

On the Generic Nomenclature of Lepidoptera: by G. R. CROTCH, M.A., Assistant Librarian in the University of Cambridge.*

Notwithstanding the "Rules for Zoological Nomenclature" sanctioned by the authority of the British Association, it would not seem that any perceptible improvement has taken place. The admirable paper of Mr. Kirby, which recently appeared in the Journal of the Linnean Society (Vol. x. p. 494), shows at least that in the diurnal Lepidoptera nothing has been done worthy the name. Mr. Kirby, unfortunately, merely points out certain inconsistencies without suggesting any remedies or consistent plan of action. Some time ago, when I thought that a "Nomenclator Zoologicus" could be accomplished by one person, I prepared chronological studies of the orders of animals, with a view of verifying the dates given in Agassiz and in other works. I am now more than ever convinced, that only by building up, as it were, in this way from the foundation, can a consistent Nomenclature be obtained. The laws of priority are of course assented to tacitly by all, but not applied. I have attempted to exhibit this action chronologically, which effectually prevents a large number of errors of omission, &c., and calls immediate attention to the errors that yet remain undetected. A genus, as far as I understand it, for the purposes of nomenclature, consists of but one species—its type: round this Linnaeus may have grouped 250 species, we only two or none—the principle is still the same. No genus can be considered defined until a type is indicated, for characters must vary with our knowledge in every case; but when the type of a genus is not indicated, I am not inclined to cut the knot by the simple process of taking the first species, but to trace the genus historically until it has a type given to it. The application of this principle to the Lepidoptera as far as the year 1816 will now be seen. It brings about no doubt some startling changes; but it appears to me that even these would be better than the diversity of opinion that now prevails. Let us take one of the most vexed ques-

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tions, the name of our blue butterflies. They were comprised by Linnaeus in the sub-genus *Plebeius*, and *P. argus* was selected by Cuvier as the typical species in 1799; *the same group* was variously styled *Cupido* (*Schrink*, 1801), *Polyommatus* (*Latr.*, 1805), *Lycæna* (*Fabr.*, 1807), *Zephyrus* (*Dalm.*, 1816); all four of which names are therefore co-extensive (though not co-typical), and if revived, which appears to me undesirable, they must be quoted from some later author.

1735. Linnaeus (*Syst. Nat. Ed. i.*) grouped all our Lepidoptera in the genus *Papilio* (typ. *P. Machaon*, *Cuv.* 1799).

1748. Linnaeus (*Syst. Nat. ed. vi.*) separated the nocturnal species under the title *Phalæna*.

1758. Linnaeus (*Syst. Nat. ed. x.*) separated the crepuscular species under the title *Sphinx*. He also sub-divided his genus *Papilio* into six sub-genera, whose names have been accepted, and, as I conceive rightly; for Linnaeus always used them sub-generically, speaking of *Papilio Danane Brassicæ*. These are—

A. *Equites*. This has been always (except by Geoffroy and Schrank) considered the typical stirps.

B. *Heliconius*, type H. *Psidii*, *Lam.* (1801).

C. *Danaus*, type D. *Brassicæ*, *Cuv.* (1799).

D. *Nymphalis*, type N. *atalanta*, *Lam.* (1801).

E. *Plebeius*, type *P. argus*, *Cuv.* (1799).

F. *Barbarus*, a heterogeneous group which has not since been accepted.

The type of the genus *Sphinx* is, according to Lamarck (1801), *S. convolvuli*. Latreille (1805), figured *S. atropos* as its type, which was separated by Ochsenheimer (1816).

