa towards the apex where they are much broken and mixed with the ashy scales of the wings. A small tuft of black scales occurs on the fold near the base of the wing and another above it. Beneath silky steel-gray with cream colored spots along the costa. Fringes lighter. Posterior wings and abdomen above concolorous with the under side of fore wings. Under side and the fringes lighter. Under side of body and abdomen with the legs light ochre-yellow. Tarsi annulated with brown. Expanse 22 mm.

Habitat.—Orono, Me., New York. One specimen was taken in Orono, at sugar, Sept. 20, 1880. Described from two males and one female.

Teras cervinana n. sp.—Head white, stained with dull red; palpi light fuscous on the outside, white above and inside, antennæ reddish fuscous. Thorax reddish fawn color, untufted, and with a transverse white stripe extending across in front even on to the costa of the fore wings. Fore wings reddish fawn colored, touched with white along the costa. A dark brown semicircle enclosing a white spot, rests upon the middle of the costa and extends to the middle of the cell. A few minute tufts of dark brown scales occur on the cell immediately below the semicircle, another on the fold near the base of the wing, another above this last on the subcostal vein, and a few towards the outer margin in an oblique line. Fringes lighter. Under side pale, silky fuscous, reflecting the markings of the

upper surface. Hind wings and abdomen above, pale fuscous, fringes and under side lighter with some small faint maculations towards the apex. Expanse 17 mm.

Habitat.—Massachusetts.

I have what I think is a variety of this species from Georgia. It differs in having the fawn color of the fore wings broken up by white, so as to appear like minute checkers.

Teras americana n. sp.—Head reddish white; palpi white within, reddish fuscous on the outside, last joint nearly concealed. Thorax whitish; the collar, tips of the patagiae and two stripes across the thorax, light red. Fore wings white, dimly reticulated with light red which is suffused along the borders. A dark red spot rests on the costa a little before the middle, and another before the apex, both of which are connected with a third which rests on the cell, so as to form a triangle, the base of which rests on the costa. A red line extends from the outer costal spot obliquely across to the anal angle, having in it a few sprinkles of tufted black scales, and a similar line nearly parallel to the former extends across the wing from the inner part of the cellular spot. A black fleck of tufted scales rests on the fold near the base of the wing, and another above it on the subcostal vein. Fringes light reddish, darker at the base. Hind wings above and beneath whitish, with very pale fuscous reticulations at the apex. Fringes concolorous with the wing. Under side of fore wings very pale reddish fuscous, reticulated, reflecting the markings of the upper side. Abdomen and legs concolorous with the hind wings. Fore and middle legs touched on the outside with light fuscous. Expanse 15–16 mm.

Habitat.—Massachusetts, California. Described from three males and one female. Californian examples have the fore wings more or less suffused with the reddish.

Teras fishiana n. sp.—Head, thorax and fore wings, light rust-red, the markings more or less plainly indicated by dark brown and gray scales. Palpi rust-red above and externally, lighter within and beneath. Head and antennae above, rusty brown, inclining to reddish gray in one example. Thorax reddish brown, lighter behind with a dark brown transverse stripe behind the collar extending to the patagiae. Fore wings light gray, the basal portion as far as the oblique band sprinkled more or less with dark brown scales, and suffused with reddish brown on the basal part of the costa. The basal side of the oblique band begins at the basal third of the costa, and extends obliquely across the wing slightly curving outwardly on the cell, but returning to the general direction again at the median vein, and terminates near the outer third of the internal margin. This line is free from the dark brown atoms, and thus appears lighter, but is followed by the darker shade of the terminal portion of the wing which is reddish brown sprinkled with dark brown atoms, the shade being darkest on the cell and costa, lighter towards the anal angle. A second pale line is faintly shown extending from near the middle of the costa obliquely out to the outer and upper angle of the cell where it curves down slightly ending at the anal angle. Fringes concolorous with the adjacent parts of the wing, but without the dark brown atoms. Under side silky gray, straw yellow on the costa and outer margin, irrorated with gray. Fringes lighter, with a reddish tinge towards the apex. Hind wings light silky gray, with darker scattered and remote irrorations; beneath lighter, the irrorations more distinct. Fringes above and beneath lighter.

Abdomen concolorous with the hind wings; anal brush, straw yellow. Legs gray with the tarsi annulated with straw yellow. Expanse 26 mm.

Habitat.—Orono, Me. Described from three males, taken Sept. 17, 1879.

I take pleasure in dedicating this species to my friend Mr. Charles Fish, Principal of the High School in Brunswick, Me., who has collected many beautiful Tortricids for me.

Lophoderus quadrifasciana n. sp.—Head, thorax and fore wings, above and beneath lemon-yellow, uniformly reticulated with orange-red. Fore wings each with two narrow oblique bands, the first starting from the basal fourth of the costa, ends at the middle of the inner margin; the second starting from the middle of the costa, ends at the anal angle. These bands enlarge a little on the internal border. Hind wings sordid yellowish. Fringes and under side lighter. The males differ in having the oblique bands of the fore wings dark purplish-brown, the portion of the wing beyond the outer band more or less suffused with purplish-brown, the hind wings above fuscous, and all the wings a little lighter beneath. Expanse 16—17 mm.

Habitat.—Maine, New Hampshire, Massachusetts, New York, Illinois.

Lophoderus mariana n. sp.—Head, thorax and basal portion of fore wings ochre white. Palpi externally and antennæ, fuscous. Thoracic tuft, yellowish and fuscous at the tip. Fore wings with the basal patch dull yellowish-white, scarcely distinguishable from the ground color beyond, and sprinkled more or less with dark brown scales. Oblique band, starting from the middle of the costa, extends across the wing to the inner margin near the anal angle. The first third of this band is dark brown while the rest is dull ochery yellow sprinkled with dark brown scales. The band is somewhat constricted where it terminates on the inner margin and also between the brown and yellow parts. The outer part of the wing is chalky white with the veins and a spot above the anal angle faintly indicated by darker scales, while a dark brown lengthened spot, but slightly separated from the oblique band, and extended nearly to the apex, rests on the costa. Fringes yellowish with brown scales at the base. Under side fuscous, with lighter and sprinkled edges. Hind wings pale gray; fringes lighter with a pale gray line near the base. Under side whitish with gray sprinkles and fine spots along the costa and apically. Abdomen pale fuscous above, lighter beneath; anal brush straw-yellow, as are also the legs. Fore and middle legs touched with fuscous; tarsi annulated with brown. Expanse 19—21 mm.

Habitat.—Orono, Me., Massachusetts, New York.

Food.—Oak? Described from four males.

In naming this beautiful species for my wife, Maria E. Fernald, I wish to say that I am indebted to her more than to all others for assistance and encouragement in my studies.

Lophoderus coloradana n. sp.—Head, thorax and basal portion of the fore wings, bright fulvous; oblique band darker, beyond which the wings are light yellow with a dark brown costal spot. Head, palpi and thorax bright fulvous; thoracic tuft darker red. Anterior wings at the base, concolorous with the head and thorax; basal patch scarcely distinguishable from the ground color beyond, but

faintly indicated by several oblique reddish lines which cross this portion of the wing and end in small brown spots on the hinder border of the wing; the band passing obliquely across the middle of the wing is dark red inclining to brown, the color of the basal portion extends into this band forming an angle on the subcostal vein; beyond the oblique band the wing is white, washed with reddish, and has a dark brown spot on the costa between the band and the apex. The ground color is lightest before this spot. Fringe concolorous with the outer part of the wing. Under side lighter but faintly reflecting the marks on the costa above. Posterior wings whitish tinged with grayish towards the anal angle, beneath of the same color but lacking the grayish tinge; fringe above and beneath lighter. Abdomen and thorax beneath, as well as the legs, light straw-yellow; fore tarsi annulated with light fuscous. Expanse 26 mm.

Habitat.—Colorado. Described from one male and one female.

Tortrix alleniana n. sp.—Head, thorax and fore wings varying in different specimens from reddish to golden-yellow, with irregular cross lines on the fore wings of a darker reddish color. The beginning of an oblique stripe on the middle of the costa and a subapical patch of a dark reddish color, occurs in some specimens. Hind wings dull ochry white, somewhat sordid towards the anal angle. All the fringes above and beneath concolorous with the wings. Under side of hind wings straw-yellow, darker apically. Under side of fore wings light fuscous, yellowish around the edges. Abdomen above and beneath, and the middle and hind legs concolorous with the hind wings. Fore legs in front, concolorous with the head. Females differ in having narrower fore wings with more pointed apices, and they are of a darker red color, while the hind wings are grayish tipped with yellowish on the apex. Expanse 23—25 mm.

Habitat.—Orono, Me. Described from three males and three females taken in July.

I have named this species in honor of Mr. Anson Allen of Orono, who has greatly aided me by his extensive collecting and critical observations.

Tortrix semicircularis n. sp.—Palpi, head, thorax and fore wings, straw-yellow, more or less mottled and reticulated with light chestnut-brown. A quadrate spot of chestnut-brown rests on the middle of the costa of the fore wings, sending off a line to the humeral angle, and one to the anal angle. An oblique band starts from the outer fourth of the costa, and extends across to the middle of the hind margin, but is suddenly constricted to a narrow line below the cell. The arrangement of these marks together with the reticulations of the wing is such that two semicircular spots of the ground color of the wing are left, one resting on the middle and the other on the basal third of the costa. There are also two circular spots more or less clearly defined, one on the middle and the other at the end of the cell. Fringe white with the apical portion and basal line chestnut-brown. Beneath washed with light chestnut, scarcely showing the markings of the upper side. Hind wings white above and beneath, washed with a faint shade of yellow apically on the upper side. Abdomen above and beneath and also the legs, light straw-yellow, fore legs marked with chestnut. Expanse 23 mm.

Habitat.—Colorado. Described from four males and three females.

One specimen has the fore wings entirely washed with chestnut but not sufficient to obliterate the usual markings.

Enectra flavibasana n. sp.—Head, palpi and thorax, dark purplish-brown. Fore wings, with the costa much arched, reddish-brown; central part of the base bright golden-yellow, with an oblique indistinct brown shade bordering it on the outside, and extending from the humeral angle up to near the middle of the costa. The apical portion of the wing is dark brown and is limited by a line from the anal angle up to the costa at the outer fourth. Numerous cross streaks show in an oblique light by their metallic reflections. Fringes lighter. Hind wings above and all the wings beneath, fuscous. The markings of the upper side of the fore wings show more or less beneath. Expanse 19–20 mm.

Habitat.—Texas, Illinois. Described from two females.

Cenopsis groteana n. sp.—Head, palpi, thorax and fore wings, bright sulphur-yellow. Outer side of the palpi, sides of the thorax extending on to the costa of the fore wings, a band from the basal third of the costa extending down to the fold joined with one from the outer third of the costa leaving a semicircular patch on the middle of the costa, of the ground color of the wing, a speck on the costa towards the apex, one on the fold near the base and a series of atoms from the outer part of the outer band across the wing curving inward at a uniform distance from the outer margin, bright coffee-brown. Fringes sulphur-yellow. Abdomen and hind wings above and beneath pure silky white. Under side of the fore wings light straw color, plainly showing the markings of the upper side. All the legs white, the fore ones touched with brown in front. Expanse 20 mm.

Habitat.—Ohio. Described from one female.

I take pleasure in dedicating this beautiful species to my old friend Prof. A. R. Grote, who has rendered me so much valuable assistance in my entomological studies.

Cenopsis quercana n. sp.—Head, palpi and antennæ, reddish-gray in the males, concolorous with the thorax and fore wings in the females. Thorax and fore wings dull rust-red. Basal patch, median and subapical bands lighter in the males and inclining to yellowish on the costa with strong greenish reflections when seen in an oblique light, showing most strongly in the females. Fringes lighter. Hind wings and abdomen above, light fuscous, lighter beneath. Under side of fore wings dull reddish, fuscous on the cell, the lighter markings of the upper side scarcely showing. Expanse ♂ 14 mm.—♀ 16 mm.

Habitat.—New York, Missouri, Texas.

Food.—Leaves of Oak, (Comstock); and cultivated Cherry, (Miss Murtfeldt). Described from four males and four females.

Phoxopteris goodelliana n. sp.—Head, palpi, thorax and fore wings, pale ashy white. Thorax touched with brown; a bright coffee-brown band extends through the fore wing from the middle of the base to the apex, occupying nearly a third of the breadth of the wing, in its widest part, and is twice indented on the posterior edge, once near the middle, and again more deeply, near the outer end, by the ocelloid patch. Through the centre of the band extends a somewhat irregular stripe of dark brown. Costa faintly marked with oblique stripes of brown which are more prominent towards the apex, leaving geminate streaks of the whitish ground color. Hind margin with about eight brown dots, and faint sprinkles of the same color over the ground color. Fringe white at the base and beneath the apex, where it is cut by a brown streak darker beyond. Hind wings

and abdomen above pale, silken, ashy; lighter beneath. Under side of fore wings pale ashy, with the fringe nearly white, and the costa lighter reflecting the oblique marks of the upper side. Expanse 28 mm.

Habitat.—Me., N. H., Mass. Described from two males and three females.

Penthina costimaculana n. sp.—Head dark ashy, palpi lighter beneath. Thorax dark brown with lighter cross stripes which cover the greater part of the patagiæ. Fore wings pale pink, with the basal half much mottled with dark brown and black. Oblique band from middle of costa to hinder margin before the anal angle, dark brown with a broad black dash crossing it on the cell, and several below. The apical portion of the wing is dark brown with three pink flecks on the costa, from the middle one of which an oblique stripe of metallic-blue extends down to a pink fleck near the middle of the outer border, above which are two more pink flecks in a line on the border. The pink interspace between the oblique band and the brown apical portion of the wing is filled in below the end of the cell with black-brown and metallic-blue scales, so as to leave but little of the pink on this part of the wing, but the pink on the costal portion of the wing forms a very conspicuous spot by means of which this species may be distinguished. Fringes brown with two spots of pink below the apex, and one at the anal angle; basal line black. Hind wings and abdomen above dark brown; fringes and abdominal brush light yellow. Under side of all the wings of a lighter shade than the upper side of hind wings; fore wings show a series of yellow spots along the costa and at the anal angle. Expanse 13—14 mm.

Habitat.—Maine, Massachusetts. Described from two males.

Penthina interruptolineana n. sp.—Head and palpi dark ashy, lighter above. Thorax light ashy, with a stout dark red tuft, and touched with purplish. Fore wings with the basal part of the costa as far as the median oblique band, and nearly down to the fold, very light purplish-ash color; below this the wing is fulvous. The oblique band is fulvous, darker on the costa with a wavy basal edge, and scarcely separable below. The outer edge of this band has three teeth, one extends outward on the upper part of the cell, the second on the lower, and the third on the hinder border. Through the middle tooth extends an interrupted black line to the middle of the outer border. The outer part of the wing is purplish, with two more or less distinct oblique fulvous bands. Fringe purple inclining to ashy at the anal angle. Hind wings and abdomen above and beneath silky gray. Under side of fore wings darker. Expanse 14—15 mm.

Habitat.—N. H., Mass. Described from one male and two females.

Sericoris albiciliata n. sp.—Head covered with black and yellowish scales mixed; palpi whitish, touched on the outside with blackish, last joint blackish. Thorax black and yellowish mixed with some indications of cross bars; fore wings black with yellow scales intermingled, and also metallic-blue in irregular broken oblique lines. The yellow is so arranged as to show two geminate spots on the basal third of the costa, with metallic stripes starting from between each of these. On the apical portion of the costa there are three yellow geminate spots equidistant, starting into oblique stripes which are soon lost. From the first and third of these yellow spots oblique metallic stripes extend more or less regularly, one to the anal angle, the other to the middle of the outer border. Fringes above and beneath straw-yellow, broken by dark metallic above the anal

angle. Hind wings dark gray with white fringes, and a large white spot on the middle of the costa extending down to the median vein. Under side lighter than above, the white costal spot more diffuse, and not reaching the costa. Abdomen above silky gray, beneath yellowish. Expanse 14 mm.

Habitat.—Orono, Me. Described from three males and one female.

Eccopsis olivaceana n. sp.—Head sordid yellow; palpi light yellow, last joint fuscous. Thorax olivaceous with cross stripes of brown. Fore wings sordid pale yellow overlaid more or less with silvery scales. Basal patch, anal patch, central and subapical bands brown, largely overlaid with olivaceous scales. The central band has two teeth on its outer side, one on the upper side of the cell, the other on the lower. The costa is marked by two geminate, sordid white streaks between the basal patch and central band, and by four similar ones towards the apex, which extend into oblique lines. Fringe white, with a fuscous basal line, and marked with fuscous at the apex, and where the subapical band joins the outer margin. Hind wings and abdomen above, and all the wings beneath, fuscous. Expanse 12–14 mm.

Habitat.—Mass., Penn. Described from two males and four females.

Eccopsis atrodentana n. sp.—Head dull ochrey yellow, touched with brownish on the vertex; palpi lighter, with the last joint, and two spots on the outside of the second, dark brown. Thorax greenish-brown, touched with dull yellowish somewhat in cross bands. Fore wings whitish between the usual markings, overlaid with silvery scales which give pale bluish reflections. The usual markings are olive-green, more or less broken or overlaid with dark brown or black. The basal patch is outwardly angulated on the fold, and is more or less broken by the ground color of the wing, especially towards the costa. The central oblique band has two teeth on its outside, one on the upper side of the cell, the other on the lower, which are dark brown or black, especially the lower one. A triangular spot rests upon the hinder margin near the anal angle, and is sometimes connected with the lower portion of the oblique band which in some specimens is divided across below the lower tooth. The usual subapical band and costal geminations are present. Fringe smoky, broken somewhat with pale, sordid yellowish. Beneath light fuscous, showing the costal geminations in yellowish. Hind wings and abdomen above pale fuscous; fringe lighter, beneath paler than above. Under side of the body, and also the legs, pale ochreous; tarsi annulated with fuscous. Genicular brush smoky. Expanse 17–19 mm.

Habitat.—Ont., Ohio, Tex. Described from six males and one female.

Eccopsis corylaea n. sp.—Head, thorax and fore wings whitish, mixed with dark brown, and pale, greenish white scales. Palpi whitish, with the last joint, and the end of the second, dark fuscous. The usual markings of the fore wings are nearly obliterated, but there is a darker, indistinct band extending from the humeral angle obliquely up and out to the costa a little beyond the middle, and bordered below by a lighter shade. The subapical band only is clearly visible as well as the costal geminations, and a small apical spot of dark brown. Fringe purple, mixed to some extent with fuscous. Beneath pale fuscous reflecting from the costal geminations. Hind wings fuscous, paler beneath. Expanse 14–15 mm.

Habitat.—White Mts., N. H. Described from two males and two females.

Eccopsis malana n. sp.—Head white in front and beneath, dark brown or nearly black above; palpi pure white, with the last joint and two small spots on the outside of the second one, fuscous. Thorax nearly black, with whitish cross bands. Fore wings white with silvery reflections. Basal patch black, represented on the costal half by a few scattered black scales, but on the inner margin, by a prominent black patch which has a re-entrant angle of the ground color on vein one, and an outward prolongation or tooth above the fold. The beginning of the oblique central band on the costa, and a small black spot at the end of the cell are all that remain of the band. The subapical band and costal geminations are present, all more or less overlaid with light scales. Fringes smoky with a black basal line. Hind wings and abdomen above fuscous; under side lighter. Legs whitish. Tarsi and tibiæ annulated with dark brown. Expanse 15 mm.

Habitat.—New York, Illinois. Bred from larvæ on Apple leaves by Mr. Coquillett, in Illinois. Described from three males.

Semasia ferruginana n. sp.—Head ashy brown above, pure ashy in front; palpi whitish, with the last joint, outer end of second, and a dash on the outside of the same, ashy. Thorax and fore wings ferruginous brown. This color on the fore wings is in narrow longitudinal stripes with pale yellowish between, but towards the outer end of the wings, the ferruginous gradually suffuses the whole surface. A few indistinct metallic streaks occur on the apical portion of the costa, and the ocelloid patch is more or less completely surrounded by metallic scales, and shaded above and below by dark brown. Hind wings and abdomen above dark reddish-brown, under side of the hind wings lighter. All the fringes lighter than the adjacent part of the wings. Expanse ♂ 16—♀ 19 mm.

Habitat.—Me., N. H., Mass. Described from one male and two females.

Semasia clavana n. sp.—Head and palpi white, slightly sordid; thorax very light gray; fore wings above light gray, with a white stripe from the base through the middle to the end of the cell; a white ocelloid patch with a few brown flecks on its sides; the outer third of the costa white, with several oblique, irregular streaks, and the basal part of the costa marked with brown flecks; a dark brown clavate stripe on the under side of the central white stripe extends to the middle of the wing. Fringes white, sprinkled with gray. Hind wings and abdomen above, and all the wings beneath, gray; fringes lighter. Legs white; tarsi annulated with gray. Expanse 14 mm.

Habitat.—Truro, Mass., Aug. 8. Described from two males.

A Synopsis of the MORDELLIDÆ of the United States.

BY JOHN B. SMITH.

The following synopsis of the genera and species is based principally upon Dr. LeConte's synopsis in Pr. Ac. N. Sc. Phila. xiv, pp. 43-51. The arrangement there proposed has been retained, and besides adding subsequently described and several new species little change has been found necessary; a few of the species there described are referred as synonyms or varieties, but otherwise matters have been left pretty much as they were. In preparing the synopsis I have been aided by Drs. LeConte and Horn of Phila., and by Prof. Schupp of Brooklyn. Dr. Horn granted me the rare favor of allowing me to take his entire collection of this family for the purposes of study and description, while Dr. LeConte placed his types and all his undetermined material at my disposal.

The insects comprising this family are distinguished by the usually small size, depressed or transversely flattened form, enlarged coxæ and femora, the transverse striation in the ANASPINI, and the anal style in the MORDELLINI. They are usually clothed with fine sericeous pubescence and often handsomely variegated.

A few words may be said of the structural characters used in separating genera and species in this family. One of the most important of these characters are the ridges on the tibia and tarsi in the *Mordellini*; these ridges vary in distinctness, direction, length and number; and by them species which superficial examination would pronounce identical, can be readily distinguished. As a means of separating species this character is excellent, as a generic distinction its value is doubtful; and yet *Glipodes* and *Mordellistena* are separated principally by the number and direction of these ridges; principally I say, but not entirely, else I should have discarded *Glipodes*; what led me to retain the genus is the peculiarity of the maxillary palpi of the ♂ of *G. sericans*. The ♂ of *helva* has either not yet been found or the peculiarity does not exist in it; should the latter prove the case, then *Glipodes* must fall; until the ♂ of *helva* is discovered it would be rather a hasty course to discard the genus, unless meanwhile some other species are discovered which will bridge the gap. This I consider more than probable when the southern and western portions of the United States have been thoroughly collected over. It is a matter of regret that common as are the species on flowers, larger collections of this family are not made, and yet a fact it is, that in

most collections this family is represented only by a few of the more common species—often not at all. The genus *Mordellistena* is divided into groups according to the number of tibial ridges, and the groups are subdivided according to the tarsal ridges, until finally color separates the species of the subdivisions where there is more than one species therein.

In a very few instances there exist besides the set of well marked ridges, imperfect or rudimentary ridges, and these rudiments in at least one case create doubt; *M. aspersa* and *M. morula* are separated only by the number of ridges on the posterior tibia; *aspersa* having two, and *morula* three; but *aspersa* occasionally has a rudimentary ridge, and this rudiment became in one instance so strong that I was really in doubt whether the insect was *morula* or *aspersa*; among the undoubted *morula* form I could find none which seemed to present a weak third ridge, while I managed to fill the gap between my specimen and the true *aspersa* by intermediate forms and so placed it with the latter; the question now is whether diligent collecting in the home of *morula* would not show that it and *aspersa* intergrade, and what effect that would have on the large proportion of species based on ridges alone! Until I can get a much greater amount of material this question cannot be absolutely determined, and meanwhile the genera and species may be distinguished as follows:

MORDELLIDÆ.

A.—*Abdomen without anal prolongation; claws not cleft; hind femora moderate.*

ANASPINI.

Anterior and middle tarsi with fourth joint equal to third.

Antennæ long; scarcely thickened externally.....**Diclidia.**

Antennæ shorter; last five joints broader.....**Pentaria.**

Anterior and middle tarsi with fourth joint very small.....**Anaspis.**

B.—*Abdomen with the last segment prolonged, conical, claws cleft and pectinate, hind femora very large.....*MORDELLINI.

Hind tibia with a small subapical ridge; eyes finely granulated.

Scutel usually emarginate behind; anal style short, obtuse.....**Tomoxia.**

Scutel triangular; anal style long and slender.....**Mordella.**

Hind tibia and tarsi with oblique ridges on the outer face; eyes coarsely granulated.

Hind tibia without subapical ridge.....**Glipodes.**

Hind tibia with subapical ridge distinct.....**Mordellistena.**

ANASPINI.

Hind femora not, or but slightly dilated; tibia slender, claws not cleft nor serrate; last dorsal segment not prolonged; sixth ventral segment not visible in *Anaspis*; visible in *Pentaria* and *Diclidia*; eyes oval, narrowly emarginate; antennæ inserted very near the eyes, not serrate. Body transversely strigate, pubescent. Species found on plants.

DICLIDIA Lec.

Scutellum rounded, triangular; last dorsal segment not prolonged, sixth ventral visible; hind tibia slender, without ridges; fourth joint of anterior and middle tarsi emarginate, not smaller than the third; claws dilated at base; hind femora small; mesosternum compressed, much elevated; eyes coarsely granulated with a small emargination; antennæ long and slender, slightly thickened externally, not serrate; third and fourth joints each equal to the first and second together; fifth and sixth a little shorter.

In the ♂ the fifth ventral segment is broadly emarginate, and from the tip of the abdomen proceed two long triangular appendages truncate at apex. The sculpture consists of fine transverse lines.

Differs from *Pentaria* by the form of the antennæ, (see Pl. I, fig. 1, *Diclidia*, and fig. 6, *Pentaria*), by the form of the mesosternum, and by the external sexual characters; the maxillary palpi, posterior tibia and tarsi, and anterior tarsi are figured Pl. I, figs. 1—4 inclusive.

The only species known is

D. lætula Lec. (*Anaspis*), Pr. Ac. 1858, p. 76. (Pl. I, fig. 5).—Yellow; scutellar cloud, and two posterior bands of elytra black; venter fuscous. 3 mm. Texas, Ohio.

Seems to be not uncommon in Texas, and will probably be found elsewhere in the southwest. The specimens vary in the distinctness of the black markings, which are sometimes barely discernable; the width of the bands varies somewhat but the position and length are always the same.

PENTARIA Muls.

Like *Diclidia*, except that the mesosternum is not compressed and elevated; antennæ with the joints 4—6 short, 7—11 thickened, not serrate; last joint of the maxillary palpi triangular, acute at tip.

The species are small, narrow, and finely pubescent; the sculpture as in *Diclidia* consists of very fine transverse lines. The species except *trifasciata* are western, and even that species is exceedingly rare; so rare that none of the eastern collectors with whom I am acquainted, nor I myself have taken it.

This as well as *Diclidia* seems to lead from some of the *Melandryidæ* to the true *Mordella*, being related to both, but most closely to *Anaspis*, and therefore properly placed in this family.

No external sexual characters have been hitherto discovered. The mouth parts and feet are shown Pl. I, figs. 6—9.

The species may be distinguished as follows :

- Body fuscous; head, thorax, feet and base of antennæ testaceous; elytra yellow, with base, tip and a median band black. 3—4 mm.; Middle and Western States.....1. **trifasciata**.
 Body slender; pubescence fine; entirely fuscous or piceous; legs, mouth parts and base of antennæ paler. 2.5—3.5 mm.; Texas and New Mexico....2. **fuscula**.
 Body narrow; yellow; with a broad fuscous band on the elytra at the middle. 2.5 mm.; California.....3. **nubila**.
 Body robust; pubescence coarse, fuscous; head, venter, legs and antennæ pale orange. 1.5 mm.; California.....4. **hirsuta**.

1. **P. trifasciata** Mels. Pr. Ac. Nat. Sc. Phila. ii, 318, (*Anaspis*), Lec. Agassiz L. Sup. 231, (*Anthobates*). (Pl. I, fig. 10).

I have received specimens from Ohio. In Dr. Horn's collection are specimens from the District of Columbia, Dakota and Utah Territory. It does not appear to vary in any respect, and may be readily distinguished from the other species in this genus by the banded elytra.

2. **P. fuscula** Lec. Pr. Ac. Nat. Sc. Phila. xiv, 44. (Pl. I, fig. 12).

The few specimens that I have seen agree in every respect with the description; there is a slight variation in size, and some in brightness of color, but none otherwise, that I could discover. The figure shows the appearance of the transverse striation.

3. **P. nubila** Lec. (*Anaspis*), Pr. Ac. 1859, p. 78. (Pl. I, fig. 11).

Nearly allied to *trifasciata* in markings, but much more slender in form. The only specimens I have seen are from California, and they present no notable variation.

4. **P. hirsuta** sp. nov. (Pl. I, fig. 13).

Readily distinguished from the other species in this genus by the exceedingly small size, the robust form, and the long and unusually coarse pubescence. It is most nearly allied to *fuscula*. One specimen only; Coll. Dr. Horn.

ANASPIS Geoff.

Scutel rounded, triangular; last dorsal segment not prolonged, sixth ventral not visible; hind tibia slightly thickened, without ridges; fourth joint of anterior and middle tarsi very small, received upon the third which is slightly lobed; claws dilated at base; hind femora flat, moderate in size; mesosternum not compressed, finely carinate; eyes coarsely granulated, with a small emargination; antennæ slightly thickened externally, not serrate; last joint of maxillary palpi rounded internally, pointed at tip; transverse strigation very fine.

In the ♂, two long slender appendages are seen proceeding from between the fourth and fifth ventral segments; the fourth and fifth and sometimes the others are longitudinally excavated.

The species are usually found on flowers; plentifully enough where they occur, but they seem to be local; in two instances I have found *A. rufa* under the bark of a decaying tree, in considerable numbers.

Dr. LeConte states that "in the ♂ two long slender appendages are seen proceeding from between the fourth and fifth ventral segments," and I have followed him in the diagnosis of the genus. I must admit however that I have been entirely unable to discover these processes, although I have examined hundreds of specimens of *A. rufa* to this end alone. ♂'s I found with the excavated ventral segments, but never the processes. The mouth parts and feet are shown Pl. I, figs. 14—18.

A.—Body entirely black.

- Thorax twice as wide as long; base of antennæ, palpi and front legs testaceous; ♂ with the ventral segments strongly channelled. 3—4 mm.; Lake Superior, Hudson's Bay Territory, Vermont, New York.....1. **nigra**.
 Thorax one-half wider than long; mouth and base of antennæ very dark testaceous. 3—4 mm.; California and Colorado.....2. **atra**.
 Thorax scarcely wider than long, base of antennæ and feet dark testaceous; elytra with a rufous humeral spot. 3 mm.; California.....3. **militaris**.

B.—Head, thorax and body black, elytra brownish-yellow.

- Thorax scarcely wider than long. 4 mm.; California and Sitka...4. **sericea**.
 Thorax one-half wider than long. 3—4 mm.; New York, Georgia, Minnesota.
 5. **flavipennis**.

C.—Thorax and elytra brownish-yellow.

- Thorax one-half wider than long, head yellow or more or less piceous; antennæ and abdomen yellow or fuscous. 3—4 mm.; Southern, Middle and Western States.....6. **rufa**.
 Thorax nearly twice as wide as long; entirely uniform yellowish-brown; more robust than the preceding. 1 mm.; Col., Des. & Cal.....7. **pustio**.

D.—Thorax yellow; elytra and body black.

- Thorax a little wider than long; anterior and middle thighs partly testaceous; transverse lines of elytra more distinct than usual. 3 mm.; California.
 8. **collaris**.

1. **A. nigra** Hald. (*Hallomenus*), Journ. Ac. Nat. Sc. Phila. New Series, i, 99; Lec. Pr. Ac. Nat. Sc. Phila. xiv, 45, (*Anaspis*).

Very rare apparently; only single specimens coming from various sections. One specimen from the vicinity of Ithaca, N. Y., and one from Vermont are all that I have seen. The insect is readily recognized by the robust form.

2. **A. atra** Lec. Ann. Lyceum Nat. Hist. N. Y. v, 157. (Pl. I, fig. 20).

More common than the former and readily distinguished from it by the more elongate and slender form. I have received it from Colorado, (Prof. Snow).

3. **A. militaris** sp. nov. (Pl. I, fig. 21).

Of the same form as the preceding, but at once distinguishable

from it by the humeral spot of the elytra. One specimen only; Coll. Dr. Horn.

4. *A. sericea* Mann. Bull. Mosc. 1843, 288; *luteipennis* Lec. Ann. Lyceum Nat. Hist. N. Y. v, 157.

A specimen of this species sent me by Dr. LeConte, does not agree with the description of the species, and appears to be a specimen of *A. rufa*. I have seen no specimen to agree with the description.

5. *A. flavipennis* Hald. Journ. Ac. Nat. Sc. Phila. New Series, i, 100.

Common in northern N. Y. In the Adirondack Mts., I found it in company with *A. rufa*, though by no means as common. The difference between this and the foregoing is very slight indeed, and a large series of *sericea* may prove its identity with this species.

6. *A. rufa* Say, Journ. Ac. Nat. Sc. Phila. v, 244, (*Mordella*); *pallioscens* Mann. Bull. Mosc. 1843, 288; *ventralis* Mels. Pr. Ac. Nat. Sc. Phila. ii, 312; *filiformis* Lec. Agassiz L. Sup. p. 231; *nigriceps* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 45.

Rather a variable species, as appears from the synonymy; *nigriceps* Lec. differs only very slightly in the color of the head from the typical *rufa*, and is at the most a local variation. I have collected many hundreds of this species, and have them from a pale yellow to a dark fuscous, although I have none with the head deep black. Dr. LeConte's type however, which he kindly sent me, does not quite agree with his remark "head black," it is more nearly piceous.

7. *A. pumilo* Lec. Pr. Ac. Nat. Sc. Phila. 1858, 76. (Pl. I, fig. 19).

The smallest of our species, presenting nothing noteworthy.

8. *A. collaris* Lec. Ann. Lyceum N. H. N. Y. v, 157.

Readily distinguished by the combination of colors of thorax and elytra. I have seen but very few specimens, and these presented nothing peculiar.

MORDELLINI.

Hind femora very large and flat; metasternum short; hind tibia dilated; claws cleft to the base, and strongly pectinated; last dorsal segment conical, prolonged, sixth ventral not visible; eyes oval, emarginate; antennæ more or less serrate, inserted in front of the eyes, under a frontal margin; body pubescent, very finely punctulate.

I have been unable to find any consistent external sexual characters.

TOMOXIA Costa.

A true *Mordellid* genus, and differing from the genus *Mordella* principally by the eyes, which do not reach the occiput. The parts are figured Pl. I, figs. 22—26.

The species of this genus are cuneiform, of a blackish color varied with irregularly diffused, grayish pubescence; scutel usually emarginate behind; anal style short, obtuse; hind tibiæ and tarsi without ridges except the short subapical one of the former; eyes finely granulated; antennæ serrate; last joint of maxillary palpi more or less elongate, triangular and moderately thick, with the extremity hollowed out, sometimes broadly securiform.

Mordella hilaris Say, for which Dr. LeConte described the genus *Glipa*, belongs I believe to this genus. *Glipa* was based on the broadly securiform maxillary palpi and the non emarginate scutellum; but *T. lineella* has the palpi nearly as broad, and the latter characteristic is so minute, and the emargination in *Tomozia* (*sensu* LeConte), is so small that I cannot persuade myself to consider it as distinct.

A.—*Scutel emarginate behind.*

I.—*Last joint of maxillary palpi long, triangular; base of thorax rounded at middle.*

Elytra with broad bands not extending behind the middle, a posterior fascia composed of spots, and apical margin cinereous; a large rhomboidal dark spot each side near base. 10—13 mm.; Middle and Western States.

1. ***bidentata.***

II.—*Last joint of maxillary palpi securiform; base of thorax sub-emarginate at middle.*

Elytra with narrow lines, and subapical fascia cinereous; dark markings all narrow. 5—7 mm.; Middle and Western States.....2. ***lineella.***

Elytra with a broad basal fascia, including each side a round black spot; transverse spot behind the middle, apex, suture and margin cinereous. 5 mm.; Western States.....3. ***inclusa.***

B.—*Scutel not emarginate behind.*

Maxillary palpi broadly securiform; black varied with cinereous hair; elytra with a narrow, sub-basal band oblique inward, and a broad one oblique outwards, brown pubescent; connected along the suture and margin with cinereous pubescence. 9—13 mm.; Middle and Western States.....4. ***hilaris.***

1. ***T. bidentata*** Say, Journ. Ac. Nat. Sc. Phila. iii, 277, (*Mordella*). (Pl. I, fig. 27).

Our most common species; found so far as I know only on dead trees. I have never caught it myself, but Prof. Schaupp informs me that he has seen it in large numbers in northern New York, in such situations. The specimens vary somewhat in the distinctness of their markings, and few indeed present them so sharply outlined as they are in the figure.

2. ***T. lineella*** Lec. Pr. Ac. N. Sc. Phil. xiv, 45. (Pl. I, fig. 28, palpi fig. 31).

Much more rare than the preceding and differing from it in the form of the maxillary palpi, in which it agrees with *Glipa*, and in the

markings. I have specimens from Ohio, but have not heard of its being found beyond the Mississippi.

3. **T. inclusa** Lec. Pr. Ac. Nat. Sc. Phila. xiv, 45. (Pl. I, fig. 29).

I have seen but a single specimen (Dr. LeConte's type), that agrees in all respects with the description, and from it the figure here given was made.

4. **T. hilaris** Say, Bost. Journ. Nat. Hist. i, 190, (*Mordella*); *hieroglyphica* Schwarz, Pr. Am. Philos. Soc. xvii, 372, (*Glipa*). (Pl. I, fig. 30, palpi fig. 32).

This species varies considerably in size, and somewhat in color of markings; a variety which has the space between the two posterior fasciæ brownish pubescent furnished the type of Mr. Schwarz's *hieroglyphica*. It does not appear to be common.

MORDELLA Linn.

Species cuneiform; scutel triangular; anal style generally long and slender; hind tibia and tarsi without ridges except the short subapical one of the former; eyes finely granulated, antennæ more or less serrate; last joint of maxillary palpi long, triangular and very obliquely truncate, except in the ♂ of *M. oculata* where it is broad and securiform with the under surface clothed with erect hairs; moderately thick and hollowed out at the extremity.

The species of this genus are usually rather rare; two or three species are common enough in the middle states, but the majority of them are found in single specimens now and again. The species do not differ in any important point from the foregoing or the two following genera, and the mouth parts are well shown Pl. I, figs. 34, 35.

The species are found on flowers, rarely on old dead trees or beneath loose bark.

I.—*Anal style short and truncate.*

Piceous, covered with sericeous brown hair; elytra with a double cinereous spot each side, behind the middle. 7—8 mm.; Kansas.....1. **4-punctata.**

Dull black; thorax, pygidium and elytra sprinkled with small rounded spots of silvery pubescence; elytra with a narrow interrupted band behind the middle, composed of confluent spots. 3—4 mm.; Northern States.

2. **borealis.**

II.—*Anal style long and slender.*

♂ *Last joint of maxillary palpi scalene, triangular.*

A.—Pubescence above dark; without conspicuous markings.

Deep black, finely pubescent; base of thorax broadly rounded at middle. 5—7 mm.; Middle, Southern and Western States.....3. **melana.**

Black; pubescence above dull or brownish, sometimes with cinereous hair intermixed; beneath black; margin of ventral segments more or less cinereous. 3—6 mm.; United States and Canada.....4. **scutellaris.**

B.—Pubescence above black, with orange or grayish colored spots.

Occipital margin, base of thorax with two projections on each side, an irregular spot surrounding the humerus, and a lunate spot near the tip of the elytra clothed with fine orange pubescence. 7—8 mm.; Fla...5. **inflammata**.

Head grayish pubescent; thorax with reticulated lines of grayish yellow hair; elytra with a curved basal spot, a narrow oblique one behind the humerus, a rounded sub-sutural one at the middle and a reniform spot one-fourth from the tip more or less fulvous pubescent; beneath spotted with cinereous pubescence. 6—7 mm.; Mid., South. & West. Sts...6. **S-punctata**.

C.—Pubescence above black, varied with cinereous markings.

Antennæ and front legs black.

Thorax cinereous, pubescent, with large black spots.

Elytra with small cinereous markings more or less confluent; beneath, varied with cinereous and black. 3—5 mm.; United States...7. **marginata**.

Elytra with a narrow sutural line, margin, and an oblique vitta from the humerus to beyond the middle, cinereous. 4 mm.; Maryland, Michigan, Virginia, Illinois.....8. **lunulata**.

Antennæ and front legs testaceous.

Thorax and elytra speckled with small rounded unequal cinereous spots; an interrupted band behind the middle and tip of the elytra cinereous; beneath, varied with cinereous and black. 4 mm.; New York, Michigan and Ohio.....9. **serval**.

Unusually narrow; elytra with two cinereous transverse bands, suddenly angulate near the suture. 3 mm.; Florida.....10. **angulata**.

♂♂ *Last joint of maxillary palpi broad, securiform.*

Elytra with a large basal band, including each side a round black spot, and an interrupted band behind the middle cinereous; beneath varied with cinereous; (maxillary palpi of ♂ much larger than in ♀ and excavated at tip). 5.—6.5 mm.; Mid., South. & West. States.....11. **oculata**.

Elytra with an oblique band running from the humerus nearly to the suture, a transverse spot behind the middle, and entire suture cinereous; beneath varied with cinereous. 5 mm.; Kansas, Texas.....12. **insulata**.

♂♂♂ *Last joint of maxillary palpi almost an isosceles triangle.*

Body entirely black; thorax cinereous pubescent with large black spots.

Elytra with a broad basal band, including on each side two spots, and two oblique undulated bands of cinereous hair. 3--4 mm.; Middle, Southern and Western States.....13. **triloba**.

Elytra with a broad basal band, including on each side a large black spot, a band just behind the middle, and tip cinereous. 3 mm.; Middle and Southern States.....14. **undulata**.

Elytra with apex and a broad transverse band before the middle cinereous; antennæ and front legs fusco-testaceous; anal style unusually long. 2.5 mm.; Texas.....15. **fuscifera**.

Head, thorax, and elytra partly yellow.

Black; antennæ, feet, middle of pectus, and occiput yellow; thorax yellow with a large triangular apical spot reaching nearly to the base; elytra with an oblique humeral vitta connected with a band before the middle; another behind the middle, apex, and margin and suture behind the second band, yellow. 2—3 mm.; Mid. & South. States.....16. **discoidea**.

1. **M. quadri-punctata** Say, Journ. Ac. Nat. Sc. Phil. iii, 276, (*Anaspis*).

One of the rare species; I believe I have seen only a single specimen, and from that is made the figure Pl. I, fig. 36; fig. 37, palpus.

2. **M. borealis** Lec. Pr. Ac. Nat. Sc. Phila. xiv, 46. (Pl. I, fig. 39).

This figure is that of a rather distinctly marked variety. I have none which agree exactly with Dr. LeConte's description, but my specimens show such a variation amongst themselves, that I would not dare to describe this as new. The type form has the pubescent spots less regularly disposed, and has an obsolete transverse band behind the middle.

3. **M. melsena** Germ. sp. nov. p. 169. (Pl. I, fig. 33).

The largest of our northern species. During the summer of 1881 I collected it quite plentifully in the Adirondack Mts., N. Y., and thus had an opportunity to note its variations; these consist only in the size of the specimens, and somewhat in their proportionate stoutness; some of them appearing more slender, and showing a decided approach to the *scutellaris* form. The anal style is sometimes so short as to bring the insect more properly into the section with the foregoing species, but usually it is of moderate length. The form of the thorax will suffice to separate it from allied species. The genus *Sphalera* Lec. based on this species has been abandoned by its author as untenable, (Pr. Ac. Nat. Sc. Phila. xiv, p. 46).

4. **M. scutellaris** Fabr. Syst. El. ii, 123; *irrorata* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 46.

An exceedingly variable species, but somewhat local in its variations. What may be regarded as the typical form with white scutel and strongly marked cinereous pubescence of the ventral segments, I have seen only from Texas and Louisiana, further north the *irrorata* form begins to predominate, and in New York State it is almost the only form; the typical *scutellaris* form being rare, but the intergrades more common. In the Adirondack Mts. I took a very large number of specimens, and they varied all the way from the typical southern form to the northern form with dull black pubescence with some whitish hair intermixed and dark under side. If varieties are to be recognized, *irrorata* Lec. will have a good claim to rank as such.

5. **M. inflammata** Lec. Pr. Ac. Nat. Sc. Phila. 46. (Pl. I, fig. 40).

Very readily recognized by the bright pubescent spots, arranged as shown in the figure. It appears to be found only in Florida. At least I have never heard of its being taken elsewhere.

6. **M. octo-punctata** Fabr. Syst. El. ii, 123. (Pl. I, fig. 41).

The pubescent spots in this species are much more yellow than orange,

although single specimens tend to that shade. The markings are usually very sharply outlined, and variation is only in size.

7. *M. marginata* Mels. Pr. Ac. Nat. Sc. Phila. ii, 312; *lineata* Mels. id. p. 313. (Pl. I, fig. 42).

These two species of Melsheimer I consider identical, the difference between the two expressed in words is, *marginata*—"elytra with small cinereous markings, more or less confluent;" *lineata*—"markings confluent into narrow lines." I have specimens collected by myself that it would puzzle the most ingenious to place if the two are to be regarded as distinct. I have found it in the Orange, Catskill and Adirondack Mts.

8. *M. lunulata* Hel. Pr. Ac. Nat. Sc. Phila. xvii, 96; *obliqua* Lec. Pr. Am. Philos. Soc. xvii, 428. (Pl. II, fig. 1).

These two species are without doubt identical; Dr. LeConte's type of *obliqua* which I have seen has the cinereous vitta very distinctly marked, but of the other specimens in his collection not one equals his type in this respect, and one of them at least might serve for just such a description as Dr. Helmuth gives; the type of *lunulata* was probably a somewhat rubbed specimen. Very few specimens are known, and *all* are in Dr. LeConte's collection.

9. *M. serral* Say, Bost. Journ. Nat. Hist. i, 191. (Pl. II, fig. 2).

Rather rare, and no two specimens seem alike; one, found on Long Island, is dark fuscous, but agrees perfectly in the markings with entirely black specimens; the transverse elytral band varies somewhat, but never enough to raise any doubt as to the identity of the species.

10. *M. angulata* Lec. Pr. Am. Philos. Soc. xvii, 427. (Pl. II, fig. 3).

I have seen the type. It is comparatively narrower than the other species of this genus, and has more the superficial appearance of *Mordellistena*. The markings are well shown in the figure.

11. *M. oculata* Say, Bost. Journ. Nat. Hist. i, 190; *jovialis* Lec. Pr. Am. Philos. Soc. xvii, 428. (Pl. II, fig. 4).

This species does not seem to vary much except in the comparative distinctness of the markings. I have seen Dr. LeConte's type of *jovialis*, and it is only a perfectly fresh and unusually distinctly marked specimen of *oculata*. I have carefully compared it with all the specimens under my control, and I have not a doubt as to the correctness of my conclusion.

12. *M. insulata* Lec. Col. Kans. p. 16. (Pl. II, fig. 5).

A very well marked species and readily recognizable by the cinereous sutural line; the species is rather uncommon, and I have been unable to note any peculiarities.

13. *M. triloba* Say, Jour. Ac. N. Sc. Phil. iii, 276, (*Anaspis*). (Pl. II, fig. 6).

The specimens I have examined present no particularly interesting variations. Dr. LeConte, in Proc. Am. Philos. Soc. xvii, 427, mentions a variety from Florida, in which the bands are narrower, and which varies slightly in other respects from the type form.

14. *M. undulata* Mels. Pr. Ac. Nat. Sc. Phila. ii, 316. (Pl. II, fig. 7).

Apparently very rare; I have seen only a single specimen from Dr. LeConte's collection and this seems to present nothing especially noteworthy.

15. *M. fascifera* Lec. Pr. Am. Philos. Soc. xvii, 427. (Pl. II, fig. 8).

I have seen the type and from it the figure was made.

16. *M. discoides* Mels. Pr. Ac. Nat. Sc. Phila. ii, 315. (Pl. II, fig. 9).

The smallest and prettiest of our species of this genus. It is rare, and I have found but a single specimen, and that on Long Island; the figure is made from that specimen; there is said to be a variety with only two transverse bands on the elytra, but this I have not seen.

GLIPODES Lec.

Species cuneiform; narrow, fuscous, covered with dense sericeous brown pubescence. Scutel rounded, triangular; anal style moderately long; hind tibia without subapical ridge; carinate along dorsal line and furnished with a long oblique ridge on outer surface, connected with dorsal ridge near tip; first joint of hind tarsi with two oblique ridges; eyes coarsely granulated; antennæ feebly serrate. Last joint of maxillary palpi scalene, triangular.

Very unsatisfactorily separated from *Mordellistena* by the characters given in the description of the genus. There are only two species known, and they resemble each other very closely so far as superficial appearance is concerned. In the ♂ of *G. sericans* Mels. the maxillary palpi are covered on the under surface with a dense brush of fine short hair; in the same sex there is at the base of the last joint an external articulated bifurcated appendage the branches of which are as long as the joint; no trace of this is seen in the ♀. For tibia and tarsi see Pl. II, fig. 10.

A.—Labial palpi with last joint emarginate.

Cuneiform, elongate, fuscous, densely clothed with sericeous brown pubescence.

6—8 mm.; Middle and Southern States.....1. **sericans.**

B.—Labial palpi with the last joint truncate.

Almost linear; fuscous, densely clothed with sericeous brown pubescence.

4.5 mm.; Georgia.....2. **helva.**

1. *G. sericans* Mels. Journ. Ac. Nat. Sc. Phila. ii, 312, (*Mordella*).

2. *G. helva* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 48.

MORDELLISTENA Costa.

Scutellum rounded, triangular; anal style long and slender; hind tibia with a subapical short transverse ridge, and from one to five oblique ridges on the outer face; hind tarsi with oblique ridges; eyes coarsely granulated; antennæ feebly serrate; last joint of maxillary palpi triangular.

Containing the greatest number of species, and divided into readily recognizable divisions according to the number of the tibial and tarsal ridges. Generally there is very little variation in the species and they appear to be remarkably local—some species being almost exclusively found in one vicinity and appearing nowhere else within miles, even though the same kinds of flowers may be equally abundant. Mountainous country seems to be especially favored by these insects, for while I never found more than half a dozen specimens in a single day on the flats around New York, and never more than two or three specimens of a species, a single days collecting in the Orange Mts. of N. J., yielded hundreds of specimens, and a gratifying number of species; a cluster of flowers usually containing several specimens of one species, and I can not recollect that I ever found two species of *Mordellistena* together on the same cluster of flowers. Three weeks collecting in the Adirondack's yielded thousands of specimens of the group *Mordellidæ*, among which were some new species, and some which were very rare; in the Catskill's also the species are plentiful, and in them as well as the Adirondack's, *Rhipiphorus stylopides* was common. For parts, see Pl. II, figs. 12—14.

There appear to be no external sexual peculiarities. The species are numerous on flowers and are frequently elegantly colored.

I.—*Hind tibia and first joint of hind tarsi each with a single short oblique ridge near tip.*

Narrow, parallel; black; elytra with two orange bands; first near base, and interrupted by suture; second, one-fourth from tip; head, feet, (except hind femora), antennæ and anus testaceous; thorax sometimes black, sometimes rufous. 2—2.5 mm.; Southern States.....1. **bicinctella.**

II.—*Hind tibia with two oblique ridges on outer face.*

A.—Ridges converging above.

First joint of tarsi with *two*, second with *one* oblique ridge.

Slender cuneiform; uniform brownish-yellow. Ridges of hind tibia long; strongly marked. 3 mm.; Pennsylvania, New York.....2. **arida.**

Ridges less long, and less strongly marked. 3 mm.; Pa., Ga.....3. **lutea.**

B.—Ridges parallel, equal.

First joint of tarsi with *two*, second with *one* oblique ridge.

Elytra black, with two transverse yellow bands interrupted at suture; body narrow, parallel.

- Body black; head rufous; thorax black, basal margin and sides dark yellow; feet and abdomen tinged with testaceous. 2—2.5 mm.; United States.....4. **trifasciata**.
- Body yellow; thorax yellow; abdomen and hind tibia and tarsi varied with black. 2—3 mm.; United States.....5. **lepidula**.
- Above pale, large frontal spot, discoidal spot and anterior angles of thorax, suture and sides of elytra blackish; feet and hind coxæ pale, metasternum and abdomen blackish. 3 mm.; Middle States.....6. **limballis**.
- Yellow; above clothed with dense sericeous pubescence; apical margin of thorax, suture, broad median band and apex of elytra dark fuscous. 2.5 mm.; Long Island.....7. **elegantulus**.
- Fuscous, linear; head, thorax, antennæ, anus, anterior and middle feet, and posterior tibiæ and tarsi reddish-yellow; elytra with light brown pubescence; suture and lateral margin narrowly piceous. 2.3 mm.; Illinois.....8. **dimidiata**.
- Black; elytra with a reddish-yellow oval humeral spot; basal joints of antennæ, palpi, tibiæ, tarsi and abdomen reddish. 3 mm.; Illinois, New York.....9. **biplagiata**.
- Black; mouth, front legs and elytra piceous; pubescence of elytra dark brown, with light hair intermixed. 2.5 mm.; Illinois, New York.
10. **intermixta**.
- Black; pubescence gray, sericeous. 2—3 mm.; California.....11. **villus**.
- Entirely luteous. 2—3 mm.; New York, Pennsylvania.....12. **vapida**.
- First and second joints of hind tarsi each with *two* oblique ridges.
- Narrow, parallel; body yellow, head behind antennæ blackish; thorax with front half yellow, with a median cloud; hind half black; elytra black with a large elongate basal spot; margin and suture behind the middle, yellow. 3 mm.; Western States.....13. **decorella**.
- Black; mouth, front, two small spots on apical margin of the thorax, and anterior feet reddish-yellow; pubescence light brown sericeous. 2—3 mm.; Illinois, New York.....14. **bipustulata**.
- Fulvo-piceous with fine dense sericeous pubescence, head slightly paler; tibial ridges more oblique than usual. 4 mm.; New York.....15. **atricaps**.
- First joint of hind tarsi with *three*, second with *one* oblique ridge.
- Piceous, clothed with brown sericeous pubescence; elytra paler, piceo-testaceous. 4 mm.; New York, Georgia.....16. **picipennis**.
- Piceous; legs pale, elytra rufous, suture and margin blackish; tibia with a distinct rudiment of a third ridge. 2.5 mm.; N. Y.....17. **pallipes**.
- Head, thorax and feet red-yellow; elytra fuscous with the humeri and apical margin reddish-yellow; abdomen, sternum, hind coxæ and femoræ blackish. 2—3 mm.; Illinois, New Jersey.....18. **fulvicollis**.
- First joint of hind tarsi with *three*, second with *two* oblique ridges.
- Red-yellow, base of thorax and elytra black; the latter with a large triangular basal spot on each, suture, and margin behind middle narrowly yellow. 3—4 mm.; Middle and Southern States.....19. **ornata**.
- Black; head and humeral spot of elytra red-yellow; anterior feet yellow; hind feet black varied with testaceous. 2—3 mm.; Middle and Northern States.....20. **militaris**.
- Black; elytra with an orange-yellow humeral spot. 4 mm.; Middle and Western States.....21. **scapularis**.

- Black; head wholly or partly reddish, thorax rufous, usually black at base, or with a dorsal cloud; legs varied with testaceous. 3—4 mm.; United States.....22. **comata**.
- Black, linear; pubescence brownish-gray; hind tibia with a trace of a third ridge. 2—3 mm.; United States.....23. **aspera**.
- Rufo-piceous; pubescence dense brown sericeous; elytra darker, with a large indistinct paler basal spot; legs and antennæ more rufous. 3—4 mm.; New York.....24. **indistincta**.
- Pale yellowish-brown, subcuneate, hind tibia with a faint trace of a third ridge. 3 mm.; Georgia, New York.....25. **tosta**.
- First joint of hind tarsi with *four*, second with *three* very oblique ridges.
Tibia with a rudiment of a third ridge; fulvous yellow. 3 mm.; Texas.
26. **inornata**.
- C.**—Ridges parallel; anterior extending almost across the outer face of the tibia.
First joint of hind tarsi with *two*, second with *one* oblique ridge.
Elytra as in 4 and 5; head, thorax and feet, yellow; thorax with a narrow dorsal cloud; trunk blackish. 2.5 mm.; Georgia.....27. **amica**.
Elytra as before; black; antennæ, tibia and tarsi, yellow; pubescence rather long and coarse. 1.5 mm.; Georgia.....28. **minuta**.
Entirely black, pubescence grayish; mouth and basal joints of antennæ piceous. 2 mm.; Illinois.....29. **picilabris**.
- First joint of hind tarsi with *three*, second with *two* oblique ridges.
Black, covered with cinereous pubescence; elytra with two broad bands, and apex black, pubescent. 2 mm.; South. California.....30. **infima**.
Elytra yellow, with base, tip, suture and a large oblong marginal spot black.
Head, thorax and body, black; antennæ and legs yellow. 2 mm.; Middle States.....31. **andrea**.
Head, thorax and body, yellow; abdomen blackish. 2.5 mm.; Georgia, New York.....32. **grammica**.
Elytra ferruginous; suture and margin blackish.
Black; mouth, anterior feet, hind tibia and tarsi testaceous, incisures black; anus piceous. 2 mm.; Georgia, New York.....33. **ancilla**.
Black; head and part of thorax reddish-yellow; anterior feet yellow; hind tibia and tarsi testaceous; incisures black. 2.5—3 mm.; Middle States.....34. **varians**.
Ferruginous; black limb of elytra very narrow; abdomen and sometimes hind coxæ and pectus blackish. 3 mm.; Middle and Southern States.....35. **ustulata**.
- Elytra without distinct markings.
Piceous; head, thorax and anterior legs ferruginous, humeri with an indefinite ferruginous spot; anus rufo-piceous. 2—3 mm.; Middle and Southern States.....36. **seminusta**.
Piceous; head, apical margin of thorax, and anterior legs ferruginous. 2 mm.; South Carolina, New York.....37. **impatiens**.
Fusco-ferruginous; elytra black, pubescence fine and dark. 3 mm.; Georgia.....38. **ferruginoides**.
Entirely blackish, piceous. 2 mm.; Middle and Southern States.
39. **nigricans**.

- Black; mouth piceous, elytra with numerous spots of cinereous pubescence. 3 mm.; Illinois.....40. **guttulata**.
- Blackish piceous; head ferruginous; antennæ, anterior feet, middle tibia and tarsi, base of hind tibia and tarsi, and margin of abdomen, testaceous; first joint of hind tarsi with a rudiment of a fourth ridge. 3 mm.; Middle and Southern States.....41. **ruficeps**.
- Ferruginous; sides of pectus and elytra darker; hind tibia with a rudiment of a third, first tarsal joint with a rudiment of a fourth ridge. 3 mm.; California.....42. **umbilica**.
- First joint of hind tarsi with *four*, second with *two* oblique ridges.
- Ridges not strongly marked; legs unusually long and slender, piceotestaceous; densely clothed with fine silvery pubescence. 6 mm.; Illinois, Florida.....43. **splendens**.
- ~~First joint of hind tarsi with *four*, second with *two* oblique ridges.~~
- Ridges more strongly marked than usual; narrow, linear; entirely black. Florida.....44. **floridensis**.
- III.—*Hind tibia with three short oblique parallel ridges.*
- First joint of hind tarsi with *three*, second with *two* oblique ridges.
- Black, linear; elytra with numerous rounded spots of ashy sericeous pubescence. 2—3 mm.; United States.....45. **pustulata**.
- Black, linear, elytra with lines of brownish-gray pubescence confluent behind. 3 mm.; Kentucky.....46. **convicta**.
- Nearly linear, ferruginous; elytra black with the suture and margin narrowly ferruginous; base ferruginous, broader at the humeri. 4—5 mm.; Middle States.....47. **fuscipennis**.
- Subeuneate; beneath ferruginous; abdomen and sides of breast dusky; above black; mouth, anterior narrow interrupted band of thorax, large triangular basal spot of each elytra, suture and margin behind the middle, yellow. 3.5—4 mm.; Lake Superior.....48. **pectoralis**.
- Nearly linear, entirely black; pubescence brownish-gray. 3—4 mm.; Lake Superior, Minnesota, New York.....49. **mornia**.
- Nearly linear; fusco-ferruginous; pubescence brown sericeous; ridges of hind tibia longer and more oblique than usual. 3—4 mm.; Middle and Southern States.....50. **anhusta**.
- First joint of hind tarsi with *three*, second with *two*, and third with *two* oblique ridges.
- All the ridges strongly marked; ferruginous, elytra black; pubescence fine and dark. 5 mm.; Georgia.....51. **singularis**.
- First joint of hind tarsi with *four*, second with *two* oblique ridges.
- Slightly cuneate piceous; covered with brown sericeous pubescence. 3—4 mm.; United States.....52. **unicolor**.
- Subeuneate; black, pubescence brown, head and anterior half of thorax ferruginous; the former sometimes with a black spot. 3—4 mm.; Middle and Western States.....53. **marginalis**.
- Ferruginous; elytra black, with a small, indistinct humeral spot ferruginous; abdomen blackish, anterior margin of ventral segments rufous; legs pale. 3 mm.; New York.....54. **Schanppii**.
- First joint of hind tarsi with *four*, second with *three* oblique ridges.
- Narrow, linear; entirely black. 5 mm.; North, Illinois.....55. **aequalis**.

IV.—*Hind tibia with a rudiment of a fourth ridge.*

First joint of hind tarsi with *three*, second with *two* oblique ridges.

Black, mouth and anterior feet piceous; pubescence grayish-brown; thorax with three black clouds; elytra with an undulated band before the middle and a large oblong spot near tip, fuscous. 4 mm.; Ills.....56. **scalaris**.

Blackish piceous, more robust than usual, pubescence brownish; thorax with three black spots; elytra with a curved band from humerus to suture, a transverse band behind the middle, and another at tip, sericeous pubescent. 2—2.5 mm.; United States.....57. **pubescens**.

Black, slender; sides of thorax and legs piceo-testaceous; elytra with a very narrow limb and two oblique bands, prolonged backward near the suture, connected by a line near the margin, and apex paler sericeous. 3—5 mm.; Pennsylvania..... 58. **bihamata**.

Fusco-luteous, slender; thorax with three badly defined basal clouds; elytra with a narrow limb and two very oblique bands yellowish sericeous. 2—3 mm.; Middle and Southern States.....59. **liturata**.

V.—*Hind tibia with four short oblique parallel ridges.*

First joint of hind tarsi with *three*, second with *two* oblique ridges.

Fusco-testaceous; subcuneate; pubescence fulvous sericeous. 4—5 mm.; New York, Pennsylvania.....60. **fuscata**.

First joint of hind tarsi with *three*, second and third each with *two* oblique ridges.

Ferruginous; elytra black with the humeri indistinctly ferruginous; suture and margin narrowly pale sericeous. 5—6 mm.; Pa., Tex.....61. **pityptera**.

First joint of hind tarsi with *four*, second with *two* oblique ridges.

Rufo-piceous; mouth, antennæ, legs and elytra paler; pubescence fine sericeous. 6 mm.; Nevada.....62. **rufescens**.

First tarsal joint with a rudiment of a fifth ridge; all small and indistinct; blackish piceous; elytra with the humeri indistinctly ferruginous; an oblique band at base, an interrupted one behind middle and the suture, cinereous pubescent. 5 mm.; New York.....63. **cinereo-fasciata**.

Tibia and first tarsal joint with a rudiment of a fifth ridge; all indistinct; subcuneate; entirely black, pubescence gray. 4—5 mm.; Col...64. **athlops**.

First joint of hind tarsi with *four* and a rudimentary *fifth*, second with *three* oblique ridges.

Black, with sericeous pubescence; head, thorax and front legs ferruginous. 5 mm.; Texas.....65. **Texana**.

First joint of hind tarsi with *four*, second and third each with *three* oblique ridges.

Very slender, dark fuscous; base of antennæ, anterior and middle feet piceous; pubescence brown sericeous. 3.5 mm.....66. **fusco-atra**.

First joint of hind tarsi with *five*, second with *three* oblique ridges.

Black; pubescence of head and thorax with the suture and margin narrowly gray. 4.3 mm.; Illinois.....67. **suturella**.

First joint of hind tarsi with *five*, second with *three*, third with *two* oblique ridges.

Black; pubescence of head and thorax brownish, of elytra black, with the suture narrowly gray; abdomen rufous varied with black. 5 mm.; Illinois.

68. **rufiventris**.

First joint of hind tarsi with *five*, second with *four*, and third with *three* small oblique ridges.

Very slender; entirely black; pubescence fine and dark. 5.8 mm.; Georgia. 69. **angusta**.

VI.—*Hind tibia with five or six very small oblique ridges.*

Black; head and sometimes base of thorax ferruginous; elytra with a ferruginous stripe from humerus nearly to the apex. 4—5 mm.; Pennsylvania, New York.....70. **attenuata.**

Black; pubescence sericeous brown; elytra blackish with a long basal spot, an undulated band behind the middle, suture and tip paler sericeous. 3.5—4 mm.; Middle and Southern States.....71. **discolor.**

Black; pubescence grayish sericeous, slightly mottled. 4 mm.; Kansas.

72. **semula.**

1. **M. bicinctella** Lec. Pr. Ac. Nat. Sc. Phila. xiv, 48. (Pl. II, figs. 15, 16).

Rare; not found so far as I know except in Dr. LeConte's collection and the figure is made from his type.

2. **M. arida** Lec. Pr. Ac. Nat. Sc. Phila. xiv, 48. (Pl. II, fig. 17).

Found occasionally in New York; I believe it will be eventually found to be identical with the following, but it needs a larger series than I have been able to get to prove this.

3. **M. lutea** Mels. Pr. Ac. Nat. Sc. Phila. ii, 315, (*Mordella*).

Quite as rare as the preceding, and I have seen only a single specimen.

4. **M. trifasciata** Say, Journ. Ac. Nat. Sc. Phila. v, 243, (*Mordella*); *nigricollis* Hel. Pr. Ac. Nat. Sc. Phila. xvi, 105. (Pl. II, fig. 19).

This latter is evidently a variety only, as Dr. Helmuth himself suggests. I have found specimens of this species with the thoracic band of yellow very narrow, but none in which it was entirely absent; larger collections from the western states will, I have no doubt, demonstrate the correctness of this reference.

5. **M. lepidula** Lec. Pr. Ac. Nat. Sc. Phila. xiv, 48. (Pl. II, fig. 19).

Very closely allied to the preceding in size, form and general appearance; but readily recognized by the yellow body. The insect appears rare in the vicinity of New York, and I have but very few specimens.

6. **M. limbata** Mels. Pr. Ac. N. Sc. Phil. ii, 315, (*Mordella*). (Pl. II, fig. 20).

Also closely allied to the foregoing species so far as form is concerned, but the markings are entirely different. This like *lepidula* is rather rare in New York and vicinity, and the specimens are only found singly. I have not noticed any variations.

7. **M. elegantulus** Sp. nov. (Pl. II, fig. 21).

Differs from the other species in this section by the pale color and brown markings. One specimen only, from Long Island; my collection.

8. **M. dimidiata** Hel. Pr. Ac. Nat. Sc. Phila. xvi, 105.

This species I have not succeeded in identifying with the material at my command. It appears sufficiently distinct, from the description, and seems to form the connecting link between the variegated species of this section and the following more modestly colored ones.

9. ***M. biplagiata*** Hel. Pr. Ac. Nat. Sc. Phila. xvi, 105. (Pl. II, fig. 22).

A variable species both as regards size and markings; a specimen from northern Illinois, found among Dr. LeConte's undetermined material, agrees in all respects with Helmuth's description, and from this the figure was made. A specimen collected in the Catskills while agreeing perfectly in the markings is only 1.7 mm. in length; another collected in the Adirondack's is nearly 4 mm. in length and the humeral spot is unusually large and diffuse. The coloration in other respects is a little different, but not enough to authorize a sp. nov. Readily distinguished from the other species in this section by the humeral spot of the elytra.

10. ***M. intermixta*** Hel. Pr. Ac. Nat. Sc. Phila. xvii, 96.

Readily recognized by the contrast in color between the thorax and elytra, the latter of which is sometimes more rufous. Specimens from California and New York, (Adirondack Mts.), agree in every respect with each other and with the description. I have found it rather rare.

11. ***M. vilis*** Lec. Pr. Ac. 1856, p. 76, (*Mordella*).

I have seen but very few specimens; differs from all other species in this section by its uniform black color.

12. ***M. vapidula*** Lec. Pr. Ac. Nat. Sc. Phila. xiv, 49.

Does not seem to vary much. I have found it occasionally in the vicinity of New York.

13. ***M. decorella*** Lec. Pr. Ac. Nat. Sc. Phila. xiv, 49. (Pl. II, fig. 24).

Distinguished from the others in this section by the variegated elytra. I have seen only a single specimen (Dr. LeConte's type), so do not know much of it. The combination of tibial and tarsal ridges peculiar to this and the two following species is shown Pl. II, fig. 23.

14. ***M. bipunctulata*** Hel. Pr. Ac. Nat. Sc. Phila. xvi, 105.

I have what I consider a specimen of this species with the thorax entirely black, collected in New York; readily distinguished from the other species of this group by its dark color.

15. ***M. atriceps*** sp. nov.

Distinguished from the preceding by the paler color, larger size, heavier form, and the longer and unusually oblique tibial ridges. One specimen only; my collection.

16. ***M. picipennis*** sp. nov.

The combination of tibial and tarsal ridges peculiar to this and the two following species is shown Pl. II, fig. 25. Distinguished from the others in this group by not having the elytra variegated. Three specimens, New York; two, my collection; Georgia, one, Coll. Dr. Horn.

17. *M. pallipes* sp. nov. (Pl. II, fig. 26).

All the legs pale testaceous—an unusual character in the genus—this point and the darker margins of elytra render the species readily recognizable. The rudiment of the third ridge is very short, having but two or three spinules but the pale color of the legs renders it easily noted, as the spinules are black. One specimen, Ithaca, N. Y.; my collection.

18. *M. fulvicollis* Mels. Pr. Ac. Nat. Sc. Phila. ii, 315, (*Mordella*). (Pl. II, fig. 27).

Easily known from the others in this group by the humeral spot on elytra and the pale thorax. It appears to be rare and I have seen only a single specimen.

19. *M. ornata* Mels. Pr. Ac. Nat. Sc. Phila. ii, 315, (*Mordella*). (Pl. II, fig. 30).

The combination of tibial and tarsal ridges peculiar to this and the seven following species is shown Pl. II, fig. 29. I have seen but a single specimen of this insect, and consequently have no remarks to offer concerning it.

20. *M. militaris* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 49. (Pl. II, fig. 28).

This will probably turn out to be only a variety of the following when more of the specimens from other parts of the country have been procured. I have seen only very few specimens and they agree pretty closely with the description; a variety however is found with the thorax more or less rufous, never having the color distinctly marked, but still differing noticeably from the type form.

21. *M. scapularis* Say, Pr. Ac. Nat. Sc. Phila. iii, 277, (*Mordella*). (Pl. II, fig. 31).

More common than the preceding but by no means plentiful at any time. It is entirely black except the orange humeral spot which leads to its recognition at once.

22. *M. comata* Lec. Pr. Ac. 1858, p. 75, (*Mordella*); *pivicornis* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 49; *cervicalis* Lec. id.; *auricoma* Hel. id. xvii, 96.

From the material I have on hand I consider these four forms identical; *pivicornis* and *cervicalis* certainly are, for I have series leading from one form into the other; *comata* differs in the entirely red head and the paler pubescence; but the color of the pubescence in this genus is not a safe guide, nor is the extent of the red color on the head; *auricoma* does not differ in any marked respect from either of the forms.

23. *M. aspersa* Mels. Pr. Ac. Nat. Sc. Phila. ii, 314, (*Mordella*); *rubrilabris* Hel. id. xvi, 105.

The most common of our species and the one therefore upon which observations can best be made; its variations are considerable and it is rather surprising that not more species have been made out of it. The legs vary from pale testaceous to dull black, the pubescence from dull brownish-black to bright cinereous, and the head from deep black to dull red; the latter is *rubrilabris* of Hel. The eastern species are usually dull black, the pubescence becoming brighter as they come from further west, until California sends the palest specimens. In like manner the color of the head changes gradually from black in the east to dull red in the Pacific States. From New York I have seen no specimens with the head entirely red, although many have it partially so, but a fair proportion of California specimens have the head entirely rufous.

24. *M. indistincta* sp. nov. (Pl. II, fig. 32).

Easily known by the pale color and the indistinct basal spot on elytra; it seems to connect the black species with the following. Seventeen specimens, Adirondack Mts., N. Y.; my collection.

25. *M. tosta* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 49.

Not uncommon in N. Y., and presenting no noteworthy variations.

26. *M. inornata* sp. nov.

Like the preceding in color, but distinct by the combination of tibial and tarsal ridges, Pl. II, fig. 33. One specimen, Texas; Coll. Dr. LeConte.

27. *M. amica* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 49. (Pl. II, fig. 19).

Combination of tibial and tarsal ridges peculiar to this and the two following species, Pl. II, fig. 34. Superficial examination would lead one to pronounce this and the following identical with the species at the head of the genus, but the ridges separate them sharply.

28. *M. minuta* sp. nov. (Pl. II, fig. 35).

One of the smallest, if not the smallest of our species; very distinctly separated from the foregoing by the coloration of head and thorax. One specimen, Georgia; Coll. Dr. Horn.

29. *M. picilabris* Hel. Pr. Ac. Nat. Sc. Phila. xvi, 105.

Unknown to me in nature but apparently very distinct from the others in this group.

30. *M. infima* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 49. (Pl. II, fig. 37).

For combination of tibial and tarsal ridges peculiar to this and the twelve following species, see Pl. II, fig. 36. Distinct from all the others in this group by the cinereous bands on elytra.

31. *M. andreae* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50. (Pl. II, fig. 38).

This and the four following species form a very compact group, differing only in minor points of coloration. I am certain that there are two species more than there is any necessity for, described; but I have not unfortunately, a series large enough to prove it. None of the species are common, and I have not seen any large numbers of them in any collection.

32. *M. grammica* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50. (Pl. II, fig. 39).

Differs from the foregoing in color of body, and probably sufficiently distinct from it.

33. *M. ancilla* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50. (Pl. III, fig. 1).

This species I believe will ultimately prove a variety of *andreae*. The only difference between the two is that *ancilla* is ferruginous, where the other species is yellow.

34. *M. varians* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50. (Pl. III, fig. 2).

This I believe is a good species; it seems to present no variation, and is not uncommon in the Orange Mts.

35. *M. ustulata* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50. (Pl. III, fig. 3).

This will I believe prove only a variety of *grammica*, the difference as shown in the figures is exceedingly slim, and that shown in the synopsis is not much greater.

36. *M. seminata* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50. (Pl. III, fig. 4).

This seems distinct from all those in the preceding group. I have seen but few specimens and have noted no variation.

37. *M. impatiens* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50,

Rather rare in my experience, and in the few specimens I have examined no great variations have been discovered.

38. *M. ferruginoides* sp. nov.

Distinct from any of the others of this group by the contrasted elytra and body. One specimen only, Georgia; Coll. Dr. Horn.

39. *M. nigricans* Mels. Pr. Ac. Nat. Sc. Phila. ii, 313, (*Mordella*); *nigerrima* Hel. id. xvii, 96.

The species varies somewhat in size and in the depth of the black color, but not otherwise; exactly how Dr. Helmuth pretended to separate his species from *nigricans* I am at a loss to imagine, his description applies in all respects to this species.

40. *M. guttulata* Hel. Pr. Ac. Nat. Sc. Phila. xvi, 105, (from the description only). (Pl. III, fig. 7).

I have not seen this insect in nature; it seems to take the place in this group that *pustulata* does in another, and may be a specimen of that species incorrectly referred.

41. *M. ruficeps* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50.

An indistinctly marked species which varies somewhat in size and somewhat in color, being sometimes more rufous. It is not common, but I find some specimens each season around New York.

42. *M. nubila* Lec. Pr. Ac. 1858, p. 76.

Of this I have seen only a single specimen; it is close to *ferruginoides*, but is darker than that species, and has in addition the rudimentary ridges on tibia and tarsi of which there exists not a trace in *ferruginoides*.

43. *M. splendidus* sp. nov.

Pl. III, fig. 5, shows the combination of tarsal ridges peculiar to this species. It is unique in this respect, and unique in the beautiful silvery pubescence with which it is clothed; it is very slender, and has the legs unusually long and thin. On the specimen from Florida I observe a rudiment of a third short ridge. Two specimens only, Illinois and Florida; Coll. of Dr. LeConte and myself.

44. *M. Floridensis* sp. nov.

Closely related to the preceding, but distinct from it by the number of ridges on the second tarsal joint, the deeper color, the dark pubescence, stouter build and much shorter and stouter anal style; the ridges also are strongly marked and very distinct.

45. *M. pustulata* Mels. Pr. Ac. Nat. Sc. Phila. ii, 314, (*Mordella*). (Pl. III, fig. 7).

Combination of tibial and tarsal ridges peculiar to this and the five following species, Pl. III, fig. 6. Distinguishable at sight from its allies by the silvery pubescent spots with which it is adorned. Dr. LeConte remarks that on one specimen he observed a rudiment of a fourth ridge. I have been unable to find anything of the kind on the species which I have examined, so that his specimen is probably aberrant in this respect.

46. *M. convicta* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50. (Pl. III, fig. 8).

I have seen Dr. LeConte's type and drawn my figure from it. The species seems closely related to the preceding but is rather heavier, and differs in the markings.

47. *M. fuscipennis* Mels. Pr. Ac. Nat. Sc. Phil. ii, 314, (*Mordella*). (Pl. III, fig. 9).

Found occasionally around N. Y., and presenting no notable variations.

48. *M. pectoralis* Lec. Agassiz L. Sup. p. 231, (*Mordella*). (Pl. III, fig. 10).

I have seen one specimen only, and that the type. It is almost identical in all respects with *ornata* except that it has three instead of two tibial ridges.

49. **M. morula** Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50.

Unicolored, and therefore readily recognized, after the tibia has been examined; one specimen I found which could be placed with almost equal propriety in this species or in *aspersa*, for the third ridge was rather more than a rudiment, and yet did not reach the distinctness of the others. *Quære*: whether *morula* and *aspersa* do not intergrade.

50. **M. ambusta** Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50.

Also unicolored and as readily recognized as the preceding; I have found it sparingly near New York, but have noted no peculiarities.

51. **M. singularis** sp. nov. (Pl. III, fig. 11).

The figure shows the combination of tibial and tarsal ridges peculiar to this species only. Well marked by the uniform ferruginous color and the deep black elytra. One specimen only, Georgia; Coll. Dr. Horn.

52. **M. nnicolor** Lec. Pr. Ac. Nat. Sc. Phila. xiv, 50. (Pl. III, fig. 12).

The figure shows the tibial and tarsal ridges peculiar to this and the two following species. Distinct from all others in this group by its uniform color, which latter varies somewhat in depth, sometimes having a strong dash of red. It is not uncommon, but I have not succeeded in getting a good series, showing varieties.

53. **M. marginalis** Say, Journ. Ac. Nat. Sc. Phila. iii, 278, (*Mordella*); *divisa* Lec. Col. of Kan. & N. Mex. 17.

This species shows little variation; superficially it is readily confused with several others but the tibial and tarsal ridges sufficiently distinguish it; *divisa* Lec. I consider only a western variation, like that of *aspersa*. I have found both forms in the Orange Mts. of New Jersey.

54. **M. Schauppit** sp. nov. (Pl. III, fig. 13).

Dedicated to my good friend Prof. F. G. Schaupp, from whom I received the first aid in my gropings for light in the beetle business, to whose kindness I owe many of my best insects, to whose good nature I owe a better knowledge of the literature of the coleopterological section of entomology than I could have obtained by years of unassisted study, and to whose liberality I owe a large part of my western and southern species of Mordellidæ, his whole collection having been placed at my disposal. I hope this may always be considered a valid species, and that it may continue as rare as the combination of good qualities which render the Professor a good companion, a sympathizing friend and a sage director in the paths of coleopterological lore. One specimen, N. Y.; my coll.

55. **M. equalis** sp. nov. (Pl. III, fig. 14).

Peculiar by the combination of ridges on tibia and tarsi; resembles several other species in the uniform black color.

56. *M. scalaris* Hel. Pr. Ac. Nat. Sc. Phila. xvi, 105. (Pl. III, fig. 16).

The figure (Pl. III, fig. 15), shows the ridges of tibia and tarsi peculiar to this and the three following species; the present species is unknown to me; but seems to be sufficiently distinct from the other species of this group by the lack of pubescent bands on the elytra. The figure was made up from the description, and its accuracy is therefore not vouched for.

57. *M. pubescens* Fabr. Syst. El. ii, 123; *hebraica* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 51; *leporina* Lec. id. (Pl. III, fig. 17).

A somewhat variable species and I believe I have series sufficient to demonstrate the identity of the above referred species. I have seen in the specimens examined variations all the way from the dark typical *pubescens* form to the bright *leporina* form, while the *hebraica* form according to Dr. LeConte's description varies in the color of the thorax to a uniform black. There is a difference in the arrangement of the pubescent bands, but I have seen all the forms in the specimens which were undoubtedly *pubescens*. It is rather common in the vicinity of N. Y.

58. *M. bihamata* Mels. Pr. Ac. N. Sc. Ph. ii, 313, (*Mordella*). (Pl. III, fig. 18).

Distinct from the preceding by the more slender form, the somewhat differently shaped bands and the reddish margin of thorax. I have seen but one specimen, and cannot therefore judge well of the exact relationship it bears to *pubescens*.

59. *M. liturata* Mels. Pr. Ac. N. Sc. Ph. ii, 314, (*Mordella*). (Pl. III, fig. 19).

Distinct from the others in this section by the pale color. It is rare, and I myself have never found the insect. I have seen but a few specimens of the species, and did not find any great variation amongst them.

60. *M. fuscata* Mels. Pr. Ac. N. Sc. Ph. ii, 313, (*Mordella*). (Pl. III, fig. 20).

The figure shows the ridges of tibia and tarsi. The color is uniform and an examination of the ridges is necessary to properly place it. It is not uncommon around New York.

61. *M. pityptera* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 51. (Pl. III, fig. 22).

The combination of ridges of tibia and tarsi is shown on Pl. III, fig. 21. The only specimens I have seen are from Texas, and they vary both in size and in color; some are nearly entirely rufous, but in full colored specimens the rufous humeral spot is always very distinct.

62. *M. rufescens* sp. nov. (Pl. III, fig. 23).

The figure shows the tibial and tarsal ridges peculiar to this and the two following species. The color is uniform and affords no indication to the species. One specimen only. Nevada; Coll. Dr. Horn.

63. *M. cinereo-fasciata* sp. nov. (Pl. III, figs. 24, 25).

Readily recognized by the unusually heavy form, which recalls *Mordella*, and the combination of cinereous bands and humeral pale spot. One specimen only, Ithaca, N. Y.; my collection.

64. *M. æthiops* sp. nov.

Unicolored. Of the seven specimens that I have seen, not one varied in any way from the description given in the synopsis. Colorado; Coll. Dr. Horn and myself.

65. *M. Texana* sp. nov. (Pl. III, fig. 64, tibia and tarsi).

Another of those species having the thorax red and elytra and body black, and therefore distinguishable only by the ridges of tibia and tarsi. Two specimens, Texas; Coll. Dr. Horn and myself.

66. *M. fusco-atra* Hel. Pr. Ac. N. Sc. Ph. xvi, 105. (Pl. III, fig. 28, tarsi only).

Unknown to me, but evidently very distinct by the ridges of posterior tibia and tarsi.

67. *M. suturella* Hel. Pr. Ac. N. Sc. Ph. xvi, 105. (Pl. III, fig. 27, tarsi only).

Also unknown to me.

68. *M. rufiventris* Hel. Pr. Ac. Nat. Sc. Phila. xvi, 105.

Also unknown to me.

69. *M. angusta* Lec. Pr. Ac. N. Sc. Ph. xvi, 105. (Pl. III, fig. 29, tarsi only).

Known to me only in very few specimens, and presenting nothing notable in those I have seen.

70. *M. attenuata* Say, Journ. Ac. N. Sc. Phil. v, 243, (*Mordella*); *vittigera* Lec. Pr. Ac. Nat. Sc. Phila. xiv, 51. (Pl. III, fig. 30).

I have seen only a single specimen from Dr. LeConte's collection of the *attenuata* form, but I have seen a number of the *vittigera* form, and from its variations I conclude that the two are identical. I believe that *vittigera* is the species, and *attenuata* the variety, if varieties are to be named. According to the laws of priority of course Say's name stands for the species.

71. *M. discolor* Mels. Pr. Ac. Nat. Sc. Phila. ii, 313. (Pl. III, fig. 31).

Tibia and tarsi of this, and the preceding and following species shown at Pl. III, fig. 32. The insect is rare, and I have seen but very few specimens.

72. *M. semula* Lec. Col. Kan. & N. Mex. 16. (Smith's Contr.).

I have seen only a single specimen and know nothing of it.

Species as yet unidentified.

Mordella nigripennis Fabr. Syst. El. p. 123.—*M. ano aculeato, ferruginea*; *elytris nigris*: Ent. Syst. Suppl. 127, 3; *statura præcordatum, (pubescens), corpus totum ferrugineum, elytris folis nigris.*

EXPLANATION OF PLATE I.

