LIST OF THE NORTH AMERICAN PLATYPTERICES, ATTACI, HEMILEUCINI, CERATOCAMPADÉ, LACHNEIDES, TEREDINES AND HEPIALI, WITH NOTES

BY AUG. R. GROTE.

(Read before the American Philosophical Society, Nov. 20th, 1874.)

In this list, I present the results of my studies on a portion of the North American Bombyces. The admirable synopsis of the Family by Dr. Packard, I have found our best authority on the subject, while I have been able to propose many necessary and important changes in nomenclature from more extended bibliographical researches. The only changes from Dr. Packard's classification here made, are the division of the "Hepiali" into two groups, in which I follow Hübner, and the disintegration of the "Ceratocampadæ" into Hemileucini and Ceratocampadæ indicated by Mr. Robinson and myself in 1866. To Mr. S. H. Scudder we owe the reprinting of the Tentamen of Hübner and, more recently, the discovery of the exact date* (1806) of that valuable document.

In the present List, a star (*) is prefixed where the genus is represented in Europe; a dagger (†) where I have been unable to examine the species myself.

Bombyces Linn. (1788). Bombyces Borkh., 1798; Bombyces Hüb., 1806; Bombycites and Noctuo-Bombycites Latr., 1810; Phalaena Hüb., 1816.

PLATYPTERICES Hübner (1806).

Platyptericidæ Stephens, 1829; Platypteryginae Grote, 1868.

* PLATYPTERYX Laspeyres (1802).

Type: Bombyx hamula S. V.

Note.—Hübner, in his Tentamen, first restricts Laspeyre's generic term to this type. Since Schrank's genus Drepana (1801), contains species not congeneric with this type, his name, while earlier, must be used for one of these, and Hübner's restriction of Laspeyre's later term must be respected according to the rules of Zoological nomenclature. This restores my original determination (1862) for our American species. Stephens' "Drepana fasciata," is probably a species of Drepanodes, from the description.


Type: Phakena lacertina Maria Linn.


**Note.**—Stephens' later restriction of _Platypteryx_ for this genus cannot be followed. Mosshier, from figures, regards our species as identical with the European. Stett. Ent. Zeit., 251, 1871.

**Dropteryx Grote** (1862).

_Type_: _Platypteryx_ formula Grote.


**ATTACI Linn.** (1788).

**Note.**—This sub-family is indicated by Linné under the name "_Attacos_," Ed. xiii, Syst. Nat., p. 2401. _Echidna_ Hüb., and _Heraea_ Hüb., must both be considered synonymous. The type of _Echidna_ (1808), is _E. Taur_; the type of _Heraea_ (1808), is _H. Carpi_.

**Actias Leach** (1815).

_Type_: Phakena Luna Linn.

_Luna_ (Linn.), Syst. Nat. Ed. 10, 1, 496, No. 5 (1758); id. Ed. 12, 810, No. 5 (1767); id. Mus. Ur., 308, No. 5 (1764); Abb. & Sm. Ins. Ga., 1, 95, T. 48; Leach, Edin. Encyc., 0 (1815), (Actias); Hüb., Verz., 152, No. 1887 (Tropoca). Canada to Alabama; double brooded in Alabama, where it readily flies in the day time.

**Note.**—The Plate of this species Band 2, Exot. Schm., is wrongly dated "1808" by Packard. It is later than the Verzieheniss. In a letter dated 20th Sept., 1866, Dr. Herrisch-Scheffer gave the following dates to the 3d vol. of the Sammlung; "_Casiphone to huntera_, 1823; _Ascepias to rustica_, 1829; Jo to taygete, 1830; _pasitha_, _grimmia_, 1831; _crista to bellrae_, 1832; _nesia to thirza_, 1833; _debora-hylas_, 1834; _lusca-huebneri_, 1853."

**Telea Hüb.** (1810).

_Type_: Bombyx polyphemus Cramer.


**Attacus Linné.**

_Type_: Attacus Atlas Linné.