The genus *Phalæna* is also sub-divided into seven sub-genera:—

A. *Bombyx*. Cuvier (1799) and Lamarck (1801) divide this into three sections, whose types are *B. paronia*, *B. dispar*, and *B. mori*; Schrank

(1802), in sub-dividing the genus, leaves *B. mori* and *versicolor* as its types. Hence we are justified in retaining *B. mori* as the type of *Bombyx*.

b. *Noctua*, N. *sponsa*, *Lam.* (1801). Cuvier and Latreille (1805) concur in this; but afterwards Latreille (1810) selected N. *pronuba* as his type.

c. *Geometra*, Ph. *syringaria*, *Lam.* (1801) *Latr.* This was regarded by Fabricius (1775) as the typical section, and hence took the name *Phalaena*; in this he was followed by Cuvier, Lamarck, Latreille, &c.

d. *Tortrix*, T. *viridana*, *Lam.* (1801). Fabricius (1775) dropped this name, and used instead *Pyralis* (nec Linn.) In this he was followed by several others, but was at last overruled.

e. *Pyralis*, P. *forficalis*, *Cuv.* (1799). This sub-genus is sunk altogether by Fabricius. Cuvier and Latreille however revive it.

f. *Tinea*, T. *pellionella*, *Geoffr.* (1762), *Lam.* (1801). This, as a name known to the ancients, has been pretty generally adopted.

g. *Alucita*, A. *pentadactylus*, *Geoffr.*, *Cuv.*, *Lam.* Applied by Linnaeus to all the cleft-winged species. Geoffroy (1762) re-created the genus under the title *Pterophorus* (typ. *pentadactylus*); Fabricius adopted this, and gave the name *Alucita* to a group of *Tineæ*, since called *Adela* by Latreille. We are bound in consistency to reject *Pterophorus* and adopt *Alucita* (typ. *pentadactylus*), employing Latreille's name, *Orneodes*, for A. *hexadactylus*.

1762. E. Geoffroy (Hist. Abrég. vol. ii.) adopts five genera, only without types. He introduces a new name, *Pterophorus*, for *Alucita*.

1767. Linnaeus (Syst. Nat. Ed. xii.) adds the sub-genus *Attacus*. (typ. Ph. *pavonia*, *Cuv.*, *Lam.*)

1775. Fabricius (Syst. Ent.) adds a new sub-genus under *Papilio*, viz., *Parnassius* (typ. *Apollo*, *Cuv.*, *Latr.*). He also adds three genera to the Nocturni.

140. *Sesia*, S. *stellatarum*, *Scop.* (1777), *Cuv.* (1799). Lamarck (1801) gives S. *fuciformis* as his type.

141. *Zygæna*, *Z. filipendulae*, *Scop.*, *Cur.*

143. *Hepialus*, *H. humuli*, *Cur.*, *Lam.*

148. || *Alucita*, *A. degeerella*, *Lam.* (1801). This group of *Tineæ* was called *Adela* by Latreille (1796).

Noctua, *Phalana*, *Tinea*, are raised to the rank of genera; *Pyralis* (nec. *Linn.*) is used for *Tortrix*; *Pterophorus* (*Geoffr.*) is used for *Alucita*.

1777. Scopoli (Introd. ad. Hist. Nat.) forms only one really new genus, the rest being the old ones re-named.

160. *Spectrum* = *Sphinx*. 161. *Macroglossa* (typ. *stellatarum*) = *Sesia* F. 163. *Anthrocera* = *Zygaena*.

162. *Trochilium*, *S. apiformis*, *Latr.* (1805). This consists of the smaller species of *Sesia*, *Fab.*, which Latreille took for the types of the genus. If, however, with Cuvier and Lamarek, we regard the large species as the true types, Scopoli's name comes into play.

He divides the Diurni into six purely artificial genera, which have no types or limits.

171. *Argyreus*. 172. *Argus*. 173. *Pterourus*.
173. *Battus*. 174. *Graphium*. 175. *Ascia*.

1793. Fabricius (Ent. Syst.) adds two sub-genera to *Papilio*.

Satyrus, *S. megaera*, *Latr.* (1805). This is the species commonly called "le Satyre," and hence evidently the true type of the genus.

Festivus, *P. Plexippus*, *Latr.* (1805). Latreille, not liking this name, has called the genus *Danaida*, Fabricius (1807) calls it *Euploea*.

187. *Hesperia*, *H. malvae*, *Cur.* (1799) *Lam.* This genus is really a new name for *Plebeius* *L.*, and the true genus *Hesperia* is due to Cuvier and Lamarek.

192. *Cossus*, *C. ligniperda*.