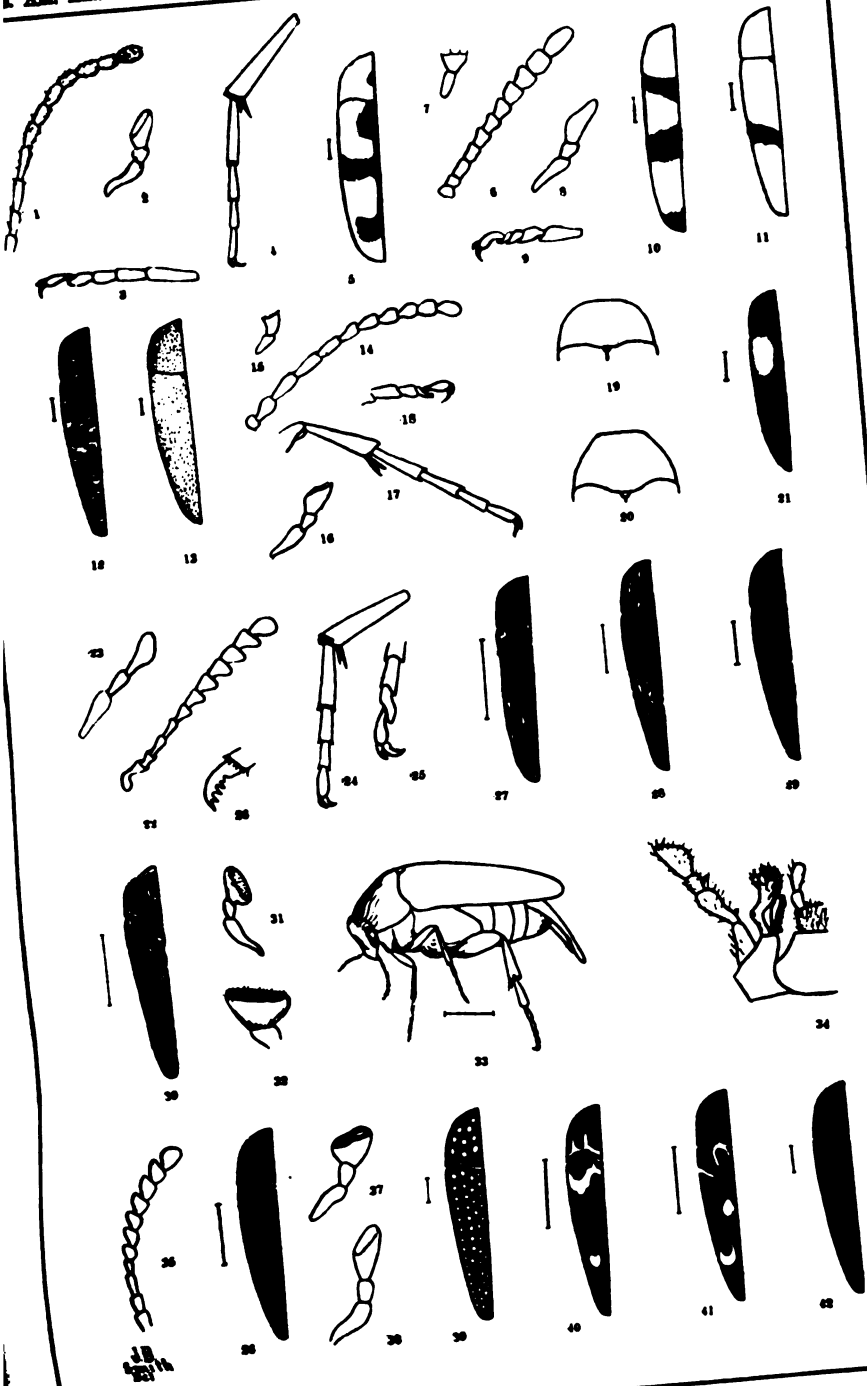
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1. *Diclidia latula* Lec., antenna.
 2. " " Lec., maxillary palpus.
 3. " " Lec., anterior tarsus.
 4. " " Lec., posterior tibia and tarsus.
 5. " " Lec., elytra.
 6. *Pentaria*, antenna.
 7. " labial palpus.
 8. " maxillary palpus.
 9. " anterior tarsus.
 10. " *trifasciata* Mels.
 11. " *nubila* Lec.
 12. " *fuscata* Lec., showing the transverse striation.
 13. " *hirsuta* sp. nov.
 14. *Anaspis*, antenna.
 15. " labial palpus.
 16. " maxillary palpus.
 17. " posterior tibia and tarsus.
 18. " anterior tarsus.
 19. " *pusio* Lec., (thorax only).
 20. " *atra* Lec., (thorax only).
 21. " *humeralis* sp. nov.
 22. *Tomoxia*, antenna.
 23. " maxillary palpus, (*bidentata*, see fig. 31).
 24. " posterior tibia and tarsus.
 25. " anterior tarsus.
 26. " claw of anterior tarsus.
 27. " *bidentata* Say.
 28. " *lineella* Lec.
 29. " *inclusa* Lec.
 30. " *hilaris* Say.
 31. " *lineella*, maxillary palpus.
 32. " *hilaris*, maxillary palpus.
 33. *Mordella melana* Germ., showing the general appearance of the species in this and the following genera.
 34. " mouth parts of *scutellaris* Fab.
 35. " antenna.
 36. " *4-punctata* Say.
 37. " " Say, maxillary palpus.
 38. " *marginata*, palpus.
 39. " *borealis* Lec. (var.).
 40. " *inflammata* Lec.
 41. " *8-punctata* Fabr.
 42. " *marginata* Mels.

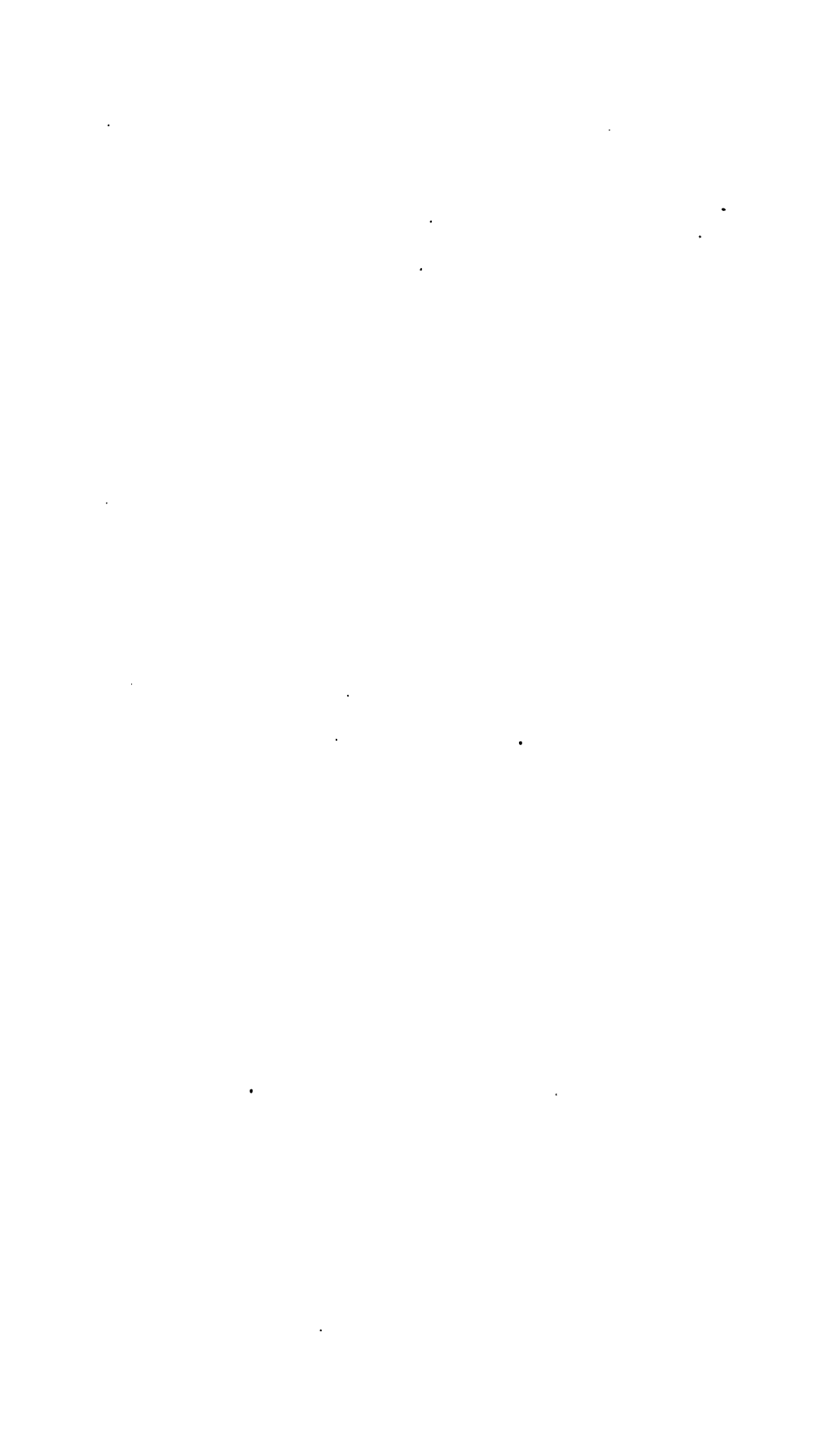
EXPLANATION OF PLATE II.

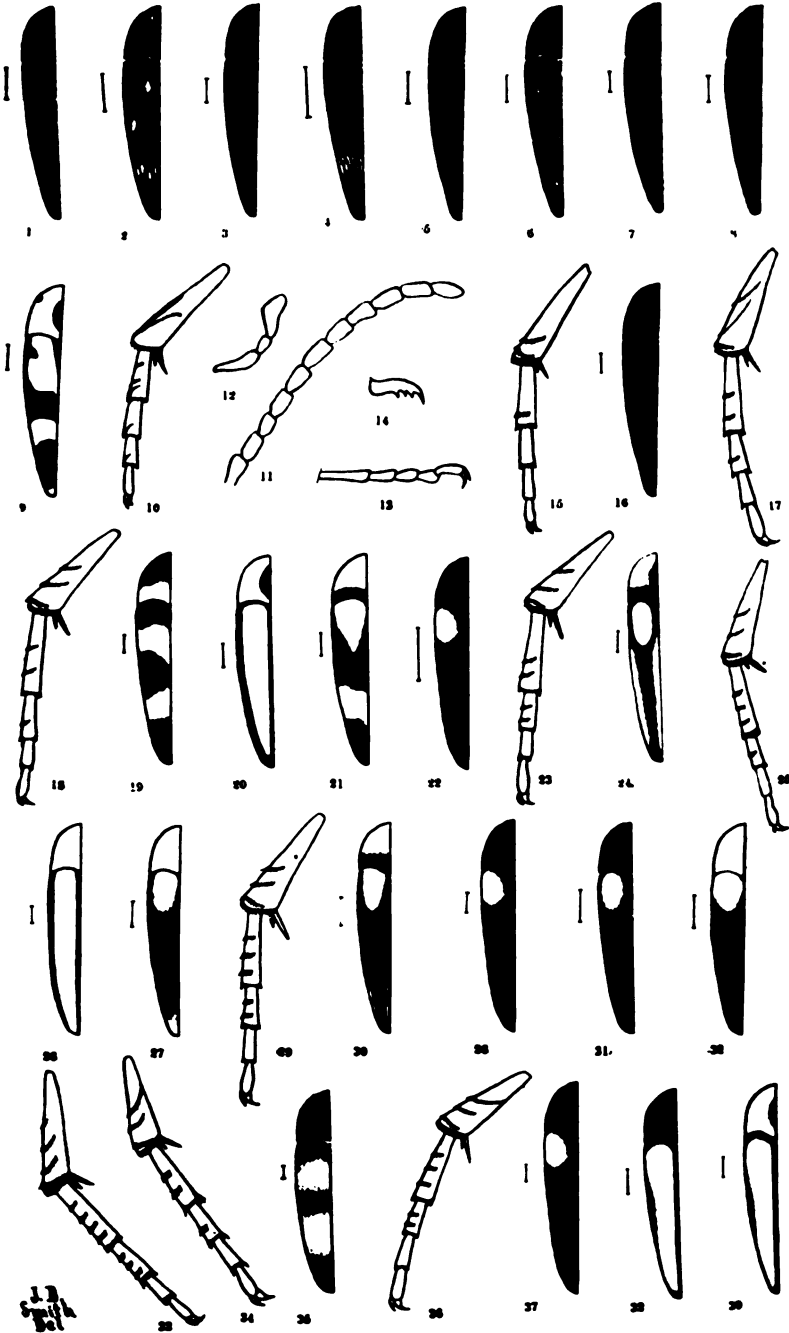
1. <i>Mordella obliqua</i> Lec.	20. <i>Mordellistena limbalis</i> Mels.
2. " <i>serval</i> Say.	21. " <i>elegantulus</i> sp. nov.
3. " <i>angulata</i> Lec.	22. " <i>biplagiata</i> Hel.
4. " <i>oculata</i> Say.	23. " tibia of sp. 13-15.
5. " <i>insulata</i> Lec.	24. " <i>decorella</i> Lec.
6. " <i>triloba</i> Say.	25. " tibia of sp. 16-18.
7. " <i>undulata</i> Mels.	26. " <i>pallipes</i> sp. nov.
8. " <i>fascifera</i> Lec.	27. " <i>fulvicollis</i> Mels.
9. " <i>discoidea</i> Mels.	28. " <i>militaris</i> Lec.
10. <i>Glipodes</i> tibia and tarsus (posterior).	29. " tibia of sp. 19-25.
11. <i>Mordellistena</i> , antenna.	30. " <i>ornata</i> Mels.
12. " max. palpus.	31. " <i>scapularis</i> Say.
13. " anterior tarsus.	32. " <i>indistincta</i> sp. nov.
14. " claw of tarsi.	33. " tibia of sp. 26.
15. " tibia of sp. 1.	34. " tibia of sp. 27-29.
16. " <i>bicinctella</i> Lec.	35. " <i>minuta</i> sp. nov.
17. " tibia of sp. 2 & 3.	36. " tibia of sp. 30-42.
18. " tibia of sp. 4-12.	37. " <i>infima</i> Lec.
19. " <i>trifasciata</i> , <i>lepidula</i> and <i>amica</i> .	38. " <i>andreae</i> Lec.
	39. " <i>grammica</i> Lec.

EXPLANATION OF PLATE III.

1. <i>Mordellistena ancilla</i> Lec.	17. <i>Mordellistena pubescens</i> Fabr.
2. " <i>varians</i> Lec.	18. " <i>bihamata</i> Mels.
3. " <i>ustulata</i> Lec.	19. " <i>liturata</i> Mels.
4. " <i>semiusta</i> Lec.	20. " tibia of sp. 59.
5. " tibia of sp. 43.	21. " tarsi of sp. 60.
6. " tibia of sp. 44-49.	22. " <i>pityptera</i> Lec.
7. " <i>pustulata</i> Mels.	23. " tarsi of sp. 61.
8. " <i>convicta</i> Lec.	24. " tarsi of sp. 62 & 63.
9. " <i>fuscipennis</i> Mels.	25. " <i>cinerco-fasciata</i> sp. n ^v
10. " <i>pertoralis</i> Lec.	26. " tibia of sp. 64.
11. " tibia of sp. 50.	27. " tarsi of sp. 66.
12. " tibia of sp. 51-53.	28. " tarsi of sp. 65.
13. " <i>Schauppilii</i> sp. nov.	29. " tarsi of sp. 68.
14. " tarsi of sp. 54.	30. " <i>attenuata</i> Say.
15. " tibia of sp. 55-58.	31. " <i>discolor</i> Mels.
16. " <i>scalaris</i> Hel.	32. " tibia and tarsi of 69-71

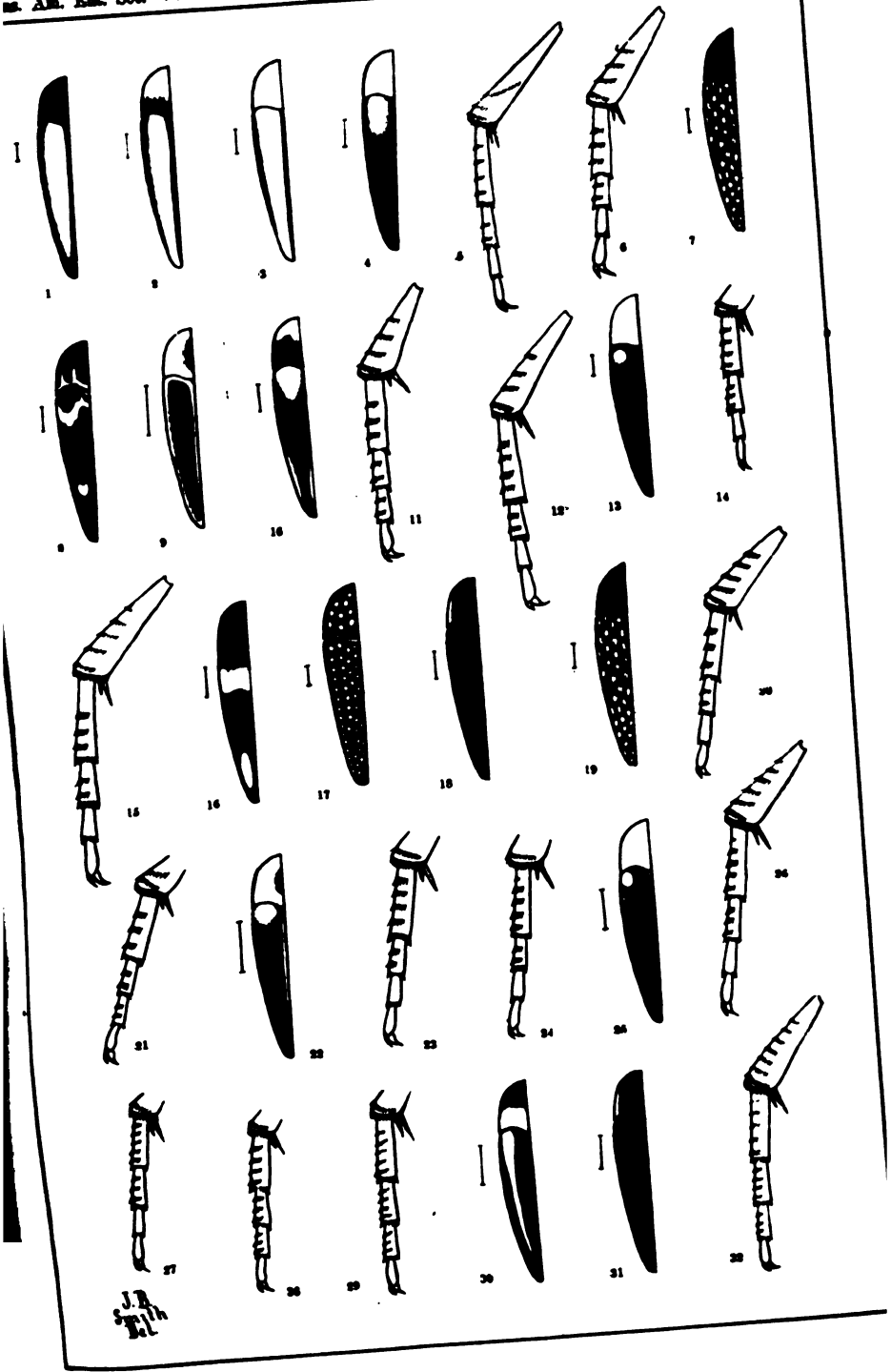






J. B. Smith
1914







Revision of the species of some genera of BUPRESTIDÆ.

BY GEORGE H. HORN, M. D.

The genera here reviewed belong to the group Anthaxiæ of the tribe Buprestini as defined in our fauna, they are three in number and may be separated in the following manner:

Mentum coriaceous in front; prothorax sinuate at base.....**Melanophila.**
Mentum entirely corneous.

Prothorax truncate at base; front not margined at sides; antennæ serrate in both sexes.....**Anthaxia.**

Prothorax sinuate at base; front slightly margined over the insertion of the antennæ which are flabellate ♂, serrate ♀.....**Xenorhipis.**

The first two genera are represented on both sides of the continent. *Xenorhipis* occurs in the Atlantic region and is extremely rare. Of its habits nothing is known.

MELANOPHILA Esch.

The species of this genus are not numerous in our fauna, but in times past their number was exaggerated by too great a regard for the variations of the elytral markings.

In our series we have three types indicated by external form and general aspect—first, the *Chrysobothris* type represented by *Drummondi* which seems to occur in the entire subarctic region of the northern hemisphere; second, the *Anthaxia* type represented by the first five species of the annexed table one of which from its wide distribution in our fauna is probably distributed in the same manner as *Drummondi*, as it is possible that *appendiculata* is not a distinct species; finally, a group of five species which does not resemble any other genus in our fauna.

The elytral markings of all the species seem to me to be derivatives of a type of which *miranda* is the most perfect exemplification. By a study of the sketches in the annexed plate one can realize how the very perfect markings of *miranda* become reduced to the maculate form by a gradual extension of the black, or contraction of the yellow markings.

In two species, *longipes* and *atropurpurea*, I have never observed any specimens with elytral spots. The same is also true of *gentilis*, *zeneola*, *intrusa* and *obtus.* Two species, *fulvoguttata* and *Drummondi*, vary from three or four spots on each elytron to none at all. In all the specimens of *miranda* that I have seen there is practically no variation.

The following table gives in brief the striking characters of our species :

- Elytra acute, sometimes acuminate at tip; first joint of posterior tarsi equalling the next three in length.....2.
- Elytra obtuse at tip or rounded; first joint of posterior tarsi not longer than the next two.....4.
- 2.—Head and thorax with smooth facets.....1. **miranda** Lec.
 Head and thorax equally punctured without facets.....3.
- 3.—Front sparsely punctured.....2. **notata** Lap.
 Front equally densely punctured.
 Sides of thorax regularly arcuate, the disc widest at middle.
 5. **atropurpurea** Say.
 Sides of thorax oblique posteriorly, the disc widest in front of middle.
 4. **leugipes** Say.
- 4.—Thorax punctulate over its entire surface; elytra not costulate.....5.
 Thorax transversely strigose at middle; elytra finely costulate.
 6. **Drummondii** Kby.
- 5.—Form depressed as in *notata*; thorax also similarly sculptured.
 3. **conspua** Lec.
- Form convex; thorax coarsely punctured.
 Margin of thorax entire or nearly so.....8. **gentilis** Lec.
 Margin of thorax obliterated in front.
 Tip of prosternum suddenly constricted.
 Hind angles of thorax obtuse not flattened; clypeus not emarginate; elytra not pubescent.....7. **fulvoguttata** Harr.
 Hind angles of thorax acute, flattened above and with a slight smooth space; clypeus narrowly semicircularly emarginate; elytra pubescent.....9. **intrusa** n. sp.
- Tip of prosternum of triangular form.
 Sides of thorax feebly arcuate, the disc and sides equally punctured.
 10. **sucoia** Mela.
 Sides of thorax distinctly arcuate, the disc posteriorly, also the sutural region of the elytra less densely punctured11. **obtusa** n. sp.

M. miranda Lec.—Head coarsely punctured, with five smooth callosities arranged in a regular pentagon. Thorax with sides regularly arcuate, lateral margin acute posteriorly, disc coarsely punctured with seven smooth spaces, three on each side oval, one in the median line posteriorly; beneath coarsely punctured, a smooth space along the lateral margin, prosternum at middle very sparsely punctate, the tip rather suddenly narrowed. Elytra not very densely punctured, the punctures comparatively fine, the surface with very regular markings as shown in the figure, the margin posteriorly finely serrulate, the tip acuminate. Body beneath coarsely punctured. First joint of posterior tarsi as long as the next three. Length .54—.64 inch: 13.5—16 mm. (Pl. IV, fig. 1).

In both sexes the last ventral segment is truncate, the angles acute and prominent.

The elytral markings of this species are the most complete and perfect of any in the genus, it is the full development of which the markings of the other species are the derivatives in a more or less imperfect manner. In *notata* and *conspua* there is a very plain attempt at a reproduction

of similar markings, while in *fulvoguttata* and *Drummondi* the lines are replaced by spots.

This species occurs from Oregon to Texas in the mountain regions.

M. notata Lap. et Gory.—Head sparsely punctured, shining. Thorax with sides regularly arcuate, sometimes slightly oblique posteriorly, broadest a little in front of middle, surface subopaque, sparsely punctured at middle, at sides finely reticulate, median line finely impressed and slightly foveate posteriorly, lateral margin distinct posteriorly; thorax beneath coarsely punctured at the sides, more finely at middle, prosternum suddenly constricted at tip. Elytra depressed, granulate punctate, lateral margin finely serrulate posteriorly, the tip acute, color black with yellow markings as shown in the figure, sometimes entirely wanting. Body beneath coarsely punctate, more or less reticulate at the sides. Posterior tarsus as in *miranda*. Length .36—.48 inch; 9—12 mm. (Pl. IV, figs. 3, 6).

The last ventral segment is truncate, the angles acute but not prominent.

This species by its smoother front is easily known from either of the next two species, and from *conspua* by the more acute elytra and the form of the posterior tarsus.

Occurs in Georgia and Florida.

M. conspua Lec.—Head rather shining, coarsely and moderately densely punctate. Thorax with sides regularly arcuate, widest at middle, surface subopaque moderately densely reticulately punctate, lateral margin obsolete in front, acute posteriorly, sides of thorax beneath densely reticulately punctured, prosternum in front densely and finely punctured, at its sides very sparsely, tip suddenly narrowed. Elytra granulate punctate, depressed, color black with variable markings, lateral margin obsoletely serrulate posteriorly, tips very obtuse. Body beneath coarsely but not densely punctured. Posterior tarsi with the first joint equal to the next two. Length .36—.48 inch; 9—12 mm. (Pl. IV, figs. 2, 4).

The last ventral segment is as in *notata*.

The elytral markings are variable, their range will be shown in the accompanying figures. In its general appearance this species resembles *notata*, the differences have already been mentioned. It seems to occupy an exactly intermediate place between the preceding and following species, resembling the former in general appearance and color and the latter in the elytral and tarsal structure.

Occurs in California and Arizona.

M. longipes Say.—Black, feebly shining, rarely with faint metallic lustre. Head densely punctured. Thorax widest in front of middle, the sides in front arcuate, posteriorly nearly straight and slightly convergent, marginal line distinct posteriorly but inferior, disc with a vague oblique impression each side posteriorly, the surface coarsely punctured along the margin, finely reticulate within this, obsoletely punctured at middle, the median line distinct, hind angles rectangular. Elytra moderately finely granulate punctate, the surface irregular, lateral margin finely serrulate posteriorly, the apices acute but not acuminate. Thorax beneath reticulate at the sides, prosternum coarsely reticulate between the coxæ, anteriorly sparsely punctate, the tip suddenly constricted. Body beneath reticulate. Abdomen

sparsely punctate, reticulate at the sides. Legs slender, moderately long. Posterior tarsi as in *miranda*. Length .28—.52 inch; 7—13 mm.

Last ventral segment broadly emarginate, the angles acute but not prominent.

This species could only be mistaken for the next, in which however the sides of the thorax are different and the elytra more acuminate at tip.

Occurs from Maine to Alaska.

As this species has such a wide distribution in our country and in the northern regions, may it not be really identical with *appendiculata* which seems as widely distributed in the Eastern Hemisphere?

M. atropurpurea Say.

Resembles the preceding very closely and differs in the following characters:

Thorax with sides regularly arcuate, widest at middle. Elytra acute and usually slightly acuminate at tip. Length .30—.52 inch; 7.5—13 mm.

This species follows the line of distribution already indicated for *miranda*.

M. Drummondii Kby.—Color variable from greenish to dark bronze, more shining beneath, form subdepressed. Head coarsely, densely and deeply punctured, rarely with a smooth spot on each side, sometimes the occiput is slightly strigose. Thorax narrower at apex, widest near the middle, sides feebly arcuate, disc distinctly impressed each side, the surface coarsely and densely punctured at the sides, transversely strigose at middle, lateral margin obliterated in front, smooth beneath posteriorly; thorax beneath coarsely and densely punctured, tip of prosternum suddenly narrowed. Elytra densely granulate punctate, and with three fine, rather vague costæ, lateral margin scarcely serrulate, apices obtuse, surface with three spots on each elytron arranged as in *fulvoguttata* sometimes entirely wanting. Body beneath and abdomen sparsely punctate. Posterior tarsi as in *gentilis*. Length .32—.42 inch; 8 - 11 mm.

The last ventral segment is subtruncate in the male, obtusely rounded in the female.

In our fauna this species has a wide distribution, from Maine to Alaska, varying to a greater or less extent in its course without presenting any characters by means of which local varieties might be indicated. I have observed that very many of our species in other families which have a subarctic transcontinental distribution occur in Siberia extending even to Europe making the complete circle. In some cases the Asiatic form bears another name, and I am inclined to believe that *guttulata* Gebl., is not specifically distinct from the present species but merely a slight variety.

M. fulvoguttata Harris.—Oblong, moderately convex, dark bronze above, more brightly metallic beneath, elytra usually with three spots on each. Head densely punctured, somewhat strigose on the occiput, clypeus truncate. Thorax

gradually narrowed in front, sides nearly straight, disc densely punctured, somewhat reticulate at the sides, a slight ante-scutellar fovea, hind angles obtuse, lateral margin obsolete in front, thorax beneath densely and coarsely punctured, prosternum at tip suddenly narrowed. Elytra moderately convex, margin finely serrulate posteriorly, the apices separately rounded, disc without trace of costæ granulately punctured at base, more finely and densely posteriorly and with a tendency of the punctures to form transverse strigæ. Body beneath sparsely punctured. Posterior tarsi as in *gentilis*. Length .30—.40 inch; 7.5—10 mm. (Pl. IV, fig. 5).

The last ventral segment is oval at tip in both sexes, a little more obtuse in the female.

In this species there are no traces whatever of fine costæ on the elytra. Its form is a little more convex than in *gentilis*. The elytral spots are usually six, two in front of middle on each side of the suture, two posterior to these and more external and two smaller about one-fifth from the apex and closer to the suture than the first pair. These are, however, variable and may be entirely absent.

Occurs in the Middle and Northern States, extending westward to California and Nevada.

M. gentilis Lec.—Color variable between green and blue or darker, metallic. Head densely punctured. Thorax with feebly arcuate sides, gradually narrowed to front, the lateral margin entire or very nearly so, disc densely and rather coarsely punctured, a slight ante-scutellar fovea, under side densely cribrately punctured, prosternum at tip suddenly constricted. Elytra moderately convex, densely granulate punctate, lateral margin at apex finely serrulate, the tip obtuse. Body beneath moderately densely punctate. Posterior tarsi with first joint not longer than the next two. Length .38—.46 inch; 9.5—12 mm.

The last ventral segment of the male is slightly truncate, of the female rounded.

This species is one of those which has never any elytral spots or other ornamentation.

Occurs in Colorado, Arizona, and the entire Pacific region.

M. intrusa n. sp.—Oblong, moderately convex, dark bronze, beneath more shining, surface sparsely pubescent. Head convex, front densely punctured and longitudinally strigose, clypeus narrowly semicircularly emarginate. Thorax narrowed in front, sides feebly arcuate, margin obliterated in front, hind angles distinct, subacute, flattened above and smooth, disc coarsely, densely and deeply punctured, beneath coarsely and densely punctured, the prosternum distinctly reticulate, suddenly narrowed at tip. Elytra rather coarsely and densely granulate punctate, the apical margin finely serrulate, the tips separately rounded. Body beneath sparsely punctate, surface with a greenish or bluish metallic lustre. Posterior tarsi as in *gentilis*. Length .26—.30 inch; 6.5—7.5 mm.

The last ventral segment is slightly truncate in the male the margin reflexed, in the female the segment is a little longer and more oval at tip.

This species represents in the western regions *æneola* of the east. It is similar in form, sculpture and color, but the two differ in the form

of the clypeus and the tip of the prosternum. Both species are finely pubescent.

Occurs in California and Nevada.

M. senecola Mels.—Oblong, moderately elongate, not depressed, senescent, beneath more shining, surface sparsely pubescent. Front broad, clypeus broadly emarginate, surface densely punctured, occiput somewhat strigose. Thorax narrowed in front, sides feebly arcuate, margin obliterated in front, hind angles obtuse slightly flattened above, disc densely punctured becoming slightly reticulate at the sides, beneath very densely, not very coarsely punctured, prosternum broadly triangular at tip. Elytra moderately convex, densely granulate punctate, margin at apex finely serrulate, tips separately rounded. Body beneath sparsely and rather feebly punctate. Posterior tarsi as in *gentilis*. Length .18—.26 inch: 4.5—6.5 mm.

The last ventral segment is slightly truncate in the male, oval in the female.

As already intimated this species and *intrusa* are closely related and have but little resemblance to the other species of this genus.

Occurs in the Middle and Southern States.

M. obtusa n. sp.—Subcylindrical, moderately robust, metallic greenish-blue. Elytra darker. Front broad, coarsely but not deeply punctured, clypeus feebly emarginate at middle. Thorax convex, narrowed in front, sides moderately arcuate, margin obliterated in front, surface coarsely, deeply and rather densely punctured, slightly reticulate at the sides, beneath coarsely, deeply and densely punctured, prosternum broadly triangular at tip. Elytra very coarsely punctured at base becoming granulate posteriorly, the posterior margin finely serrulate, the tips separately rounded. Body beneath coarsely but not densely punctured. Posterior tarsi as in *gentilis*. Length .22 inch: 5.5 mm.

The last ventral segment is slightly truncate and the margin reflexed.

I have seen but one specimen of this species which resembles in its form one of the smaller species of *Acmaeodera*. It is more obtuse at either end and more cylindrical than any species in our fauna.

One specimen, Georgia.

ANTHAXIA Esch.

In the study of our species I have been unable to find any sexual characters like those which have been observed in the species of Europe. On the other hand, with an incomplete series however, I have not been able to find any of the latter with the tarsal claws toothed as in our *cyanella* and *quercata*.

It will be observed that these two species differ from each other in the same manner that *viridifrons* and *viridicornis* do, and the question has arisen in my mind whether they are not respectively sexes of each other, the male in each case having the rougher surface sculpture.

With an original tendency to a contrary course I have been compelled,

from the mass of material before me, to follow Mr. Crotch in the suppression of a number of species under the name *æneogaster* L. et G., he having chosen for the aggregate a name posterior to that by three years.

In the following list will be found one species hitherto unknown to our fauna, *salicis* Fab., which has probably been introduced. There can be no doubt of the capture of these specimens in Kansas. Had they been taken near the Atlantic coast in or near any of our commercial cities, their occurrence would have been mentioned, but the name not introduced in our lists.

The following synoptic table and the short descriptions will, it is hoped, enable our students to identify their species.

Body depressed, oblong-oval. Last ventral segment not differing in sculpture from the other segments.

Thorax transversely strigose at middle.

Color bright blue, elytra except at base cupreous..... **salicis** Fab.

Thorax uniformly sculptured, punctured or reticulate.

Claws simple or merely a little broader at base.

Elytra roughly granulate..... **æneogaster** L. et G.

Elytra feebly sculptured, at most scabrous.

Elytra finely granulate, subopaque. Body above and beneath bright green with a tendency in the elytra to become olivaceous.

deleta Lec.

Elytra scabrous, feebly shining. Body above and beneath uniform brownish-bronze..... **viridifrons** Gory.

Elytra scarcely wrinkled. Body nearly black with a slight purplish lustre, front and sides of thorax, broadly, cupreous or æneous.

viridicornis Say.

Claws broadly toothed at base.

Elytra moderately shining, surface not granular..... **cyanella** Gory.

Elytra subopaque, surface finely granular..... **quercata** Fab.

Body cuneiform, *Agriloid*. Last ventral segment conspicuously more coarsely punctured. Claws slender..... **flavimana** Gory.

A. salicis Fab.—Form rather broad, depressed, color bright blue. elytra bright coppery, blue at base. Head densely punctured. Thorax nearly twice as wide as long, sides irregularly arcuate, hind angles distinct, disc moderately convex, broadly concave each side of middle, median line moderately impressed, coarsely punctured at the sides and in front, finely strigose at middle and near the base, color bright blue with a darker somewhat velvety space on each side. Elytra granulate-punctate, color bright coppery with a triangular space extending across the base and nearly one-third along the suture. Prothorax and body beneath densely punctured, abdomen rather densely rugose at base, smoother near the tip. Claws slender, simple. Length .26—.28 inch; 6.5—7 mm.

This species differs from all those strictly native to our fauna by the brilliancy of its color. In form it resembles closely that variety of the next species known as *expansa*.

I have seen but two specimens, collected by Dr. H. A. Brous, at

Smoky Hill, Kansas, in the flowers of a Malvaceous plant. It is quite a common species in Europe and was probably introduced with some plant in which it lives.

A. seneogaster L. et G.—Form rather broad, depressed, piceous or black surface with faint seneous lustre, very rarely green? Head densely punctate reticulate, with very short pubescence. Thorax transverse, sides feebly arcuate in front, nearly straight at middle, slightly sinuate posteriorly, the hind angle acutely rectangular, disc moderately convex, usually with four foveæ arranged in an arcuate transverse series, sometimes with two only, often without trace of any surface normally coarsely reticulate, often however subgranular or even slightly longitudinally strigose on each side of the middle. Elytra gradually narrower from the apical third, the tips obtuse, surface rather coarsely granulate punctate and with a faint oblique impression extending from the humeri toward the middle of the suture. Beneath more or less seneous and more shining than above, the prothorax variably reticulate, the body and abdomen coarsely punctate. Claws simple. Length .14—.28 inch: 3.5—7 mm.

At the time of the publication of the "Revision of the Buprestidæ" by Dr. LeConte, the number of specimens before him did not exceed ten, these formed the basis of the six names which appear in the Revision, five of them represented by uniques. Since that time the amount of material has considerably increased and the selected specimens representing all shades of variation in his cabinet and mine now number about eighty, which represent many hundreds of specimens from which selections were made. The result of this accumulation has been the demonstration of the identity of those forms which Crotch had already placed as varieties in the Check List.

The surface lustre of the vast majority of the specimens is brownish-bronze, specimens however occur in the Yosemite Valley of California as brilliantly green as *deleta* or *quercata*. The latter form, which for convenience may be called *prasina*, is rather rare, I have seen but eight, these however exhibit the same thoracic variations observed in the darker forms. The specimens with bronze surface vary in the form and sculpture of the thorax. Three forms *inornata*, *foveicollis* and *imperfecta*, are absolutely identical, these have the four thoracic foveæ well marked, in the manner of some European forms. These foveæ become gradually fainter in *retifera* and *expansa* and are finally lost in *strigata*. Specimens often occur with the middle foveæ well marked and the lateral obsolete or entirely wanting. The surface sculpture of the thorax also varies in a gradual manner. In *strigata* the sides are distinctly reticulate, the middle much more finely and the lines of the reticulation forming short longitudinal strigæ. From this we have every gradation to the granular form, through forms like *retifera* in which the entire surface is reticulate to those simply granulate without reticulation. The existence

of pubescence, or the reverse, on the front is merely a question of the state of preservation of the species.

From a slight examination which I have made of European species there appears to be the same tendency to vary as is exhibited in the preceding species. The amount of material at my disposal has been too meagre to indicate positively the equivalence of several species but what occurs in one fauna may be found in another. I am not by any means positive that our species will prove different from some previously described from Europe, as it will be observed that *umbellatarum* and some of its allies very suspiciously resemble the aggregate which is united under the name *senecogaster* L. et G.

This species is the most widely diffused in our fauna. It occurs in Maine, going west through Canada and the Northern States to the Hudson's Bay region, to Colorado and Utah, thence westward to Oregon and following the Pacific slope southward as far as Tejon in California.

A. deleta Lec.—Oblong, very little narrower posteriorly, color above and beneath bright green with a tendency to become brownish on the elytra. Front flat, densely punctured. Thorax broad, not narrower at base, sides feebly arcuate, sometimes straight at middle and slightly arcuate at apex and base, hind angles small, rectangular, disc even or with a feeble trace of impression on either side of middle, surface reticulate at the sides, scabrous at middle. Elytra subopaque, finely granulate, apices obtuse. Body beneath bright green, the surface reticulate, abdomen more shining. Claws slender, slightly dilated at base. Length .16—.20 inch; 4—5 mm.

In form this species resembles *inornata*. It is however much less depressed and with finer surface sculpture. The color of the surface is very uniform, the type in the cabinet of Dr. LeConte being discolored, hence the different description. Bright green forms of *inornata* occasionally occur, but these are always so rough in their sculpture that there will be no difficulty in separating them from the present species.

Occurs from Colorado to Nevada and California.

A. viridifrons Gory.—Oblong, feebly convex, dark coppery bronze, more shining beneath, head often green. Front slightly convex, a feeble frontal depression, surface reticulate. Thorax broad, sides irregularly arcuate, disc moderately convex, usually with two slight transverse depressions on each side which are often absent, surface regularly reticulate. Elytra narrowed at apical third, apices obtuse, surface distinctly rugulose and subopaque. Prothorax and body beneath indistinctly reticulate, abdomen very sparsely punctate. Claws slender, slightly broader at base. Length .16—.20 inch; 4—5 mm.

This species and *viridicornis* seem to bear the same relation to each other that *quercata* and *cyanella* do. It is desirable that all of these should be studied in their habits with the view of ascertaining if the differences are not merely sexual.

Occurs in the Middle, Southern and Western States.

A. viridicornis Gory.—Oblong, moderately depressed, black, beneath bluish, above slightly purple, sides of thorax broadly shining cupreous. Front slightly depressed at middle, surface reticulate and cupreous or brassy. Thorax broad, sides feebly and irregularly arcuate, disc slightly convex, on each side a transverse depression, surface very regularly reticulate. Elytra narrowed at apical third, the apices obtuse, surface opaque finely wrinkled. Body beneath more shining than above, the thorax reticulate, abdomen sparsely punctate. Claws slender, broader at base. Length .20—.26 inch; 5—6.5 mm.

This species resembles *cyarella* in form but is less shining and with the thorax differently colored. The form of the claws will enable the two to be easily separated.

Occurs in the Middle and Southern States.

A. cyarella Gory.—Oblong, parallel, elytra narrowing at apical third, color bluish or purple, shining. Front flat, impressed at middle, surface coarsely punctured somewhat reticulate at the sides. Thorax broad, sides nearly straight at middle, arcuate at either end, disc moderately convex with a deep triangular impression on each side behind the middle extending to the hind angle, surface distinctly reticulate at the sides, smoother at middle. Elytra obtuse at tip, disc with a vague oblique impression in front of middle, the surface moderately shining, obsoletely scabrous at base and indistinctly punctured and much smoother near the apex. Body beneath black with a purplish tinge, the prothorax indistinctly reticulate, the abdomen obsoletely punctate and nearly smooth. Tarsal claws with a broad tooth, acute at its free angle. Length .16—.22 inch; 4—5.5 mm.

It appears to have escaped notice that this species and *quercata* have the claws distinctly toothed. This distinguishes these two from any others at present known in our fauna, while the broader form, more shining and less sculptured surface distinguish the present from *quercata*.

Occurs in the Middle, Southern and Western States, extending as far as Texas, also one specimen from California, (Ulke).

A. quercata Fab.—Oblong, slightly narrowed posteriorly, color usually bright green with the middle of the thorax and a broad vitta on each elytron brown. Front flat without depression, densely punctured. Thorax broad, the sides usually straight at middle, arcuate at the front angle and slightly sinuate near the posterior, disc feebly convex, with a moderate depression each side behind the middle composed of two confluent transverse impressions, surface reticulate, but less distinctly at middle. Elytra gradually narrowed to the tips which are obtuse, surface feebly granulate at base, somewhat less rugous posteriorly. Body beneath green, the thorax distinctly reticulate, the abdomen nearly smooth. Claws toothed at base. Length .16—.24 inch; 4—6 mm.

There is a tendency in this species to vary in color, the bright green giving place to brownish. *A. bivittata* Gory, seems merely a form of this species with the brown elytral vitta well marked.

The attention of collectors should be directed to this species and *cyarella*. They are so often sent together, and even placed side by side that I am inclined to suspect a closer relationship than that of allied species, in other words may they not be sexes of one?

Occurs in the Middle and Southern States to Texas. I have seen one in Mr. Ulke's cabinet from California.

A. flavimana Gory.—Narrowly cuneiform. Front convex, finely reticulate. Thorax broader than long, narrower posteriorly, apex bisinuate, sides feebly arcuate, hind angles rectangular, disc moderately convex, very regularly reticulate, a vague impression each side of middle, another more distinct in front of scutellum. Elytra narrowed to apex, a fine transverse basilar impression, surface slightly rugous, vaguely striato-punctate, with one interval slightly more convex, apices obtuse. Thorax beneath reticulate, body and abdomen obsoletely reticulate or nearly smooth, the last ventral segment very coarsely punctured. Tarsal claws slender. Length .12—.20 inch; 3—5 mm.

The male is more slender and smaller than the female. In the latter the last ventral segment is coarsely punctured over its entire surface while in the male the tip is alone punctured.

The color of this species varies considerably. The head is usually metallic-green, varying to purplish. The thorax is broadly purple-black or dark brown at middle, the sides green or blue. The elytra are dark purple or bronze varying to greenish, with usually a basal triangle of green. The under side is green or bronze.

Occurs in the Middle and Southern States as far as Texas.

XENORHIPIS Lec.

This genus differs remarkably not only from the other two of the group but from all others in the family in the structure of the antennæ of the male. The joints of the male antennæ from the second to the tenth are provided with a branch of varying length, that of the second shortest. In the accompanying plate (IV, fig. 9), I have endeavored to reproduce as accurately as possible the form of each joint and its branch, and will refer the reader there rather than give a detailed description. The antennæ of the female do not differ remarkably from the usual Buprestide type, being slender and subserrate from the fifth joint.

X. Brendeli Lec. Proc. Acad. 1866, 384.

In the two outline figures on the plate (IV, figs. 7, 8), representing both sexes it will be observed that the thorax of the male is quadrate, and that of the female distinctly wider than long. In the latter sex the head is also more transverse and the eyes smaller than in the male and much less prominent.

The three specimens known do not vary perceptibly from each other in size .20 inch; 5 mm.

While very rare the species has a wide distribution. The specimen in Mr. Ulke's cabinet was collected in Peoria, Illinois; Dr. LeConte has one from Texas; that in my cabinet (a ♀), was found by Mr. A. Merkel in his garden at Brooklyn.

Bibliography and Synonymy.

MELANOPHILA Esch.

- M. miranda** Lec. (*Phænops*), Proc. Acad. 1854, p. 83; Trans. Am. Philos. Soc. ~~—~~ ~~—~~ p. 212; Col. Kans. 1859, p. 11, pl. ii, fig. 7.
- M. notata** Lap. et Gory, (*Apatura*), Mon. i, p. 4, pl. i, fig. 5; Lec. loc. cit. p. 212 —
luteosignata Ziegl. Proc. Acad. 1846, p. 267.
opaca Lec. loc. cit. p. 213.
- M. conspua** Lec. Pacif. R. R. Rep. 47 par. p. 44; Tr. Am. Philos. Soc. xi, p. 212 —
- M. longipes** Say, (*Bupr.*), Journ. Acad. iii, p. 164; Gory, Mon. Supp. p. 76, pl. xi ~~—~~ ~~—~~ i, fig. 74; Lec. loc. cit. p. 212.
immaculata Mann. Bull. Mosc. 1837, p. 70; Gory, loc. cit. p. 75, pl. xiii, fig. ~~—~~ ~~—~~.
appendiculata † L. et G. Mon. i, Apat. p. 8, pl. ii, fig. 14.
- M. atropurpurea** Say, (*Bupr.*), Journ. Acad. iii, p. 160; Lec. loc. cit. p. 213.
- M. Drummondi** Kby. (*Trachyp.*), Faun. Bor. Am. p. 159, pl. ii, fig. 8; L. et ~~—~~ ~~—~~
Mon. i, p. 5, pl. i, fig. 3; Lec. loc. cit. p. 213.
guttulata † Mann. Bull. Mosc. 1853, p. 221.
- M. fulvoguttata** Harris, (*Bupr.*), N. E. Farmer, 1829, p. 2; Ins. Inj. Veg. 44; ~~—~~ ~~—~~
loc. cit. p. 213.
octospilota L. et G. Mon. i, p. 4, pl. i, fig. 4.
croceosignata L. et G. loc. cit. p. 5, pl. i, fig. 6.
decolorata L. et G. loc. cit. fig. 7.
- M. gentilis** Lec. List Col. p. 42.
prasina || Lec. loc. cit. p. 254.
- M. intrusa** n. sp.
- M. seneola** Mels. Proc. Acad. ii, p. 146.
metallica Mels. loc. cit.
- M. obtusa** n. sp.

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- A. salicis** Fab. Gen. Ins. Mant. p. 237; Lap. et Gory, Mon. i, Anth. p. 12, pl. ii ~~—~~ ~~—~~
fig. 14.
- A. seneogaster** L. et G. loc. cit. p. 32, pl. vii, fig. 44.
inornata Rand. Bost. Journ. ii, p. 4; Lec. Trans. Am. Philos. Soc. 1859, p. 215 ~~—~~ ~~—~~
expansa Lec. Pacif. R. R. Expl. xi, Ins. 47 paral. p. 44.
strigata Lec. Trans. Am. Philos. Soc. 1859, p. 215.
foveicollis Lec., *imperfecta* Lec., *retifer* Lec. loc. cit. p. 215.
- A. delata** Lec.
- A. viridifrons** Gory, Mon. Suppl. p. 284, pl. xlvii, fig. 277; Lec. loc. cit. p. 217.
subarnea Lec. loc. cit. p. 216.
- A. viridicornis** Say, Journ. Acad. iii, p. 162; Trans. Am. Philos. Soc. iv, p. 161 ~~—~~ ~~—~~
Lec. loc. cit. p. 216.
- A. cyanella** Gory, loc. cit. p. 285, pl. xlvii, fig. 278; Lec. loc. cit. p. 216.
scoriacea Mels. Proc. Acad. ii, p. 148.
- A. quercata** Fab. Syst. El. ii, p. 216; L. et G. loc. cit. p. 21, pl. v, fig. 28; Lec. loc. ~~—~~
cit. p. 217.
cuneiformis Gory, Mon. Suppl. p. 290, pl. xlviii, fig. 284.
bivittata Gory, loc. cit. p. 292, pl. xlix, fig. 286.
- A. flavimana** Gory, loc. cit. p. 291, pl. xlix, fig. 285; Lec. loc. cit. p. 218.
gracilis Mels. Proc. Acad. ii, p. 148.

**Notes on some little known Genera and Species of
COLEOPTERA.**

BY GEORGE H. HORN, M. D.

The following pages contain the results of fragmentary studies made at various times, with notes on some genera sufficiently well known by some of which the descriptions have been necessarily imperfect.

Several new genera are described here for the first time, one being a contribution from Dr. LeConte in order that the description might accompany the figure. Species are described in several genera now for the first time known in our fauna as *Dasycerus* and *Oniticellus*.

Considerable space has been devoted to *Polymæchus* and many details given on the plate, the better to elucidate its systematic position, it being now accepted as a Rutelide rather than a Dynastide.

A few genera have been figured in order that the student might be able to acquire a better idea of their external form than that obtained from description alone.

One foreign genus has been studied and its affinities pointed out. *Myrmeospectra* seems not to have fallen under the observation of any careful student since the days of Motschulsky, and the position assigned it by that author as well as that given in the Catalogus are equally erroneous.

The species formerly placed in *Lichnanthe* and *Dasydera* have been synonymically treated and placed under *Amphicomus*, the two genera above mentioned not presenting characters sufficient for their separation.

LEPTINUS Mull.

Having had occasion to examine our species of this genus with the view of describing the parts of the mouth, several important differences between the two species have been observed which are of sufficient moment to require the creation of a new generic name for our larger form.

These characters in brief are as follows:

Head entirely without eyes; prosternum not separating the anterior coxæ.

Leptinus.

Head with translucent eye spots at the hind angles of the head; prosternum separating the coxæ..... **Leptinillus.**

The latter genus based on *L. validus* Horn, being much larger than the other was used in preference for dissection, and the sketches on the accompanying plate were made from it.

The head viewed from above presents a well marked hemihexagonal frontal suture. The labrum is transverse, connate with the front, the suture well marked and nearly straight.

The mandibles are of irregular triangular form, thin and translucent, convex above, concave beneath, the inner edge finely fimbriate, the apex very acute and prolonged.

The maxillæ are bilobed, outer lobe longer with moderately long and rather dense ciliæ, inner lobe shorter, ciliate externally and with shorter and stouter hairs internally. The palpi are four-jointed as shown in the figure.

The mentum is transverse slightly concave beneath, narrowed in front, the hind angles prolonged in long slender processes over the gula. On the front of the mentum is an accessory piece. Ligula concealed behind the mentum, the paraglossæ prominent, alate, united on the median line and finely fimbriate along their margins. The palpi are short, three-jointed, the penultimate joint longer than the others, the basal support slightly projecting beyond the mentum causing the palpi to appear four-jointed.

The head is provided at the posterior angles, under the lateral margin with an oval translucent eye spot recalling a similar structure in *Adelops* or in some *Anophthalmi*.

The prosternum moderately separates the anterior coxæ and is fimbriate at tip, the coxal cavities open behind.

The plate gives in sufficient detail the under side of the body.

The legs are not long. The anterior and middle coxæ have a distinct trochantin. Anterior tibiæ slightly broader to tip, ciliate at the outer angle, the tarsi dilated in both sexes but more widely in the male, the fourth joint bilobed. Middle tibiæ stout, ciliate and finely spinulose externally, the tarsi dilated but less widely than on the anterior legs, the fourth joint less distinctly bilobed. Posterior tibiæ slender, ciliate and spinulose, tarsi slender, first joint nearly as long as the next two, the fourth joint slender. Tibial spurs all distinct.

The relationship of *Leptinus* has already been discussed by Dr. LeConte and will not be repeated here, and as fuller details of its structure will be given in a forthcoming work, merely enough is given here to render the accompanying plate intelligible.

Details of structure are illustrated on Plate V.

PLATYPSYLLA Ritsema.

This genus is founded on a curious parasite discovered on the American Beaver in captivity in the Zoological Gardens at Amsterdam. By Mr. Ritsema it was placed in a relationship not very remote from the true fleas. Prof. Westwood who described the insect about one month later believed it typical of a new order which he named *Achreioptera*.

In the Proc. Zool. Soc. London, Nov. 1872, Dr. LeConte gave in greater detail than had been done a description of its anatomy, especially of the mouth parts and expressed the opinion that *Platypsylla* was a Coleopteron not very remote in its affinities from *Leptinus*. With this opinion I fully agree.

I have before me the dissection of the mouth parts made by Mr. Matthews and another prepared by myself which are illustrated by the annexed plate. As these differ somewhat from those given by Dr. LeConte and subsequently by Westwood, (*Thesaurus Oxoniensis*, 1874), attention will be called to the differences.

The antennæ consist of a long basal joint followed by a broader cupuliform piece which seems to be composed of two joints. Within the cupule is an oval mass composed of six segments. Westwood and LeConte give a greater number of segments to the mass but do not mention the division of the cupule.

The mentum being easily seen without dissection, my figure does not differ essentially from that of those authors.

The maxillæ are composed of two lobes, both thin and translucent, the inner especially so. The outer is ciliate with long hairs on its outer side from the insertion of the palpus to its apex. The inner lobe is long, wedge-shaped, truncate at apex and ciliate with very short hairs. The palpus is four-jointed as shown in the figure.

When the mentum and maxillæ are removed and the head viewed from the under side the following structures become evident.

The frontal suture nearly straight defines the clypeus, which has at its middle a small oval dark spot being a point at which the chitin is denser. Immediately posterior to this spot is a small somewhat pentagonal piece articulated at its base a little in front of the frontal suture and which is the labrum. Posterior to the labrum on each side is a small oval spot.

Immediately behind the labrum the edge of the mandible can be detected. This organ is extremely thin and transparent and is with great difficulty defined. The illustration is as far as I have been able to follow its outline. That this is not merely a line of sculpture on the head has been rendered evident to me by the removal of the structure from the opposite side of the head, but I have not been able to isolate the mandible.

Prof. Westwood was unable to find any trace of the mandible. After a very careful study of the piece which has been figured by Dr. LeConte as the mandible I am convinced that it is really one of the granules which occur behind the labrum, and that the apparently serrate edge

is a very irregular fracture. That this piece could hardly be even an aborted mandible seems evident, from the fact that it is a little less in size than the first or basal joint of the maxillary palpus.

The other parts of the body as described seem to need no further comment. Details are given on Plate V.

MONCEDUS* n. g. (Lathridiidae).

I have established this genus on a very small species having the following remarkable characters:

Antennæ ten-jointed, joints 1—2 thick, third a little larger than the following 4—9, which are rounded but little longer than wide, tenth as long as the eighth and ninth, oval, obtuse, above one-half longer than wide. Eyes convex, prominent. Front coxæ not prominent, separated by the narrow prosternum, cavities closed behind. Legs rather short, tibiæ without distinct spurs; tarsi three-jointed, the first joint large, dilated, flat and spongy beneath, oval, not emarginate; second joint small arising from the upper surface of the first joint, about one-third from the distal end; third joint long, with rather large claws feebly toothed near the base. Upper surface very coarsely sculptured, elytra with rows of large foveæ and with the interstices subcostate, alternately more elevated as in certain *Micro-*

M. guttatus Lec. n. sp.—Fulvous, antennæ black. Head flat, broadly impressed, opaque, alutaceous or finely punctulate. Prothorax quadrate, a little longer than wide, not wider than the head with the eyes, sides nearly straight, tip and base feebly rounded, the latter margined, angles, both front and hind, acute, slightly prominent; disc very coarsely punctured, with four shallow impressions; there is a slight vestige of a smooth elevated dorsal line behind the middle. Scutel visible, black. Elytra more than one-half wider than the prothorax, truncate at base, with rectangular humeri, rounded behind and covering completely the dorsal segments; sides parallel, strongly margined; disc moderately convex with nine rows of large cribrate punctures; these rows are somewhat confused by pairs, with the interspaces elevated and subcostate; they are marked with black spots as follows: one at four-fifths the length on the first and second row of punctures, and another very near the tip; two on the third and fourth row, the anterior one elongate, about the middle, the posterior one between the two spots of the inner rows; two elongate spots on the fifth and sixth rows, one before, the other behind the middle; and finally some elongate clouds on the seventh and eighth rows behind the middle. Length 2 mm. (Pl. IV, fig. 10).

One specimen, Cedar Keys, Florida; Mr. H. G. Hubbard. This odd form seems to lead to the Monotomidae, but differs by many characters.

DASYCERUS Brongn.

This genus heretofore represented only in Europe by three species has been lately discovered within our fauna, two species having been almost simultaneously discovered on both sides of our continent. They are as follows:

* Through the kindness of Dr. LeConte I have been permitted to publish the description to accompany the figure I have drawn on Pl. IV.

D. carolinensis n. sp.—Brownish testaceous. Head triangular, each side impressed, lateral angles somewhat elevated, surface subopaque, granulate. Thorax transversely hexagonal, apex wider than base, lateral angles prominent but obtuse, disc convex with an obtuse, sinuous, costiform elevation extending from apex to base on each side of middle, surface granulate. Elytra broadly oval, a little more narrowed at apex, convex, each with the suture slightly elevated and three well defined sharp costae, the margin also costiform, intervals concave, irregularly biserially punctulate. Body beneath and legs somewhat paler than above. Length .07 inch; 1.75 mm. (Pl. IV, fig. 11).

Resembles the European *D. sulcatus* Brongn., but less robust, the thorax less transverse, and the humeri of the elytra more rounded.

Occurs near Morganton, North Carolina, (Morrison).

D. angulicollis n. sp.—Brownish testaceous. Head triangular, above granulate in lines, a smooth space over the insertion of the antennae. Thorax very transversely hexagonal, the lateral angles acute and prominent, apex slightly prolonged at middle and on each side within the front angles emarginate, the latter prominent anteriorly, disc convex, on each side a slender carina diverging posteriorly bifurcating in front forming a Y, near the lateral margin anteriorly a short carina, surface variably granulate. Elytra broadly oval, humeri rounded, convex, suture slightly elevated, disc of each side tricostrate the intervals densely and irregularly triserially granulate-punctate, the marginal interval smoother at base. Body beneath somewhat paler than above, comparatively smooth. Length .07 inch; 1.75 mm. (Pl. IV, fig. 12).

Resembles more closely *D. sulcatus* and has the lateral angles of the thorax even more acute. It differs also from *sulcatus* and *carolinensis* in the form of the apex of the thorax. *D. sulcatus* differs from both our species in having the intervals of the elytra ornamented with a double series of very regularly placed coarse punctures, and by the humeri of the elytra quite distinctly angulate and not rounded.

Occurs in California and given me by Mr. Ulke.

PEPLOGLYPTUS Lec.

This genus was established by Dr. LeConte for a curious little Histeride allied to *Glymma*, (see Trans. Am. Ent. Soc. 1880, p. 189), differing especially in the position of the antennal fossae. On plate VI, fig. 1, will be found a much enlarged representation of the upper surface; figure 2 gives a view of the head and thorax seen from the front. On the right side of the latter the antenna is extended so that the fossa under the anterior angle is seen. The scape when at rest is received in a groove at the side of the head extending to the labrum, the funiculus and club are folded backward as shown in the left side of figure 2.

PSEPHENUS Lec.

In order that some points in the structure of this rather anomalous genus may be better understood I have prepared an outline sketch on plate VI, fig. 14, of the upper surface of a male. The sexual differences

in the maxillary palpi are also shown. Fig. 15 is a more enlarged view of a portion of the under side. It will be observed that the structure of the legs and antennæ is decidedly Elmide, that of the under side recalls strikingly some *Dascyllidæ*. *Psephenus* seems to be a genus with Elmide affinities pointing strongly in the direction of the *Eubridæ* series of *Dascyllidæ*.

LARA Lec.

At the time of the description of this genus, the only specimen known was imperfect, having but three basal joints of the antennæ remaining. Having recently received a perfect specimen the outline on plate VI, fig. 16, has been prepared with the view of illustrating the missing organ and of giving a general idea of the species. The antennæ are rather long, scarcely at all serrate, first joint stouter, second oval much shorter, 3—11 subequal. The legs and tarsi do not differ notably from those of *Psephenus*.

ONITICELLUS Serv.

O. californicus n. sp.—Oblong, black, feebly shining, elytra more opaque. Thorax broad, emarginate in front, sides and base arcuate, surface with very coarse punctures, regularly but not densely placed, the intervals with finer punctures, a slight depression in front of the scutellum. Elytra finely seven-striate, striæ with punctures not closely placed, intervals opaque, very finely alutaceous and irregularly biserially punctate, each puncture with a very fine hair. Pygidium opaque, sparsely punctate. Body beneath shining, coarsely punctate. Length .54 inch; 13.5 mm.

Male.—Head broad; clypeus expanded at the sides, slightly prolonged at middle and arcuate in front, bearing a moderately long, slightly arcuate horn which is feebly emarginate at tip, behind the horn the head is smooth; occiput transversely carinate and with a short compressed horn at middle; sides of head coarsely punctured. Thorax convex, anteriorly with a broad but shallow depression behind which is a small smooth tubercle. (Pl. VI, figs. 3—4).

Female.—Head oval, coarsely punctured; clypeus nearly semicircular, obtusely bidentate in front; vertex with a short obtuse horn situated immediately between the eyes; occiput with a transverse carina on a line with the posterior border of the eyes. Thorax regularly convex, more coarsely punctured than the male, without the anterior concavity but with a slight tubercle at middle behind the anterior margin.

The genus *Oniticellus* is closely related to *Onthophagus* and differs in having the antennæ eight-jointed and by the presence of a very distinct scutellum. This is the first instance of the occurrence of the genus in our fauna, in fact there is but one other, from Cuba, in the Western Hemisphere.

For this interesting addition we are indebted to Mr. Henry Edwards, who collected but one pair at the base of Mount Shasta, California.

AMPHICOMA Latr.

Under this generic name are included the North American species formerly placed in *Lichnanthe* and *Dasydera*.

Our species are as follows:

- Elytra contiguous from suture to tip, their disc immaculate, labrum emarginate. **lupina.**
- Elytra dehiscent posteriorly.
- Labrum very feebly emarginate, almost truncate.....**ursina.**
- Labrum deeply emarginate.
- Elytra immaculate.
- Thorax densely punctate over its entire surface.....**vulpina.**
- Thorax with a smooth space in each hind angle.....**Edwardsi.**
- Elytra with denser spots of pale pubescence in three irregular rows.
- Pubescence above and beneath pale yellow.....**canina.**
- Pubescence entirely black, that of the disc of thorax brownish-yellow. **Rathvoni.**

A. lupina Lec. (*Lichnanthe*), Journ. Acad. 1856, p. 288.—Piceous with slight greenish lustre, elytra testaceous. Body beneath sparsely clothed with yellowish hairs. Labrum deeply emarginate. Thorax broader than long, densely punctured over its entire surface and clothed with rather short yellowish hair. Elytra with very short and not dense black hair, contiguous along the entire suture, the sutural angle with a distinct tooth. Length .44 inch; 11 mm.

The antennal club is slightly longer in the male. The posterior legs are stouter in the female and shorter and the tarsi relatively longer. The posterior tibiae are distinctly arcuate in ♂, straight in ♀. As a general rule the ♀ is much less pubescent than the ♂ and the hairs shorter, although the differences here are less marked than in the following species.

Occurs in New York, Pennsylvania, and the New England States.

A. ursina Lec. (*Dasydera*), Proc. Acad. 1861, p. 345; *Cooperi* Horn, Trans. Am. Ent. Soc. 1867, p. 164.—Piceous, shining, head and thorax with distinct æneous lustre, elytra testaceous. Labrum very feebly emarginate. Thorax narrowed in front, broader in ♀, surface densely punctured with a smooth space at each hind angle, clothed with silken white hairs longer in ♂. Elytra dehiscent posteriorly, sparsely clothed with short white hairs. Body beneath moderately densely clothed with white hairs, the abdomen smooth at middle and rufo-testaceous, without hairs in ♀, very sparsely pubescent even at sides and entirely rufous ♂. Legs piceous with æneous lustre, tibiae and tarsi usually paler. Length .40—.60 inch; 10—15 mm.

In this species the legs, especially the tibiae are more densely ciliate than in any other species. The sexual characters are as in *lupina*, the male being however more slender than the female.

The species described by me as *Cooperi* seems merely a feeble male.

Occurs in California near Sacramento.

A. vulpinus Hentz, Journ. Acad. 1826, pl. xiii, fig. 3; Burm. Handb. iv, 1, p. 27, and iv, 2, p. 472; Lec. Journ. Acad. 1856, p. 287.—Piceous, moderately shining, terminal segments of abdomen rufo-testaceous. Head and thorax without metallic lustre, the latter densely punctured over its entire surface and clothed with long fulvous hair, shorter and less dense ♀. Elytra brownish testaceous, immaculate, sparsely clothed with very short black hairs, at tip dehiscent. Body beneath with long fulvous hair, denser at the sides. Legs piceous. Length .60 inch; 15 mm.

The sexual characters are as in *lupina*. It will be observed however that in the posterior tarsus of the female the first joint is not conspicuously longer than the second, while it is so in both sexes of all the other species.

Occurs in the Middle and New England States.

A. Edwardsi Horn, (*Lichnanthe*), Trans. Am. Ent. Soc. 1870, p. 77.—Piceous black, surface with distinct aeneous lustre, clothed with brownish-black hair. Clypeus emarginate. Thorax densely punctured with a smooth space near each hind angle. Elytra dehiscent at tip, brownish testaceous, sparsely clothed with very short black hair. Abdomen nearly smooth at middle, usually entirely piceous, sometimes with the last two segments rufous. Legs piceous, with aeneous surface, sparsely pilose. Length .50–.60 inch; 13–15 mm.

The sexual characters as in *lupina*.

This is the only species at present known with the hair entirely dark.

Occurs in Oregon, Washington Territory and Nevada.

A. canina Horn, (*Lichnanthe*), Trans. Am. Ent. Soc. 1867, p. 164.—Piceous clothed with pale yellowish hairs. Head and thorax with aeneous lustre. Thorax densely punctured with a smooth space near each hind angle, hair moderate in length, uniformly yellowish. Elytra dehiscent posteriorly, brownish testaceous, sparsely clothed with very short black hair and with spots of short yellowish pubescence arranged in three irregular rows. Abdomen piceous with aeneous lustre, the third segment nearly naked and with dark pubescence at the side margin only. Legs piceous, sparsely hairy, tarsi paler. Length .50–.60 inch; 13–15 mm.

Sexual characters as in *lupina*.

Occurs with the preceding.

A. Rathvoni Lec. (*Dasydera*), New Species, 1863, p. 76. Closely resembles *Edwardsi*, except that the pubescence of the disc of thorax is brownish-yellow and the elytra are maculate as in *canina*.

Occurs in California, Nevada and Washington Territory.

Which of the west coast species was seen by Doubleday and casually recorded (London's Magaz. 1839, iii, p. 97), it is not possible to determine.

PLUSIOTIS Burm.

P. Lecontei n. sp.—Oblong oval, moderately convex, above brilliant green. Clypeus nearly semicircular, densely punctured and of cupreous color; head more sparsely punctured, the punctures finer posteriorly. Thorax twice as wide as long, narrower in front, sides anteriorly arcuate, posteriorly nearly straight, disc moderately convex, surface sparsely finely punctulate, color brilliant green, the

margins somewhat cupreous by transmitted light. Elytra wider than the thorax, broadest behind the middle, surface moderately deeply striate, the striæ finely punctured, intervals distinctly convex, very sparsely punctulate, the second interval with coarse punctures which extend from the base a little beyond the middle; a very distinct tuberosity at the apical termination of the third and fourth intervals. Pygidium green with golden lustre, sparsely punctulate. Body beneath fimbriate with pale hairs. Metasternum and posterior coxæ greenish with cupreous lustre. Abdomen very sparsely punctate with more evident cupreous lustre. Femora green, tibiae more cupreous. Tarsi piceous with seneous surface. Length .80—.90 inch; 20—23 mm.

Specimens have been observed with the surface more or less suffused with cupreous, these seem rather immature than true varieties.

This species is closely related to *P. Lacordairei* Bouc., (Proc. Zool. Soc. London, 1875, p. 122, pl. xxiii, fig. 4), but differs in important characters. M. Aug. Sallé has kindly made comparisons for me and I repeat his words: "It is an entirely new species very different from all those described and the smallest of all, the under side is cupreous while in *Lacordairei* it is silvery, the thorax is more arcuate and the lateral border more dilated, the striæ of the elytra are deeper and the punctures in them larger and deeper, finally the green color is deeper and the legs more red."

The first specimen examined was from Tucson, Arizona, in the cabinet of Mr. H. Edwards, a second in the cabinet of Dr. LeConte was collected by Prof. Snow in New Mexico. The series in my cabinet came from near Prescott, Arizona.

I dedicate this species to a friend.

POLYMECHUS Lec.

Clypeus somewhat trilobed, the middle lobe bidentate, separated from the front by an elevated carina which is broadly interrupted at middle. Labrum transverse, slightly prolonged at middle, carinate above and densely ciliate. Mandibles pyramidal, the outer edge not toothed, the tip turned upward. Maxillæ stout at base, the inner lobe small, the inner edge double with three small teeth on each edge and with long ciliæ, the tip acute; palpi moderate in length, the last joint elongate-oval and equal to all the others. Mentum narrow, the base suddenly broader, above the base gradually wider to middle then narrowed to the apex which is slightly emarginate; sides of mentum with long ciliæ, under surface with short hairs. Ligula triangular in great part concealed behind the mentum, densely ciliate at tip; palpi short, three-jointed, the second joint very small, the terminal longer than the other two combined. Eyes large convex, larger in the male, deeply emarginate by the sides of the front. Antennæ ten-jointed, club three-jointed as long as the stem in the female, one-half longer in the male. Legs short, stout, tibiae not longer than the femora, tarsi as long or longer than the tibiae. Tarsal claws dissimilar in the sexes, those of the female simple feebly arcuate and alike on all the feet, those of the male as follows: front leg—anterior claw a little stouter than the other with a trace of a tooth at middle, posterior claw simple; middle leg—anterior or outer spur deeply divided, the lower division forming

a tooth as long as the upper, inner claw simple; posterior leg—claws as in the middle leg. Fourth joint of middle and posterior tarsi with a spiniform prolongation at apex beneath.

P. brevipes Lec., the only species known, is at all times a rare insect and until now the material at hand did not admit of the sacrifice of a specimen for dissection. The figures on the accompanying plate give an idea of the general form of the species as well as of its details.

Since the first description of the species (Proc. Acad. 1856, p. 23), the position of the genus has remained in doubt. In the Classification of the Coleoptera of North America it is placed in the tribe Orytomorphi, a division of the Dynastide series. Our later studies show that *Polymæchus* is allied rather to *Parastasia* an East Indian genus associated with *Rutela* by Lacordaire.

The genera of Scarabæidæ seem to need revision, especially in the entire Pleurostict series. The Melolonthidæ are not satisfactorily grouped, the Cetonide genera not at all defined, while much remains to be cleared up in the doubtful ground between the Rutelides and Dynastides.

Details of structure will be found on Pl. VI, figs. 5—12.

APHONUS Lec.

Details of the structure of the oral organs are given on Pl. I V, fig. 13, in order that comparisons may be made between *Polymæchus* and *Aphonus*, the former being now referred to the Rutelini, the latter a true Dynastide superficially resembling *Polymæchus*.

ELATERIDÆ.

Since the days of Latreille many attempts have been made to define the families of that division of the serricorn series named by that author the Sternoxes, containing the Buprestidæ, Throscidæ, Eucnemidæ, Elateridæ, Cerophytidæ and Cebrioidæ, as they are accepted by one or other author.

The first two families are not only abundantly distinct from each other but possess characters which sharply separate them from those which follow. The last four families do not present any characters which are defined with sufficient sharpness to warrant their separation.

In the preceding volume of these Transactions I have attempted to demonstrate that the Cebrioidæ are not separable from the Elateridæ, the tribe Plastocerini filling the space which formerly existed between the two families.

The Eucnemidæ on the other hand seem more sharply defined.

Here we discover no trochantin to the middle coxæ which exists in all Elateridæ. If, however, *Perothops* be considered a member of the family, not only does this character fail but we have also present a form of front analogous to that of the Cebrioidæ, to all of which must be added a greater length of tibial spurs and serrate ungues.

In his elaborate monograph of the Eucnemidæ de Bonvouloir (excluding *Perothops*) includes *Cerophytum*, in which Lacordaire observed characters which seemed to him of sufficient importance to retain it as a family by itself. Neither course seems proper.

Cerophytum has a short transverse labrum, connate with the front, the suture however distinct, in this respect it resembles the Cebrioidæ. The front is gibbous and the clypeus obtusely carinate and the entire head resembles rather the Rhipiceridæ or the Macropogonini of the Dascyllidæ. The very long trochanters on the middle and posterior legs recall a similar character, less developed however, in the front and middle legs of the Macropogonini. The posterior coxæ have not the usual lamina observed in the Sternoxide series, but are sunken in the coxal cavities on the same plane with the metasternum and the abdomen.

The mode of insertion of the antennæ in the Eucnemidæ, in which the base of these organs is distant from the eyes and the front greatly narrowed, is a character to which due weight should be given. *Cerophytum* possesses it, but *Perothops* seems as nearly as possible intermediate between the Eucnemide and Elateride types.

In view of the facts above given what is the proper course to pursue? Should we recognize the Eucnemidæ, Elateridæ, Cebrioidæ, Perothopidæ and Cerophytidæ as distinct families each equal in value to the Buprestidæ, or should they be considered parts of a greater family which can safely be assumed to have that value? The latter course seems to me far more acceptable. The following table of the sub-families of the Elateride complex is therefore presented.

Posterior coxæ laminate. Trochanters small.

Labrum concealed; ungues simple; antennæ somewhat distant from the eyes, their insertion narrowing the front.....	EUCNEMINÆ.
Labrum visible, free; ungues variable; antennæ arising near the eyes, front not narrowed.....	ELATERINÆ.
Labrum transverse, connate with the front.	
Ventral segments six; ungues simple; antennæ as in the Elaterinæ; tibial spurs well developed.....	CEBRIONINÆ.
Ventral segments five; ungues serrate; antennæ slightly distant from the eyes, front narrow; spurs moderate.....	PEROTHOPINÆ.
Posterior coxæ not laminate. Trochanters of middle and posterior legs very long.	
Labrum short, transverse, connate with the front; front gibbous; ungues serrate.....	CEROPHYTINÆ.

Having the sub-families arranged it will be observed that the Eucneminae and Cerophytinae have no visible trochantin to the middle coxae. The Elaterinae and Cebriioninae have a well defined trochantin which is very small in the Perothopinae.

In the first sub-family the mandibles are short, usually robust, their apices broad or bidentate. The vast majority of the species of the second sub-family have a similar type of mandible; in the final tribe (Plastocerini), the mandibles become prominent and acute at tip and in great part smooth, a modification which is exaggerated in the Cebriioninae to become gradually reduced in the Perothopinae and Cerophytinae.

In their relationship with each other the first three sub-families form a very natural linear series. The fourth with Eucnemide affinity seems equally related to the Cebriionides. The Cerophytinae seem to me to have less Eucnemide affinity than de Bonvouloir claims, but with some relationship with that series, and almost equally with the Perothopinae, they lead very naturally to the Rhipiceridae and Dascyllidae.

CRYPTOSTOMA Latr.

The figure on the accompanying plate VI, fig. 13, will give an idea of the form and color of *Cryptostoma Dohrni* Horn. The color is bright blood-red the shaded part of the elytra black. I have seen but one specimen kindly given me by Dr. Dohrn who obtained it from a series of specimens collected near San Diego, California.

MYRMECOSPECTRA Motsch.

Head oval, broadest between the eyes and arcuately narrowed behind them. Antennae arising under a slight frontal ridge and more distant from the eyes than from the front, apparently ten-jointed. Labrum transverse, feebly emarginate, concealing the mandibles. Maxillary palpi with the second and last joints equal in length, the third very short and transverse the terminal flat, oval and obliquely truncate. Labial palpi short, the terminal joint cylindrical, acute at tip, more slender than the preceding but equal in length. Thorax ovate, convex, the base prolonged, basal margin reflexed, hind angles feebly prominent, anterior angles with large extensible vesicles. Scutellum moderate, rounded at tip. Elytra oval, rounded at tip, humeri obtusely prominent, disc very convex posteriorly, behind the base transversely impressed. A large extensible vesicle behind the humeri. Body apterous. Abdomen conically prolonged beyond the elytra. Legs slender. Tarsi five-jointed in both sexes. Claws with membranous appendages.

ANTENNAE ♂.—First joint elongate pyriform, slightly arcuate, second very small almost concealed, third large, quadrate, a little broader than long, distal edge emarginate, joints 3–10 subequal, eleventh slightly longer.

ANTENNAE ♀.—First joint large, triangularly dilated, second narrower and one-half shorter, third a half shorter than the second and the smallest of all, 4–7 longer than the third, 8–11 a little longer and broader.

Through the kindness of Dr. H. A. Hagen of the Museum of Comparative Zoology, I have been enabled to study this genus which appears to have been passed in silence since its description by Motschulsky. The male only has been examined, the description of the female antennæ are after the latter author.

It is to me a matter of great surprise that Motschulsky, and after him the authors of the Catalogus, should have placed such a characteristic insect so far from its natural relationship. The presence of extensible vesicles and the structure of the male antennæ are sufficient to have suggested its place at once. It is placed by Motschulsky as a Ptinide.

There can be no doubt but that *Myrmecospectra* is allied to *Collops*. The antennæ are however more distinctly eleven-jointed than in the latter genus, while the true third joint is similarly dilated in both. The tarsi are similar in the sexes, the anterior pair being five-jointed in both, while in *Collops* they are four-jointed in the males. While it is related to the latter genus in its antennal structure the form of body and even the color and markings reproduce *Temnopsophus* Horn, (Trans. Am. Ent. Soc. 1872, p. 111), which however has the tarsi as in *Collops*.

M. Nietneri Motsch. Etudes Ent. 1858, pp. 65 and 122, fig. 17.

This is the only species at present known, it is found in Ceylon. The original specimens were collected by Nietner, one of them having reached Dr. Hagen to whom I am indebted for the privilege of examining it as well as for one of the outline sketches which will be found on the accompanying plate VI, figs. 18—19.

MECOMYCTER n. g. (*Dasytini*).

Antennæ eleven-jointed, arising midway between the eyes and the margin of the front, under a slight ridge, first joint pyriform, second oval, third and fourth narrower than the second, five to ten gradually broader, somewhat triangular, eleventh longer, oval. Head oval, prolonged to a flat beak of moderate length. Eyes oval, moderately prominent. Labrum semicircular, membranous at base. Mandibles moderately prominent, acute, feebly arcuate. Maxillæ with inner lobe prolonged and ciliate within, the palpi moderately long, the terminal joint longest and slightly ciliate. Mentum narrow and long, the palpi slender and glabrous, the last two joints equal. Thorax oval, broadest at base. Scutellum distinct, quadrangular. Elytra wider than the thorax, oval, broader behind, apices entire, rounded. Legs slender. Tarsi five-jointed, slightly ciliate beneath, first four joints equal, fifth longer. Ungues slender and simple, without lobes.

This genus presents a curious combination of characters found separately in various genera of *Dasytini*. The prolonged head allies it to *Arthrobrachus* and the *Prionocerides* of Lacordaire, and its simple unguis to *Melyris*. By the structure of its tarsi it resembles *Dasytes*.

M. omalinus n. sp.—Body beneath piceous. Head flat above, coarsely punctured, orange-yellow, piceous behind the eyes. Antennæ piceous, four or five basal joints pale. Thorax oval, narrowed in front, a little longer than wide, apex truncate, base feebly arcuate, hind angles rounded, disc convex, coarsely and moderately densely punctured, surface orange-yellow sometimes with a median piceous stripe. Elytra coarsely punctured, the punctures gradually finer to apex, surface finely pubescent, color orange-yellow with a common sutural piceous stripe broader at either end, not attaining the apex, sides posteriorly piceous, this color sometimes extending and joining the sutural stripe, forming an anchor. Legs pale yellow. Length .14—.16 inch; 3.5—4 mm. (Pl. VI, fig. 17).

In the male the last ventral segment is feebly emarginate, and entirely piceous in color. In the female arcuate and tipped yellow.

Occurs in western Kansas, collected by Dr. H. A. Brous.

In the accompanying figure the head is represented fully extended. In nature it is deflexed and inserted nearly as far as the eyes. The first glance at the species recalls some of the forms of Omalini (*Trigonodemus*), hence the specific name.

Synopsis of the species of the tribe LEBIINI.

BY GEORGE H. HORN, M. D.

During the past few years Baron Chaudoir has excited an interest in the truncatipenne series of Carabidæ by his numerous monographic publications, which show a conscientious and profound study of the genera and species of this group. While I have been able to follow him satisfactorily in all the minor details of his work, I have utterly failed to see in his larger subdivisions any evidence of a systematic treatment of the subject.

It will be evident to any one studying Chaudoir's essays on the truncatipenne series that the ligula and paraglossæ play an important part in the diagnoses of the divisions whether called tribes or groups. Thinking that the key to the system might be found by a careful study of these organs, dissections were prepared and drawings made of the parts, for comparison, and the conclusion was forced upon me, as it will be on any one who will adopt the same course, that the mouth organs are of very little value in defining groups higher than genera and when used at all must be used with extreme caution.

With the desire of doing full justice to the subject dissections were made of all accessible genera many of which have been published in the preceding volume. The further the dissections were made the more evident it became that the ligula must be discarded as the basis

of any system of subdivision of the Carabidæ. Knowing then that the publication of the present paper in the form originally intended would carry with it a very decided expression of the above opinion, I felt that greater weight would attach to that opinion if some other system were presented at the same time. This essay became a secondary matter and the Classification of the Carabidæ as presented in the preceding volume was allowed precedence.

The synoptic table of the genera will not be repeated here, nor will I include *Lebia*, as nothing of importance has been added since my paper published several years ago.

The descriptions of the species are for the most part short, several of the more troublesome genera only have received greater attention in their details.

TETRAGONODERUS Dej.

This genus is a centre around which are grouped others having in common a form of inner maxillary lobe which I have illustrated in a series of dissections of Carabide mouth parts, (Trans. Am. Ent. Soc. ix, pl. viii, fig. 80). The tibial spurs of the middle and posterior legs are also long and slender and their margins very finely serrulate. The terminal spur of the anterior tibia is more obviously serrulate than the others.

The tribe *Tetragonoderidæ* as suggested by Chaudoir, (Bull. Mosc. 1876), contains five genera three of which are due to him. *Cyclosomus* Latr. which belongs here has a decided resemblance to *Omophron*, and has very oddly place by various authors from an incorrect appreciation of its true relationship which Chaudoir first made known.

Among the genera dismembered from *Tetragonoderus* is *Peronoscelis* Chd., which is said to differ from the former by the ligula not margined in front by the extension of the paraglossæ. In the dissection above quoted the ligula and paraglossæ have been drawn exactly as I have observed them and there does not appear to be any extension of membrane in front of the ligula, an appearance of this kind may, however, be produced by disarranging the focus of the microscope and an optical illusion is the result. From the failure of this character there may be considerable doubt of the value of the genus.

In the diagnosis of the two genera will be found the following expressions :

TETRAGONODERUS * * * unguiculi tenues, acuti, subtus obsolete basi, interdum evidentius, denticulati.

PERONOSCELIS * * * unguiculi simplices, aut obsolete basi denticulati.

These extracts are introduced because certain of our species have

denticulate claws while two have them absolutely simple, and Chaudoir has already supposed that one of the latter may be a *Peronoscelis* although the species was unknown to him in nature.

Tetragonoderus is represented in our fauna by four species which may be arranged in the following manner:

Claws serrate, (*TETRAGONODERUS*).

Prosternum margined at tip. Elytra in great part piceous. Legs and outer joints of antennæ piceous..... *intersectus* Germ.

Prosternum not margined at tip. Elytra in great part testaceous. Legs and antennæ testaceous..... *fasciatus* Hald.