GILOSAMIA Grote (1874).

Type: Phakena Cynthia Drury.

Note.—Mr. W. F. Kirby, has drawn attention to the fact that after Walker's restriction of the genus Samia, in 1856, to cecropia and promethea, the term could not be used again for Hübner's Samia cynthia. The term Platysamia must then be dropped and a new name be used for the present genus, hitherto confounded with Attaeus, and described by me in 1865 under the name Samia. To Philosamia belong the Asiatic species, ivuta, ricini, Cumingii and Guerini.

Cynthia (Drury), Ill. 2, 10, Pl. 6, fig. 2; Hüb., Verz., p. 156, No. 1629 (Samia); Grote, Proc. Ent. Soc., Phila., 5, 298 (Samia).

Note.—With the usual latitude for coarseness and infidelity of coloring, I think Cramer's figures under this name represent the same species.

Brooklyn, L. I.; Philadelphia; Baltimore. Introduced and apparently acclimated with us.

CALLOSAMIA Packard (1864).

Type: Bombyx Promethea Drury.


Note.—In the original perfect copies of Drury, an Index, with names according to the Linnean system, is given at the end of each volume.


SAMIA Hübner (1816).

Type: Phakena Cecropia Linn.


Note.—No description of this species under the names "Euryalus" or "ceanothi" is known to us previous to Dec., 1865, the date of its description as Californica.

California.

* Saturnia Schrank (1801).

Type: Phakena pavonia major Linn.

HEMILEUCINI Grote and Robinson (1866).

Note.—This group, which we would consider as of sub-family value, is discussed in Ann. Lyc. Nat. Hist., N. Y. 8, pp. 377, 378. None of the collective names proposed by Hübner can be used. The group is not recognized in the Tentamen (1806); in the Verzeichniss some of the genera are referred to the Echidnæ, and one to the Hercæ, names explained above under Attacæ.

AUTOMERIS Hüb. (1816).

Type: Bombyx Janus Cramer.


Note.—This generic term has priority in the Verzeichniss. Cramer's figures under this specific name cannot, by themselves, constitute a valid priority.


COLORADIA Blake (1863).

Type: Coloradia Pandora Blake.

Note.—This genus is distinct from Dirphia Hüb. (1816), the type of which is Dr. Tarquinius (Cram).


PSEUDOHAZIS G. & R (1866).

Type: Saturnia eglanterina Boisd.

Note.—Dr. Packard's genus Encronia is founded on H. maja, which we have shown to be Walker's type of Hemileuca. In an opposite view, the validity of the present generic name cannot be disputed until it is satisfactorily shown that the South American H. venosa Walk., is congeneric.


HEMILEUCA Walk (1855).

Type: Phakena Maja Drury.

Maja (Drury), Ill. 2, 42, Pl. 24, fig. 3; Bombyx Proserpina Fabr., Ent. Syst., 561, No. 17; id. Abb. & Sm., Ins. Ga., Pl. 50; Walk., C. B. M., 6, 1317 (Hemileuca). Mass. to Georgia, Westward to Illinois.


Euleucopheleus Pack. (1872).

Type: Euleuc. tricolor Pack.


CeratoCampadæ Harris (1841).

Note.—This appears to be the earliest collective term that can be used for this group. The genera are partly referred by Hübner in 1816, to his Echidna (see ante), and partly to his Trichoda. The type of Trichoda (1806) is, however, a Lachneid, a designation which has the priority by a line in 1806.

Eacles Hübner. (1816).

Type: Bombyx imperialis Drury.

imperialis (Drury), 1, 17, Pl. 9, figs. 1, 2; Phalaena imperatoria Abb. & Sm., Ins. Ga., 109, T. 55; Hübner, Verz., 153, No. 1602 (Eacles); Bombyx didyma De Beauv., Ins. Afr. Am., pp. 51, 52, Pl. 20, figs. 1, 2 (1806). Eastern States, Southward. Appears to be replaced in Brazil by E. magnifica Walk.