195. *Hyblaea*.

1796. Latreille (Préc. des Charact.) adds a few genera, but unfortunately gives no species:—

13. Aglossa, A. pinguinalis, *Latr.* (1802).

14. Ypsolopha [Hyps-].

16. Yponomeuta [Hypon-], Tin. evonymella, *Latr.* (1802).

17. Oecophora, Tin. sulphurella, *Latr.* (1802).

18. Adela, Aluc. reaumurella, *Latr.* (1802).

20. Orneodes, Pter. hexadactylus.

1798. Fabricius (Suppl. Ent. Syst.) adds a few genera:—

Lithosia, L. quadra, *Latr.* (1810).

Galleria, Phal. cereana, *L.*

Phycis, Tin. boletella and spissicella. Haworth (1812) retained this genus for *T. spissicella*; Ochsenheimer (1810) for *T. boletella*.

Crambus=Pyralis, *Linn.* Latreille, in sub-dividing the group (1810), retains this for *C. earneus*. Leach (1815) gives *C. pineti*, *pascuorum*, &c. He also adopts the genus Ypsolophus from Latreille [-lopha].

1799. Cuvier (Tabl. elem.) forms no new genera, but gives precision to the old ones by characterizing them and indicating their types.

Illiger (Käf. Preuss.) in a list of genera at the end of the volume, indicates the genus *Adela* under the new name, *Nemophora* (*Hoffm.*).

1801. Lamarck (Syst. Anim. s. Vert.) also fails to create new genera, but indicates the types, &c., with even more exactitude than Cuvier.

Schrantz (Fauna Boica, ii. 1) distributes the species into 17 genera, one of which only is new. The Diurni, however, are re-modelled as follows:—

197. Erynnis=Hesperia, *Fab.* 198. Pieris=Papilio, Heliconius, Danaus. 199. Maniola=Satyrus. 200. Papilio=Nymphalis. 201. Cupido=Plebeius, *L.* 212. Psyche, no type.

I differ very much from Mr. Kirby in my estimate of the value of this book: he appears to me merely to have re-named the sections then in use.

1802. Schrank (Fauna, Boica ii. 2) constitutes a large number of genera at the expense of *Bombyx*, &c.

Saturnia=*Attacus*, *L.*

|| *Laria*, *L. dispar*, *Leach*, 1815; *salicis* and *nivosa*, *Hüb.*, 1816.

Aretia, *A. fuliginosa*, *Hüb.*, 1816.

Lasiocampa, *L. quercus*, *Leach*, 1815; *pini*, *Hüb.*, 1816.

Cerura, *C. vinula*.

Drepana.

Pecilia, *P. runica*, *Hüb.*, 1816.

Cucullia, *C. verbasci* and *scrophulariae*, *Hüb.*, 1816.

Hadena, *N. saponaria* and *capsincola*, *Hüb.*, 1816.

Catocala, *C. fraxini L.*, *Hüb.*, 1816.

Polypogon, *P. barbalis* and *tentacularis*.

Nymphula, *N. potamogalis*, *Hüb.*, 1816.

Scopula, *S. paludalis* and *dentalis*.

Hypena, *H. palpalis* and *rostralis*, *Hüb.*, 1816.

Agrotera, *A. nemoralis*.

Pyrausta, *P. cingulalis*, *Hüb.*, 1816.

Setina=*Lithosia* F. [Hübner (1816) takes up the genus for *Tin. ephemeralis*.]

Nemapogon, *Leach*, 4 sp. (1815).

Setella, *T. marmorella*.

Harpella, *T. proboscidella*.

Plutella, *T. xylostella*.

Stigmella, *T. rosella* (*De G.*).

Pyralis (typ. *pinguinalis*)=*Aglossa*, *Latr.*

Latreille (Hist. Nat. ii.) gives an analysis of his genera. The following are new:—

Smerinthus, *S. tiliæ*, *Latr.* (1805).

Stygia, *S. australis*, *Latr.* (1805).