Claws simple, no trace of serration, (*PERONOSCELIS*?).

Prosternum slightly protuberant, margined at tip. Elytra broadly oval, the dorsal punctures distinct. Eyes convex..... *latipennis* Lec.

Prosternum obtuse, not margined. Elytra oblong-oval, the dorsal punctures indistinct. Eyes not prominent..... *pallidus* Horn.

T. *intersectus* Germ.—Piceous, upper surface somewhat bronzed. Antennæ with two basal joints pale. Head smooth. Thorax nearly twice as wide as long, base and apex equal, sides arcuate, slightly sinuate posteriorly, hind angles distinct not prominent, disc smooth, median line distinctly impressed but attaining neither the apex nor base. Elytra oval slightly oblong, finely striate, intervals slightly convex, dorsal punctures distinct, situated on the third interval, the anterior somewhat in front of middle near the third stria, the posterior one-fourth from apex near the second stria; color piceous with bronze surface lustre, with a pale space on the intervals 5—6—7 near the base, one in interrupted sinuous band at apical third testaceous. Prosternum margined at tip. Legs piceo-testaceous. Claws serrate. Length .20 inch; 5 mm.

Male.—The anterior tarsi have three joints moderately dilated and slightly squamulose beneath, the middle tarsi with joints 2—4 more narrowly dilated. The last ventral segment is acutely notched at middle posteriorly and on each side one setigerous puncture.

Female.—Tarsi slender. Anal segment entire and with two setæ on each side.

Chaudoir places this species in a series in which the prosternum is not margined. The resemblance of this insect to a *Bembidium* of the *Notaphus* group is certainly remarkable and it is usually found in that vicinity in amateur collections.

Occurs in the States bordering the Gulf.

T. *fasciatus* Hald.—Piceous, slightly bronzed, antennæ and legs testaceous, elytra fasciate with testaceous. Thorax similar in form to *intersectus* but less broad and with the sides less arcuate in front. Elytra also more oval, more deeply striate and with the intervals distinctly convex, dorsal punctures as in *intersectus*; the color usually in great part testaceous with a semicircular space around the scutellum, a broad sinuous band with irregular edges at middle, and the apical fourth piceous. Prosternum obtuse, not distinctly margined at tip. Claws serrate. Length .18 inch; 4.5 mm.

The sexual characters are as in *intersectus*.

This species has a far wider distribution than the preceding, occurring

from Michigan and New York to Louisiana and Texas, extending to Arizona and the Peninsula of California. The more northern specimens are more shining and smaller with the elytra always paler. In the Texas region the specimens are somewhat less shining with darker color.

T. latipennis Lec.—Head piceous, surface bronzed, front with a slight arcuate impression each side, the anterior supra-orbital puncture unusually deep. Eyes rather prominent. Antennæ testaceous. Thorax colored as the head, less than twice as wide as long, apex and base equal, margin slightly reflexed, sides arcuate in front, rather strongly sinuate posteriorly, hind angles acute but not prominent, apical arcuate impression distinct, in front of which the surface is longitudinally wrinkled, median impression moderately deep, on each side of disc a punctiform impression, basal margin longitudinally wrinkled. Elytra broadly oval, very little longer than wide, striate, the striae indistinctly punctured, intervals slightly convex, dorsal punctures as in *intersectus* but each one situated more anteriorly; color yellowish testaceous with an irregular undulating fascia at middle composed of small piceous spots, the apex for a short distance piceous. Body beneath piceo-testaceous. Legs testaceous. Prosternum slightly protuberant at tip and distinctly margined. Claws simple. Length .20—.22 inch; 5—5.5 mm.

Male.—The anterior tarsi have three joints very distinctly dilated and squamulose beneath, the middle tarsi narrowly dilated with joints 2—4 squamulose beneath, the first joint only at tip. The anal segment is feebly emarginate at middle and the margin on each side has but one setigerous puncture.

Female.—The tarsi are not dilated. The anal segment entire and with one seta each side as in the male.

It may be observed in this species that the spurs of the tibiae are less distinctly serrulate than in the two preceding species, the anterior tibial spur especially so. The general appearance of this species is that of a broad *fatiscutus*.

There seems very little doubt in my mind that Chaudoir is correct in merely guessing that this species should be referred to *Peronoscelis*. It should probably be placed near *undatus* and *mexicanus*.

Occurs in Texas.

T. pallidus Horn.—Pale rufo-testaceous, subopaque. Head impunctate, without impressions, eyes not prominent. Antennæ testaceous. Thorax less than twice as wide as long, sides moderately arcuate in front, oblique and very slightly sinuate behind, hind angles rectangular, not prominent, disc with a finely impressed median line and without lateral foveæ. Elytra oblong-oval, finely striate, striae not punctured, intervals nearly flat, dorsal punctures not evident. Body beneath smooth, prosternum obtuse at tip, not margined. Claws simple. Length .18—.20 inch; 4.5—5 mm.

Male.—Sexual characters as in *latipennis*.

Female.—As in *latipennis*.

In this species the mentum tooth is broader and less acute than in those which precede.

I have seen but two specimens of this species, one ♀ from the southern district of California, the other from Camp Grant, Arizona.

NEMOTARSUS Lec.

This genus contains but one species resembling at first sight some of the varieties of *Lebia scapularis*. The head is rather suddenly narrowed behind the large eyes and the neck is narrow. The thorax is broadest at base which is arcuately truncate, the lateral margin gradually broader from apex to base. Color yellowish testaceous, elytra piceous with an oval spot near the base, and the apex testaceous.

The tibial spurs are long and slender (equalling very nearly the first tarsal joint), their margins not serrulate. The tarsi are slender and long, the first joint equalling the next two, fourth joint simple. Ungues with long pectination.

One species occurs in our fauna.

N. elegans Lec.—Length .20—.22 inch; 5—5.5 mm.

Male.—Anterior tarsi feebly dilated, the first three joints finely biserially squamulose beneath. Middle tarsi slender. Anal segment with one seta each side.

Female.—Tarsi slender. Anal segment bisetose.

LEBIA Latr.

Since the revision of our native species published by me (Trans. Am. Ent. Soc. iv, p. 130), but one species has been described, (*L. rhodopus* Schwarz, Proc. Amer. Philos. Soc. 1878, p. 354 = *viridis* Say), and one Mexican species observed in Texas, *L. biteniata* Chev. This belongs in our series near *pulchella*. It is pale rufo-testaceous, antennæ piceous the basal two joints pale, legs piceous, the bases of the femora pale. Elytra violaceous, with a yellow band in front of middle, arcuate to the front on each elytron, and another narrower apical band leaving only the sutural angle violaceous. Length .22 inch; 5.5 mm.

In regard to the other species mentioned in our lists very little need be said.

L. ruficollis Lec. is probably merely a variety of *cyanipennis* Dej., similar variations in color have been observed in the species of *Tecnophilus*.

L. frigida Chaud. does not present any characters separating it specifically from *fuscata* Dej.

L. divisa Lec. which has the elytra blue, the basal third red, head and thorax of same color, should probably be referred to the group known as *Lamprias* in the European fauna. I have seen three specimens all of which are females.

The genera into which Chaudoir has divided *Lebia* seem for the most part not only unnecessary but untenable. In a review of our genera of Carabidæ I have attempted to demonstrate by dissection that all the genera have distinct epilobes developed however in a varying degree, hence any division founded on their supposed absence is untenable.

The four genera into which our species have been divided may be retained as sub-generic divisions on the following basis :

Anterior tarsi of male somewhat obliquely dilated.....LOXOPSEBA.

Anterior tarsi of male not obliquely dilated.

Mentum with a distinct tooth.....LEBIA.

Mentum not or merely obtusely toothed.

Head not suddenly constricted behind the eyes.....DIANCHOMENA.

Head suddenly constricted.....APHELOGENIA.

These differences become so vague that it is not always easy to determine with certainty the generic position of a species.

COPTODERA Dej.

In this genus the ligula proper is rather narrow, bisetose at tip, the paraglossæ membranous, wide, prolonged beyond the tip of the ligula, their apices in contact or even overlapping. The mentum is broadly and rather deeply emarginate without tooth. The terminal joints of the palpi are somewhat fusiform. The labrum is large almost concealing the mandibles. Antennæ with the first three joints and the base of the fourth glabrous. The head is not narrowed behind the eyes. Middle of base of thorax very slightly lobed. Tibial spurs normal in length. Tarsi slender, pubescent above, first joint as long as the next two, fourth feebly emarginate. Ungues pectinate.

One species occurs within our territory.

C. ornata Dej.—Piceous, elytra bluish-green. Length .24-.26 inch; 6-6.5 mm.

Male.—Anterior tarsi feebly dilated, first three joints biserially squamulose. Middle tibiae distinctly emarginate on the inner side near the tip, the tarsi slender. Anal segment bisetose each side.

Female.—Tarsi slender. Middle tibia not emarginate. Anal segment as in the male.

The tibial character above noted is usual in *Lebia*. The present is the only other instance in which I have observed it.

Occurs in the Middle and Southern States.

PHLEOXENA Chaud.

The characters are very nearly those of *Coptodera*. The ligula is quadrisetose in front, the paraglossæ prolonged and slender at tip. The genus does not seem composed of very homogeneous material as one species is added for want of a better position and our own has no mentum tooth as required by the diagnosis. Almost the entire fourth antennal joint is glabrous.

One species occurs in our fauna.

P. signata Dej. (*Coptodera*).—Head piceous. Thorax testaceous with a median piceous spot more or less defined. Elytra piceous with an undulating fascia posteriorly, and an irregular dentate band more or less interrupted, broad

at the lateral margin, behind the base, testaceous. Legs testaceous. Length .22—.24 inch; 5.5—6 mm.

Male.—Anterior tarsi with three joints slightly dilated and beneath biserially squamulose. Anal segment with one seta each side.

Female.—Tarsi slender. Anal segment bisetose each side.

Occurs in the Gulf States and the Carolinas.

DROMIUS Bon.

This genus is typical of a group, called by Chaudoir the *Dromiides*, which seems very closely related to his *Callidides* as both groups are defined. In examining the ligula it will be observed that all the genera have that member bordered in front by a membrane which is an extension of the paraglossæ, incomplete however in *Metabletus*. *Dromius* makes an exception, there is no membranous border whatever, at least in *D. piceus*.

In *Dromius* the palpi are slender, the tarsi slender with the fourth joint not bilobed nor emarginate, the unguis more or less serrate and the mentum without tooth.

In our fauna but two species occur, very dissimilar in their general aspect and almost generically distinct. In Europe the species are moderately numerous and in form other characters supply the missing links in our small series. They are:

Entirely piceous. Thorax broader than long, trapezoidal. Elytra nearly parallel, humeri distinct, body winged. Palpi distinctly pubescent.....**piceus** Dej. Pale testaceous, head black. Form slender. Thorax a little longer than wide, very narrowly margined. Elytra elongate, gradually broader behind, humeri obliterated, body apterous. Palpi not distinctly pubescent.....**atriceps** Lec.

D. piceus Dej.—Piceous, moderately shining. Head distinctly longitudinally wrinkled above the eyes. Thorax trapezoidal, wider than long, narrower at base, sides moderately arcuate and margined, the margin moderately reflexed, hind angles obtuse, median line nearly entire, surface slightly, transversely wrinkled. Elytra oblong, parallel, surface striate, striæ not distinctly punctured, intervals slightly convex, dorsal punctures not evident. Body beneath piceous, smooth. Length .26—.30 inch: 6.5—7.5 mm.

Male.—The anterior tarsi of the male are slightly dilated, the first three joints biserially lamellate beneath. The anal segment is slightly emarginate at middle and on each side are three setigerous punctures.

Female.—Tarsi slender. Anal segment plurisetose each side.

This species extends from the Atlantic region to the Pacific by the northern line. In the eastern region it does not appear to extend further south than North Carolina.

D. atriceps Lec.—Pale yellowish testaceous, head nearly black. Head smooth. Thorax trapezoidal, as long as wide, slightly narrowed behind, sides feebly arcuate in front and very narrowly margined, hind angles obtuse, median line rather deeply impressed, surface smooth. Elytra broader behind, humeri

rounded, surface very obsoletely striate at middle, smooth externally. Body beneath smooth, shining. Length .16 inch; 4 mm.

The two specimens I have seen seem to be females, the anal segment is bisetose each side.

The specimen in the cabinet of Dr. LeConte has a transverse dark fascia the anterior border of which is in front of the middle of the elytra and straight, the posterior border is concave so that the fascia is twice as broad at the lateral margin as at the suture.

Occurs in Georgia and Louisiana. Seems to be closely related to *D. sigma* of Europe.

APRISTUS Chaud.

A genus composed of small black species differing from all our *Dromiide* genera by the simple, slender claws. The mentum is toothed, the ligula small, cordiform and quadrisetose in front, completely rounded by its paraglossæ. The thorax is truncate at base.

The species occurring in our fauna are as follows:

Elytral striæ deeply impressed, those at the sides more feebly. Thorax a little wider than long.

Hind angles of thorax acute, slightly prominent, the lateral margin a little broader and more reflexed posteriorly. Median line of thorax deep and reaching the basal margin. Intervals of elytra rather strongly convex. Surface color nearly always black..... *cordicollis* Lec.

Hind angles of thorax rectangular not prominent, the lateral margin not wider behind. Median line fine, usually not attaining the basal margin. Intervals moderately convex. Surface bronzed..... *subsulcatus* Dej.

Elytral striæ feeble, those at the sides nearly obsolete. Thorax about one-fourth wider than long.

Hind angles of thorax rectangular not prominent, margin not wider behind. Median line deeply impressed at middle and very faintly reaching the basal margin. Color slightly bronzed..... *laticollis* Lec.

As the essential characters of the three species are rather fully given in the table the following short notes will supply what is considered necessary.

A. cordicollis Lec.—This species is larger than *subsulcatus*, the elytra flatter and the intervals decidedly more convex. The surface color is black with a slight tinge of blue. Length .14—.16 inch; 3.5—4 mm.

Male.—Three joints of anterior tarsi distinctly dilated and densely biserially squamulose beneath. Anal segment with one seta each side.

Female.—Tarsi slender. Anal segment with one seta each side.

Occurs in the Middle States and Canada.

A. subsulcatus Dej.—The surface color is piceous rather than black with a tendency in the elytra to become brown. The thorax has the sides less arcuate in front, less sinuate behind and is consequently less cordiform than in the preceding species. Length .12—.14 inch; 3—3.5 mm.

Occurs from Canada to Texas and New Mexico.

A. laticollis Lec.—The surface is slightly bronzed but much more shining than in either of those which precede. The thorax is rather wider, the striae less deep and those at the sides almost entirely obliterated. Length .12 inch; 3 mm.

Occurs in Oregon, California and Arizona.

BLECHRUS Motsch.

This genus is composed of a small number of black shining species differing from the allied genera either by the slightly lobed base of thorax, the mentum not toothed or the claws serrate. The ligula proper is small and bisetose at tip, the paraglossæ rather wide and completely surrounding the ligula. In examining the illustrations of the mouth parts (Trans. Am. Ent. Soc. ix, pl. viii, figs. 86, 87, 88, 89, 90), it will be observed that *Blechrus* and *Axinopalpus* have the ligula bisetose in front, *Apristus* and *Metabletus* quadrisetose and *Dromius* sexsetose.

The species of *Blechrus* are as follows:

Thorax very distinctly wider than long, broadest about one-third from apex.

Elytra faintly substriate at middle.....**nigrinus** Mann.

Thorax not wider than long, widest immediately behind the apex.

Elytra almost smooth.

Elytra longer than head and thorax, sides nearly parallel.....**lucidus** Lec.

Elytra not longer, sides distinctly arcuate.....**pustio** Lec.

B. nigrinus Mann. - Form moderately elongate, depressed, black, shining. Head microscopically alutaceous. Thorax about one-fourth wider than long, sides moderately arcuate in front, slightly sinuate posteriorly, the hind angles rectangular, disc moderately convex, the median line deeply impressed but not entire, the surface very finely transversely strigose. Elytra oblong, nearly parallel, one-third longer than the head and thorax, disc obsoletely striate near the suture, smooth at the sides. Body beneath smooth shining. Legs black. Length .12-.14 inch; 3-3.5 mm.

Male.—Anterior tarsi with three joints feebly dilated, indistinctly lamellate beneath. Anal segment with one puncture each side.

Female. Tarsi slender, anal segment with one puncture each side.

This species has a distribution from New York to California by the northern line through Canada, the larger specimens occurring in Vancouver. It will be observed in many specimens that, owing to the thinness of the elytra and their disposition to curl, the form is apparently more elongate. From a comparison under the microscope I can see no differences between the forms from California and those from Lake Superior.

B. lucidus Lec.—Form and color of *nigrinus*, differing only as follows: Thorax as long as wide, widest immediately behind the apical angles, hind angles small not prominent. Elytra parallel, nearly without any traces of striae, the surface microscopically transversely strigose. Length .10-.12 inch; 2.5-3 mm.

Sexual characters as in *nigrinus*.

Occurs in Kansas, Nevada, Oregon and California.

B. pusio Lec.—Smaller than *lucidus* with the thorax more narrowed at base and the hind angles less distinct. The elytra are not longer than the head and thorax, the sides distinctly arcuate. The median line of thorax is also much less impressed. Length .08 inch; 2 mm.

This is the smallest member of the truncatipenne series in our fauna.

Occurs from Ohio to Texas.

METABLETUS Schmidt-Goebel.

This genus contains in our fauna but one species. The thorax is slightly lobed at base, the mentum with a small emarginate tooth, the claws serrate. The ligula is moderately prominent, elongate-oval, with five short setæ in front and four at the tip, the intermediate two short the outer two long. The paraglossæ are broad, a little longer than the ligula but closely united with it, obtuse at tip and not passing in front of the ligula.

M. americanus Dej.—Black, shining, with an extremely faintaceous tinge. Head smooth, shining. Thorax a little less than twice as wide as long, sides arcuate in front, slightly sinuate posteriorly, hind angles distinct, not prominent, margin very narrow, disc slightly convex. median line rather deeply impressed, not entire, surface smooth, shining, slightly opaque along the base. Elytra oval, scarcely wider posteriorly, apex distinctly truncate, disc very vaguely substriate, two dorsal punctures very faint. Body beneath almost entirely smooth. Length .10—.12 inch; 2.5—3 mm.

Male.—Anterior tarsi with three joints moderately dilated and feebly biserially lamellate beneath. Anal segment entire with one seta each side.

Female.—Tarsi slender. Anal segment as in male.

This species bears considerable resemblance to *Blechnus nigrinus* but the generic characters readily distinguish it. I do not find that *M. borealis* Zimm. differs essentially from *americanus*.

This insect is found from Vermont to British Columbia and northward to Hudson's Bay Territory.

AXINOPALPUS Lec.

Mentum emarginate, distinctly toothed. Ligula (proper) triangular, bisetose at apex, the paraglossæ narrow and bordering it in front, the palpi rather thick the last joint oval subsecuriform, the maxillary palpi slender and long, the terminal joint cylindrical and acutely prolonged at tip. Thorax truncate at base. Tarsal claws distinctly serrate in *biplagiatus* or very indistinctly in *fusciceps*.

It will be observed that this genus differs in many important particulars from each of the Dromiide genera which precede and from all of them collectively by the form of the palpi. The ungues have been called simple in *fusciceps* but an examination shows the base of each claw to have rarely more than one serration while in *biplagiatus* there are two or three.

Two species occur in our fauna.

Piceous, elytra with an oblique testaceous stripe from the humeri.

biplagiatus Dej.

Testaceous, head piceous.....**fusciceps** Lec.

A. biplagiatus Dej.—Piceous, shining. Antennæ, legs and oblique stripe of elytra pale. Head very finely alutaceous. Thorax less than twice as wide as long, slightly cordate, sides arcuate, sinuate near the hind angles which are rectangular but not prominent, disc slightly convex, median line distinctly impressed and entire, surface smooth. Elytra flat, oval, a little broader behind, apex truncate, disc obsolete striate at middle; the oblique pale vitta starts from the humerus toward the suture and extends parallel with the latter beyond the middle. Body beneath smooth, shining. Length .12 inch; 3 mm.

Male.—Anterior tarsi with three joints slightly dilated, feebly lamellate beneath. Anal segment slightly notched at middle, a single seta each side.

Female.—Tarsi slender. Anal segment entire, one seta each side.

I fully agree with Dr. LeConte in uniting *californicus* with this species. It affords another instance of the transcontinental distribution of a species along our northern border.

Occurs from the New England States to California.

A. fusciceps Lec.—Yellowish testaceous, head piceous or nearly black. Head finely alutaceous. Thorax about one-half wider than long, slightly narrowed at base, sides moderately arcuate, somewhat sinuate in front of the hind angles which are rectangular and slightly prominent, disc moderately convex, median line impressed nearly entire, the subapical and antebasal transverse impressions distinct, surface smooth. Elytra oval, a little wider behind, disc slightly convex, vaguely substriate, more distinctly near the suture. Body beneath smooth, shining. Length .12 inch; 3 mm.

Sexual characters as above.

As *biplagiatus* follows a complete line of transcontinental distribution so this occurs over a shorter line extending from Texas to southern California, following the line which Dr. LeConte has already noticed for so many species which occur in the Peninsula of California.

TECNOPHILUS Chaud.

The species referred to this genus were in times past placed in *Philotecnus* until removed by Chaudoir, (Bull. Mosc. 1877, i, p. 240). The latter genus is said to be identical with *Cymindoidea*. In the present essay I will not attempt to determine the value of the new genus created for our species and will merely state that as far as a comparison with our genera is concerned it is undoubtedly valid.

The characters of the genus have already been referred to in the preceding volume of these Transactions and sufficiently detailed figures given of the mouth parts. There is no need, therefore, of repeating here except to call attention to the fact that it is one of the few genera of the tribe in our fauna with simple ungues.

There are five species recognized by Chaudoir, one of them provisional. In order that the student may be in possession of the data on which Chaudoir bases his recognition of these species the following facts are presented.

T. nigricollis Lec., one specimen presented by Dr. LeConte.

T. Pilatei Chd., one specimen said to be from Texas.

T. ruficollis Lec., no type from the author; two other specimens which seem to differ a little from the description and cause Chaudoir to suggest provisionally the name

T. glabripennis Chd.

T. croceicollis Mén., not seen at all by Chaudoir.

From the above it will be seen that from four specimens two of which belong to one species, enough has been learned to admit the validity of four species and to suggest the possibility of a fifth.

My own cabinet, with that of Dr. LeConte, contains eighteen specimens. I have examined about half as many more from other cabinets and have become convinced that there is but one species variable principally in color. The study in detail is as follows:

Var. *Pilatei* Chd.—Head and thorax above and beneath red, also the meso- and metasternum, legs and antennæ. Elytra bright blue or greenish-blue, abdomen piceous. This form has the thorax a little less arcuate on the sides.

Var. *ruficollis* Lec.—Head and thorax above and beneath red. Antennæ brownish. Meso- and metasternum at middle reddish at sides piceous, abdomen piceous. Legs piceous, brownish-red at base of femora.

Var. *croceicollis* Mén.—Colored as in *ruficollis* except that the head becomes brown deepening in color to piceous. The metasternum entirely piceous. Legs piceous.

Var. — Colored as in *croceicollis* with the thorax becoming gradually browner.

Var. *nigricollis* Lec.—In this variety the elytra are of a deep violet-blue, the change from the brilliant blue observed in *Pilatei* having progressed gradually from that variety to the present. Here the head and thorax above and beneath and the under side of the body, legs and antennæ are piceous becoming shining black.

Var. *glabripennis* Chaud.—This name was suggested for two specimens of *ruficollis* from which the fine pubescence of the elytra had been removed.

In my opinion but one species exists in our fauna :

T. croceicollis Ménét.—Length .24—.32 inch ; 6—8 mm.

Male.—The anterior tarsi are slightly dilated the first three joints biserially lamellate beneath. The middle tarsi are scarcely at all dilated and with traces of lamellæ on the second and third joints only. The anal segment has one seta each side.

Female.—Tarsi slender hairy beneath. Anal segment with two setae each side.

Occurs on the Pacific coast from San Diego to Oregon, thence eastward to Montana, Utah and possibly Texas.

EUPROCTUS Solier.

Mentum emarginate, without tooth, epilobes not prominent. Ligula corneous, cuneiform, truncate and quadrisetose at apex, paraglossæ membranous, prolonged across the front of the ligula and ciliate, palpi with terminal joint somewhat triangular. Maxillary palpi with last joint as in the labial. Labrum transverse, not emarginate in front. Mandibles with distinct scrobe externally. Antennae with the first three and the base of the fourth joint glabrous. Head gradually narrowed behind the eyes to a neck. Thorax truncate at base, slightly oblique near the hind angles which are slightly reflexed. Tarsi slightly flattened above, somewhat pubescent, the first joint of the posterior not as long as the next three, fourth joint on all the feet deeply bilobed. Ungues pectinate.

Notwithstanding that Chaudoir places *Euproctus* in the *Callidides* and *Tecnophilus* in an uncharacterized group *Mimodromiides*, there does not seem any valid reason for separating them very remotely.

One species occurs in our fauna.

En. trivittatus Lec. (*Onota*).—Bright rufo-testaceous, elytra with a common sutural vitta expanded slightly at middle and a submarginal band extending along the apex to the suture, piceous. Length .20 inch ; 5 mm.

Male.—Anterior tarsi feebly dilated, the first three joints biserially lamellate papillose, the fourth pubescent. Anal segment with one seta each side.

Female.—Tarsi pubescent beneath. Anal segment bisetose each side.

Collected by Mr. A. Bolter in Florida, at Fort Capron.

CALLIDA Dej.

This genus is one of the largest in the truncatipenne series, Chaudoir recognizing very nearly one hundred species after separating a number of genera of very doubtful value.

The species in our fauna, although not numerous, have not escaped division and the two genera are separated by characters which seem to have very feeble value and are as follows :

CALLIDA.—Tarsi with a median groove on the upper side more or less apparent. In the male the anterior tarsi are always, the middle very often dilated, the joints beneath biserially lamellate-papillose, in the middle tarsi the lamellæ are always wanting on the first joint, and sometimes on all the joints.

SPONGOLOBA.—Tarsi neither sulcate nor impressed. In the male

the first three joints of the anterior tarsi are lamellate-papillose, the middle tarsi with the first joint, sometimes the second also biserially lamellate, third joint spongy.

Chaudoir further adds concerning the species of the latter genus, "These species which seem to me should not remain in the genus *Callida* for the reasons above given and because their facies is quite different, appear to make the transition to the genus *Philophyga*, of which they have somewhat the form, being however more elongated."

It needs only to be stated that *C. decoru* is for Chaudoir a *Callida* and *C. punctata* a *Spongoloba* to convince the majority of American students that any great difference of facies does not exist.

Our species are not numerous and may be separated in the following manner:

- U**pper side of tarsi flattened and more or less distinctly sulcate or impressed.
 Body above uniformly colored.
 Color piceous or castaneous, feebly striate.....?.....**platynoides** Horn.
 Piceous, elytra with slight cupreous tinge.....**planulata** Lec.
 Bright blue or green.....**viridipennis** Say.
 Body above bicolored; thorax red, elytra blue or green.....**decora** Fab.
- U**pper side of tarsi convex, not sulcate or impressed.
 Body above bicolored; thorax red, elytra blue or green.....**punctata** Lec.
 Body bright blue or green.
 Elytra distinctly longer than the head and thorax, their surface moderately striate with slightly convex intervals.....**fulgida** Dej.
 Elytra not longer than head and thorax, their surface very finely striate with flat intervals.....**purpurea** Say.

In addition to the above *C. rubricollis* Dej., a Cuban species is said by Chaudoir to occur in our fauna. We have never seen any native specimens.

C. platynoides n. sp.—Form moderately elongate. piceo-testaceous or castaneous, head and thorax somewhat paler than the elytra, shining without trace of metallic surface lustre. Head very sparsely punctulate, front on each side impressed, exteriorly to which the surface is longitudinally wrinkled. Antenna brownish. Thorax as broad as long, widest in front of middle, sides arcuate in front, feebly sinuate posteriorly the angles rectangular, lateral margin rather wide and slightly reflexed, disc slightly convex, median line distinctly impressed, surface feebly transversely wrinkled and with few punctures along the apical margin, the sides and median line. Elytra oblong, subparallel, striæ finely impressed, indistinctly punctulate, intervals nearly flat finely sparsely punctulate. Dorsal punctures on the third interval, the anterior slightly in front of the middle, the posterior at apical third. Body beneath nearly smooth, a few punctures at the sides of the metasternum. Length .42—.50 inch; 10.5—12.5 mm.

Male.—Anterior tarsi moderately dilated the first three joints biserially squamulose beneath, the fourth joint nearly naked. Middle tarsi with first joint hairy, second and third biserially squamulose, fourth nearly naked. Anal segment with one setigerous puncture each side.

Female.—The anterior and middle tarsi are nearly as widely dilated as the male, the first three joints hairy beneath, the fourth less hairy. Anal segment each side bipunctate.

This is the largest species in our fauna and the only one without a trace of metallic surface lustre. The general appearance at first sight recalls the *bicolor* variety of *Platynus brunneomarginatus* or *Pinacoderus platycollis*. It is probably closely allied to *C. brunnea* Dej., from the vicinity of the City of Mexico, the female is however described as having the tarsi spongy beneath.

Occurs in the mountains east of Visalia, California, also in southwestern Utah.

It is remarkable that California should furnish two brownish species of adjacent genera in which all the other species are more or less metallic.

C. planulata Lec.—Form moderately elongate, piceous, elytra with cupreous-violaceous surface lustre, the sides slightly greenish. Head smooth, front vaguely impressed each side. Antennæ brownish. Thorax about as wide as long, broader at middle the sides arcuate, very slightly sinuate in front of the hind angles which are rectangular, lateral margin slightly reflexed, very narrow in front, gradually wider posteriorly, disc slightly convex, the median line broadly and deeply impressed, surface slightly wrinkled laterally and with a few punctures at apex along the median line and at the sides. Elytra oblong-oval, rather deeply striate, the striae very finely punctured, intervals convex and with very few punctures. Dorsal punctures as in the preceding species. Body beneath piceous, shining and nearly smooth. Length .44 inch; 11 mm.

Male.—Unknown.

Female.—Anterior tarsi slightly dilated, the first four joints spongy beneath, middle tarsi less dilated, first joint hairy the next three spongy. Anal segment with four punctures each side.

I have seen but one specimen, that described by Dr. LeConte from the Berlandiere collection the localities of which are not accurately stated. The specimen may have been taken in Mexico or Texas.

(Chaudoir (Annales Belg. 1872, p. 120), describes *C. metallescens* from Vera Cruz, Mexico, which may be identical with *planulata*.)

C. viridipennis Say.—Form elongate, color bright bluish-green, elytra usually margined with cupreous. Antennæ piceous, three basal joints paler. Legs piceous. Vertex smooth, front impressed each side and rugulose. Thorax a little longer than wide, sides very feebly arcuate, widest a little in front of middle, margin narrow, a little wider posteriorly, hind angles rectangular not prominent, disc moderately convex, median line impressed, a little deeper posteriorly, surface very sparsely punctulate and obsolete wrinkled. Elytra oblong, the sides very feebly arcuate, disc striate, the striae very finely punctulate, intervals slightly convex, obsolete sparsely punctulate. Body beneath piceous with slight metallic lustre, surface nearly smooth. Length .36—.40 inch; 9—10 mm.

Male.—Anterior tarsi moderately dilated, the first three joints biserially lamellate beneath, the fourth joint spongy. Middle tarsi less dilated, similarly clothed. Anal segment with one puncture each side.

Female.—Anterior and middle tarsi less dilated than in the male, the first three joints pubescent, the fourth somewhat spongy. Anal segment bisetose each side.

Occurs in the Gulf States from Florida to Texas.

C. decora Fab.—Form slender, body beneath bicolorcd. above, head and thorax green or blue, thorax yellowish-red. Legs yellow, the tips of the femora and tarsi piceous. Antennæ piceous, three or four basal joints testaceous. Head smooth, front arcuately impressed each side and slightly rugose. Thorax as broad or a little broader than long, widest in front of middle, sides arcuate in front, slightly sinuate posteriorly, the angles rectangular sometimes slightly prominent, lateral margin narrow, equal from base to apex, narrowly reflexed, disc moderately convex, median line impressed, surface nearly smooth, a few punctures along the apical and lateral margins. Elytra oblong, sides feebly arcuate, striae very fine and finely punctured, intervals very flat and finely sparsely punctulate, dorsal punctures as in *planulata*. Body beneath smooth, the head and abdomen piceous, the remainder of the body yellowish-red. Length .28—.34 inch; 7—8.5 mm.

Male.—The first three joints of the anterior tarsi are biserially lamellate beneath, the fourth somewhat spongy, the middle tarsi with first joint setose, second and third lamellate, fourth spongy. Anal segment bipunctate each side.

Female.—Anterior and middle tarsi more slender than the male and pubescent beneath. Anal segment trisetose each side.

This species closely resembles *punctata* but has a wider thorax with a more distinct margin. The impressed tarsi will also distinguish the present species.

As synonyms of this species I place *cordicollis* Putz. described from Mexico and *cyanoptera* Lec. from Texas, these two are certainly the same and differ from *decora* merely in having the elytra more blue.

Occurs in the Gulf States and Mexico.

C. punctata Lec.—Form slender, colored as in *decora*. Head and antennæ as in *decora*. Thorax not longer than the head, a little longer than wide, widest a little in front of middle, sides arcuate, slightly sinuate posteriorly, the hind angles obtuse, lateral margin extremely narrow, disc convex, median line distinctly impressed, surface transversely wrinkled, a few punctures near the apex. Elytra oblong gradually broader posteriorly, surface finely striate, striae punctate, intervals flat, obsolete sparsely punctate. Body beneath and legs as in *decora*. Length .28—.30 inch; 7—7.5 mm.

Male.—Anterior tarsi dilated, first three joints biserially squamulose beneath, the fourth nearly naked, middle tarsi less dilated the first joint hairy beneath, second and third squamulose, fourth spongy. Anal segment bisetose each side.

Female.—Tarsi less dilated than in the male, with stiff hairs beneath. Anal segment bipunctate each side.

This species closely resembles *decora* but the thorax is much narrower and the margin extremely narrow. I see no reason why Chaudoir preferred to compare it with *smaragdina* (= *purpurea*).

Occurs in Michigan, Ohio, Louisiana and Kansas.

C. fulgida Dej.—Form moderately elongate, color bright metallic greenish-blue. Antennæ piceous, first three joints and the basal half of the fourth testaceous. Head nearly smooth, front with a vague impression each side and slightly

wrinkled. Thorax a little longer than wide, widest at middle, base a little narrower than apex, sides moderately arcuate, very feebly sinuate in front of the hind angles which are obtuse, almost rounded, margin very narrow, disc slightly convex, median line moderately deeply impressed, surface obsoletely transversely wrinkled, a few obsolete punctures along the apical margin and sides. Elytra oblong, slightly wider posteriorly, longer than the head and thorax, striæ moderately deep, finely punctulate, intervals slightly convex, sparsely obsoletely punctulate. Body beneath blue, smooth, shining. Length .32—.40 inch; 8—10 mm.

Sexual characters as in *punctata* except that the anal segment of the female is tripunctate.

This species has some resemblance to *viridipennis* but is more brightly colored, has a more narrowly margined thorax and with the base not impressed above.

Occurs in Georgia and Florida.

C. purpurea Say.—Form more robust, as in *Philophuga amana*, color deep blue or violet varying to green, moderately shining. Antennæ as in *fulgida*. Head sparsely punctulate, front vaguely impressed each side and rugulose. Thorax as broad as long, base and apex equal, sides arcuate, a very feeble sinuation in front of the hind angles which are obtuse, margin narrow, a little wider posteriorly, disc moderately convex, median line impressed, surface transversely wrinkled especially near the sides, a few punctures along the apical margin. Elytra oval, slightly oblong, scarcely longer than the head and thorax, a little wider posteriorly, sides moderately arcuate, disc finely striate, striæ punctured, intervals flat or very slightly convex near the base, sparsely obsoletely punctulate. Body beneath smooth, shining. Length .30—.36 inch; 7.5—9 mm.

Sexual characters as in *fulgida*.

For what reason Say's name *purpurea* has been heretofore applied to a species now referred to the genus *Philophuga*, I can not understand. In the Trans. Amer. Philos. Soc. 1823, p. 10, Say describes *Cymindis purpurea* immediately after *viridipennis*, and of both he says, "penultimate joint of tarsi bilobate," and in comparing the two species says "in form and magnitude resembles *C. viridipennis* but is more depressed and wider." I think there can be no doubt that this species is the true *purpurea*. It greatly resembles *Philophuga amana* in external appearance, but the latter has the fourth tarsal joint emarginate and not bilobed.

Occurs in Michigan, Georgia, Missouri and Kansas. The specimens from the latter region are darker blue in color, and I at one time referred to them as a probable new species; they do not differ otherwise.

PHILOPHUGA Motsch.

This genus contains those species in our fauna formerly placed in *Glycia*. It is very closely related to *Callida* and differs in having the fourth tarsal joint emarginate, not bilobed. An examination of the ligula does not show any reason why *Philophuga* should be remotely separate.

from *Callida*. In the dissections which I have made and figured (Trans. Am. Ent. Soc. ix, pl. viii, figs. 93, 94, 95), there will not be found any remarkable differences between these genera and no reason is apparent why Chaudoir should not have included the present genus in his *Callidides*. It is however treated apart (Bull. Mosc. 1877, i, p. 243), with no suggestions as to its position, being simply compared with *Tecnophilus* with which it has far less in common than *Callida* or *Plochionus*.

The species at present known are distinguished as follows:

Body winged, elytra very little narrowed at base.

Color blue or green.

Elytral striae fine, not impressed; head and thorax metallic-green, elytra blue or violet.....**viridicollis** Lec.

Elytral striae deeply impressed on the disc, finer externally; body above entirely blue or bluish-green.....**amena** Lec.

Color castaneous.....**castanea** n. sp.

Body apterous, elytra narrowed at base.

Color uniformly bluish or greenish.....**viridis** Dej.

P. viridicollis Lec.—Body beneath bluish-green, legs black with slight purplish tinge, head and thorax metallic-green, elytra blue. Front each side broadly impressed and punctured, vertex and occiput very sparsely punctate. Antennae piceous, three basal joints paler. Thorax not wider than long, very narrowly margined, sides feebly arcuate and gradually narrowing to base, hind angles not prominent, base regularly arcuate; disc moderately convex, median and subapical lines distinctly impressed, surface transversely wrinkled and punctured along the apex, sides and base. Elytra oblong, a little less than twice as long as wide at base, surface finely striate, striae punctured, more distinctly near the base, more finely and distantly posteriorly, intervals flat, very sparsely punctate. Body beneath smooth, a few punctures at the sides of the pro- and metasterna. Body winged. Length .40 inch; 10 mm.

Male.—The anterior tarsi have four joints very distinctly dilated and biserially lamellate beneath, the middle tarsi are similar but a little less dilated. The anal segment is entire and with two setigerous punctures each side.

Female.—Tarsi slender. Anal segment with three punctures.

I can not understand by what misconception Chaudoir considers this species *purpurea* Say, which is a true *Callida*, nor am I aware that Dr. LeConte has at any time united his *amena* with the present species. Specimens were sent by me to Chaudoir as stated by him and the only explanation of the error may be found in a possible confusion of the labels.

The correct synonymy will be found at the end of the paper.

Occurs in Texas extending northward to Kansas.

P. amena Lec.—Body above and beneath uniformly blue or green, more or less metallic, legs black with a tinge of purple. Head oval, front coarsely punctured each side, more sparsely on the vertex and occiput. Antennae piceous, three basal joints paler. Thorax distinctly wider than long, otherwise similar

to *viridicollis* with the rugæ more distinct and the punctures more numerous extending on the disc. Elytra about one-fourth longer than wide, not narrowed at base, surface striate, the striæ moderately impressed on the disc and distinctly punctate, intervals slightly convex and sparsely punctulate. Body winged, beneath smooth sparsely punctate at sides of pro- and metasterna. Length .32 inch; 7.5—8 mm.

Male.—Tarsal characters as in *viridicollis*. Anal segment with a very feeble emargination at middle and bisetose each side.

Female.—As in *viridicollis*.

In the "List of the Coleoptera of North America," Dr. LeConte placed this species as a variety of *purpurea* Say, which is by Say's description a true *Callida*. Chaudoir having confused the matter by considering *purpurea*, *viridicollis* and *amæna* synonymous, gave a new name to the present species, which any one would recognize as distinct from *viridicollis*, and called it *Horni*. It bears a very close resemblance to *Callida purpurea* Say, but the latter has the bilobed fourth tarsal joint and an obtuse mentum tooth.

This species occurs from Kansas through Utah and Nevada to California.

P. viridis Dej.—Color uniformly blue or green, more or less metallic. Front broadly impressed and punctured each side, vertex smooth, occiput very sparsely punctured. Antennæ piceous, three basal joints pale. Thorax broader than long, somewhat cordiform, sides arcuate in front, distinctly sinuate posteriorly, hind angles subacute, somewhat prominent, sculpture similar to *viridicollis* but much smoother on the disc. Elytra very little longer than wide posteriorly, narrow at base, disc with impressed, finely punctured striæ, the intervals flat and rather coarse but irregularly placed punctures. Body apterous, beneath somewhat wrinkled but without punctures. Legs black with slight purple tinge. Length .30 inch; 7.5 mm.

Male.—Sexual characters of *amæna*.

Female.—Unknown.

I have never seen but one specimen of this insect collected in Oregon by the late W. M. Gabb. It resembles *amæna* but differs in its more distinctly cordiform thorax, the form of the elytra and the apterous body.

Chaudoir appears to have been more fortunate in obtaining specimens as he mentions variations of color from blue and green to nearly black.

P. castanea n. sp.—Castaneous, moderately shining. Front with a feeble depression each side with few punctures, vertex smooth, occiput very sparsely punctulate. Antennæ piceo-testaceous. Thorax broader than long, somewhat cordate, sides strongly arcuate in front, sinuate posteriorly, hind angles sharply rectangular, disc moderately convex, median line finely impressed, apical line obsolete, surface punctured along the apex base and sides, the latter somewhat wrinkled, middle of disc sparsely punctulate or nearly smooth. Elytra about

one-half longer than wide, base slightly narrowed, disc with moderately deeply impressed, finely punctured striæ, the intervals slightly convex sparsely punctate. Body winged, beneath smooth. Length .36 ♂ — .42 ♀ inch; 9—10.5 mm.

Male.—Tarsal characters of *amæna*. Anal segment truncate, on each side a muricately punctured space from which numerous hairs arise.

Female.—Tarsi slender. Anal segment with three setæ each side.

This species has very nearly the form of *amæna*, the thorax however more nearly that of *viridis*. Its color makes it an odd member of the genus, but parallel instances are found in *Callida*.

The sexual characters of the male in the anal segment are also at variance with the other species, but I have been unable to find any valid reason for separating it from *Philophuga*.

Two specimens from the high mountains in Kern Co., California.

PLOCHIONUS Dej.

Although plainly distinct from *Callida*, it is by no means an easy matter to sharply define the two genera. Chaudoir relies on the quadrisetose ligula of *Plochionus*, bisetose in *Callida*. The structure of the fourth tarsal joint whether bilobed or emarginate does not separate all the Plochioni, but it must be admitted that in *Callida* the lobes are longer and more divergent.

Chaudoir properly separates the species of *Plochionus*, forming two subgenera which seem nearly parallel with the two genera created at the expense of *Callida*.

Our species are as follows:

Fourth tarsal joint emarginate; tarsi flattened above; unguis with short pectination..... **pallens** Fab.

Fourth tarsal joint bilobed; tarsi not flattened, more slender; unguis with longer pectination.

Color above uniform, piceous or a little paler..... **timidus** Hald.

Rufo-testaceous, elytra bicolored.

Elytra with a submarginal spot and common sutural piceous vitta.

amandus Newm.

Elytra piceous with a narrow margin and large oval discal space rufotestaceous..... **dorsalis** n. sp.

P. pallens Fab.—Piceo-testaceous. Head smooth, a moderately deep impression each side of the front. Thorax broader than long, base wider than apex, sides arcuate in front, obliquely narrowing to the hind angles which are rectangular, lateral margin broad, disc feebly convex, median line entire, surface obsolete transversely wrinkled. Elytra deeply striate, striæ obsolete punctulate, intervals slightly convex, sparsely obsolete punctulate. Body beneath smooth, shining. Length .26—.38 inch; 6.5—9.5 mm.

Male.—Anterior tarsi with four joints moderately dilated, the first three lamellate-papillose beneath, middle tarsi less dilated, with the second and third joints lamellate beneath. Anal segment bisetose each side.

Female.—Tarsi not lamellate. Anal segment as in male.

In this species, as indicated in the table, the tarsi are flattened above and subsulcate at middle, the fourth joint simply emarginate, the ungues with rather short pectination, almost serrate.

This insect has been diffused by commerce over the entire globe and is found near all the cities of our seaboard visited by foreign vessels.

P. timidus Hald.—Very similar in form and color to *pallens*. The thorax is rather shorter, the sides more arcuate, the hind angles more sharply rectangular. The tarsi are slender, cylindrical, not flattened nor sulcate above, the ungues with longer pectination. Length .28—.30 inch; 7—7.5 mm.

Male.—Anterior tarsi narrowly dilated, the first three joints biserially squamulose beneath, middle tarsi less dilated, first joint hairy beneath, the next three squamulose. Anal segment bisetose each side.

Female.—Tarsi slender. Anal segment with three or four setæ each side.

Occurs from Pennsylvania to Texas and California.

P. amandus Newm.—Resembles in form that next described (*dorsalis*), but is somewhat larger and narrower. It differs more especially in the mode of elytral coloration. There is a common sutural piceous stripe occupying the inner three intervals and a small oval piceous spot near each side margin a little behind the middle. Length .28 inch; 7 mm.

I have seen but one specimen, a female, not differing in sexual characters from *dorsalis*, taken in Florida.

P. dorsalis n. sp.—Bright rufo-testaceous, elytra piceous with the narrow side margin and large discal space rufo-testaceous. Head sparsely obsolete punctulate, front each side impressed. Antennæ pale. Thorax transverse, broad at middle, base broader than apex, sides arcuate in front, oblique behind the middle, hind angles rectangular but not prominent, lateral margin wide broad posteriorly, disc moderately convex, median line entire, surface transversely wrinkled. Elytra striate, striae very obsolete punctulate, intervals slightly convex with distant minute punctures. Body beneath and legs bright rufo-testaceous, abdomen smooth. Length .26—.28 inch; 6.5—7 mm.

Male.—Anterior tarsi with four joints moderately dilated and biserially squamulose beneath, middle tarsi less dilated the first joint setose the next three squamulose. Anal segment bisetose each side.

Female.—Tarsi slender. Anal segment with three or four setæ each side.

This species has very closely the form of *timidus* Hald., but differs in color. The oval rufo-testaceous spot on the elytra extends to the fifth stria on each side and varies very slightly in form in all the specimens I have seen.

Collected by Mr. H. G. Hubbard in Florida.

PINACODERA Schaum.

The species here included were separated by Schaum from *Cymindis* from which it differs in having the tarsal joints not hairy above, and by the middle tarsi of the male being dilated. The terminal joints of both palpi are similar and not securiform, but more or less truncate at tip—

In addition to these characters it will be observed that all our species of *Pinacodera* have well developed wings, in *Cymindis* the wings are aborted or absent.

Our species are distinguished as follows:

Hind angles of thorax obtuse, not prominent.

Elytral intervals slightly convex in their entire length. Thoracic margin narrow, scarcely translucent.....*limbata* Dej.

Elytral intervals flat. Thoracic margin broad and translucent.

***platicollis* Say.**

Hind angles of thorax distinct, slightly prominent.

Margin of thorax broad, not wider at base than apex.....*punctigera* Lec.

Margin of thorax very narrow in front, a little wider at base.

Intervals convex at base, flat posteriorly. Thorax distinctly broader than long.....*semisulcata* n. sp.

Intervals convex in their entire extent. Thorax not broader than long.

***sulcipennis* n. sp.**

In addition to the above number in our fauna Chaudoir has described

four from Mexico.

***P. limbata* Dej.**—Piceous, legs, antennæ, humeral spot and sides of elytra paler. Head smooth, slightly wrinkled above the eyes. Thorax one-third wider than long, sides moderately arcuate and somewhat narrowed to base, hind angles very obtuse or rounded, margin rather broad, moderately reflexed and translucent, disc moderately convex, median line finely impressed, surface nearly smooth. Elytra oval slightly oblong, with fine moderately impressed and obsolete punctulate striae, the intervals slightly convex with a few fine punctures very sparsely placed, dorsal punctures on the third interval near the third stria; color piceous, with testaceous humeral spot which extends along the outer two marginal intervals to apex. Body beneath piceo-testaceous, smooth. Length .32—.40 inch; 8—10 mm.

Male.—Anterior tarsi with four joints dilated and biserially lamellate beneath, middle tarsi less dilated, similarly lamellate, anal segment with two punctures each side.

Female.—Tarsi slender. Anal segment as in male.

This species is as a general rule smaller than *platicollis*, the thorax with a broader and more translucent margin, and has the humeral spot and side margin paler. The hind angle of the thorax is also more rounded.

Chaudoir and LeConte mention varieties of this species without the humeral spot but I have not met with such, the specimens in the collection of LeConte referred to *fuscatu* Dej., (which Chaudoir unites with *limbata*), seem plainly paler forms of *platicollis*.

Occurs from the Middle States southward.

***P. platicollis* Say.**—Piceous, antennæ and legs testaceous. Head with a few wrinkles above the eyes and with the vertex very sparsely punctulate. Thorax one-third broader than long very little narrowed behind, margin moderate, not translucent, distinctly reflexed, hind angles distinct not rounded, disc slightly

convex, median line finely impressed, surface often slightly wrinkled and with a few punctures near the hind angles. Elytra oblong, striae fine and obsolete punctulate, intervals usually flat and sparsely punctulate, the dorsal punctures in *limbata*. Body beneath piceous, smooth. Length .36-.44 inch; 9-11 mm.

Sexual characters as in *limbata*.

The convexity of the elytral intervals in the preceding species and their flatness in this are not strictly accurate characters for distinguishing the two, as specimens occasionally occur which belong unmistakably to the present species in which the intervals are slightly convex. It seems probable that *Planesus fuscicollis* Motsch., should be referred to the present rather than the preceding species.

Occurs with the preceding species.

P. punctifera Lec.—Brownish piceous, feebly shining. Head sparsely punctate, a few wrinkles over the eyes. Thorax one-third broader than long, distinctly narrowed at base, hind angles rectangular, margin rather narrow but wider posteriorly and more reflexed, disc slightly convex, median line finely impressed from base to apex, surface obsolete wrinkled and sparsely punctulate. Elytra oblong-oval, with fine striae, obsolete punctulate, the intervals slightly convex near the base, flat posteriorly and sparsely punctulate, dorsal punctures as in *limbata*. Body beneath smooth and with the legs rufo-piceous. Length .38-.40 inch; 9.5-10 mm.

Sexual characters as in *limbata*.

This species resembles some of the paler forms of *platicollis* but has the hind angles of the thorax more distinct and the surface more wrinkled and punctulate.

Occurs near Fort Yuma, California, and in Arizona.

P. sulcipennis n. sp.—Piceous, very slightly shining. Head irregularly rugose on the front, vertex sparsely punctate. Antennae piceous. Thorax about as long as wide, sides moderately arcuate, slightly sinuate posteriorly, hind angle acute slightly prominent, margin narrowly reflexed in front, a little wider posteriorly, disc moderately convex, median line distinctly impressed but not entirely subapical impression distinct, surface nearly smooth. Elytra oblong-oval, rather deeply striate, the striae not punctured, intervals convex in their entire length and without punctures, dorsal punctures very small, placed as in *limbata*. Body beneath piceous, smooth. Legs rufo-piceous. Length .40 inch; 10 mm.

Male.—Tarsal characters as in *limbata*. Anal segment with but one puncture each side.

This species appears related to *P. basipunctata* Chd. found in Mexico, but seems distinct by the elytral sculpture.

I have seen but one specimen, collected in the Peninsula of California by the late W. M. Gabb.

P. semisulcata n. sp.—Piceous, feebly shining. Head sparsely punctate, slightly wrinkled above the eyes. Antennae rufo-piceous. Thorax one-third wider than long, sides moderately arcuate, slightly sinuate posteriorly, the hind angles distinct and slightly prominent, margin very narrowly reflexed in front, a little

wider posteriorly, disc slightly convex, median line distinct but not entire, sub-apical line obsolete, surface very sparsely punctulate at middle, slightly wrinkled at the sides, more distinctly punctulate at base and apex. Elytra oblong-oval, finely striate, deeper at base, the striae not distinctly punctured, intervals convex in the basal region, then very flat to the apex, the surface not distinctly punctured. Body beneath piceous, smooth. Legs piceous. Length .44 inch; 11 mm.

Male.—Sexual characters as in *sulcipennis*.

This species resembles *punctigera* but has a narrower thoracic margin and with differently sculptured elytra. In the latter respect it resembles *basipunctata* Chd., which however seems to have a thorax more nearly like our *Plochionus*.

One specimen from the Peninsula of California, collected by the late W. M. Gabb.

CYMINDIS Latr.

This genus originally indicated by Latreille was made by that author, and many who have followed him, a magazine for very dissimilar material. The dismemberment began with Castelman in 1832, and has been continued by Schaum, LeConte and Chaudoir, *Pinacodera* and *Apenes* being the result in our fauna. At the time of Chaudoir's "Monographic Essay," (Berl. Zeits. 1873), eighty-eight species were known, of which fourteen belong to our fauna. This latter number must be reduced to ten and from the character of the differences given in the descriptions it seems probable that a proportionate reduction should be made in the exotic species.

Our species make a very homogeneous aggregate, no one being in any way aberrant. All agree in being apterous and are consequently terrestrial in their habits. I am not aware of the existence of any forms among the exotics with wings, this character being entirely overlooked. *Apenes* and *Pinacodera* have well developed wings and as far as our fauna is concerned we have this as an additional character separating them from *Cymindis*.

In our fauna all the species are more or less hairy above, but exotic forms, about twenty-five in number, are entirely glabrous, these are mostly European.

The mode of pectination of the tarsal claws is quite constant, varying very slightly in the greater or less length of the teeth. The tarsal joints are always hairy above, the fourth joint slightly emarginate.

The species known in our fauna are not numerous but are with difficulty separable in tabular form. The following table will assist the student but must not be too strictly interpreted without reference to the descriptions.

Thorax widely margined, the margin more or less translucent.

Interstrial spaces with confused punctures.

Head and thorax similar in color to the elytra, the latter without distinct humeral and lateral paler spaces.

Margin of thorax of moderate extent, very little reflexed and scarcely translucent, with many, usually three or more, setigerous punctures.....**laticollis** Say.

Margin of thorax wide, translucent, distinctly reflexed, with one or two setigerous punctures.....**cribricollis** Dej.

Head and thorax usually paler than the elytra, the latter with distinct humeral spot and lateral margin paler, the surface in fully colored specimens somewhat metallic.....**planipennis** Lec.

Interstrial spaces with a single row of punctures.....**elegans** Lec.

Thorax narrowly margined.

Thorax distinctly broader than long, the margin wider than in the following species and with but one setigerous puncture at the side.

unicolor Kby.

Thorax not wider than long, margin extremely narrow, sides with at least two setæ.

Elytra rather flat, intervals densely and comparatively finely punctured and without lustre.....**americana** Dej.

Elytra normally convex, intervals not densely punctured, the punctures often coarse, surface shining.

Thorax equally punctured, the median line feebly impressed.

Thorax very coarsely punctured, the punctures subconfluent at the sides, margin rarely with translucent edge.....**cribrata** Lec.

Thorax normally not confluent punctured, sides with distinct but narrow translucent border.

Surface conspicuously pubescent, elytra never with humeral pale space.

pilosa Say.

Surface not conspicuously pubescent, elytra with pale humeral space.

borealis Lec.

Thorax unequally punctured, median line deeply impressed. Elytral intervals with one row of punctures.....**neglecta** Hald.

C. laticollis Say.—Piceous, moderately shining, elytra often with faint bluish tinge, legs and antennæ rufo-testaceous. Head coarsely and deeply, not densely punctured, middle of front less so. Thorax about one-third wider than long, sides arcuate, slightly sinuate posteriorly, hind angles distinct, not prominent, margin moderate in width, nearly equal from apex to base and slightly reflexed, disc moderately convex, median line distinct but not entire, surface coarsely and deeply punctured, rather sparsely at middle, more densely at the sides and base, with moderately long erect brownish hairs, the margin with usually four punctures bearing longer erect setæ. Elytra oval, uniformly piceous, with semi-erect brownish hairs, those on intervals 3—5—7 longer, surface rather deeply striate, striæ with coarse punctures, intervals slightly convex, very irregularly biserially punctulate. Prothorax beneath coarsely and deeply punctate, body and abdomen very sparsely punctate. Length .44—.48 inch; 11—12 mm.

Male.—Anterior tarsi with three joints moderately dilated and biserially squammuligerous. Anal segment slightly emarginate, trisetose each side.

Female.—Tarsi slender. Anal segment entire, trisetose each side.

From the collection of Baron Chaudoir I obtained a specimen of the species named *villigera*, and find no differences between it and his types of *laticollis* except that the hairs of the surface are better preserved.

Occurs in Colorado, Texas and New Mexico.

C. cribricollis Dej.—Piceous, legs and antennæ rufous. Head coarsely and deeply punctured, less densely in the middle of the front. Thorax nearly one-third wider than long, base equalling the length, sides arcuate, slightly sinuate in front of the hind angles which are subacute but not prominent, margin broad, translucent, equal in width from base to apex, moderately reflexed and with a variable number of setigerous punctures, not exceeding three, disc moderately convex, median line distinctly impressed, surface coarsely and deeply punctured, more sparsely at middle but not very densely at the sides. Elytra oval, usually a little broader behind, piceous, very rarely with an indistinct humeral spot and pale margin, moderately deeply striate, the striæ punctured, intervals usually convex and irregularly punctulate. Prothorax beneath coarsely and deeply punctured, metasternum at sides less coarsely punctured, abdomen sparsely punctured. Length .36—.44 inch; ♀—11 mm.

Male.—Anterior tarsi with three dilated joints biserially lamellate beneath.

Anal segment feebly emarginate at middle and each side bisetose.

Female.—Tarsi slender. Anal segment entire, bisetose each side.

The variations of this species are not very striking, notwithstanding its very wide distribution. In several specimens before me from Maine and New Hampshire, the margin of the thorax is rather wider and more translucent and the edge less arcuate in outline. There is also a more evident paler humeral space and the pale edge of the elytra is quite distinct. These can not be considered a distinct species as it is quite impossible to draw any line with sufficient sharpness between them and the more usual form. As the species approaches the Pacific coast the elytral intervals become somewhat flatter, and the individuals are of an average greater size than those of the more eastern regions, this form might be considered represented by the name *abstrusa* Lec.

The synonymy of this species is also somewhat confused. That the species here described is *cribricollis* Dej., there can be no doubt. I fully agree with Dr. LeConte in his determination of *marginata* Kby., as a synonym, for the following reasons: it is the more common species of the region from which Kirby's material was collected, corresponds closely with the description, and is the only widely margined species known to occur there. Chaudoir considers *planipennis* Lec. (*brevipennis* Zimm.), identical with Kirby's, which can not be true from the fact that the former occurs in the Rocky Mountain region and Oregon, not coming east of the Mississippi, moreover Kirby would not have failed to mention the decidedly bluish-green color of the elytra.

Occurs from Newfoundland through the New England States to

Canada, Montana, Oregon and Vancouver, and southward along the Rocky Mountains to Colorado. I have one specimen from Arizona which I refer to this species.

C. planipennis Lec.—Form rather short, piceous or piceo-testaceous beneath, head and thorax usually paler than the elytra which have a distinctly metallic surface lustre, the humeri and lateral margins testaceous. Head sparsely punctate, the punctures not coarse except over the posterior border of the eyes. Thorax one-third wider than long, narrowed at base, sides arcuate, sinuate posteriorly, the hind angles distinct not prominent, margin moderate in width and slightly reflexed and with three setigerous punctures, disc convex, shining, sparsely punctured and with but few erect hairs, median line distinctly impressed. Elytra oval, piceous, surface distinctly metallic, humeral spot and lateral margin testaceous, striate, striae finely punctured, intervals very little convex, irregularly biserially punctate, the punctures coarser than those of the striae. Prothorax beneath coarsely punctured at the sides, body and abdomen sparsely punctured or nearly smooth. Length .50—.40 inch: 7.5—10 mm.

Male.—Tarsi as in *laticollis*. Anal segment feebly emarginate with one seta each side.

Female.—Anal segment entire, bisetose each side.

This species is known among those with wide thoracic margin by the more convex disc of thorax and by the head and thorax paler than the elytra, the latter distinctly metallic in the vast majority of specimens. The humeral spot and pale margin are present in *elegans*, but this has but one row of interstitial punctures.

Two varieties of this species occur:

Var. brevipennis Zimm.—This is the form containing nineteen in twenty specimens and is that described above.

Var. planipennis Lec.—Of this I have seen but two specimens. The form is essentially the same as the preceding. The color is pale brown with the base of the elytra paler, the surface feebly shining without metallic lustre, the striae are fine and finely punctured, the intervals flat and indistinctly punctured, the punctures however larger than those of the striae.

The synonymy of this species has been confused in a way almost impossible to rectify without direct reference to the types. The history is as follows:

The first mention of this species is by Dr. LeConte by whom it was considered *crabrocollis* Dej., Ann. Lyc. iv, p. 186''. In the unpublished manuscripts of Zimmermann, Dr. LeConte found a description of the present species, that author having detected the incorrectness of the reference to *crabrocollis*. Dr. Zimmermann named the species *brevipennis*, (Trans. Am. Ent. Soc. 1869, p. 243''). In the meantime New Species 1863, p. 6), Dr. LeConte described the form which I consider merely a southern variety under the name *planipennis* which I retain as the older name. Chandor erroneously adopts Kirby's name for the species.

Occurs from Arizona to New Mexico, Colorado, Utah, Nevada, Oregon and Vancouver, following the distribution of *Melanophila miranda* and other species.

C. elegans Lec.—Piceous, shining, antennæ and legs pale, elytra with humeral spot and lateral margin paler. Head coarsely and deeply punctured, less closely at the middle of the front. Thorax about one-fifth wider than long, base narrower than the length, sides arcuate in front, very slightly sinuate in front of the posterior angles which are distinct but not prominent, margin moderate in width, scarcely reflexed, with two well marked setæ, disc moderately convex, median line distinctly impressed, punctures coarse and deep, sparser at middle, closer at the sides. Elytra regularly oval, a little wider behind the middle, apex not truncate and with very feeble trace of sinuation, surface shining with moderately deep finely punctured striæ, the intervals flat with a single row of punctures coarser than those of the striæ. Prothorax beneath very coarsely and deeply punctate. Metasternum at sides less coarsely punctured. Abdomen nearly smooth. Length .40—.46 inch; 10—11.5 mm.

Sexual characters as in *cribricollis*.

This is probably one of the most easily recognizable of all the species of the genus. The elytra at tip are more nearly entire than any other and approach the form of some *Platynus*. The margin of the thorax is less wide than in any of the species which precede but wider than those which follow. It forms in this respect a link between the two series.

Occurs from Massachusetts to Florida and is more common in the southern regions.

C. unicolor Kby.—Form rather slender, piceous, legs and antennæ pale. Head coarsely and moderately densely punctured, nearly equally over the entire surface. Thorax very little wider than long, somewhat cordate, sides arcuate in front, sinuate posteriorly, the hind angles acute and somewhat prominent, narrowly margined, the margin reflexed, and with one setigerous puncture, disc moderately convex, the median line scarcely evident, surface coarsely, moderately densely and equally punctured. Elytra oval slightly broader posteriorly, piceous, moderately shining, without humeral pale space except when immature, disc with finely punctured striæ, the intervals nearly flat, irregularly biserially punctured. Prosternum coarsely punctured, sides of metasternum and the inflexed margin of the elytra less coarsely punctured. Abdomen sparsely punctured. Length .34—.36 inch; 8.5—9 mm.

Male.—Anterior tarsi with three dilated joints, biserially lamellate beneath. Anal segment entire, bisetose each side.

Female.—Tarsi slender. Anal segment entire, bisetose each side.

The abdomen although sparsely is much more closely punctured than in any of the preceding species. The thoracic margin is wider than the following species, much less wider than those which precede and not translucent.

Occurs in Labrador, the New England States, Hudson's Bay Territory

and in Colorado. In the latter region it has been found at an elevation of thirteen thousand feet at Argentine Pass.

C. americana Dej.—Piceous, feebly shining, antennæ, legs, humeral spot and narrow side margin rufo-testaceous. Form rather slender. Head sparsely punctured, especially on the front. Thorax a little longer than wide, narrowed at base, sides narrowly margined, irregularly arcuate in front, sinuate posteriorly, hind angles somewhat obtuse, the margin narrowly reflexed with one setigerous puncture, disc moderately convex, coarsely and equally punctured, median line rather deeply impressed. Elytra oval, broader posteriorly, disc rather flat, with moderately deep finely punctured striæ, the intervals rather flat and densely punctured, the punctures much coarser than those of the striæ, surface subopaque piceous, nearly black, a large humeral spot and narrow side margin rufo-testaceous. Prothorax beneath coarsely punctured, metasternum at sides less coarsely. Abdomen sparsely punctured. Length .44—.64 inch; 11—16 mm.

Male.—Anterior tarsi with three dilated joints, biserially lamellate beneath. Anal segment emarginate at middle with one seta each side.

Female.—Tarsi slender. Anal segment entire, bisetose each side.

Chaudoir in his essay retains *venator* distinct from *americana* basing his determination on two specimens of the former and three of the latter. I believe with Dr. LeConte that the two species are perfectly identical.

Occurs from Canada to the Middle States and Kansas. Chaudoir claims to have seen it from Louisiana but our collections do not contain any from so far south.

C. cribrata Lec.—Form rather elongate, piceous, antennæ and legs rufo-testaceous, elytra with a slightly greenish surface lustre. Head coarsely and deeply punctured, smoother on the front, cribrate above and behind the eyes. Thorax longer than wide, narrowed at base which is strongly arcuate, sides moderately but irregularly arcuate in front, slightly sinuate near the hind angles which are obtuse, margin extremely narrow, disc convex, median line broadly but not deeply sulcate, surface coarsely and rather densely punctured, often cribrate at the sides. Elytra oval, scarcely wider behind, with deeply impressed punctured striæ, the intervals convex and with a single irregular row of punctures, margin very narrowly rufous. Prothorax beneath cribrately punctured, metasternum at sides coarsely and densely punctured, abdomen very sparsely punctured. Length .36—.42 inch; 9—10.5 mm.

Male.—Anterior tarsi with three joints dilated and biserially lamellate beneath. Anal segment entire, bisetose each side.

Female.—Tarsi slender. Anal segment bisetose each side.

This species has some superficial resemblance to *borealis* but the thorax is more coarsely punctured and the margin extremely narrow. The hairs of the surface are comparatively long and erect, the setæ of the margin of the thorax at least three in number. The elytra are entirely piceous with faint tinge of greenish, the humeri never pale except from immaturity and the lateral margin is very narrowly rufous.

Occurs in western Kansas.

C. pilosa Say.—Form moderately elongate, piceous, elytra with faint greenish lustre, surface very distinctly pilose. Head coarsely and deeply not densely punctured. Antennæ rufo-testaceous. Thorax about as wide as long, narrower at base, sides arcuate, slightly sinuate posteriorly, narrowly margined, the margin slightly translucent in front and near the hind angles which are rectangular and slightly prominent, disc moderately convex, coarsely and deeply punctured, median line vaguely impressed. Elytra oval scarcely wider behind, with deeply impressed punctured striæ, the intervals slightly convex and rather coarsely, irregularly punctured. Prothorax beneath coarsely and moderately densely punctured, metasternum at sides coarsely and less deeply punctured, the punctures extending also on the inflexed sides of the elytra. Abdomen sparsely punctured. Legs rufo-testaceous. Length .38—.44 inch; 9.5—10 mm.

Sexual characters as in *cribrata*.

Excepting *unicolor* the present is the only species in which the thorax is not longer than wide.

This is the common species of the Middle States extending to Canada.

C. borealis Lec.—Form slender, piceous, antennæ and legs pale, elytra with slight greenish lustre with humeral spot and narrow margin pale. Head very sparsely punctate, a little more densely over the eyes. Thorax usually a little longer than wide, narrower at base, sides irregularly arcuate, slightly sinuate in front of the hind angles which are distinct but not prominent, margin narrowly reflexed, disc convex, median line scarcely impressed, surface not densely punctate. Elytra oval not much wider posteriorly, with deeply impressed punctured striæ, the intervals flat, irregularly biseriately punctate. Prothorax beneath and sides of metasternum rather sparsely punctate. Abdomen nearly smooth. Length .30—.36 inch; 7.5—9 mm.

Sexual characters as in *cribrata*.

Resembles *pilosa* and *cribrata* but differs from both in the constant humeral pale space and the more finely and sparsely punctured thorax. It is also more feebly pubescent than either.

Occurs from Nova Scotia to Hudson's Bay Territory.

C. neglecta Hald.—Form slender, piceous, shining, elytra usually somewhat paler but without distinctly marked humeral spot. Head very sparsely punctate, nearly smooth at middle. Antennæ pale. Thorax distinctly longer than wide, narrower at base, sides moderately arcuate, slightly sinuate posteriorly, hind angles rather obtuse, margin extremely narrow, disc moderately convex, median line rather deeply impressed, surface sparsely and irregularly punctate. Elytra oval, a little wider behind, striæ deep and coarsely punctured, intervals slightly convex with a single row of punctures much finer than those of the striæ. Prothorax beneath coarsely punctured, densely on the sternum, very sparsely at the sides. Metasternum at sides punctured, abdomen nearly smooth. Legs pale. Length .30—.34 inch; 7.5—8.5 mm.

Sexual characters as in *cribrata*.

This species is readily known by its feebly pubescent surface, the rather deep thoracic channel, the very narrow side margin and by the uniserial punctures of the intervals very much finer than those of the striæ.

Chaudoir places *unicolor* Kby. as a probable synonym of this species. I am inclined to believe from his remarks that the specimens determined by him as *neglecta* are really *borealis*, with which Kirby's species might be more aptly compared than the present.

Occurs in the New England and Middle States and is the rarest of our species.

APENES Lec.

This genus is one of many which have been dismembered from *Cymindis* from which it differs principally in having the thorax lobed at base. The mouth parts do not differ essentially from *Cymindis* except that the terminal joint of the labial palpi is more broadly triangular.

With *Pinacodera*, *Apenes* is placed by Chaudoir in a group or series which he calls "aberrant Cymindides." The previously indicated group of "true Cymindides" is not defined, consequently it is impossible to determine in what respect these two (with others) are especially aberrant.

Apenes is exclusively an American genus, species occurring from temperate North America to the Argentine Republic.

Those known in our fauna are as follows:

Head longitudinally sulcate.

Surface with a metallic bronze lustre.....**lucidula** Dej.

Head simply punctured.

Elytra shining, striæ distinctly impressed.....**sinuata** Say.

Elytra opaque black, striæ very fine.....**opaca** Lec.

Head finely strigose or longitudinally wrinkled.

Color brownish, subopaque.....**nebulosa** Lec.

A. lucidula Dej.—Form moderately elongate, subdepressed, surface metallic, the head and thorax usually greenish, the elytra dark bronze or cupreous. Head rather deeply longitudinally sulcate. Antennæ rufo-testaceous. Thorax broader than long, narrowed at base, sides arcuate, narrowly margined, hind angles distinct but very small, disc feebly convex, the median line entire, surface shining, irregularly wrinkled, at base a few punctures, at apex longitudinally strigose. Elytra with a pale humeral spot (sometimes absent) at the base of the sixth interval, surface with moderately deeply impressed, finely punctured striæ, the intervals slightly convex, finely alutaceous and obsoletely sparsely punctulate, dorsal punctures two, the anterior at the middle of the elytra equidistant from the second and third striæ, the posterior near the second stria. Body beneath piceous, shining, nearly smooth, tibiæ and tarsi paler. Length .40 inch; 10 mm.

Male.—The anterior tarsi have four joints dilated and biserially lamellate beneath, the middle tarsi narrowly dilated not lamellate. The anal segment has one puncture each side.

Female.—Tarsi slender. Anal segment with two punctures.

Variations of the color of the surface are often observed. The legs

are usually piceous, sometimes testaceous. *A. angustata* Schz. is merely a narrower race of bright surface color, similar forms are found by Mr. Ulke near Washington.

Occurs from New York to Florida.

A. sinuata Say.—Piceous, moderately shining, without metallic lustre. Head sparsely punctate, a few wrinkles at side of front. Antennæ rufo-testaceous. Thorax about one-third wider than long, sides moderately arcuate, very slightly sinuate in front of the basal angles which are distinct but not prominent, margin extremely narrowly reflexed, disc moderately convex, median line entire, subapical line feeble, surface shining, sparsely punctate, more densely near the apex. Elytra oblong-oval, surface with distinctly impressed, finely punctured striæ, the intervals slightly convex, very finely alutaceous, the dorsal punctures on the third interval nearer the second stria, the anterior in front of middle, color piceous with a pale humeral space and a subapical testaceous fascia. Body beneath piceous, prosternum at middle and metasternum at sides sparsely punctate. Legs testaceous. Length .28 inch; 7 mm.

Sexual characters as in *lucidula*.

The elytra have at the humerus a pale testaceous space which begins on the fifth interval and reaches the side, extending one-third the length of the elytra and along the extreme margin to the middle. The subapical fascia is sinuous and does not reach the side margin nor the suture.

Occurs from the Middle States to Texas.

A. opaca Lec.—Piceous, head and thorax shining, elytra opaque black. Head very sparsely punctulate, a few wrinkles in front of the eyes. Antennæ rufo-testaceous, a little longer than the head and thorax. Thorax one-third wider than long, distinctly narrowed at base, sides arcuate, slightly sinuous in front of the hind angles which are slightly prominent, disc very slightly convex, surface sparsely finely punctulate, a few wrinkles along the sides and apex, median line entire. Elytra elongate-oval, rather flat, striæ fine and with minute punctures, intervals very flat, dorsal punctures as in *sinuata* but very indistinct; color opaque black with a faint triangular paler humeral spot. Body beneath piceous, smooth, prosternum scarcely visibly punctulate. Legs testaceous. Length .30 inch; 7.5 mm.

Sexual characters as in *lucidula*.

This species appears more closely allied to *morio* and *parallela* than to any in our fauna.

Occurs in Georgia and Florida, and appears to be rare as I have seen but three specimens.

In the Bull. Mosc. 1875, Baron Chaudoir reviews the species of this genus and describes a new one as *A. opaca* from the Argentine Republic. A new name should be given it by any one *knowing the species*, the practice of changing the preoccupied names of *unknown* species is by no means a good one and generally results in no good to science.

A. nebulosa Lec.—Brownish piceous, subopaque. Head strigose and sparsely punctulate, darker in color. Antennæ brownish testaceous. Thorax nearly twice as wide as long, narrower at base, sides moderately arcuate, a slight sinuation near the hind angles which are distinct but not prominent, disc slightly convex, median line distinctly impressed, surface finely strigose and very sparsely punctulate. Elytra oblong-oval, the striæ distinctly impressed and obsolete punctulate, intervals very slightly convex and finely alutaceous; color brownish piceous with a paler humeral space and subapical fascia, as in *sinuata*. Body beneath smooth, legs testaceous. Length .24 inch; 6 mm.

Sexual characters as in *lucidula*.

This species having paler elytra than *sinuata*, the humeral spot and subapical fascia do not show as plainly as in that. The subapical fascia is, however, more nearly complete and posterior to the humeral spot there is sometimes an additional paler mark on the fifth interval.

Occurs in Arizona extending to Cape San Lucas, Lower California.

EUCERUS Lec.

Mentum transverse, rapidly narrowing to the front, at middle rather deeply emarginate without tooth, epilobes distinct, their apices acute. Basal membrane of the ligula nearly filling the emargination. Ligula (proper) small, the apex dilated, truncate and bisetose, paraglossæ rather broad adherent to the ligula and slightly prolonged beyond it. Labial palpi moderate in length, the terminal joint fusiform, the tip membranous and subulate, the surface pubescent, the penultimate joint bisetose in front. Maxillæ slender, the inner lobe acute at tip and with an acute tooth behind the tip, inner edge ciliate beginning a short distance behind the tooth; outer lobe slender the terminal joint a little shorter. Maxillary palpi moderate in length, the terminal joint as in the labial palpi. Mandibles not prominent, acute at tip, scrobe well marked. Labrum moderately prominent, quadrate, slightly transverse, the angles obtuse, quadrisetose in front. Antennæ with the pubescence covering the third joint and extending slightly on the second.

I have dwelt in some detail on the mouth parts as these have not heretofore been fully described. A figure of the mentum, ligula and maxilla will be found in the preceding volume of these Transactions, pl. viii, fig. 100.

E. varicornis Lec.—This is the only species in our fauna. It is a small insect (.12—.14 inch; 3—3.5 mm.) piceous in color with the elytra somewhat iridescent, head darker, legs testaceous, antennæ piceous the outer five joints nearly white. A figure in outline will be found in Transactions vol. ix, pl. iv, fig. 5.

Occurs in the southeastern Gulf States, and very rare.

PENTAGONICA Schmidt-Goebel.

The name above given has been adopted by Chaudoir and others, for what reason I am unable to state, as the name *Rhombodera* Reiche, appears with date 1842, four years anterior to *Pentagonica*.

The details of structure have already been sufficiently given by Lacordaire, (*Genera* i, p. 133), and need no further reference here except as to the form of the mandibles, which are more explanate

than usual in the present tribe and without the usual excavation on the outer side.

One species occurs in our fauna.

P. flavipes Lec.—A small species with a general resemblance to some of the varieties of *Lebia analis*. The thorax is short the sides strongly angulate, the base narrowed. The elytra are very vaguely striate without punctures, the surface finely alutaceous. The legs are always testaceous, the under surface of the body piceous, except the prothorax. Length .14—.18 inch; 3.5—4.5 mm.

Male.—The anterior tarsus is feebly dilated, the first joint somewhat spinous beneath, the second and third with a few squamules biserially placed. The middle tarsus is not at all dilated. The anal segment has one seta each side.

Female.—Tarsi slender. Anal segment bisetose each side.

This species varies greatly in color and forms three varieties.

Var. flavipes Lec.—Entirely piceous. Legs testaceous.

Var. bicolor Lec.—Head and thorax above and beneath pale reddish-yellow. Legs testaceous.

Var. —.—Head piceous, thorax reddish-yellow, elytra piceous. Legs testaceous.

Although very rare the species has a wide distribution, occurring in the Gulf States, extending northward to Illinois and Kansas and westward to Arizona.

ONOTA Chaud.

Mentum emarginate, without tooth, the epilobes slightly prominent; ligula corneous, truncate in front, apex a little narrowed and bisetose; paraglossæ membranous prolonged beyond the ligula and extending narrowly across its apex; palpi moderate, terminal joint elongate-ovate. Labrum in front feebly emarginate, sexsetose, base narrower. Mandibles expanded, lamiform, without scrobes. Maxillary palpi moderate, terminal joint as in the labial. Antennæ with the first three joints and the base of the fourth glabrous. Head gradually narrowed behind the eyes to the neck. Thorax angulate at the sides, base truncate at middle, on each side slightly oblique. Elytra with two dorsal punctures, situated on the third interval close to the second stria. Tarsi flattened and subsulcate above, fourth joint bilobed. First joint of posterior tarsi as long as the three following. Ungues pectinate.

This genus is placed by Chaudoir in his Callidides, which seems as convenient a position as any, taking the ligula as a key to classification. This organ has had an exaggerated importance given it by many late authors, and even with our limited number of genera I have found it impossible to separate the truncatipenne series in smaller groups. In my table of the genera of the tribe Lebiini, (Trans. Amer. Ent. Soc. ix, p. 156), I have placed *Eucærus*, *Pentagonica*, (*Rhombodera*) and *Onota* in close approximation, indicating thereby a relationship between them, while it must at the same time be admitted that each has other relationship about as well marked—*Pentagonica* with *Lebia*, *Onota* with *Callida*, and *Eucærus* with *Ega*.

Onota is represented in our fauna by one species.

O. Floridana Horn.—Reddish testaceous, elytra bluish-green, *striata*. Length .20—.25 inch; 5—6 mm.

Male.—Anterior tarsi feebly dilated, the first three joints biserially lamellate-papillose beneath, fourth joint hairy. Middle tarsi without papilla. Anal segment with one seta each side.

Female.—Tarsi less dilated, not papillose. Anal segment bisetose each side.

Occurs near Lake Poinsett, Fla.; concealed in the leaves of Palmetto.

Bibliography and Synonymy.

TETRAGONODERUS Dej.

- T. intersectus** Germ. (*Bemb.*) Ins. Spec. nov. p. 28.
Lecontei Dej. Species iv. p. 449.
distigma Motsch. Bull. Mosc. 1864, ii, p. 222.
T. fasciatus Hald. Proc. Acad. i, p. 298; Lec. (*Thyreop.*) Ann. Lyc. iv, p. 197.
undulatus Lec. New Species 1863, p. 7.
T. latipennis Lec. Trans. Am. Ent. Soc. 1874, p. 44.
T. pallidus Horn, Trans. Am. Ent. Soc. 1868, p. 130.

NEMOTARSUS Lec.

- N. elegans** Lec. Trans. Amer. Philos. Soc. 1853, p. 377; Chaud. Bull. Mosc. 1871, Horn, Trans. Am. Ent. Soc. ix, pl. iv, fig. 2.

COPTODERA Dej.

- C. errata** Dej. Species i, p. 277; Chaud. Annales Belg. 1869, p. 179.
viridipennis Gory, Annales France, 1833, p. 194.
viridipennis Lec. Ann. Lyc. iv, p. 196.
ruficornis Chaud. loc. cit. p. 179.

PHLEOXENA Chaud.

- P. signata** Dej. (*Coptodera*) Species i, p. 275; Chaud. Ann. Belg. 1869, p. 151.
collaris Lec. (*Coptodera*) Ann. Lyc. iv, p. 197.

DROMIUS Bon.

- D. piceus** Dej. (*Cymindis*) Species v, p. 353.
quadricollis Lec. Proc. Acad. 1859, p. 82.
D. atriceps Lec. Trans. Am. Ent. Soc. viii, p. 163.

APRISTUS Chaud.

- A. cordicollis** Lec. (*Dromius*) Ann. Lyc. iv, p. 190.
A. subsulcatus Dej. (*Dromius*) Species ii, p. 451.
latens Lec. Ann. Lyc. iv, p. 191.
fuscipennis Motsch. Bull. Mosc. 1864, iii, p. 233.
A. laticollis Lec. Ann. Lyc. v, p. 176.

BLECHERUS Motsch.

- B. nigrinus** Mann. (*Dromius*) Bull. Mosc. 1843, ii, p. 184.
angustus || Lec. (*Dromius*) Ann. Lyc. iv, p. 191.
linearis Lec. (*Bomius*) Ann. Lyc. v, p. 177.

B. lucidus Lec. (*Bomius*) Ann. Lyc. v, p. 177.

B. pusio Lec. New Species 1863, p. 6.

METABLETUS Schmidt-Goebel.

M. americanus Dej. (*Dromius*) Species v, p. 361.

borealis Zimm. Trans. Am. Ent. Soc. 1869, p. 243.

AXINOPALPUS Lec.

A. biplagiatus Dej. (*Dromius*) Species i, p. 243.

californicus Motsch. Bull. Mosc. 1845, iv, p. 356, pl. v, fig. 1.

fusciceps Lec. Ann. Lyc. v, p. 176.

nigriceps Lec. Trans. Am. Ent. Soc. 1880, p. 164.

TECNOPHILUS Chaud.

T. croceicollis Ménét. (*Callida*) Bull. Ac. Petr. ii, 1844, p. 53.

chloridipennis Motsch. K&f. Russl. 1850, p. 39, note 3.

ruficollis Lec. Ann. Lyc. v, 1851, p. 176.

nigricollis Lec. loc. cit.

pilati Chaud. Bull. Mosc. 1877, i, p. 239.

glabripennis Chaud. loc. cit. p. 242, note.

EUPROCTUS Solier.

E. trivittatus Lec. (*Onota*) Proc. Amer. Philos. Soc. 1878, p. 373; Horn, Trans. Am. Ent. Soc. ix, pl. iv, fig. 3.

CALLIDA Dej.

C. platynoides Horn, n. sp.

planulata Lec. Proc. Acad. 1858, p. 59.

viridipennis Say, (*Cymindis*) Trans. Amer. Philos. Soc. 1823, vol. ii, p. 9; Lec. Ann. Lyc. iv, p. 189; Chaud. Ann. Belg. 1872, p. 117.

marginata Dej. Spec. i, p. 222.

laevis Fab. (*Carabus*) Syst. El. i, p. 181; Dej. Spec. i, p. 224; Icon. Col. ed. 1, v. ii, pl. vii, fig. 7; Chev. Col. Mex. fasc. ii, n. 36.

cardicollis Putz. Mem. Liege ii, p. 373.

cyanoptera Lec. Proc. Acad. 1858, p. 59.

C. punctata Lec. Ann. Lyc. iv, p. 189; Chaud. (*Spongoloba*) Ann. Belg. 1872, p. 152.

C. fulgida Dej. Species v, p. 330; Chaud. (*Spongoloba*) loc. cit.

C. purpurea Say, (*Cymindis*) Trans. Amer. Philos. Soc. 1823, p. 10.

amaragdina Dej. Species i, p. 225; Chaud. (*Spongoloba*) loc. cit.

cyanipennis Chaud. Bull. Mosc. 1844, p. 467.

PHILOPHUGA Motsch.

P. viridicollis Lec. (*Cymindis*) Ann. Lyc. iv, p. 188.

purpurea † Chd. (nec Say,) Bull. Mosc. 1877, i, p. 245.