Citheronia Hübner. (1816).

Type: Bombyx regalis Fabr.

regalis (Fabr.), Syst. Ent., 436, No. 93; Phalaena regia Abb. & Sm., 2, 121, Pl. 61; Hübner, Verz., 153, No. 1599 (Citheronia); Phalaena Laocoön + Stoll (nee Cramer) Supp. pp. 179, 180, Pl. 42, fig. 2, 3; Eacles Laocoön, Walk., C. B. M., 6, 1732. Massachusetts to Georgia. Appears to be replaced in Mexico by C. mexicana G. & R.


Sphingicampa Walsh (1864).

Type: Sphingicampa distigma Walsh.


Anisota Hübner. (1816).

Type: Bombyx stigma Fabr.


**Dryocampa** Harris (1833).

Type: Bombyx rubicunda Fabr.


**LACHNEIDES** Hüb. (1806).

[Bombycidae Stephens (p.), 1829.]

[Lasiocampidae Duponchel (p.), 1846.]

Note.—The adoption of this name by Dr. Packard in 1888, must now be followed. It is the earliest title for any part of the sub-family that we are able to find. The type of the genus Lachneis is the European Lachneis Catux.

**GLOVERIA** Pack. (1872).


* Eutricha Hübner (1806).

Type: Bombyx quercifolia Linn.


† Mildaii (Stretch), Zyg. and Bomb. N. A., p. 113, Plate 4, fig. 12 (Gastropacha). California.

Note.—The American species seem to need revision. Dr. Packard informs me that the memoir in which "alascensis" was described is no longer extant, the edition having been destroyed in the great fire at Chicago.

* Trichoda Hübner (1806).

Type: Bombyx neustria Linn.

Americanana (Fabr.), Ent. Syst., 3, p. 493, No. 81; Harris Rep. Ins. Inj. Veg., p. 269 (Clisiocampa); id. 3d Ed., Pl. 7, figs. 13, 17; Cl. decipiens, Walk., U. B. M., 6, 1488; castrensis † Abb. & Sm., p. 119, T. 6); Bombyx frutetorum Boisd., Ann. S. E. Belg., 12, 82. Canada to Georgia.


Artace Walk. (1855).

Type: Artace punctistriga Walk.


Tolyte Hübner (1816).

Type: Bombyx Velleda Stoll.

Velleda (Stoll), Supp. Cram., p. 178, Pl. 41, fig. 4; Hübner, Verz., S. 189, No. 1943 (Tolyte). Canada to Georgia.


Note.—Fitch's description and figure of the ♂ were probably taken from rubbed specimens.

Heteropacha Harvey (1874).

Type: Heteropacha Rileyana Harvey.

Rileyana Harvey. Bull. Buff. Soc., N. S., 1, p. 262, Pl. 11, fig. 1. Missouri; Texas (Boll. in M. C. Z. Cam.).

Note.—Dr. Harvey's type is somewhat rubbed. Fresh specimens show the fringes distinctly chequered, fuscous and whitish. On the forewings the median space is darker, confined by dark lines indistinctly edged with whitish. Terminally the wing is more whitish, showing the subterminal spots plainly.

Teredines Hübner (1806).

[Tessides Herr. - Sch., 1845.]

Note.—This and the following group are equivalent to the "fodicantes" of Hübner (1806). We would consider them of equal value. The European T. Cossus (Linn.) is made the type of the genus Teredo, by Hübner, in the Tentamen. In v. Heineman's extremely unsatisfactory arrangement of the Bombyces, the genus Limacodes is associated with this group.

Xystus Grote (1874).

Type: Cossus robiniae Peck.

Note.—The name Xyleutes of Hüner, cannot be used for this genus, for the reason that it is originally applied to none of the species; in the Verzeichnis it appears to be used instead of Teredo (Tentamen) for the European Teredo cossus (Linn.). Gr.: ᾽ξυςτός.