Herminia=*Polypogon*, *Schr.*

Latreille (1805) figures *H. ventilabris*; (1810) he gives *H. barbatus* as his type; Leach (1815) gives *H. proboscidalis*.

Botys, *B. purpuraria*, *Latr.*, (1810).

Cerostoma, *Ypsol. dorsatus*, *Fab.*

He also uses *Sesia* (Fabr. p.) for *S. apiformis* [= *Trochilium* Scop.].

1803. Laspeyres (Neue Schr. Nat. Gesell. iv.).

Platypteryx, P. falcataria, *Latr.* (1810), = Drepana, *Schr.*

1803. Lewin (Prod. Ent.) creates two new genera for Australian species :—

Phalænoides, P. glycinae; Cryptophasa, C. irrorata, &c.*

1805. Latreille (Hist. Nat. xiv.) in describing the species at length, makes but little addition to his previous sketch. The sub-genera of Papilio are elevated to generic rank, and their names in some cases changed :—

Danaida (typ. plexippus) = Festivus, Fab.; Pieris (Schrank) = Danaus, L.; Polyommatus = Plebeius, L.

Zeuzera, Z. aesculi. Erroneously spelt *Zenzenra*; but he writes Zeuzera in the *Dictionnaire*, which is contemporaneous, if not earlier.

1806. Dumeril (Zool. Anal.) forms one new genus :—

Heteropterus, H. speculum, Rott. The type of this is gathered from his later works.

1807. Fabricius (Ill. Mag. d. Ent. vi.) has given, through Illiger, a synopsis of the new genera from his unpublished work entitled, "Systema Glossatorm." It fortunately extends only to the end of the Crepuscularia, and contains 49 genera. Two or three species are generally cited as types; and he has re-named all his old sub-genera, irrespective of the fact that they had been raised to generic rank by Latreille.

1. Urania, P. Leilus, *Latr.* (1810).
2. Amathusia, P. Phidippus.
4. Zelima, P. Pylades.
5. Morpho, P. Achilles, *Westw.* (1850).
6. Cethosia, P. Cydippe, *Latr.* (1810).
7. Castnia, P. Icarus, *Latr.* (1810).

* When several species are cited, without distinguishing the type, I have cited the first, appending &c. to it.

8. Euploea=Festivus, *Fabr.* Euploea, *Boisd.* (1832), typ. Eunice, &c.
9. Apatura, P. Iris, *Ochs.* (1816).
10. Limenitis, L. populi, *Dalm.* (1816).
11. Cynthia, C. cardui, *Horsf.* (1828), arsinoe, *Westw.* (1840).
12. Vanessa=Nymphalis, *L.*
13. Biblis, P. Biblis; Didonis, *Hüb. West.* (1850).
14. Hipparchia=Satyrus, *Fab.*
15. Neptis, (N. aceris, *Horsf.*, *Westw.*)
16. Brassolis, P. Sophoræ, *Latr.*, *Boisd.*
17. Paphia, P. jasius, *Ochs.* (1816). Ochsenheimer re-named this *Charaxes* without reason.
18. Melanitis, M. undularis, *Horsf.* (1828).
19. Argynnis, P. Paphia, *Latr.* (1810).
20. Thais, P. Hypsipyle. Ochsenheimer has re-named this *Zerynthia*.
21. Idea, P. Idea.
22. Doritis=Parnassius, *Fab.* Doritis, *Hüb.* (1816), typ. D. apollina.
23. Pontia=Danaus, *L.*, *Cuv.* Pontia, *Boisd.* (1836), P. nina, *Cram.*
24. Colias, C. Rhamni, *Latr.* (1810).
25. Haetera, P. Piera, *Doub.* (1846).
26. Acraea, A. horta, *Latr.*, *Boisd.*
27. Mechanitis=Heliconius, *L.*
28. Libythea, P. celtis, *Latr.* (1810).
29. Melitæa, P. Athalia, *Dalm.* (1816).
30. Helicopis, Hesp. cupid and gnidus.
- 31.†Hesperia, (nec. *Cuv.*, *Latr.*)
32. Lycaena=Plebeius, *L.*
33. Erycina, E. lysippus, *Hüb.* (1816)=Riodina, *Westw.* (1850).
34. Myrina, Hesp. alcides, *God.*, *Westw.*
35. Thecla, Th. betulae, *Dalm.* (Aurotis).
36. Nymphidium, N. caricæ, *Westw.* (1850).
37. Danis, Pap. Danis, *Cram.*, *Boisd.*
38. Emesia, Hesp. ovidius, *Westw.* (1850).