P. amena Lec. (*Cymindis*) Ann. Lyc. iv, p. 188.

purpurea † Lec. (nec Say,) loc. cit.

Hornii Chd. Bull. Mosc. 1877, i, p. 245.

P. viridis Dej. (*Cymindis*) Spec. v, p. 325; Chd. Bull. Mosc. 1877, i, p. 244.

cyanea Motsch. K&f. Russl. 1850, p. 39, n. 4; Bull. Mosc. 1859, iii, p. 143, pl. iii, fig. 5.

P. castanea Horn, n. sp.*

* In addition to the above list Chaudoir describes *P. subcordata* from Mexico which does not seem distinct from *viridicollis* Lec.

FLOCHIONUS Dej.

- P. pallens** Fab. Syst. El. i, p. 244; Chaud. Ann. Belg. 1872, p. 168.
Bonfilii Dej. Spec. i, p. 251; Hope. Col. Man. ii, pl. i, fig. 6.
Boisduvali Gory, Ann. Fr. 1833, p. 189.
valens Lec. New Species, 1863, p. 5.
- P. timidus** Hald. Proc. Acad. i, p. 298.
- P. amandus** Newm. Entomol. i, p. 32.
vittatus Lec. Proc. Acad. ii, p. 48.
- P. dorsalis** Horn, n. sp.

PINACODERA Schaum.

- P. limbata** Dej. (*Cymindis*) Species v, p. 320.
v. fuscata Dej. idem. p. 321.
laevigatus Motsch. (*Planesus*) Bull. Mosc. 1864, ii, p. 297.
fuscicollis Motsch. idem. p. 298.
- P. platycollis** Say, (*Cymindis*) Trans. Amer. Philos. Soc. ii, p. 14.
campfanata Dej. (*Cymindis*) Species ii, p. 448.
russata Newm. (*Lebia*) Entom. p. 31.
- P. punctigera** Lec. (*Cymindis*) Ann. Lyc. v, p. 178.
- P. semisulcata** Horn, n. sp.
- P. sulcipennis** Horn, n. sp.

CYMINDIS Latr.

- C. laticollis** Say, Trans. Amer. Philos. Soc. iv, p. 413; Lec. Ann. Lyc. iv, p. 186;
 Chaud. Berl. Zeitsch. 1873, p. 95.
villigera Chaud. loc. cit. p. 96.
- C. cribricollis** Dej. Species v, p. 311; Chaud. loc. cit. p. 97.
marginata Kby. Fauna Bor. Am. iv, Ins. p. 13.
reflexa Lec. Agass. Lake Sup. p. 203.
abstrusa Lec. Proc. Acad. 1859, p. 82.
- C. planipennis** Lec. New Species 1863, p. 6.
cribricollis † Lec. Ann. Lyc. iv, p. 186.
brevipennis Zimm. Trans. Am. Ent. Soc. 1869, p. 243.
marginata † Chaud. Berl. Zeitsch. 1873, p. 96.
- C. elegans** Lec. Ann. Lyc. iv, p. 186.
- C. unicolor** Kby. Fauna Bor. Am. iv, p. 14.
hudsonica Lec. New Species, 1863, p. 6; Proc. Acad. 1873, p. 322.
- C. americana** Dej. Species ii, p. 446; Chaud. Berl. Zeitsch. 1873, p. 102.
venator Dej. Species v, p. 311; Chaud. loc. cit. p. 103.
- C. cribrata** Lec. Col. Kansas, 1859, p. 2.
- C. pilosa** Say, Trans. Amer. Philos. Soc. ii, p. 10.
puberens Dej. Species i, p. 215.
- C. borealis** Lec. New Species 1863, p. 7.
- C. neglecta** Hald. Proc. Acad. i, p. 298.

APENES Lec.

- A. lucidula** Dej. (*Cymindis*) Species v, p. 320.
var. angustata Schwarz, Proc. Amer. Philos. Soc. 1878, p. 354.
- A. sinuata** Say. (*Cymindis*) Trans. Amer. Philos. Soc. ii, p. 8.
pustulata Dej. Species v, p. 316.
- A. opaca** Lec. Ann. Lyc. v, p. 175.
- A. nebulosa** Lec. Proc. Acad. Nat. Sc. 1866, p. 364.

EUCERUS Lec.

varicornis Lec. Trans. Amer. Philos. Soc. 1853, p. 387.

PENTAGONICA Schmidt-Goebel.

lavipes Lec. (*Didetus*) Trans. Amer. Philos. Soc. 1853, p. 377.

bicolor Lec. (*Rhombodera*) New Species 1863, p. 7.

americana Motsch. Bull. Mosc. 1864, iii, p. 224.

angulata Boh. (*Lebia*) Eugen. Resa p. 7, is probably from South America. The name *goniodera* proposed by Harold is unnecessary.

ONOTA Chaud.

loridana Horn, Trans. Am. Ent. Soc. ix, p. 157, pl. iv, fig. 4.

EXPLANATION OF PLATE IV.

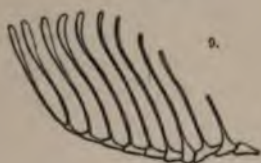
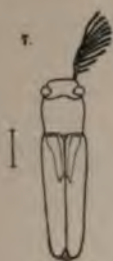
1. Elytral markings of *Melanophila miranda* Lec.
2. " " " *conspua*.
3. " " " *notata*.
4. " " " *conspua*, a variety.
5. " " " *fulvoguttata*.
6. " " " *notata*, a variety.
7. *Xenorhipis Brendeli* Lec. ♂.
8. " " " ♀.
9. Antenna of 7, more enlarged.
10. *Monadus guttatus* Lec.
11. *Dasycerus carolinensis* Horn.
12. " *angulicollis* Horn.
13. Mouth parts of *Aphonus tridentatus* Say.

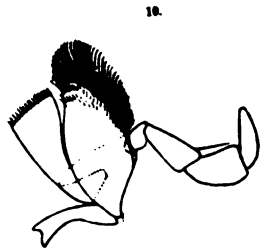
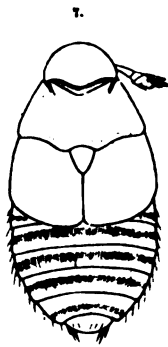
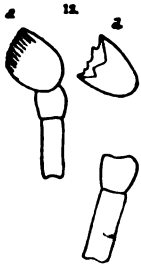
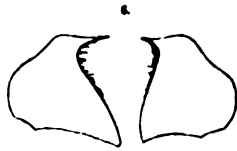
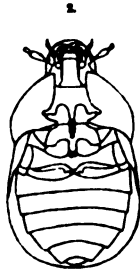
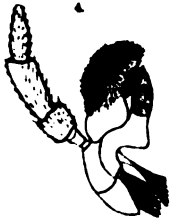
EXPLANATION OF PLATE V.

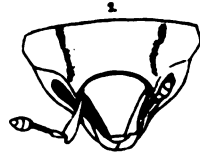
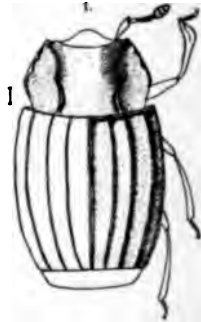
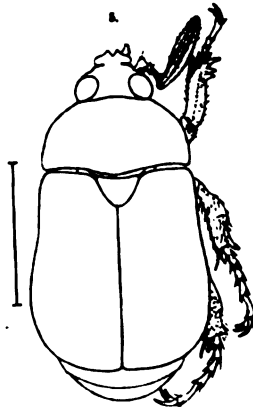
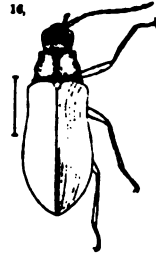
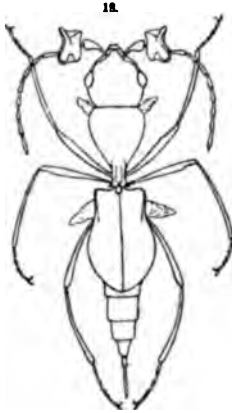
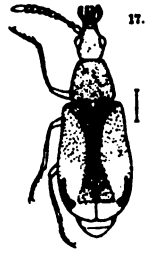
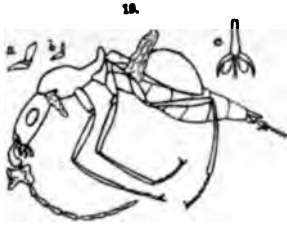
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- Fig. 1. *Leptinillus validus* ♀ Horn, much enlarged.
 " 2. Under side of same.
 " 3. Lateral view of head and thorax showing the eye-spot at *e*.
 " 4. Maxilla of *Leptinillus*.
 " 5. Mentum of same.
 " 6. Mandibles of same.
 " 7. *Platypsylla castoris* Ritsema, greatly enlarged.
 " 8. Under side of dissected head showing the labrum at *a*, and the partial outline of the mandible posterior to it.
 " 9. Antenna of *Platypsylla* with the club (*a*) more enlarged, showing the apparent number of its joints.
 " 10. Maxilla of same.
 " 11. Mentum of same.
 " 12. Mandible of *Platypsylla* as previously figured (*a*) with the same piece as figured (*d*), as seen by me under higher power with oblique light. This piece from its size appears to be one of the tubercles broken off which are shown in fig. 8, behind the labrum.

 EXPLANATION OF PLATE VI.

- Fig. 1. *Peploglyptus Belfragei* Lec.
 " 2. Head and thorax, showing the position of the antennae free and at rest.
 " 3. *Oniticellus californicus* ♂ Horn; *a*, antenna; *b*, head of ♀.
 " 4. Same, lateral view.
 " 5. *Polymachus brevipes* ♂ Lec.
 " 6—7—8. Anterior, middle and posterior legs seen from the front or under side.
 " 9. Labrum of *Polymachus*.
 " 10. Maxilla of same.
 " 11. Mentum of same.
 " 12. Mandible, viewed laterally.
 " 13. *Cryptostoma Dohrni* Horn.
 " 14. *Psephenus Lerontei* Hald.
 " 15. Under side of same.
 " 16. *Lara avara* Lec.
 " 17. *Mecomycter omalinus* Horn.
 " 18. *Myrmecospetra Nietneri* Motsch.
 " 19. Lateral view of same. A small insect (.14 inch; 3.5 mm.), from Ceylon.







Notes on TINEIDÆ of North America.

BY LORD WALSHINGHAM.

Through the kindness of my friend Professor C. H. Fernald, I have lately had an opportunity of examining several collections of North-American Tineidæ,* containing in many cases typical specimens received directly from the authors by whom the species were described. This has enabled me to put together the following notes, which may, I hope, contribute in some small degree towards a rectification of synonymy, which in this extensive family, can by no means be hastily attempted. Among the collections lent to me were:—

1. A large box containing a number of specimens from Prof. Fernald's own collection, some of which had been named and verified by comparison with authors' types; as well as a considerable number from the collection of the American Entomological Society at Philadelphia, these latter being unfortunately for the most part in decidedly bad condition.

2. Two boxes containing a few specimens belonging to Prof. Fernald, received by him from Miss Murfeldt from the neighborhood of St. Louis. These were in good condition and named, but not in all cases correctly.

3. Three boxes, kindly lent by the Peabody Academy of Sciences of Salem, Massachusetts, containing a number of specimens received as types from Mr. Chambers (many unpinned in pill-boxes with cotton wool), partly corresponding with a list of names subsequently procured from that gentleman by Prof. Fernald; and containing, moreover, a few types of species described by Dr. Packard.

4. Three boxes lent by Mr. Goodell of Amherst, Massachusetts, one containing some few more of Mr. Chambers's types, and two others containing a miscellaneous collection of unnamed species.

5. A box kindly sent at my request by Prof. Riley from Washington, containing some more of Mr. Chambers's species, several of the specimens being marked as types in the list which accompanied them, and several very interesting species, which I understand to have been bred and collected by Prof. Riley himself.

With these materials before me my only regrets are that I have not been able to make more use of them. Several difficulties have presented themselves. First, the condition of the specimens themselves has not, on the whole, been very satisfactory. Comparatively few had the wings properly

* For reasons for the use of this term, see *ibid.* p. 164, page 77.

extended, or were preserved with a due regard for the safety of their palpi and antennæ, so necessary for the correct determination of many genera and species. Secondly, having in many cases only one or two examples of each species, and these subject to the not insignificant risks of another journey between America and England, I have been most unwilling to denude wings for the purpose of examining their neuritic. And, thirdly, the immense number of nearly allied species described by Mr. Chambers of which he has given us no figures, and of which I have not seen the types, have rendered it impossible, especially in such genera as *Gelechia* and *Blattbasis*, satisfactorily to determine many of the numerous species contained in the collections submitted to me. In such cases I have deemed it advisable merely to indicate the genera in my catalogue of specimens, and not to attempt to offer, in this paper, the remarks which in some cases have occurred to me upon their probable nomenclature and synonymy.

After returning my cordial thanks to the owners of the different collections which have been placed at my disposal, I must acknowledge the great assistance derived from Mr. Chambers's "Index to the described Tineina of the United States and Canada," published in 1878, in the Bulletin of the United States Geological and Geographical Survey, vol. iv, which has greatly facilitated reference to numerous scattered papers in the 'Canadian Entomologist,' the 'Cincinnati Quarterly Journal of Science,' the 'Journal of the Cincinnati Society of Natural History,' and other periodical publications, and which is referred to hereafter in this paper, for the sake of brevity, as the "Index," as well as from Mr. Stainton's valuable republication of Dr. Clemens's papers on "Tineina of North America," hereinafter referred to under that name, which has been rendered doubly serviceable to me from my having first studied it at Philadelphia in 1872, and made notes upon Dr. Clemens's typical specimens which were then before me. Good colored drawings of all the species in the various collections, except such as are represented in my own cabinet, have been made for me by Mr. Edwin Wilson; and I hope in course of time, that these may be rendered available to the public either by publication in Mr. C. O. Waterhouse's most useful 'Atlas of the Identification of Insects,' of which the first volume has just appeared, or in some other illustrated journal. The numbers which precede the names of the various species mentioned in this paper correspond to those used in my catalogue of the specimens now returned to their owners, and are attached in blue labels to the specimens themselves.

Genus **CHOREUTIS.**

746, 747. **Choreutis bjerkandrella** Thnb. (Woeke, Cat. 1302), var. *australis* Zell.

This species has not, so far as I am aware, been recorded from North America. I have received it from Miss Murtfeldt, from whom the specimens in Prof. Fernald's collection were also obtained. It occurs also in California, together with a form identical with, or very closely allied to, *Choreutis silphiella* Grote, (Papilio, vol. i, p. 40), which must probably be regarded as distinct.

Genus **ACROLOPHUS** Poey.

716, 717. **Acrolophus** sp.

Given as *Anaphora agrotipennella* Grote, in Miss Murtfeldt's list, to which a note is attached by Prof. Fernald: " = *An. arcanella* Cl.; the type is a shade lighter colored, and nearly as light as *An. mortipennella* Grote." I must leave Prof. Fernald responsible for this comparison,* merely observing that Clemens writes, in his description of *A. arcanella*, " Labial palpi shorter in the ♂ than in the preceding (*A. popeanella* Clem.), ascending, but not recurved." The specimens now before me have the palpi decidedly recurved. I saw Dr. Clemens's supposed type at Philadelphia in 1872; but a note of interrogation on my list, shows that I had then some doubt as to its identity. Mr. Grote's type of his *Anaphora agrotipennella* is not among his very large series of specimens belonging to this genus now in the British Museum; but on my calling his attention to specimens similar to those in Miss Murtfeldt's box he expressed his opinion that they were not his *A. agrotipennella*. Mr. Grote confirmed my belief that *A. agrotipennella* was equivalent to *A. scardina* Zeller, Verh. z.-b. Ges. Wien, 1873, p. 216, which is described by Zeller as variable in size and color. Is not this also *A. popeanella* Clem.? as suggested by Chambers, (see "Index").

Mr. Grote calls attention to the difference in the palpal structure (Can. Ent. iv, p. 138), referring to Stainton's edition of Clemens's papers (Tin. North Am. p. 60), where the head of *A. popeanella* is figured; but referring to p. 57 we find "*popeanella*: labial palpi in the male as long as thorax," which is evidence that the figure on p. 60 must represent the female. The whole genus requires careful revision; and the name "*Anaphora*" of Clemens must be required to give place to one of the earlier generic names which has been attached to these curious forms by other authors. Hübner's *Pinaris hamiferella* (Zütrage, pp. 441, 442) appears to belong to the same genus; this is from Rio Janeiro, whence

* My comparison was made under unfavorable circumstances and is not to be depended upon.—C. H. FERNALD.

I have also received numerous examples. Walker's genera *Zaruma*, *Urbana* and *Niharra*, are all nearly allied forms.

Felder and Rogenhofer (Novara, pl. cxxxix, fig. 35), adopt, I think with good reason, Poey's genus *Aerolophus* for what is evidently a species congeneric with *Anaphora plumifrontella* Clem.

Poey, in the 'Centurie de Lépidopteres de l'île de Cuba,' 1832, elegantly characterizes that genus, and admits that his species is evidently generic with *Pinaris hamiferella* Hübner, Zutr. 441, 442. He would gladly have adopted Hubner's generic name, had it been founded on palpi instead of on the colors of the insect; but he adds: "on peut par son Catalogue des Lépidoptères connus, que la plupart de ses Pinaris ont les palpes courts et de la forme ordinaire."

Mr. Grote has somewhere suggested (I have not the reference before me), that *Aerolophus* should probably be substituted for *Anaphora*. In this I entirely concur.

718. ***Aerolophus?* sp.**

Named in Miss Murtfeldt's list, "*Anaphora mortipennella* Grote." It is larger than Grote's measurement and seems to be pale ochraceous rather than "dirty whitish." I am not convinced that it is truly *A. mortipennella*, and should be glad to be reassured as to this. It presents a curious superficial resemblance to *Amydria effrenatella* Clemens, in color and markings, but differs in the structure of the palpi and the darker hind wings, broader fore wings, &c.

It differs also in the form of the wings from all Clemens's species of the genus *Anaphora*, and has the appearance of a connecting generic link between *Anaphora* and *Amydria*. The venation, however, differs from that of both these genera in the furcation of the apical vein.

280 281. ***Aerolophus?* *simulatus*, sp. nov.**—Head rough; maxillary palpi none; tongue none; ocelli none. Labial palpi recurved over the head and part of the thorax; the second joint very long, roughly clothed with projecting scales beneath; third joint about half as long as the second, brush-like, with very long diverging scales on the underside. Antennae strong, slightly pubescent, somewhat serrated on both sides, especially towards the apex. The anal appendages in the male much developed, the elongated ovate side claspers not reaching beyond the upper shield, which is triangular and pointed. Fore wings with the costa arched, apex rounded, apical margin oblique, slightly convex, the dorsal margin somewhat convex, not emarginate before the rounded anal angle. Hind wings ovate, wider than the fore wings. Fore wings with twelve separate veins. The vein from the upper corner of the discal cell in the fore wings ends on the costal margin and is not forked; cell of hind wings not closed. Alternate brown and whitish ochreous patches along the costal and dorsal halves of the fore wings, the paler portions apparently predominating rather more than in *Eutepote cecanoni*, the darker portions assuming the form of two undulated fasciae; there are

numerous raised bluish fuscous scales scattered especially about the darker patches. Hind wings and cilia dull brown. Expanse 15 millims.

Six specimens in the collection of the Am. Ent. Soc. Philadelphia, unfortunately all of them in very bad condition. So far as I can judge, the markings and colour are almost exactly similar to those of the following species, also from Texas.

EULEPISTE, gen. nov.

Head rough, maxillary palpi none, tongue none, ocelli none. Labial palpi ascending, with the second joint roughly clothed with coarse scales, projecting beneath; terminal joint coarsely scaled, tapering to a blunt point, about equal in length to the second joint. Antennæ (with the basal joint thickened and coarsely scaled) slightly serrated and pilose beneath. Anal appendages of the male greatly developed; the side claspers elongate ovate, projecting well beyond the triangular pointed upper shield, which is clothed with long scales; the anal segment with short diverging bristles beneath. Fore wings: costa arched, apex rounded, apical margin oblique, slightly convex; dorsal margin nearly parallel with the costal, but slightly emarginate before the anal angle; apical vein forked. Hind wings ovate, rather wider than the fore wings, widest on the basal half, tapering outwards towards the rounded apex, and not emarginate below it. Veins of the fore wings twelve, not including the false vein after vein 1 on the dorsal margin; two of these from the same stem; cell closed. The vein running from the upper corner of the cell in the fore wings is forked, one branch ending on the costal margin, and one in the apex.

268-279. **Eulepiste cressoni**, sp. nov.—Palpi brown, with ochreous scales intermixed, the apical joint with an indistinct pale ochreous band around its middle. Antennæ pale brown. Fore wings brown, with scattered purplish fuscous and ochreous scales, the former collected in raised tufts, especially about the dorsal margin; the latter aggregated in the form of three or four square patches, one before, and one beyond the middle of the dorsal margin, one about the middle of the costa and one at or just before the apex. These in some specimens are so arranged as to form an indistinct chess-board pattern, the dark and pale squares being alternate on the costal and dorsal halves of the wing; in some specimens the median costal and the antemedian dorsal pale squares, which are always somewhat the most conspicuous, are joined in an angulated fascia. Abdomen with the hind wings and their cilia dull brown. The first two pairs of legs conspicuously spotted with brown and ochreous, the third pair ochreous on the tibiæ, spotted with brown on the tarsal joints. Expanse 15 to 20 millim., the ♀ being larger than the ♂.

Several specimens in the collection of the Am. Ent. Soc. Philadelphia, from Texas. I have long possessed and known this species, but could not believe it to be still undescribed, as it seems to be common in Texan

collections; but I am unable to find any description agreeing with it. In coloration this seems to be almost inseparable from the preceding species, but its short palpi and the neuration of the fore wings amply distinguish it, and probably do not justify the juxtaposition of the two species in systematic order. *Eulepiste*, indeed, exhibits some signs of affinity to the genus *Aerolepia*.

Genus **BLABOPHANES**.

126, 127, &c. **Blabophanes dorsistrigella**, Clem. (See Chamberlain's Index.)

This is the same as *Tinea subjunctella*, Walk. (Cat. Lep. Het. B. xxviii. p. 471), but Dr. Clemens's name has precedence.

Specimens are in Prof. Fernald's collection.

180, &c. **Blabophanes ferruginella**, Hub. (Woeke, Cat. 1368).

Tinea crociocapitella, Clemens, Proc. Ac. Nat. Sci. Phil. 1859, p. 257, &c.

Specimens of this species in Prof. Fernald's collection and in the American Ent. Soc. at Philadelphia agree with a specimen in my own collection, which has been compared with Dr. Clemens's type.

Genus **TINEA**.

1050. **Tinea biflavimaculella**.

Tinea biflavimaculella, Clem. Proc. Ac. Nat. Sci. Phil. 1859, p. 257; Tin. Nor. Am. p. 237, &c.

Tinea insignisella, Walk. Cat. Lep. Het. B. M. xxviii. p. 471.

?— *Tinea rusticella*, Hub., var. *spilotella*, Tengst., see "Index."

I am not acquainted with the type of *Tinea spilotella*, which has been regarded as a variety of *T. rusticella*; but there is little or no variation among the numerous specimens of *T. biflavimaculella* which I have seen. These appear to have the fore wings somewhat wider in proportion to their length than *rusticella*, and are so different in markings as to convince me that they are not mere varieties of that species; whether they are the same as *T. spilotella* or not I cannot venture to decide. Mr. Stainton writes (Tin. Nor. Am. p. 237) that they are closely allied to, if not identical with, it. I find that Mr. Walker's type of *Tinea insignisella* agrees with this species.

13, 14, &c. **Tinea pellionella**, Lin. (Woeke, Cat. 1405).

Tinea carnariella, Clem. Proc. Ac. Nat. Sci. Phil. 1859, pp. 256, 257; Tin. Nor. Am. pp. 49-51.

Tinea griseella, Cham. Can. Ent. v. p. 88.

Tinea flavifrontella, Pack. Guide, p. 346 (larva only).

Dr. Packard has confused two distinct species in his account of *Tinea flavifrontella*, Lin. (Guide p. 346). The name *flavifrontella*, W. V. et Fab. ?, is quoted by Stainton (Ins. Brit. Lep. Tin. p. 34) as a probable synonym of *Tinea biselliella*, Hummel. This species, which appears

to be indicated by Dr. Packard in his description of the imago, makes no case in its larval stage; the case figured by Dr. Packard belongs most probably to *Tinea pellionella*, Lin., which is *T. carnariella*, Clem., = *T. griseella*, Cham. Mr. Chambers does not allude to the case-making habit of the larva; but I gather from Prof. Fernald's letter, August 19, 1881, that *T. griseella* has this habit.*

182, &c. ***Tinea graueella***, Lin. (Wocke, Cat. 1385.)

This, as suggested by Mr. Stainton (Tin. Nor. Amer. p. 53), is *Tinea varietella*, Clem., and undistinguishable, so far as I can judge, from European specimens.

There are examples in the collection of the American Entomological Society at Philadelphia and in Prof. Fernald's cabinet.

238. ***Tinea fuscipunctella***, Haw. (Wocke, Cat. 1404.)

A specimen in Prof. Fernald's collection is labelled "Labrador." Prof. Packard's types of *Æcophora frigidella*, Pack., from the Peabody Academy of Sciences, Salem, Mass., are also from Labrador, and belong, without doubt, to the genus *Tinea*, probably to *T. fuscipunctella*; but their condition is not such as to justify the expression of any very decided opinion as to their identity.

Genus **EUDARCIA**.

852. ***Eudarcia simulatricella***.

Eudarcia simulatricella, Clem. Proc. Ac. Nat. Sci. Phil. 1860, ii.

Tinea cametariæella, Cham. Can. Ent. v. p. 85, and "Index."

My notes on Clemens's type are that the "transverse streak near the tip" of the fore wings mentioned in the description is "semi-circular, not extending across the wing." This agrees with Chambers's description, in which it is called "an obliquely curved costal white streak." I fail to see in this specimen the "costal white spot in the apical portion of the wing" mentioned by Chambers, nor does this occur in Clemens's description. The neuration, according to Dr. Clemens's figure, differs from that of the genus *Tinea*, with which, in other respects, this species appears to agree.

A single specimen received from Mr. Chambers as *T. cametariæella* is in the collection of the Peabody Academy of Sciences, Salem, Mass.

Genus **SCARDIA**.

1037. ***Scardia anatomella***.

Fernaldia anatomella, Grote, Bull. U. S. Geol. & Geog. Surv. vi. p. 274.

I am well acquainted with this species, having bred several specimens from larvæ found in March, 1872, boring round holes in a dead fallen

* *Tinea griseella* Cham. is a case-making species, and is the most common and destructive carpet and clothes moth in this part of the country.--C. H. FERNALD.

pine-tree. It is very nearly allied to *Scardia boletella*, Fab. (= *S. poly-pori*, Esper), from which it differs only in its smaller size, in the apical joint of the palpi being distinctly annulated, and in the darker portions of the wing being much blacker (more purplish black), and approaching much nearer to, or reaching the anal angle, from which in *boletella* & *poly-pori* are distinctly separated.

Genus **INCURVARIA.**

806. ***Incurvaria acerifoliella*.**

Ornith. acerifoliella, Fitch, Rep. Nox. Ins. N. Y. parts 1 & 2, p. 269; Ont. 1873, p. 42.

Incurvaria acerifoliella, Clem. Proc. Ac. Nat. Sci. Phil. 1860, p. 55; Tin. Am. p. 90.

Tinea aridella, Cham. Can. Ent. v. p. 86, xi. p. 146 and Index.

Mr. Chambers (Can. Ent. xi. p. 146) writes, "*Tinea iridella*, (Cham.) will probably be referred to *Incurvaria*." This is, without doubt, *I. acerifoliella*, Fitch, of which a single specimen is in the collection of the Academy of Sciences, Salem, Mass.

I am now convinced that the two species placed by me in the genus *Lampronia* (P. Z. S. 1880, xii. p. 10), under the names *L. oregonella* and *L. tripunctella*, should be more properly included in the genus *Incurvaria*, their heads not being smooth above except where they have been slightly denuded. My *Incurvaria tripunctella* agrees with Chambers's *I. russatella* in all respects except in having an additional costal spot; for I find a memorandum made at Philadelphia in 1872, - Chambers's type (of *Incurvaria russatella*) does not agree with his description as to the position of the costal and dorsal spots; they are not exactly 'opposite' to each other, the costal being decidedly nearer to the base.

Genus **ADELA.**

1027. ***Adela ridingsella*.**

Adela ridingsella, Clem. Proc. Ent. Soc. Phil. 1864, ii. p. 426; Tin. Nor. Am. p. 250.

Dieta coruscifasciella, Cham. Can. Ent. v. p. 74 &c., see "Index."

Adela Dieta coruscifasciella, Cham. Index.

Adela schlageryi, Zell. Verh. z.-b. Ges. Wien, 1873, p. 27.

This confirms my statement (P. Z. S. 1880, p. 79) that these two names had been given to the same species; the specimen is the type of Chambers's species, kindly lent by Mr. Goodell.

Genus **ACROLEPIA.**

181. ***Acrolepia dorsimaculella*.**

Heribea dorsimaculella, Chambers, Can. Ent. iv. p. 43.

Heribea coactella, Chambers, Can. Ent. iv. p. 44.

Argopis dorsimaculella, Chambers, Can. Ent. v. pp. 13, 174.

If, as I believe, I have rightly identified this species, Mr. Chamber-

was justified in suggesting (Can. Ent. v. p. 174) that it might "be found to belong to *Acrolepia*, Curt." It is very nearly allied to *Acrolepia betulella*, Curt. (Woocke, 1531), but the dorsal white streak is not divided by a dark line as in that extremely local species. The palpi are also somewhat shorter; the pale costal streaks and spots, moreover, serve to distinguish it.

Genus **ARGYRENTHIA.**

556. *Argyrenthia subreticulata*, sp. nov.—Palpi white, with a slight golden tinge; head and face silvery white; antennæ annulated with white and golden. Fore wings white; the dorsal portion pure white to within a short distance of the apex; the costal third from the base bright golden, beyond the middle the golden scaling covers a wider portion of the wing, and is reticulated with white, becoming slightly darker or more bronzy towards the apex, around which is a bronzy gold line at the base of the fringes; apical cilia golden; dorsal cilia pale greyish. Hind wings grey, with pale golden-brown fringes. Expanse 9 millim.

One in coll. Am. Ent. Soc. Phil.; apparently allied to *A. glaucinella*, Zell. &c.

Genus **CHIMABACCHE.**

100. *Chimabacche? haustellata*, sp. nov.—Palpi fuscous, the second joint with a long projecting tuft, white at the apex externally, white at the base and apex internally, the apical joint fully equal to the second in length, with white lines above and beneath reaching to the apex; head with some rough projecting scales above; face smooth. Antennæ fuscous, nearly two thirds of the length of the fore wings, partly annulated, partly streaked on alternate joints, with conspicuous white scales, strongly ciliated beneath, having the basal joint somewhat tinged with ochreous. Tongue rather long and scaled, whitish ochreous. Fore wings elongate, with the apical margin oblique, the apex depressed, slightly inclining to falcate, brownish fuscous, with some scattered whitish scales about the apical portion of the wing, and two inconspicuous spots of whitish scales, one on the middle, the other about the end of the cell, the first nearer to the costal than to the dorsal margin; at the middle of the costa is a diffused pale ochreous spot, followed by a larger one at the commencement of the costal cilia, and a third just before the apex. There are some pale ochreous spots along the inner and outer edges of the otherwise dark fuscous cilia of the apical margin. Hind wings scarcely paler than the fore wings, with a fuscous clouded line along the middle of the subochreous cilia. Tarsi spotted with pale ochreous. Expanse 16 millim.

Having before me only a single specimen of this species, I have hesitated to describe a new genus for its reception, especially as I am unable critically to examine the neuration. The apical vein is furcate, and except for the narrower and rather more acuminate hind wings, the longer tongue and tufted second joint of the palpi, it approaches most nearly the genus *Chimabacche*, Zell., in which, at least provisionally, I propose to place it. It would be interesting to discover the female of this species,

which, if I have even approximately determined its generic position, is probably nearly apterous.

The specimen is in Prof. Fernald's collection.

Genus **EPIGRAPHIA**.

8. **Epigraphia packardella**.

Enicostoma packardella, Clem. Proc. Ent. Soc. Phil. ii. p. 125.

Epigraphia eruditella, Grote, N. Am. Ent. i. p. 53, pl. v. f. 12.

This species is closely allied to *Epigraphia steinkellneriana*, Schiff. (Wocke, Cat. 1662).

The label in Prof. Fernald's collection indicates that this is *Epigraphia eruditella*, Grote. I have been able to verify this by comparison with Mr. Grote's type now in the British Museum.

Genus **SEMIOSCOPIS**.

203. **Semioscopis inornata**, sp. nov.—Palpi whitish, the second joint externally brownish fuscous: apical joint with a brownish-fuscous spot beneath at its base, and a broad brownish-fuscous band around its middle: head and thorax whitish, much mixed and clouded with greyish fuscous. Antennæ pubescent, slightly tinged with ochreous. Fore wings greyish white, profusely irrorated with greyish-fuscous scales, a few scattered greyish-fuscous spots along the costa, especially near the costal cilia, two before the middle of the cell and two at its outer end, in both cases placed one above the other; some slight greyish-fuscous mottling around the apical margin, but all the markings very inconspicuous. Cilia whitish, divided by an obscure greyish-fuscous line before their points. Hind wings whitish grey, with pale cilia; a strong tuft of long hairs on the basal part of the dorsal vein. Abdomen greyish, tinged towards the base and at the anal tuft with ochreous. Legs whitish grey. Expanse 33 millim.

In Prof. Fernald's and Mr. Allen's collections.

134. **Semioscopis allenella**, sp. nov.—Palpi greyish white, tinged with fuscous externally and beneath, the apical joint with a fuscous band around its middle. Antennæ having a slightly serrated appearance in the male, subochreous. Head greyish white. Fore wings with costa attached; apex and anal angle rounded, apical margin somewhat oblique, with rather the form of one of those Tortricidæ, greyish white, with numerous specks and mottlings of greyish fuscous, especially on the costal and apical parts of the wing, the most conspicuous being just beyond the middle of the cilia; two greyish-fuscous discal spots, one at the middle, the other at the end of cell, each followed by some ochreous scales, a row of diffuse greyish-fuscous spots around the apical margin before the cilia, extending round the apex beneath the costal cilia, the costa greyish-fuscous at the extreme base. Hind wings and cilia whitish grey. Abdomen and posterior pair legs tinged with ochreous. On the underside the hind wings are decidedly paler than the fore wings. Male expanse 19 millim.

This species is undoubtedly allied in form and general appearance to *Epigraphia*, but differs in venation: the apical vein of the fore wing is forked, and vein 3 is also forked soon after leaving the lower end of the cell, its two branches ending on either side of the anal angle. From Prof. Fernald's and Mr. Allen's collections.

Genus **DEPRESSARIA.**

221. **Depressaria fulva**, sp. nov.—Palpi rich tawny red, speckled with whitish and fuscous scales: the second joint whitish on its inner side; apical joint paler, tipped with ochreous, with a few fuscous scales around its middle. Antennæ fuscous, pubescent and ochreous beneath; head tawny red; thorax tinged with fuscous, with some whitish scales posteriorly. Fore wings rich tawny red, much sprinkled with fuscous scales; some whitish scales forming a short line from the dorsal margin very near the base; a blackish inconspicuous spot, with a single white scale in its centre, lies at the end of the cell, and is surrounded by a diffuse greyish-fuscous cloud, from which the lines of the veins are marked by greyish-fuscous scales to the apex and apical margins; the costal and apical margins are much speckled with fuscous; the cilia greyish, tipped with shining rosy red. Hind wings and cilia grey, the cilia tipped at the extreme apex with rosy red. Abdomen grey; legs paler, somewhat tinged with rosy red. Expanse 22 millim.

A beautiful and distinct species, of which one male is in Prof. Fernald's collection.

Depressaria applana, Fab. (Wocke, Cat. 1729.)

Gelechia clemensella, Cham. Can. Ent. viii. p. 173.

This specimen in Prof. Fernald's collection is labelled "*Gelechia clemensella*, Cham., *salicifungiella*, Clem." *Gelechia clemensella* is omitted from Mr. Chambers's "Index." The description with which the specimen before me appears to agree will be found under the reference given above. *Gelechia salicifungiella*, Clem., is not only specifically but generically distinct. It is a narrow-winged *Gelechia*, of the "*Ergatis*" group, remotely allied to *G. roseosuffusella*, Clem., and cannot for a moment be mistaken for a *Depressaria*.

The only point in which this specimen and two others in the same collection differ from our European form is in their slightly shorter and smaller fore wings. Mr. Stainton, to whom I submitted this specimen, concurs with me in the opinion that it is *Depressaria applana*, but writes that he has "not a specimen exactly like it."

65, 66. **Depressaria arenella**, W. V. (Wocke, Cat. 1703).

? *Depressaria yeatiana*, Wism. P.Z.S. 1881, p. 316.

These specimens are unset and cannot be so well examined as if the wings were spread; but I have no doubt of their identity with the European *D. arenella*. On re-examination I am disposed to doubt whether the two single specimens from Texas and Oregon referred to in P. Z. S. 1881, p. 316, as *D. yeatiana*, Fab., do not more properly belong to this same species.

Genus **CRYPTOLECHIA.**

335. **Cryptolechia nubeculosa.**

Cryptolechia nubeculosa, Zeller, Verh. z.-b. Ges. Wien, 1873, p. 245, af. iii. f. 12.

Harpalyce canusella, Cham. Can. Ent. vi. p. 235, and Index.

Ide canusella, Cham. Cin. Soc. Nat. Hist. ii. p. 180.

A specimen received from Prof. Riley, which was sent to him by Mr. Chambers as *Harpalyce canusella*, proves that this species, common in Texan collections, is the same as *Cryptolechia nubeculosa*, figured and described by Zeller. The three species placed by Chambers in his genus *Harpalyce*, afterwards changed to *Ide*, do not differ, so far as I am able to ascertain, from the most usual forms of Zeller's genus *Cryptolechia*.

22. ***Cryptolechia quercicella***, Clem.

Psilocorisca quercicella, Clem. Proc. Ac. Nat. Sci. Phil. 1860, p. 212.

Cryptolechia faginella, Cham. Bull. U. S. G. & G. Surv. 1878, p. 94 et seq.

Hagno faginella, Cham. Can. Ent. iv. p. 131, vi. p. 231.

Cryptolechia cressonella, Cham. Bull. U. S. G. & G. Surv. 1878, pp. 85, 86.

† *Cryptolechia obsoletella*, Zell. var. Verh. z.-b. Ges. Wien, 1873, p. 242.

Mr. Chambers (Bull. U. S. G. & G. Surv.) discusses at length the difference between his *Cryptolechia* (originally *Hagno*) *faginella* and undescribed species for which he proposes the name "*cressonella*," and compares them both with *Cryptolechia* (originally *Psilocorisca*) *quercicella*, as described by Clemens and recognized by Zeller. He ends by expressing some hesitation as to their distinctness from each other, and writes, "with fuller collections of bred specimens of all the supposed species it is not improbable that they will be deemed at most only phyletic varieties of a single species." Having carefully compared a considerable number of specimens from Texas, from Missouri, and from North Carolina, I am unable to discover any constant and reliable characters by which they can be distinguished from each other. Two examples from Miss Murtfeldt's collection, which have the appearance of bred specimens, faithfully represent the two varieties *quercicella*, Clem., and *cressonella*, Cham. There seems to be a considerable amount of variation in the distinctness of the slender transverse lines, in the intensity of the coloring of the head, thorax and fore wings, in the separation or amalgamation of the spots on the apical margin, and in the presence or absence of diffuse costal spots. The hind wings also are lighter in some specimens than in others. I have no knowledge of the insect described as *Cryptolechia obsoletella*, Zeller (Verh. z.-b. Wien, 1873, p. 242); but a specimen in Prof. Fernald's collection agrees with Zeller's description, and leads me to think it not impossible that it may be found to be a small dark variety of the female of this same species.

728. ? ***Cryptolechia cretacea***.

Cryptolechia cretacea, Zell. Verh. z.-b. Ges. Wien, 1873, p. 243.

Harpalyce albella, Cham. Can. Ent. vi. p. 235; Cin. Soc. Nat. Hist. ii. p. 180, and Index.

Ide albella, Cham. Journ. Cin. Soc. Nat. Hist. n. p. 180.

This, originally from Miss Murtfeldt's collection, is without doubt

Chambers's *H. albella* as named in her list; and I have little doubt that it will be found to be *Cryptolechia cretacea*, Zeller, with the description of which it well agrees. Zeller evidently regards *Harpalyce* as equivalent to *Cryptolechia*, as shown by his placing Chambers's *Harpalyce cerasella* in that genus.

Genus **GELECHIA.**

163. Lateiled "**Phaetusa plutella**, Cham., Texas."

If specimens received from Miss Murtfeldt are truly *Gelechia prunifoliella*, Cham., which I see no reason to doubt, as they agree entirely with the original description (Can. Ent. v. p. 186), although not with the amended version of it (Can. Ent. vii. pp. 106, 107), it seems to me, that this example must belong to the same species. Mr. Chambers gives his reason for separating them (Can. Ent. vii. p. 106); but, except so far as these depend upon slight differences of neuration which I cannot examine, I am unable to recognize them in the specimens before me. It is of course just possible that Miss Murtfeldt's specimens may not truly represent *G. prunifoliella*.

176. **Gelechia cercerisella.**

Gelechia quinella, Zell.

G. cercerisella, Cham. var. Can. Ent. vi. p. 231.

This is the Texan species described by Prof. Zeller, and is equivalent to the supposed variety of *Gelechia cercerisella*, Cham., noticed by Mr. Chambers, Can. Ent. vi. p. 231. I have a single specimen of the typical *Gelechia cercerisella*, which differs in the absence of the lower median spot, but appears to be in other respects similar to the Texan form.

210. **Gelechia flavicorporella**, sp. nov.—Palpi whitish ochreous, stained and spotted with fuscous outwardly and beneath; second joint brush-like beneath, third joint acuminate. Head greyish-fuscous; antennæ greyish-fuscous, speckled with a few ochreous scales. Fore wings (with the costa slightly arched before, and slightly depressed about the middle, the apical margin oblique) about equally covered by greyish-fuscous, whitish ochreous, and brownish ochreous scales—the brownish prevailing across the middle, the fuscous beyond the middle, and the whitish around the apical margin and fringes. There are four indistinct spots of whitish scales, two on the outer half, one on the inner half of the cell, and one on the fold, placed obliquely below and before the middle discal spot. The outer discal spot is followed, the others are all preceded, by fuscous scales: some whitish ochreous spots along the apical margin are followed by fuscous scales at the base of the cilia, and an indistinct fuscous shade runs along the middle of the cilia, not extending above the apex. Hind wings greyish, with greyish ochreous fringes. The anterior half of the abdomen distinctly yellow ochreous; the posterior half greyish-fuscous, with paler anal tuft. Posterior tarsi greyish-fuscous, the joints and tibiae paler. Expanse 20 millim.

One male in Mr. Allen's collection; one in Prof. Fernald's collection.

1066. *Gelechia petasitis*, Pfaff (Wocke Cat. 1836).—Palpi whitish, irrorated with greyish scales; second joint brush-like beneath; apical joint short than the second. Antennæ rather indistinctly annulated. Head and thorax greyish white. Fore wings lanceolate acuminate, narrow at the base; the anal area obsolete, white, profusely irrorated with grey scales, with three elongate greyish-fuscous dots, the first about the middle of the fold, the second obliquely above on the cell, the third at the end of the cell; a row of greyish-fuscous dots above the apex and apical margin, sometimes almost obsolete; cilia with mixed white and greyish-fuscous scales. Hind wings wider than the fore wings, decidedly emarginate below the apex, grey with greyish ochreous cilia not quite equal to the width of the wings. Posterior legs pale ochreous; the tarsi fuscous, spotted with pale ochreous at the joints.

♀. Much whiter than the male, the antennæ more distinctly annulated, the cal and marginal spots more conspicuous.

Expanse 17 millim.

Two males and one female in Mr. Goodell's collection; one very plainly marked female in Mr. Allen's collection.

670. *Gelechia (Bryotropha?) bosquella*.

Gelechia bosquella, Cham. Bull. U. S. G. & G. Surv. iv. p. 87, and "Index."

Æcophora bosquella, Cham. Can. Ent. vii. p. 92.

Gelechia bosquella, Cham. Can. Ent. vii. p. 124.

This is certainly a *Gelechia*, not an *Æcophora* as suggested by Chambers (Bull. U. S. G. & G. Surv. iv. p. 87, and "Index"); the palpi in the form of the hind wings at once distinguish it. The description should be amended as follows:—Head maroon-brown; the upper or central portion of the pale orange fascia is tinged with white; the costal spaces are both white, the outer one being by far the largest and most conspicuous; there is also a small white spot on the margin below the apex, with some few white scales below it. In the specimen before me the tip of the basal joint of the antennæ is scarcely to be called white.

120, &c. *Gelechia (Lita) vagella*.

Gelechia vagella, Walk. Cat. Lep. Het. B. M. xxix. p. 596.

Depressaria fuscoochrella, Chambers, Can. Ent. iv. pp. 106, 129, 147, 148.

Gelechia fuscoochrella, Chambers, Bull. U. S. G. & G. Surv. 1878, iv. p. 143.

Gelechia (Lita) liturosella, Zeller, Verh. z.-b. Ges. Wien, 1873, p. 265.

A specimen in the collection of the Peabody Academy of Science, Salem, Mass., received from Mr. Chambers, agrees in every particular with Zeller's description of *G. liturosella*; and I am convinced, by comparing it with Walker's rather damaged type in the British Museum that it was originally described as *G. vagella*.

There are specimens in Prof. Fernald's collection, and in Mr. Goodell's collection from Amherst, Mass. I did not meet with it in the Western States.

1159. *Gelechia* (Lita?) *conclusella*.*Gelechia conclusella*, Walk. Cat. Lep. Het. B. M. xxix. p. 593.*G. crescentifasciella*, Cham. Can. Ent. vi. p. 237, &c., and Index (nec B. U. S. G. & G. Surv. iv. p. 90).*G. griseofasciella*, Cham. Cin. Quart. Journ. Sci, ii. p. 253.

This specimen is labelled "*Gelechia griseofasciella*, Cham., Texas," and is one of those received from Mr. Chambers, and regarded by Prof. Riley as unique and as type specimens. I have no hesitation, after comparing it with the type of *G. crescentifasciella*, Cham., received from Mr. Goodell, in pronouncing it a worn specimen of that species. Mr. Chambers has described two supposed varieties of his *G. crescentifasciella*, the first with a complete fascia, the second with only pale costal and dorsal spots. These will probably be proved to be distinct species. The specimen before me is the fasciated form, and is equivalent to Walker's *G. conclusella*. A specimen of the second, also from Mr. Chambers's collection, is in the Peabody Academy of Sciences, Salem, Mass., and is not distinguishable from specimens received from Texas; it has a decided dark spot on the extreme base of the costa.

222. *Gelechia* (*Teleia*) *oronella*, sp. nov. — Palpi with the second joint thickened with projecting scales, scarcely brush-like, greyish white, with the basal half of the second joint, a spot before its apex externally, and two wide annulations on the apical joint brownish fuscous. Head and thorax greyish white; antennæ brownish fuscous. Fore wings narrow, elongate, greyish white; a patch at the base of the costa pointing downwards parallel to the fold, a sometimes reduplicated streak along the middle of the fold, an outwardly oblique line of spots from before the middle of the costa, beyond which are two dots at the end of the cell, all brownish fuscous; the wing is speckled and smeared, especially above and below the fold and on the apical portion, with dilute brownish fuscous, and there is a spot on the beginning of the costal cilia, preceded by a smaller one of the same color, others less conspicuous around the apical margin; cilia greyish. Hind wings not deeply emarginate below the apex, a little broader than the fore wings, greyish, with slightly paler fringes. Abdomen pale greyish-ochreous. Expanse 15 millim.

Two in Prof. Fernald's collection from Orono, Maine.

This species differs from *Gelechia* (*Evagora*) *apicitrifunctella*, Clem., *G.* (*Evagora*) *gilvisporella*, Zell., and *G.* (*E.*) *dorsistrigella*, Zell., in the dorsal portion of the wing below the fold being not paler than the remainder of the wing, as well as in its much darker antennæ, which are not annulated. It is also somewhat larger than those species, which are about equal in size to *Gelechia* (*Evagora*) *crisatella*, Cham. It has so much the appearance of the tuft-bearing species with which I have here compared it, that I fully expected it to belong to the same group; but it is more properly placed in the sub-genus *Teleia*.

291-303. **Gelechia (Poecilia) inscripta**, sp. nov.—Palpi white, the lower half of the second joint blackened externally, and with a small fuscous spot near its apex, very slightly brush-like beneath; apical joint smooth, acuminate, with two black annulations, one above the base, the other before the tip. Head and thorax white, some black scales on the middle of the thorax above antennae white, annulated and spotted above on each joint with fuscous, the whole basal joint excepted. Fore wings elongate acuminate, slightly enlarged towards the base, and tapering outwards, white, with a reduplicated black spot at the extreme base of the costa; a black fascia pointed obliquely inwards from the costa before the middle to the middle of the fold, below which it dies out in a patch of scattered scales; a black costal spot at the commencement of the costal cilia, another opposite to it on the dorsal margin, between them are some scattered fuscous scales and dots, sometimes obsolete; around the apex and apical margin are some fuscous dots before the white cilia, which become greyish about the anal angle. Hind wings and cilia pale greyish. Abdomen white, with a faint ochraceous tinge. Legs white, the tarsal joints spotted with fuscous. Expanse 13 millim.

I have long known this species, having received it from Texas and from St. Louis. It is possibly the species referred to by Prof. Riley (Can. Ent. iii. pp. 195, 196) as "*Gelechia geminella*, Lin.," being very similar in appearance to *Gelechia gemmella*, Lin., but differing in the position of the dark fascia, which in *gemmella* commences beyond the middle of the costa.

Prof. Riley states that his species feeds upon oak-galls. Several specimens are contained in the collection of the Am. Ent. Soc. Philadelphia, which is now before me. I believe them to be from Texas.

A specimen from Miss Murtfeldt's collection is stated in her list to be *Gelechia palliderosucella*, Cham.; but it is impossible to reconcile any variety of this species with Chambers's description under that name.

310-318. **Gelechia (Ergatis) roseosuffusella**.

Gelechia (Ergatis) roseosuffusella, Clem. Proc. Ac. Nat. Sci. Phil. 1860, p. 122. see "Index."

Subsequently described by Walker (Cat. Lep. Het. B. M. xxix. p. 595) as *Gelechia bella*, Walk., a very common species in all North American collections. I have it also from California.

679, 868, &c. **Gelechia (Ergatis) rubidella**.

Gelechia rubidella, Clem. Proc. Ac. Nat. Sci. Phil. 1860, p. 163; Tin. Nor. Am. p. 115, &c.

Gelechia rubensella, Cham. Can. Ent. iv. p. 193, &c., and Index.

I am unable to separate this species from *G. rubidella*, Clem., which has also the dark tip to the palpi. Like *roseosuffusella* it seems to be a somewhat variable species, but distinguished usually by its smaller size as well as by the habits of its larva. I am not acquainted with *G. intermediella*, Cham.; but probably a good series received from Belknap, Texas, exhibiting a wide range of variation from dark grey to pale rosy

may be correctly referred to that species. They differ from *roseosuffinella* in their smaller average size; but a knowledge of their larval habits is necessary to establish this as a distinct species and to contribute to a general revision of the group to which they belong.

G. (Ergatis) pulilundella, Zell. Verh. z.-b. Ges. Wien. 1873. p. 273, must be at least very closely allied to this species; but I have not seen the type.

849 871. *Gelechia (Anacampsis) absconditella*.

Gelechia absconditella, Walk. Cat. Lep. Het. B. M. xxix. p. 595.

Gelechia palpiannulella, Cham. Can. Ent. iv. pp. 68, 69.

These two specimens, presented by Mr. Chambers to the P. A. S. Salem, Mass., and therefore presumably equivalent to his type, have one peculiarity which is omitted in the original description. The fifth, tenth, and less distinctly the thirteenth joints from the apex of the antennæ are whitish ochreous above, giving the appearance of three annulations; but the difference of color is scarcely distinguishable in the under side. I find this same peculiarity in Walker's *Gelechia absconditella*, and have no hesitation, after a careful examination of his type, in referring *G. palpiannulella* to that species. Walker's "length of wings 6 lines," should have been "expanse of wings 6 lines," which is an outside measurement. Something approaching to the same ornamentation of the antennæ is described by Mr. Chambers as a characteristic of *Gelechia lephrasella*, Cham. (Can. Ent. iv. p. 68), which, however, appears to differ considerably from *G. absconditella* in general coloration.

This species appears to be allied to *Gelechia (Anacampsis) anthyllidella*, Hüb. (Wocke, Cat. 2078).

1061 1064. *Gelechia (Anacampsis) tristrigella*, sp. nov.—Palpi smooth, orange-yellow, the second joint thickened, not tufted, the apical joint longer than the second. Eyes crimson (as in *G. agrimoniella*, Clem.). Antennæ greyish fuscous, indistinctly annulated with pale ochreous. Head iridescent steel-blue; face yellow. Fore wings with the apical margin slightly more oblique than in *G. agrimoniella*, greyish fuscous from the base to beyond the middle, with a greenish hue in some lights and a steel-grey streak along the costal margin, passing over the front of the thorax; beyond the middle very dark brown, with a transverse white fascia extended outwards at the commencement of the costal cilia, narrowed in the middle of the wing, and somewhat dilated about the dorsal margin: beyond it are three, sometimes four, white tooth-like streaks, with their bases joined towards the apical margin and separated from the steel-grey fringes by a reduplicated line of dark brown, which passes around the apex. Hind wings brown, with grey fringes, oblique, but scarcely emarginate below the apex; the base of the costal margin steel-grey. Abdomen brown, with three or four white transverse bands at the ends of the posterior segments. Posterior legs dark brown externally, pale ochreous on their inner sides, banded with pale ochreous above the spurs (which are also pale ochreous) and at the tarsal joints. Expanse 12 millim.

Four specimens from Mr. Coquillet. No locality given.

A beautiful species, allied to *G. agrimoniella*, Clem., which is also represented in this collection, but differing from it in the three contiguous white streaks from the apical margin.

331. *Gelechia* (—?) *attributella*.

Gelechia attributella, Walk. Cat. Lep. Het. B. M. xxix. p. 593.

Evagora difficilisella, Chambers, Can. Ent. iv. p. 66.

Taygete difficilisella, Chambers, Can. Ent. v. p. 231, vii. p. 105, viii. p. 19.

Gelechia difficilisella, Chambers, Can. Ent. iv. p. 192, v. pp. 185, 186, 187, 229, and Index.

Comparing these specimens with one in the collection of the Peabody Academy of Sciences, Salem, Mass., received from Mr. Chambers, and with Walker's type of *G. attributella* in the British Museum, I find them to be the same. Walker's name has precedence.

148-150. *Gelechia* (*Evagora*) *apicitripunctella*.

Evagora apicitripunctella, Clem. Proc. Nat. Sci. Phil. 1860, p. 165.

Gelechia (*Teleia*?) *gilviscopella*, Zell. Verh. z.-b. Ges. Wien, 1873, p. 266.

Gelechia gilviscopella, Cham., "Index."

These are pale varieties of a species which I carefully compared in 1872 with the remains of Clemens's type of *Evagora apicitripunctella*, in the collection of the Entomological Soc at Philadelphia. They do not entirely agree with his description, but this may probably be owing to their slightly worn condition. They agree as nearly with Zeller's description of *Gelechia* (*Teleia*?) *gilviscopella*; and although it seems somewhat remarkable that Dr. Clemens should have overlooked the tuft of hairs on the hind wings, I am convinced that a comparison of this species with his type of *Evagora* will show them to be the same. In Prof. Riley's collection is a dark specimen with a more decidedly yellow brush on the hind wing; it agrees with Zeller's figure of his *G. dornivittella*. They may very probably be specifically distinct, although an intermediate variety in the collection of the Peabody Academy of Sciences, received from Mr. Chambers under the name of *Gelechia cristatella*, Cham., points to the possibility that these may be three varieties one species. I have at least two undescribed brush-bearing species from California and Oregon, in which I observe that the brush is much less developed in the female sex than in the male, although it cannot be said to be entirely absent from good specimens. In females which are much worn it cannot be detected. Dr. Clemens's type was probably a female-

93, 94, 95. *Gelechia* (*Tachyptilia*) *rhoifruetella*.

Gelechia (*Tachyptilia*) *rhoifruetella*, Clemens, Proc. Nat. Sci. Phil. 1860, p. 163; Tin. Nor. Am. p. 114, &c.

Gelechia ochreocostella, Chambers, Bull. U. S. G. & G. Surv. 1878, iv. p. 91.

? *Gelechia* (*Tachyptilia*) *consonella*, Zell. Verh. z.-b. Ges. Wien, 1873, p. 251.

This species, represented in Prof. Fernald's and Prof. Riley's collections, has also reached me from Texas, collected by Belfrage. It is, as Mr. Stainton remarks (Tin. Nor. Am. p. 114), nearly allied to the European *G. populella* (Wocke, Cat. 2091). One of the specimens in Fernald's collection is labelled "*viburnum*," and another in Riley's collection is labelled "*Depressaria viburnumella*, Cham." This may possibly indicate that it has been found to feed upon *Viburnum*, as well as upon *Rhus typhina*, the food-plant noticed by Clemens.*

D. viburnumella is not included in Chambers's "Index," nor can I find any description of a species so-named. The type of *G. ochreocostella*, Cham., kindly lent to me by Prof. Riley, is undoubtedly a worn specimen of *rhoifrutella*. All the examples which I have examined appear to agree closely with Prof. Zeller's description of *Gelechia (Tachyptilia) consonella*, Zell., also from Missouri and Texas, which I strongly suspect to be the same species; and I have specimens from California, which show that it is widely distributed.

1031. *Gelechia (Trichotaphe) ochripalpella*.

Gelechia (Trichotaphe) alacella, Clem. Proc. Ent. Soc. Phil. i. p. 132.

Gelechia (Trichotaphe) ochripalpella, Zell. Ver. z.-b. Ges. Wien, 1873, p. 279.

Gelechia goodelliella, Cham. Cin. Soc. Nat. Hist. 1881, p. 289.

This is Mr. Chamber's type of *Gelechia goodelliella*, Cham., and is equivalent to *Trichotaphe alacella*, Clem., which was rechristened by Zeller, owing to the name *alacella* being preoccupied in the genus *Gelechia*.

112. *Gelechia (Trichotaphe) juncidella*.

Trichotaphe juncidella, Clem. Proc. Ac. Nat. Sci. Phil. 1860, p. 166; Tin. Nor. Am. p. 122.

Gelechia pallipalpis, Walk. Cat. Lep. Het. B. M. xxix. p. 596.

Depressaria? dubitella, Cham. Can. Ent. iv. p. 92.

Gelechia dubitella, Cham. Can. Ent. iv. p. 147.

Gelechia (Cryptolechia?) dubitella, Cham. Bull. U. S. G. & G. Surv. 1878, iv. p. 86, and "Index."

Gelechia juncidella, Cham., "Index."

I have received this species from Miss Murtfeldt, who describes its larval habits (Can. Ent. vi. p. 221). Specimens received from Mr. Chambers are also in the collection of the Peabody Academy of Sciences, Salem, Mass., but these are in very bad condition. Good and well-marked examples agree with Walker's type of *Gelechia pallipalpis*, now in the British Museum, and with Clemens's *T. juncidella*, which latter name has precedence.

* I received a series of these from Mr. James Angus, West Farms, N. Y., some of which, as he informed me, "fed on Viburnum," others "fed on Nanny berry."

208. *Gelechia (Trichotaphe) purpureofusca*, sp. nov.—Labial and maxillary palpi and tongue all bright orange, the apical joint of the labials somewhat tinged with fuscous, shorter than the second joint, which is much thickened and tufted. Face smooth, iridescent steel-grey. Head and fore wings deep purplish fuscous in fresh specimens, assuming a brownish or more ochreous tinge when worn. The head and fringes in some lights have a bronzy grey metallic sheen. Abdomen and hind wings brownish fuscous, with scarcely paler cilia. The two anterior pairs of legs correspond in color to the fore wings, the third pair to the hind wings. Expanse 18 millim.

From Mr. Allen's and Prof. Fernald's collections.

511. *Gelechia (Trichotaphe?) rufusella*.

Gelechia (Trichotaphe?) rufusella, Cham. Can. Ent. vi. p. 240.

Menesta rubescens, Wlsm. P. Z. S. 1881, p. 319, pl. xxxvi. fig. 9.

This is a *Gelechia* probably belonging to the section *Trichotaphe*. I am at a loss to understand how I could have been induced, by the examination of a somewhat imperfect specimen, to regard it as belonging to the genus *Menesta*, Clem.

I have now seen several specimens of *Menesta tortriciformella*, Clem., as well as *Gelechia rufusella*, Cham.; they are without doubt generically distinct—the antennæ of *Menesta* being strongly ciliated in the male, and the fore wings much shorter and more tortriciform than in any *Gelechia*.

691. *Gelechia (Trichotaphe?) inserrata*, sp. nov.—Palpi pale yellowish cream-color, the second joint externally shaded along its upper side with brownish (differing from *serrativittella*, Zéll., which has the brown shading beneath the second joint and at the end of the apical joint). Head and anterior portion of the thorax with the tegulæ pale yellowish cream-color. Antennæ brown, the basal joints only being cream-colored. Fore wings and cilia brown, the costal half nearly to the apex pale yellowish cream-color, with no oblique projection from the dark portion, but with a single rounded excrescence or bulge about the middle of it. Hind wings and fringes grey, with a slender pale ochreous line along the base of the fringes. Abdomen ochreous, tinged with greyish fuscous. Expanse 15 millim.

This species appears to be intermediate between *G. serrativittella*, Zéll., and *G. flavicostella*, Clem. Allied to the latter in the color of the palpi and in the absence of a serrated edge to the dark dorsal portion of the wings, but differing from it in the less rounded apex, and narrower and less deeply colored fore wings, and in the absence of a long point from the costal streak running in the direction of the anal angle, as well as in its smaller size. More nearly allied to the former in size and color, but differing in the coloration of the palpi, in the absence of a serrated edge to the dark dorsal portion of the wing, and in its paler thorax. It is, however, perhaps slightly larger than *serrativittella*, having the fore wings more widened outwardly than in my specimen of that species.

although it does not differ from Prof. Zeller's figure (Verb. z.-b. Ges. Wien, 1873, t. iv. fig. 27) in this respect.

16, 743, &c. *Gelechia* (*Malacotricha*) *bilobella*.

Gelechia (*Malacotricha*) *bilobella*, Zell. Verh. z.-b. Ges. Wien, 1873, p. 280.

? *Begoe costaluteella*, Cham. Can. Ent. ix. p. 24.

A specimen in Prof. Fernald's collection is labelled "*Nothris dolabella*, Zell., but the form and color of the palpi distinguish it from that species.

From a careful comparison of specimens and descriptions I find the best distinguishing marks between what I suppose to be *Nothris dolabella*, Zell., and *Gelechia bilobella* are the form and color of the palpi, which in the former have a projecting tuft under the second joint, with the extreme tip of the apical joint fuscous. In the latter no tuft on the second joint, and the tip of the same color as all their upper surface, quite pale ochraceous. The supposed type of *Nothris eupatoriella*, Chambers, received from Mr. Goodell, very obviously agrees in these particulars with the latter form; whereas Chambers's description of *N. eupatoriella* agrees better with the former. I think therefore that Mr. Goodell's specimen must be one of Chambers's series, but not the actual specimen from which the description was taken, and that in this series the two species must have been mixed.

This is, moreover, a somewhat peculiar variety, differing from both the species described by Zeller in having the pale ochreous ground-color of the fore wings suffused with iron-grey, and with a distinct yellow ochreous margin to the dark streak internally: the patch on the dorsal margin is also separated from the base. I believe it to be a variety of *G. bilobella*, but it may possibly prove to be a distinct but closely allied species.

Chambers's description applies correctly to what I believe to be the true *Trichotophe setosella*, Clem. (*Nothris dolabella*, Zell.), whereas Mr. Chambers's *Begoe costaluteella*, Can. Ent. ix. p. 24 (afterwards printed *Begoe costolutella* in his "Index"), is probably *Gelechia bilobella*, Zell. Both these two forms have short maxillary palpi. Should they not therefore be both separated from *Nothris*, which, I believe, has no maxillary palpi? or are we to follow Herrich-Schäffer and others in regarding *Nothris* as inseparable from *Gelechia*?

Genus **YPSOLOPHUS**.

Ypsolophus roseocostellus, sp. nov.—Palpi with the second joint and its projecting tuft triangular, externally fuscous, except a narrow whitish cinereous margin along its upper edge; apical joint whitish cinereous; antennæ faintly annulated with fuscous and pale cinereous. Head and thorax pale cin-

creous, with a faint rosy tinge. Fore wings elongate, wider than *Y. pomettellus*. Harris, having the apical margin less oblique than in *punctidiacellus*, Clem., pale cinereous with a slight reddish tinge, which is especially noticeable along the costa and around the apical margin, with some scattered fuscous scales and spots, a small fuscous spot immediately above the fold at the basal fourth of the wing, with sometimes a few fuscous scales on the opposite side of the fold; a fuscous spot on the middle of the fold, sometimes followed by a few whitish scales, another on the disc obliquely above and beyond it (in *Y. punctidiacellus*, Clem., this is before it), also followed by whitish scales. Beyond this is another fuscous spot on the end of the cell, preceded by a few whitish scales, from which two oblique lines of fuscous scales are traceable in fresh specimens proceeding outwards to the discal and costal cilia; some fuscous scales before the apical margin sometimes assume the form of a line of fuscous spots in the rosy margin of the wing. Cilia cinereous, with a rosy tinge, and a faint fuscous line along their middle. Hind wings shining pale greyish, with scarcely paler cilia, along the base of which is a very narrow ochreous line. Abdomen pale grey; anal tuft tipped with ochreous. Expanse 17 millim.

One in my collection received from Miss Murtfeldt from St. Louis.

One in the collection of Professor Fernald.

It is smaller than *Y. querciella*, Cham.; and that species, by Mr. Chambers's description, appears to have no discal or plical spots.

28, &c. *Ypsolophus bipunctellus*, sp. nov. — Palpi whitish ochreous, the tufted second joint with a triangular brown patch reaching nearly to the upper end of the fringe; apical joint with a distinct brown streak along its inner side to the apex; head whitish ochreous. Thorax and fore wings pale brownish ochreous, dusted with more or less widely scattered black scales; a rather elongate black discal dot before the middle, equidistant from the costal and dorsal margins, having a few whitish scales along its anterior and lower edges, followed by a smaller black dot at the end of the cell, also surrounded on its anterior and lower edge by whitish scales; a row of about 8 marginal black dots around the apex and apical margin. In many specimens (see No. 48 of this list) a fuscous streak commences at the first discal spot and is diffused outwardly beyond the second spot to the apex. Hind wings pale greyish ochreous, with a faint fuscous line near the base of the pale cilia. Abdomen greyish. Expanse 17 millim.*

This species is nearly allied to *Y. stramineellus*, Cham., but differs from it in the presence of two distinct discal spots, and in its slightly wider wings, which are, however, much narrower than those of the species which I take to be *Y. unipunctellus*, Clem. I have not observed the distinct line along the underside of the apical joint of the palpi in any of the species allied to this

17, &c. *Ypsolophus pomettellus*.

Rhinosa pomettellus, Harris, Journ. N. Y. S. A. Soc., Sept. 1853.

Chatochilus pomettellus, Fitch, Rep. Nox. Ins. N. Y. no. 1, p. 221, no. 3, sec. 42.

Rhinosa pomettella, Emmons, Nat. Hist. N. Y. part v. p. 254.

Ypsolophus pomettellus, Chambers, Bull. U. S. G. & G. Surv. iv. p. 166.

* Habitat, Orono, Me., May 1, 1881. — C. H. FERNALD.

Ypsolophus pauciguttellus, Clemens, Proc. Ent. Soc. Phil. ii. p. 124; Tin. Nor. Am. p. 228; Zeller, Verh. z.-b. Ges. Wien, 1873, pp. 283-285.

Chætochilus contubernetellus, Fitch, Rep. Nox. Ins. N. Y. no. 1, p. 231, no. 3, sec. 44.

Ypsolophus contubernetellus, Chambers, Bull. U. S. G. & G. Surv. iv. p. 166.

Ypsolophus flavivittellus, Clemens, Proc. Ent. Soc. Phil. ii. p. 429; Tin. Nor. Am. p. 254; Zeller, Verh. z. b. Ges. Wien. 1873. pp. 283-285.

Ypsolophus reedella, Chambers, Can. Ent. iv. p. 222.

Ypsolophus ruderella, Chambers, Bull. U. S. G. & G. Surv. iv. p. 167.

Ypsolophus quercipomonella, Cham. Can. Ent. iv. pp. 222, 223; Bull. U. S. G. & G. Surv. iv. p. 167.

♂ *Dichomeris ligulella*, Hüb. Beiträge, p. 143. — ? = var. *contubernetellus*.

A specimen of this species in Prof. Riley's collection is labelled "Palmer worm-moth." Under this name it was originally described as *Rhinosia pometellus* by Dr. Harris. It was placed by Dr. Fitch in the genus *Chætochilus*, who also described the variety called the "comrade Palmer worm" (*Chætochilus contubernetellus*), met with in company with the typical form, and regarded by him as a distinct species, although he was not without suspicions that it might be only a variety. Dr. Clemens subsequently described the typical form as *Ypsolophus pauciguttellus* and the variety as *Ypsolophus flavivittellus*. Mr. Chambers's type of the *Ypsolophus reedella*, in the collection of the Peabody Academy of Sciences of Salem, cannot be separated from *Y. pauciguttellus*, Clem.; and he himself suggests in his "Index" that it may be a variety of *Y. pometellus*. Specimens of the same form in Prof. Fernald's collection, obtained from Miss Murtfeldt, are labelled *Ypsolophus quercipomonella*, Cham., but do not agree with his description. It would be interesting to know if this name was suggested by Miss Murtfeldt from a knowledge of their larval habits. Their excellent condition suggests the idea that they may probably be bred specimens.

Professor Zeller (*loc. cit.*) first drew attention to the probability that Clemens's name *pauciguttellus* must give way to the earlier name *pometellus* of Harris, and that *flavivittellus*, Clem., was the same as *contubernetellus*, Fitch.

From intermediate varieties which have reached me from more than one of my American correspondents, and which show some or all the discal and plical spots as in *Y. pometellus*, and have the pale costal half of the wing more or less clearly defined as in *Y. flavivittellus*, I am convinced that these will be found to be different forms of the same species. Dr. Fitch (*loc. cit.*) describes a larva differing from the larva of his *Chætochilus pometellus*, which he regards as probably that of *C. contubernetellus*; but as he failed to verify this by rearing the moth from it, evidence of their distinctness in the larval stages is entirely

wanting, unless the rather doubtful differences between Chambers's larva of *quercipomonella*, and Fitch's larva of *pometellus*, as described by them, can be regarded as sufficient to establish it. It will be admitted that Chambers's description cannot possibly be intended to indicate the black-headed larva, which I take to be erroneously associated with *Y. contubernatellus* by Fitch. It seems to me impossible to separate specifically the oak-feeding from the apple-feeding varieties; but a careful comparison of their larvæ is necessary before a final decision can be arrived at.

Genus **NOTHRIS.**

743. **Nothris setosella.**

Trichotaphe setosella, Clem. 1860, T. N. A. p. 121.

Ypsolophus eupatoriella, Cham. Can. Ent. iv. p. 221.

Nothris dolabella, Zell. Verh. z.-b. Ges. Wien, 1873, p. 288.

Nothris eupatoriella, Cham. B. U. S. G. S. iv. 1878, p. 158.

This should stand as *Nothris setosella*, Clem. The form and coloring of the palpi at once distinguish it from *Gel. bilobella*, Zell. Clemens's description is not a good one; he omits to notice the discal spot and the darkened apical portion of the fore wings; it was evidently taken from a somewhat worn specimen. I have been to some extent guided to the conclusion that this is Clemens's *T. setosella* by having seen a specimen so named in the late Mr. C. T. Robinson's collection at New York. I do not remember to have seen Clemens's type at Philadelphia, but Mr. Robinson was probably acquainted with the species described by him.

Genus **HELICE.**

727. **Helice pallidochrella.** Cham. Can. Ent. v. p. 188.

Helice (Gelechia) pallidochrella, Cham. "Index."

Gelechia gleditachrella, Cham., see "Index."

This is evidently the species described by Mr. Chambers under the above name, but some mistake has undoubtedly been made in the original generic description. Mr. Chambers writes of his genus *Helice* (Can. Ent. v. p. 188, "Secondaries narrower than the primaries; apex ~~long~~ and sharply pointed, with the posterior margin suddenly and ~~deeply~~ incised beneath it and the anal angle rounded." In Can. Ent. vii-106, Mr. Chambers states that "*Sinoe*, *Helice*, and *Agnippe* resemble *Laverna* in having raised tufts of scales on their wings." The specimen before me (Mr. Chambers's own specimen from Miss Murtfeldt's collection) has the hind wings narrow and evenly attenuated from the base, not incised below the apex, and it has no signs of any raised tufts of scales on the fore wings. Mr. Chambers probably placed it in the genus *Gelechia*, under the name of *Gelechia gleditachrella* (Index).

p. 144), having regard to the description which he had given of the form of the hind wings; but lacking this character it is not a true *Gelechia*.

I can find no description of *Gelechia gleditschizella*, and no other reference to it than that contained in the "Index" to "vol. x. p.," which is not correct, the species not being noticed in that volume.

Genus **CARPOSINA**.

102. *Carposina crescentella*, sp. nov.—Palpi with second joint enlarged, somewhat claviform, third joint short and blunt, both fuscous tipped with whitish. Head greyish fuscous, the face somewhat paler; tongue yellowish, naked; antennæ of the male strongly ciliated, of the female simple, greyish fuscous. Fore wings whitish grey, mottled with greyish fuscous; the costa greyish fuscous at the base, with about six diffuse greyish-fuscous spots along the costal margin, the first and least conspicuous being before the middle, the others at or beyond it; diffuse spots of greyish fuscous are continued around the apical margin, each throwing a shade of the same color through the greyish cilia; there is a dark-margined white crescent-shaped mark at the end of the cell, the upper portion of which contains some bright ochreous scales; this is preceded and followed by greyish-fuscous blotches. Immediately below the costal margin and before the middle is a short bright ochreous longitudinal streak, below which an irregular greyish-fuscous shade extends to the dorsal margin. On the outer edge of the dark costal patch at the base is an oblique bright ochreous streak, not reaching the costa, and below this, about the base of the dorsal margin, is a small greyish-fuscous blotch. Hind wings pale greyish fuscous, the cilia having a slight brownish-ochreous tinge. Anal tuft ochreous. Posterior tibiae pale ochreous above; the tarsi fuscous, spotted with pale ochreous at the joints. Exp. ♂ 17, ♀ 16 millim.

I have at least one other species of this genus from California.

Genus **LECITHOCERA**.

565. *Lecithocera? flavistrigella*, sp. nov.—Head rough, yellowish, tinged with ferruginous on the frontal tuft. Labial palpi rather short, depressed, with projecting bristles at the outer side on the second and apical joints, the apical joint fuscous. Maxillary palpi well developed. Antennæ fully as long as the fore wings, stout, setaceous, pale yellow. Thorax and fore wings purple; the fore wings oblong ovate, with a long yellow outwardly widening basal streak reaching near to an oblique yellow dorsal spot before the dorsal cilia, beyond which on the costa is a rather larger spot of the same color; the cilia at the extreme apex shining yellowish grey, above and beneath fuscous. Hind wings lanceolate, pale purplish, with fuscous cilia. Abdomen and third pair of legs greyish-fuscous, the tibiae densely pilose. Expanse ♀ millim.

The labial palpi are shorter than in *Lecithocera luticornella*, Zell. Having only one specimen in my own collection, the other belonging to the Am. Ent. Soc. Phil., I do not examine the neuration. Its long and thick antennæ agree well with the genus in which I have placed it, and of which I have one or more other species from California.

Genus **EGOCONIA**.

417. *Egoconia latipennis*, sp. nov.—Palpi pale ochreous, the second joint with a fuscous patch at the base externally, apical joint with a fuscous spot beneath at its base. Tongue pale ochreous, the maxillary palpi tinged with fuscous. Head pale ochreous. Antennæ very thick, with a serrated appearance beneath, brownish fuscous above, pale ochreous beneath and at the joints. Thorax pale ochreous, tinged anteriorly with brownish fuscous. Fore wings with the costa rather straight, beyond a slight bulge near the base; apex rounded, apical margin somewhat oblique, slightly convex. Dorsal margin straight, nearly parallel with the costal, pale ochreous, much suffused and irregularly clouded with brownish fuscous, which occupies the whole of the costal and apical portions of the wing, except a pale fascia, commencing at the costal cilia, turning outwards at a right angle at the apex of the cell, then again downwards to the anal angle; the apical margin and the dorsal half of the wing are also chiefly pale ochreous, enclosing one plical and two discal diffused brownish-fuscous spots, of which the outer one near the end of the cell is the most conspicuous; cilia tinged with greyish fuscous. Hind wings very pale cinereous; fringes greyish fuscous, with a pale ochreous line along their base. Expanse 18 millim.*

This species has much broader wings than the European *Egoronia quadripuncta*, Haw.; but the colors are much the same, although differently arranged. The only specimen I have seen is in somewhat imperfect condition; it is in the collection of the Am. Ent. Soc. Philadelphia.

Genus **PIGRITIA**.224. *Pigritia laticapitella*.

Pigritia laticapitella, Clem. Proc. Ac. Nat. Sci. Phil. 1860, p. 173; Tin. Nor. Am. pp. 41, 136.

Blastobasis? aufugella, Zeller, Verh. z.-b. Ges. Wien, 1873, p. 300.

Dryope murtfeldtella, Cham. (partim) Can. Ent. vi. p. 50.

This specimen received from Mr. Chambers, is in the collection of the Peabody Acad. Sci. Salem, Mass. I have little doubt that this is *Blastobasis? aufugella*, Zeller, the description of which agrees extremely well with light well-marked varieties of this species. Prof. Zeller, after comparing it with *Blastobasis phycidella*, its resemblance to which is also noticed by Mr. Stainton (Tin. Nor. Am. p. 136), expresses some doubt whether it should be rightly included in the genus *Blastobasis* or classed with *Hyppatima*, which it resembles in the absence of a notal spot at the base of the antennæ of the males. Probably it will be convenient for the present at least, to retain Clemens's genus *Pigritia*. Mr. Chambers described (Can. Ent. vi. p. 50) two varieties of his *Dryope murtfeldtella*, one of which he writes "should perhaps be regarded as a distinct species." A specimen received from Mr. Goodell, referred to in his list as "*Dryope murtfeldtella*, Chambers type," undoubtedly belongs

* Habitat, Orono, Me.—C. H. FERNALD.

to this possibly distinct variety, and is equivalent to *Pigritia ochrocomella*, Clemens.

Genus **BLANTOBASIS.**

104, 741, 742. **Blastobasis glandulella.**

Gelechia glandulella, Riley, Can. Ent. iii. p. 187

Blastobasis nubilella, Zell. Verh. z.-b. Ges. Wien, 1873, p. 297; 1875, p. 139.

Holcocera glandulella, Riley, Can. Ent. vi. p. 18, &c., see "Index."

Blastobasis glandulella, Chambers, Index.

Prof. Zeller (Verh. z. b. Ges. Wien, 1875, p. 139) suggests that most probably his *Blustobasis nubilella* is the species described by Riley as *Holcocera glandulella*. I have several specimens of *B. glandulella* which undoubtedly agree with Zeller's figure and description of *B. nubilella*; but Prof. Riley's own authority is desirable to confirm the opinion that they are one species.

Genus **GRACILARIA.**

1029. **Gracilaria swederella**, Thnb.

Gracilaria alchimiella (Wocke, Cat. 2317).

Gracilaria superbifrontella, Clem. Proc. Ac. Nat. Sci. Phil. 1861, p. 5: Tin. Nor. Am. p. 91, &c., see "Index."

Gracilaria packardella, Cham. Can. Ent. iv. p. 27, &c., see "Index."

Gracilaria elegantella, F. & B. S. e. Z. xxxiv. pp. 202, 203.

This specimen in Mr. Goodell's collection is labelled "*G. packardella*, Cham."

Although the pale costal patch occupies a larger proportion of the wing than is usual in our European *swederella*, it seems extremely doubtful whether this can be regarded as specifically distinct. *G. swederella* varies in this respect, and often approaches very closely to the specimens before me. I have received others from Miss Murtfeldt as *G. packardella*, Cham.; there is a similar specimen in the Peabody Academy of Sciences at Salem, received from Mr. Chambers himself under the same name.

These differ from the present example in the somewhat less extended costal patch, being incised beyond the middle of its lower margin by a projection from the darker dorsal portion of the wing. *G. swederella* often approaches this form also; and until more evidence has been obtained, the distinctness of *G. packardella* from *G. superbifrontella* must be at least open to doubt.

I find these two varieties referred to in my notes on Dr. Clemens's types of *G. superbifrontella*, written at Philadelphia in 1872, where they were both placed under the same name.

Dr. Clemens himself suggested (Tin. Nor. Am. p. 91) that *G. superbifrontella*, Clem., must be closely allied to the European *G. swederella*;

and Mr. Chambers (Can. Ent. ix. p. 195) writes of *G. packardella* :—
“ It is allied to *superbifrontella* and *swederella* more closely than to any other species.

G. swederella feeds in Europe, so far as I am aware, upon oak alone ; *G. superbifrontella* feeds, according to Dr. Clemens, on *Hamamelis virginica* (Wych hazel), according to Frey and Boll upon oak.

Of *G. packardella*, Mr. Chambers writes (Can. Ent. iv. p. 27), “ from circumstances I suspect it to be an oak-feeding species ;” but he subsequently recognizes *G. elegantella*, Frey and Boll, as his *G. packardella* ; and in answer to the doubt expressed by those authors whether their species was bred from oak or maple, he writes (Cin. Quart. Journ. Sci. ii. p. 227) :—“ I have long known the larva on maple, and last fall succeeded in breeding *G. packardella* from it.”

There must surely be some mistake among these different observations, unless the larva of *G. swederella* is polyphagous in America. It is not clear from Chambers's description in what points *G. packardella* differs from *G. superbifrontella* in the perfect state ; nor does the description of *G. elegantella* appear to show any very reliable distinctive differences. But I am well aware that Mr. Chambers has much better opportunities for judging in this matter than I can have. His final decision will be accepted by no one more readily than myself ; but I hope these remarks may induce him to compare his specimens with Dr. Clemens's type and to express his matured opinion.

32, 33. ? **Gracilaria coroniella.**

Gracilaria coroniella, Clem. Proc. Ent. Soc. Phil. ii. p. 421, v. p. 145 ; Tin. Nor. Am. p. 243.

These two specimens are labelled, “ Bred from *Betula alba*.” I have little doubt that they belong to the species described by Dr. Clemens under the above name (see Tin. Nor. Am. p. 243), from a single hibernated specimen.

The “ small costal pale yellow spot,” “ a little posterior to the triangular patch,” is not noticeable in these specimens, which agree in all other respects with the description.

This species is very nearly allied to *Gracilaria stigmatella*, Fab. (Wocke, Cat. 2320), from which it differs in its paler head and thorax and its somewhat narrower fore wings, also in the pale costal patch occupying a somewhat larger proportion of the wing-surface, and being cut off obtusely on the fold, not prolonged outwards in a slight point beneath. Moreover the larvæ of *G. stigmatella* feed upon poplar, willow, and sallow, but not (so far as I am aware) upon birch. A single speci-

men in Mr. Walsh's collection, of which I have a short note, was destroyed in the Chicago fire.*

825. *Gracilaria elongella*, var. ? (Wocke, Cat. 2331).

Greatly as this appears to differ from the typical *G. elongella* (813, 814), I am disposed to regard it as a form of that most variable species, approaching, if not identical with, *G. roscipennella*, Hüb. A long series of *G. elongella*, taken by me in California and Oregon, includes this form and almost every possible gradation between this and the typical *G. elongella*. *G. roscipennella*, Hüb., is figured in Her.-Schäff. Schmet. v. Eur. pl. 95. fig. 732. I have never seen a European specimen agreeing with this figure, and there may possibly be evidence of its distinctness with which I am unacquainted and which may have induced Dr. Wocke to maintain the name in his Catalogue (No. 2331), although he himself regards *G. roscipennella*, Treitsche, as referable to *G. elongella*.

1241, 1242. *Gracilaria robinella*.

Parectopa robinella, Clem. Proc. Ent. Soc. Phil. ii. p. 4; Tin. Nor. Am. p. 207.

Gracilaria robinella, Cham., see "Index."

Parectopa lespedezaefoliella, Clem. Proc. Ac. Nat. Sci. Phil. 1860, p. 210; Tin. Nor. Am. p. 144.

Gracilaria lespedezaefoliella, Cham., see "Index."

Gracilaria mirabilis, F. & B. S. e. Z. xxxiv. p. 212.

In my copy of Mr. Stainton's edition of Clemens's paper (Tin. Nor. Am. p. 145), I find that Dr. Clemens states that his *Parectopa lespedezaefoliella* has "two silvery white spots" on the costa. A marginal note on this page, made after an examination of the type of this species at Philadelphia, reminds me that it has "three decidedly." Moreover my note on comparing this with the type of *P. robinella* at the same time is, "scarcely to be separated. I cannot, with a strong glass, detect the slightest difference." A figure of *Gracilaria mirabilis*, F. & B., taken from a specimen in Mr. Stainton's collection, confirms Mr. Chambers's view that this species is equal to *G. robinella*, Clem. (see Index).