† Mac Murtroi (Boisdt.), Icon. Régne. An., Pl. 85, fig. 2 (Cossus); Cossus plagiat us Walk., Cat. B. M., 7, p. 72 (Cat. Ins., Mass.).


Note.—A single species is known from Cuba, Xystus piger (Grote), Proc. Ent. Soc. Phila., 5, 254 (Xyleutes).

* Zeuzera Latreille (1805).

Type: Bombyx sesculi Linn.

† pyrina (Fabr.), Ent. Syst., 3, p. 5, No. 6 (Cossus); Walk., C. B. M., 7, p. 1530 (Zeuzera). North America.


HEPIALI Linn. (1788).

[Hepioli Hüb., 1806.]

Note.—This sub-family is indicated by Linné, under the name “Hapalit,” Ed. xiii. Syst. Nat., p. 2402.

* Hepialus Fabr. (1793).

Type: Noctua humuli Linn.

Note.—The type of this genus is the European humuli, indicated by Hübner in the Tentamen, 1806. Following Dr. Packard’s remarks, our species, though occasionally of increased size, do not differ generically.


Note.—This and the following species have been confounded by Harris and Packard.

quadrigattatus (Grote), Proc. Ent. Soc., Phila., 3, p. 73, Pl. 1, fig. 6 (Gorgopis); Hep. arg. † Harris, Agassiz, Lake Superior, 399, Pl. 7, fig. 6; id. Rep. Ins. Inj. Veg., 3d Ed., p. 410 (foot note), fig. 202; id. Walk., var. C. B. M., 7, 1556; Sthenopis arg. † Pack., Proc. E. S., Phila., 3, 392. Great Slave Lake; Lake Superior; Quebec (Bélanger); Saskatchewan.

Note.—This is a larger, more pinkish, salmon-colored species, with smaller dots.

Note.—This is perhaps the true $H. \text{argenteomaculatus}$, as separated by myself.

Harris first notices apply to an Eastern species.

† Behrensii (Stretchi), Zyg. Bomb. N. A., 1, 105, Pl. 4, fig. 6 ($S\text{thenopis}$). California.

† montanus (Stretch), Zyg. Bomb. N. A., 1, 105, Pl. 4, fig. 7 ($S\text{thenopis}$). California, (Sierra Nevada).

hyperboreus Mösch., W. E. M., 6, 129 ($E\text{pialus}$), Taf. 1, fig. 1; Hep. pulcher Grote, Proc. Ent. Soc., Phila., 3, p. 522, Pl. 5, fig. 3. Labrador; Colorado Territory.


RESULTS OF AN EXAMINATION OF AN EXPLODED LOCOMOTIVE BOILER, AND OF EXPERIMENTS TO ASCERTAIN THE CAUSES OF EXPLOSION.

BY DR. CHARLES M. CRESSON.

(Read before the American Philosophical Society, July 17, 1874.)

The boiler was constructed of No. 1 ($\frac{1}{4}$ in.) boiler iron, single riveted (with the exception of the junction of the waist with the fire-box, which was double riveted); it was of the ordinary locomotive form with enlarged grate surface adapting it for use with Anthracite fuel.

The fire-box had the ordinary flat crown sheet suspended from wrought iron girders by means of bolts $\frac{3}{4}$ in. in diameter, placed $4\frac{1}{2}$ in. apart, the ends of the girders being supported upon the vertical sides of the fire-box. The vertical sheets of the fire-box were stayed by wrought iron bolts $\frac{3}{8}$ in. in diameter, placed 4 in. apart, screwed into the sheets and riveted at the end.

The crown sheet and that part of the boiler directly over the fire-box were connected by stay-rod.

The engine had been run upon a siding to pull out a train of cars, which train being heavier than was ordinarily pulled, the steam-blower was applied for the purpose of increasing the intensity of the fire and generating steam of a higher pressure than was usually employed. But when preparations for starting were completed, it was found, upon refer-