39. Thymele=Hesperia, *Fab.*, *Latr.*
40. Helias, H. phalænoides, *n. sp.*
41. Pamphila, P. comma, *Dalm.* (1816) Hesperia.
42. Laothoe=Smerinthus, *Latr.*
45. Aegeria=Trochilium, *Scop.* (*Sesia*, *Latr.*)
46. Amata, Zyg. passalis and Cerbera.
48. Glaucopis, *n. sp.*
49. Procris, P. statices, *Leach* (1815).

Thus such names as Vanessa, Hipparchia, Doritis, Pontia, Mechanitis, Lycaena, Thymele, Laothoe, Aegeria, ought to disappear altogether.

1808. Ochsenheimer (Schmett. ii.) forms four new genera.

- || Chimæra, Noct. chimæra, *Hüb.*
- Atychia=Procris, *Fab.*
- Syntomis=Amata, *Fab.*
- Thyris, Sph. fenestrina.

He says that Sesia should be spelt *Setia*.

1809. Latreille (Gen. Crust. ii.) combines the new genera of Fabricius with each other, so as to produce great confusion.

- Eurybia (Ill.), Pap. salome, *Cram.*
- Aegocera, B. venulia, *Cram.*
- || Atychia, Sph. chimæra.
- Aglaope, Zyg. infausta.
- Callimorpha, C. dominula, *Leach* (1815).
- Euplocamus, Tin. guttella, *Latr.* (1810).

1810. Haworth (Lep. Brit.) creates five new genera, unfortunately without indicating types.

5. Apoda, Bom. testudo.
8. Falcaria=Drepana, *Schr.*
9. Nudaria, B. munda.
11. Phytometra.
12. Hemigeometra=Catocala, *Schr.* = Noctua, *Lam.*

Ochsenheimer (Schmett. Bd. iii.) forms numerous genera in the Bombyces without indicating exact

types. He also re-names three of Schrank's genera.

2. Aglia, Sat. Tau.
3. Endromis, B. versicolora.
4. Harpyia=Cerura, *Schr.*
5. Notodonta, N. dromedarius, &c., *Hüb.* (1816).
11. Liparis=|| Laria, *Schr.* Typ. monacha et dispar, *Germ.* (1811).
12. Orgyia, O. fascelina, *Hüb.* (1816).
13. Pygaera, P. Timon, *Hüb.* (1816).
14. Gastropacha=Lasiocampa, *Schr.*
15. Eyprepia=Arctia, *Schr.* Typ. E. cibrum, *Germ.* (1811).

These names are adopted and restricted by Hübner, and must bear his application.

1811. E. F. Germar. *Systematis Glossatorum prodromus*, Sect. I., II. 4to. Lips. This book was published after Ochsenheimer's third volume, which he cites on p. 26, and is a thoroughly careful book.

9. Attacus (*Linn.*), Ph. Pavonia *L.* Linnaeus used this in a sub-generic sense only.

10. Tachiptena, Bomb. tau, *L.*=Aglia, *Ochs.* (1810).

11. Platypteryx (*Laspl.*), Ph. falcula, &c.

13. Laspeyria, Ph. flexula.

14. Scoliopteryx, C. libatrix.

Psylla||, Bomb. celsia, &c. This genus is utterly heterogeneous in its construction.

16. Eriogaster, B. lanestris, &c. The character given by him reaches its extreme in E. lanestris, which may therefore be regarded as his type.

18. Arctornis—Arctia, *Schr.* (26 sp.)

1812.

PART II.

30. Callimorpha (*Latr.*), Ph. hera, dominula, &c.
32. Eyprepia (*Ochs.*), Ph. cibrum.
Liparis (*Ochs.*), L. monacha & dispar.
33. Penthophera, Bomb. morio, &c.
34. Laria|| (*Latr.*), B. pudibunda, &c.