Mr. Stainton has kindly added a footnote to the figure, "= *Parectopa lespedezaefoliella*." These three names have therefore been given to the same species.

Genus ORNIX.

1142. *Ornix anglicella*, Stn. (Wocke, Cat. 2366).

I am unable to distinguish this from the common European *Ornix anglicella*. It may possibly have been described under another name in America, but I have not been able to recognize it.

* Habitat, Orono, Me.—C. H. FERNALD.

1015, 1016. **Ornix**, sp. (*prunivorella*, Cham.?).

Lithocolletis geminatella, Pack.

I think these may be *Ornix prunivorella*, Cham., although that author does not record that the larva of that species feeds on apple or pear. These specimens are not in good condition, and it is impossible, in so difficult a genus as *Ornix*, to be quite certain to what species they belong.

They are the types of *Lithocolletis geminatella*, Packard, according to the label attached to the second specimen, but they undoubtedly belong to the genus *Ornix*.

Genus **COLEOPHORA**.

705. **Coleophora leucochrysellæ**.

Coleophora leucochrysellæ, Clem. Proc. Ent. Soc. Phil. ii. p. 6; Tin. Nor. Am. p. 211.

Coleophora argentella, Cham. Can. Ent. x. p. 112, and "Index."

Coleophora argentialbella, Cham. Can. Ent. vii. p. 75.

This is *C. argentella* of Chambers's "Index," the larger of the two distinct species, both called by him *Col. argentialbella*. In Can. Ent. vii. p. 75, Mr. Chambers describes this species thus, "apical part of the primaries very sparsely dusted with scattered dark brown scales;" adding, "four specimens, only one of which exhibits the dusting." *Coleophora leucochrysellæ*, Clem., expands $\frac{1}{2}$ an inch, and is the same as *L. argentella*, but without the dusting. It has much the appearance of *Coleophora ibipennella*, Zell. (Wocke, Cat. 2423), but without a knowledge of the larval case it would be premature to express any certainty as to its identity.

It is not impossible that Mr. Chambers may have had two distinct species before him when describing his two varieties of *C. argentella*.

1180, 1181. **Coleophora malivorellæ**.

Coleophora malivorellæ, Riley, Agricul. Rep. 1878, pp. 48, 49, pl. vii. fig. 1.

Coleophora multipulvella, Cham. Bull. U. S. G. & G. Surv. iv. p. 93.

These specimens were kindly lent by Prof. Riley. The species has much the appearance of the European *Coleophora hemerobiella*, Zell., which also feeds on apple, but the case of the larva is of quite a different form.

Mr. Chambers's description of his *C. multipulvella* precisely agrees with specimens received from Prof. Riley; but I have not seen his type.

Genus **LAVERNA**.

240. **Laverna subridescens**, sp. nov.—Maxillary palpi short. Labial palpi (having the third joint half the length of the second, coarsely scaled and abruptly pointed), whitish grey, with the scales tipped with fuscous on their outer sides. Antennæ with enlarged basal joint brown. Head cinerous, face paler;

tongue probably broken off. Thorax cinereous. Fore wings dirty whitish along the dorsal margin below the fold, sparsely dusted with cinereous scales. Brown above the fold, much sprinkled with cinereous and rosy iridescent scales; a broad oblique dirty whitish streak from the costal cilia before the apex, containing a line of brown scales, meets a similar but less conspicuous streak from the dorsal margin at an acute angle before the apex, in which are two dark lines, one at the base, the other at the ends of the apical cilia: within the lower margin of the darker portion of the wing are two considerable tufts of raised scales of the general hue, the first slightly before the middle, the second nearly halfway from this to the apex: dorsal cilia cinereous. Hind wings cinereous, with a slight greyish iridescent tinge; cilia cinereous. Abdomen missing. Expanse 20 millim.

This species is nearly allied to *Laverna idæi*. Zell. (Wocke, Cat. 2569).

One in Prof. Fernald's collection.*

225, 226, 645, 646. *Laverna?* *eloisella*.

Laverna eloisella, Clemens, Proc. Ac. Nat. Sci. Philad. 1860, p. 171: Tin. Nor. Am. p. 131; Can. Ent. ix. p. 74.

Laverna? anotherælla, Chambers, Can. Ent. vii. p. 30.

Phyllocnistis magnatella, Zeller, Verh. z.-b. Ges. Wien, 1873, p. 315.

Laverna? magnatella, Chambers, Can. Ent. ix. pp. 73, 74: Bull. U. S. G. & G. Surv. 1878, iv. p. 152.

My notes on this species confirm my belief that it is the original *Laverna eloisella*, Clem. Two specimens in Prof. Fernald's collection are labelled "from stems of *Oenothera*, Orono." I have received it from Miss Murtfeldt; and have taken it in Oregon on Rouge River."

When looking over Dr. Clemens's types at Philadelphia, I made the following note on *Laverna eloisella*:—"Not a *Laverna*. Only two wings, both worn, remain. Identical with my two from Rouge River."

In my notes on Mr. Robinson's collection in the Central Park Museum, New York, I find—"Clemens's description of *L. eloisella* seems to have been taken from a worn specimen."

I confess there is much difficulty in reconciling the original description with the specimens now before me; but if the wings I saw at Philadelphia were those of Clemens's type, they belong without doubt to the same species. Mr. Chambers, Can. Ent. ix. p. 74, writes, "I have never seen *L. eloisella*, Clem., but I suspect that it will be found congeneric with this species" (*Laverna? magnatella*). The specimens vary in the extent and intensity of their different markings, and, like all internal feeders, are very subject to injury by grubs.

* Habitat, Labrador. Collected by Mr. William Cowper.—C. H. FERNALD.

30, 215. *Laverna subbistrigella*, Haw. (Wocke, Cat. 2583).

My British specimens of this species, having been all taken after hibernation, are slightly paler than the American examples in Prof. Fernald's collection,* but I am unable to separate them by any differences of specific value.

The species has not hitherto been recorded from America. I met with it myself in California in 1871.

31, 57, 129, 130. *Laverna decorella*, Stph. (Wocke, Cat. 2582).

? *Laverna unifasciella*, Chambers, Can. Ent. viii. p. 159.

I am unable to distinguish these specimens from *Laverna decorella*, a species not hitherto recorded as occurring in America. Mr. Chambers describes his *Laverna unifasciella* as allied to *L. murtfeldtella*, Chamb., and the preceding species (*L. bifasciella*, Ch.), but still more nearly to *L. decorella*, Steph.," received from "Behrens, San Francisco." I met with *L. decorella* myself near San Francisco in 1871, at the end of April, and in Mendocino county, California, in the following month, and am strongly disposed to think that Mr. Chambers's *L. unifasciella*, which I have not seen, is the same species.†

902. *Laverna luciferella*.

Laverna luciferella, Clem. Proc. Ac. Nat. Sci. Phil. 1860, p. 171; Tin. Nor. Am. p. 130.

L. cephalanthiella, Cham. Can. Ent. iii. p. 221, vii. p. 53, xi. p. 7, and Index.

A specimen of *L. cephalanthiella*, Cham., received from Mr. Chambers himself, is in the collection of the Peabody Academy of Sciences, Salem, Mass. I have carefully compared it with an example of *Laverna luciferella*, Clem., with which it agrees.

Genus WILSONIA.

1019. ? *Wilsonia brevivittella*.

Wilsonia brevivittella, Clem. Proc. Ent. Soc. Phil. ii. p. 428; Tin. Nor. Am. p. 254.

Laverna ænothævorella, Cham. MS.

Laverna ænothæseminella, Cham. Can. Ent. viii. p. 138, xi. p. 6.

This stands as *Laverna ænothæseminella* in the "Index," and is the same as specimens received by me from Miss Murtfeldt. I feel sure that it is Clemens's *Wilsonia*, the peculiar palpi are well described by Clemens.

The specimen before me is in Mr. Goodell's collection, and is stated in his list to be the "type" of *L. ænothævorella*, Cham.

It would be well to compare specimens with the type of Clemens's *Wilsonia*, in order to remove any possible doubt that may remain after studying the descriptions.

* Habitat, Orono, Me.—C. H. FERNALD.

† Ibid.

Genus **STILBOSIS.**372, 1020, &c. **Stilbosis tesquella.****Stilbosis tesquella**, Clem. Proc. Ac. Nat. Sci. Phila. 1860, p. 170; Tin. Nor. Am. pp. 40, 129.*Stilbosis tesquella*, Cham. "Index."*Laverna? quinquecristatella*, Cham. Cin. Soc. Nat. Hist. 1881, p. 5.

Mr. Chambers's type of *Laverna quinquecristatella* in Mr. Goodell's collection proves that this name must give place to that which accompanies Dr. Clemens's prior description of the same species.

I think I can detect very short maxillary palpi not mentioned by Dr. Clemens.

Walshia amorphella, Clem., as noticed below, has also been placed by Mr. Chambers in the genus *Laverna*, to which it undoubtedly has the appearance of being allied.

Genus **WALSHIA.**977. **Walshia amorphella**, Clem. Proc. Ent. Soc. Phil. ii. p. 419.*Laverna miscelorella*, Cham. Can. Ent. vii. p. 51.

This type of *L. miscelorella*, received from Mr. Chambers, and preserved in the collection of the Peabody Academy of Sciences at Salem, agrees with my examples of *Walshia* compared with Clemens's type at Philadelphia in 1872.

Genus **SCHRECKENSTEINIA.**827, 828. **Schreckensteinia festaliella**, Hüb. (Wocke, Cat. 2705).

This generic name adopted in Wocke's Catalogue should probably take precedence of *Chrysororys*, under which name, following Dr. Jordan and Mr. Stainton, I referred this species to the Pterophoridae (Pter. Cal. & Or pp. 1, 2). Its larval habits, especially in the formation of an open network cocoon before pupation, give rise to considerable doubt whether it can rightly be included in that family.

Mr. Chambers places his beautiful *Lithariapteryx abronixella* among the Glyphipterygidae, but it agrees in neuration and in the form of the wings almost exactly with *Schreckensteinia*. Their oral parts are also very nearly similar. In having no maxillary palpi it would appear to approach the subfamily of Elachistina rather than the Glyphipterygina.

Genus **COSMOPTERYX.**228, 229. **Cosmoptyeryx fernaldella**, sp. nov.

There are two specimens of a new species of *Cosmoptyeryx* in Prof. Fernald's collection, for which I propose the above name. This is a most interesting species, very closely allied to the European *Cosmoptyeryx lienigiella*, Zell. (Wocke, Cat. 2709), differing from it in the following particulars. The upper median streak before the first fascia is short and

disconnected, not continued to the base of the wing. The apical streak is rather more slender, and the black spot on the saffron-yellow space between the golden bands is decidedly elongate, whereas in *lienigiella* it is not longer than its width. It would be interesting to learn whether any species of *Arundo* grows where these specimens were taken. Its larvæ may possibly be found to have similar habits to those of *lienigiella*, which mine the leaves of *Arundo phragmites* in August and September. Postponing for the present a more detailed description, I have named it after my friend Professor C. H. Fernald, to whom I am greatly indebted in my studies of North American Tineidæ and Tortricidæ, and whose labors upon the latter of these two families promise to yield valuable results.

1189. **Cosmopteryx lespedezae**, sp. nov.

This is a beautiful new *Cosmopteryx* in Prof. Riley's collection, labelled "*Cosmopteryx* on *Lepedeza*, Boll." Nearly allied to *C. clemensella*, Stn., and possibly to *C. montisella*, Cham.; differing from *clemensella* in having the outer margin of the dark basal portion of the wing more oblique, the two middle silver streaklets preceding the orange band rather longer, and especially in the annulation of the antennæ. *C. clemensella* has a broad white band about $\frac{2}{3}$ of an inch wide at the commencement of the outer third of the antennæ, preceded and followed by equally wide dark bands, the apex being widely white.

The species now before me has the wide dark band before the white apex; but this is preceded by a very narrow white band, which in its turn is preceded by an equally narrow dark one. In other respects it closely resembles *C. clemensella*, the orange band being pale as in this species. *C. montisella* is described as having a dorsal and an apical streak beyond the orange fascia; this species has only an apical.

Genus **BATRACHEDRA**.

1229, 1230. **Batrachedra rileyi**, sp. nov.—Bred from rotten cotton-bolls. Head chestnut-brown; palpi widely divergent, whitish, with an oblique pale brown mark on each side near the end of the second joint, and two or three brownish spots on the sides of the apical joint. Antennæ with white and fuscous annulations; the basal joint elongate, chestnut brown. Fore wings chestnut-brown, slightly shaded with fuscous towards the costal margin; a whitish ochreous streak at the base of the dorsal margin, followed by two or three other smaller ones along the dorsal margin (in some specimens these are obsolete); above the dorsal margin are two oblique whitish ochreous streaks, the first before the middle, the second before the anal angle. A similar streak from the costal margin immediately before the apex is outwardly margined by a streak of black scales, the apex and apical margin being also black; there is also a faint fuscous streak running downwards through the cilia below the apex. On the cell are two elon-

gate patches of black scales, one immediately before the middle of the wing, the other halfway between this and the base. Fringes grey, with a slight yellowish tinge. Hind wings pale greyish. Hind tibiae greyish white, outwardly fuscous; hind tarsi whitish, with a wide fuscous band followed by two fuscous spots on their outer sides. Expanse 11 millim.

This is a most interesting species, nearly allied to *Batrachedra ledereriella*, Zell., which Monsieur Millière has bred from larvæ, feeding in the webs of the gregarious larvæ of *Liparis chrysorrhæa*, Lin. I have also bred it from among old webs of other larvæ and of spiders on branches of different species of *Mimosa* and other shrubs, also from old galls on *Pistachia terebinthus* and a species of *Cornus* (?) in the south of France, these galls containing numerous webs of spiders. I have found larvæ of *Batrachedra præangusta* among the cotton-like seeds of willow (*Salix caprea*), and in one instance in a goldfinch's nest lined with that substance. The habitat of the larva of this new species is particularly interesting, confirming these observations as to the substances chosen for food by the known species of this genus. It would be desirable to ascertain whether the larva of *Batrachedra salicopomonella*, Clem., bred from galls on *Salix cordata* by the late Mr. B. D. Walsh and Dr. Clemens, finds any similar source of nutriment in or among the galls which it frequents.

Genus **IDIOSTOMA**, Wlsm.

445. *Idiostoma americella*, sp. nov.

Antennæ pale straw-color. Labial palpi straw-white, widely diverging, the apical joint as long as the very slightly stouter second joint. Maxillary palpi clothed with long, straight, straw-white hairs, projecting downwards. In the Proc. Ent. Soc. London, 1881, p. 273, pl. xiii. f. 42, I described this genus, from a single South-African specimen, under the name of *Idioglossa*, as having tufts of hair-like scales at the base of the tongue; but I was then in some doubt as to the true position of these tufts. There is no doubt as to the present species being congeneric with the African one; but the tufts belong undoubtedly to the maxillary palpi, the joints of which they conceal. Having only a single specimen, I am again precluded from dissecting it; but the original generic description must be amended in this particular, and the name, which is misleading, must be changed. The specimen in the collection of the American Ent. Soc. Philadelphia is much worn; but the genus is completely distinct from all other known genera, and is easily recognizable at a glance by the ornamentation of the hind wings. Since this specimen has been sent back to America, I have received, through the kindness of Mons. E. Ragonot, a beautiful example, collected in Texas

by the late Mr. Boll, which has enabled me to amend the description. Fore wings straight, narrow and sharply pointed, straw-colored; an oblique brownish streak or fascia about the basal third of the wing, nearer to the base on the dorsal than on the costal margin, sending a point of scales of the same color outwards along the middle of the cell, with silvery metallic scales before it towards the base, above it towards the costa, and beyond it along the dorsal margin, some of which have a lilac iridescent lustre; a brownish streak from the commencement of the costal cilia, tending obliquely outwards to the dorsal margin, internally margined with bright silvery scales, above and below which are brownish-fuscous streaks through the cilia; the extreme apex is silvery. The hind wings, which are narrower than the fore wings, are pale straw-colored, straight and sharply pointed, showing three distinct silvery fasciæ, the outer one being the narrowest of the three; these are margined on both sides by brownish submetallic scales; beyond the outer fascia is a bronzy brown shade, the cilia above and beneath it, and at the extreme apex, being darkened in contrast to the remainder, which are very pale straw-white; legs very pale straw-color; abdomen straw-colored, barred with silvery. On the dorsal margin of the fore wings are two groups of dark projecting scales, one before and one beyond the middle, and there is a similar group before the middle of the hind wings. Expanse 10 millim.

One specimen in the collection of the Am. Ent. Soc. Philadelphia.

Genus **ELACHISTA.**

1076. **Elachista? metallifera**, sp. nov.—Head, palpi, thorax, and base of the fore wings silvery grey. Antennæ somewhat darker, marked on their outer half above by six dilute silvery grey spots, including the extreme apex as one of the six. Head smooth; palpi depressed, the apical joint slightly upturned. Fore wings shining dark brown, with a slightly oblique golden fascia before the middle, wider and nearer to the base on the costal than on the dorsal margin; on its outer margin below the fold a tuft of raised brown scales; beyond the middle is a second golden fascia, wider and nearer to the base on the dorsal than on the costal margin; on its outer edge a tuft of raised brown scales; a silvery shining costal spot before the apex, and a larger opposite dorsal one with a beautiful blue and purple iridescence; the points of the brown apical cilia are whitish. Dorsal cilia and hind wings with their cilia brownish grey. The legs brown, with conspicuous shining white bands and tarsal spots. Apparently allied to *E. madarella*, Clem., but with a different arrangement of markings. Expanse 5 millim.

One specimen in Mr. Goodell's collection.

I place this provisionally in the genus *Elachista*, from which it differs only in the possession of raised tufts of scales, so far as can be ascertained without denuding the wings. *Elachista bicristatella*, Cham. Cim. Soc. Nat. Hist. vol. ii. p. 187, has the same peculiarity.

Genus **ESYLE**.889. *Esyle fasciella*.*Esyle fasciella*, Cham. Cin. Quart. Journ. Sci. ii. p. 97. Ac. and "Index."*Lithocolletis? fasciella*, Can. Ent. vii. p. 93.*Gracilaria fasciella*, Cham. Can. Ent. ix. p. 123; Can. Ent. xi. p. 118. ix. p.

194.

Gracilaria 5-notella, Cham. Can. Ent. xi. p. 118, ix. p. 194.? *Gracilaria (Coriscium) quinquenotella*, Cham. Can. Ent. ix. p. 124.

Mr. Chambers first described this species under the new generic name *Esyle*, and drew attention to its great similarity to *Lithocolletis*, except in the neuration of the hind wings (Cin. Quart. Journ. Sci. ii. p. 98); subsequently (Can. Ent. ix. p. 194) he suggested that this species, which he found had also been described by him under the name "*Gracilaria 5-notella*," might possibly be the *Gracilaria fulgidella* of Clemens.

I think this is not improbable, having regard to Dr. Clemens's description of *G. fulgidella*, and to my brief note on Clemens's type made in 1872:—"Surely not a *Gracilaria?* a small species." The species described by Mr. Chambers has not the antennæ of a *Gracilaria*, these being shorter than the anterior wings in the specimen before me. It was probably this same character which led me to doubt Clemens's specimen being a true *Gracilaria*, except in the form of the palpi. It appears to me to be more nearly allied to *Lithocolletis* than to *Gracilaria*, but I have not examined the neuration. Mr. Chambers's figure of the hind wings (Journ. Cin. Soc. Nat. Hist. p. 203, fig. 34) certainly shows some slight divergence from those of that genus. In the collection of the Peabody Academy of Sciences, Salem, Mass., are specimens of the two extreme varieties referred to by Mr. Chambers (Can. Ent. ix. p. 194, xi. p. 118). It is difficult to believe that they can be referable to the same species, although he gives apparently good reasons for thinking that they are so.

Genus **LITHOCOLLETIS**.655, 656. *Lithocolletis mariæella*.*Lithocolletis mariæella*, Cham. Cin. Quart. Journ. Sci. ii. p. 99.*Lithocolletis alniella*, Cham. "Index" partim.*Lithocolletis trifasciella*, Cham. Can. Ent. xi. p. 92.

This species approaches very closely to *Lithocolletis fralichiella*, Zell. (Wocke, 2892), but differs from it in having the first and second transverse fasciæ curved outwards, instead of straight as in the European species. *L. mariæella* has been bred from *Symphoricarpos*; *L. fralichiella* feeds on *Alnus*. I received a specimen in 1878 from Miss Murtfeldt, labelled "*L. lucidicostella*, Clem.; *mariæella*, Cham." It is quite distinct from *lucidicostella*, of which Mr. Stainton writes (Tin.

Nor. Am. p. 66), "allied to *heegeriella*, Zell., and *tenella*, Zell., Mr. Chambers in his "Index" gives *marizella* as a synonym of *L. alniella*, Zell., and refers wrongly to Can. Ent. vi. p. 99 for the description. The reference should be Cin. Quart. Journ. Sci. ii. p. 99.

The specimens now before me from Miss Murtfeldt's collection agree with Chambers's description of *L. marizella*, from which *L. alniella*, Zell., is quite distinct, *alniella* being a grey-colored species, not golden.

L. trifasciella, Haw., to which Mr. Chambers subsequently refers his *L. marizella*, is also distinct from this species, having the dark anterior margins of white transverse fasciæ much wider and more conspicuous. There is an American specimen of the true *L. trifasciella* in Prof. Riley's collection labelled "From leaves of honeysuckle."

Lithocolletis desmodiella.

Lithocolletis desmodiella, Clem. Proc. Ac. Nat. Sci. Phil. 1859, pp. 319, 320; Tin. Nor. Am. pp. 65, 68, &c.

Lithocolletis gregariella, Murtfeldt, Can. Ent. xiii. p. 245.

Specimens received from Miss Murtfeldt as *Lith. gregariella*, some in Prof. Fernald's collection, some in my own, undoubtedly agree with *Lith. desmodiella*, Clem., from which Miss Murtfeldt was led to believe that they differed in some slight degree when she redescribed this pretty little species.

40. **Lithocolletis pomifoliella**, Zell. (Wocke, Cat. 2852).

Lithocolletis cratægella, Clem. Proc. Ac. Nat. Sci. Phil. 1859, p. 324; Tin. Nor. Am. pp. 76, 77.

This specimen in Prof. Fernald's collection labelled "*Lithocolletis cratægella*, Clem.," agrees with two others from Miss Murtfeldt's collection under the same name. These are undoubtedly our well-known European *L. pomifoliella*.

Clemens writes of his *L. cratægella*, "Antennæ, front, and tuft dark silvery grey." Stainton writes of *L. pomifoliella*, "head bright saffron-yellow; face and palpi white; antennæ white, annulated with fuscous." I have not been able to detect any differences in these points between American and European specimens. The faces of those now before me are as white as in English examples, and their heads are tufted with saffron above; their antennæ are also faintly annulated.

Genus **TISCHERIA.**

662, 663. **Tischeria tinctoriella?**

Tischeria tinctoriella, Cham. Cin. Quart. Journ. Sci. ii. pp. 108-111.

These specimens are wrongly named in Miss Murtfeldt's list "*Lithocolletis quercifoliella*, Clem.," with a footnote:—"I think there is a

mistake about this species somewhere." Clemens did not describe a *Lithocolletis quercifoliella*; he renamed *Argyromyxa quercifoliella* of Fitch, and called it *Lithocolletis fitchella*. The specimens before me belong to the genus *Tischeria*, and are probably the same as those referred to by Chambers under the name *T. tinctoriella*. The purple zigzag lines on the nidus of the larval mine, which accompanies these specimens, point to this conclusion. They approach in some respects Clemens's description of the female of his *Tischeria zelleriella*, of which Chambers states that, so far as he is able to learn, there is no authentic specimen now extant." In Mr. Stainton's edition of Dr. Clemens's papers this is one of the few species not marked with an asterisk in the Index, thus signifying that it is one of which I did not see the type in the collection of the Entomological Society at Philadelphia in 1872. My notes assure me that this is a mistake. I have a memorandum, made when the types were examined by me at that time, to the effect that this species (*T. zelleriella*) approaches very closely to *T. citrinipennella*, from which it seems probable that Clemens's type specimen still exists and that my observation refers to a male.

The American representatives of the genus *Tischeria* require very careful study before a revision can be attempted.

Genus LYONETIA.

599. *Lyonetia latistrigella*, sp. nov.—Head and palpi white. Antennæ, except the white basal joint, bronzy brown. Thorax and fore wings white, with an oblique broad bronzy brown streak from the middle of the dorsal margin, somewhat narrowed where it crosses the fold, thence again dilated, ending in an obtuse point slightly above the middle of the wing at the commencement of the apical fourth; beyond this is a large ferruginous patch, with one dorsal and three costal white streaks, internally margined with bronzy brown, and a large round black apical spot, preceded by some white scales from above and beneath; dorsal cilia of fore wing, abdomen, and hind wings with their cilia all bronzy brown; legs white, touched with brown at the tarsal joints. Expanse 9 millim.

One specimen in collection of Am. Ent. Soc. Phil.

It is not impossible that this may be a variety of the species described by Dr. Packard as *L. nidificansella* (Guide, 354), which, as pointed out by Mr. Chambers, is evidently a *Lyonetia*; but the absence of the costal streaks and other markings alluded to in the description lead me to regard it as a distinct species. Dr. Packard's species is probably more nearly allied to *L. sperulella*, Clem.

Genus BUCCULATRIX.

1165. *Bucculatrix trifasciella*.

Bucculatrix trifasciella, Clem. Proc. Ent. Soc. Phil. v. p. 147; Tin. Nor. Am. p. 172, &c.

Bucculatrix obscurifasciella, Cham. Can. Ent. v. p. 150.

This specimen in Prof. Riley's collection, received from Mr. Chambers his *B. obscurifasciella*, is equal to specimens of *B. trifasciella*, Clem. in my collection, which were named in America, probably from Clemens type.

1013, 1014. **Bucculatrix pomifoliella.**

Bucculatrix pomifoliella, Clem. Proc. Ac. Nat. Sci. Phil. 1860, p. 211.

Lithocolletia curvilineatella, Pack. Guide, p. 354.

Bucculatrix pomonella, Pack. Guide, 7th edit. p. 354, pl. 8.

Mr. Chambers (Can. Ent. iii. p. 184) rightly suggested that Dr. Packard's *L. curvilineatella* was probably a *Bucculatrix*. In the 7th edition of the 'Guide' (1880) the name *B. pomonella*, Clem., is substituted for *L. curvilineatella* on page 354, although the latter remains in the Index as before.

The specimens before me, belonging to the collection of the Peabody Academy of Sciences, Salem, Mass., are, according to my information, the types of *L. curvilineatella*, Pack.

Genus MICROPTERYX.

815. **Micropteryx auricyanea**, sp. nov.—Head and face rough brown whitish grey. Antennæ missing. Fore wings golden bronzy, streaked and dotted with brilliant bright blue metallic scales set on purple. The most noticeable of these are a series of spots around the apex and apical margin, an oblique streak from about the middle of the dorsal margin, and some blotches towards the middle of the costa and above the anal angle. Cilia bronzy grey. Hind wings greyish towards the base, becoming purple towards the apex; cilia light yellowish grey. Expanse 13 millim.

This species is very nearly allied to *M. fustuosella*, Zell., but differs in the arrangement of the blue spots, which in *fustuosella* are much more evenly distributed.

One specimen in the collection of the Peabody Academy of Sciences, Salem, Mass.

Synopsis of the North American HELIOTHINAE.

BY JOHN B. SMITH.

Under the term *Heliothinae* are grouped a number of genera and species, distinguished by no exclusive or peculiar character, and yet having a certain facies which enables the student to determine almost at a glance the species of the group. Nor is it quite correct to say that there are no peculiar characters—for a large proportion of them are very peculiar in the armature of the fore-tibia, which is distinct from any thing found elsewhere, but is not a feature of *all* the genera.

There may of course be decided structural characters, which the examination usually accorded to Lepidoptera does not and cannot reveal. Owing to the dense clothing of the insects, and the absolute necessity of destroying a specimen to examine its anatomical structure, no really scientific classification of them has yet been made, and the present synopsis may at a future time, when the species become more common, be entirely superseded, even though the number of our species be not largely increased.

In consequence of the well marked structural peculiarities of some members of the group, the study, in the beginning, appeared an easy task. This idea was soon dispelled by the discovery of a certain heterogeneity in those genera with many species. In the progress of the work, while I hope to prove definitely that certain genera are unnecessary, it will be observed that specific synonyms are comparatively few.

Before I had advanced very far in my studies it seemed that I would be compelled to choose one of two courses—either multiply genera on small structural differences, or unite all the species in one or two genera with a large number of species in each, creating sections or divisions, and giving them a sub-generic value. Neither of these courses entirely pleased me, and it was not until I had carefully examined all the species and made all the figures, that I finally arranged them and as they stand in the synopsis. It will perhaps be well that I should state exactly what value I have given to the various structural characters. First the eyes: They are all naked in the group, as I understand it (*Lepipolys* and *Anarta* being excluded, though *Lygr. cupes* has a very strong affinity in superficial appearance to the former), often rounded and globose,

but in a very large proportion of the species narrow, ovate or reniform.

Lederer in his *Nortuinen Europas* does not seem to be quite consistent in the value given to this as well as several other characters, and under the generic term *Heliothis* he grouped species with both narrow and round eyes.

The species *ononis* is a true *Heliothis* in all but the eyes, and these are decidedly narrowed and ovate, and by the use of this character two exceeding closely allied species are separated; still it was an absolute necessity if this peculiarity has a generic value, and reflection convinced me that it deserves to be so considered. The character is evident, and I have not seen any specimen as yet in which the question was but for an instant doubtful in my mind, whether it had ovate or round eyes. The clypeus and its modifications next required attention, and the greatest possible diversity of clypeal structure occurs in this group.

While not prepared to reject the character entirely, I was inclined to give it but small value, inasmuch as in *Chariclea* (as that term is used by Lederer) there are some species with and others with no clypeal modification. I observed however that in this group there are practically but two main kinds of modification, and the others were modifications of them. Except in one instance, so far as I now recollect, clypeal structure alone has not been relied upon to separate genera; that instance is *Heliolonche* which differs from *Melichliptriu* only in the flattened shelf-like projection of the front. This I retained as distinct, giving the modification thus far a generic value.

The tongue does not vary enough to make discussion of the value of its modifications profitable. The palpi have an almost uniform pattern throughout, and the antennae do not afford a base even for grouping the species.

The thorax affords but one character, and that is in the nature of its vestiture. I have here given its variations a generic value, separating species with hairy vestiture from those which have it scaly or mixed. *Chariclea* is the only genus in which the thoracic vestiture is formed into tufts, and that genus differs in that respect from all others here treated of.

The neuration of the primaries in this group affords little of generic value. The venation is remarkably constant, as shown in Plate VII, fig. 46. In *Pippona* the accessory cell is wanting, and this peculiarity of venation would sustain the genus even did it have no other peculiarities of structure.

In *Heliothis paradoxus* the neuration of the ♀ is normal; of the ♂ aberrant. This aberration I have not given a generic value, and have discarded *Heliochilus* which was based on it. This I have done because the aberration is found in one sex only, the ♀ being a true *Heliothis*, and sexual characters should not in my opinion be accorded a generic value; and also because it is an aberration only, entirely out of harmony with the variations elsewhere found in the venation of the *Noctuidae*. The abdomen of the ♀ sometimes has the oviduct more or less extruded, but no generic value can be attributed to this character for it grades so insensibly from one extreme to the other that it would be a matter of great difficulty if not impossibility to limit a genus thus based. The genitalia of the ♂ I have not examined for the following reasons: first, they can never have a generic value; second, I did not need them for sub-divisions, and in the third place there were many species of which I have seen the ♀ only.

The legs and more especially the tibiae have furnished bases for generic divisions. Species with spinose tibiae I have uniformly separated from those not so armed, though there were described in *Melicliptria* species with and without this distinction.

The anterior tibiae vary very decidedly and I have given the variations a modified generic value. Those species of *Melicliptria* which have the anterior tibia not abbreviated, and merely terminated with spinules I separate from that genus.

It was with that group having the anterior tibiae abbreviated and heavily armed that I had the greatest difficulty, the question being whether the variation had generic value, and if so to what extent. The negative seemed the safer and I have therefore followed that course. Still there is no genus the species of which differ very widely in armature except *Shinia* as that term is used by me, and here I found it impossible to give it any value, because if I had done so, very divergent species (superficial appearance considered) would have come into the same genus and closely allied species would be separated; the modifications are so gradual also that it would be difficult to limit each genus. Very divergent forms superficially and perhaps structurally have thus been run together into one genus, but the differences are so gradual that I could discover no dividing line between the groups safe enough to base a genus on.

The tarsal claws vary somewhat as will be seen by the few figures given. In the two species of *Dasympoudaea* they are very strongly dentate. In *Heliolonche* they are perfectly simple, and in *Melicliptria* obsoletely toothed. There are variations other than those figured, but

I did not particularly note them, because I preferred not to use this character to separate even groups, as it would necessitate the use of a microscope—an instrument which not all students or collectors have.

Regarding the arrangement of the species of each genus, and of the sequence of the genera in the appended list it is necessary to say a few words.

Species are catalogued in the list as they follow in the synopsis, except in *Shinia*. In this genus I have arranged them in accordance with superficial resemblance, retaining however as far as possible the §§ into which the genus is divided in the synopsis.

Genera are placed so that those most closely allied are nearest together. The arrangement of the species and genera in Mr. Grote's various lists is entirely unnatural, and the fact that many species which were not congeneric were placed in the same genus, and that genera so closely allied as *Shinia* and *Lygrranthoecia* (*sensu* Grote) were widely separated, renders that almost a necessary consequence.

Accepting as I do the theory of evolution and of modification by environment, I could not expect and did not attempt to show in a linear series all the relationships of the group—that I leave for a future work, when in a chart I hope to show the affinities of the *Noctuidæ* with the other Lepidoptera, and of the genera with each other.

The affinities of the group, as was to be expected, tend in every direction. Accepting *Heliothis* as the centre, it is preceded by *Anarta* and followed by *Acontia*. *Pippona*, *Antapluga* and *Aedophron*, ally it to *Cucullia*, *Cleophana*, and *Nycterophyeta*. *Cirrhophanus* (*Chariclea sensu* Grote) allies it to *Plusia* and *Busilodes*. *Chariclea* (*Pyrrhia* Grote) unites it with *Xanthia* and *Orthosia*. *Cirrhophanus* I have omitted from the group, as rather more nearly allied to *Plusia*.

I head the group with *Sympistea* which differs from *Anarta* chiefly in having naked instead of hairy eyes. Of the same shaggy form but with round eyes and a rather more *Heliothid* appearance is *Pseudanthoecia*. *Daxyspondaea* is closely allied but differs by the armed tibiae. *Triocnemis* with narrowed primaries and robust form is followed by *Aedophron*, which by its clypeal structure and wing form tends strongly to *Cleophana*. *Pippona* has strong affinities in the same direction, but has heavily armed anterior tibiae. From this point *Antapluga*, *Grotella* and perhaps *Epinyetes* and *Bessula* form a spur pointing to some forms of the *Plusinae*. *Pyrrhia* and *Heliothis* best find space here, followed by *Alaria* with its strong *Heliothid* appearance and spinulated tibiae, the anterior not very decidedly abbreviated. *Shinia* follows next, and com-

pletes the chain in one way to the lower forms. Equally close to *Heliopsis* though catalogued after *Shinia* comes *Melaporphyriu* with its dark colors and ovate eyes, leading readily to *Melicliptria* with abbreviate and armed fore tibia: between *Melicliptria* and *Shinia*, *Heliophana* holds a place, bridging the gap between the two through *Pseudotamila* with scaly vestiture and ovate eyes. *Heliolonche* comes next, most nearly related to *Melicliptria*, followed by *Axenus*, which is naturally followed by *Heliaca*, which in turn is very near *Annaphila*. *Pseudacontia* forms the bridge between the pale more frail forms of *Shinia* and the genus which it mimics. *Derrima* is aberrant, having decided affinities with *Chariclea pernana*, and through it to *Plusia* or allies.

These relationships I have tried as far as possible to express by cataloguing—with what success my readers must say.

In the course of my work also the question as to what use I should make of Hübner's genera presented itself. I had already expressed myself strongly in favor of entirely ignoring Hübner, not having at that time the experience with other authors that I have had since. I have therefore re-examined the entire subject, have read all that is written on it and have substantially adopted neither of the views heretofore advocated, but have laid out a course, apt to prove repugnant to most, but which I believe to be the one most consonant to justice and reason.

It has never been determined what is necessary to create a genus; what, if any, description was needed, and there have been as many courses as there have been authors. In the earlier times generic ideas were widely different from those now held, and characters universally in use now were then unknown.

Genera have been even in recent times created by a mere designation of the type, and as Hübner's genera and many of Guenée's and Walker's are so imperfectly described, that it is utterly impossible to recognize the genus apart from a comparison with the species placed in it, they all stand on about the same footing and deserve the same treatment.

Generic ideas have, as before remarked, changed, and while Hübner's and Guenée's genera may have been perfectly pure in the state of the science at that time, they are now deemed heterogeneous. Yet it must be remembered that all these authors had their own idea of what constituted a genus, and this idea can only be gathered from a study of all the species placed by them in the same genus. Unless a genus is expressly limited by description sufficient to identify it, or unless there is one particular species distinctly designated as the type of the genus, every

species placed in it by its author must be considered as equally a part of the aggregation of these species, distinct though they may be according to our ideas, is the generic idea of the author as to that particular genus. When in the course of time the genus is divided up into new genera are created, based on some of its species, the original generic name, though it be retained, should not be credited to its originator because the genus so named in the sense of its author has ceased to exist, and the genus should be credited to the author limiting and describing it.

This idea I have followed throughout this paper, and shall continue to follow it until it is shown to be incorrect or unjust, and *all* the works are placed on the same basis. It is, however, perhaps necessary to say that among Hübner's works entitled to consideration I do not include the *Tentamen*.

While writing this paper and in the course of my studies on the subject I have had before me, all the European genera and most of their species, and I find that while it is a perfectly easy task to limit the European genera, the American species, being much more numerous, so greatly diverge that it is a matter of great difficulty to say exactly where the line dividing the genera shall be drawn, and while I believe that the following synopsis is accurate and sufficient to define the genera as they now are represented, I am well convinced that species will be found which will eventually close the gap between *Heliothis dipsuceus* and *S. Thoreaui*, and that all the species must be either placed in *one* generic name or *two* generic names in each—that is provided there be no new characters discovered which genera can be based.

Further and particular discussion as to structure will be more in order when speaking of the respective genera.

My thanks are due to Messrs. Henry Edwards and B. Neumoeg of New York for the loan of their and many of Mr. Grote's types, and all my Brooklyn friends who placed at my disposal their entire collections in which (especially that of Mr. Tepper) there were many of the types.

Synopsis of the Genera.

Tibiae not spinose.

Anterior unarmed at tip.

Clypeus without projection.

Vestiture scaly or flattened hair.....**Sympistes.**

Vestiture hairy.

Eyes reniform or narrow ovate.....**Heliaca.**

Eyes rounded globose.

Form robust, vestiture divergent, thorax untufted, head somewhat retracted.....**Pseudanthoecia.**

Form less robust, vestiture not divergent, thorax with a crest behind collar, head not retracted.....**Chariclea ?**

Clypeus with projection.

Vestiture hairy.

Eyes reniform, clypeal projection flattened.....**Axonus.**

Eyes round, globose clypeal projection tumescent.....**Aedophron ?**

Anterior armed at tip with claws or spines.

Clypeus without projection.

Vestiture scaly.....**Pseudacontia.**

Vestiture hairy.

Eyes globose.

Head small, strongly retracted, wings short and wide, tibial armature consisting of 3 spines.....**Derrima.**

Head large, not retracted; wings long and narrow, tibial armature consisting of a single claw.....**Chariclea ?**

Clypeus with projection or excavation.

Vestiture hairy.

Eyes reniform, ovate.....**Xanthothrix.**

Eyes globose round.

Armature consisting of two outer claws, apex of primaries obtuse, outer margin rounded.....**Aedophron ?**

Armature consisting of two inner and two outer claws, primaries sublanceolate.....**Pippona.**

Vestiture scaly or flattened hair.

Clypeus excavated, with a tubercle in excavation.....**Antaplaga.**

Clypeus with inferior plate projecting.....**Epinyctes.**

Tibiae spinose.

Anterior armed at tip.

Clypeus with projection or excavation.

Vestiture hairy.

Eyes round, globose.....**Beaulia.**

Eyes narrow, ovate or reniform.....**Heliolonche.**

Vestiture scaly or mixed.

Eyes round.

Clypeus excavated, with tubercle in excavation.....**Grotella.**

Clypeus with inferior plate produced.....**Shinia ?**

Clypeus without projection or excavation.

Vestiture hairy.

Eyes round, globose.

Anterior tibia not abbreviated, armature consisting of terminal spinules.....**Heliopsis.**

Anterior tibia scarcely abbreviated, armature consisting of terminal claws; shaggy, robust, with small primaries, outer margins rounded.....**Dasyspondaca.**

Anterior tibia abbreviated, flattened; armature consisting of several long strong spines; vestiture recumbent, form moderate; primaries with oblique outer margin.....**Alaria.**

Anterior tibia flattened, corneous at tip, with a long inner and shorter outer projection; primaries very narrow with oblique outer margin.....**Tricnemis.**

Eyes small, ovate or reniform.

Anterior tibia not abbreviated, armature consisting of terminal spinules.....**Melaphorphyria.**

Anterior tibia abbreviated.

With two inner and three outer claws, primaries wide, short,

Heliophana.

With a single inner claw only and from one to three outer claws,

Primaries with produced apices and oblique outer margin.

Melipotria.

Primaries wider, with apices less produced, outer margin more even.....**Helioca.**

Vestiture scaly or mixed.

Eyes globose or scarcely narrowed.....**Shinia** ?

Eyes very small, narrow, ovate or reniform.....**Pseudotamila.**

SYMPISTIS Hb.

Habitus of *Anarta Myrtilla*. Head small, retracted, with moderately long vestiture; eyes small, naked, ovate; tongue moderate, palpi short, with lengthy ciliae beneath. Thorax robust with evident collar, vestiture consisting of elongate flattened scales or hair (*spiensigen schuppen*); primaries narrow, with rounded outer margin and elongate fringes; legs strong, robust, tibiae not spinose, anterior unarmed at tip. Abdomen heavy, with small basal tuft. To this genus I refer *Euros*, Hy. Edw. (*Papilio*, 1, 19) which seems to have been described from an examination of the type in an unnatural position, which caused Mr. Edwards to mistake the *femora* for *tibiae*, and the latter for the *tarsi*. Mr. Edwards type is a ♂, and from such examination as I have been able to make of the sexual pieces, they agree with what Lederer says of this genus: the tibia are clothed with elongate hair, and the position of the anterior one was such that Mr. Edwards' error in describing it as very short and furnished with a thickened process terminating in a blunt spine was excusable. In fact it is of ordinary length, and without any armature

at all; the spines referred to on middle and posterior tibia are the usual spurs.

The species (*celeris*) referred by Mr. Grote to this genus has spinose tibiae, and hairy vestiture and is a *Melicliptrix*.

S. proprius, Henry Edwards, Papilio 1, p. 19 (*Euros*), Pl. VIII, fig. 1.—Reddish brown primaries, with darker usual lines and a zigzag pale line near outer margin: reniform and claviform yellowish; secondaries smoky black; wings beneath smoky, with reddish brown margins. Expands .75 inch, 20 millim.

Habitat.—California (Siskiyou Co.).

To the kindness of Mr. Edwards I owe the opportunity of making an examination of the type.

PSEUDANTHOECIA, gen. nov.

Eyes naked, small, somewhat oval, hidden in the dense vestiture of the head, which is small and retracted; clypeus bulging without projection: palpi exceeding front, second joint heavily fringed beneath; tongue moderate; thorax heavy, densely clothed above with long hair, forming a distinct tuft behind collar and another at base; abdomen with lateral tuftings toward tip more prominent in the ♂; ovipositor of ♀ lengthily extruded; wings short and narrow; with depressed costa and scarcely produced apices; fringes elongate; tibiae entirely unarmed.

Closely allied to the *Janthinea* Guen., from which it differs only by the absence of the flattened clypeal projection; from *Omia* it differs in the form of the wings, body and head; from *Aurarta myrtilli* only in the naked eyes; from *Dausypoudaea* in the non-spinose tibiae. It is with some hesitation that I have created this genus, but I believe it to be a necessity. It best fits into *Janthinea*, but lacks the very decided clypeal projections of that genus. To *Aurarta myrtilli* the insect bears a very close resemblance while differing as above specified and in the very salient oviduct of ♀; from *Lygranthoecia brevis*, its nearest American ally, it differs in the unarmed tibia which in *brevis* are strongly marked, (Pl. VII, fig. 33) the species is

P. tumida, Gr. Bull. Bkln. Ent. Soc. 3, 30 (*Lygranthoecia*), Pl. VIII, fig. 2.—Distinguished by the generic characters, the pale yellow primaries, with deep red median shade crossed by an unguled white line beyond the middle; secondaries black, with base yellow. Expands .75 to .90 inches, 20-24 millim.

Habitat.—Colorado.

DANYSPOUDAEA, nov. gen.

Eyes naked, globose; head moderate, scarcely retracted; tongue strong; palpi well exceeding front, oblique, terminal joint evident, compressed; second joint moderately fringed beneath; thorax very heavy cylindrical, with dense long hairy vestiture, forming a somewhat prominent rounded

collar, and an indistinct posterior tuft most evident in *lucens*; sides distinctly bounded, giving it a decidedly quadrate appearance from above; wings proportionately small, primaries with rounded outer margins and unusually long fringes; tibia spinose, anterior scarcely abbreviated, obliquely truncate at tip, where it is armed at inner side with a long strong spine-like claw, a shorter spine at outer side and two or three strong spines at outer and a similar number at inner lateral margin; tarsal claws strongly dentate; abdomen conic, somewhat exceeding secondaries, with a decided basal tuft in *lucens* which is wanting in *Meadii*.

This genus is separated from *Heliothis* by the more robust form, shorter primaries, the differently armed anterior tibia, by the strongly dentate tarsal claw and quadrate decidedly bounded thorax.

Lucens may be considered the type, and the two species which place in it are distinguished as follows:

Abdomen tufted at base, primaries carmine, with the usual lines silvery white,

lucens —

Abdomen not tufted; primaries green, with silvery lines and paler blotches,

Meadii —

D. *lucens*, Morr., Proc. Ac. N. Sc. Ph., 1875, p. 69 (*Heliothis*); Grt. Can. Ent. xiv. p. 175 (*Tamila*), Id. var. *luxuriosa*; Pl. VII, fig. 1 and 1a, tibia and tarsal claw, and Pl. VIII, fig. 4, wing.

Readily distinguished by the carmine primaries crossed by silvery lines as shown in the figure; the tibia differs somewhat from that of the following species, as will be seen by a comparison of the figures, and this species has a distinct basal tuft on abdomen—a feature not found in any other species of the group with spinose tibiae. With *Heliothis* this species could not remain united, the whole appearance of the insect is too entirely different.

Habitat.—Nebraska, Montana and Colorado. The specimens from Nebraska appear almost universally of a paler color while equally fresh than those from other sections. Mr. Grote has named the dark variety *luxuriosa*, in my opinion without sufficient reason.

Expands 1 inch, 26–30 millim.

D. *Meadii*, Grt. Buf. Bul. 1 p. 121, pl. 3, fig. 5 (*Heliothis*); Id. 2. p. 35 (*Tamila*); Pl. VII, figs. 2 and 2a, tibia and tarsal claw, and Pl. VIII, fig. 3, wing.

At a glance distinguishable from the preceding by the greenish color of the primaries, though the style of marking is identical and the relationship otherwise extremely close; it lacks the abdominal tuft and is somewhat slighter than the preceding species. Described as a *Heliothis* in the "sub-genus" *Tamila* and placed with *nundina* in the subsequent lists by Mr. Grote, in which *Tamila* is given generic rank. With *nundina* it has

nothing in common. The wings differ in shape, the armature of tibia varies decidedly, the vestiture is entirely hairy, and the form is so evidently different that a reference to the "sub-genus" *Heliothis* would have been most proper. Expands $1\frac{1}{2}$ inch, 28-32 millim.

Habitat.—Colorado, Montana.

TRIOCNEMIS, Grt.

Papilio 1. 77. Tibia Pl. VII, fig. 3.

Eyes naked, globose; head scarcely retracted, large, clypeus bulging; palpi slightly exceeding the front, heavily fringed with scales beneath; tongue strong; thorax heavy with very long dense hairy vestiture, somewhat divergent patagia and a dense basal tuft; abdomen untufted, conic; primaries narrow, with produced apices and oblique outer margin; tibiae not spinose, anterior flattened with "a broad rounded exterior projection, a very long stout spine [claw] near the inner margin, and a short spine at the extremity of the inner edge."

Peculiar by the armature of the anterior tibia, combined with the lack of spines on the other pairs. Judging from Mr. Grote's very superficial generic description, and the superficial examination I was at that time enabled to make, I referred this genus to *Schinia* Hb. in my synopsis of the genera. From that genus it differs by the lack of spines on the tibiae.

T. asperis, Grt., Papilio 1, 77, Pl. VIII, fig. 5. —White, with a broad median space on primaries blackish; terminal spaces leaden grey, sub-terminal space white with intermediate small zigzag black marks at middle; secondaries with dusky outer margin. I have examined the type from Mr. Edwards' collection. Expands $1\frac{1}{2}$ inch, 28 millim.

Habitat.—Washington Territory (Grote), Southern California (Henry Edwards.)

ÆDOPHRON, Led.

Noct. Eur. p. 180.

Eyes naked; clypeus with cylindrical projection impressed at tip; tongue very long and strong; antenna heavy in the ♂ with moderately long ciliation; palpi short and drooping; thorax convex with dense woolly clothing; abdomen conic in both sexes, in the ♀ with extruded oviduct; tibiae not spinose; anterior armed at tip with two claws one above the other at outer side; first tarsal joint also with a stout spine at tip.

This is Lederer's description of the genus, and Pl. VII, fig. 4, shows the tibial armature of *phlebotora* Led. The only American representative of the genus hitherto described is unknown to me and is incorrectly placed in this genus. The following is new:

A. pallens, sp. nov.—Differs from the European species and from the description of the genus by the lack of terminal armature of the anterior tibia, but

otherwise agrees with it in every respect; the wings are dirty white, with a narrow smoky median band and a fine dark t. p. line; the secondaries are of a uniform pale color; secondaries beneath as above; primaries smoky; clypeus bulging with a cylindrical conic protuberance.—FR. TEPPER.

Described by Mr. Tepper, at my request, from a single specimen in his collection. It fits in no other genus so well as in this, and I do not consider the lack of the tibial armature in this case as a generic distinction.

Differs throughout from *Chariclea* Kirby, which is not the *Chariclea* of Mr. Grote, but closely allied to Lederer's section B, *a* of that genus. Expands 1 inch, 26 millim.

Habitat.—Southern California.

A. Snow, Gr., Pr. Ac. N. Sc. Ph., 1875, p. 422; Ill. Essay, f.

This is described as of a pale lemon yellow; primaries with a light roseate shading beyond the cell, with the sinuate t. p. line faintly indicated in rose-color. Some roseate basal shades, and at the place of the t. a. line. Secondaries pale fuscous, with a roseate terminal stain. Primaries fuscous beneath, with rosy apices.

Mr. Grote says the fore tibiae are short, with terminal and lateral claws; middle and hind tibiae spinose; this last expression precludes the possibility of the insect belonging to this genus, which has the tibiae unarmed except the terminal armature of the anterior pair which are abbreviated. It is probably an *Ataria*.

PIPPONA, Harv.

Buf. Bul. 3, 9. Tibia, Pl. VII, fig. 5.

Eyes naked; head moderate; clypeus full, with the inferior plate somewhat projecting; palpi very short; tongue rather weak; thorax moderate, with scaly vestiture, mixed with somewhat flattened hair; abdomen conic, untufted. ovipositor of ♀ extruded; tibiae spinose, anterior abbreviated, flattened, with two inner and three outer claws as shown in figure; primaries elongate, with lengthily produced apices.

A somewhat rubbed specimen from Mr. Henry Edwards' collection has enabled me to examine the venation of this rather peculiar genus, and this adds to the peculiarity, the absence of the accessory cell, present in all other genera of this group which I have examined except, perhaps, *Antoplaga*. The insect has a *Bombycyl* appearance, already noted by Dr. Harvey, but the peculiar formation of the anterior tibia, and the structure of clypeus and abdomen places it here.

P. bimatrix, Harv., Buf. Bul. 3, 10. Entirely white, primaries with a satiny lustre; head with a yellowish tinge. Readily recognized by the white color and peculiarly shaped primaries. Expands 14 inch, 30 millim.

Habitat.—Texas.

ANTAPLAGA Grote.

Can. Ent. 9, 71.

Form slender; eyes naked; head scarcely retracted; clypeus bulging, with a cup like depression, having a tubercle at lower margin; tongue moderate or weak; thorax small, convex, with vestiture consisting of flattened hair; abdomen slender, elongate; legs moderate; tibiae not spinose, anterior with a single claw at tip; primaries large, with acute, produced apices and roundedly oblique outer margin.

So far as I can make out this genus agrees with *Pippona* in the want of the accessory cell of primaries, but of this I am not at all certain, having no specimens to destroy; the form of primaries and general appearance indicates a close relationship between the two, but the formation of the clypeus and of the anterior tibia very readily separates them.

- Primaries white at basal third, olive brown beyond, interrupted by an oblique sub-marginal white line..... **dimidiata**.
 Primaries white, with two transverse black lines and a series of black spots, forming an interrupted sub-marginal line..... **sexseriata**.

A. dimidiata, Grt., Can. Ent. 9, 71 (Pl. VIII, fig. 6).

This species is readily recognized by simple markings, well shown in the figure. The base is white and satiny, a dark olive brown shade from the middle to margin, interrupted by an oblique white fascia from tip to the hinder margin near the angle. Secondaries uniform pale smoky brown. Expands 1½ inches, 30 millim.

Habitat.—Colorado.

A. sexseriata, Grt. Papilio I., 176 (*Grotella*), Pl. VIII, fig. 7.

Readily separable from the foregoing by the entirely white primaries, crossed by two deep black lines and a row of black spots near the outer margin. I have the type from Mr. Neumoegen's collection, and it differs from *Grotella*, in which genus it was placed by Mr. Grote, by having only a single claw terminating the anterior tibia, by the lack of spines on the median pair, and by the more elongate wings.

The genus is very closely allied to *Grotella* however, the clypeal structure being precisely identical, and the spinose tibiae of *Grotella* are really all that separate it from *Antapлага*. Lack of sufficient material has made it impossible for me to study the neuration. The species seems to lack the accessory cell, but of that I am not at all certain. Expands 1 inch, 26 millim.

Habitat.—Arizona (Prescott).

GROTELLA, Harvey.

Buf. Bul. II, 278.

Eyes naked, globose; head not retracted; clypeus prominent, with a

naked, ovate depression and projecting rim, from the lower part of which rises a conic tubercle, somewhat exceeding the surrounding rim; palpi very short and slender; thorax and abdomen slight; vestiture of the former consisting of scales and compressed hair; primaries full, with convex costal and rounded outer margin; venation unknown as yet; legs moderate, tibiae spinose, anterior somewhat abbreviated, with a moderate claw at inner and a spine at outer edge.

Closely related to the preceding, but differing by the spinose tibia. Dr. Harvey in his generic description says nothing of the clypeal modification.

This genus is closely allied to the *Acontinae* and may, perhaps, find place there at some future day.

The species is

G. septempunctata, Harv., Buf. Bul. II., 278 (Pl. VIII, fig. 8).—Entirely white, with seven small black spots arranged as shown in the figure. Very readily recognized, and well known, but sufficiently rare in collections to have made it impossible for me to get a specimen from which the neuration might be studied. Expands $\frac{3}{4}$ inch, 20–22 millim.

Habitat.—Texas.

BESSULA, Grt.

Papilio 1, 176.

“Clypeus full; infra clypeal plate projecting; fore tibia with a claw on the inside at extremity of joint; a succession of three spines outside; all the tibia spinose; thorax untufted hairy; antennæ of male simple, ciliate beneath; eyes naked.”

This genus is unknown to me, and in what respect it differs from *Tricopsis* or *Schinia* I can't discover from the description, except it is the more elongate tibia; else every word will apply to *Tricopsis chryselus*.

B. luxa, Grt., Papilio 1, 176.—Primaries and thorax very pale yellow; secondaries white, immaculate, silky; primaries with a curved t. p. line of faint ochrey dots; two faint cellular dots; a dot or two in place of t. a. line; subterminal line a succession of similar dots; beneath of yellowish white. Expands $\frac{3}{4}$ 25 ♀ 30 millim.

Habitat.—New Mexico.

EPINYCTIS, Grt.

Can. Ent. 14, p. 75.

“Vestiture scaly; eyes naked; labial palpi short; front full without excavation or tubercle; infra clypeal plate prominent; tibia non-spinose; fore tibia short, with claw; thorax and abdomen untufted; antennæ simple; cut of the wings something like *Cucullia*; primaries narrow and

long; apices pointed; external margin oblique, even; the wings satiny white."

This is Mr. Grote's description. The genus is unknown to me. The species is

E. notatella, Grt., Can. Ent. 14, p. 75.—Wings satiny white; primaries with two black dots on the cell; a row of black points on external margin. "Size of *dimatrix*." Expands 1½ inches, 30 millim.

Habitat.—Montana.

I should like to see this insect—an examination of the differences between this genus and *Antaploga* would prove instructive.

HELIOTHIS, Hb.

Eyes naked, globose; head not retracted; clypeus full, bulging, but never projecting in a knob or tumor (Beule); palpi small, moderately fringed beneath; tongue strong; body stout, strong, with lengthy recumbent hair, forming no distinct tufts on thoracic dorsum; abdomen stout, conic, ♀ ovipositor not extruded; tibiae spinose; anterior not abbreviated and terminated by a spine at inner and another at outer edge (Pl. VII, fig. 6); wings moderate, with primaries somewhat produced at apex and roundedly oblique outer margin.

The venation of the group in general, and of this genus in particular is shown, Pl. VII, fig. 46.

As above limited the genus embraces *Chloridea rhexia*, and those species placed by Lederer in the second section of the genus, excluding therefrom *Ononis* s. v. (*Mel. oregona* Hy. Edw.). Of the species referred to this genus in his "New Check List," Mr. Grote has since placed *lucens* with *Tamila*, with the type of which it has not the slightest affinity (Can. Ent. 14, 175). *Spinosea*, Gn., drops from the genus while *Oxylos citrinellus* is added. This latter insect does not fit into *Heliothis* as I have limited it and I have not included it. Of the others I do not know *lupatus*, which may or may not belong to the genus as above limited, but which Mr. Grote (*loc. cit.*) includes in the genus as he proposes to limit it. *Cupex*, Grt., which is also included, does not belong to this genus, the structure of the anterior tibia (Pl. VII, fig. 23) sufficiently separates it, while the vestiture instead of being hairy is composed of scales and flattened hair. The markings of primaries only ally it to the species properly in the genus (in my opinion) and the species was probably described as *Heliothis* merely because it looked like one, and without any examination of the structure.

As limited by me, and excluding *lupatus*, which I don't know, the species stand follows:

- Primaries with reniform scarcely discernible, orbicular obsolete, pale, with three distinct olivaceous oblique stripes..... **rhexia**
- Primaries with reniform more distinct, always readily discernible.
- Neuration of the ♂ aberrant, a pellucid spot in discal cell, and another between costa and vein 10. Costa strongly convex at middle. ♀ with pale luteous primaries, reniform rounded blackish, indeterminate, orbicular small, punctiform..... **paradoxus**
- Neuration of ♂ normal.
- Primaries luteous, usual spots indistinct, orbicular generally obsolete or faintly indicated, a more or less distinct submarginal, but no median transverse shade..... **armiger**
- Primaries with a distinct median transverse shade, reniform always distinct with distinct black spots on costa, usually confluent with reniform orbicular indistinct..... **dipsacousus**
- Primaries with ground color paler, reniform and orbicular unusually large sharply defined by a fine black line, median space pale, thorax whitish hair intermixed..... **scutosus**

H. rhexia, Sm. Abb. Insecta Ga. 2 p. 199, pl. 100 (*Phalæna*); Guen., Noct. p. 175 (*Apsila*); Grt., list. Buf. Bul. 2, p. 33 (*Chloridea*); *Spectanda* Strk., Lepid. p. 122 (*Heliothis*); Pl. VII, fig. 6. tibia, Pl. VIII, fig. 9, wing.

This species, I believe, is a true *Heliothis* in the sense that this term is used in this synopsis. The armature of the tibia is identical with that of the other species the neuration is the same, and in fact I can find nothing at all of generic value to separate it. Readily distinguished from all others of this genus by the markings which consist of three transverse pale olive shades on a paler ground. Expands 1½ inches, 37 millim.

Habitat.—Southern and Western States.

H. paradoxus, Grt., Proc. Ent. Soc. Phil. 4, p. 329, Pl. III, figs. 4 and 6 (*Heliochilus*), Pl. VIII, fig. 11.

In this species the male is aberrant so far as the neuration is concerned, the figure showing an enlarged view of the peculiarity. In the ♀ the neuration does not differ from *Heliothis*, except in the somewhat smaller size of the accessory cell, and the consequent greater approximation of the veins from or forming it. Color as in *Armiger*, ♀ sometimes with no markings except an indistinct rounded reniform and a small orbicular; more generally as in the ♂ and as shown in the figure. Expands 1.04 inch, 27 millim.

Habitat.—Iowa, Colorado, Florida, Alabama and Southern States.

H. armiger, Hb.—*Umbrosus*, Grt., Proc. Ent. Soc. Phil., 1, p. 219 (Pl. VIII, fig. 10).

Varies considerably in coloration. The European specimens seem usually more pale and have the markings more indistinct than in American examples. Occasionally specimens of a pale greenish yellow

color are found, and sometimes reddish specimens are met with. On Long Island I have taken a form with pale ground color, and distinct blackish markings tending to suffusion. I have never found a trace of a median band such as distinguishes the following species.

The larva of this species is known as the boll worm in the South and the corn worm in the North. It is $1\frac{1}{2}$ inches in length, varying in color from dark green to brown, striped with a darker shade of the ground color; dorsal stripe dark, with pale borders each side; subdorsal still darker, bordered by a pale stripe over *stigmata*. On each side are 8 shiny piliferous spots from which arise brown hairs. The four on the back of each segment are arranged in the form of a trapezoid, with the parallel sides transverse with the body, shortest side to the head. The two on each side are arranged about the stigmata, one above and a little anterior to the opening, and the other back and on a line with them. Head, legs and cervical shield brown. A few short hairs scattered over the body. (From Ills. Agr. Rept., vol. 15, p. 232.)

The moth expands $1\frac{1}{2}$ to $1\frac{3}{4}$ inches, 30-39 millim.

Habitat.—United States and Europe.

H. dipsaceus, Linn., Syst. p. 188, S. V. (*Noctua*); *phlogophagus*, Grt. & Rob., Trans. Am. Ent. Soc. 1, 187; *interjacens*, Gr., Bul. Bkln. Ent. Soc. 3, p. 30; var. *maritima*, Graslin; *luteitinctus*, Grt. Proc. Ac. Nat. Sci. Phil. 1875, 427 (Pl. VIII, fig. 12).

This species is common to Europe and America. I have carefully compared specimens from all sections with those of Europe and find no specific difference between them. *Interjacens* is a form with the markings rather more distinct than usual, but not entitled to rank with *maritima* (*luteitinctus*) as a variety. A varietal rank this last named form is entitled to hold; it has yellow secondaries, margined with black and with a black discal spot, and has the black markings of primaries much more distinct than in the type form. There is sometimes a complete black margin all round the primary, and a more decided variety it would be difficult to imagine.

The larva is described by Mr. Coquillet in *Papilio*, 1, 56: "Body naked, light green, a dark dorsal line, on each side of the body are two white lines, 16 legs, head green, length 30 millim. One specimen taken on grass assumed the chrysalis form July 14, producing the imago on the 5th of the following month." Guenée says: Caterpillar yellowish green, with brown red stripes; subdorsal concolours bordered inferiorly by a sinuous band of brownish violet; stigmatal concolours bordered inferiorly with brown; on each segment is a transverse reddish line; stig-

mata black; head pale yellow, the upper portion covered with black points (Guen. 2, 181).

Moth expands $1\frac{1}{4}$ and $1\frac{1}{2}$ inches, 29-34 millim.

Habitat.—Europe and America.

H. scutonus, S. V. Fabr. 84, W. V., W. H.: *Nuchalis*, Grt. (Pl. VIII, fig. 1-2).

Mr. Grote in his New Check List notes that these species are probably identical—in this he is correct. I have compared examples from both continents and find them identical; any difference there may be between extremes from each hemisphere is readily filled by selection from abundant material from each section. The markings are different from any of the other species, and are better shown in the figure than they could be described by me. Expands $1-1\frac{1}{4}$ inches, 26-32 millim.

Habitat.—Europe and America.

The larva feeds on *Artemisia compestris* and also on the flowers. A pale yellowish green with three blackish lines, one dorsal and the other on each side; entirely covered with fine black points and short lines; each point bearing a number of fine hairs; head brown red with black spots. Also varies somewhat in color. Spins a loose cocoon and transforms in the earth.

CHARICLEA, Kirby.

Eyes naked, globose; head not retracted sometimes with a tumescence projection; tongue strong; thorax stout, vestiture hairy, forming a small acute tuft behind collar; abdomen of the usual form, distinct dorsal tufts at base; primaries with somewhat produced apices; form much as in *Heliopsis*; tibiae not spinose; anterior sometimes with a claw at tip.

The species belonging to this genus Mr. Grote catalogues as *Pyrrhia*, using *Chariclea* for two species, *triangulifer* and *pernana*, which are not congeneric with *C. umbra*. I cannot agree with him in this use of the term, and prefer to use *Chariclea* as used by Lederer, regarding the species so referred by Mr. Grote as generically distinct, and, indeed, as scarcely belonging to the *Heliopsids*, the prominent inner angle of primaries in *pernana*, and, indeed, the entire appearance of the insect allying it much more nearly to *Plusia* than *Heliopsis*.

Of the three species described as *Pyrrhia*, I know only two; *stilla*, Grt., and *illiterata*, Grt., are unknown to me. *Illiterata* by-the-by has disappeared from the list, and the why and wherefore thereof I have not as yet ascertained.* That leaves of the species catalogued by Mr. Grote, *Exprimens*, Wlk., and *Angulata*, Grt., both of these are varieties of one and the same species, viz.:

* Since the above was written I find that the species has been referred to as a synonym of *Orthosia aurantiago*, Gn.

C. umbra. Hufn., *exprimens*, Wlk. C. B. M.; Noct. 687 (*Heliothis*); *angulata*, Grt., Trans. Am. Ent. Soc., Sept., 1874 (Pl. VIII, figs. 14 and 15).

The species is of a bright red brown color, with darker brown lines arranged as shown in the figures fig. 14, showing the *umbra* form and fig. 15 the extreme angulated form; between the two there are any number of inter-grades, and there is no doubt whatever in my mind of the specific identity of the species. I have carefully compared both forms with European specimens of *umbra* and have no doubt of their specific identity, though there is a slight difference in the course of the lines between the two.

The larva of the *angulata* form has been described by Mr. Coquillet in *Papilio* 1, p. 8, as follows: "Body bluish white; a yellowish brown stigmatal stripe; from the stigmatal stripe on one side of the body to that on the other side are about 10 black lines; sometimes a dorsal row of about 7 yellowish brown spots; piliferous spots black; venter pale greenish; head shining yellow, with a black spot on each side near the jaws, the jaws sometimes black; length 1½ inches. Several specimens found upon smartweed (*Polygonum Pennsylvanicum*) September 15; they entered the earth about three inches and formed oval cells September 27, disclosing the imagoes May 22, and a few days afterwards."

Expands 1½ inches, 36–42 millim.

Habitat.—America and Europe.

ALARIA, Westw.

Eyes naked, globose, or very slightly narrowed; front full; head moderate; palpi exceeding front; tongue strong; body stout, strong; vestiture hairy; abdomen of the usual *Heliothis* form; wings moderate; primaries with obtuse apex and rounded outer margin; tibiæ spinose; anterior somewhat abbreviated, armed at tip with long inner claw-like spines, and a series of shorter stout spines at outer side.

Differs from *Heliothis* in nothing but the armature of the anterior tibia—a very unsatisfactory distinction. I retain it as distinct because I have given this character a generic value throughout the group, and because the very marked superficial appearance will readily separate it from *Heliothis*. The three species I place here were referred by Mr. Grote to three distinct genera: *florida* went to *Rhodophora*, *guaræ* remained *Ataria*, while for *citrinellus* an especial genus was created which was termed *Oxylos*. Mr. Grote seems never to have suspected the close relationship existing between these species and *Heliothis*, and he places a number of entirely different forms between the two. In *Can. Ent. vol. 14*, p. 172, he refers *Oxylos citrinellus* to *Heliothis*, but seems not

to have suspected the possible identity of *Alaria* with it, although structurally it even more closely resembles it.

The species are readily separable as follows :

Anterior tibia with a single long inner spine.

Primaries bright red, with yellow outer margin..... ~~Florida~~

Primaries whitish, with base, a longitudinal median shade, margin and an oblique shade from apex toward internal margin red..... ~~gaurae~~

Anterior tibia with two long inner claws.

Primaries pale yellow..... ~~citronellus~~

A. florida, Guen., Noct. 2, 171. pl. 2, fig. 7 (*Rhodophora*), (Pl. VII, fig. 7, tibia, Pl. VIII, fig. 16, wing.).

Strongly marked and readily recognized by the beautiful red primaries shaded outwardly with pale yellow. The larva of this species is described by me in Bul. Bkln. Ent. Soc. vol. 4, page 28. It feeds on the buds and seed capsules of the evening primrose, and is of the same delicate green color as they are; of a velvety appearance and clothed with short dense pubescence; its habit is to lie horizontally along the bud or seed capsule, and boring a hole near the tip to feed downward into it, gradually disappearing from view; this habit, unknown to the collectors in general, explains why the larva is not often found, though its food-plant is well known. It becomes full grown in August and September, transforms to a pupa about six inches below the ground, and the imago emerges the following July, when it is often found early in the morning in the closed flowers of the evening primrose.

Expands 1½ inches, 30–36 millim.

Common in New York, and I have received it from Utah.

A. gaurae, Sm., Abb. Ins. Ga. 2, p. 197, pl. 99 (*Phalaena*), *Porphyria matutina*, Hb. (Pl. VII, fig. 8, tibia, and Pl. VIII, fig. 17, primary).

Nearly allied to the preceding in the bright colors, but readily separable by the form of marking, as shown in the figure, as well as by the armature of the anterior tibia. It seems to vary somewhat in the extent of the red markings and in the clearness of the white ground color. Expands as before.

Habitat.—Florida and Southern States.

A. citronellus, G. & R., Trans. Am. Ent. Soc. 3, 180, pl. 2, fig. 79 (*Heliothis*); *Orylos*, Grt., Check List, 1875, note 25. *Heliothis*, Can. Ent. 14, 172 (Pl. VII, fig. 9, tibia).

Differs from the preceding by the armature of the tibia, as well as by the uniform pale yellow of primaries. The figure of the tibia shows a side view and is somewhat distorted. Expands 1½ inches, 30 millim.

Habitat.—Texas and Colorado.

SCHINIA, Hb.

Eyes naked, globose; front full, bulging; "infra clypeal plate" sometimes slightly projecting; palpi short, as usual, fringed beneath, but not as in *Melicleptria* or allies, more as in *Heliothis*; tongue strong; body stout, clothed with long hair, intermixed with scales and flattened hair; the hair usually overlaying the scales, so that at a cursory examination the vestiture appears hairy; abdomen conic, untufted; wings moderate; primaries with somewhat produced or rectangular apices; tibiæ spinose; anterior abbreviated, flattened, and broad at tip, and armed with one or more long inner, and a series of from two to four outer claws.

This genus is based on *trifascia*, Hb., from which the main points of the foregoing description were taken. Congeneric with this are *Euleucyptera*, *Tamila*, *Tricopsis*, and *Lygranthoecia* (in part).

Mr. Grote in Can. Ent. vol. 14, p. 76, makes the remarkable statement that the anterior tibia of *S. trifascia* appear to him unarmed, and in accordance with that view he described as *Schinia* his species *buxea*, which has broader wings, entirely unarmed elongate fore tibia, the others being non-spinose and close scaly vestiture. It is most assuredly no *Schinia*, has not the slightest affinity to it, and is not even a *Heliothis*. Mr. Grote evidently did not take the trouble to examine his insect carefully. On a par is his description of *Meadii* and *vanella* as *Tamila*. *Tamila* is based on *nundina*, and that species is congeneric with *Schinia 3 fascia*. The genus is therefore a synonym of *Schinia*, and it cannot be used for the other species of the genus which are not congeneric with it. *T. Meadii* is congeneric with *Heliothis lucens*, Morr., and I have created a new genus for these species. *T. vanella* has narrow ovate eyes, and an armature which would make it a *Melicleptria* were it not for its scaly vestiture. It certainly is not congeneric with *nundina*, and I have made it the type of a distinct genus, associating it with *Melicleptria*, *perminuta*, Hy. Edw., and *Lygranthoecia scissa*, Grt., with which it is undoubtedly congeneric.

Tricopsis chrysellus has a small clypeal projection which varies in size in the specimens, and is not present in *aleucis* its near ally. It does not indicate generic distinction, for the same peculiarity is sometimes present in *Heliothis scutosus*.

The slight difference in the tibial armature of *Euleucyptera* does not authorize that genus, and it also drops in as a synonym of *Schinia*. *Lygranthoecia marginata*, the type of the genus in which it is placed is also a *Schinia* in structure though not in markings. It is too closely

allied however to be separated, and with this reference of its type *Lycranthoecia* also swells the list of synonyms of this genus.

The armature of the anterior tibia in all the species I place in this genus consists of claws, ranged very nearly in the same manner, but with some few differences in the groups, and in fact between each species; there is also a slight difference in the form of primaries, but so gradually running into each other that not even subdivisions of the genus could be based on them; the venation seems not to vary from *Heliothis* to any appreciable extent.

I separate the species as follows:

Infra clypeal plate produced.

Primaries silvery white, with base, outer margin and a narrow median band clay yellow.....**Chrysellus.**

Primaries as before, without the median clay yellow band, and much wider marginal band.....**Hulstia.**

Clypeus entirely unmodified.

Primaries silvery white with clay yellow base outer margin and wide median band.....**Aleucis.**

Primaries silvery, with base and outer margin pale olive.....**Cumatilis.**

♀. Anterior tibia with a strong inner and three shorter outer claws.

Primaries brownish yellow, sometimes tending to olivaceous, with three whitish, almost parallel, oblique lines.....**Trifascia.**

Primaries more luteous, white lines narrower, more curved, and not parallel,
Gracilentia.

Primaries whitish, with a subbasal, median and marginal reddish yellow band, in the latter a subterminal white line; reniform obsolete indicated,
Velaris.

Primaries whitish, with subbasal and median luteous shade, the latter crossed at outer third by a transverse white line; reniform distinct black.**Obliqua.**

Primaries smoky brown, with a paler median shade, bounded by white lines; a subterminal faint white line.....**Bifascia.**

Primaries white, with subbasal, median and subterminal olivaceous yellow shades, a distinct black punctiform orbicular, and a large, distinct black reniform.....**Nundina.**

Primaries yellowish white, with a subbasal and subterminal dark shade, bounded by white lines; the subterminal shade usually interrupted near costa by the angulations of the white lines; secondaries with dusky margin in which is an elongate white spot, and with a distinct dusky discal spot.....**Separata.**

Secondaries yellow, with black margin and black discal spot.....**Lynx.**

Secondaries smoky brown, or reddish; primaries of a "saturate" reddish brown, with median space bounded by narrow crenulated lines.....**Saturata.**

Secondaries black, with a yellow fascia almost divided by a large black discal spot.....**Sordidus.**

♀♀. Anterior tibia with a single inner, and, at least, four shorter outer claws or strong spines.

Secondaries white or whitish.

Form comparatively slight, wings large.

- Secondaries with an indistinct smoky border, discal spot obsolete indicated; primaries luteous, mottled with black; a pale median shade, and distinct reniform.....**Tertia.**
- Secondaries with distinct black border and black discal spot; primaries as before, but median white space wider and without discal spot,
Alba fascia.
- Form more robust, wings comparatively smaller.
- Primaries red, with yellowish median and marginal shade.....**Regia.**
- Primaries red, with yellowish median shade, and some white scales on veins in terminal red portion.....**Sanguinea.**
- Secondaries with wide black margin and distinct discal spot; primaries smoky gray, with dusky basal and subterminal shade; reniform and orbicular strongly marked.....**Cupes.**
- Secondaries yellow.
- Secondaries with a black outer margin in which is a yellow spot, and a large black discal spot.....**Jaguarina.**
- Secondaries with basal half yellow, outer half black.....**Spraguei.**
- Secondaries entirely black.....**Arcifera.**
- Anterior tibia with a single inner and single outer claw or strong spine.
- Secondaries black, with a central pale space in which is a large black spot,
Spinosa.
- Secondaries pale reddish brown, rather more yellowish outwardly...**Lupatus.**
- Anterior tibia with two equal inner claws.
- Five strong outer claws; body entirely luteous; wings with paler median space,
Packardii.
- Primaries without markings luteous.....**Mortua.**
- Primaries as in *Packardii*, but less distinctly marked.....**Nobilis.**
- Four equally long and strong outer claws; body and wings pearl gray; primaries with a slightly paler median space, bounded by very narrow crenulated white lines.....**Thoreani.**
- As before, but third outer claw is shorter than the others; the color on the primaries is more strongly contrasted with lines wider and not crenulate,
Rivulosa.
- Anterior tibia with three outer claws only.
- Primaries dark smoky brown, with paler outer margin and a triangular paler spot on middle of costa and of inner margin, bounded outwardly by white lines and approaching but not meeting in the centre of the wing,
Constricta.
- Primaries deep yellowish brown, with paler yellowish median and terminal shades.....**Brevis.**
- Primaries dark luteous, with pale median shade and a strongly angulated terminal pale line.....**Errans.**
- Primaries very pale yellow, with darker basal and subterminal shade,
Inclara.
- Primaries with rich deep crimson base and subterminal shade, paler roseate median space and olivaceous terminal shade.....**Meskeana.**
- Primaries with dark yellowish brown base and subterminal shade, paler median space, and pale yellow terminal shade.....**Ultima.**

S. chrysellus, Grt., Buf. Bul. 2, p. 76 (*Tricopsis*), Pl. VII, fig. 10, tibia, and Pl. VIII, fig. 18, wing.

A very pretty and strongly marked species, easily distinguished by the somewhat projecting inferior clypeal plate and the bright silvery primaries, crossed by a narrow yellow band at middle. Expands 1 inch, 26 millim.

Habitat.—Texas.

S. Hulstia, Tepper, sp. nov. (Pl. VIII, fig. 19).

Closely allied to the foregoing in structure, but readily separable therefrom by the narrower silvery median shade not crossed by any band, and by the wide luteous outer margin. Expanse as before.

1 ♀ Texas (?). Type, coll. Tepper.

Named by Mr. Tepper, at my request, for Rev. Geo. D. Hulst of Brooklyn, a good entomologist and a well known authority on the *Cosmopolinae*.

S. aleucis, Harv., Buf. Bul. 3, pl. 2, fig. 5 (*Tricopsis*) (Pl. VIII, fig. 20).

The tibial armature is like that of the foregoing species, but it lacks the clypeal projection. In ornamentation it closely resembles *Chryselelus*, but is readily separated by the wider dark and narrow silver shades. Expanse as before.

Habitat.—Texas (?).

S. cumatilis, Grt., Proc. Ent. Soc. Phil. 4, 330, pl. 2, fig. 6 (*Euleucyptis*); *submula*, Strk. (Pl. VII, fig. 11, tibia, Pl. VIII, fig. 21, wing).

The tibial armature of this species differs somewhat from all the others of this genus, but only in the size of the claws, otherwise it is identical, and the difference certainly is not generic. The figure shows the same all excavation on the inner side of the fore tibia of all Noctuidæ, the lappet covering the same being raised.

The species is readily recognized by the silvery median shade, and greenish base and outer margin. I consider it the prettiest of our *Heliothids*. Expands 1½ inches, 28–30 millim.

Habitat.—Colorado.

S. trifascia, Hb., Zutr. 1, 11, fig. 33, 34 (Pl. VII, fig. 12, tibia, Pl. VIII, fig. 22, primary).

The type of the genus; dark yellowish brown with a greenish tinge, crossed by three pale lines as shown in the figure. Very generally found in the Eastern States, but never very common. Expands 1½ inches, 28–32 millim.

S. gracilentia, Hb., Zutr. 1, 8, figs. 5 and 6; *oleagina*, Morr., Proc. Ac. Nat. Sci. Phil. 1875, p. 67; *imperspicua*, Strk., Lep. 122 (*Heliothis*). Pl. VII, figs. 13 and 13a, tibia and tarsal claw, and Pl. VIII, fig. 23, wing.

Distinguished from the foregoing by the want of the greenish lustre of primaries, and the narrower sinuate white lines.

Habitat.—Texas.

S. velaris, Grt., (*Tamila*) Pl. VII, fig. 14, tibia, Pl. VIII, fig. 24, wing.

The markings of the wing are well enough shown in the figure; the ground color is white, the markings are dark yellow with a rufous tinge. Expands 1 inch, 25 millim.

Habitat.—California.

S. obliqua, sp. nov. (Pl. VII, fig. 15, tibia, Pl. VIII, fig. 25, wing).

Distinguished from the preceding by the olivaceous tinge in the primaries and the distinctly marked reniform. Expands 1 inch, 25–28 millim.

Habitat.—Arizona. 2 ♂.

To the kindness of Mr. Neumoegen I owe my type. A better preserved specimen is in his collection.

S. bifascia, Hb., Zutr. 1, 14, figs. 55, 56 (Pl. VIII, fig. 26).

The tibia are as in the preceding species. It is distinguished from all others in this § by its smaller size, much darker ground color, and the decidedly sinuate narrow white line. Expands $\frac{3}{4}$ inch, 20 millim.

Habitat.—Arizona.

S. mundina, Dru. 1, 36 (*Noctua*), pl. fig. 5, *nigrirena*, Haw., p. 266 (*Noctua*), Guen., Noct. 2, 176 (*Tamila*); Pl. VII, fig. 16, tibia, Pl. VIII, fig. 27, wing.

A very handsome species, readily recognized by the bright color, and the large black, decidedly constricted reniform. The orbicular is a distinct round spot.

This species is the type of *Tamila*, and is very closely allied in all structural points with *Shinia*, *3 fascia*, as a comparison between perfect examples of both will show. Expands 1 inch, 24–28 millim.

Habitat.—New York (L. I.).

S. separata, Grt., (*Lygranthoecia*) *Balba*, Grt., Papilio 1, 156 (*Lygranthoecia*) *acutilinea*, Grt., Can. Ent. X. 232, and Ill. Essay, Pl. III, fig. 34, (*Lygranthoecia*) *Walsinghami*, Hy. Edw., Papilio 1, 20 (Pl. VII, fig. 17, tibia, Pl. VIII, fig. 28, primary).

Rather a variable species, as appears from the synonymy, but there is not the slightest doubt but that they are all color variations of one and the same species. The armature of the anterior tibia is identical in all, and is as shown in the figure. Of *separata* I had specimens so named by Mr. Grote, and from the same lot from which came his type. Of *balba* I have a specimen from Mr. Neumoegen's collection, and I have also examined the type of that species. Of *Walsinghami* I had Mr. Edwards' type; a specimen I received from Utah Territory agrees in every respect with the figure of *acutilinea* in the "Ill. Essay." I am, therefore, in a position to give as intelligent an opinion as a close comparison of types can ever make possible. The figure is from my Utah

specimen and from a specimen in Mr. Tepper's collection, holding the middle between *acutilinea* and *separata*. *Balba* and *Walsinghami* are exceedingly close together, and vary in the pale dull color of the former, and the more reddish yellow of the latter from the type. There is a decided variation in the course of the subterminal white lines, and, in fact, in all the lines, but in the large series before me I can pick out all the species and intergrades between them. I can find *separata* colored like *Walsinghami*, and *acutilinea* colored in the same way. I notice also that all the variations seem local—*Walsingham* is from Oregon, *balba* is from Arizona, *separata* from Nevada, and *acutilinea* from Montana and Utah Territory. At best they are only indistinct varieties and scarcely entitled to be catalogued as such. Expands 1–1½ inches, 24–30 millim.

Habitat as above.

S. lynx. Guen., Noct. 2, 185, (*Anthoecia*) Grt., Proc. Ent. Soc. Phil. 2, 343, Pl. 6, fig. 6, et Buf. Bul. 2, 34 (*Melichiptria*); id. Check List, 1875 (*Lygranthoecia*); id. New Check List (*Anthoecia*); Pl. VII, fig. 18. tibia, Pl. VIII, fig. 29, wing.

Readily distinguished from all the others in this § by the yellow secondaries. The markings of the primaries are shown by the figure. A form in Mr. Graef's collection has the primaries saturate with reddish, but evidently belongs to this species. Expands ¾ inch, 20–22 millim.

Habitat.—Georgia and North Carolina.

S. saturata, Grt., Buf. Bul. 2, 74 (*Lygr.*); *rubiginosa*, Strk., Lep. 122 (*Heliothis*); Pl. VIII, fig. 27, wing.

Separated from all the preceding by the reddish color of primaries, scarcely contrasted median space bounded by narrow crenulate white lines, and by the uniform pale reddish secondaries. The *rubiginosa* form of Mr. Stecker differs from the *saturata* form by the paler, more uniform reddish color, but is undoubtedly the same as Mr. Grote's species. Expands 1 inch, 24 millim.

Habitat.—Kansas and Southern California.

S. sordidus, sp. nov.

Primaries pale chocolate brown, extreme base, narrow median shade and apical spot paler, more yellowish; median shade with a roseate tinge; the space is narrow, bounded inwardly by a distinct crenulated white line; outwardly by a like but more even white line, making a bold curve outwardly around the reniform, and from the middle of the wing running parallel with the interior line to inner margin; reniform distinct, but not sharply bounded; from the apical pale spot an indistinct sinuate yellowish subterminal line extends to the hind angle; secondaries black,

with a yellow fascia in which is a distinct black discal spot almost dividing the fascia; body concolorous, with primaries; beneath primaries black with a narrow median fascia, a small ovate spot at outer two-thirds and an elongate apical spot, yellow. Secondaries as above.

Like the rest of this group the anterior tibia have a long inner and three outer and shorter claws, much as in *trifascia*. Expands $\frac{1}{2}$ inch, 18 millim.

Habitat.—Selma, Alabama.

The species has the ovipositor of ♀ distinctly extruded. The apices of primaries are somewhat more produced than in the others in this group.

A single specimen in my collection, received from Prof. Riley after the plates were already completed and of which therefore no figures are given.

S. tertia, Grt., Proc. Ac. Nat. Sci. Phil. 1874, 212 (*Tamila*), Pl. VII, fig. 19, tibia, Pl. VIII, fig. 30, primary.

Begins a new § and readily distinguished from any of the preceding by the four outer claws of tibia; the markings are shown by the figure and are ochrous on a white ground; the reniform is distinct, the secondaries dirty white with a darker shade at outer margin. Expands 1-1 $\frac{1}{4}$ inches, 24-27 millim.

Habitat.—Texas.

S. alba*fascia*, sp. nov. (Pl. VII, fig. 20, tibia, Pl. VIII, fig. 31, wing).

Closely related to the foregoing, but obviously distinct by the black outer margin and large discal spot of secondaries, and by the broad white space of primaries, the want of the reniform which is only faintly indicated, and by the different armature of the fore tibia. It, as well as the preceding, differs from the subsequent species in the § by the slighter body and comparatively larger wings. There may be, and probably are, some structural characters which would separate these two species from the others in this genus, but I have not been able to find them, nor do I believe that they can be discovered except by denuding the specimens. Expands 1 inch. The type is a ♂ in my collection.

Habitat.—Utah.

S. Regia, Strk., Lep. 121 (*Heliothis*). Pl. VII, fig. 21, tibia, Pl. VIII, fig. 32, wing.

A very pretty species, differing from the others of the § by the roseate primaries, crossed by a pale median shade, and with pale outer margin. Expands 1 $\frac{1}{4}$ inch. 26-30 millim.

Habitat.—Kansas.

S. sanguinea, Gey., Zutr. 4, 9, fig. 613. 614 (*Oria*); Guen. 2, 167, p. 9. 5 (*Oria*); Grt. (*Porrina*) Pl. VII, fig. 22, tibia, Pl. VIII, fig. 33, wing.

Superficially this species resembles the preceding, but differs by the want of the outer pale margin, and by the white scales on the veins throughout the primaries. The difference between the tibial armature is apparent by a comparison of the figures and need not be specifically noted here. Expands $1\frac{1}{2}$ inch, 32 millim.

Habitat.—Southern States and California (Auc. Grote).

S. cupes, Grt., Buf. Bul. II, Pl. 3, fig. 4 (*Heliothis*); *Crotchii*, Hy. Edw. (*Heliothis*); Pl. VII, fig. 23, tibia, Pl. VIII, fig. 34, primary.

Obviously different from all others in the genus, but not sufficiently distinct to authorize generic separation. With *Heliothis* it has nothing in common except the pattern of markings, while the shaggy heavy vestiture and plump figure gives it a different appearance from any of the other species here placed. The figure of the tibia is distorted and gives a half side view, but the armature is all given. Expands 1 inch, 28 millim.

Habitat.—Washington Territory.

S. Jaguarina, Guen., Noct. 2, 184 (*Anthoecia*), Grt. Proc. Ent. Soc. Phil. 3, 528, et. Buf. Bul. 2, 126 (*Melicliptria*); Pl. VII, fig. 24, tibia, Pl. VIII, fig. 35, wing.

The largest and most robust of the species, readily separated from others of this § by the yellow secondaries margined with black, and a large spot of same color on disc. The markings of the primaries are smoky brown on a yellowish gray ground, arranged as in figure. Expands $1\frac{1}{2}$ inch, 32–36 millim.

Habitat.—Georgia, Nebraska and Colorado.

S. Spraguei, Grt., Proc. Ent. Soc. Phil. 2, 341, Pl. 6, figs. 4 and 5 (*Anthoecia*); Buf. Bul. 2, 34 (*Melicliptria*); List of 1875 (*Lygranthoecia*); Pl. VII, fig. 25, tibia; Pl. VIII, fig. 36, wing.

Separable from the foregoing by the darker color of primaries and by the yellow secondaries lacking the discal spot and having a much wider black margin. The body also is of a beautiful golden yellow. Expands $\frac{3}{4}$ – $\frac{1}{2}$ inch, 22–24 millim.

Habitat.—New York and Eastern States.

S. arcifera, Guen., Noc. 3, 399 (*Anthoecia*), *arcigera* l. c. p. 184, Grt., Proc. Ent. Soc. Phil. 2, 340, Pl. VI, fig. 3; Buf. Bul. 2, 34 (*Melicliptria*); Pl. VII, fig. 26, tibia, Pl. VIII, fig. 37, wing.

Readily separated from all the others of this section by the black body and secondaries. Primaries much as in the preceding, but darker throughout and with the median shade somewhat constricted. Expands as before.

Habitat.—Atlantic States.

S. spinosae, Guen., Noct. 2, 182, Pl. IX, fig. 10 (*Heliothis*); *Anthoecia Air-ella*, G. & R., Proc. Ent. Soc. Phil. 6, 19, Pl. III, fig. 3. Pl. VII, fig. 28, tibia, Pl. VIII, fig. 38, wing.

Decidedly different in the armature of anterior tibia from all others in his genus, and I refer it here with considerable hesitation. From *Heliothis* it differs in the vestiture and somewhat in the armature. The armature is more spine than claw like, and the eyes are somewhat narrowed—scarcely more so, however, than in *separata*—and as it has all the superficial characteristics of this genus I leave it here for the present. Expands $\frac{1}{2}$ inch, 20 millim.

Habitat.—New York.

S. lupatus, Grt. (*Heliothis*), Can. Ent. 7, 224.

This species I did not receive until the plates were completed, so I am unable to give figures of either tibia or wing. The anterior tibiae are abbreviated, broadened at tip, and have a long inner and shorter outer claw. It comes thus into the same section with *Spinosa*, and is certainly no *Heliothis*, the scaly vestiture alone sufficing to separate it. The insect does not at all resemble anything else in the group, but comes very near to the insect named *illiterata* by Mr. Grote, and which he now refers to *Orthosia aurantiago*, Guen. A specimen received from Prof. Riley is labelled *Pyrrhia illiterata* in Mr. Grote's handwriting, and was determined by Mr. Grote for Mr. Riley some years ago. As *Heliothis lupatus* I have a specimen from Mr. Neumoegen's collection also labelled by Mr. Grote—the two insects are unquestionably identical, and in one case certainly Mr. Grote has been in error. It is impossible for me to ascertain where the error is, for I have not seen the types of either of the species, but as Mr. Grote has written considerably of *Heliothis* lately, I assume that his latest determination is most likely to be correct.

Heliothis Illinoisensis, French, was also referred by Mr. Grote as a synonym of *Orthosia aurantiago*, after an examination of the type as Prof. French informs me. I accept this reference as correct. The species *lupatus* is reddish, somewhat as in *Chariclea umbra*, paler at basal half. There is no pale median shade. The usual lines are all distinct and black, the subterminal being strongly dentate; the orbicular is small but distinct, and the reniform is large and distinctly bounded. There is a diffuse blackish transverse shade just beyond the middle of the wing; thorax concolorous, with primaries; secondaries paler, the basal half rather more yellowish; an indistinct transverse dark line crosses the wing at basal third, and a narrower, more distinct line crosses it at outer third; abdomen yellowish; beneath paler than above; primaries with the orbicular and reniform distinctly marked, and a dark subterminal

shade; secondaries with transverse lines faintly reproduced. Expands $1\frac{1}{4}$ inches, 32 millim.

Habitat.—Texas.

S. Packardii, Grt., Proc. Ent. Soc. Phil. 3, 528, Pl. VI, fig. 2; Buf. Bul. 2, p. 34 (*Melicliptria*); New Check List (*Anthoecia*). Pl. VII, fig. 29, tibia.

The most heavily armed of the species, and readily recognized by that character alone. Superficially it resembles *Jaguarina*, and the secondaries are as in that species. In fact, on again comparing them there is little else than tibial armature to separate the two. This, however, is so marked that there can be no question as to the specific distinctness of the two. Expands 1 inch, 26 millim.

Habitat.—Texas.

S. mortuus, Grt., Proc. Ent. Soc. Phil. 3, 528, Pl. VI., fig. 1 (*Anthoecia*).

This species resembles the preceding in armature, but differs from it in the uniform pale yellow color of the wings, scarcely a trace of the usual markings being visible. I have seen the type at Philadelphia. Expands as before.

Habitat.—Texas.

S. nobilis, Grt., Proc. Ent. Soc. Ph. 3, 529, Pl. VI, fig. 3; *Packardii*, var. Grt., Buf. Bul. 2, 34 (*Melicliptria*); Lists (*Lygranthoecia*); New Check List (*Anthoecia*).

I have seen the type of this species in the Philadelphia collection; the tibia is as heavily armed as in *Packardii*, and it resembles that species in the form of marking, but is much paler and the markings are scarcely contrasted; the primaries are a pale clay yellow, the median and terminal spaces only slightly paler; reniform distinct; secondaries with a darker margin and distinct dark discal spot.

It was not until after the synopsis was in the hands of the printer that I saw the type, and therefrom found that I had heretofore been in error in the insect to which this name belonged. Expands as before.

Habitat.—Arizona (?).

S. Thoreauli, G. & R., Trans. Am. Ent. Soc. 3, 181, Pl. II, fig. 80 (*Anthoecia*); Buf. Bul. 2, p. (*Lygranthoecia*), Pl. VII, fig. 30, tibia, Pl. VIII, fig. 40, wing.

Also very strongly armed; easily distinguished by the uniform pale gray color, the slightly paler median space, separated by narrow, crenulated white lines. Expands $1\frac{1}{4}$ inch, 30 millim.

Habitat.—Texas.

S. rivnlosa, Guen., Noct. 2, 184, Pl. IX, fig. 12 (*Anthoecia*); *marginatus*, Haw., 374 (*Crambus*); *contracta*, Wlk., C. B. M., Noct. 836 (*Microphysa*); *divergens*, Wlk., id. 830 (*Antophila*); *designata*, Wlk., id. 830 (*Euclidia*); *Lygranthoecia*, Grt., lists; Pl. VII, fig. 31, tibia, Pl. VIII, fig. 41, wing.

Rather a formidable synonymy for a common insect, and it should indicate a considerable variation in the species. This, so far as I am aware of, does not exist, but on the contrary it seems remarkably constant. Much like the preceding superficially, but the colors are more contrasted, and the lines are wider and not crenulate. Expands 1 inch, 26 millim.

Habitat.—Middle States.

S. constricta, Hy. Edw., Papilio, 2, 128 (*Lygranthoecia*): Pl. VII, fig. 32, tibia, Pl. VIII, fig. 42, wing.

Entirely peculiar in its marking, which I leave to the figure to explain. It is closely related to the preceding, while easily separated from it. Expands 1 inch, 26 millim.

Habitat.—North Carolina.

S. Brevis, Grt., Proc. Am. Ent. Soc. 3, 530, Pl. VI, fig. 4; Buf. Bul. 2, 34 (*Melipotria*); var. *Atrites*, Grt., Buf. Bul. 1, 119, Pl. VII, fig. 33, tibia, Pl. VIII, fig. 43, wing.

Widely distinct from the species immediately preceding so far as superficial appearance is concerned, and readily distinguished by the proportionately small wings; the primaries of a deep brown, variegated with paler colors, as in figure; the secondaries usually black with a yellow band, which in the var. *Atrites* is wanting. Expands $\frac{3}{4}$ to $\frac{1}{2}$ inch, 20–23 millim.

Habitat.—Colorado.

S. errans, sp. nov. Pl. VII, fig. 34, tibia, Pl. VIII, fig. 44, wing.

This species is the one usually labelled *nobilis* in collections, and I have seen the species so labelled in Mr. Grote's handwriting. It bears some resemblance to the type of *nobilis* in the Philadelphia collection, but is evidently distinct by the armature of the anterior tibia. It is related to the preceding in form, but differs in color and markings; the latter are olivaceous on a luteous ground, arranged as shown in the figure. Expands $\frac{1}{2}$ inch, 24 millim.

Habitat.—Arizona.

S. inclara, Strk., Lep. 122 (*Heliothis*): Grt. New List (*Anthoecia*): Pl. VII, fig. 35, tibia, Pl. VIII, fig. 45, wing.

Resembles the preceding in form and color, but differs evidently in the pattern of the marking as shown in figure. Expands as before.

Habitat.—Texas.

S. Meskeana, Grt., Can. Ent. 7, 224; *fastidiosa*, Strk., Lep. 121 (*Heliothis*): Grt., Papilio, 1, 137 (*Lygranthoecia*); New List (*Anthoecia*); *rufimedia*, Grt., Bkln. Bul. 3, 31; Pl. VII, fig. 34, tibia, Pl. VIII, fig. 46, wing.

Of *rufimedia* I have the type from Mr. Hulst's collection; of *Meske-*

ana I have a specimen so labelled by Mr. Grote from Mr. Neumann's collection. The two are undoubtedly identical, though from the manner in which it is spread has a somewhat different appearance. The bright roseate shade renders this species readily recognizable. Expands $\frac{1}{2}$ inch, 17 millim.

Habitat.—Texas and Florida.

S. ultima, Strk., Lep. 122 (*Heliothis*); Grt. Papilio, 1, 157, *Lygranthoecis*; Pl. VII, fig. 36, tibia, Pl. VIII, fig. 47, wing.

Probably only a variety of *Menkeana*. The underside is identical, the style of markings above is the same, and the only difference is in the color of primaries. Lack of sufficient material prevents my making reference with certainty, and I will leave the insect here for the present as a good species.

DERRIMA, Wlk.

C. B. M., Noct. 770.

Eyes naked, rather small, rounded; head small, sunken, buried in the projecting vestiture of thorax; front globose, not projected; tongue moderate; thorax short, heavy, densely clothed with thick hairy vestiture; abdomen slender; wings broad and rather short, with round outer margin and angles; tibiæ not spinose; anterior not abbreviated, armed at tip with three terminal spines precisely as in *Melaporphyria immortua*.

Two species are described; one by Walker, which is unknown to me and the other by Mr. Grote, this is

D. Henrietta, Grt., Proc. Ent. Soc. Phil. 3, 3, Pl. II, fig. 1 (*Philemma*); Pl. VII, fig. 37, tibia, Pl. VIII, fig. 48, wing.

The species is readily recognized by the yellow color of primaries, margined outwardly with red, as shown in the figure; the spots are small, annulated; centre white, and arranged as in figure. Expands $\frac{1}{2}$ inch, 22 millim.

Habitat.—Southern States.

D. stellata, Wlk., C. B. M. Noct. 770; Grt., Trans. Am. Ent. Soc. 2, 119.

This species is unknown to me. Mr. Grote who saw it in England says *loc. cit. supra*. "It differs as follows: The fringes on both wings are long and pink; the ocellate spots on primaries are a little larger, pure white, narrowly margined with black scales, not with suffused ferruginous borders in which the lower spot is generally absorbed as in *Henrietta*. The pink terminal space of the same wings is shaded with yellow, and the ground color of both wings beneath is yellow, shaded pink on the borders. Finally the narrow line which defines the pink terminal space

inwardly appears to be straight, not scolloped and defined by white spots as in *Henrietta*."

From this it will be seen that the difference between the two species is slim, and the probabilities are that they are varieties of the same species.

MELAPORPHYRIA, Grt.

Eyes naked, narrow, ovate or reniform; head moderate, scarcely, if at all, retracted; palpi short, as usual fringed beneath; front full, in some specimens of *ononis* the inferior clypeal plate is very slightly produced; tongue strong; body moderate; vestiture hairy; thorax and abdomen untufted, the latter of the usual form; wings moderate, with somewhat produced apices; tibiae spinose, anterior with two or three spinules at extremity, not at all abbreviated.

To this genus I refer the European species *ononis*, of which *oregona*, Hy. Edw., is a synonym, *Melicliptria belladonna*, Hy. Edw., and *M. prorupta*, Grt. They all agree with *Heliothis* in structure except as to the eyes which here are reniform. It is not a compact genus, and the species do not much resemble each other in ornamentation, but the structural resemblances are so close that I do not see how it can be again subdivided, and from the genera into which the various species have been described, they differ in some respects which I consider of a generic value.

The species are separated as follows:

- Anterior tibia with three terminal spines; color of wings dark smoky brown primaries with three oblique pale lines, a lighter median shade, and a vinous outer margin..... **immortua.**
- Anterior tibia with two terminal spines; wings with a pale yellow median space, base and outer margin reddish brown on primaries; on secondaries darker, **prorupta.**
- Wings deep black; secondaries with white median band; primaries with white median space, in which are the large black reniform and orbicular, **belladonna.**
- Wings smoky, with paler median space; reniform and orbicular of primaries large; secondaries with large dark discal spot, and a pale lunule in the dark marginal band..... **ononis.**

M. immortalis, Grt., Buf. Bul. II, p. 75, Pl. VII, fig. 37, tibia, and Pl. VIII, fig. 49, wing.

The type of the genus, and differing from all the others in having the anterior tibiae armed at tip with three terminal spines. It is readily recognized by the dark color and fine whitish oblique lines of primaries. Expands $\frac{1}{4}$ inch, 24 millim.

Habitat.—Colorado (New York?).

M. prorupta, Grt., Trans. Am. Ent. Soc. 4, p. 294 (*Melicliptria*); ~~venusta~~. Hy. Edw., Pac. Coast Lep. No. 12, 10 (*Melicliptria*); Pl. VII, fig. 38, tibia. Pl. VIII, fig. 50, wing.

Stouter than the other species of this genus, and with two terminal spines on anterior tibia; the wings are very simply marked, and the species is readily recognizable. The form of marking is sufficiently shown in the figure, and the color is given in the table. In superficial appearance it is very close to *Melicliptria*, from which in fact it differs only by the longer anterior tibia, armed with spines instead of claws. This species as well as the following would be placed in *Heliothis* under Lederer's definition of that genus; they differ from *immortua* in having rather narrower wings. Expands 1½ inch, 26–28 millim.

Habitat.—California.

M. ononis, Fabr., 81, S. V. (*Noctua*); Led. Noct. Eur. (*Heliothis*); *oregona*. Hy. Edw., Proc. Cal. Ac. Nat. Sci., May, 1875 (*Melicliptria*); Pl. VIII, fig. 51.

This species is common to both Europe and America, though found here only in the Western States. I have carefully compared specimens from Colorado and Nevada with those from Europe, and there is no appreciable difference between them. It was placed in *Melicliptria* by Mr. Henry Edwards, and it is catalogued in Staudinger's list as *Heliothis*. I have placed it here as better located than in either of the others. I would fain have made this the type of the genus, and placed *immortua* as an aberrant representative with it, but this is now impossible. Expands 1 inch, 26–28 millim.

Habitat.—Colorado and Nevada.

The caterpillar is said to feed on *Ononis spinosea et arvensis*, and to prefer the flowers. It is cylindric, tapering toward the extremities, and is said to vary in color and maculation with every moult. It varies from dark green with yellow lines to rosy or crimson red, or even brown with more or less distinct paler longitudinal lines and always darker transverse lines; finely pubescent.

M. belladonna, Hy. Edw., Papilio 1, 20 (*Melicliptria*); Pl. VIII, fig. 52.

Undoubtedly congeneric with *ononis*. Unique in appearance, and readily recognized by the deep black color, contrasted with the white central spaces in both wings. The figure is from Mr. Edwards' type. Expands 1½ inches, 28–30 millim.

Habitat.—Southern Utah.

PSEUDOTAMILA, Gen. nov.

Eyes naked, ovate, small; head retracted, small; clypeus prominent, bulging; tongue moderate; palpi exceeding front and nearly reaching to vertex, slender, as usual fringed beneath; thorax stout, convex; ves-

titure somewhat divergent, and consisting of flattened hair and scales; primaries rather short and broad with somewhat produced apices; tibiae spinose; anterior but little abbreviated, with a moderate, pointed claw at inner and one or two small claws at outer side of tip; abdomen conic, of the usual *Heliothid* form.

This genus is based on a species of *Tamila* and one of *Melicliptria*; from the former it differs by the reniform eyes and armature of fore tibia, from the latter by the scaly vestiture.

The species are as follows:

- Secondaries black, with an entire white band near base; primaries with a whitish median space; reniform pale, indistinct.....**vanella.**
- Secondaries black, with an interrupted white band beyond the middle, a narrow white median space on primaries, divided by the distinct dark reniform, **perminuta.**

P. vanella, Grt. Can. Ent. 2, 197 (*Tamila*); Pl. VII, fig. 39, tibia, and Pl. V I II, fig. 53, wing.

Markings sufficiently shown in figure; the tibia is very like that of *Melicliptria*, but the palpi are different, and the vestiture will readily separate the two. With *Tamila nundina*, the type of that genus, this species has nothing in common. Expands $\frac{3}{4}$ inch, 20 millim.

Habitat.—Nevada and California.

H. perminuta, Hy. Edw., Papilio 1, 21 (*Melicliptria*); Pl. VII, fig. 40, tibia, and Pl. VIII, fig. 54, wing.

The armature of the anterior tibia differs from that of the foregoing species, by having a supplemental small claw at outer side; the median band of primaries is not so distinct; the markings differ as shown in figure, and the size is perceptibly smaller. Expands $\frac{3}{4}$ inch, 17 millim.

Habitat.—Southern California.

HELIOSEA, Grt.

Buf. Bul. 2, 220.

Like *Heliophana*, but with the fore wings more widened outwardly, and by the inner claw of the fore tibia being single.

The species is *pictipennis*, Grt., Buf. Bul. 2, 220; Illustrated Essay, Pl. III, fig. 32. The species is unknown to me except from the figure and description which is as follows: "Fore wings pale clay color with two vinous purple lines, the inner arcuate, the outer subsinuate; basal and terminal spaces somewhat olivaceous, as is the thorax and head; costa shaded with vinous purple as are the fringes; hind wings black, with a broad white band; abdomen black, pale at tip; beneath pale, with blackish shades at the base and before internal angles of the wings. Expanse 14 millim."

Habitat.—California.

It is impossible to refer this with any degree of certainty, so I leave matters as they are until some accident turns up another specimen.

HELIOPHANA, Grt.

Buf. Bul. II, 220.

Eyes naked, small, ovate; front full, head small; palpi short. Tonsils moderate; body stout; vestiture hairy, divergent; abdomen conical. Primaries broad and rather short; apical margin slightly produced. Anterior tibiae spinose; anterior short, broad, with two equal terminal claws, and two shorter claws on outer side. Differs from *Melicliptria* only in the stouter body, rather broader wings, and the form of anterior tibia and its armature. It is with some hesitation that I separate it, but it is readily recognized, and does not conflict with that genus as defined.

The species are distinguished as follows:

Primaries wide, clay yellow, with slightly darker transverse shades; secondaries smoky brown..... *mitis*.
 Primaries vinous red; secondaries black..... *bins*.

H. mitis, Grt., Buf. Bul. I, 116, Pl. III, fig. 7 (*Melicliptria*); Buf. Bul. II, p. 220 (*Heliophana*).

The type of the genus and readily recognized by the form of anterior tibia, Pl. VII, fig. 41, and the pale, almost unicolorous primaries. Expands $\frac{1}{2}$ inch, 20 millim.

Habitat.—Texas.

H. bins, Guen., Noct. 2, 186; Grt. Buf. Bul. II, p. 34 (*Melicliptria*); New Check List (*Lygranthoecia*).

I am doubtful of the correctness of this reference. The only specimen I have seen lacks the anterior legs, so that I am not quite sure it belongs here; it was, however, placed in *Lygranthoecia* by Mr. Grote, so I assume the anterior tibia bear at least some resemblance to that genus, from which this insect differs by the ovate eyes and hairy vestiture. Readily recognized by the contrasted wings, the primaries being uniform vinous red, the secondaries are black. Expands $\frac{1}{2}$ inch, 20 millim.

Habitat.—Nebraska.

(Guenée's description is as follows:

Anthoecia bins, Guen., Noct. 2, 186, 23 millim; primaries above variegated with red, brown and yellowish olive, the last color is found principally in the terminal space, the first at base and middle; two white points on costa indicate principally in the ♀ the median lines which are very indistinct; secondaries black, base yellow and two spots of same color on disc. and fringes yellow; beneath varied with black, pale yellow and red brown; the subterminal band of secondaries is entire.

The ♀ is darker and more reddish than the ♂. Am. Sept. coll. Bdv.

XANTHOTHRIX, Hy. Edw.

Cal. Ac. Sci., July, 1878.

Eyes naked, slightly constricted. small; head small, retracted, clothed with thin divergent vestiture; palpi very short, not exceeding front; heavily and lengthily fringed beneath; terminal joint sub-obsolete; tongue moderate; clypeus with naked, irregular cup-like depression, at the lower portion of which is a tubercle-like projection varying in length; thorax stout, convex, with fine hairy vestiture; legs moderate, clothed with fine hair, rather more lengthily in the ♂; tibiae not spinose, anterior armed with a single claw at tip; wings proportionate; primaries with costal margin somewhat depressed apices slightly produced; more perceptibly in *Neumoegeni*; there are no peculiarities of venation so far as I can discover from my limited material; ♀ ovipositor extruded.

This genus is closely allied to *Heliodex*, differing only in the form of the clypeal modification, by the presence of a claw on the anterior tibia and the somewhat more produced apex of primaries.

Mr. Edwards doubted the generic identity of his two species. I followed suit in my synopsis, and Mr. Grote in his "New Check List," p. 37, in note, separates *Neumoegeni*, creating therefor the genus *Euedwardsia*, basing it on the difference in form of the clypeal projection and the more produced apex of primaries. Careful re-examination of the species leads me to believe that they must be retained in the same genus for the present.

The two species can be readily distinguished as follows:

- Protuberance of clypeus not exceeding front; primaries pale olivaceous; secondaries smoky black, with few olivaceous scales.....**ranunculi.**
- Protuberance exceeding front; wings tawny yellow; primaries with three very indistinct darker streaks; secondaries with a discal reniform black spot and a narrow dusky outer margin.....**Neumoegeni.**

X. ranunculi, Hy. Edw., Cal. Ac. Nat. Sci., July 1, 1878.

Expands $\frac{1}{2}$ inch, 21 millim.

Habitat.—Southern California.

X. Neumoegeni, Hy. Edw., Papilio I, p. 101.

Expands $\frac{1}{2}$ inch nearly, 16 millim. *Habitat.*—California.

No figures are given of either of the species as they are unicolorated and the tibia has only a single terminal claw.

HELIOLONCHE, Grt.

Buf. Bul. I, p. 115: Id. II, p. 220.

Eyes naked, small and constricted; head small, retracted; clypeus with a flattened shelf-like projection inferiorly; palpi slightly exceeding the projection; lengthily fringed beneath; tongue strong; vestiture of

head long and fine; thorax convex, clothed with fine silken hair; abdomen more or less conic, with tufts of fine divergent hair at sides; ♀ ovipositor extruded; tibiae spinose; anterior abbreviated, with a long inner and short outer claw (Pl. VII, fig. 42); primaries with depressed costal margin and produced apices. Separated from *Melicliptria* only by the clypeal projection.

Mr. Grote's original description of the genus in Buf. Bul. I, p. 115, is all wrong. He says the tibiae are not spinose, and is explicit in stating that there is no clypeal projection—the exact opposite is the fact. The wings (primaries) are said to differ from *Melicliptria*, being narrower and more lanceolate, in fact they agree precisely with *Heliothis cardui*, which Mr. Grote says is the type of the genus.

In Buf. Bul. II, p. 320, this description is so far corrected as to mention that the tibiae are spinose.

H. modicella, Grt., Buf. Bul. I, p. 116, Pl. III, fig. 12, Pl. VIII, fig. 55, is the only species and is readily recognized by the purplish primaries, having an oblique pale yellow fascia from near apex nearly to the internal angle.

Expands $\frac{1}{2}$ inch, nearly, 16 millim.

Habitat.—California.

AXENUS, Grt.

Buf. Bul. I, 152.

Eyes naked, minute, reniform; head small, retracted; clypeus with a broad thin plate inferiorly, which is not exceeded by the short palpi; form stout; vestiture hairy, somewhat divergent; primaries ample; tibiae not spinose.

Related to *Helionche* by the clypeal structure, and to *Heliaca* by the form. The species is

A. arvalis, Grt., Buf. Bul. I, 152, Pl. IV, fig. 8, ♂.

The species is readily distinguished by the structural characters, by the dark "olivaceous" blackish color and paler powdery transverse lines over both wings, and by the long paler fringes. Expanse 16–20 millim.

Two varieties, *ochraceus* and *amplus*, Hy. Edw., have been recently described. I know neither.

Habitat.—California

I have referred this genus and species to the *Heliothids* rather than to the "*Eustrotinae*" on account of the clypeal structure, reniform eyes, and divergent hairy vestiture.

Annaphila, Grt., also has ovate or reniform eyes, and has much of the

appearance of *Helioea*, differing however by the vestiture which in *Adonaphila* is scaly.

MELICLEPTRIA, Hb.

Eyes naked, small, ovate; head small, retracted, buried in the hairy vestiture of the thorax; palpi very short, slight, heavily fringed beneath; front full, but not bulging; body stout, proportionately heavy, clothed with thin divergent hair, usually of a paler color than body and somewhat silky; primaries with more or less depressed costa and produced apex; tibiae spinose; anterior abbreviated, broadened at tip, with usually a moderate claw at inner, and a shorter claw at outer side of tip; sometimes also one or more additional claws at outer side; claws of tarsi simple or but slightly dentate; abdomen conic, untufted, with ovipositor of ♀ extruded.

The type of this genus *cardui*, and its near ally *cognatu*, of Europe are placed by Lederer in *Heliothis*, and so also Staudinger in his list catalogues them. They seem to me to be decidedly distinct from that genus by the ovate eyes, retracted head, thin silky vestiture, abbreviated and differently armed anterior tibiae, and by the much smaller primaries, with the apex more produced and costa more depressed than in *Heliothis*.

Of the species placed by Lederer in his second group with ovipositor of ♀ not extruded is *ononis*, of which *Melicleptria oregona*, Hy. Edw., is a synonym. This differs from all the others in that section known to me by the ovate eyes. It cannot be placed in the present genus, because the anterior tibia is not abbreviated and is entirely unarmed at tip, not even having terminal spines. It seems to find a place most properly between the two without belonging strictly to either, and I have therefore placed it in a preceding genus, where its affinities and those of its congeners are more fully discussed.

The species placed in the present genus fall into two rather well-marked divisions by the form of the primaries. Some having them narrow and small as in *cardui*, while others have them broader and more ample, resembling the following genus or *Heliothis*. The armature of *suetus* also of which I have examined the type, differs from that of *cardui* (Pl. VII, fig. 43), but the remaining characters are the same, and this difference in armature authorizes a section of the genus only.

Adonisea, Grt., is a synonym of this genus. Careful examination fails to reveal any generic difference whatever, and the somewhat wider wings only separate it from *cardui* and allies, but bring it nearer to other species in the genus. The armature of the anterior tibia is practically

identical with *cardui* (Pl. VII, figs. 42, 43), and absolutely so with *Heliolonche*, which in turn differs from *cardui* only by the clypeal projection. The genera here are separated by slight characters, readily recognizable however, and so arranged that any one differing from my views as to their value may range them under one genus if he so please.

As restricted by me, the species of the genus may be distinguished as follows:

Armature of anterior tibia consisting of a long claw at inner and a shorter at outer side of tip.

Secondaries unicolor, immaculate deep orange red.....*celeris*.

Secondaries black, with a large yellow spot; primaries purplish red with a pale yellow median shade, more or less irrorate, with bluish scales,

pulchripennis.

Secondaries yellow, with black margins and large black discal spot; primaries much as before, but with a pale leaden gray outer margin.....*Graefiana*.

Secondaries black, with two or three small pale yellow spots; wings beneath with contrasted black and whitish markings.....*villosa*.

Secondaries black, with an irregular whitish band and a whitish lunule in outer margin; primaries black, irregularly varied with pale yellow.....*honesta*.

Anterior tibia with a long inner and three shorter outer claws.....*metata*.

M. *celeris*, Grt., Buf. Bul. I, p. 148 (*Melicliptria*); New Check List (*Euros*): Pl. VIII, fig. 56.

A strongly marked species readily distinguished by the red primaries. Referred to *Euros* in the Check List, but restored to *Melicliptria* in Can. Ent. XIV, p. . Expands $\frac{3}{4}$ inch. 22 millim.

Habitat.—Southern California.

M. *pulchripennis*, Grt., Proc. Bost. Soc. Nat. His. 16, p. 241; Buf. Bul. II, p. 241 (*Adonisea*); var. *languida*, Hy. Edw., Papilio 1, 20; Pl. VIII, fig. 57.

A very pretty and decidedly marked species. The tibia is shown Pl. VII, fig. 42, and differs from the type form in being heavier and blunt. The markings of primaries are shown in figure. The variety *languida* is much more irrorate with blue and the color is more dull. Expands $\frac{3}{4}$ inch. 22 millim.

Habitat.—Southern California.

M. *villosa*, Grt., Proc. Ent. Soc. Phil. p. 531, Pl. VI, fig. 6; *pauzilla*, Grt., Buf. Bul. I, p. 118, Pl. III, fig. 6; *persimilis*, Grt., Buf. Bul. I, p. 117, Pl. III, fig. 11; Pl. VIII, fig. 58.

Rather a variable species as appears from the synonymy. *Pauzilla*, of which I have the type, was referred by Mr. Grote himself to *villosa*. The type of *persimilis*, also in my possession, differs in the more contrasted color of primaries, and the larger and paler spots on secondaries. The type of *persimilis* is a ♀, of *pauzilla* a ♂. The latter differs in the paler ground color of primaries, but is undoubtedly identical with

willura. The under side of both are identical. Expands $\frac{1}{2}$ to 1 inch, 20-26 millim.

Habitat.—Colorado and California.

M. Graeffiana, Tepper. "A very pretty species, closely allied to *pulchripennis*, but differing from it and all the other species in the genus by the yellow secondaries margined all around with black, and having a large black discal spot; the primaries are of a rather pale vinous red, with pale gray outer margin and wide yellow median shade in which are the large reniform and orbicular." The markings are shown in Pl. VIII, fig. 59. The tibiae are as in *pulchripennis*.

Described by Mr. Tepper at my request from the unique ♀ in his collection. Expands $\frac{1}{2}$ inch, 22 millim.

Habitat.—Southern California.

M. honesta, Grt., Papilio 1, p. 77; Pl. VIII, fig. 60.

Distinguished from all others by the interrupted pale band of secondaries and pale spot in outer margin. Expands 1 inch, 22 millim.

Habitat.—Washington Territory, Mount Hood.

M. sueta, Grt., Buf. Bul. 1, p. 117, Pl. III, fig. 10; *Californiensis*, Grt., Buf. Bul. 1, p. 149, Pl. VII, fig. 44, tibia, and Pl. VIII, fig. 61, primary.

The types of both these species are in my possession. The markings on both are identical, but the ground color of *Californiensis* is darker than in *sueta*, otherwise and on the reverse there is no difference. Expands $1\frac{1}{2}$ inch, 32 millim.

HELIACA. H. Sch.

Eyes naked, narrow ovate; front full, with rough hairy vestiture; palpi short, fringed beneath; tongue moderate; body moderate, with coarse hairy vestiture; wings ample; primaries with only slightly produced apices; tibiae not spinose, anterior unarmed; abdomen of ♂ with tufts at sides.

The species that I refer to this genus differ from their European congeners by the somewhat stouter form, the somewhat less ample primaries and the somewhat more produced apices, but the relationship is otherwise so close, that I have no hesitation whatever in referring them here.

The species are readily separable as follows:

- Primaries dark smoky brown, with yellow median shade, interrupted by the large dark reniform and orbicular.....**diminutivus**.
- Primaries pale clay yellow, with lighter median space, markings identical with preceding.....**fasciata**.
- Primaries smoky brown, with wider yellow median shade; reniform smaller, an apical white patch and sinuate pale outer line.....**dubitans**.
- Primaries bright rosy crimson, darker at base; a creamy white median band and a rather wide steel-blue subterminal line.....**nexilis**.

H. diminutivus, Grt., Buf. Bul. 1, p. 148 (*Heliothis*); id. II, p. 34 (*Melicoptris*).

Separable from both the genera in which it has been heretofore placed

by the non-spinose tibia; the markings of primaries are shown Pl. VIII I, fig. 62; the secondaries vary from having a single spot at middle of costal margin to three confluent spots, forming a yellowish band across secondaries. Expands $\frac{1}{2}$ inch, 20–24 millim.

Habitat.—California and Nevada.

H. fasciata, Hy. Edw. (Pl. VIII, fig. 63).

Almost certainly a variety of the preceding, but my material is ~~not~~ large enough to prove it; the under side is identical, and the markings of the upper side of primaries is the same; only the very pale color of the primaries above separates the two. Expands $\frac{1}{2}$ inch, 20 millim.

Habitat.—Nevada.

H. dubitans, Tepper (Pl. VIII, fig. 64).

Described by Mr. Tepper at my request. The single specimen from Nevada wants the anterior legs, but is otherwise perfect; a single spinule terminating the median tibiae leads me to feel a slight doubt about the correctness of the generic reference, for which I am responsible; the markings on upper surface of primaries are shown in the figure; the reverse is a copy of the upper side, except that the colors are black and white; secondaries black, with a narrow white band composed of confluent spots. Expands $\frac{1}{2}$ inch, 20 millim. Type coll. Tepper.

Habitat.—Nevada, ♂.

H. nexilis, Morr., Proc. Ac. Nat. Sci. Phil. 1875, 102 (*Eutricopis*); Grote, New Check List (*Melichpatria*); *elaborata*, Hy. Edw., Papilio I, 21 (Pl. VIII, fig. 65).

I have had before me the types of *Eutricopis nexilis* and *Mel. elaborata*, the former from Mr. Tepper's collection, the latter from Mr. Edwards'. They are undoubtedly identical. Mr. Morrison's type is a ♂, Mr. Edwards' a ♀, and the latter is the brighter colored and rather the more perfect specimen. The secondaries are black, and have two whitish spots on disc, barely connected. ♂ and ♀ expands $\frac{1}{2}$ inch, 20–23 millim.

Habitat.—Colorado.

PSEUDACONTIA, gen. nov.

Eyes naked, large, globose; clypeus full; palpi short, with heavy middle and small terminal joint; the latter truncate at tip; tongue moderate; vestiture smooth, scaly, with a small posterior tuft; primaries elongate, with rounded apices and outer margin; abdomen conic without tufts on the specimens I have seen; legs strong, with unusually elongate posterior tarsi; tibiae not spinose, anterior abbreviated, widened at tip, with corneous termination and a stout, strong inner claw (Pl. VII, fig. 45).

Bears a strong superficial resemblance to *Acontia*, as which the species was described by Mr. Morrison. This is

P. crustaria, Morr., Proc. Ac. Nat. Sci. Phil. 1875, p. 70 (*Acontia*), Pl. VIII, fig. 66.

Readily recognized, not only by the generic characters but by the whitish primaries with dark base, median and marginal band; secondaries blackish, with a white median band not attaining the costal margin.

I have the type of Mr. Morrison's *Acontia crustaria* (♂ and ♀), and they cannot remain associated with that genus. The bulging clypeus, and more than all the abbreviated armed fore tibia place the species among the *Heliothids*, and forms the connecting link between the two groups. Both specimens had the anterior tibia prominently displayed, and I cannot understand Mr. Morrison's remark, "legs long and slender; the tibia unarmed." Expands rather more than an inch, 28 millim.

Habitat.—Nebraska.

The species which I have not seen are as follows:

Schinia rectifascia, Grt., Proc. Bost. Soc. Nat. Hist., 16, 242.—More broadly winged and slighter bodied than *S. trifascia*, Hb., of a somewhat pale, dull olivaceous color. The primaries have each three pale fasciæ, but these are much narrower and nearly upright in the new species. The two first corresponding to the ordinary median lines are nearly straight, wider apart than in *trifascia*, where they are approximate and very oblique. The third fascia corresponds to the usual subterminal line; it is outwardly projected beyond its costal inception, where it copies the course of the second fascia or outer median line. A pale linear discoloration at the extremity of the cell in the place of the reniform. The fringes and terminal margin are stained of a brownish ochraceous on both wings; the secondaries are silky, discolored whitish; beneath pale fuscous, with ochreous terminal stains dying the fringes, and with costal trace of double darker common lines. Expanse 28 millim.

Habitat.—Pennsylvania and Alabama.

Anthoecia tuberculum, Hb., Zutr. 517, 518; Guen. Noct. 2, 185.—Primaries above clear ochraceous, mixed with olivaceous at base, at the median space and toward the outer margin, where it forms a band which occupies the entire subterminal space—the rest cloudy, indistinct; the reniform is more or less distinct; secondaries black, yellow at base with a black discal spot; beneath varied with ochraceous and black; the primaries have the disc black, with an inferior band and spot yellow; abdomen distinctly banded with yellow and black.

Am. Sept. (Coll. Bd.).

Lygrantheecia limbalis, Grt., Proc. Ac. Nat. Sci. Phil. 1875, 421.—"Allied to *arcifera*. Fore wings deep shining blackish-brown; thorax more reddish; all the lines obliterate: the annulets of the reniform can be made out; on the middle of the wing there is a whitish patch on internal margin, and one above it, smaller, on costa; hind wings black, immaculate, with pale fringes; beneath black, with the terminal spaces reddish; abdomen black, with the terminal segment yellowish. Expands 20 millim.—Prof. Snow."

Habitat.—Kansas.

Would seem from the description to be allied to *L. constricta*, Hy. Edw.

Lygranthoecla coereita, Grt., Papilio I, 156.—Allied to *balba* in appearance, but differing by the presence of four blunt spines on the outside of the fore tibia. It is very pale, and differs from *Separata* by the hind wings being white; primaries faded ochrey, with the lines white; s. t. space narrow, constricted by the broad white subterminal line opposite the cell; reniform long, discolorous defined, extended inferiorly; orbicular marked; terminal line dotted; t. p. line not so much exerted opposite the disc as usual; head and thorax nearly white; same size with its allies. This form perhaps is nearest to *Separata*, but the ground color is as pale as *Regia*, in which the subterminal space is not constricted opposite the disc, and the fine rosy purple color is very different from the faded ochreous shadings on the primaries of *Coereita*."

Lygranthoecla roseitincta, Harv., Buf. Bul. II, 278.—Fore tibia with a double row of spinules and inner longer terminal claw; middle and hind tibiae unarmed; thorax of a light ochreous yellow, beneath drab; abdomen dark Quaker drab at upper portion, lower portion reddish, beneath light carmine red, anal tuft yellow; tibiae red; primaries light brown drab, approaching a dusky yellow; t. a. line single, convex outwardly, most angulate at cell, almost obliterated on inferior margin, space between the t. a. line and the thorax filled with carmine; t. p. line concave above, convex below even on the costa; carmine shading in the subterminal space, an ill-defined median shade; terminal line black; fringes whitish; reniform oval, inwardly oblique. orbicular absent; beneath carmine red, apex and costa white, basal streak black; orbicular spot a black dot, a white line uniting it with the subquadrate reniform spot, subterminal and terminal spaces blackish, hardly obscuring the carmine; inferior marginal region white; the secondaries are of a bright crimson color, a broad black margin not extended quite to anal angle; fringes white, except at anal angle, where they are concolorous; beneath concolorous, the black band only obtaining at internal angle, a shade darker on the disc; fringes concolorous. Expanse 18 millim.

Habitat.—Texas.

Lygranthoecla Parmelliana, Hy. Edw., Papilio I, 14.—Primaries ochraceous drab, with a slight greenish tint; basal space clouded with olive brown; t. a. line narrowly edged with white, and deeply toothed outwardly on median nervure; t. p. line also white, with a slight sinuation in the middle where it is lost in a brownish cloud; the central space is the palest portion of the wing; it is crossed from costa to internal margin by a narrow olive-brown cloud, obscuring the large reniform spot; sub-reniform obsolete; behind the t. p. line is a dark olive-brown shade, the margins paler, with black dots at the end of the nervules; secondaries dusky, with a paler discal shade and the costa also pale; fringes of both wings alternately stone color and brown; beneath the margins are broadly dusky, with dusky discal spots; centre of both wings paler; thorax and abdomen ochraceous drab. Expands 24 millim.

Habitat.—Maryland. Type coll. Schönborn, Washington.

Heliothis siren, Strk., Lep. 122.—Expands 15.16 inch.—Head and thorax yellow, inclining to rust color; abdomen above black, beneath yellowish; upper surface: primaries shining grayish yellow, much the same tint as in *Lyax*, Guen., also style of decoration much as in that species; the basal part is rust or sienna colored, mixed with black on or towards edge nearest the median space; the submarginal band is also rust colored, with exterior and inner edges mixed with black; this band is suddenly narrowed to a mere line about one-third in from the

costa; an indefinite rust colored shade through the middle of median space: discal spot rather small; fringes same color as ground of primaries; secondaries all black with pure white fringes: under surface of primaries black with a white exterior margin, and a narrow yellowish white edging on costa; inferiors black, with large white apical space extending along costa two-thirds in; fringe white.

Habitat.—Texas, J. Boll.

Heliothis nubila, Strk., Lep. 122.—Expands 15.16 inch.—Head and body above greyish, of an olivaceous green tinge: beneath whitish; upper surface: primaries same color as body: the median lines very faintly defined, especially the inner one, which is almost obsolete: the sub-marginal space of a darker shade than the rest of the wing: basal part scarcely distinguishable from the median space; no discal spot or blotch perceptible; fringe same color as wings; secondaries white of a yellowish cast, marginal band broad, black and straight on inner edge; discal spot large and black; some black scales at base; fringes white; under surface yellowish or tawny white; on primaries a longitudinal black basal patch reaching neither to costa or inner margin: a round black discal spot; a broad black submarginal band which does not extend to either inner margin or costa; between it and the latter the color is reddish; secondaries: an indistinct discal spot and a sub-marginal band, inner half of which is black and apical half reddish.

Habitat.—Texas, J. Boll.

This is almost certainly identical with *Anthoecia mortua*, Grt.

Heliothis lanul, Strk., Lep. 132.—Expands 1-1.16 inches.—Head and body white, lightly tinged with sienna or rust brown at basal part of thorax and tips of patagiae; upper surface: primaries white and not very dark rust brown; the basal third is at and near base brown, then white with scattered brown points, then comes a line which extends from costa to inner margin as in *Rivulosa*, *Regia*, etc., but not as much bent as in these species: this line is succeeded by the median space, which is brown and encloses two conspicuous white spots, the largest is in the discoidal cell, the other half way between it and the inner margin, the largest of these white spots is joined exteriorly by a metallic lead-colored discal spot; the outer edge of the median space, which is very much produced opposite the discal spot, is succeeded by a white line edged outwardly with brown, beyond this is again white, then an irregular jagged line of brown edged outwardly with white; this is succeeded by the marginal band of brown with a row of minute black spots; fringe white with brown points at tips of veins; secondaries silky white, with a very faint brownish sub-marginal band; fringe long and white; under surface white, with markings of primaries in a manner somewhat faintly repeated in costal and exterior parts.

Habitat.—Texas.

Heliothis gloriosa, Strk., Lep. 132.—Head and body above white, with pale olivaceous shades; beneath white; antennae and legs white; upper surface primaries dull purplish red and olivaceous, neither of these colors intense, marked somewhat after the manner of *Rivulosa* and allies; the basal third of wing is purplish and is separated from the median space by a pure white line that widens at the veins thus forming teeth; the median space is olivaceous and encloses a purplish discal spot, which latter is prolonged outwardly to and beyond another white toothed line which separates the median from the outer space; the latter is purplish anteriorly and olivaceous marginally, the latter color is more or

less at the nervules encroached on by the purple; fringe light and dark oliveaceous; secondaries dirty white; a faint discal mark; marginal third of wing broadly shaded with brownish; fringe white, with brown at veins; under surface: primaries shining white; fuscous discal spot; a pale crimson shade near apex; a broad fuscous submarginal band; fringe fuscous and white; secondaries silky white; a very faint discal mark; a slight pale crimson tint at apex; fringe white, with fuscous at nervules, which latter color does not extend to the terminations thereof. By far the largest and, with the exception of *Regia*, the most beautiful of that group of which *Rivulosa* is the type.

Habitat.—Texas.

Aspila subflexa, Guen., Noct. 2, 175 (*Aspila*).—The primaries are a little more produced at apex than *rhezia*. Color very pale greenish yellow, with three olive green bands: the third inflected at middle, and broken into a series of spots; fringe olive green: secondaries *blanc nacre*, absolutely without spot or band.

RHODODIPSA, Grt.

Bul. Bul. Geol. Surv. 3, 797.

Mr. Grote in some remarks on the species *volupia* of Fitch gives the only definition of the genus which I have been able to find. He says, after remarking that in *Rhodophora* the anterior tibia besides being armed at tip has also spinules: "In *Rhododipsa* the joint wants the spinules; there is an outer claw and two spines on the inside, followed by a third paler-colored and more slender, but nearly as long, much longer than the ordinary spinules. At the location of this third spine in *Rhodophora* is a spinule not noticeably longer than the rest, and not as long as one which follows the outer claw, and commences a series which is wanting in *Rhododipsa volupia*."

This is all of generic characters given and it certainly does not sustain the genus.

Rhododipsa volupia, Grt., Bul. U. S. Geol. Surv. 3, 797; Bkin. Bul. 3, 47.—Head and thorax dark yellow; fore and hind wings bright crimson; primaries with the median lines propinquitous, irregularly toothed, yellowish white, not very distinct; a yellowish white discal spot; the subterminal line of the same color runs very near the external margin, twice bent; the very narrow terminal space again crimson before the pale, yellowish fringes which are faintly interlined and similar on both wings; beneath the wings are crimson, with the secondaries shaded with pale, as also the costal edge of primaries; legs and under surface of thorax yellow; abdomen red beneath. Expanse 26 millim.

Habitat.—Texas and Colorado.

After the above was written I saw the type of Fitch's *volupia*, and it is undoubtedly the same as the above species of Mr. Grote. The genus *Rhododipsa* as based on this species has no sufficient foundation; the species is entirely congeneric with *florida* and *gaurae*, and was by Dr. Fitch correctly referred to *Alaria*. Mr. Grote's course in describing a species which he must have known by the description to have very closely

sembled Mr. Fitch's *volupia*, under the same name, and thereafter entirely ignoring Mr. Fitch's species in his list can scarcely be called honest.

M. missiana, Grt., Papilio 1, 175; id. 2, Pl. 1, figs. 1 and 2.—Thorax lighter yellow or orange; this color spreads over base of fore wings; fore wings pale smooth clay color, crossed by two broad vague mesial white bands; subterminal line inaugurated by a brilliant wine-red, outwardly oblique, linear scale patch, partly resolved into about three spots; a spot on external margin; hind wings brilliant wine red; the internal margin yellowish; indications of yellow mesial line, and the fringes are also of this color; beneath the disc of primaries is of the same wine red, and the hind wings are crossed by lines and shades of the same color. Expanse 24 millim.

Habitat.—Northern New Mexico (Snow.).

Melicliptria Hoyt, Grt., Bul. Bkln. Ent. Soc. 3, 30.—Body blackish, hairy; the villosity has a purple tinge and is paler beneath; fore wings triangulate, blackish, overlaid by a sprinkling of pale scales, especially at base and terminally; a rather narrow angulate yellowish white band crosses the wing at the place of the posterior line; hind wings yellowish white, with a rather wide determinate black border extending also along internal margin; no discal lunule; under surface paler, more whitish; primaries diffusely whitish about the transverse band, reflected from the upper surface; on secondaries a black costal spot, and the whitish color intrudes on the terminal band at anal angle. Expanse 22 millim.

Habitat.—Wisconsin.

Melicliptria vacciniae, Hy. Edw., Proc. Cal. Ac. Nat. Sci. May, 1875.—“Head and thorax brown, with a few brown scales; abdomen blackish brown, with the base of segments whitish; primaries light brown, with a golden tinge; base of wing darker than the other portion; t. a. only moderately shaded, very slightly dentate anteriorly as it reaches the internal margin; median shade whitish, brown as it reaches the costa; orbicular almost obsolete; reniform large, distinct; t. p. whitish, bent considerably outwards near the costa, nearly straight toward the internal margin; s. t. sharply toothed in the middle; resting on this line are four or five black dashes; fringes shining golden brown, with dark patches; secondaries black, with median white fascia, broadest behind the middle, but not reaching to the anal margin; near the outer margin is a small white streak suggesting a submarginal band; fringes white; beneath primaries black, reddish near costa, with broad median band, a kidney-shaped spot near apex and anteriorly notched marginal band, all cream white; secondaries black, with a large space near the costa, reddish white and a nearly oblong spot in centre of wing cream white; behind this is also a small white spot; fringes of both wings as in the upper side. Expanse of wings 0.75.”

Habitat.—California (Sierra Nevada).

Pyrrhia stilla, Grt., N. A. Ent. 1880.—Bright orange red, allied to *angulata* rather than *eximens*; base of primaries bright smooth orange without markings; median shade triangular, contrasting deep brown forming a mesial band acutely angulated, even diffuse exteriorly; stigmata obsolete; exterior line as in *angulata*, obsolete on the inside; subterminal subobsolete; fringes with a bright reddish tint; hind wings light yellow with blackish lunule, blackish at base with a broad vague blackish band tinged with reddish outwardly; beneath yellow;

fringes on primaries red; a red exterior band touched with blackish inferiorly: a discal lunule; secondaries with a diffuse red exterior band, a faint discal mark before which the costa is touched with red. Expands 36 millim.

Habitat.—Western States.

Schinia Gulnare, Strk., Proc. Dav. Ac. Nat. Sci. 2, 274, Pl. IX, fig. 1.—Expands 1½ inches.—Head olivaceous; body brilliant pale metallic, olivaceous or greenish gray; beneath greenish and not so brilliant; upper surface: primaries shining silvery grey or olivaceous, somewhat of the tint of *Plusia modesta*, Hb., but very highly lustrous; three silvery lines cross the wings; the first or subbasal is straight until almost to costa, whence it turns inwardly toward the base at an acute angle; the second starts a little beyond the middle of the inner margin, whence it expands into a curve towards but not to the apex; not far from the costa it is bent abruptly backwards, forming an acute angle; half way between the last described line and the outer margin and curved in nearly the same manner, and with the tooth or point formed by the bend near costa, touching the exterior margin a little below the apex is the last or third line; between this line and the outer margin, and resting on the last, is an oblong, pointed at both ends patch of deep gold: another golden smaller mark is nearly at the apex; secondaries much the same color as the primaries near and at the exterior margin, but paler at the base; all the fringes olive green; under surface somewhat same color as above and nearly as brilliant, but devoid of the three transverse lines, and also of the golden patch on the primaries; all are pale at the edge of costa, and two short pale lines are on the costa at exterior third of wings; apex with a golden reflection; secondaries with obscure discal dots, and marginal and submarginal bands or lines.

One specimen, Illinois, French. I have some doubts of the correctness of the generic reference of this species. The figure does not look like a *Schinia*, but I have unfortunately not seen the insect itself.

Schinia scissa, Grt., Proc. Bost. Soc. Nat. Sci. 1876, p. 415 (*Lyyranthocia*): New Check List (*Anthocia*).

To the kindness of Mr. Thaxter I owe a specimen of this species. It belongs with *Meskeana* and is closely allied to it; the anterior tibia have two inner and three outer claws as in Pl. VII, fig. 36; the primaries are of a rich dark brown with a yellowish blotch from the middle to outer ½ of wing, indicating the median pale space; usual lines obsolete; reniform large and black; secondaries yellow in the centre, with a complete black margin and a large black discal spot: anal segment and clothing yellow; beneath primaries black at base, yellow in the middle and brown at outer margin, apex more reddish; secondaries as above, except that the costal margin is roseate. The species has the superficial appearance of *Melicleptria*, the retracted small head of *Pseudotamila*, and the vestiture of the genus in which I place it. Expands ¾ inch.

Habitat.—Florida.

List of Genera and Species.

SYMPISTES, Hb.
proprius (Hy. Edw.).

PSEUDANTHOBCIA, m.
tumida (Grt.).

DASYPOUDAEA, m.
lucens (Morr.).
luxuriosa (Grt.).
Meadii (Grt.).

TRIOCNEMIS, Grt.
saporis, Grt.

AEDOPHERON, Led.
pallens, Tepper.
 * (?) *Snowi*, Grt.

PIPPONA, Harv.
bimatrix, Harv.

ANTAPLAGA, Grt.
dimidiata, Grt.
sexseriata (Grt.).

GROTELLA, Harv.
septempunctata, Harv.

* **BESSULA**, Grt.
luxe, Grt.

* **EPINYCTES**, Grt.
notatella, Grt.

HELIOTHIS, Hb.
rhoxia (Sm. Abb.).
spectanda, Strk.
paradoxus (Grt.).
armiger, Hb.

umbrosus, Grt.
dipsaceus, Linn.
phlogophagus, G. & R.
interjacens, Grt.
 var. *maritima*, Graslin.
luteitinctus, Grt.

sentesus, Fabr.
nuchalis, Grt.

* *siren*, Strk.
 * *nubila*, Strk.
 * *lanul*, Strk.
 * *gloriosa*, Strk.

* **CHLORIDEA**, West.

* *subflexa*, Guen.

CHARICLEA, Kirby.
umbra, Hufn.

exprimens (Wlk.).
 var. *angulata* (Grt.).
 * *stilla* (Grt.).

ALABIA, West.
florida (Guen.).

gaurae (Sm. Abb.).
matutina, Hb.
citronellus (Grt.).
volupia, Fitch.
volupia, Grt.

* **RHODODIPSA**, Grt.
 * *miniana*, Grt.

SCHINIA, Hb.
chrysellus (Grt.).

Hulstia, Tepper.
alencis (Harv.).
oumatilis (Grt.).
sulmula, (Strk.).
trifascia, Hb.

* *rectifascia*, Grt.
gracillenta, Hb.
oleagina, Morr.
imperopieua (Strk.).

bifascia, Hb.
 * *Gulnare*, Strk.

Velaris (Grt.).
obliqua, m.

nundina (Dru.).
separata (Grt.).
balba (Grt.).
acutilinea (Grt.).
Walsinghami (Hy. Edw.).

lynx (Guen.).
tertia (Grt.).
albefascia, m.
regia (Strk.).
sanguinea (Geyer).
cupes (Grt.).
Jaguarina (Guen.).

* Unknown to me.

Spraguei (*Grt.*).
aroidera (*Guen.*).
arcigera (*Guen.*).
saturata (*Grt.*).
rubiginosa (*Strk.*).
spinosa (*Guen.*).
hirtella (*G. & R.*).
lupatus, *Grt.*
Packardia (*Grt.*).
Thoreani (*G. & R.*).
mortua (*Grt.*).
nobilis (*Grt.*).
rivulosa (*Guen.*).
marginatus (*Haw.*).
contracta (*Wlk.*).
divergens (*Wlk.*).
designata (*Wlk.*).
constricta (*Hy. Edw.*).
brevis (*Grt.*).
var. atrites (*Grt.*).
errans, *m.*
nobilis, † *Grt.*
inclara (*Strk.*).
Meskeana (*Grt.*).
fastidiosa (*Strk.*).
rufimedia (*Grt.*).
scissa (*Grt.*).
ultima (*Strk.*).
 * **parmeliana** (*Hy. Edw.*).
 * **coerita** (*Grt.*).
 * **roseitincta** (*Harv.*).
 * **tuberculum** (*Hb.*).
 * **limballis** (*Grt.*).
MELAPORPHYRIA, *Grt.*
immortus, *Grt.*
prorupta (*Grt.*).
venusta (*Hy. Edw.*).
belladonna (*Hy. Edw.*).
onenis, *Fabr.*
oregona (*Hy. Edw.*).
DERRIMA, *Wlk.*
Henrietta, *Grt.*

* **stellata**, *Wlk.*
PSEUDATAMILA, *M.*
vanella (*Grt.*).
perminuta (*Hy. Edw.*).
 * **HELIOSEA**, *Grt.*
 * **picitipennis**, *Grt.*
HELIOPHANA, *Grt.*
mitis, *Grt.*
bina (*Guen.*).
XANTHOTHRIX, *Hy. Edw.*
ranunculii, *Hy. Edw.*
Neumoegeni, *Hy. Edw.*
HELIOLONCHE, *Grt.*
medicella, *Grt.*
AXENUS, *Grt.*
arvalis, *Grt.*
*var. * amplius*, *Hy. Edw.*
*var. * ochraceus*, *Hy. Edw.*
MELIOLEPTRIA, *Hb.*
celeris, *Grt.*
pulchripennis (*Grt.*).
languida, *Hy. Edw.*
Graefiana, *Tepper.*
villosa, *Grt.*
pauzilla, *Grt.*
persimilis, *Grt.*
honesta, *Grt.*
sueta, *Grt.*
californiensis, *Grt.*
 * **vacciniæ**, *Hy. Edw.*
 * **Hoyi**, *Grt.*
HELIACA, *H. Sch.*
diminutivus (*Grt.*).
fasciata (*Hy. Edw.*).
dubitans, *Tepper.*
nexilis (*Morr.*).
elaborata (*Hy. Edw.*).
PSEUDACONTIA, *M.*
crustaria (*Morr.*).

EXPLANATION OF PLATE VII.

<i>Paryspodaea lucens</i> , anterior tibia.	26. <i>Schinia arcifera</i> , anterior tibia.
" " tarsal claw.	27. " <i>saturata</i> , " "
" <i>Meadii</i> , anterior tibia.	28. " <i>spinosae</i> , " "
" " tarsal claw.	29. " <i>Packardii</i> , " "
<i>Triocnemis saporis</i> , anterior tibia.	30. " <i>Thoreauti</i> , " "
<i>Aedophron phlebophora</i> " "	31. " <i>rivulosa</i> , " "
<i>Pippona bimatrix</i> , " "	32. " <i>constricta</i> , " "
<i>Heliothis rhexia</i> , " "	33. " <i>brevis</i> , " "
" " tarsal claw.	34. " { <i>nobilis</i> , " "
<i>Alaria florida</i> , anterior tibia.	{ <i>Meskeana</i> , " "
" <i>gaurae</i> , " "	35. " <i>inclara</i> , " "
" <i>citronellus</i> " "	36. " <i>ultima</i> , " "
<i>Schinia chrysellus</i> , anterior tibia.	37. <i>Derrima Henrietta</i> , " "
" <i>cumatilis</i> , " "	38. <i>Melaporhyria immortua</i> , anter. tibia.
" <i>trifascia</i> , " "	39. " <i>prorupta</i> , " "
" <i>gracilentia</i> , " "	40. <i>Pseudotamila vanella</i> , " "
" " tarsal claw.	41. " <i>perminuta</i> , " "
" <i>velaris</i> , anterior tibia.	42. <i>Heliophana mitis</i> , " "
" <i>obliqua</i> , " "	43. <i>Heliononche modicella</i> , " "
" <i>nundina</i> , " "	44. <i>Melicliptria cardui</i> , " "
" <i>separata</i> , " "	45. " <i>suetus</i> , " "
" <i>lynx</i> , " "	46. <i>Pseudacontia crustaria</i> , " "
" <i>tertia</i> , " "	47. Neuration of <i>Heliothis</i> .
" " tarsal claw.	48. Palpus of <i>Heliothis</i> .
" <i>albafascia</i> , anterior tibia.	49. Clypeal projection of <i>Azenus</i> .
" <i>regia</i> , " "	50. " " " <i>Pippona</i> .
" <i>sanguinea</i> , " "	51. " " " { <i>Xanthothrix</i> .
" <i>cupes</i> , " "	{ <i>Nemmoegeni</i> .
" <i>Jaguarina</i> , " "	52. " " " <i>Aedophron</i> .
" <i>Spragueia</i> , " "	

EXPLANATION OF PLATE VIII.

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|------------------------------------|------------------------------------|
| 1. <i>Sympistes proprius.</i> | 34. <i>Schinia cupes.</i> |
| 2. <i>Pseudanthoecia tumida.</i> | 35. " <i>Jaguarina.</i> |
| 3. <i>Dasypoudaea Meadii.</i> | 36. " <i>Spragueia.</i> |
| 4. " <i>lucens.</i> | 37. " <i>arcifera.</i> |
| 5. <i>Triocnemis saporis.</i> | 38. " <i>spinosa.</i> |
| 6. <i>Antiplaga dimidiata.</i> | 39. " <i>saturata.</i> |
| 7. " <i>sezaeriata.</i> | 40. " <i>Thoreaui.</i> |
| 8. <i>Grotella septempunctata.</i> | 41. " <i>rivulosa.</i> |
| 9. <i>Heliothis rhexia.</i> | 42. " <i>constricta.</i> |
| 10. " <i>armiger.</i> | 43. " <i>brevis.</i> |
| 11. " <i>paradoxus.</i> | 44. " <i>nobilis.</i> |
| 12. " <i>dipsaceus.</i> | 45. " <i>inclara.</i> |
| 13. " <i>scutosus.</i> | 46. " <i>Meskeana.</i> |
| 14. <i>Chariclea umbra.</i> | 47. " <i>ultima.</i> |
| 15. " <i>var. angulata.</i> | 48. <i>Derrima Henrietta.</i> |
| 16. <i>Alaria florida.</i> | 49. <i>Melaporphyria immortua.</i> |
| 17. " <i>gaurae.</i> | 50. " <i>prorupta.</i> |
| 18. <i>Schinia chrysellus.</i> | 51. " <i>ononis.</i> |
| 19. " <i>Hulstia.</i> | 52. " <i>belladonna.</i> |
| 20. " <i>aleucia.</i> | 53. <i>Pseudatamila vanella.</i> |
| 21. " <i>cumatilis.</i> | 54. " <i>perminuta.</i> |
| 22. " <i>trifascia.</i> | 55. <i>Helionche modicella.</i> |
| 23. " <i>gracilentia.</i> | 56. <i>Melicliptria celeris.</i> |
| 24. " <i>velaris.</i> | 57. " <i>pulchripennis.</i> |
| 25. " <i>obliqua.</i> | 58. " <i>persimilis.</i> |
| 26. " <i>bifascia.</i> | 59. " <i>Graefiana.</i> |
| 27. " <i>nundina.</i> | 60. " <i>honesta.</i> |
| 28. " <i>separata.</i> | 61. " <i>sucta.</i> |
| 29. " <i>lynz.</i> | 62. <i>Heliaca diminutiva.</i> |
| 30. " <i>tertia.</i> | 63. " <i>fasciata.</i> |
| 31. " <i>albafascia.</i> | 64. " <i>dubitans.</i> |
| 32. " <i>regia.</i> | 65. " <i>nexilis.</i> |
| 33. " <i>sanguinea.</i> | 66. <i>Pseudacantia crustaria.</i> |

Remarks Upon the North American HELIOTHINAE and Their Recent Literature.

BY A. R. GROTE.

PREFACE.

I was engaged in a study of the *Calpinæ* (m.), *Stiriinæ* (m.), *Plusinæ* (m.), and *Heliothinæ* (m.), contained in Mr. Neumogen's Collection, my MMS. being in part in printer's hands, when a paper appeared on the *Heliothinæ* by Mr. John B. Smith, based partly on specimens from Mr. Neumogen's collection. It anticipated to some extent the changes I had found necessary since the publication of my new Check List. *Hel. Lucens*, which I stated in my List was not a *Heliothis*, I had associated with *Meudii*. I found that I had not understood Gueneé's genus *Tamila* and that its type was a *Lygranthoecia*. In fact until now I had not examined it, or even possessed a specimen of *nundina*. I found that the character of mixed scales and hair was shared by other genera and that my *Tamilæ* belonged to different genera. So far my own discoveries went. Mr. Smith now farther interestingly shows us that we have the European genera *Sympistis* and *Heliaca* in our fauna, and that the *Oregona* of our collections is the same as the European *Ononis*. Omitting *Anarta* and *Lepipolys*, he rejects only four species from the group as defined in the new Check List and adds two, placed by me in the succeeding subfamily.

The principal mistake which Mr. Smith makes is the assumption that my Lists are monographic, and that I have reviewed all the genera and species therein enumerated. A table of a part of the *Heliothinæ* was published by me in 1874; except that, I had gone no farther than describing the species as they came up from time to time. Twenty-five years ago, when I commenced to study, we had less than a dozen named species of *Noctuidæ* in American collections, now we have about fifteen hundred. The most of them I have described. After my visit, in 1868, to Europe, I originally applied the natural characters used in German works by Lederer and others, translating the terms. I believe I am the first to call the corneous plate at the base of the clypeus, the "infra-clypeal plate;" I translated Lederer's term "Wimpern" by "lashes."

Recently Mr. Smith criticised in *Can. Entomologist* my diagnosis of a Deltoid genus by saying I did not state whether the eyes were naked or not. I replied that all Deltoid genera had naked eyes. Mr. Smith then answered that my statement gave a wrong impression, because some genera had them lashed! He, therefore, did not then know that the term "naked" applied to the surface of the compound eye itself and that the lashes were the fringe around the orbit, that eyes could be naked and lashed (*Homohadena*), or hairy and unlashd!

I have given the full terminology of the characters of the *Noctuidæ* in my writings. Mr. Smith uses precisely these characters. It should have struck him that our results would, under these circumstances, nearly coincide. And that I could not have examined the material where these characters were at variance with the classification adopted. In fact, while my Lists are the result of my studies, I have expressly stated that I brought our fauna into a general correspondence with the European and that in details much work remained to be done. In the following paper I have discussed some of Mr. Smith's criticisms. In the Republic of Science every one is bound to state facts and it is his duty to do so. But, as in any other social republic, the laws of conduct should be respected. It is nowhere necessary to be unfair and prejudiced. I can show that Mr. Smith has transgressed in this way in his paper. He has been unfair in concealing that his synonymy is taken from me, that his generic types are those laid down by me in my List of 1874. He does not credit me with the separation of *Melicleptria* with *cardui* as type, nor does this matter that he takes out one or two species. Above all he ignores the fact that I have gradually established certain genera and species and had no opportunity of comparing all the European genera. In a difficult group where many types were uniques and left my hands after description, it was to be expected that changes would be made when all were compared. Many intermediate forms came up from time to time and necessitated changes. So bent is Mr. Smith to cavil, that he brings up the fact that in establishing the genus *Heliolonche* ten years ago, I first called the tibiae non-spinose, and that I properly corrected it immediately afterwards by finding them armed. Why such a fact should be repeated I am at a loss to know. Mr. Smith is unjust when he says my course with *volupia* is "scarcely honest." The facts are these: I identified Dr. Fitch's *volupia* hesitatingly. Dr. Fitch's description contradicts my insect in color of hind wings and details of markings. I could not be sure of my determination; in fact, I am astonished now to hear that I was right and that my insect corresponds with Dr. Fitch's type. After twice describing and

once figuring it, associating Dr. Fitch's name with the species and giving my doubts, I finally became convinced that, as more pink *Heliothids* turned up in the West, I might be wrong and, to avoid a new name, proposed in the Brooklyn Bulletin that, if I was wrong, the insect should still be called *volupia*, Gr. I catalogued it thus until the fact could be substantiated (as it now is) and Mr. Smith accuses me of dishonesty! And by figuring and redescribing it, it is I, after all, who have made *volupia* known. I described *nobilis* from specimens brought by Mr. Ridings from Colorado about seventeen years ago; I figured it and since then never identified it in any paper, nor to the best of my recollection ever saw or determined it again. On the strength of somebody's specimens from Texas named "*nobilis*," which turn out to be different, Mr. Smith quotes *nobilis*, Gr., as a synonym, and gives the unfounded impression that I had mixed up two species as "*nobilis*," of which I am completely innocent. His citation could only be warranted had I in print described a wrong insect as "*nobilis*, Gr." Out of about 100 species of *Heliothinae*, I have described about fifty, four of which Mr. Smith rejects as color varieties, but quotes them as synonyms.

Mr. Smith says he supposes he will have to wait till "accident turns up" my *H. pictipennis*, which I have given a beautiful and exact figure of, as well as a complete description. He passes over a number of much more doubtful species without a word to contradict my statement that my *Limbalis*, which he does not know, is not allied to *Marginata*, but to *Arcifera*, by saying that it must be near Mr. Edwards' *Constricta*.

REMARKS.

Taking Mr. Smith's paper on the *Heliothinae* only from its scientific side and treating it as an advance in our knowledge of the North American species, which I am perfectly willing to do, the following remarks may be of assistance: Of my own species not known to Mr. Smith, *Stilla* is undoubtedly a valid and most beautiful species, congeneric with *Angulata*, and Professor Snow has the type. I wish that Mr. Smith would follow Dr. Speyer and take *Pyrrhia* for this genus. *Chariclea* is not a pure assemblage as defined by Lederer; its type is *Delphinii* and as my *Pernana* is not congeneric, we have yet no North American *Chariclea*. I have referred *Cirrhophanus* to the *Stiriinae*, perhaps a

sub-group of *Plusiinae*. *Rectifascia* is congeneric with *Gulnare*, but a smaller species; I have only one example, but both go out of the present group.

Coercita is a very pale species allied to *Separata*. I noted a difference in the tibial armature, which made me describe it as distinct. *Limbalis* is a beautiful little species, much smaller and not resembling *Constricta*, except superficially, and very near to *arcifera*, whereas *Constricta* is colored like *Rivulosa*. *Hoyi* falls away to *Leucobrephe* my type, as explained, was defective. *Snowi* is so like the figures of *Rhodites* in the shape of wing and thickness of body, and agrees, except in one point, as noted by me, with Lederer's diagnosis, that I cannot believe it to be an *Alaria*; *Pallens* also does not quite agree. It is figured and perhaps Prof. Snow has an example. The ♂ type of *Beasula* (rubbed) is in Prof. Snow's collection. I differ as to the citation of varieties *Luxuriosa* and *Californiensis* as synonyms. They are both free from the white shading which is spread over the primaries on typical forms and have quite a distinct look. As they are geographical in distribution it is nonsense to overlook them. *Luxuriosa* has the lines also very fine and it looks very much like a different species at first sight. The same may, perhaps, be said of the varieties of *Separata*. The synonymy of the species of *Heliothis* I suggested myself (in fact, except the varieties of *Separata* and *Persimilis*, the synonymy has all been first stated by myself). The varieties of *Arvalis* are less marked than *Californiensis* and *luxuriosa*; they are mere accidental variations (*ochraceus*) in color, or obliterations (*amplus*) of the paler lines and shades. As to *M. Persimilis* I figured it because it differed from all my *Pauzilla*, and I am unwilling to draw it in without more evidence than Mr. Smith gives.

So far as the forty-six species of mine are concerned Mr. Smith knows all but ten. Of these, *Hoyi* and *Rectifascia* being ruled out, there exist good colored figures of *Pictipennis*, *Miniana* and *Snowi*, which can leave no doubt as to the species being valid and belonging here. Of the remaining five there is no doubt in my mind that *Limbalis*, *Stilla*, *Luxa*, are good species correctly placed. With the now proved variability of *Separata*, I commence to have a doubt as to *Coercita* being distinct; specimens from the locality will decide. Finally, the tenth, *Notatella* is Mr. Hulst's *Magdalena*. I regarded it, notwithstanding its Cucullia-shaped wings, as a *Heliothid*, but I only had one unset example and have none to compare again. As it is known, it is a matter of little immediate consequence, my desire being to have my species understood.

Dr. Speyer at some length records the difference between my *Angulata* and *Umbra* and regards them as different. Why, if our *Experimens* is *Umbra*, is it that this variety does not occur in Europe? I do not understand the grounds upon which Mr. Smith calls *Angulata* a variety of *Umbra*, and they are not stated satisfactorily. I had also two or three *Rufimedia* and they looked very different from my Texan *Meskeana*. I do not feel certain that they are the same, but if any error has happened it can be easily detected; certainly Mr. Smith should know with Mr. Hulst's type specimen before him and I am willing to accept the fact. I compared Mr. Hulst's species with *Meskeana* and thought it different. Specimens (types) of both are in B. M. coll. So far as the species go, the above will explain my divergencies from Mr. Smith's views which are slight or rather, since he adopts the most, the debatable points between us may be said to be few. Following Staudinger, I have only adopted as named varieties forms equivalent to what he calls varieties in the European fauna. Where the name only expresses a slight change and one of the usual form of the species, I put it as a synonym in italics. With regard to the genera Mr. Smith does not include my *Oxycnemis advena* or *Rhodosea Julia*, which are valid genera in my opinion. I think, when Mr. Smith knows them, he will share my views; he probably did not know of their publication.

RHODOSEA, Gr.

Eyes full, naked, unlashd; anterior tibiae shortened, with a longer inner and shorter outer terminal claw, else not spinose; front very bulging; infra-clypeal plate pronounced, exceeded by the third joint of the palpi; tibiae unarmed, and this character separates the moth from *Alaria*. The wings are elongate, shaped as in *Heliophila* somewhat, but apices blunt and rather narrow; vestiture hairy; antennae simple. The moth is our most beautiful Heliothid. The wings are entirely of a dead pink, like that of *Florida*, with a longitudinal yellow discal dash, and marked at base with yellow and with yellow fringe and edges to the primaries; hind wings pale, with faint dusky border; head and legs and thorax in front flushed with pink; thorax behind yellow; beneath the primaries are clouded centrally with fuscous, with the discal streak repeated; costal region and apices rosy. Expands 36 millim.

1. JULIA. Gr.—New Mexico.

TRICNEMIS, Gr.

The essential characters of this genus are the form of tibial armature and the posterior thoracic tuft. The genus is first discarded, then adopted by Mr. Smith, with the observation that my description (which he copies

in part) is superficial. I give the principal characters and those added by Mr. Smith are the superficial ones. *Azenus* is also called a bad genus by Mr. Smith, and now appears as good and even belonging to a different subfamily. Mr. Smith is vacillatory and hard to please.

LYGRANTHOECIA, G. & R.

Type: *Crambus marginatus*, *Haw.*

In the Buffalo Bulletin, 1874, in my partial list of genera of this group, I gave the extension of this genus which I used in my Check List (1875). It is only enlarged now by Mr. Smith by adding to it the single species of *Tamila* and *Oria*, and others from different genera which do not change my conception of it in 1874 and subsequently. It replaces *Anthoecia*, which has a different type. I cannot understand what induced Mr. Smith to call it *Schinia*. I am the only author to use *Schinia*, and I took it for the three species so called by Hübner, who does not give any characters, and the adoption of his term at my expense shows that Mr. Smith abandons his acknowledged principles. I am the first to describe the fore tibiae of the type, and my only error, if it is one, is that I believed that modifications of tibial armature would give generic characters, and so I retained and described as distinct *Tricopia* for the satiny white forms, and retained *Euleu-yptera* for *cumatilis*, describing the anterior tibial armature. This genus might be called *Tamila*, because its type is shown by Mr. Smith to belong here. But that term rests only on one species and Gueneé does not note its relation to his *Anthoecia*. The first mistake is really made in the "Species Général." Although I made many changes with Gueneé's Hadenas, Mamestras and Agrotids, rearranging the species by their natural characters, I drew in but few genera and almost everywhere I allowed the genera to stand. I did this partly because I was under the impression that ultimately more genera would be recognized, and it was important to keep the synonymical meaning of the old terms from being lost; secondly, because my work had not yet got to the stage where I had the species all described and was ready to monograph the family. It is absurd of Mr. Smith to assume now, in monographing a small group of about 100 species, of which I have discovered about one half, that I should have exhausted inquiry which covers all the species described by other writers. It is assumed by him that my list is a minute study, such as I have made of the small forms related to *Erotyla*, and I am made responsible for the genera of my predecessors. But I had done enough, as far as I pretended to go, when I brought the genera approximately into their proper sequence, and had sifted the species so that the inconsistencies of former

workers on our Noctuids were to some extent avoided and rectified. My Hadenas have naked eyes, my Mamestras hairy ones, my Agrotids spinose tibiae. I have recognized the presence of important genera such as *Oncocnemis* in our fauna, without the European species at hand which Mr. Smith now has in such profusion. Undoubtedly the work is now easier with all the determinations made. My school friends Mr. Graef and Mr. Tepper have gradually acquired most all the European species, and such a person as Mr. Smith can easily arise and go through the labor of examining their rich collections and getting our fauna in details into correspondence with the European. But with only a book before me and a specimen of the first North American *Oncocnemis*, it was not so easy to write with a feeling of certainty. To return to this genus, as it cannot be called *Anthoecia* (which is a different genus), it ought in justice to be called by the name I retained for the larger number of its species and which, moreover, is better sounding. I shall continue, therefore, to use the term *Lygranthoecia*, and simply refer the species of *Schinia* as congeneric with *L. marginata*. The use of *Thalpochanes* rests on similar grounds.

DISOCNEMIS, Gr.

In my notes on Mr. Neumogen's collection I made Mr. Henry Edwards' species *Belladonna*, the handsomest of the group, the type of this new genus, leaving *Oregona*, unrecognized by me as the same as the European *Ononis*, in *Melicleptria*. In describing *Melaporphyria* I noted the narrowed eyes, shared by this genus, but the present differs by the tibiae having two instead of three claws as stated by Mr. Smith. The two species are also alike in form of wing and aberrant from *Immortua* in this respect. The naked eyes are narrowed or ovate. The infra-clypeal plate is more marked in both species than in *Melaporphyria*. The head is less prominent. Palpi heavily fringed, rather short, and the vestiture is longer and more hairy than in my genus *Melaporphyria*, with which the present generally agrees, as shown by Mr. Smith. The type is *Melicleptria Belladonna*, Hy. Edw.

TRICOPIS, Gr.

Mr. Smith uses characters given in my table in the Bull. Buf. Soc. as sectional. The produced infra-clypeal (as this term is used by me) plate and the peculiarity of tibial armature are held by me to be of generic importance. *Aleucis*, of Harvey, is said not to have the plate prominent and is, perhaps, a *Lygranthoecia*. When we have two characters in combination it is enough to give sanction to the genus which

differs also (except from *aleucis*) in ornamentation. In his work no new characters are used by Mr. Smith different from those employed by me, if I except the tarsal structure of *Meadii*, which escaped me. He has apparently very thoroughly carried them out over all described species, and corrected my error that *Tamila* was to be distinguished by its vestiture.

HELIOTHIS, Hübner.

I suggested the identity of our species with the European, which Mr. Smith adopts and is, no doubt, right in this. My type (figured by Glover) of *Umbrosus* is the greenish, light colored, and not ochrey and mixed form. I have seen no European specimens like this, and it seems a well marked variety. I took several specimens in the cotton fields about Atlanta, flying in the daytime. None of my *Luteitinctus* correspond with the figure of *Maritima*, except in so far that the secondaries are yellow, but they are brighter and differently marked in the American examples I have examined. It seems to me a variation in the same direction, but not exactly equivalent.

Notwithstanding that two species are taken out and another added, it is evident that the genus is used in the sense which I intended by Mr. Smith. The same is perfectly true of *Melicleptra* as proposed by me with its type. Mr. Henry Edwards is the first to doubt the validity of my genus *Adonisea*, which I unwillingly merge into *Melicleptra*.

I had hoped that Mr. Smith would have known Mr. Strecker's species, but he knows fewer than I do and adopts all the synonyms of that author which I had detected. In so far Mr. Smith's paper is premature.

As I have shown, the *Stiriinae* are characterized by a short, subquadrate thorax, the patagiae often relieved or deflected, usually untufted, the abdomen closely scaled, weak, tapering suddenly to anus. The palpi are distinguished by being weak, of unequal length, the third joint not long or distinct and pointed as in the *Plusiinae*. In the usually clawed fore tibiae they approach the *Heliothinae*, in the shape of wing they are in a measure intermediate between the *Calpinae* and *Plusiinae*. I have not found any characters which divide the group. I call *Eustrotiinae*, composed of genera clustering about *Tarache* and *Eustrotia*. I cannot call this latter genus *Erastia*, because this latter term is used first by Hübner for a genus of *Geometridae*. The *Stiriinae* frequent flowers, and the extruded ovipositor of some genera makes it probable that some inhabit stems or fruit in the larval state. The metallic wings ally them to *Plusia*. None of my subfamily groups have exclusive characters. I

agree with Lederer except that I consider the *Bombyciæ* and *Brephidæ* as *Noctuidæ*, and am adverse to giving an independent family rank to these small assemblages of genera. I also believe that genera may be founded on comparative characters, and that we should not associate very different-looking insects because technically they agree in certain natural characters. If we can find a modification of these, this will support a genus which otherwise we might not erect. Still I have always relied on natural characters and nowhere have I considered that pattern, color or size are sufficient. Admitting that secondary sexual characters must be used in some lower groups to erect our genera upon, I cannot make an exception with *Heliochilus*, as I have elsewhere fully explained.

The four species which have become homeless through Mr. Smith's paper and must be transferred to other subfamily groups, I would arrange as follows:

XANTHODES, Guen.

BUXEA, Gr.—Texas.

TRILEUCA, Gr.

Eyes full, naked, unlashd; vestiture scaly; body untufted; tibiae unarmed; wings full; primaries unusually broad for this group; apices pointed, external margin straight. The colors are faded brownish ochrey, silky, shining; fore wings crossed by three pale, narrow upright lines, the outer angulate on costal region. The species are:

TRIFASCIA, Gr.—Southern States.

GULNARE, Streck.—Illinois.

CHAMAECLEA, Gr.

Front with a tubercle; tibiae apparently unarmed; body untufted; wings like *Stiria*. The genus is not unrelated to *Grotella*, and in colors oddly resembles the European *C. Delphinii*. I have figured it in my Illustrated Essay.

PERNANA, Gr.—Arizona.

Note.—In my revision of the *Stiriinae*, etc. (Can. Ent.), I record this genus and its characters at length.

LIST.

HELIOTHINAE, m.

LEPIPOLYS, Guen.

- 1.
- perscripta*
- , Guen.

ANARTA, Ochs.

2. *myrtilli*, Linn.
acadiensis, Beth.
3. *cordigera*, Thunb.
luteola, G. & R.
4. *melaleuca*, Thunb.
bicycla, Pack.
5. *melanopa*, Thunb.
nigrolunata, Pack.
6. *quadrilunata*, Gr.
7. *subfasciata*, Gr.
8. *submarina*, Gr.
9. *schoenherrii*, Zett.
leucocycla, Staud.
10. *Richardsoni*, Curt.
algida, Lef.
11. *promulsa*, Morr.
12. *nivaria*, Gr.
Mam. curta, Morr.
Orth. perperula, Morr.
13. *membranacea*, Morr. —
14. *lapponica*, Thunb.
amissa, Lef.
15. *Zetterstedtii*, Staud.
16. *Kolloggii*, Hy. Edw.

SYMPISTIS, Hübner.*

17. *proprius*, Hy. Edw.
- MELICLEPTRIA, Hübner. (Gr.).
18. *celeris*, Gr.
19. *pulchripennis*, Grt.
var. languida, Hy. Edw.
20. *Graefiana*, Tepper.
21. *villosa*, Gr.
pauzilla, Gr.
22. *persimilis*, Gr.
23. *honesta*, Gr.
24. *sueta*, Gr.
var. Californiensis, Gr.
25. *vacciniae*, Hy. Edw.

HELIOLONCHE, Gr.

26. *modicella*, Gr.
- HELIOSEA, Gr.
27. *piotipennis*, Gr.
- HELIACA, H.-S.
28. *diminutiva*, Gr.
29. *fasciata*, Hy. Edw.
30. *dubitans*, Tepper.
31. *nexilis*, Morr.
elaborata, Hy. Edw.

MELAPORPHYRIA, Gr.

32. *immortus*, Gr.
- DISOCNEMIS, Gr.
33. *prorupta*, Gr.
venusta, Hy. Edw.
34. *belladonna*, Hy. Edw.
35. *ononis*, Fabr.
oregona, Hy. Edw.

PSEUDATAMILA, Smith.

36. *perminuta*, Hy. Edw.
 ??
37. *vanella*, Gr.

HELIOPHANA, Gr.

38. *mitis*, Gr.
- XANTHOTHRIX, Hy. Edw.
39. *ranunculi*, Hy. Edw.

EUEDWARDSIA, Gr.

40. *Neumoegeni*, Hy. Edw.

HELIOCHILUS, Gr.

41. *paradoxus*, Gr.
- HELIOTHIS, Hübner.
42. *armiger*, Hübner.
var. umbrosus, Gr.
43. *dipsaceus*, Linn.
phlogophagus, G. & R.
interjacens, Gr
var. luteitinctus, Gr.
44. *sotosus*, Fabr.
nuchalis, Gr.
45. *rhexia*, A. & S.
spectanda, Streck.

* Not *Sympistes*, Smith.

flexa, Guen. —

PYRRHIA, Hübner.

bra, Hüfn.

exprimens, Walk.

gulate, Gr.

lla, Gr.

DASYSPOUDAEA, Smith.

ens, Morr.

var. luxuriosa, Gr.

adii, Gr.

SEUDANTHOECIA, Smith.

aida, Gr.

OXYCNEMIS, Gr.

ena, Gr.

TRIOCNEMIS, Gr.

oris, Gr.

AEDOPHRON, Led.

lens, Tepper. —

lwi, Gr.

ALARIA, West.

irae, A. & S.

RHODODIPSA, Gr.

upia, Fitch.

niana, Gr.

RHODOPHORA, Guen.

ida, Guen.

RHODOSEA, Gr.

lia, Gr.

ICTEROPHAETA, Smith.

gdalena, Hulst. (Febr.)

Epinyctis notatella, Gr. (April.)

PIPPONA, Harv.

natrix, Harv.

GROTELLA, Harv.

tempunctata, Harv.

ANTAPLAGA, Gr.

nidiata, Gr.

seriata, Gr.

BESSULA, Gr.

ta, Gr.

TRICOPIS, Gr.

rysellus, Gr.

latica, Tepper.

??

lucis, Harv.

LYGRANTHOECIA, G. & R.

70. *cumatilis*, Gr.

submala, Streck.

71. *trifascia*, Hübner.

71½. *bifascia*, Hübner.

72. *gracilentata*, Hübner.

oleagina, Morr.

imperspicua, Streck.

73. *velaris*, Gr.

74. *obliqua*, Smith. —

75. *nundina*, Dru.

76. *separata*, Gr.

var. balba, Gr.

var. acutilinea, Gr.

var. ? Walsinghamii, Hy. Edw.

76½. *coercoita*, Gr.

77. *roseitincta*, Harv.

78. *lynx*, Guen.

79. *siron*, Streck.

80. *tertia*, Gr.

81. *albafascia*, Smith. —

82. *regia*, Streck.*

83. *sanguinea*, Geyer

84. *cupes*, Gr.

crotchui, Hy. Edw.

85. *lupatus*, Gr.

86. *jaguarina*, Guen.

87. *Packardii*, Gr.

88. *mortua*, Gr. (Colorado),

89. *nubila*, Streck. (Tex.)

90. *nobilis*, Gr. (Colorado).

91. *errans*, Smith.

92. *arceifera*, Guen.

var. Spraguei, Gr.

93. *limbalis*, Gr.

94. *brevis*, Gr.

var. atrites, Gr.

95. *inclara*, Streck.

96. *ultima*, Streck.

97. *tuberculum*, Hübner.

98. *bina*, Guen. —

99. *spinosa*, Guen.

hirtella, G. & R.

100. *Meskeana*, Gr.

rufimedia, Gr.

fastidiosa, Streck.

101. *parmeliana*, Hy. Edw. —

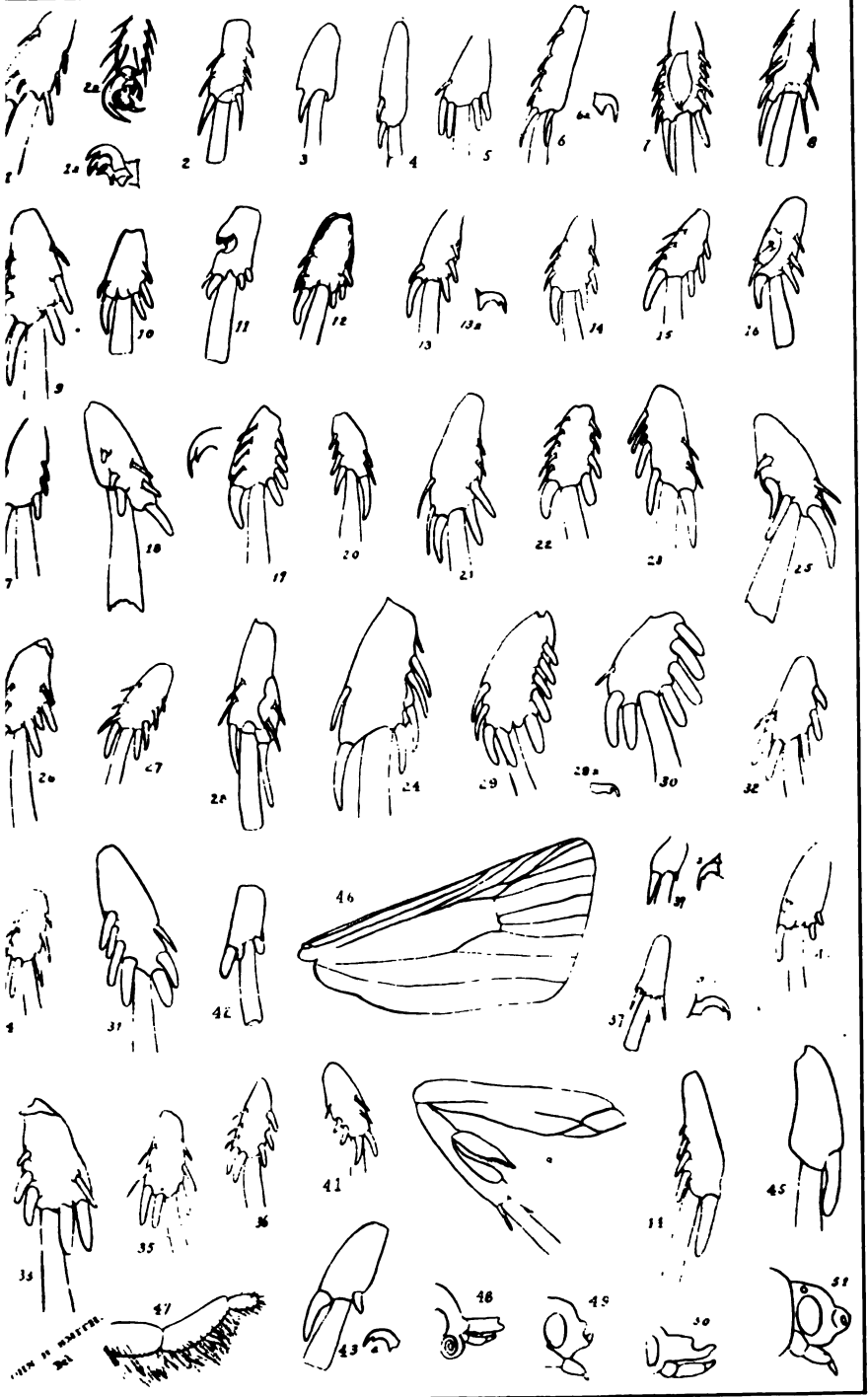
102. *marginata*, Haw.

riculosa, Guen.

ferred by me to *Lygranthoecia*. I associated it with *Sanguinea* in coll. Neum.

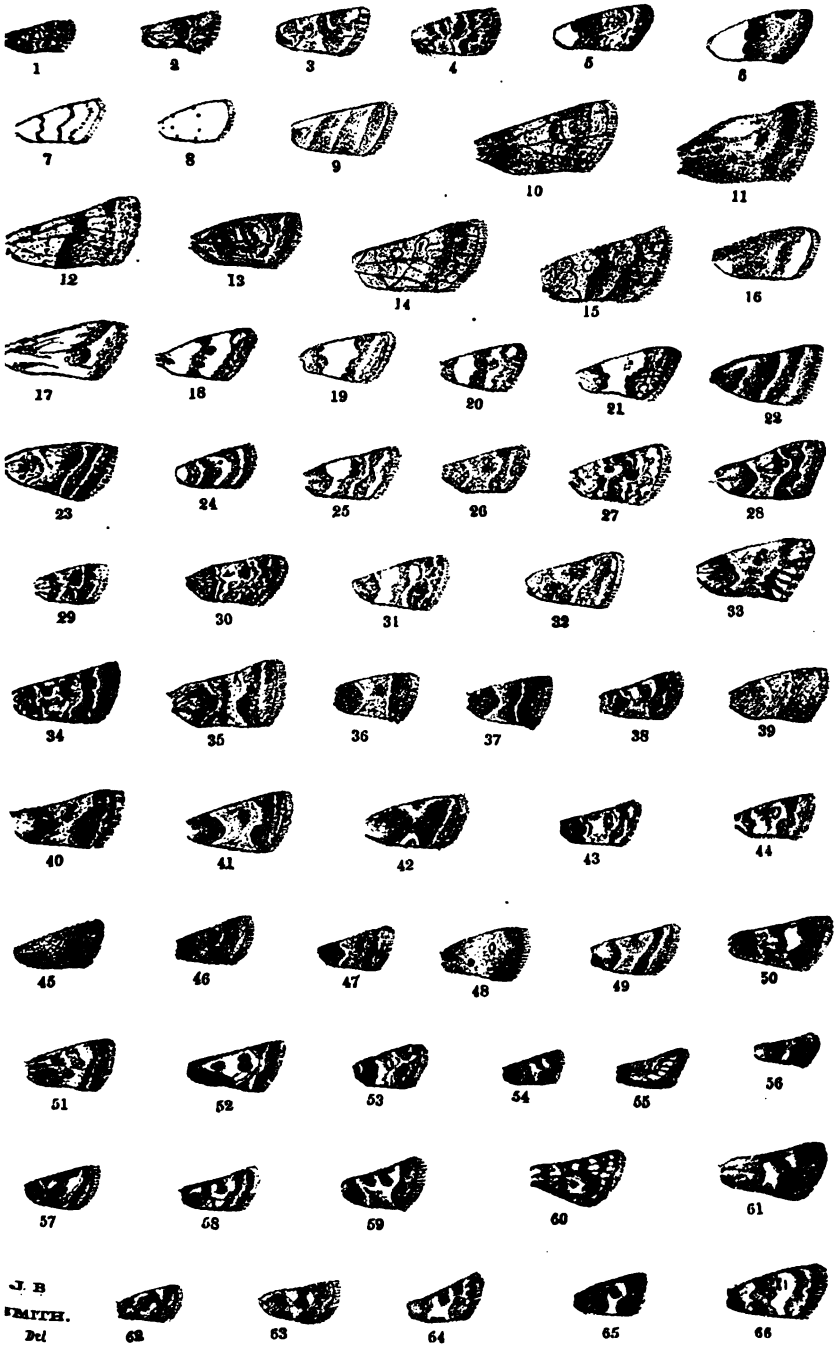
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| <p>103. <i>constricta</i> Hy. Edw.
 104. <i>Thoreaui</i>, G. & R.
 105. <i>saturata</i>, Gr.
 <i>rubiginosa</i>, Streck.
 106. <i>lanul</i>, Streck. —
 107. <i>gloriosa</i>, Streck. —
 DERRIMA, Walk.
 108. <i>stellata</i>, Walk.
 var. <i>maj.</i> suff. <i>suc.</i>?</p> | <p>109. <i>Henrietta</i>, Gr.
 AXENUS, Gr.
 110. <i>arvalis</i>, Gr.
 <i>amplus</i>, Hy. Edw.
 <i>aberr. ochraceus</i>, Hy. Edw.
 PSEUDACONTIA, Smith.
 111. <i>erustaria</i>, Morr. —</p> |
|--|--|

By the arrangement I have proposed the pale, often whitish form with the front bulging, infra-clypeal plate exposed (sometimes mainly at the middle as in *Rhodosea*) are placed at the end, as they approach the *Tarache*-like genera in some respects. The mossy-scaled, broad front of *Tarache* is intermediate between the clypeus of the *Heliothids* and that of *Eustrotia*. I am willing to place *Axenus* here, but I cannot understand why Mr. Smith at one time considers it a bad genus and not distinct from *Annaphila*, and then puts it into another subfamily? Could it only be shown how much is lost by unnecessary criticism, both to science and human happiness, I think it would be less generally indulged in. I have worked so long and on the whole to such plainly advantageous results to a knowledge of our *Noctuidae*, that I am rather entitled to a greater consideration. I assure Mr. Smith, in conclusion, that I shall view the results of his future work with pleasure and that, although this is my last reply to him, that I shall be glad to assist him in any way possible while the power to do so remains with me.

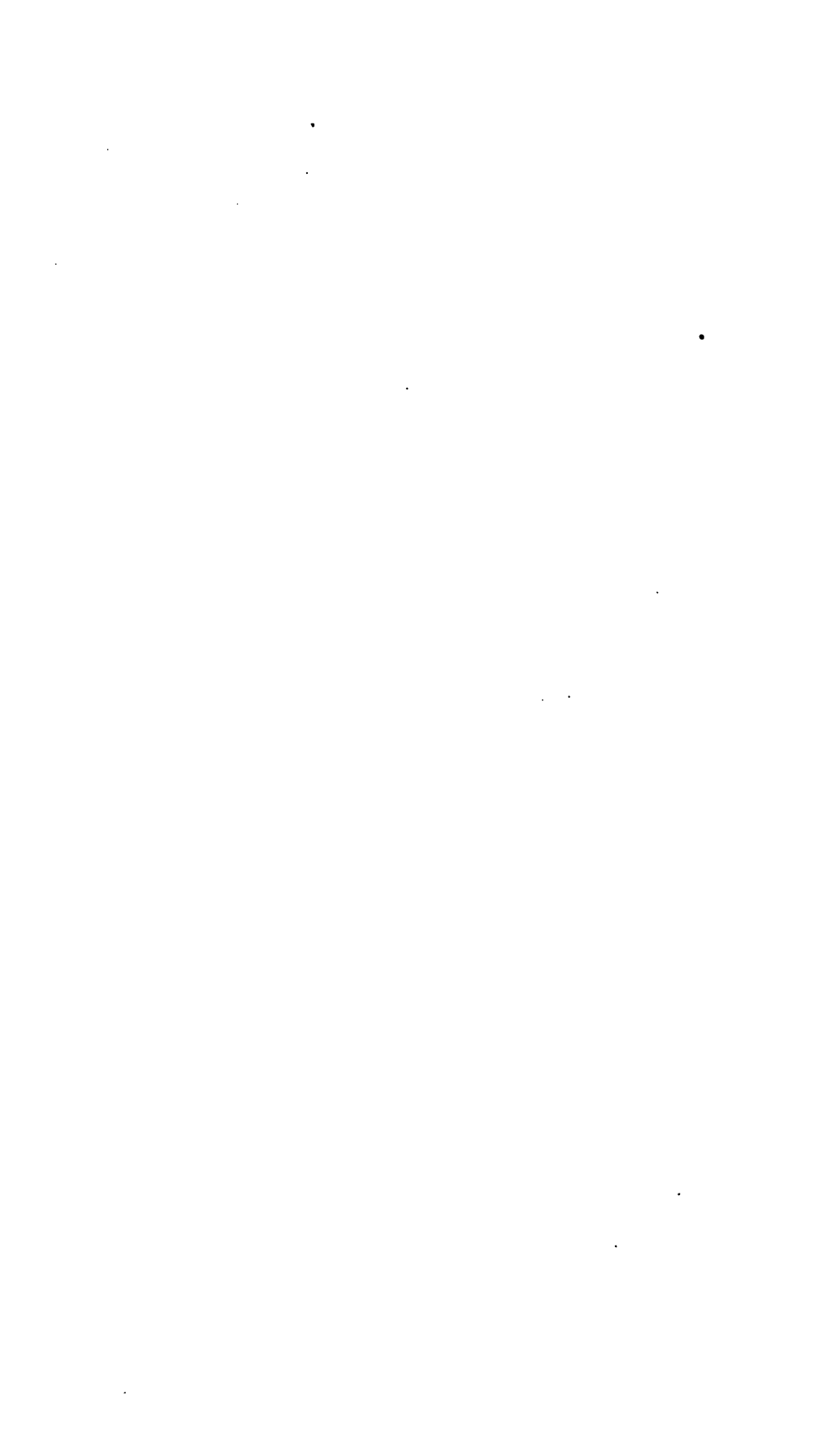


W. H. WHITFIELD
1911





J. B.
SMITH.
Del.



**Miscellaneous notes and short studies of North American
COLEOPTERA.**

BY GEORGE H. HORN, M. D.

The following pages have been prepared with the view of placing before the students of our fauna any points of material interest which have been observed from time to time. These include synonymical notes, short studies of various genera, and descriptions of some new species. Synonyms are ascertained by the accumulation of specimens when the types or their equivalents are at hand. When, however, types are in the hands of distant authors an interchange of specimens establishes the fact of identity, which should be made known by publication. Short studies are either preliminary to monographic work or supplementary to it, and are, in either case, useful in giving the newest ideas. The description of isolated new species is probably the least useful of the parts of a paper of this kind, as but little is added to our knowledge beyond a new name, and this, too often, a possible synonym.

With these few words of explanation the following notes are presented:

Amblychila Piccolomini Reiche.

A second and very careful examination of the type of this species in the Museum of the Jardin des Plantes convinced me that the views, already several times expressed, of its identity with *cylindriciformis* Say, are correct. It is certainly smaller than the specimens taken in Kansas and at the same time smoother, corresponding very closely in these respects with specimens taken in New Mexico and Eastern Arizona, which are in the cabinets of Dr. LeConte and Mr. Ulke respectively. The locality in which the Reiche specimen was collected was said to be California, but I have endeavored to show from collateral evidence that the specimens distributed by Dupont from the same series were collected, in all probability, in Texas (vide Trans. Am. Ent. Soc. X. Bull. p. iv).

Cicindela Magdalenae Lec., Proc. Acad. 1873, p. 321.

At the time of the preparation of the "Index to the species described by Dr. LeConte," I caused to be inserted on my own responsibility that the species was probably South African in origin, my reasons being that the type of markings and the whole facies of the species were widely different from any in our fauna, and decidedly like the South African forms of which I had seen a number in the cabinet of Mr. F. G. Schaupp.

During a visit to Prof. Westwood last year he kindly placed the type before me, belonging to the Hope collection at Oxford. I then found that the specimen really belonged to a series of four, this one having been accidentally misplaced and that the species was *C. senegalensis*, Dej.

***Carabus cancellatus* Illig.**

This species must be added to the list. More than a dozen specimens were captured near Wilmington, N. C., by the late Mr. Wenzel, and were part of the unpinned specimens contained in a bottle with other alcoholics undoubtedly native species.

***Calosoma peregrinator* Guér.**

Specimens of this species kindly given me by Mr. Salvin show that *C. carbonatum*, Lec., must be placed in synonymy. By some misunderstanding *C. prominens*, Lec., has been suppressed as the synonym, but must be restored to the well-known species with the sides of thorax angulate.

CYCHRUS Fab.

An examination of Dr. Schaum's types in the Berlin Museum shows that our determinations of his species are correct.

C. convexus, Moraw., from Japan, is almost an exact reproduction in miniature of our *C. tuberculatus*, Harr.

ANOPHTHALMUS Sturm.

In 1871 a table of our species was published by me in these Transactions. Since that time Mr. Hubbard has made known another species, and one about to be described has also been taken. The number of specimens has been increased, and renewed study shows the necessity of modifying some of the characters given in the table twelve years ago. The following table and notes are presented in the hope that they will prove more useful:

Terminal joint of maxillary palpus shorter than the preceding; elytra with two dorsal punctures.

Thorax longer than wide, base truncate, hind angles rectangular, humeral margin of elytra not serrulate **Tollkampfi.**

Terminal joint of maxillary palpus equal to or longer than the preceding; elytra with three dorsal punctures.

Base of thorax on each side oblique; elytra with punctured striae.

Thorax a little longer than wide; humeral margin of elytra not serrulate, striae feeble, obsolete punctured, intervals sparsely punctulate and pubescent..... **interstitialis.**

Thorax not longer than wide; humeral margin of elytra distinctly serrulate, striae rather deep, the punctures coarse, intervals slightly convex, rarely punctulate, not pubescent **Menetrical.**

Base of thorax on each side squarely truncate, elytra with obsolete or feeble striae.

Humeral margin of elytra not serrulate.

Thorax longer than wide.....**tenuis**.

Thorax as wide as long.

Thorax small, not as long as the head and scarcely larger. Elytra obsoletely striate, surface shining and with very short pubescence near the base.....**pusio**.

Thorax larger and wider than the head. Elytra with scarcely any traces of striae, its surface subopaque, finely alutaceous, not pubescent,

eremita.

Humeral margin of elytra distinctly serrulate.

Elytra subopaque, very finely alutaceous, surface with very feeble traces of striae. Thorax distinctly narrowed behind.....**pubescens**.

Elytra shining, surface distinctly striate. Thorax rather transverse, scarcely narrower posteriorly.....**audax**.

In the above table I have attempted to arrange the species in such a manner as to indicate the gradual approach toward the forms of *Trechus* existing in our fauna. The palpar structure of *Tellkampfi* marks that species as the most specialized. The first three species in the above table are also remarkable in their very feeble evidence of the existence of the recurrent end of the sutural stria, it has, in fact, almost entirely disappeared.

A. *Tellkampfi* Erichs., Müll. Arch. 1844, p. 384.

This species represents in our fauna *A. Bilimeki*, of Europe. It is remarkable in having but two dorsal punctures.

It occurs most abundantly in the Mammoth Cave of Kentucky, also in Cave City cave.

A. *interstitialis* Hubbard, American Entomologist, 1880, p. 52.

The characters given in the table sufficiently differentiate this species from any other in our fauna. In it the recurrent sutural stria is feebly indicated. It is also remarkable for the great length of the tarsal claws which are a little more than half the length of the last tarsal joint. In attempting to distinguish this species too great stress should not be laid on the interstitial punctuation, as it is variable here and exists in an equally variable manner in the next species.

Occurs in the Mammoth and Cave City caves.

A. *Menetriesi* Motsch., Etudes. Ent. 1862, p. 41.

I find that Motschulsky quotes an earlier date for this species, but on referring to the Etudes, 1854, p. 12, there is merely a mention of a species. Three characters together serve to distinguish this species from any other in our fauna—the serrulate humeri—deeply striate elytra and prominent hind angles of the thorax. In the last respect, however, the

specimens are somewhat variable and the hind angles are sometimes scarcely more than rectangular.

At the same time Motschulsky describes two other species, *striatus ventricosus*. The latter I feel quite sure is merely a variety of *Menetriesi*. The other may possibly be *interstitialis*, *Hubb.*, but I am unwilling to suppress a name founded on a good description to adopt one quite otherwise.

Occurs in the Mammoth, Cave City, Saltpetre and Ronald's caves.

A. tenuis Horn, Trans. Am. Ent. Soc. 1871, p. 327.

This is the most slender species in our fauna. The hind angles of the thorax are slightly prolonged backwards. The elytra are faintly striate on the disc, the intervals with slight traces of punctuation, and the entire surface extremely finely alutaceous. The recurrent sutural stria is well marked. The tarsal claws are extremely slender and nearly straight.

My specimens were collected by Prof. Cope in the Wyandotte cave of Southern Indiana; those possessed by Dr. LeConte are from the Bradford caves.

A. pusio Horn, Trans. Am. Ent. Soc. 1868, p. 125.

This is our smallest species. The thorax is not larger than the head, narrowed behind, the hind angles not prominent, the base nearly squarely truncate and the basal impressions very deep. The striae of the elytra are evident only near the suture, and the sutural stria is very distinctly recurved. The surface is shining, the intervals near the base very finely punctulate and with very short pubescence.

I have seen but three ♂ specimens of this species, all collected by Prof. Cope in Erhart's cave, Montgomery county, Virginia.

A. eremita Horn, Trans. Am. Ent. Soc. 1871, p. 325.

A species somewhat resembling *tenuis*, but broader. The thorax base is very squarely truncate, and the elytra less striate and more distinctly alutaceous than in any other species in the present list.

One ♂ specimen collected in Wyandotte cave.

A. pubescens Horn, Trans. Am. Ent. Soc. 1868, p. 126.

The humeri are distinctly serrulate, the surface distinctly alutaceous, feebly striate and with an extremely fine pubescence, which appears to be more persistent than in the other species.

Collected in Cave City, Saltpetre and Ronald's caves.

A. audax n. sp.—Rufo-testaceous, shining, head slightly darker. Thorax one-third broader than long, scarcely narrowed at base, sides slightly arcuate in front, feebly sinuate in front of the hind angles, which are rectangular but not prominent, base squarely truncate, apical and median lines moderately distinct.

basal impressions deep, lateral margin wider posteriorly. Elytra oblong oval, wider than the thorax, base truncate, humeri obtuse, the margin serrulate, disc finely striate, the striae slightly punctured at base and nearly obsolete at the sides, the recurrent sutural stria rather deeply impressed. Tarsal claws small. Length .16 inch; 4 millim.

By its much broader thorax with the margin wider behind, this species approaches *Trechus* more closely than any of the preceding species.

One specimen ♂, Ronald's cave, cabinet of Dr. LeConte.

Of the species mentioned above I have seen a very large number of *Tellkampfi*, five of *interstitialis*, twenty of *Menetriesi*, seven of *tenuis*, three of *pusio*, one of *eremita*, six of *pubescens* and one of *audax*.

TRECHUS Clairv.

T. hydropticus n. sp.—Piceous shining, elytra iridescent, antennae and legs pale. Thorax transverse, narrower at base, sides feebly arcuate anteriorly, margin wider posteriorly, hind angles distinct but not prominent. Elytra broadly oval, not more than one-fourth longer than wide, surface smooth, the three inner striae alone distinct, the others obsolete. Body beneath smooth, shining. Length .12 inch; 3 millim.

This species is closely related to the California *ovipennis*, but is much smaller and more convex, the eyes are much less prominent and very feebly granulated.

Collected by Mr. Ulke in Virginia.

PSEUDOMORPHA Kby.

The occurrence of a new species gives me the opportunity to bring together a few notes on those previously described so that they may be aptly compared.

But one other species is known from North America (*P. Pilatei*, *Chaud.*, Yucatan), which is even smaller than *excrucians* and with the parallel form of *Behrensi* and *augustata*. It is a very distinct species. The type was kindly shown me by Mr. René Oberthur, its present owner.

There are now known to us in our fauna four species of *Pseudomorpha*, which for convenience of determination may be arranged as follows:

Elytra distinctly narrower posteriorly.

Elytra with rows of coarse punctures forming nine quite regular striae,

excrucians Kby.

Elytra nearly smooth, punctures obsolete.....**Cronkhitel** Horn.
Elytra parallel.

Elytra with moderate punctures, very irregular on the disc, forming striae at the sides.....**Behrensi** Horn.

Elytra with moderate punctures, confused on the disc, finer at the sides and forming striae, in addition a row of large dorsal punctures 9 or 10 in number near the suture.....**augustata** Horn.

P. excrucians Kby., Trans. Linn. Soc. 1825, p. 101, Pl. 3, fig. 3.—The body beneath and legs, head and thorax rufo-testaceous, elytra piceous. Head and

thorax with very few punctures. Elytral punctures very coarse, forming quite regular striae, merely a little confused behind the the scutellum. Length .26 inch; 6.5 millim.

Male.—Anterior and middle tarsi with rather long hairs beneath. Third ventral segment rather densely punctured at middle, more sparsely at the sides, fourth and fifth segments with a short transverse row of closely placed, recumbent bristles at middle. Last ventral segment with two submarginal setigerous punctures on each side. The third and fourth ventral segments have also a series of coarse punctures, forming an arcuate row extending from side to side, each puncture bearing an erect seta.

Occurs in Georgia.

P. Cronkhitel Horn, Trans. Am. Ent. Soc. 1867, p. 151.—Body beneath rufopiceous, above piceous. Head and thorax very sparsely punctulate. Elytra sculpture nearly obsolete, but with one or two large punctures in the post-scutellar region. Length .32 inch; 8 millim.

Male.—Characters as in *excrucians*.

The post-scutellar punctures represent the row of dorsal punctures of *augustata*.

Collected in Owen's Valley, California.

P. Behrensi Horn, Trans. Am. Ent. Soc. 1870, p. 76.—Body beneath rufopiceous, above piceous. Head and thorax sparsely, but quite distinctly, punctured. Thorax obsoletely subcarinate at middle posteriorly. Elytra with coarse punctures forming striae at the sides, but rather irregular at middle. There is no indication of a dorsal series of punctures. Length .38 inch; 9.5 millim.

Male.—Characters as in *excrucians*.

Female.—Third ventral coarsely and densely punctured at middle, less densely at the sides, fourth and fifth segments without the short transverse row of bristles. Last ventral with four submarginal setigerous punctures on each side.

Occurs in the San Joaquin Valley, California.

P. augustata n. sp.—Elongate, parallel, castaneous, shining. Head with very few punctures near the occiput. Thorax a little more than twice as wide as long, narrowed in front, sides slightly arcuate, margin narrowly explanate, except near the hind angles, angles of thorax rounded, disc moderately convex, median line finely impressed, surface with a few rather coarse punctures at middle, fewer and less evident near the sides, the extreme margin plurisetose. Elytra elongate, parallel, as wide as the thorax, surface sparsely punctate, the punctures irregularly placed on the disc, but forming vague striae near the sides; about one-fourth from the suture is a series of coarse dorsal punctures about ten in number bearing short setae, lateral margin sparsely fimbriate. Body beneath paler than above, smooth and shining. Third ventral segment at middle densely submarginally punctured, fourth and fifth segments with a transverse row of short setae at middle, the last ventral with two large setigerous punctures near the margin on each side. Length .30 inch; 7.5 millim. Pl. IX., fig. 6.

The specimen before me is a male, and the characters given above for the abdomen are sexual. In shape this species is fully three times as long as wide. By its parallel elytra it approaches *P. Behrensi*, Horn, which has not, however, any trace of the dorsal series of setigerous punctures on the elytra.

A female in the cabinet of Dr. LeConte has the row of dorsal punctures less distinct, and the last ventral segment with three marginal punctures.

Collected by H. K. Morrison in Arizona.

AMPHIZOA.

This genus was at first considered by Dr. Sharp sufficiently a Dytiscide to be placed in his division *Dytisci complicati*. This view he, however, recalls, and is willing to admit that Amphizoa and Pelobius must be isolated from any of the great families of Adephaga. He is not, however, willing to admit that they should take rank as families in the same sense as we receive the Carabidae or Dytiscidae, his objection being based on an unwillingness to consider Amphizoidae and Pelobiidae, each containing but one genus and those genera three species each, comparable with great aggregates containing many genera and numerous species.

In adopting the views of Dr. LeConte regarding Amphizoa and extending the idea still further in the suggestion of a family for Pelobius, the number of the species was entirely a minor consideration. The type of structure was taken as the standard of comparison and each particular type was designated by a name adopted in all cases from those in use.

To those who prefer to follow Dr. Sharp's synthetic method of treating the subject, I can see no reason why a single species should not represent in itself all the various syntheses through which Dr. Sharp passes the objects of his study. Thus a species *insolens* represents also the genus Amphizoa, the tribe Amphizoini, the subfamily Amphizoinae, and finally the family Amphizoidae, which makes part of a larger aggregate known as Adephaga.

It is quite within the limit of possibility that an ally of Amphizoa should occur with a structure of middle coxal cavities, as in the *Dytisci fragmentati* or the subfamily Carabinae. We would then certainly have all the elements of a complete synthesis with the addition of a single species. To my mind an important modification of structure has as great systematic value when represented by one species as by a thousand.

A. Josephi, Matth., is retained as distinct by Dr. Sharp. I have carefully examined the type and find it not different from the male of *insolens*.

The occurrence of a species (*A. Davidis*, Lucas) in the mountain regions of Thibet has been recently made known.

DYTISCIDAE.

While on a visit to Dr. Sharp I was enabled through his kindness to examine very nearly all of the species described by him from our fauna. From notes made by me at the time I have been enabled to identify very many of the species since my return, although a good number still remain unknown to us.

The work of Dr. Sharp is the most important ever given to science on this family. Numerous characters overlooked by others have been clearly presented. While I can hardly agree with him in his estimate of the value of very minute characters for the separation of species, it must nevertheless be admitted that his entire work gives evidence of close, conscientious and accurate study.

The following notes are intended to bring his work into closer correspondence with our cabinets as far as I am able to interpret it. In those cases in which I feel compelled to dissent from his views I have endeavored to give my reasons as clearly and briefly as possible, and if the expressions are short and didactic, they have been so framed to avoid unnecessary verbosity.

In using Dr. Sharp's work I have many times had occasion to regret that his idea of the entire inviolability of the original name given by preceding authors has been put in practice. Unless there happens to be a new species on a given page it is impossible to say with certainty what genus is before us, nor can we in this case be certain as on p. 411 a new *Antiporus* is described with the name *Hydroporus*. It is, to say the least, a little confusing to find, as on p. 271, four generic names on one page.

The omission of author's names after genera throughout the book is, to say the least, inconvenient. While I admit that the name of the author is not an essential part of the generic name it very often gives us a clue to bibliography, often a matter of very great utility.

CANTHYDRUS Sharp.

This contains the species formerly in our lists under *Suphis*.

C. punctipennis, Shp., seems merely a pale form of bicolor, *Say*. It is taken frequently by Mr. Ulke near Washington.

HYDROCANTHUS.

Dr. Sharp is willing to admit three species in our fauna.

H. oblongus, Shp.—This species is founded on the pale or ferruginous specimens often found in Pennsylvania.

H. iricolor, *Say*.—Dr. Sharp identifies as we have done.

H. texonus, Shp., is what we have called *atripennis*, Say, which name Dr. Sharp assigns to a Brazilian species.

On the whole I am inclined to agree with Mr. Crotch, who considered all these forms one species.

LACCOPHILUS.

L. fuscus, Shp., founded on one female specimen, does not appear separable from *decipiens*, Lec.

L. pictus, Cast., occurs in Arizona and the Peninsula of California.

L. insignis, Shp.—This and the preceding species were confounded together by Crotch. It occurs in Texas only, as far as we know. This species has the yellow marks on the elytra forming distinct fasciae, while in *pictus* the yellow marks are in the form of small isolated spots. Another species closely allied to these two has been collected in Arizona.

L. americanus, Aubé., is noted in our fauna by Dr. Sharp. I have never seen native specimens, but it is known to me from the Antilles.

L. terminalis, Shp.—Closely allied to *fasciatus*, Say, and recalling also *maculosus*. It is known to me from Peninsula of California and the adjacent regions of Upper California.

L. atristernalis, Crotch, is *mexicanus*, Aubé.

COELAMBUS.

C. fumatus, Shp., seems to be the true *lutescens*, Lec. The latter, as determined by Dr. Sharp, should receive another name.

C. infuscatus, Shp.—A specimen from Oregon referred by me to this species is a male. The anterior tarsal claws are dissimilar, the anterior being a little shorter than the posterior, stouter, more arcuate and rather broadly dilated at base.

DERONECTES.

D. suffusus, Shp.—Specimens from Massachusetts in my cabinet belong to this species, but I am unable to convince myself that it is specifically distinct from *catascopium*, Say.

D. prosternalis, Shp.—This is clearly Say's *catascopium*. I do not know why the latter name should be disregarded. It is distinguished from *griseostriatus* by having the prosternum more carinate in front, but I am quite sure from my observation that this is an evanescent character.

HYDROPORUS.

H. pulcher, fide Shp., is not *pulcher*, Lec., which has no distinct sutural stria.

H. integer, Shp., is the true *pulcher*, Lec.

H. labratus, Shp., seems to be identical with *oppositus*, Say, which has not been considered specifically distinct from *undulatus* by Crotch.

H. peltatus, Shp.—Dr. Sharp writes that this name is equivalent to *spurius*, Lec. There does not appear to be any special reason for the substitution and the name should be restored.

H. clypealis, Shp.—This is probably confounded in all cabinets with *undulatus*, Say. The males are, however, easily distinguished by the claws of the front tarsi being very unequal.

H. mexicanus, Shp.—A specimen apparently of this species is in my cabinet from Southern California.

H. rivalis, Gyll.—Of this species *obesus*, Lec., and *congruus*, Lec., are synonyms.

H. despectus Shp., *perplexus* Shp., *rusticus* Shp., *tenebrosus* Lec. (*subpubescens* Lec.), *hirtellus* Lec.

I am quite sure that I have identified in our series all the forms above indicated, that is, a certain number can be referred to each name, but the vast mass of specimens is of intermediate material. I think the name *tenebrosus*, Lec., should be applied to the aggregate.

H. tristis, Payk.—To this belong *varians* and *subtonsus*, Lec.

HYDROTRUPES Sharp.

H. palpalis, Shp.—A few specimens have been received from the San Bernardino Valley, California. It may be at once known by the quadrate terminal joint of the labial palpi. The body is black and shining, the elytra very finely punctured, the punctures connected by minute reticulations.

AGABUS.

A. perplexus, Shp., is *suturalis*, Crotch.

A. ambiguus Say, fide Shp.—From specimens sent to Dr. Sharp I learn that the species here identified is the same as *discolor*, Harris, of our cabinets. Dr. Sharp is now inclined to believe that the species should not be separated from congener, Payk. The latter name should remain with *ambiguus* and *discolor* as synonyms.

A. aeneolus, Crotch.—Dr. Sharp states that the type of *punctulatus*, Aubé, is the same as this. The latter name should be used.

A. strigulosus, Crotch.—To this *nanus*, Lec., must be referred.

A. Walsinghami, Crotch, does not appear specifically distinct from *confertus*, Lec.

A. confinis, Gyll.—To this *ovoideus*, Cr., must be referred.

A. Lecontei, Crotch.—This species was originally described as *discolor*, Lec. The name being preoccupied was changed in the Mel-

sheimer Catalogue to *lutosus*. In the List of Coleoptera (1863) the latter name is lost sight of in its relation to *discolor*, and is there given as a name intended to be applied to another species and was so used by Crotch. In order to avoid further confusion the name *Lecointei* should be allowed to stand.

A. nigroaeneus, Er.—Abundant from Canada to California, and is the species described as *lutosus*, Crotch.

ILYBIUS.

I. ater, De Geer.—To this *ungularis*, Lec., must be referred.

I. ignarus, Lec. fide Shp., does not seem to be correctly identified.

The true species belongs to Sharp's group 2.

I. angustior, Gyll.—To this *picipes*, Kly., should be referred.

COPTOTOMUS.

C. obscurus, Shp.—I have very great doubt of the distinctness of this species.

RHANTUS.

R. obscurus, Shp., is *flavogriseus*, Crotch.

R. longipes, Shp., was regarded as a mere color variety of the preceding by Crotch, and, I think, correctly.

R. plebejus, Shp.—While I can separate specimens which agree with Dr. Sharp's description, I do not believe the species distinct from *binotatus*, Harr.

R. discedens, Shp., is the female of *tostus*, Lec.

R. sericans, Shp., is the species recorded in our lists as *notatus*, Fab., and, I think, not distinct.

COLYMBETES.

C. Crotchi, Shp., is *strigatus*, Lec.

C. exaratus, Lec., *sculptilis*, Harr., *rugipennis*, Shp.—After a study of the large series in our cabinets I arrive at the following results:

The males, from whatever part of our territory, are identical. The females, however, vary. The principal forms are (1) those with the thorax sculptured as in the male; (2) those with the thorax more decidedly vermiculate; (3) those with the thorax much more coarsely and deeply vermiculate, and the transverse strigae of the elytra deeper on the disc, much finer at sides and apex.

I think this condition of affairs is indicative of polymorphism in the female. A similar polymorphism in *Agabus* congener and *bipustulatus* has been ably elucidated by Dr. Sharp.

I think the three species above named should be united under the name of *sculptilis*, Harr.

C. inaequalis, Horn.—I consider this in the same manner a dimorphic female of *seminiger*, *Lec.*

HYDATICUS.

H. modestus, Shp., *cinctipennis*, Aubé, *americanus*, Shp.—In the separation of these three species from *stagnalis*, *Fab.*, I can not agree with Dr. Sharp. The only differences are in the color of the upper surface. These variations seem to run gradually from one style to another. The form in which the elytra (except the sides) are black is the most common. A second variation occurs with a subbasal yellow transverse band of variable distinctness. The band then becomes pectinate posteriorly, and we have the vittate varieties thus gradually formed.

ACILIUS.

A. semisulcatus, Aubé.—Crotch was entirely correct in noting smooth females for this species. I have doubts whether this species should be considered distinct from *fraternus*, *Harr.* In studying our large series I find the females in the Eastern Atlantic region to be equally divided between the smooth and the sulcate forms. The sulci extend very little in front of the middle of the elytra. As we go west the sulci become gradually longer, so that the Oregon and Alaskan specimens are sulcate very nearly to the base. Smooth females become rare as we go westward. I think our collections demonstrate the identity of these two species.

In a recent letter Dr. Sharp holds that the two species are distinct, the character on which he relies principally is the somewhat greater distance between the anterior margin of the posterior coxa and the posterior border of the middle coxal cavity in *fraternus* than prevails in *semisulcatus*. I have not been satisfied with my study of this character.

GRAPHODERES

In this genus Dr. Sharp has discovered a variability in the number of the small palettes on the anterior and middle tarsi of the male.

In view of the very great resemblance between the so-called species, it is difficult to imagine that the variability indicates specific distinction. I have examined a number of males and very few agree among themselves. From an examination of the species in the cabinet of Dr. Sharp, I believe that the separation of *fasciatocollis* *Harr.*, *perplexus* *Shp.*, and *elatus* *Shp.*, from *cinereus* entirely unwarranted by the evidence afforded by other species of recognized variability in tarsal vestiture.

On the other hand I have seen three males, two collected by myself in Northern California and a third in Washington Territory, in which the middle tarsi of the male are not at all dilated, nor are there any palettes.

The anterior tarsi have a total of fifteen palettes and the claws are unequal, the posterior being one-third shorter, feebly arcuate, but distinctly sinuate beneath. The claws of the middle tarsi ♂ are feebly arcuate and of unequal length.

G. occidentalis n. sp.—Form more elongate than in *cinereus*, colors precisely similar. Male sexual characters as above. Length .54 inch; 13.5 millim.

This species seems closely allied to *austriacus*, but Dr. Sharp says its anterior claws are a "little unequal." Here they are very unequal on the anterior and middle feet.

Occurs in California and Washington Territory. Female unknown.

The following species are those unknown to Dr. Sharp and placed in an appendix to his paper. As some of them have escaped notice in our lists, it has been thought advisable to make such notes concerning them as may aid in their determination. The numbers given are those of Dr. Sharp's Appendix.

1180. *Agabus atratus* Mann., probably *tristis* Aubé.

1193. *Agabus irregularis* Mann. Has been identified by Crotch with *hypomelas* Mann., and, probably, correctly.

1201. *Agabus scapularis* Mann., probably *anthracinus* Mann.

1202. *Agabus subopacus* Mann., can not be identified.

1227. *Colymbetes fossiger* Motsch., is *Agabus morosus* Lec.

1249. *Colymbetes sobrinus* Motsch., is *Agabus nigroaeneus* Er.

1251. *Colymbetes strigosus* Lec., is a clerical error (= *strigatus*).

1285. *Dytiscus anxius* Mann., is probably *circumcinctus* Ahr.

1292. *Dytiscus fuscostriatus* Motsch., probably *circumcinctus* Ahr.

1413. *Hydroporus persimilis* Cr. The type of this species in my cabinet does not seem different from *collaris* Lec.

1423. *Hydroporus pulcher* || Motsch., is a pale *striatellus* Lec.

In addition to the above there is nearly an equal number of species due to Say, Melsheimer, Mannerheim and Motschulsky, which have escaped recognition and seem to be beyond the limits of an approximative guess.

The following species described by Kirby in the *Fauna Boreali Americana* have, for the most part, been omitted by Dr. Sharp. The types are all in the British Museum and their synonymy could have been authoritatively decided by him. I have seen nearly all of them and the following notes will, probably, be found correct:

Hydroporus nigrolineatus Step., is probably not that species, but one of the smoother forms of *Coelambus impresso-punctatus* Schall, otherwise known to us as *Hydroporus quadrilineatus* Mann.

Hydroporus laevis Kby., is probably the same as that subsequently described by LeConte as *duodecimlineatus* and, if so, Kirby's name should prevail.

Hydroporus picatus Kby., and *similis* Kby., are forms of the variable *impresso-punctatus* Schall.

Laccophilus biguttatus Kby.—This has been placed as a synonym of two other species at various times, but it is probably not a *Laccophilus* at all and seems rather to be a species of *Hydroporus*, perhaps allied to pulcher *Lec.*

Colymbetes semipunctatus Kby., is an *Agabus* and known to us.

Colymbetes bicolor Kby. and *phaeopterus* Kby.—From an examination of the types of these two species in the British Museum, they seemed to be merely color varieties of one species and identical with the form described by Sharp as *Agabus confinis* Gyll. I believe ambiguous *Say* to be the same species, and the name is older than any of those above quoted.

Colymbetes reticulatus Kby., seems to be the same as that described by Aubé a year or two later as *Agabus reticulatus*.

Colymbetes picipes Kby., is *Iybius angustior* Gyll.

Colymbetes assimilis Kby., is *Rhantus binotatus* Harris.

Colymbetes triseriatus Kby., is *C. sculptilis* Harris.

Colymbetes rugicollis Kby., is *Graphoderes liberus* Say.

Colymbetes Macallochii Kby., is *Acilius mediatius* Say.

Dytiscus Oligbuki Kby., is considered to be *confluens* Say, which in turn is *dauricus* Gebl.

Dytiscus Harrisii Kby., a well-known species.

Dytiscus Franklinii Kby., from the description it also must be referred to *dauricus* Gebl.

The following species are sufficiently conspicuous to warrant their description in an isolated manner:

LACCOPHILUS Leach.

L. lateralis n. sp.—Oval, rather broad, yellowish testaceous, elytra black with few yellow marks. Head and thorax obsoletely finely punctulate. Sides of thorax feebly arcuate, hind angles rectangular, color yellowish testaceous with a bilobed piceous spot at the apex and a smaller one at base. Elytra very minutely punctulate, black, with few yellow spots each indicating a tendency toward three transverse series, epipleurae pale. Body beneath nearly smooth, abdomen obliquely scratched. Length .16-.18 inch; 4-4.5 millim. Pl. IX, fig. 2.

This species is closely related to *insignis* and *pictus*, more particularly the latter in form, although even a little more broadly oval. The spots on the elytra are much less numerous and the epipleurae pale in their

entire extent. The dark spaces at the apex and base of the thorax are present in all the specimens before me, and are always wanting in the other two species.

Occurs in Arizona.

The three species above cited form a conspicuously defined little group, characterized by their black elytra maculate with clear yellow. The essential characters of each are as follows:

- Oval, slightly oblong, thorax entirely immaculate. Elytral spots conspicuous, more or less confluent in fasciae; epipleuræ piceous..... **insignis**.
 Oval, rather broad, thorax with a narrow ante-scutellar piceous space. Elytral spots small, not confluent; epipleuræ piceous..... **pictus**.
 Oval, rather broad, thorax with bilobed apical and basal spots. Elytra with few yellow spots; epipleuræ pale..... **lateralis**.

L. insignis Shp., occurs in Texas, *pictus* Cast., in Arizona and Lower California, *lateralis* Horn, in Arizona.

HYDROPORUS Clairv.

H. palliatus n. sp.—Oval, moderately convex, without pubescence, surface shining, color piceous; legs, palpi, antennae, epipleuræ and base of elytra pale yellow. Head with scarcely any trace of punctuation. Thorax with sides very feebly arcuate, the margin very narrowly thickened, surface punctured, rather closely along the base and sides, quite densely near the hind angles, a subapical series of coarser punctures. Elytra paler than the thorax, the basal pale band of varying width extending from the humeri to the suture; surface sparsely and rather finely punctured, and with two indistinct series on each elytra of coarser punctures. Prosternal process moderate. Articular lobes of hind coxæ truncate, the outer angles acute, the cotyloid cavities distinctly separated. Sides of hind coxæ, epipleuræ and abdomen coarsely punctured, abdomen at middle more finely and less densely punctured. Coxal lines deep, nearly parallel, slightly divergent only in front. Third joint of anterior and middle tarsi deeply bilobed. Length .14 inch; 3.5 millim.

I have examined about a dozen specimens and find no special sexual differences. I refer this species to Dr. Sharp's Group 8, in association with *vilis* and others. The shining surface and pale band at the base of the elytra make it a very conspicuous species.

Occurs at Crystal Springs, California.

✓ **H. picturatus** n. sp.—Broadly oval, form of *ricalis*. Beneath piceous, abdomen at times rufescent at base and apex. Head yellow, a little darker posteriorly, surface very sparsely and finely punctured. Thorax with regularly arcuate sides, the side margin not thickened, hind angles obtuse, surface with an extremely fine punctuation, with coarser punctures in the basal and subapical regions, lateral impressions vague, color yellow with broad basal and apical spaces piceous, so that but a narrow line of yellow divides them. Elytra finely and densely punctured, with very coarse punctures irregularly placed and with feeble traces of two dorsal striae, color yellow with interrupted black suture transversely confluent, forming a conspicuous oval spot near the middle of the vittae, another posteriorly and a very irregular space extending to the side margin. Prosternum

in front of the coxae acutely carinate, the lobe rather broad, not elongate. Beneath subopaque, coarsely punctured at the sides of the coxal plates and two ventral segments, the remainder of the surface somewhat rugulose. Legs antennae infuscate toward the tip. Length .10 inch; 2.5 millim. Pl. IX, fig.

This species is referred to Dr. Sharp's Section C. of Group 3, and the species there belonging is most clearly allied to *rivalis*, which it resembles in form and considerably in its markings. It is, however, more shining and with the coarse puncturation of the upper surface very obvious. The third tarsal joint is scarcely bilobed, the claw-joint rather long, and the claws long and slender.

I have seen but four specimens collected in Western Nevada.

H. quadrimaculatus n. sp.—Broadly oval, feebly shining, piceous, head centre of prothorax, two spots on each elytron orange yellow. Head alutaceous sparsely, finely punctured. Thorax piceous, a central transverse space pale, sides feebly arcuate, hind angles rectangular, surface with coarse punctures along basal region, those in front gradually finer, between these a dense, very fine puncturation, lateral impressions very vague. Elytra with distinctly alutaceous surface with numerous but not densely placed coarse punctures, which are gradually finer to the apex and obsolete toward the sides. Prosternum finely carinate between the coxae, the prosternal process rather broad but not long. Body beneath distinctly alutaceous, subopaque, the sides of the coxal plates with very coarse punctures. Ventral segments somewhat wrinkled at the sides. Length .12-.14 inch. 3-3.5 millim. Pl. IX, fig. 5.

This species is also referred to the *rivalis* group, although its sculpture and style of coloration recall *Hydrovatus*. The male has the anterior tarsi a little more dilated than the female, the claws longer and rather less arcuate. In both sexes the third joint is feebly emarginate and the terminal joint moderately long. In the female the terminal ventral segment is somewhat acuminate, in the male simple.

The elytral spots are large, the humeral spot extends on the epipleura and reaches nearly to the suture, its posterior border being broadly notched. The posterior spot is about one-third from the tip, of irregular quadrate shape, and also reaches the side margin of the elytra. The extreme tip is often yellow also.

Occurs in Western Nevada.

TRIARTHRON Maerk.

T. Lecontei Horn, Trans. Am. Ent. Soc. 1868, p. 131, has been described as *T. cedonulli* Schauffuss, Ann. Ent. Soc. Fr. 1882, p. 43.

A second species occurs in Pennsylvania.

T. pennsylvanicum n. sp.—Oval, moderately robust, rufotestaceous, shining. Clypeus slightly prolonged and truncate, corneous. Head sparsely and finely punctulate. Thorax narrower in front, sides moderately arcuate, disc very sparsely and finely punctulate. Elytra wider at base than the thorax, disc striate, striae with coarse closely placed punctures, intervals slightly convex, sparsely

punctulate, the alternate series, 1-3-5-7, with coarser punctures distantly placed. Body beneath less shining, sparsely punctate and pubescent. Prosternal process scarcely prolonged between the coxae. Length .12 inch; 3 millim.

This species closely resembles *Lecontei*. It has a smaller thorax, the elytra more deeply striate, the striae more closely punctured, the intervals more convex but less punctulate. In *Lecontei* the clypeus is entirely membranous, in the present species prolonged and corneous, in that species the prosternum is distinctly prolonged between the coxae, here scarcely so. As my type of *Lecontei* is a ♂ and the present a ♀, it is hardly safe to insist on the clypeal character as a specific one.

One specimen ♀, collected by Dr. W. G. Dietz at Hazleton, Pennsylvania.

DIETTA Sharp.

At the time of the publication of my Synopsis of the Silphidae, I called attention to certain apparent anomalies in the structure of the insect, especially in the structure of the tarsi, which were said to be 4-5-5-jointed. Through the kindness of Dr. Sharp I have examined his unique, and found that the specimen was really a monstrosity, there being four joints on one anterior tarsus and five on the other. The genus must, as I suspected, be placed in the series with five joints on all the feet, and is really, as I stated, intermediate between *Hydnobius* and *Anoglus*.

STACHYGRAPHIS Lec.

On the request of Dr. LeConte I have prepared a figure of this very peculiar genus of Staphylinidae, allied to *Geodromicus* of the Homalini. It is remarkable in the spinous hairs projecting laterally from the post-ocular region of the head. All the tibiae exhibit curious structure, as shown in the plate, which characters are, possibly, sexual. Two specimens only are known, both of which agree in the details given.

It occurs in California.

S. maculata Lec., Pl. IX, fig. 7.

A full description will shortly appear.

HISTER Linn.

H. (Phelister) gentilis n. sp.—Oval, convex, black, shining. Head and thorax sparsely and finely punctulate. Thorax with an entire, well-impressed submarginal stria. Elytra more sparsely and finely punctured than the thorax, surface with six entire dorsal and a sutural stria, all sharply impressed, the inner dorsal and sutural joining by an arc; external subhumeral entire, internal absent. Epipleurae unistriate. Propygidium and pygidium sparsely and finely punctured. Prosternum convex, the striae distinct, diverging and ascending in front. Marginal stria of mesosternum entire. Body beneath sparsely punctulate. Anterior tibiae very finely serrulate. Length .10 inch; 2.5 millim.

It is not without some little doubt that I refer this species to *Phelister*.

The antennal fossae are slightly enclosed in front, approaching *Orthophilus*, but the resemblance extends no further. It might be placed near *H. vernus* from which, however, it differs in many points.

Taken by H. K. Morrison in Arizona.

ECHINODES Zimm.

E. declivens n. sp.—Broadly oval, piceous, brown, moderately shining. Head smooth, obtusely carinate at middle, deeply impressed on each side. Thorax shining, surface with sparsely placed, slightly muricate punctures, each bearing a short erect hair. Elytra with a marginal and three vaguely impressed entire striae at the side, each with a single row of coarse and closely placed punctures bearing a short erect hair; between these striae and the suture are four series of punctures rather irregularly placed, bearing setae, the sutural row the most distinct. Propygidium and pygidium shining, sparsely punctate. Body beneath shining, smooth. Prosternum bicarinate, the carinae divergent posteriorly. Length .06 inch; 1.5 millim.

This species resembles *E. setiger* Lec., and is but little longer. It differs in the elytral sculpture. The present species has the outer striae more impressed, the inner rows of punctures single, while in *setiger* the outer striae are less impressed and the inner rows composed of two or more series of punctures.

Collected by H. K. Morrison in Arizona.

Teretriusoma facetum Lewis, Ent. Mo. Mag. 1879, p. 61.

This species was described with the locality "Canada." I had always doubted the occurrence of this form so far north in our fauna, and a reference to the donation book of the British Museum gave the locality as Ceylon, although the specimen was otherwise labelled. Mr. Lewis informed me that he had other evidence that the insect was Ceylonese, and the species must, therefore, be removed from our lists.

PELTASTICA Mann.

A species of this genus has been discovered in Japan and specimens were kindly given me by Mr. George Lewis. The species strikingly resembles our own, but is broader, less convex and the margin of the elytra more explanate. It is also paler in color. The crescentic pale fascia, so evident near the basal third of the elytra in our species, does not appear in the Japanese form.

CHRYSOBOTHRIS Each.

C. contigua Lec.—This species seems to have been misunderstood at home and abroad. It is of moderate size, resembling somewhat in form *femorata*, and may be at once distinguished from any other species in our fauna by the clypeus being bidentate at middle, the two teeth being separated by a narrow acute notch.

C. semisculpta Lec., was made a synonym of *femorata* by Crotch. It is really the ♀ of *contigua*.

C. cuprascens Lec., is also peculiar in the structure of the clypeus, that portion being almost rectilinearly truncate, with a small notch at middle. The anterior tibiae of ♂ have a small and very acute tooth near the tip.

C. vulcanica Lec., and *C. californica* Lec., appear to be merely unusually developed ♀♀ of *C. trinervia* Kby.

C. exesa Lec.—Male specimens now known to us show the anterior tibiae to be simple and not serrate within, the apex scarcely broader than the female. The femoral tooth is serrulate as in *femorata*. The middle tibiae are very distinctly arcuate in the male and very slightly so in the female, the posterior are straight in both sexes. The last ventral segment ♂ is triangularly emarginate, in the ♀ broadly emarginate with an acute angle each side.

C. cribraria Mann., which has remained in our lists unknown is that variety of *femorata* known as *soror* Lec.

GYASCUTUS Lec.

The occurrence of a new species in the eastern portion of our fauna has led to new study of our species with the following result: In 1868 (Trans. Am. Ent. Soc., ii. p. 154) I gave a synoptic table and called attention to the existence of two series of species—the first with the tarsi rather slender, especially the posterior, in which the first joint equals very nearly the next two joints together and the entire tarsus as long as the tibia—the second with short and broader tarsi, the first joint but little longer than the second.

The first series above indicated constitutes the genus *Gyascutus*, while the species of the second should be referred to *Hippomelus*.

The species referred to *Gyascutus* may be distinguished in the following manner:

- Epistoma broadly emarginate; species of robust facies.....2.
- Epistoma subtruncate; species of slender facies.....4.
- 2.—Elytra with subcostiform elevations; thorax very unequally sculptured and with irregular smooth spaces.....**pluricosta** Lec.
- Elytra without subcostiform elevations.....3.
- 3.—Thorax irregularly sculptured, with large smooth spaces, prosternum in front somewhat concave, color above and beneath green bronze,

obliteratus Lec.

- Thorax nearly equally sculptured with coarse punctures, without distinct callosities, prosternum in front flat, color above and beneath reddish bronze.....
- 4.—Thorax gradually narrowed in front, sides scarcely arcuate, the surface regularly punctured.....**cuneatus** Horn.

G. carolinensis n. sp.—Form moderately robust, reddish or coppery bronze, moderately shining. Sides of thorax moderately arcuate, the disc convex, coarsely punctured, at the sides somewhat tuberculate by the confluence of the punctures. Scutellum small oval. Elytra densely and deeply punctured, the punctures near the apex less confused and forming a slight tendency to striae. Body beneath more shining than above, moderately densely punctured, but smoother along the median line. Prosternum very coarsely punctured in front, the process smooth with a row of coarse deep punctures so closely placed as to resemble a groove. Length .60-.76 inch; 15-19 millim.

Although very distinct in its facies from *obliteratus* it is not easy to give any striking characters by which the two may be separated. It is, however, smaller, less robust, the sculpture much less coarse and the color quite different.

There have been about eight or ten specimens collected by the late Mr. W. F. Wenzel near Wilmington, North Carolina. I find no difference in them except in size. Those in my cabinet were kindly given me by his son, Mr. Henry Wenzel.

Of the species in the table, *cuneatus* makes the closest approach in resemblance to *Hippomelas saginata*, in fact, the two might easily be confounded without reference to the structure of the tarsi.

HIPPOMELAS L. et G.

The following species belong to the above-named genus and are distinguished as follows:

Epistoma rather deeply emarginate, the labrum almost bilobed.

Thorax with moderately arcuate sides and regularly punctured surface,
sphenicus Lec.

Epistoma broadly emarginate, the labrum feebly notched.

Thorax narrowed in front, the sides nearly straight, disc regularly punctured,
saginata Mann.

Arcuate, disc irregularly and roughly sculptured.....**caelatus** Lec.

Thorax quadrate, sides arcuate, the disc regularly and moderately punctured,
californicus Horn.

H. saginata Mann., has not yet to my knowledge occurred within our faunal limits.

H. caelatus by its robust form and thoracic sculpture approaches *Gyascutus*, while *californicus* by its feeble frontal ridges seems to lead to *Psiloptera*. All the species of both genera have the tips of the elytra slightly emarginate and slightly spinous.

Deltometopus ereptus Bonv.—An examination of the type in the collection of M. Sallé convinces me that it in no wise differs from *amornicornis* Say.

Analestesa testacea Leach, is *Cebrio bicolor* Fab.

Corymbites tristis Cand.—Specimens, which on comparison do not differ from this species, have been found in Japan by Mr. George Lewis.

I have already stated that I believe *Elater semivittatus* Say, to be the older name of this species.

EUBRIA.

In a synopsis of our Dascyllidae attention was directed to the difference between the anterior and posterior claws of each pair of feet, the former being deeply bifid, the latter simple. Reasoning from analogous forms in our fauna I had reason to believe that the claws of the female would prove to be simple. While in the British Museum the suspicion was mentioned to Mr. A. Sidney Olliff, and to him we owe the demonstration of a character which I had suspected from analogy.

Pleolobus Philippi, which appears in the Munich Catalogue among the Telephorini is a Dascyllide and identical with *Anorus Lec.*, which is the prior name.

The tribe Macropoginini, as recognized in our books, will include the South American genus *Artematopus*, and as Lacordaire has already indicated the tribe, his name, Artematopini, should be adopted. The definition of the tribe must, however, be modified in accordance with the views already expressed by me (Trans. Am. Ent. Soc. 1880, p. 77).

CLERIDAE.

Cymatodera gigantea Horn, I find on comparison to be *C. Hopei* Gray. The latter name should prevail.

C. texana Gorham, Biol. Cent. Amer. iii. 2, p. 134, is the second of the species indicated by me but not named in my Synopsis, Trans. Am. Ent. Soc. 1876, p. 230.

Enoplium humerale Horn.—Mr. Gorham (loc. cit. p. 184) refers this species to Pyticera, but drops my specific name on the ground that there is a *humerale* in Pelonium. If the genera are distinct the reasoning is not valid.

CERAMBYCIDAE.

Callidium nicolas Wht., is merely the dark form of *Hylotrupes ligneus* Fab.

Callidium subfasciellum Wht., is *Phymatodes varius* Fab.

Liopus dorsalis Wht., is a *Lepturges*, and is from Brazil and not United States.

From an examination of the cabinet of Mr. H. W. Bates it became evident that our species referred to *Pilema* are really *Callimus*, while *Callimus chalybaeus* Lec., must receive a new generic name, and *Poecilobrium* has been proposed by me* to contain not only that species, but also *Callidium rufipes* Fab., of Europe.

*Class. Col. N. A., ed. ii., p. 291.

CHRYSOMELIDAE.

HISPINI.

The coleoptera forming this tribe of CHRYSOMELIDAE are so well known as not to need at present any general remarks.

Those occurring in our fauna are divisible into several groups in the following manner :

Tarsal claws simply divergent.

Third joint of tarsus deeply bilobed.

Antennae filiform or fusiform.....MICRORHOPALIDES.

Antennae clavate. Elytra with oblique plications.....OCTOTOMIDES.

Third joint of tarsus not bilobed, fourth joint long.

Antennae very short, clavate.....STENOPODIIDES.

Tarsal claws widely divaricate.

Antennae filiform.....CALLISPIDES.

MICRORHOPALIDES.

Form more or less oval to cuneiform. Antennae filiform, 8-11 jointed. Tarsal claws divergent, the claw joint projecting at most one-third its length beyond the deeply bilobed third joint.

This group corresponds with the *Cephalodontites* of Chapuis, and the name has been changed because the genus from which the name has been derived does not appear distinct from *Odontota*, which Harold in his turn replaces by *Chalepus*.

Our genera are as follows :

Antennae with 8 joints, the last four being closely connate.

Elytra oval, convex, not or feebly costate.....MICRORHOPALA.

Antennae with 11 distinct joints. Elytra costate.

Middle tibiae straightODONTOTA.

Middle tibiae curvedCHARISTENA.

MICRORHOPALA Chev.

Head small, rounded, front slightly convex. Antennae apparently with but 8 joints, the last four being closely united in an oblong mass. Thorax usually broader than long and wider at base. Elytra with rows of punctures, the interval costiform or not. Legs short, tibiae straight, slightly broader toward the tip. Third tarsal joint deeply bilobed, the fourth joint usually not longer than the lobes, rarely much longer.

Microrhopala, as here constituted, contains also the species in our fauna referred in the books to *Uroplata*. There seem to be no valid characters for separating these genera. Certain of our species are referred by Chapuis (Genera des Coleoptères, XI, p. 322) to a section of the latter genera called *Pentispa*, characterized by the head having five longitudinal grooves on the vertex. I have never observed more than

three grooves (*rubrolineata*), often one only as in *vittata*, or with a confused punctuation (some specimens of *Xerene*). In his essay on the Chrysomelidae (Proc. Acad. 1873, p. 82) Crotch included *Octotoma* in *Microrhopala*. The genus seems sufficiently marked to retain as distinct. Our species, although not numerous, are not easily separable in tabular form. The following table will assist in their recognition :

- Terminal joint of tarsi very little or not longer than the lobes of the third; antennal club elongate.....2.
- Terminal joint of tarsi nearly twice as long as the lobes of the third; antennal club rather short.....10.
- 2.—Elytra with eight series of punctures only3.
- Elytra with more than eight series.....9.
- 3.—Joints 2-6 of antennae nearly smooth and glabrous.....**vittata**.
- Joints 2-6 roughly sculptured and somewhat hairy.....4.
- 4.—Body above bicolored, thorax generally with lateral red stripe, elytra usually **vittata**5.
- Body above entirely blue or slightly greenish6.
- Body above bicolored, elytra yellow, apical half and suture black,
dimidiata.
- 5.—Surface above and beneath black, rarely feebly bronzed**Xerene**.
- Surface above and beneath bright blue.
- Thorax with lateral red vitta, elytral vitta narrow.....**rubrolineata**.
- Thorax without vitta, elytral vitta broad.....**vulnerata**.
- 6.—Thorax not or very little wider at base than apex.....**floridana**.
- Thorax gradually wider from apex to base.....7.
- 7.—The rows of punctures regular and distinct.....8.
- Rows of punctures very irregular, the punctures large and confluent,
Erebus.
- 8.—Punctures of the outer rows much larger and of more irregular size than the inner.....**excavata**.
- Punctures of all the rows equal and distinct.....**cyanea**.
- 9.—The interval between the third and fourth costae with four series of punctures near the apex; form slender, parallel.....**porcata**.
- 10.—Above and beneath black.....**montana**.
- Above reddish yellow, elytra maculate with black, thorax on each side with a distinct basal impression.....**Melshelmeri**.

As the species are for the most part common and well-known, detailed descriptions seem unnecessary, and only the more important characters and variations will be mentioned.

M. vittata Fab.—Oblong ovate, bluish black, head, thorax, base of femora, elytral vitta and narrower side margin red. Antennae nearly smooth to the sixth joint. Front unisulcate. Elytra with eight series of punctures arranged in pairs, the alternate intervals broader and slightly more convex. Length .20-.26 inch; 5-6.5 millim.

Var. *laetula* Lec., has the head and thorax more clearly red than in the Eastern forms. Kansas to Oregon.

Var. ———. A specimen from Colorado has the elytra entirely black, without vitta, the head is also fuscous.

Occurs everywhere in our territory except in the Arizona region.

M. dimidiata n. sp.—Black, above yellow, median space of thorax, sutural stripe and apical half of the elytra black. Antennae black, third joint scarcely longer than the fourth. Vertex sulcate, bronzed. Thorax gradually broader to base. Sides at middle subangulate, disc convex cribrately punctured. Elytra nearly parallel, very slightly broader behind, apices conjointly rounded, the margin serrate, disc with eight rows of coarse deep punctures separated by three well-marked costae. Legs black. Length .20 inch; 5 millim.

This species differs entirely in the style of coloration from any in our fauna and approaches the Mexican type of Hispididae. I have in my cabinet a Mexican species closely resembling the present, which differs in the elytra at tip, more strongly dentate and the thorax has on each side an elongate smooth callus.

Occurs in Texas.

M. Xerene Newm.—Black, sides of thorax and elytral vitta reddish yellow. Front usually coarsely punctured, rarely with traces of grooves. Elytra with eight regular rows of deeply impressed punctures, the intervals between them slightly alternating. Length .16-.20 inch; 4-5 millim.

Var. *interrupta* Couper.—In this form the vitta is interrupted. The species otherwise is very little variable.

Occurs in the Atlantic region and Canada. I have not seen specimens from west of the Mississippi.

M. rubrolineata Mann.—Body above and beneath blue, sides of thorax and elytral vitta reddish-yellow. Head distinctly grooved. Length .16-.20 inch; 4-5 millim.

Var. *signaticollis* Lec.—This form has the elytral vitta entirely wanting. Numerous specimens have been observed in which the vitta extends but half the length of the elytra.

This species is closely related to the preceding and differs by very slight characters which are, however, constant. It will also be observed that the margin of the elytra near the apex is very distinctly serrate in this species.

Occurs in California.

M. vulnerata n. sp.—Form of the preceding species, above and beneath blue, elytra with a yellowish-red vitta, which is broader toward the base. Front sulcate. Thorax entirely blue, punctures coarse and deep, but distinct, not confluent. Elytra with margin serrulate near the apex, disc with eight equal rows of coarse deep punctures, the intervals equal: vitta extending about two-thirds the length of the elytra, and at its basal half suddenly wider and reaching nearly to the side margin. Length .14-.18 inch; 3.5-4.5 millim.

Although closely related to *rubrolineata* the present species has the

thorax entirely blue, and the punctuation more regular and not confluent. The elytral vitta is also a constant difference.

Occurs in Arizona.

M. floridana Schwarz.—Above and beneath dark blue, nearly black. Vertex sulcate. Thorax broader than long, sides nearly parallel, coarsely, deeply and somewhat confluent punctured. Elytra with eight rows of coarse punctures, the punctures of the four inner rows larger and more elongate than the others, the alternate intervals very slightly more elevated. Lateral margin scarcely visibly serrulate. Length .18 inch; 4.5 millim.

The form of the thorax will distinguish this from the following uniformly blue species.

Occurs in Florida.

M. excavata Oliv. (*Pluto* Newm.).—Bluish black, moderately shining. Front sulcate. Thorax distinctly wider at base, the disc coarsely and irregularly punctured. Elytra with eight rows of coarse deep punctures, the two inner rows less deep and somewhat confused, the intervals sometimes slightly elevated, usually flat, margin of elytra serrulate. Length .20 inch; 5 millim.

In this species there is considerable variation of elytral sculpture, so great that I had supposed two distinct forms existed. Certain specimens have the costae slightly indicated and may be considered the typical forms, others again have no trace of costae. A form occurs in Texas without costae, with the rows of punctures quite regular, these approach very closely to *cyanea*.

Occurs from Canada to Georgia and Texas.

M. erebns Newm.—Bluish black, feebly shining. Vertex sulcate. Thorax broader behind, coarsely and deeply cribrate. Elytra with the series of punctures much confused, the punctures very large and somewhat confluent, especially at the sides, margin of elytra serrulate. Length .18-.20 inch; 4.5-5 millim.

This species carries to the greatest extreme the irregularity of the elytral punctures, as well as their size and depth. It is very rare that any specimen exhibits an entire row of punctures. There being no regular rows of punctures the intervals are consequently never costiform.

Occurs in Florida.

M. cyanea Say.—Bluish black, sometimes slightly bronzed, shining. Vertex sulcate. Thorax broader at base, coarsely and deeply punctured. Elytra with eight regular rows of equal punctures, the intervals equal and never carinate, margin not serrulate. Length .24 inch; 6 millim.

Occurs in Missouri, Colorado and Texas. I have seen a specimen marked New York.

The preceding four species of uniform dark blue color are very puzzling and difficult to separate, and with a greater or less amount of material will give rise to differences of opinion as to whether the number four should be increased or diminished. My first study of the series,

several years ago, seemed very unsatisfactory, but on resuming it for the completion of the present work, I have not modified the notes made at that time.

M. porcata Mels.—Black, without lustre. Vertex distinctly sulcate. Thorax quadrate, sides slightly arcuate, surface cribrate. Elytra nearly parallel, each distinctly tricostate, the intervals biserially punctured, except between the second and third, in which four rows of punctures are observed at the apical fourth, becoming confused at the base, margin not serrate. Length .12 inch; 3 millim.

By its slender form this species resembles a *Charistena*, but the tibiae are straight and gradually broader to tip.

Occurs from Pennsylvania to Illinois, but rare.

M. montana n. sp.—Form moderately robust, black, without lustre. Vertex distinctly sulcate. Thorax slightly transverse, not wider behind, sides moderately arcuate, disc convex, coarsely but very regularly punctured. Elytra distinctly tricostate, the intervals between the costae with a double series of coarse punctures, that between the two outer costae with four rows of punctures, distinct near the apex and separated by a slight costa, confused near the base. Fourth tarsal joint much longer than the lobes of the third. Length .10 inch; 2.5 millim.

This species and the next agree in having the fourth tarsal joint nearly twice as long as the lobes of the third. The antennae are also shorter than usual in the genus and the terminal joints more decidedly capitate.

Occurs in Montana.

M. Melsheimeri Cr. (*Odontota Hardyi* Cr.).—Beneath piceous, above reddish yellow, maculate. Vertex sulcate. Thorax nearly quadrate, sides feebly arcuate, disc convex coarsely and deeply punctured, usually a median smooth callus and a vague impression on each side at base, color sometimes uniformly reddish yellow, occasionally maculate with piceous spots. Elytra sculptured as in the preceding species, color reddish yellow, maculate, with piceous spots arranged in oblique series, sometimes confluent in oblique fasciae. Legs reddish yellow. Fourth tarsal joint elongate. Length .12 inch; 3 millim.

Occurs in the Atlantic region, also in California.

The characters used for the separation of the genera of *Hispidae* are for the most part feeble. These two species are probably as much entitled to separation as a distinct genus as *Octotoma* or *Charistena*, but in a fauna like our own in which the representation is limited there seems little use in multiplying names.

ODONTOTA Chev.

The generic name here adopted is chosen rather in deference to the limited tradition of the science in this country, than from a conviction that it will ultimately prevail. In the group *Cephalodontides*, as defined by Chapuis, four genera are given in which the antennae have the eleven joints quite distinctly separated, these are *Odontota*, *Cephalodonta*, *Charistena* and *Anoplitis*. The first is distinguished by the prominence of

the head in front of the antennae, the second has antennae one-third longer than the thorax and rather slender, while *Charistena* has curved middle tibiae. The latter genus seems fairly established. *Odontota* and *Anoplitis* differ only in the description by the prominence of the head of the former. In studying our species I do not find the character valid, in other words, it is evanescent. *Cephalodonta* does not occur in our fauna, and a discussion of its value would be premature without specimens.* In the *Hispidae*, as in many other parts of the *Coleoptera*, classification has been too much diluted by unnecessary genera.

The following table gives a summary of the species known in our fauna:

Elytra with ten series of punctures.....	2.
Elytra with eight series of punctures.....	6.
2.—Elytra not costate, form narrow, parallel.....	collaris.
Elytra costate.....	3.
3.—Elytra with two costae only, first and third, the latter being feeble, apex coarsely serrate or even dentate.....	omogera.
Elytra with three entire costae only.....	4.
4.—Elytra black, at most with reddish humeri.	
Body beneath black, thorax red with discal dark space.	
Humeri red, thorax distinctly flattened posteriorly.....	scapularis.
Elytra entirely black, thorax convex.....	notata.
Body beneath red, thorax red, elytra black.....	bicolor.
Elytra reddish yellow, sutural stripe black.....	dorsalis.
5.—Thorax very much broader at base than apex, elytra somewhat expanded at tip....	rubra.
Thorax very little wider at base, elytra not expanded at tip.....	californica.
6.—Elytra gradually wider behind, somewhat expanded at apex, surface variably maculate with piceous.....	nervosa.
Form slender parallel, color yellowish, elytra with narrow sutural strip and side margin blue-black.....	gracilis.

O. collaris Say.—Slender, parallel, piceous, thorax red, elytra blue. Vertex not sulcate. Thorax transverse, widest at middle, sides arcuate, disc convex with an ante-scutellar depression, surface cribrate. Elytra with ten rows of equal punctures, closely placed without costae, the interval between the first and second pairs of rows a little wider, corresponding with the usual first costa, margin finely serrulate. Length .22-.24 inch; 5.5-6 millim.

Occurs in Colorado and Illinois.

O. omogera Cr.—Cuneiform, black, opaque, thorax in part and humeral spot red. Vertex sulcate. Thorax widest at base, subangulate at middle, coarsely and deeply punctured, disc flattened posteriorly, the depression limited each side by a slight umbone and posteriorly by a transverse ridge; color red, sides and

* In the Munich Catalogue, p. 3613, the authors go a step further in uniting all these genera with *Chalepus* (excepting *Cephalodonta*), while Chapuis considers *Chalepus* as a mere section of *Cephalodonta*. The name being much the older should have taken priority over that of which it is considered a part.

pressed space piceous. Elytra broader toward the apex, the margin of which is explanate and rather strongly toothed, the suture slightly retracted; disc with ten rows of punctures, the first pair separated from the others by a strong smooth costa extending from the basal margin to the apex, a fainter costa also exists at the usual position of the third costa. Length .30-.32 inch; 7.5-8 millim.

This species extends southward from Arizona to Mexico and Central America. It may possibly be described under an older name from the latter countries, but at the time Crotch described the species we were unable to satisfy ourselves that this was the case.

O. scapularis Oliv.—Robust cuneiform, black, thorax in great part and humeral angles of elytra red. Vertex punctured. Thorax widest at base, sides arcuate or feebly subangulate, disc convex, slightly depressed posteriorly with the ante-scutellar transverse ridge, surface coarsely and deeply punctured, color red, a median piceous space. Elytra serrulate at apex, ten rows of punctures, each elytron tricostate, the second and third costae separated by four rows of punctures. Legs black, femora at basal third sometimes red. Length .22-.28 inch; 5.5-7 millim.

Occurs from the Middle States to Arizona. The Eastern specimens are always smaller and have a darker thorax.

O. notata Oliv.—Very like the preceding species in form, but differs in the thorax being more regularly convex with scarcely any trace of posterior flattening, and the dark space of the surface is limited to a well defined central spot. The elytra are entirely black, and the punctures of the rows are less deep and less approximated, and the rows themselves less crowded together. Length .24-.26 inch; 6-6.5 millim.

Occurs in Georgia and Florida.

O. bicolor Oliv.—Form rather slender, beneath bright red, head, antennae, elytra and legs black. Vertex sulcate. Thorax very little wider at base, sides obtusely subangulate, disc convex with scarcely any trace of posterior depression, cribrately punctured. Scutellum red. Margin of elytra serrulate, disc punctured and costate as in *scapularis*. Body beneath bright red. Legs black, the bases of the femora usually red. Length .24 inch; 6 millim.

This species differs also from the others in having the second joint of the antennae fully as large as the third. It is also less cuneiform, approaching *collaris* in shape.

Occurs in the Middle and Western States.

O. dorsalis Thunb.—Black, thorax and elytra reddish yellow, the latter with a common sutural piceous vitta. Vertex coarsely punctured. Thorax wider at base, sides arcuate, disc cribrately punctured and with faint depression posteriorly. Elytra striate and costate as in *scapularis*, margin finely serrulate. Length .24-.26 inch; 6-6.5 millim.

The only variation in this species is in the width of the sutural vitta. This is usually broader behind, sometimes it is very narrow and parallel, and still more rarely wider at the base.

Occurs in the Middle and Southern States.

The name above used has been taken from the Munich Catalogue. The description is unknown to me.

✓ **O. rubra** Weber.—Broadly cuneiform, depressed, elytra broader at apex, color above rose red or reddish yellow, the elytra slightly clouded with darker spaces. Vertex punctured. Thorax much broader behind, sides nearly straight, coarsely and deeply punctured, slightly depressed posteriorly. Elytra broader at apex, which is obtuse, the margin explanate and serrate, disc with ten rows of punctures and three entire rather strong costae; between the second and third costae a shorter one which starts from the humeral umbone and joins the second, and a shorter which starts from the third near the apex and extends forward. Length .24-.26 inch; 6-6.5 millim.

The under side of the body varies in color from piceous to pale red.

This species is widely diffused, specimens have been seen even from California.

✓ **O. californica** n. sp.—Beneath piceous, above reddish yellow, nearly as in *rubra*. Vertex with longitudinal impression. Thorax a little wider posteriorly, disc coarsely and deeply punctured, slightly flattened near the base, sides nearly straight or slightly sinuate. Elytra gradually wider posteriorly, the apical margin feebly explanate and finely serrate, disc with rows of punctures and costae as in *rubra*. Length .18 inch; 4.5 millim.

This species might be mistaken for the smaller forms of *rubra*. It differs, however, in having the thorax much less dilated posteriorly, and the elytra have not the rather abrupt expansion of the apex. In *rubra* the thorax at base is nearly twice as wide as the apex, in the present species not more than one-fourth wider. The elytral costae while they preserve the type of *rubra* are much less elevated.

Occurs in California and Arizona.

O. nervosa Panz.—Color variable. Vertex with median sulcus. Thorax about one-third wider at base than apex, sides nearly straight, anterior angles often prominent and dentiform, disc coarsely and deeply punctured. Elytra elongate quadrate, slightly arcuately broader posteriorly, margin feebly serrulate, surface with eight rows of punctures separated by three entire costae, the first distinctly broader. Length .14-.16 inch; 3.5-4 millim.

This species is extremely variable in color. The under side may be either piceous or entirely pale. The head is usually dark, thorax often pale, usually more or less maculate with piceous. The elytra are sometimes pale, with slight traces of darker spaces resembling in this respect *rubra*, or the surface may be black with a few indistinct yellow spots. The more common form has yellow elytra with piceous spots arranged as follows: At scutellum and humeri, two spots on the first costa and one opposite them at the side margin, a spot at the outer apical angle. These often become connected by oblique extensions. The great number of variations have given this species a large synonymy.

Occurs everywhere in the Eastern regions, also in Arizona.

O. gracilis n. sp.—Slender, parallel, reddish yellow, suture of elytra and a narrow space at the side bluish black. Vertex vaguely sulcate. Thorax quadrate, scarcely wider than long, base very little wider than apex, sides feebly arcuate, disc convex, coarsely but not densely punctuate. Elytra parallel, not wider at apex, margin finely serrulate, disc with eight rows of punctures separated by three entire costae. Body beneath pale. Legs pale, tarsi piceous. Antennae piceous. Length .14 inch; 3.5 millim.

This species has more nearly the form of *Charistena*. The colors recall those of *dorsalis*.

One specimen, Columbus, Texas.

CHARISTENA Baly.

Antennae 11-jointed, first joint stout, oval, second longer, third longer than the second, 4-6 gradually shorter, 7-11 distinct, stouter than the others but closely articulated. Head small, front not prominent. Eyes moderate, finely granulated. Thorax usually subcylindrical, margin indistinct. Elytra elongate, parallel, apex rounded, disc tricostate, with eight rows of coarse punctures in pairs. Legs moderate, intermediate tibiae strongly arcuate, the inner apical angle acute, slightly prolonged. Tarsi dilated, densely pubescent beneath, first joint triangular, rather small, second reniform, third deeply bilobed, fourth almost entirely between the lobes of the third, claws feebly curved divergent.

This genus founded by Dr. Baly, has been suppressed by Gemminger & Harold in their Catalogus into *Chalepus* (*Anoplitis*, *Odontota*) without, it seems to me, any valid reason, the characters on which it is based being of at least equal value to any of those on which the other genera of this group are separated.

Our species are as follows:

Body above unicolorous, bluish or black.

Femora feebly serrulate, third joint of antennae not elongate.....**nigrita**.

Femora distinctly serrulate, third joint of antennae longer than second,
perspicus.

Body above bicolored. Thorax red, with base and apex black.

Thorax longer than wide.....**Ariadne**.

Thorax transverse.....**Lecontei**.

Ch. nigrita Oliv.—Moderately elongate, feebly shining, subopaque, black, with at most a feeble violaceous lustre. Thorax longer than wide, sides feebly arcuate in front, subparallel behind, surface coarsely and deeply punctured. Elytra wider than the thorax, subparallel, apex obtusely rounded, with the margin feebly serrulate, disc feebly depressed, each with three discal costae, and the suture and margin moderately elevated, between the costae two rows of large deep punctures. Abdomen nearly smooth. Legs black. Length .15 inch; 3.75 millim.

The intermediate femora are very finely serrulate beneath. The third joint of the antennae is not longer than the second.

This species is widely distributed over the Atlantic region.

Ch. perspicus n. sp.—Moderately elongate, shining, black, upper surface with very distinct bluish lustre. Thorax longer than wide, sides very feebly arcuate.

ate. disc moderately convex, with a distinct transverse basal impression, surface coarsely and deeply punctate. Elytra wider than the thorax, subparallel, apices obtusely rounded with the margin serrulate, disc tricostate, the costae with the suture and margin moderately elevated and between them two rows of coarse peep punctures. Body beneath smooth, shining. Legs black. Length .22 inch; 5.5 millim.

The intermediate femora are much more distinctly serrulate than in the preceding species, and the third joint of the antennae is longer than the second, and about equal to the fourth and fifth together. These characters with the greater distinctness of the basal thoracic impression, the larger size and color serve to distinguish this species from the preceding.

Occurs in Arizona and New Mexico.

Ch. Ariadne Newm.—Moderately elongate and shining, elytra distinctly blue, thorax red, usually margined with black at apex and base. Thorax a little wider than long, sides feebly arcuate in front, subparallel behind, disc moderately convex with a feeble basal impression, surface coarsely and deeply punctured. Elytra as in *nigrita*. Legs black. Intermediate femora scarcely visibly serrulate. Length .15 inch; 3.75 millim.

The third joint of the antennae is nearly as long as the second, and is intermediate in this respect between the two preceding species.

Occurs in Florida and appears to be rare.

Ch. Lecontei Baly.—Very similar to the preceding in color and sculpture. It has, however, a wider thorax, the base of which is transversely impressed and the disc at middle subcarinate. Length .20 inch; 5 millim.

Occurs in Florida, rare. Unknown to me.

OCTOTOMIDES.

Form oblong, depressed, obtuse and dilated posteriorly. Antennae short, 8-jointed, the last two forming an elongate oval club. Tarsal claws divergent. Elytra with short oblique plicae, the intervals punctured.

OCTOTOMA Suff.

Antennae as long as head and thorax, first two joints oval, the second smaller, third cylindrical a little longer. 4-6 shorter, each slightly broader and shorter than the preceding, seventh obconical, eighth oval, subacute at tip, these two forming an elongate club. Femora moderate, distinctly sinuate beneath near tip, tibiae curved at base, the anterior more dilated than the others and with the outer edge sinuate. Tarsi dilated, densely pubescent beneath, first joint triangular, small, second broad and very deeply emarginate, third as long as the first two and deeply bilobed, fourth but little longer than the lobes of the third, prolonged at tip in an inter-unqual process, claws moderate, feebly curved.

Our species differ from the generic description given by Chapuis in the form of the femora and tibia. That author states that the femora have a dentiform process beneath near the tip, and that all the tibiae are slender. In our species they are as described above and the differences may be specific only.

O. plicatula Fab.—Oblong, dilated posteriorly, piceous black, opaque. Head yellowish, occiput black. Antennae rufous, club darker. Thorax yellowish, disc and sides piceous, transverse, anterior angles prominent in front, behind them the sides are deeply sinuate, the three-fourths posterior to the sinuation straight and deeply convergent, surface coarsely punctured and with a T-shaped callosity in the middle of the disc. Scutellum yellow. Elytra oblong, dilated at apex, each at tip obliquely truncate, more prolonged at the suture, base broader than the thorax, humeri obtuse, entire margin denticulate, disc flattened, surface with numerous acutely elevated, short, oblique plications more or less anastomosing, the intervals punctured. Legs piceous, the femora and tibiae at base and tip paler. Length .18 inch; 4.5 millim.

This species is widely distributed, but rare. Occurring in Illinois, South Carolina and Texas. Its peculiar sculpture and clavate antennae make it one of the most easily known species in our fauna.

O. marginicollis n. sp.—Beneath piceous, above yellowish, apical half of the elytra brown. Antennae pale yellow, the third joint nearly as long as the two following together. Head feebly punctured. Thorax nearly twice as wide as long at middle, sides nearly straight behind, arcuate in front and slightly sinuate behind the prominent front angles, lateral margin narrowly explanate and translucent, especially in front, disc slightly convex, vaguely depressed posteriorly, surface coarsely cribrately punctured. Elytra elongate, quadrate, arcuately narrowed at middle and rather abruptly dilated at apex, margin serrate, surface with elevated ridges formed as follows: An irregular carina begins at the base within the humeral angle and extends somewhat sinuously to the middle, where it abruptly forms an intricate network of strongly elevated ridges, extending over nearly the entire apical half of the elytra, on each side a short distance from the apex of the suture is a laminiform tubercle, between the ridges the surface is coarsely punctured, cribrate at the basal portion of the elytra. Legs yellowish, femora and tibiae broadly annulate, with brown at middle. Length .20 inch; 5 millim. Plate IX, fig. 9.

This species is larger and relatively broader than *plicatula*. It differs primarily in color and very obviously in sculpture. In the preceding species the elytra are covered with oblique plications, but in the present species the elevations are confined to the apical half of the elytra and are more irregularly sinuous instead of oblique plications.

Occurs in Arizona.

STENOPODIDES.

Form oval, moderately robust. Elytra with alternate intervals feebly more convex. Antennae very short, extending but very little behind the anterior margin of thorax, 8-jointed, last two joints forming an elongate oval club. Tarsi not dilated, clothed beneath with silken hairs, third joint not bilobed, scarcely emarginate, fourth joint as long as the others together, moderately stout, claws rather long, feebly curved, divergent.

This assemblage of characters defines a very distinct group, and the structure of the tarsi has nothing approaching it as far as known among the Phytophaga, except in *Haemonia*. Can it be possible that the present insect is subaquatic in its habits in the manner of that genus?

STENOPIDIUS n. g.

Head small, vertex not prominent, front vertical. Labrum short, truncate; mentum narrow, elongate; palpi slender, the last joint of the maxillaries longer than the preceding united. Eyes large, oval. Antennae short, passing very slightly the anterior margin of the thorax, first joint subglobular, second longer, obconical; 3-6 equal, as broad as long; seventh obconical, broader than long; eighth in form of an oval obtusely pointed mass, with the sutures barely visible. Thorax broader than long, base very little wider than apex, sides feebly arcuate, apical margin slightly prolonged at middle and sinuate on each side. Scutellum broader than long, truncate at tip. Elytra oval, one-third longer than wide, apices conjointly rounded, surface with eight rows of punctures on each, the alternate intervals slightly broader and very feebly more convex. Legs moderate, glabrous. Tarsi not dilated, with short silken hairs beneath, each two-thirds the length of its tibia, first three joints nearly equal in length, the third emarginate above, fourth as long as the others together, with the feebly arcuate claws nearly half the length of the joint.

✓*S. flavidus* n. sp.—Oval, moderately robust, glabrous, body beneath antennae and head black, upper surface and legs pale yellow. Head black, a spot above each eye yellow. Thorax broader than long, base very little wider than apex, apex prolonged at middle and slightly elevated, on each side sinuate and deeply impressed, sides feebly arcuate in front, subparallel at basal two-thirds, with an extremely feeble trace of sinuation, base feebly lobed at middle, sinuate on each side, surface coarsely, deeply and rather closely punctured with a small fovea at each anterior angle. Elytra wider than the thorax, oval, one-third longer than wide, sides very slightly arcuate, margin feebly serrate, disc convex, each with eight rows of coarse punctures, intervals narrow, each alternate slightly wider and very little more convex. Body beneath black, shining, abdomen sparsely punctate, pygidium and a spot on each side of the last ventral yellow. Length .16 inch; 4 millim. Pl. IX, fig. 8.

In form this species is shorter and more robust than any in our fauna. The peculiar characters are so many as to make it probably the most easily recognized known Hispide. The form of the apex of the thorax is especially noteworthy, from the fact that the depression along the margin on each side of a slight median elevation, appears to be for the reception of the club of the antennae when at rest. This latter character, together with the aspect of the surface and the structure of the tarsi, render it probable that the species is subaquatic in its habits.

Occurs in California and Arizona.

CALLISPIDES.

Form elongate, subcylindrical. Antennae filiform, eleven-jointed. Tarsi dilated, densely pubescent beneath, third joint deeply bilobed, claws divaricate. First ventral suture nearly obliterated at middle. Elytra with striae of punctures.

One genus is known in our fauna.

STENISPA Baly.

Antennae 11-jointed, first joint small, subglobular, second obconical, a little longer, third cylindrical nearly as long as the first two, 4-10 subequal, eleventh longer and subacute at tip. Head small, front concave with an inter-antennal

carina. Eyes oval, finely granulated. Thorax quadrangular. Scutellum oval, acute at tip. Elytra subcylindrical, slightly narrowed at tip. Femora stout, tibiae not arcuate, but slightly flattened. Tarsi dilated, densely pubescent beneath, first joint triangular, as large as the second, second feebly emarginate, third deeply bilobed, fourth nearly half projecting beyond the third, with rather stout, moderately arcuate divaricate claws. Metasternal episterna very narrow at middle.

Two species occur in our fauna.

Black with a slight bronze tinge**metallica**.
Black with slight bluish tinge, thorax red**collaris**.

S. metallica Fab.—Subcylindrical, elongate, black, shining, with slight bronze tinge. Thorax a little longer than wide, sides at anterior angles feebly arcuate, posteriorly straight, with a very feeble trace of sinuation, surface very sparsely punctate. Elytra with ten rows of moderately fine punctures and a short scutellar row. Body beneath shining, very sparsely punctate. Length .20-.24 inch; 5-6 millim.

Occurs from the New England States to Texas.

S. collaris Baly.—Subcylindrical, elongate, black, with slight bluish tinge, thorax red. Thorax quadrate, sides at anterior angles feebly arcuate, posteriorly straight and parallel, surface sparsely punctate. Elytra as in *metallica*. Body beneath black, sparsely punctate. Length .26 inch; 6.5 millim.

This species is somewhat stouter in appearance than the preceding, and differs in form of thorax and different color.

Occurs from Michigan to Texas.

Bibliography and Synonymy.

MICRORHOPALA Baly.

- M. vittata** Fab., Ent. Syst. Suppl. p. 117; Oliv. Ent. vi, p. 770, No. 95, pl. ii, fig. 20; Crotch, Proc. Acad. 1873, p. 82.
laetula Lec., Col. Kans. 1859, p. 27.
- M. dimidiata** n. sp.
- M. Xerene** Newm., Ent. Mag. v, 1838, p. 390; Baly, Ann. Nat. Hist. 1864, p. 269; Crotch, loc. cit. p. 82.
interrupta Couper, Can. Nat. 1865, p. 63.
- M. rubrolineata** Mann., Bull. Mosc. 1843, ii, p. 307; Crotch, loc. cit. p. 82.
signaticollis Lec., Proc. Acad. 1859, p. 82.
- M. vulnerata** n. sp.
- M. floridana** Schwarz, Proc. Am. Philos. Soc. 1878, p. 369.
- M. Erebus** Newm., Entomologist, 1841, p. 77.
- M. excavata** Oliv., Ent. vi, p. 775, No. 95, pl. ii, fig. 29; Crotch, Proc. Acad. 1873, p. 83.
Pluto Newm., Entom. 1841, p. 77.

- M. cyanea** Say, Journ. Acad. iii, p. 433; Crotch, loc. cit. p. 83.
Hecate Newm., Entom. 1841, p. 77.
- M. porcata** Mels., Proc. Acad. iii, p. 161; Crotch, loc. cit. p. 83.
- M. montana** n. sp.
- M. Melsheimeri** Crotch, Proc. Acad. 1873, p. 83.
Hardyi Cr. (*Odontota*), Trans. Am. Ent. Soc. 1874, p. 80.

ODONTOTA Chevz.

- O. collaris** Say, Journ. Acad. iii, p. 433.
Walshii Crotch, Proc. Acad. 1873, p. 81.
- O. omergera** Cr., loc. cit. p. 80.
- O. scapularis** Oliv., Ent. vi, 766, No. 95, pl. i, fig. 13; Crotch, loc. cit. p. 80.
lateralis Say, Journ. Acad. iii, p. 431.
- O. notata** Oliv., loc. cit. p. 774, pl. ii, fig. 26; Crotch, loc. cit. p. 81.
- O. bicolor** Oliv., Encyc. Meth. vii, 1792, p. 96; Ent. vi, p. 774, pl. ii, fig. 27;
 Kirby, Fauna Bor. Am. iv, p. 227; Crotch, loc. cit. p. 81.
Bacchus Newm., Entom. 1841, p. 76.
- O. dorsalis** Thunb., Götting. Gel. Anz. 1805, p. 282.
scutellaris Oliv., Ent. vi, p. 771, pl. ii, fig. 21; Crotch, loc. cit. p. 81.
suturalis † Harr., Ins. Inj. Veg. 2d ed. p. 98.
- O. rubra** Weber, Obs. Ent. 1801, p. 60; Crotch, loc. cit. p. 81.
quadrata Fab., Syst. El. ii, p. 66; Oliv., Ent. vi, p. 774, pl. ii, fig. 28.
marginata Say, Long's Exped. ii, p. 292.
pallipes Germ., Ins. spec. nov. p. 529.
- O. californica** n. sp.
- O. nervosa** Panz., Ed. Voet. iv, 1798, Vorber et p. 92, Front fig. 1.
inaequalis Weber, Obs. Ent. 1801, p. 65.
rosea Weber, loc. cit. p. 66; Crotch, loc. cit. p. 81.
suturalis Fab., Syst. El. ii, p. 63; Oliv., Ent. vi, p. 777, p. ii, fig. 32.
flavipes Germ., Ins. spec. nov. 1824, p. 529.
obsoleta et pallida Say, Journ. Acad. iii, p. 432.
Philemon et Baucis Newm., Ent. Mag. v, 1838, p. 390.
- O. gracilis** n. sp.

CHARISTENA Baly.

- C. nigrita** Oliv., Ent. vi, p. 778, pl. ii, fig. 35; Baly, Trans. Ent. Soc. London,
 Series ii, Vol. iii, p. 252; Crotch, loc. cit. p. 81.
- C. perspicua** n. sp.
- C. Ariadne** New., Entom. 1841, p. 77; Baly, loc. cit. p. 252; Crotch, loc. cit. p. 82.
- C. Lecontei** Baly, loc. cit. p. 252.

OCTOTOMA Suffr.

- O. plicatula** Fab., Syst. El. ii, p. 63; Oliv., Ent. vi, p. 776, pl. ii, fig. 31; Crotch,
 loc. cit. p. 83.
- O. marginicollis** n. sp.

STENOPODIUS Horn.

- S. flavidus** n. sp.

STENISPA Baly.

- S. metallica** Fab., Syst. El. ii, p. 66; Oliv., Ent. vi, p. 777, pl. ii, fig. 33; Baly,
 Cat. Hisp. p. 14, pl. iv, fig. 4; Crotch, loc. cit. p. 80.
brevicollis Rand. (*Languria*), Bost. Journ. ii, p. 48.
- S. collaris** Baly, Cat. p. 163; Crotch, loc. cit. p. 80.

ASIDA Latr.

A. maera n. sp.—Form slender, resembling *Eleodes extricata*. Black, moderately shining. Head coarsely and on the occiput densely punctured. Thorax at the sides longer than wide, narrower in front than at base, sides feebly arcuate and obtusely margined, hind angles acute and slightly divergent, disc slightly convex, sparsely punctured at middle, confluent punctured near the sides, base very feebly bisinuate. Elytra not wider at base than the thorax, sides not margined, humeral angle slightly reflexed. oval, broadest behind the middle, surface sparsely punctured and slightly wrinkled. Prothorax beneath coarsely punctured, abdomen subopaque, scabrous. Length .54 inch; 13.5 millim. Pl. IX, fig. 10.

This species is the most slender at present known in our fauna, and is the only one with the thorax gradually narrowed from base to apex with nearly straight sides.

Collected by Prof. Snow in New Mexico, occurs also in Arizona.

EUSATTUS Lec.

E. politus n. sp.—Oval, very little longer than wide, convex, black, shining. Head very sparsely punctate in front. Thorax very narrowly margined, base bisinuate, the hind angles obtuse, surface sparsely punctate at the sides, nearly smooth at middle. Elytra with very fine punctures, very remotely placed, sides rounded not margined, the epipleurae gradually wider from apex to base. Prosternum coarsely punctured in front, the intercoxal process and tip margined. Body and abdomen very sparsely and finely punctulate. Length .40 inch; 10 millim.

This species by its smooth surface resembles *laevis* Lec., while its form is more nearly that of *difficilis* Lec. It differs, however, from all those with rounded sides to the elytra (except *puberulus*) in having the prosternum margined. This character I find to occur in *robustus* Lec. and *costatus* Horn, which have strongly margined sides to the elytra.

Occurs at Santa Barbara, California. From C. F. Gissler.

E. dilatatus Lec., should be united with *muricatus* Lec.

E. puberulus Lec., in addition to the small scale-like hairs of the surface, differs from *muricatus* in having the prosternum distinctly margined.

The following amended table will enable our species to be distinguished:

Elytra with a distinct lateral margin.....	2.
Elytra not margined	5.
2.—Epipleurae occupying the entire space below the margin; prosternum distinctly margined at tip.....	robustus.
Epipleurae narrow, suddenly broader at base.....	3.
3.—Prosternum margined at tip; elytra subcostate and granular.....	costatus.
Prosternum not margined at tip.....	4.
4.—Elytra with faint costae and transverse reticulations.....	reticulatus.
Elytra coarsely and irregularly eroded.....	erosus.
5.—Prosternum margined at tip.....	6.
Prosternum not margined.....	7.
6.—Elytra subopaque, punctured, with fine scale-like hairs.....	puberulus.
Elytra smooth, shining.....	politus.

- 7.—Epipleuræ suddenly broader at base; elytra smooth.....**laevis.**
Epipleuræ gradually broader from apex to base.....8.
- 8.—Epipleuræ nearly smooth; elytra faintly punctured.....**dubius.**
Epipleuræ punctured and hairy.....9.
- 9.—Form oblong; elytra finely reticulate.....**productus.**
Form oval; elytra with faint traces of costae.....**difficilis.**
Form oval, very convex, elytra submuricate.....**muricatus**

With the exception of *reticulatus*, which occurs on the plains, all the above species are found west of the Rocky Mountains, from Oregon to Cape St. Lucas. Other species occur in Mexico.

CORPHYRA Say.

In the Transactions for 1871 (p. 228–233) I gave a synopsis of the species then known to us, with full descriptions. In that paper fourteen species were admitted. After the return of Mr. Crotch from California in 1873, his material was placed in my hands and six new species were described, one of which I now believe to be a variety. At the time these latter were described other engagements prevented me from bringing all our species together in one table, and only those from the west coast were treated (Trans. Am. Ent. Soc. 1874, pp. 40–43).

The object of the present essay is to bring them all together with such short notes as will enable them to be easily recognized.

The discovery of a new species in Nevada introduces an entirely new element in the series, viz., flabellate antennae in the male with the second and third joints moniliform.

Another series of characters which have been regarded in the separation of species is found in the form of the male sexual apparatus (*oedeagus*). These I have not attempted to describe, but the accompanying sketches will give an idea of the variations. The organ is composed of two semitubular pieces, variously modified at the free end. A lateral view shows the organ to be more or less curved upwards near the tip, except in *inconspicua*, where it is absolutely straight. Through the centre of the tube formed by the lateral pieces a membranous tube passes, which is of somewhat denser structure near the tip. This tube is capable of considerable extension and is the efferent duct, or penis, properly speaking. The figures on Pl. IX, figs. 11–18 give a lateral and an under view of the organ; in many cases it is absolutely identical in several species. I have not seen that of *C. cyanipennis*, but believe it will be found to resemble fig. 18.

The modifications in the form of the end of the complex organ have had considerable weight in causing me to retain several species apart, while I have used apparently trivial characters to indicate their differences.

Series A.—Antennae dissimilar in the sexes, serrate in ♀, pectinate or flabellate ♂.

- Antennae ♂ flabellate, joints 4–10 bearing long branches, joints 2–3 small, globular; elytra at tip ♂ simple.....1. **flabellata**.
 Antennae ♂ pectinate, joints 3–10 with stout branches, joint 2 small, globular; elytra at tip ♂ slightly impressed.....2. **Crotchli**.

Series B.—Antennae subserrate in both sexes.

- Posterior tibiae of males arcuate and obliquely grooved, elytra at tip simple in both sexes.....3. **abnormis**.
 Posterior tibiae slender and similar in the sexes.....2.
 2.—Elytra at tip dissimilar in the sexes, that of the male either prolonged, impressed or tipped with yellow and usually smoother.....3.
 Elytra alike in the two sexes.....11.
 3.—Elytra at tip ♂ acutely cuncate and tipped with yellow.....4.
 Elytra simply tipped with yellow, not impressed nor bullate.....5.
 Elytra at tip more or less bullate and distinctly impressed.....6.
 4.—Elytra entirely black.....4. **distinguenda**.
 Elytra with a nearly entire pellow vitta.....5. **Bardi**.
 5.—Thorax shining without median impressed line.
 Thorax black.....6. **funebria**.
 Thorax red, rarely with darker median spot.....7. **punctulata**.
 Thorax subopaque, a distinctly impressed median line.....8. **causaliculata**.
 6.—The elytral tip ♂ yellow and impressed.....7.
 The tip in ♂ black, with impression.....9.
 7.—Last two ventral segments ♂ yellow, legs yellow.....9. **elegans**.
 Abdomen entirely black in both sexes.....8.
 8.—Thorax entirely red.
 Legs pale.....**monticola**.
 Legs black.
 Elytra sparsely punctured.....10. **terminalis**.
 Elytra densely punctured.....11. **Lewisi**.
 Thorax black.
 Legs pale.....12. **fulvipes**.
 Legs black.....13. **Newmani**.
 9.—Elytra blue, antennae, tibiae and tarsi pale.....14. **cyanipennis**.
 Elytra blackish, varying to red.....10.
 10.—Legs yellow.....15. **pulchra**.
 Legs entirely black.
 Clypeus pale yellow; thorax red, with broad median space black,
 16. **labiata**.
 Clypeus black.
 Elytra with distinct pruinose surface lustre.
 Elytra rather densely punctured, thorax black.....17. **lugubris**.
 Elytra coarsely and sparsely punctured, thorax red.....18. **collaris**.
 Elytra shining without pruinose lustre.....**variabilis**.
 11.—Thorax nearly smooth, color red.....19. **inconspicua**.
 Thorax conspicuously punctured, usually piceous, the elytra vittate in ♂,
 luteous in ♀.....20. **vittata**.
 1.—**C. flabellata** n. sp.—Piceous, thorax and legs reddish yellow. Head and thorax with very few fine punctures. Elytra shining, punctuation sparse

and feebly impressed, nearly smooth at apex and base, pubescence fine and short. Scutellum yellow. Body beneath sparsely punctured and slightly pubescent. Length .18-.26 inch; 4.5-6.5 millim.

Male.—Antennae with joints 2-3 small, globular, 4-10 with a long branch, eleventh joint nearly as long as the five preceding joints together, equalling in length the process from the tenth joint. Elytra at tip absolutely simple as in the female. Anterior and middle tarsi scarcely dilated.

Female.—Antennae subserrate, the second joint alone small.

I have one male in my cabinet with the elytra pale. This style of variation seems to be usual in those species, which occur west of the Rocky Mountains. I have never observed any tendency in the Atlantic species to have the elytra become paler.

I have seen six specimens collected in Western Nevada.

2.—*C. Crotchii* Horn, Trans. Am. Ent. Soc. 1874, p. 41.

In all the specimens I have seen of this species the elytra are pale reddish yellow, the suture and apical margin narrowly bordered with piceous.

Male.—Antennae pectinate from the third joint, second small, globular. Elytra at tip feebly impressed. Anterior and middle tarsi distinctly dilated.

Female.—Antennae slender and very feebly subserrate.

Collected by Mr. Crotch at Crystal Springs, California.

3.—*C. abnormis* Horn, Trans. Am. Ent. Soc. 1874, p. 40.—Black, thorax red.

Male.—Antennae feebly serrate. Anterior and middle tarsi dilated. Posterior tibiae arcuate and obliquely sulcate.

Female has not been identified with certainty.

Occurs in California and Colorado.

4.—*C. distinguenda* Horn, loc. cit. p. 42.—Nearly black, thorax red; antennae subserrate in both sexes.

Male.—Elytra smoother at apical third and yellow, the tips prolonged, acute and slightly reflexed.

Female.—Elytra nearly equally punctured, tip not prolonged nor yellow.

Collected at San Buenaventura and Visalia, California.

5.—*C. Bardi* Horn, loc. cit. p. 42.—Piceous, thorax red, elytra with a pale vitta extending from the humeri to near the tip. Antennae subserrate in both sexes.

Male.—Sexual characters as in the preceding species, but the tip is rather less prolonged.

Female as in *distinguenda*.

Collected at San Buenaventura, California, by Mr. Crotch.

6.—*C. fumebriis* Horn, Trans. Am. Ent. Soc. 1871, p. 280.—Body and legs entirely black, elytra with slight pruinose lustre.

Male.—Elytra tipped with yellow and smoother, not convex nor impressed.

Female.—Elytra concolorous, equally punctured.

Occurs widely diffused in California.

7.—**C. punctulata** Lec., Ann. Lyc. V, p. 151.—Black, thorax red. Varies with the elytra entirely reddish yellow.

Male characters as in *funebria*.

Female as in *funebria*.

Occurs in California and Nevada. .

This and the preceding species seem to differ only in the color of the thorax and may possibly be the same.

8.—**C. canalliculata** Lec., New Species, p. 143.—Black, thorax red, surface feebly shining. Thorax with median impressed line deeper behind. Elytra rather coarsely not densely punctured. Eyes less prominent than the hind angles of the head. I have seen variations of this species in which the color is entirely black, and one of them with pale legs.

Male.—Elytra bordered at tip with yellow, smoother, not impressed.

Female as in *funebria*.

Collected rather commonly by Mr. Charles Dury, near Cincinnati, Ohio. The males seem to be rare.

9.—**C. elegans** Hentz, Trans. Am. Philos. Soc. 1830, p. 257.—Piceous, thorax, legs and two basal joints of antennae reddish yellow. Elytra rather coarsely, sparsely punctate.

Male.—Elytra with an oval bullate spot at tip which is very smooth, yellow and impressed. Last two segments of abdomen yellow.

Female.—Elytra nearly equally punctured at tip. Abdomen black.

Occurs principally in the northwestern regions. My specimens are from Detroit and Dakota. It occurs, however, in the Middle States.

10.—**C. terminalis** Say, Journ. Acad. V, p. 257.—Piceous, thorax red, elytra slightly pruinose, the punctures coarse, deep, but not dense.

Male.—Elytra at tip yellow, smooth, impressed, but not more convex.

Female.—Elytra concolorous, a little smoother at tip.

Occurs in the Middle States, Ohio and Michigan.

11.—**C. Lewisii** Horn, Trans. Am. Ent. Soc. 1871, p. 281.—Body beneath piceous, color above variable. Elytra moderately densely punctured.

A large series of specimens shows this species to be very variable and this, too, in characters usually considered of some importance. These varieties are as follows:

Lewisii.—Black, thorax red. Elytra of male tipped with yellow.

variabilis.—Black, thorax red. Elytra of male black at tip.

monticola.—Elytra yellowish, tip ♂ yellow, legs entirely or in part pale.

In addition to the above-named varieties specimens occur with yellow elytra as in *monticola*, but with entirely or partly black legs, and again, others entirely black above.

It might seem as if some of these forms should be considered specifically distinct, as the characters separating them are no less than those used to distinguish other species. While certain characters are used as

convenience for separation, it must be admitted that there are minor differences of aspect or sculpture not easy or practicable to describe which really distinguish species in the cabinet, and in many the sexual characters of the male afford the only means of giving expression to recognized differences.

In the varieties above indicated I see no reason for drawing the specific line anywhere, there are none of these minor differences of aspect and sculpture, nor is the habitat a factor in the kind of variation. I have concluded to unite these forms under one name and have placed the varieties in separate places in the table, so that all the forms may be recognized.

Male.—Elytra at tip somewhat swollen, smooth and impressed. When the tip is yellow the impression is always black.

Female.—Elytra not swollen at tip, punctured.

The form *Lewisii* occurs in Colorado; *monticola* in California, Nevada and Montana; *variabilis* in Colorado, Montana, New Mexico and Arizona. The totally black specimens are from Arizona.

12.—*C. fulvipes* Newm., Ent. Mag. V, p. 375.—Black, shining, legs yellow. Elytra coarsely and moderately densely punctured. Thorax sometimes reddish brown.

Male.—Elytra at tip yellow, swollen, smooth, impressed.

Occurs in New York, Ohio, Michigan and Canada.

13.—*C. Newmani* Lec., Proc. Acad. 1855, p. 274; *tugubris* ♀ Newm.

This species agrees in most respects with *fulvipes*, except that the legs are black. The apical spot of the male is however smaller, and the elytra less coarsely and densely punctured.

Occurs in Maine, Canada and New York.

14.—*C. cyanipennis* Bland, Proc. Ent. Soc. Phila. 1864, p. 264.—Piceous, tibiae, tarsi, antennae and palpi yellow. Elytra blue, coarsely but not densely punctured.

Male.—Elytra slightly swollen at tip, impressed and smoother, not yellow.

Female.—Elytra not swollen nor impressed.

Occurs in New Hampshire and Virginia.

15.—*C. pulchra* Lec., Jour. Acad. ser. 2, 1, p. 83.—Piceous, legs and two basal joints of antennae pale. Thorax red, with broad median black space. Elytra densely punctured.

Male.—Elytra not more convex at tip, deeply impressed and smoother only in the impression.

Female.—Elytra nearly equally punctured to tip.

Occurs in Ohio, Missouri, Dakota and Montana.

16.—*C. labiata* Say, Jour. Acad. 1827, p. 247.—Piceous, clypeus pale yellow. Thorax red, with broad median black space. Elytra densely punctured.

Sexual characters as in *pulchra*.

This species closely resembles *pulchra*, but differs in 1 legs and a pale clypeus.

Occurs in the Middle States, Ohio and Dakota.

17.—*C. lugubris* Say, Jour. Acad. 1827, p. 246.—Color entire **Male**.—Elytra at tip slightly swollen, smoother, deeply impressed **Female**.—Elytra a little smoother at tip.

This species is more coarsely and less densely punctured 1 or *labiata*, but agrees closely in this respect with *fulvipes*, w low legs and the male elytra tipped with yellow.

Occurs in the Middle States, Canada and Ohio.

18.—*C. collaris* Say, Journ. Acad. 1827.—Black, thorax **red** coarse, deep, sparsely placed punctures.

Male.—Elytra at tip smoother, not swollen, and with a feeble in the suture.

This species is the smallest of those with the elytra imp and is unusually coarsely punctured. It is almost impossi guish the females from those of *terminalis*.

Occurs in the Middle States.

19.—*C. inconspicua* Horn, Trans. Am. Ent. Soc. 1874, p. thorax red, elytra piceous or or rufous. Elytra moderately densely

The tips of the elytra are not in any respect differen sexes. The only method of distinguishing the male is by of the additional ventral segment. The females might be *punctulata* or *Lewisii*, but the elytra are rather more coa densely punctured, and the form smaller and more slender.

Occurs in California and Nevada.

20.—*C. vittata* Horn, Trans. Am. Ent. Soc. 1871, p. 279.— with vitta and side margin pale, often in the female entirely pale. spicuously and moderately densely punctured. Elytra moderately tured.

The sexual characters are entirely wanting at the tips of The females have usually luteous elytra and the legs pale. Occurs in California.

CANTHARIS Linn.

C. mutilata Horn, having the fifth joint of the male an vated and somewhat prolonged upwards at its distal end, m between those species which have several joints so deformed and those in which the intermediate joints are simply thick

C. deserticola Horn.—At the time of the description o (Proc. Amer. Philos. Soc. 1873) I knew the female only ; with Group 2. The male is now at hand, and having the

This species closely resembles *pulchra*, but differs in having black legs and a pale clypeus.

Occurs in the Middle States, Ohio and Dakota.

17.—**C. lugubris** Say, Jour. Acad. 1827, p. 246.—Color entirely black.

Male.—Elytra at tip slightly swollen, smoother, deeply impressed.

Female.—Elytra a little smoother at tip.

This species is more coarsely and less densely punctured than *pulchra* or *labiata*, but agrees closely in this respect with *fulvipes*, which has yellow legs and the male elytra tipped with yellow.

Occurs in the Middle States, Canada and Ohio.

18.—**C. collaris** Say, Journ. Acad. 1827.—Black, thorax red. Elytra with coarse, deep, sparsely placed punctures.

Male.—Elytra at tip smoother, not swollen, and with a feeble impression near the suture.

This species is the smallest of those with the elytra impressed at tip, and is unusually coarsely punctured. It is almost impossible to distinguish the females from those of *terminulis*.

Occurs in the Middle States.

19.—**C. inconspicua** Horn, Trans. Am. Ent. Soc. 1874, p. 42.—Piceous, thorax red, elytra piceous or or rufous. Elytra moderately densely punctured.

The tips of the elytra are not in any respect different in the two sexes. The only method of distinguishing the male is by the presence of the additional ventral segment. The females might be mistaken for *punctulata* or *Lewisii*, but the elytra are rather more coarsely and less densely punctured, and the form smaller and more slender.

Occurs in California and Nevada.

20.—**C. vittata** Horn, Trans. Am. Ent. Soc. 1871, p. 279.—Piceous, elytra with vitta and side margin pale, often in the female entirely pale. Thorax conspicuously and moderately densely punctured. Elytra moderately densely punctured.

The sexual characters are entirely wanting at the tips of the elytra.

The females have usually luteous elytra and the legs pale.

Occurs in California.

CANTHARIS Linn.

C. mutilata Horn, having the fifth joint of the male antennae excavated and somewhat prolonged upwards at its distal end, must be placed between those species which have several joints so deformed (*e. g.* *encera*) and those in which the intermediate joints are simply thicker.

C. deserticola Horn.—At the time of the description of this species (Proc. Amer. Philos. Soc. 1873) I knew the female only and placed it with Group 2. The male is now at hand, and having the intermediate

antennal joints thicker in the male must be referred to Group 1. The pygidium of the male is broad and truncate, the hind trochanter without spine, the surface glabrous. It is therefore allied to *lugubris*, *Childii* and *tenebrosa*, from all of which it differs by the head, thorax and femora being bright red and the elytra finely reticulate.

The following modification of the table of the species of Group 2 has been made necessary by the discovery of new forms.

- Anterior tibiae of males with one spur; hind trochanters subangulate.
 Elytra finely punctured, rather glossy, antennae stout**gentilis**.
 Elytra scabrous, subopaque, antennae slender**moerens**.
 Anterior tibiae of males with two spurs.
 Outer spur of hind tibiae short, stout, broader and concave at tip.....2.
 Outer spur rather slender, laminate at tip..... ..3.
 2.—Elytra black.
 Elytra finely scabrous.....**insperata**.
 Elytra reticulate.
 Thorax subpentagonal, coarsely punctured.....**reticulata**.
 Thorax pearly smooth, sides not angulate.....**cribrata**.
 Elytra fulvous or luteous.
 Head and thorax black.....**cardinalis**.
 Head, thorax and elytra luteous.....**dichroa**.
 3.—Antennae moniliform, scarcely longer than head and thorax...**occipitalis**.
 Antennae slender, usually as long or longer than half the body.....4.
 4.—Stouter species, thorax as wide or wider than long.....5.
 Slender species, thorax longer than wide and narrower than the head.....6.
 5.—Body above, including head, of one color.
 Hind trochanters of male subangulate beneath.....**incommoda**.
 Hind trochanters oval.....**stygia**.
 Body above bicolored.
 Thorax and elytra dark bluish green; occiput red.....**auriculata**.
 Head and thorax brilliant alucous, thorax yellowish red, with median metallic-green spot.....**refulgens**.
 Head greenish black, thorax red, elytra olive green.....**Crotchii**.
 Head and thorax red, elytra very dark green.....**aeneipennis**.
 6.—Color above reddish testaceous, elytra sometimes black.....**nitidicollis**.
 Color entirely black.....**lugeus**.
 Bright aeneous, elytra slightly cupreous.....**Rathvoni**.

C. gentilis n. sp.—Black, rather shining, scarcely pubescent. Head sparsely punctate. Thorax pentagonal, punctured at sides and base. Elytra rather shining, sparsely, finely punctured, a few coarser punctures intermixed. Metasternum densely punctured, abdomen more shining and sparsely punctured. Spurs of hind tibiae very slender. Length .72-.90 inch; 18-23 millim.

Male.—Anterior tibiae with one spur. Last ventral segment crescentically impressed and triangularly emarginate.

This is one of the largest species of the group and has a more shining surface. It recalls *Epicauta corvina* in form.

Occurs in New Mexico and Arizona.

C. occipitalis n. sp.—Black, rather shining. Head sparsely punctate, the entire occipital region red. Thorax subpentagonal, with very few punctures. Elytra very very obsoletely scabrous and with very few minute punctures. Body beneath very sparsely punctate. Length .50-.76 inch; 12.5-19 millim.

Male.—Anterior tibiae with two spurs. Last ventral segment broadly emarginate with obtuse angles on each side.

Occurs in the southern part of California.

C. incommoda n. sp.—Black, without lustre. Head coarsely, sparsely punctate. Thorax subpentagonal, with very few punctures. Elytra finely scabrous and punctate. Body beneath very sparsely punctate. Length .68-.90 inch; 17-23 millim.

Male.—Anterior tibiae with two spurs, middle tibiae rather strongly arcuate. Last ventral deeply triangularly emarginate, penultimate ventral broadly emarginate. Hind trochanters subangulate.

The species may be known from the many other black ones by the sexual characters, and by reference to those given in the above table.

Occurs in the southern part of California.

CALOSPASTA Lec.

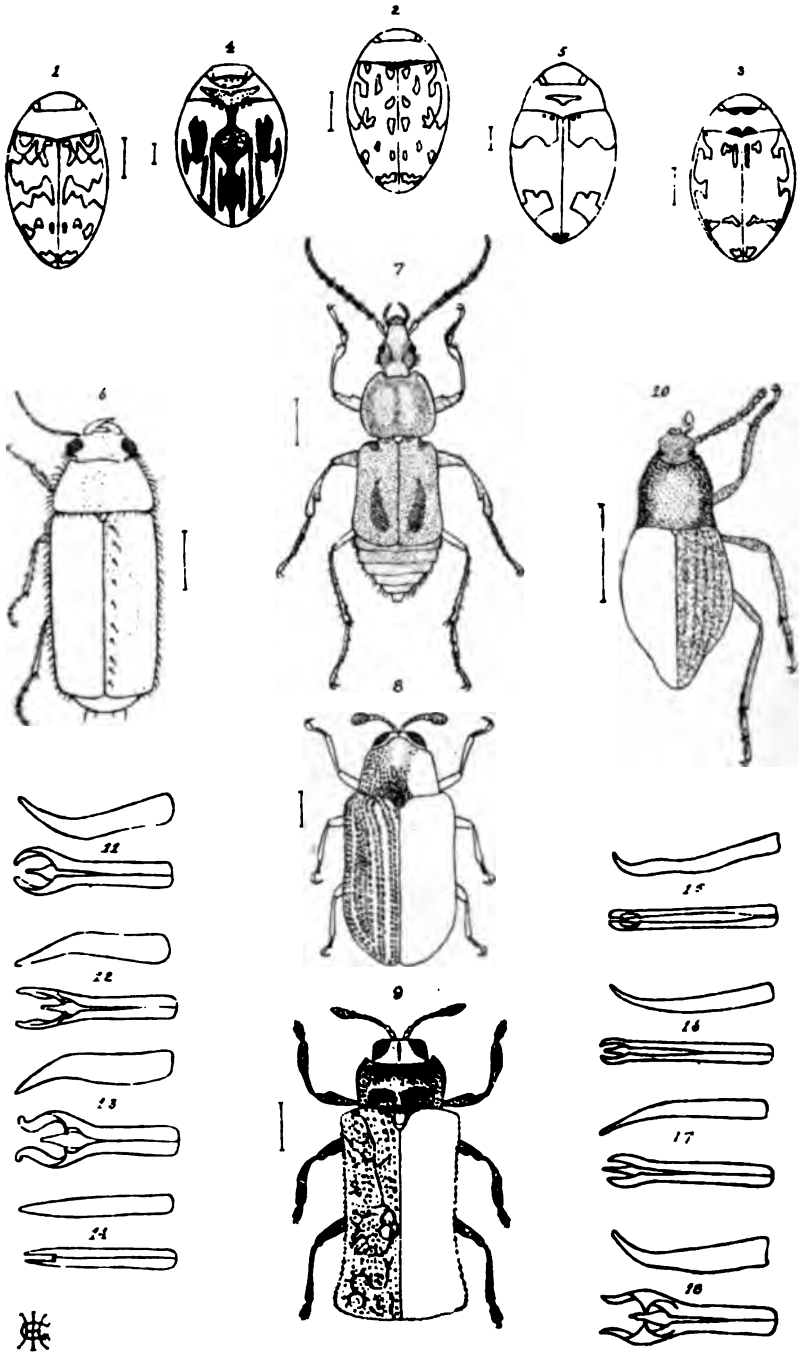
C. viridis n. sp.—Green or slightly bluish, feebly shining, sparsely pubescent. Head sparsely punctured. Antennae short, not reaching the hind angles of the thorax, filiform, the joints closely articulated. Thorax quadrate, very little wider than long. Elytra rather coarsely scabrous and distinctly pubescent. Body beneath sparsely punctured and pubescent. Spurs of hind tibiae slender and acute. Tarsal claws with the upper and lower portions nearly equal. Length .24-.30 inch; 6-7.5 millim.

This species is remarkable in being the first appearance of the genus east of the Rocky Mountains and in having the two portions of the claw nearly of equal length.

Occurs in Colorado and New Mexico (Prof. F. H. Snow).

EXPLANATION OF PLATE IX.

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| Fig. 1. <i>Laccophilus insignis</i> Sharp. | Fig. 12. Same of <i>C. terminalis</i> . |
| " 2. <i>Laccophilus pictus</i> Lap. | " 13. Same of <i>C. Lewisi</i> . |
| " 3. <i>Laccophilus lateralis</i> Horn. | " 14. Same of <i>C. inconspicua</i> . |
| " 4. <i>Hydroporus picturatus</i> Horn. | " 15. Same of <i>C. punctulata</i> , <i>funebris</i> , <i>vittata</i> , <i>Bardi</i> and <i>distinguenda</i> . |
| " 5. <i>Hydroporus quadrimaculatus</i> Horn. | " 16. Same of <i>C. pulchra</i> , <i>labiata</i> and <i>Crotchi</i> . |
| " 6. <i>Pseudomorpha angustata</i> Horn. | " 17. Same of <i>C. lugubris</i> , <i>abnormis</i> , <i>flabellata</i> and <i>collaris</i> . |
| " 7. <i>Stachygraphis maculata</i> Lec. | " 18. Same of <i>C. fulvipes</i> , <i>Newmani</i> and <i>elegans</i> . |
| " 8. <i>Stenopodius flavidus</i> Horn. | |
| " 9. <i>Ocotoma marginicollis</i> Horn. | |
| " 10. <i>Anida macra</i> Horn. | |
| " 11. Oedeagus of <i>Corphyra canaliculata</i> Lec. | |



PROCEEDINGS
OF THE
MONTHLY MEETINGS
OF THE
ENTOMOLOGICAL SECTION
OF THE
ACADEMY OF NATURAL SCIENCES,
PHILADELPHIA.

JANUARY 13, 1882.

Vice-Director Dr. HORN in the chair.

The Publication Committee announced the completion of vol. ix of the Transactions of the American Entomological Society to page 220.

Dr. Horn stated that he had published in a review of the Quediide Staphylinidæ the description of a genus which he had named *Anacyptus*; having since learned that the name was preoccupied, he now proposed in its stead *Microcyptus*.

The following additions to the Library of the American Entomological Society were announced:—

Canadian Entomologist, vol. xiii, No. 12. From the Editor.

Le Naturaliste Canadien, vol. xii, No. 144. From the Editor.

Proceedings of the Boston Society of Natural History, vol. xxii, sigs. 11—13. From the Society.

Psyche, vol. iii, No. 86. From the Editors.

Entomologist's Monthly Magazine, Nos. 211 and 212. From the Conductors.

Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College for 1880 and 1881. From the Museum.

Journal of the Linnean Society, vol. xv, Nos. 84 and 85. From the Society.

Proceedings of the Zoological Society of London for 1881, part 3. From the Society.

Journal and Proceedings of the Royal Society of New South Wales, vol. xiv, 1880. From the Society.

Journal of the Royal Microscopical Society, Ser. 2, vol. i, part 6. From the Society.

Catalog der Coleopteren von Sibirien, von L. von Heyden. From the Author.

Deutsche Entomologische Zeitschrift herausgegeben von der Deutschen Entomologischen Gesellschaft, 1880, No. 2; 1881, No. 2. From the Society.

Analecta hemipterologica, von Dr. O. M. Reuter. From the Author.

Naturgeschichte der Insecten Deutschlands, von Dr. W. F. Erichson, vol. vi, part 1. By purchase.

Address of Hon. Geo. B. Loring Commissioner of Agriculture, and other proceedings of the Cotton Convention held in Atlanta, Ga., Nov. 2, 1881. From C. V. Riley.

FEBRUARY 10, 1882.

Vice-Director Dr. HORN in the chair.

The Publication Committee announced the completion of vol. ix of the Transactions of the American Entomological Society to page 240.

The Publication Committee reported favorably the following papers for publication in the Transactions:—

“Revision of the species of some genera of Buprestidæ,” by George H. Horn, M. D.

“Notes on some little known genera and species of Colcoptera,” by George H. Horn, M. D.

“Synopsis of the species of the tribe Lebiüni,” by Geo. H. Horn, M. D.

“Descriptions of species belonging to the genus Nysson inhabiting North America,” by E. T. Cresson.

Dr. Horn exhibited some drawings to accompany one of the papers reported on this evening, illustrating the anatomy of *Platypnylla* and *Leptinus*. He expressed the view that a close relationship existed between these genera.

For the larger species known as *L. validus* Horn, a new generic name was proposed, *Leptinillus*, from its differing from the true *Leptinus* in having rudimentary eyes and the anterior coxæ separated by the prosternum.

The following additions to the Library of the American Entomological Society were announced:—

Proceedings of the Boston Society of Natural History, vol. xx, part 4; xxi, part 1. From the Society.

Bulletin of the Buffalo Society of Natural Sciences, vol. iv, No 2. From the Society.

Papilio, vol. i, No. 11; ii, No. 1. From the Editor.

Comptes-Rendus des Séances de la Société Entomologique de Belgique, Série iii, Nos. 11 and 12. From the Society.

Annali del Museo Civico di Storia Naturale di Genova, vols. xvi and xvii. From the Museum.

Horæ Societatis Entomologicæ Rossicæ. Tome xv, 1879. From the Society.

MARCH 10, 1882.

Director Dr. LECONTE in the chair.

The Publication Committee announced the completion of vol. ix of the Transactions of the American Entomological Society to page 272.

Dr. Horn read some notes on the families of Coleoptera related to the Elateridæ, and expressed the view that the Elateride series must be regarded as a complex rather than as a family. The divisions proposed are EUCNEMINÆ, ELATERINÆ, CEBRIONINÆ, PEROThOPINÆ and CEROPHYTINÆ, regarded by Dr. Horn as closely related sub-families. The subject is more fully discussed in a paper now in the hands of the Publication Committee.

Dr. Horn announced the death of George B. Dixon, a member of the Section, which took place February 23d. last, at Pilatka, Florida.

The following additions to the Library of the American Entomological Society were announced:—

Memoirs of the Boston Society of Natural History, vol. iii, No. 4. From the Society.

Proceedings of the Boston Society of Natural History, vol. xxi, part 2. From the Society.

Canadian Entomologist, vol. xiv, Nos. 1 and 2. From the Editor.

Entomologist's Monthly Magazine, No. 213. February, 1882. From the Conductors.

Le Naturaliste Canadien, vol. xiii. January, 1882. From the Editor.

Psyche, vol. iii, No. 87—89. From the Editors.

Berliner Entomologische Zeitschrift, vol. xxv, 1881. From the Society.

Comptes-Rendus des Séances de la Société Entomologique de Belgique, Série iii, No. 14. From the Society.

Hymenopteren von Portorico, von Dr. H. Dewitz. From the Author.

APRIL 14, 1882.

Director Dr. LECONTE in the chair.

The Publication Committee announced the completion of vol. ix of the Transactions of the American Entomological Society.

Dr. Horn called attention to the fact that for a number of years our catalogues have contained species of Coleoptera described by various European authors, which have escaped recognition principally through

the erroneous localities given. Happily the number is rapidly diminishing by direct comparison of specimens with types.

The fauna of the United States has been so thoroughly studied at home that the distribution of genera and species is now pretty well understood, and we are warranted in being very skeptical when species are referred to genera unknown to us from a given locality.

In the following notes I have gathered from the authors such information as has been published, which has a direct bearing on the matter of distribution.

Amblychila Piccolomini Reiche, Ann. Fr. 1839, p. 557.

"Our colleague M. Dupont received, about the end of 1838, a collection of Coleoptera containing among others some specimens from New California, among which was found a large Cicindelide."

From our knowledge of the distribution of *Amblychila* it has been doubted whether the specimen was taken in California, inasmuch as that State has been very thoroughly collected over by many competent persons and no trace of that insect found. This is however merely negative evidence. The matter would have very little importance were it not that Reiche and Chaudoir insisted on the distinctness of this species from *cylindriciformis* Say, basing their argument as much on the locality as on any usual specific characters. The type has been seen by Dr. LeConte and myself and does not differ in any appreciable manner from specimens collected in New Mexico.

Pasimachus californicus Chaud., Bull. Mosc. 1850, ii, p. 437.

"This insect was collected in California by M. Piccolomini and has been sent me by M. Dupont. He is the same traveller who collected *Amblychila Piccolomini* Reiche."

The occurrence of *Pasimachus* in California is also in opposition to our ideas of generic distribution. The species remained unidentified until a specimen from Chaudoir demonstrated that it was a species occurring in the Texas region and known as *validus* Lec.

Pangus americanus Mots., Bull. Mosc. 1859, iii, p. 237.

This insect was recognized as a *Discoderus* by Dr. LeConte twenty years ago. The figure and description by Motschulsky are equally insufficient, but I feel fully justified in considering it *D. impotens* Lec., which is not rare in western Texas.

The type was given to Motschulsky by Dupont doubtless from the Piccolomini collection.

Agasoma californicum Ménét., Bull. Ac. Petr. 1843, ii, p. 63.

It is now recognized that *Agasoma* Mén. does not differ from *Steno-*

morphus Sol., a genus represented in Texas and Mexico. The species has never been observed in California by any recent collectors and its reference to that locality is as doubtful as the other species here recorded.

No information is given of the source from which Ménétries obtained the above species, all the others described in the paper are truly Californian, have definite localities and are credited to Wosnessensky.

Triepidius triangulicollis Motsch., Bull. Mosc. 1859, iv, p. 367.

This insect I have identified with *Ischiodontus ferreus* Lec. There can be no doubt that Motschulsky was deceived in attributing lobes to the first three tarsal joints, from the tendency of the brush of hairs which terminates the first joint on the under side to form a pencil simulating a lobe. The specimen is stated to be from California and came to Motschulsky from Dupont.

From the above notes it would appear that all the trouble with doubtfully distributed genera had its origin in a small collection made by Piccolomini and distributed by Dupont to his friends. It must be evident to those acquainted with the distribution of species in our fauna that Piccolomini collected in Texas some distance up the Rio Grande. When it is remembered that the geography of that part of our continent had in 1838 another political alliance, and that its subdivisions were totally different from those of a few years later, it will be understood why the locality "*California*" very correct at that time, conveys an erroneous impression at the present.

A similar geographical allowance must be made in the works of Say. Many localities are given as "*Missouri Territory*," a sufficiently well defined region to those who studied the geographies of thirty years ago. At present the name is lost and many States and Territories now occupy that region on the maps.

Mr. E. T. Cresson presented the following tables to assist the student in the separation of the species belonging to the genus

EUCERCERIS Cress.

Females.

Clypeus with side lobes produced into a large blunt conical tubercle, middle lobe depressed; body yellow with fulvous markings....**causaticulatus** (Say).

Clypeus with side lobes flat or depressed, not protuberant.

Middle lobe of clypeus produced into a porrect spine.

Abdomen ferruginous, with three apical segments black.....**bicolor** Cress.

Abdomen ferruginous, with broad yellow bands above; wings fuscous.

fulviceps Cress.

Abdomen above black, with broad yellow bands; wings clear, with costal margin fuliginous.....**rubripes** Cress.

Middle lobe of clypeus triangularly produced subapically into a flat obtuse tooth; body black with yellow markings.....**zonatus** (Say).
Clypeus with both side and middle lobes flat or simply convex.

Legs black and yellow.

Metathorax with basal enclosure obliquely striated, opaque, entirely black; abdomen very finely punctured.....**flavocinctus** Cress.

Metathorax with basal enclosure smooth and polished, with a V-shaped yellow mark; abdomen deeply and unevenly punctured.....**similis** Cress.

Legs fulvous.

Metathorax with basal enclosure shining, transversely striated; middle lobe of clypeus convex, toothed at apex; form rather slender, coarsely but not densely punctured, somewhat shining.....**fulvipes** Cress.

Metathorax with basal enclosure opaque, densely and strongly punctured; middle lobe of clypeus flat with the apex somewhat prolonged and rounded, not toothed; form robust, very densely punctured, opaque...**montanus** n. sp.

Males. *

A.—Neuration of anterior wing different from that of ♀; second submarginal cell not petiolated and the marginal very much broader at base.

Ventral segments three, four and five each with two short tufts or pencils of erect curved bristles on apical middle; body black with yellow markings.

zonatus (Say).

Ventral segments three, four and five each with a fringe of long, erect, curved bristles on apical middle; body black with yellow markings.

superbus Cress.

Ventral segments three and four each with a fringe of unusually long, erect, curved bristles on apical middle, and a row of short, erect, evenly cut, closely appressed bristles on apical middle of segment five; body ferruginous with pale yellow markings.....**canaliculatus** (Say).

Ventral segments three and four each with a fringe of long, erect, matted bristles on apical middle, and two erect, parallel, approximated, dentiform processes on apical middle of segment five; body black with white and fulvous markings.....**elegans** Cress.

Ventral segments three and four each with a fringe of unusually long, erect bristles on apical middle; body black with yellow markings.....**similis** Cress.

Ventral segment five with a fringe of erect bristles on apical middle.

Metathorax black, generally with a ferruginous spot on each side; cheeks more or less ferruginous.....**rubripes** Cress.

Metathorax black, always with a yellow spot on each side; cheeks with a small yellow spot.....**fulvipes** Cress.

* After a careful examination of the male specimens, the most reliable characters for the separation of the species have been found to consist in the location of the erect fringes of bristles on the apical margin of the ventral segments. These, when present, can easily be distinguished from the usual pubescence, and are more readily seen from a lateral and somewhat oblique view. The armature of the clypeus and shape of the last dorsal segment of the abdomen do not appear to be sufficiently constant, and are rather difficult to see; while the contiguity or non contiguity of the side lobes of the clypeus with the eyes, although apparently constant in some species, varies in others and are therefore characters not to be relied on.

Ventral segments simply pubescent, without fringes of erect bristles; body black with yellow markings; abdomen very finely punctured.

flavocinctus Cress.

B.—Neuration of anterior wings similar to that of ♀; second submarginal cell petiolated, the marginal only slightly broader at base.

Mandibles broadly dilated and flattened on outer surface; face unusually broad, narrowed above, entirely pale yellow; clypeus flat, depressed, unarmed at tip; legs and antennæ fulvous.....**montanus** n. sp.

Mandibles as usual; face not unusually broad, not narrowed above; clypeus armed at tip with three blunt teeth; body black with yellow markings; face with three longitudinal yellow stripes; legs black, ferruginous and yellow.....**vittatifrons** Cress.

Eucerceris canaliculatus.

Philanthus canaliculatus Say, West. Quar. Rep. ii, 79; Amer. Ent. pl. 49, ♂.

Cerceris bidentata Say, West. Quar. Rep. ii, 80, ♀.

Eucerceris canaliculatus Cress., Proc. Ent. Soc. Phila. v, 112; Patton, Bull. U. S. Geo. Survey, v, 357, ♂ ♀.

Hab.—Kansas, Colorado, Texas. Eight ♂ ♀ specimens.

Eucerceris bicolor Cress., Trans. Am. Ent. Soc. ix, Proc. xxxviii, ♀.

Hab.—Montana. Six ♀ specimens; ♂ unknown.

Eucerceris fulviceps Cress., Trans. Am. Ent. Soc. vii, Proc. xxiii, ♀.

Hab.—New Mexico. One ♀ specimen; ♂ unknown.

Eucerceris rubripes Cress., Trans. Am. Ent. Soc. vii, Proc. xxiii, ♂.

Eucerceris unicornis Patton, Bull. U. S. Geo. Survey, v, 359, ♀.

Hab.—Kansas, Colorado, Montana. Eleven ♂ ♀ specimens.

Eucerceris zonatus.

Philanthus zonatus Say, West. Quar. Rep. ii, 79; Amer. Ent. pl. 49.

Eucerceris zonatus Cress., Proc. Ent. Soc. Phila. v, 105, ♂ ♀.

Var. *Eucerceris laticeps* Cress., Proc. Ent. Soc. Phila. v, 107, ♂ ♀.

Hab.—Massachusetts, Illinois. Seven ♂ ♀ specimens.

Eucerceris flavocinctus Cress., Proc. Ent. Soc. Phila. v, 109, ♀.

Eucerceris cingulatus Cress., Proc. Ent. Soc. Phila. v, 110, ♂.

Hab.—Colorado, Nevada, Oregon, Washington Territory, Vancouver's Island. Numerous ♂ ♀ specimens.

Eucerceris similis Cress., Trans. Am. Ent. Soc. vii, Proc. xxiv, ♂ ♀.

Hab.—Nevada. Six ♂ ♀ specimens.

Eucerceris fulvipes Cress., Proc. Ent. Soc. Phila. v, 111, ♂ ♀.

Hab.—Colorado, Montana. Sixteen ♂ ♀ specimens.

Eucerceris superbus Cress., Proc. Ent. Soc. Phila. v, 108, ♂; Patton, Bull. U. S. Geo. Survey, v, 356.

Hab.—Colorado, Dakota, Montana. Seven ♂ specimens; ♀ unknown.

Eucerceris elegans Cress., Trans. Am. Ent. Soc. vii, Proc. xxiii, ♂.

Hab.—Nevada. One ♂ specimen; ♀ unknown.

***Encerceris vittatifrons* Cress.**, Trans. Am. Ent. Soc. vii, Proc. xxiv, §.
Hab.—Nevada, Washington Terr. Seven ♂ specimens; ♀ unknown.

***Encerceris montanus* n. sp.**—♀.—Black, opaque, densely and strongly punctured, clothed with a short erect whitish pubescence; head wider than thorax: face broad, slightly narrowed above; clypeus short, very broad, flat, the side lobes touching the eyes, the middle lobe somewhat prolonged and rounded at tip, unarmed; a transverse ovate spot on each lobe of clypeus, broad longitudinal spot on sides of face not reaching summit of eyes and broad line on prominence between antennæ, the whole forming three broad stripes on the face, line on upper posterior orbits broader above, upper posterior margin of prothorax, postscutellum, two large irregularly shaped spots on metathorax pointed within, tegulæ, segments 1–5 of abdomen above, except basal margin and transverse line on disk of segments three and four, spot on sides of sixth segment, and interrupted bands on ventral segments 3–5, all lemon-yellow; mandibles except tips, four basal joints of antennæ, basal half of flagellum beneath, legs entirely, and two basal segments of abdomen beneath, fulvous-yellow; basal enclosure of metathorax densely and strongly punctured; wings hyaline, with costal margin irregularly clouded with yellowish-fuscous, neuration as usual; segments 2–5 of abdomen above less densely and more irregularly punctured, except in the transverse median deeply impressed lines; apical segment finely rugulose above with lateral carina sharp, fringed with pale hair and terminating in a short obtuse tooth; venter sparsely punctured, shining. Length .50 inch.

♂.—Black, opaque, densely and strongly punctured, clothed with whitish pubescence; head large, much wider than thorax; face very broad, flat, very slightly narrowed above, the tubercle between antennæ prominent; clypeus flat, very broad, its anterior margin truncate its entire width, unarmed, the side lobes touching the eyes for a short distance; mandibles with outer face dilated, flattened, smooth, polished, the upper and lower edges obtusely angular, each mandible with a prominent and obtuse tooth within between base and apex, which latter is pointed and subacute; face, clypeus, prominence between antennæ, spot or line behind summit of eyes, mandibles except tips, scape beneath, posterior margin of prothorax, postscutellum, sometimes a dot on extreme sides of scutellum, a small round spot on sides of metathorax above near base, tegulæ, spots on thorax beneath, coxæ, trochanters, legs beneath, band on posterior margin of abdominal segments 1–6 above, those on 2–5 more or less suddenly dilated laterally, and bands on ventral segments 2–5, all lemon-yellow; scape above, flagellum entirely, legs above and most of the two basal segments of abdomen beneath, fulvous-yellow; sometimes the basal joints of antennæ above are spotted with black; wings hyaline, with apical half of costal margin narrowly fuscous and a small fuscous cloud at base of second submarginal cell, costal nervure fulvous: the shape of the marginal and submarginal cells like those of the ♀ except that the marginal cell is slightly broader at base and the third submarginal a little larger; venter clothed with a long, loose, pale pubescence, a fringe of long erect bristles on apical middle of segments three and four, scarcely longer than the pubescence and almost concealed by it; last dorsal segment flat, carinate laterally, the carinae ending at tip in a short obtuse tooth, the last ventral segment slightly protruding beyond the last dorsal and deeply cleft. Length .50 inch.

Hab.—Montana. (Morrison). One ♀, two ♂ specimens.

The following additions to the Library of the American Entomological Society were announced :—

Proceedings of the Academy of Natural Sciences of Philadelphia, 1881, part 3. From the Academy.

Proceedings of the Boston Society of Natural History, vol. xxi, sigs. 17 and 18. From the Society.

Bulletin of the Essex Institute, vol. xiii, Nos. 10—12. From the Institute.

Canadian Entomologist, vol. xiv, Nos. 2 and 3. From the Editor.

Entomologist's Monthly Magazine, Nos. 214 and 215. From the Conductors.

Le Naturaliste Canadien, vol. xiii, Mars 1882. From the Editor.

Papilio, vol. ii, Nos. 2 and 3. Purchased.

Psyche, vol. iii, Nos. 90—92. From the Editor.

Comptes-Rendus des Séances de la Société Entomologique de Belgique, Sér. iii, Nos. 14—16. From the Society.

Deutsche Entomologische Zeitschrift herausgegeben von der Deutschen Entomologischen Gesellschaft, vol. xxvi, No. 1. From the Society.

Meddlelanden of Societas pro Fauna et Flora Fennica, 1881, Nos. 6—8. From the Society.

Geological and Natural History Survey of Canada. Report of Progress for 1879—80. From the Survey.

Insects Injurious to Forest and Shade Trees, by A. S. Packard, Jr., M. D. From the Author.

Entomologische Zeitung. Herausgegeben von dem Entomologischen Vereine zu Stettin, vol. xlii, 1881. From the Society.

Species des Hyménoptères d'Europe et d'Algérie, par Ed. André, January, 1882. From the Author.

Guide to Practical Work in Elementary Entomology, by Professor J. Henry Comstock. From the Author

Revue Coléoptérologique publiée par Constant Van den Branden, vol. i, No. 2. From the Author.

Liste des Criocérides recueillies au Brésil, par feu Camille van Volxem suivie de la description de douze nouvelles espèces Américaines de cette tribu, par A. Preudhomme de Borre. From the Author.

Materiaux pour la Faune Entomologique de la Province du Luxembourg Belge ; Province de Namur ; Province d'Anvers ; Brabant, Coléoptères première centurie, par Alfred Preudhomme de Borre. From the Author.

Sopra alcuni Imenotteri di Tunisia.—Diagnosi di alcuni specie nuove del genere *Chrysis*.—Spedizione Italiana nell' Africa Equatoriale risultati Zoologici Imenotteri.—Escursione in Calabria (1877-78) Imenotteri.—Note Imenotterologiche.—Contribuzione allo studio di alcune specie Italiane del genere *Tiphia* dell' Ingegnere G. Gribodo. From the Author.

MAY 12, 1882.

Mr. C. A. BLAKE in the chair.

The Publication Committee announced the completion of vol. x. of the Transactions of the American Entomological Society to page 24.

The Publication Committee reported in favor of the publication in the Transactions of the American Entomological Society the paper entitled:

“A Revision of the Mordellidae of the United States, by John B. Smith.”

The following additions to the Library of the American Entomological Society were announced:—

Transactions of the Academy of Sciences of St. Louis, vol. iv, No. 2. From the Academy.

Psyche, No. 93. From the Editors.

Papilio, vol. ii, No. 4, April, 1882. From the Publishers.

Entomologist's Monthly Magazine, No. 216, May, 1882. From the Conductors.

Le Naturalist Canadien, vol. xiii, No. 4. From the Editor.

Report of the Entomologist of the United States Department of Agriculture for 1880, by J. Henry Comstock. From the Author.

The Silkworm; being a brief manual of Instruction for the Production of Silk, by C. V. Riley. From the Author.

Little known facts about well-known animals, by C. V. Riley. From the Author.

The North American species of *Conops*, by S. W. Williston. From the Author.

Revue Coléopterologique, by C. Van den Branden, No. 3, April, 1882. From the Author.

Comptes-Rendus Société Entomologique de Belgique, Série iii, No. 17. From the Society.

Mr. Eugene M. Aaron was elected a member of the Section.

JUNE 9, 1882.

Mr. C. A. BLAKE in the chair.

The Publication Committee announced the completion of vol. x. of the Transactions of the American Entomological Society to page 48.

The following additions to the Library of the American Entomological Society were announced:—

Aid to the identification of Insects, vol. i, by C. O. Waterhouse. Purchased.

Proceedings of the Scientific Meetings of the Zoological Society of London. Index 1871–1880. From the Society.

Transactions of the Entomological Society of London, 1881. From the Society.

Nova Acta Regiæ Societatis Scientiarum Upsaliensis, Ser. 3, vol. xi, No. 1, 1881. From the Society.

A Synonymic Catalogue of Diurnal Lepidoptera, Supplement, March, 1861—June, 1877, by F. W. Kirby. Purchased.

Eleventh Report of the State Entomologist on the Noxious and Beneficial Insects of the State of Illinois, by C. Thomas. From the Author.

Verhandlungen des naturforschenden Vereines in Brünn, vol. xix, 1880. From the Society.

Verhandlungen des Vereins für naturwissenschaftliche Unterhaltung zu Hamburg, vol. iv, 1877. From the Society.

Naturgeschichte der Insecten Deutschlands, vol. iii, part 1.

Rencensio Critica Lepidopterorum Musei Ludovicæ Ulricæ quæ descripsit, Carolus A. Linné.

Bidrag til Kundskaben om Norges Lepidopterfauna. J. S. Schneider.

On motion the Section adjourned until the regular night of meeting in September.

SEPTEMBER 8, 1882.

Director Dr. LECONTE in the chair.

The Publication Committee announced the completion of vol. x. of the Transactions of the American Entomological Society to page 164.

Dr. LeConte read extracts from letters received from Dr. Horn, who was absent in Europe, giving some synonymical notes on our species observed by him. The most important observed was that the species hitherto referred by us to *Callimus* should constitute a new genus, for which Dr. Horn proposes the name *Pœcilobrium*, which will include not only our *P. (Callimus) chalybaeum* Lx., but also *Callidium rufipes* Fab., of Europe.

On the other hand the species referred to *Pilema* are truly *Callimus*. —

The following additions to the Library of the American Entomological Society were announced :

Proceedings of the Scientific meetings of the Zoological Society of London, 1881, Part 4. From the Society.

Trichopterygia Illustrata et descripta.—A Monograph of the Trichopterygia, by Rev. A. Matthews. Purchased.

Bulletino della Società Entomologica Italiana, 1880, part 3. From the Society.

Entomologisk Tidsskrift, af Jacob Spangberg, 1881, parts 3 and 4. From the Author.

Enumeratio Insectorum Norvegicorum, vol. v, part 1.

The Butterflies of North America, by William H. Edwards, second series, part 10. From the Author.

Proceedings of the Academy of Natural Sciences of Philadelphia, Part 1. January to April, 1882. From the Academy.

Cistula Entomologica, vols. ii. and iii. Purchased.

The Bee's tongue, and glands connected with it, by J. Spaulding. From the Author.

Retarded development in Insects.—On the oviposition of *Paradoxus decipiens*.—New Insects injurious to Agriculture, by C. V. Riley. From the Author.

Noctuidæ in the Missouri Entomological Reports, by C. V. Riley. From the Author.

OCTOBER 13, 1882.

Vice-Director Dr. HORN in the chair.

The following additions to the Library of the American Entomological Society were announced :—

Transactions of the American Entomological Society, vol. x, No. 1. From the Publication Committee.

A Biography of Fossil Insects, by S. H. Scudder. From the Author.

Fragments of the coarser anatomy of Diurnal Lepidoptera, by S. H. Scudder. From the Author.

Bemærkninger til H. Siebke's Enumeration insectorum Norvegicorum, Fasc. v, pars 1 (Hymenoptera phytophaga and aculeata), edidit J. Sp. Schneider.

Supplement til H. Siebke's Enumeratio insectorum Norvegicorum, Fasc. i, ii (Hemiptera, Orthoptera and Coleoptera).

Sitzungsberichte und Abhandlungen der Naturwissenschaftlichen Gesellschaft Isis in Dresden.

Coleopterologische Hefte, von E. V. Harold, vols. i.—iv. Purchased.

The Honey Ants of the Garden of the Gods, and the Occident Ant of the American Plains, by H. C. McCook. From the Author.

Proceedings of the Linnean Society of London, July, 1882. From the Society.

Bulletino della Società Entomologica Italiana, 1881, parts 3 and 4. From the Society.

Canadian Sportsman and Naturalist, vol. i, No. 12.

Twelve pamphlets on Coleoptera, by A. P. DeBorre. From the Author.

NOVEMBER 10, 1882.

Director Dr. LECONTE in the chair.

The Publication Committee announced the completion of vol. x. of the Transactions of the American Entomological Society to page 184.

A letter was read from a gentleman desiring to view the collection of the Society. After an interchange of views the Chair announced that it was the sense of the Section that while they desired to aid the development of an interest in the study of Entomology, the collections in charge of the Section could not be used unless under the supervision of the Conservator.

Dr. Horn exhibited some dissections of the mouth parts of Coleoptera, mounted in such a manner that they could be placed in the cabinet with the specimens from which they were taken. The method, he believed, originated with Dr. Sharp, of Scotland, and consists of a cell made of cardboard, the top and bottom being the usual thin cover-glass and filled in the ordinary way with Canada balsam. When properly dried the name of the species may be written on the card, and the whole (except the glass) coated with shellac and thus rendered impervious to moisture.

The following additions to the Library of the American Entomological Society were announced:—

Deutsche Entomologische Zeitschrift, herausgegeben von der Deutschen Entomologischen Gesellschaft, 1882, No. 2. From the Society.

Journal of the Linnean Society, vol. xv, Nos. 86–88. From the Society.

Annales de la Société Entomologique de Belgique, vol. xxv. From the Society.

Memoirs of the Boston Society of Natural History, vol. iii, No. 5. From the Society.

Bulletin of the Essex Institute, vol. xiv, Nos. 1-6, 1882. From the Institute.

Papilio, vol. ii, Nos. 5 and 6. From the Editors.

Bulletin of the Minnesota Academy of Natural Sciences, vol. ii, Nos. 3 and 3. From the Academy.

Verhandlungen der kaiserlich-königlichen Zoologisch-botanischen Gesellschaft in Wien, vol. xxxi. From the Society.

Berliner Entomologische Zeitschrift, herausgegeben von dem Entomologischen Verein in Berlin, vol. xxvi, part 1. From the Society.

Species des Hyménoptères d'Europe and d'Algiers, par Ed. Andre, vol. xii. From the Author.

Proceedings of the Davenport Academy of Natural Sciences, vol. iii, No. 2. From the Academy.

Bulletin of the Buffalo Society of Natural Sciences, vol. iv, No. 3. From the Society.

Mittheilungen der Schweizerischen Entomologischen Gesellschaft, vol. vi, Nos. 2 and 6. From the Society.

Entomologisk Tidskrift, af Jacob Spangberg, 1882, parts 1 and 3. From the Author.

Proceedings of the Scientific meetings of the Zoological Society of London, 1882, parts 1 and 2. From the Society.

Mr. Henry Skinner was elected a member.

The next meeting was announced for December 11.

DECEMBER 11, 1882.

Director Dr. LECONTE in the chair.

The Publication Committee announced the completion of vol. x. of the Transactions of the American Entomological Society to page 224.

On behalf of the author, a paper entitled a "Synopsis of the North American Heliethinae," by John B. Smith, was read by Dr. Horn.

The report of the Treasurer was read and on motion referred to a Committee, of Messrs. Wilt, LeConte and Horn, for audit.

The following additions to the Library of the American Entomological Society were announced:—

Entomologist's Monthly Magazine, vol. xix, Nos. 217-222. From the Conductors.

Journal of the Linnean Society of London, vol. xvi, Nos. 89-94. From the Society.

Canadian Entomologist, vol. xiv, Nos. 3-9. From the Editor.

Naturaliste Canadien, vol. xiii, Nos. 6-10. From the Editor.

Proceedings of the Academy of Natural Sciences of Philadelphia, part 2, May and October, 1882. From the Academy.

Psyche, vol. viii, Nos. 94-98. From the Editors.

Compte-Rendu Société Entomologique de Belgique, Série iii, Nos. 18-24. From the Society.

Proceedings of the Boston Society of Natural History, 1882, pp. 321-432. From the Society.

Petites Nouvelles Entomologiques, Nos. 155-216. From A. Sallé.

The Committee on nominations presented their report.

The business of the evening having been called, an election for officers for the ensuing year was held. On the count of the ballots the following were declared elected :

Director.—John L. LeConte, M. D.

Vice-Director.—George H. Horn, M. D.

Recorder.—James H. Ridings.

Treasurer.—E. T. Cresson.

Conservator.—Eugene M. Aaron.

Publication Committee.—George H. Horn, M. D.
Henry Skinner.

JANUARY 12, 1883.

Vice-Director Dr. HORN in the chair.

The Publication Committee reported in favor of the publication of a "Synopsis of the North American Heliethinae," by John B. Smith, in the Transactions of the American Entomological Society.

The following additions to the Library of the American Entomological Society were announced :—

Bulletino della Società Entomologica Italiana, 1882, parts 2 and 4. From the Society.

Transactions of the American Entomological Society, vol. x, No. 2. From the Publication Committee.

Canadian Entomologist, vol. xiv, No. 11. From the Editor.

Quarterly Journal of the Boston Zoological Society, vol. ii, No. 1. From the Society.

Compte-Rendu Société Entomologique de Belgique, Série iii, Nos. 25-26. From the Society.

The Committee appointed to audit the account of the Treasurer reported that they had examined the accounts and vouchers and found them correct. The report was accepted and the papers ordered filed.

FEBRUARY 9, 1883.

Vice-Director Dr. HORN in the chair.

The Publication Committee announced the completion of vol. x. of the Transactions of the American Entomological Society to page 256.

Dr. Horn called attention to a recent publication in which the author denied the existence of the outer or palpiform lobe in the maxillae of the Gyrinidae. A preparation was exhibited showing the lobe in question in one of our species of *Gyrinus*. The preparation will be sent abroad as an evidence that the figure already published by Dr. Horn was correct (Trans. Am. Ent. Soc. 1881, vol. x, p. 150).

MARCH 9, 1883.

Vice-Director Dr. HORN in the chair.

Additions to the Library of the American Entomological Society were read as follows:—

Proceedings of the Scientific meetings of the Zoological Society of London, part 3. From the Society.

Annales de la Société Entomologique de France, Série 6, Tome 1, 1881. From the Society.

Canadian Entomologist, vol. xv, No. 1. From the Editor.

Journal and Proceedings of the Royal Society of New South Wales, 1881. From the Society.

Proceedings of the Boston Society of Natural History, vol. xxi, sig. 29. From the Society.

Recherches Experimentales sur les Mouvements respiratoires des Insectes, par Felix Plateau. From the Author.

Matériaux pour la Faune Entomologique du Hainaut, par A. P. de Borre. From the Author.

Nos Elaphriens, par A. P. de Borre. From the Author.

Sur un Travail Récent de M. S. H. Scudder concernant les Myriapodes du Terrain Honiller, par A. P. de Borre. From the Author.

Matériaux pour la Faune Entomologique de Flander, par A. P. de Borre. From the Author.

Matériaux pour la Faune Entomologique de la Province de Limbourg, par A. P. de Borre. From the Author.

Matériaux pour la Faune Entomologique de la Province d'Anvers, par A. P. de Borre. From the Author.

Analyse et Résumé d'un Mémoire de M. Le Dr. G. H. Horn on the Genera of Carabidæ, etc., par A. P. de Borre.

Mr. J. T. Pennypacker tendered his resignation as a member of the Section.

APRIL 13, 1883.

Vice-Director Dr. HORN in the chair.

Additions to the Library of the American Entomological Society were read as follows:—

Proceedings of the Davenport Academy of Natural Sciences, vol. iii, part 3. From the Academy.

Entomologist's Monthly Magazine, vol. xix, April, 1883. From the Conductors.

Classification of the Coleoptera of North America, by J. L. LeConte and G. H. Horn. From the Authors.

Annales de la Société Entomologique de Belgique, Série iii, No. 30. From the Society.

Deutsche Entomologische Zeitschrift, herausgegeben von der Deutschen Entomologischen Gesellschaft, 1883, No. 1. From the Society.

Bulletino della Società Entomologica Italiana. January-March, 1882. From the Society.

Dr. Horn exhibited a piece of ticking, a portion of a feather pillow, presenting the appearance of a fine plush on the inner side. Through the ravages of *Attagenus megatoma* the feathers had become comminuted, and by frequent handling and beating had become felted into the material of the ticking.

MAY 11, 1883.

Vice-Director Dr. HORN in the chair.

The Publication Committee announced the completion of vol. x. of the Transactions of the American Entomological Society to page 268.

Donations to the Library of the American Entomological Society were announced as follows:—

Transactions of the Entomological Society of London, 1882. From the Society.

Entomologist's Monthly Magazine, Nos. 227—229. From the Conductors.

Papilio, vol. iii, No. 4. From the Editors.

Canadian Entomologist, vol. xv, Nos. 2—5. From the Editor.

The Butterflies of North America, by W. H. Edwards, second series, part 2. From the Author.

Proceedings of the Boston Society of Natural History, 1883, sigs. 7 and 8. From the Society.

Report of the Entomological Society of Ontario for 1882. From the Society.

Synopsis of the Noctuidæ of Illinois, by G. H. French. From the Author.

Reports of Experiments chiefly with Kerosene upon the insects injuriously affecting the Orange Tree and Cotton Plant, by C. V. Riley. From the Author.

Report of Observations on the Rocky Mountain Locust and the Chinch Bug, by C. V. Riley. From the Author.

Compte-Rendu Société Entomologique de Belgique, Série iii, No. 31. From the Society.

Verhandlungen des naturforschenden Vereines in Brünn, vol. xx. From the Society.

Verhandlungen des naturforschenden der Preussischen Rheinlande und Westfalens.

Die Käfer Westfalens zusammengestellt, von F. Westhoff. From the Author.

Entomologische Zeitung. Herausgegeben von dem Entomologischen Vereine zu Stettin, vol. xliii. From the Society.

Dr. Horn presented a communication entitled "Miscellaneous notes and short studies of North American Coleoptera."

The next meeting was appointed for June 11, after the semi-annual meeting of the American Entomological Society.

JUNE 11, 1883.

Vice-Director Dr. HORN in the chair.

The Publication Committee reported in favor of the publication of Dr. Horn's paper, presented at the May meeting. They also reported that they had accepted from Mr. A. R. Grote a paper in reply to that of Mr. John B. Smith on the Heliothinae, and as they deemed it proper that the two papers should appear together in the Transactions, the consent of the Section was asked for immediate publication. The action was approved and the request granted.

Additions to the Library of the American Entomological Society were read as follows:—

Dr. Horn announced that the Academy had approved of a request of the Sections that they be allowed to elect persons as Contributing Members, who shall be allowed no other privileges than that of taking part in the scientific proceedings of the Section. The right to vote, hold office or take part in the business of the Section being reserved for those only who are also members of the Academy.

The meetings were adjourned until September.

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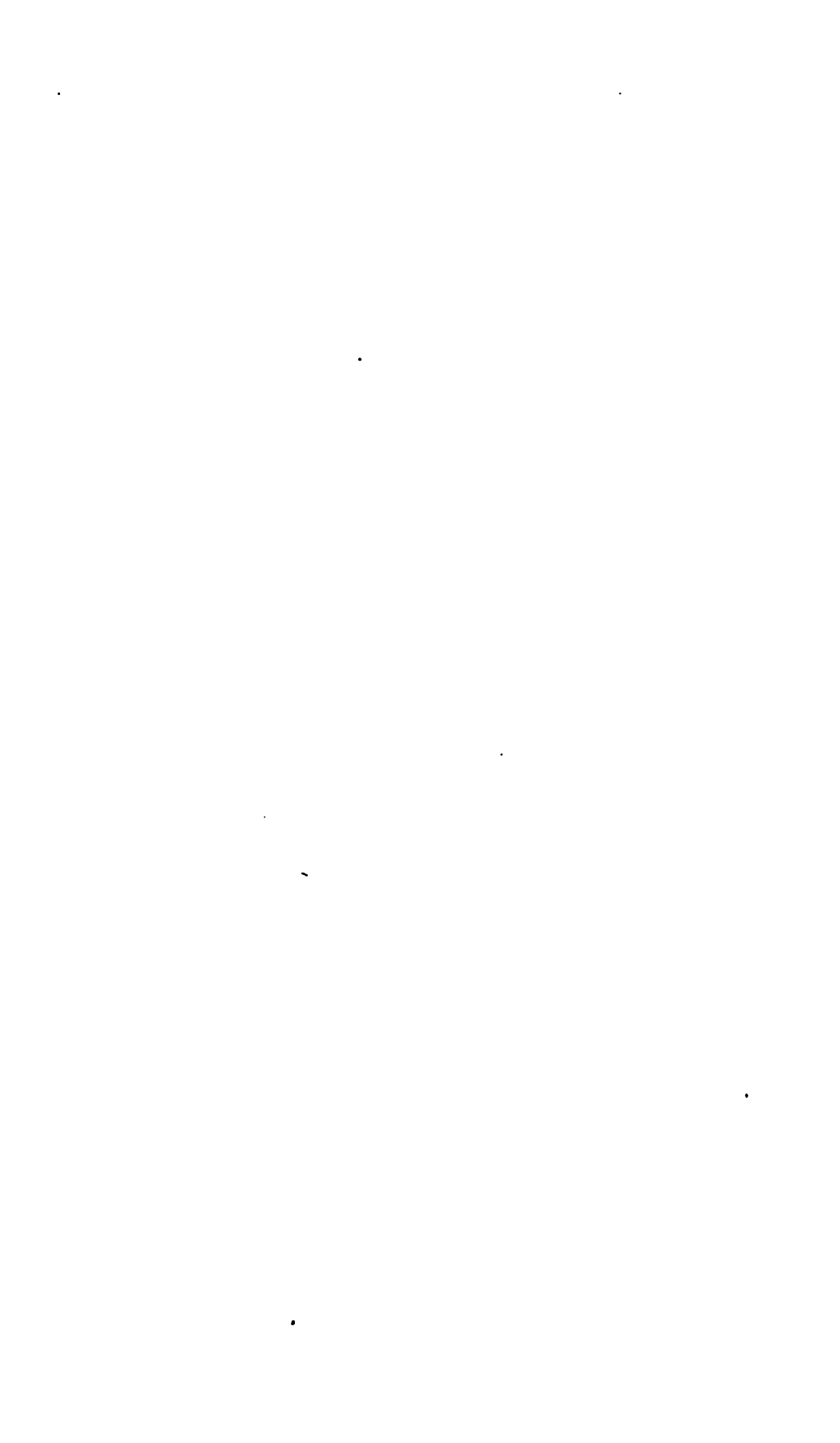






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