- 35. Notolophus, B. gonostigma et antiqua.
- 36. Pygaera (*Ochs.*), 6 sp.
- 37. Notodonta (*Ochs.*), 20 sp.
- 42. Pterostoma, B. palpina.
- 43. Cerura (*Schr.*), C. vinula, &c.
- 45. Stauropus, S. Fagi *L.*
- 45. Endromis (*Ochs.*), B. versicolor.
- 46. Lasiocampa (*Ochs.*), L. dumeti, &c., 12 sp.
- 49. Odonestis, B. pruni F.
- 50. Gastropacha (*Ochs.*), B. quercifolia, &c.

Haworth (Lep. Brit.) continued to form new genera, but was preceded in many of them.

- 20. Funaria=Psyche, *Schr.* p.
- 19. Anthophila, Phal. fabriciana *L.*
- 22. Palparia, Tin. caudella, &c.
- 23.†Phycis (nec. *Ochs.*), T. spissicella.
- 24. Scoparia, T. cembrella, &c.
- 25. Diurnea, T. fagella, &c.
- 26. Depressaria, T. Heraclella, &c.
- 27. Erminea=Hyponomeuta, *Latr.*
- 28. Capillaria=Adela, *Latr.*
- 29. Dasycerus=Oecophora, *Latr.*
- 30. Chelaria, Tin. conscriptella.
- 31. Gracillaria, T. hemidactylella, &c.
- 32. Porrectaria, T. ochrodaactyla, &c.

Haworth (Trans. Ent. Soc. i.).

- p. 340. Fumea *pro* Fumaria.

1814. Leach (Zool. Misc.) forms two new genera.

- p. 37. Agarista, A. picta, *n. sp.*
- 79. Ourapteryx, O. sambucaria, *L.*

1815. Leach (Zool. Misc. ii.) adds a new genus.

- p. 25. Actias, Phal. luna, *L.*

Leach (Edin. Encycl. ix.) gives a general system of Entomology.

- 419.†Colias, C. Hyale.

- 420. Gonopteryx, C. Rhamni=Colias, *Fab.*, *Latr.*

436. Ino, Z. statices = Proeris, *Fab.*
 Dorvillia, B. versicolor = Endromis, *Ochs.*
456. Biston, G. prodromaria, &c.
459. Abraxas, G. grossulariata.
460. Bupalus, G. piniaria.
461. Hipparchus, G. papilionaria and prunata.
464. Cilix, Pl. compressa.
466. Simaethis, T. dentana.
467. Nola, P. palliolatus.
- Phalaena (typ. *margaritaria*), Geometra (typ. *lunaria*).

1816. (Ochsenheimer (Schmett. iv.) has formed a series of new genera among the Noctuidæ taken from Hübner. Their use must of course be settled by Hübner's Verzeichniss, published in the same year. He has often taken Hübner's sections for genera.

6. Charaxes *pro* Paphia, *Fab.*
 11. Zerynthia *pro* Thais, *Fab.*
 15. Hecaerge *pro* Libythea, *Fab.*

The genera adopted from Hübner should stand in his name. The following are *stirpes* for Hübner, and cannot be retained at all:—Deilephila, Diphthera, Agrotis, Graphiphora, Amphipyra, Miselia, Polia, Xanthia, Cosmia, Xylena, Plusia, Heliothis, Erastria, Anthophila, Brephia, Euclidia.

59. Apamea, and 62. Calyptro, are magazine creations of his own, and comprise several genera.

J. W. Dalman (K. Vet. Akad. Handl. 1816) formed the genera known to him upon more exact characters, and carefully indicated his types. He has re-named several genera that had become confused in their application.

Limenitis (*Fab.*), L. populi. Aglais (=Vanessa, *Fab.*), A. urtice. Argynnis (*Fab.*), A. adippe. Melitaea (*Fab.*), M. athalia. Amaryssus (=Papilio, *L.*), P. Machaon. Doritis (=Parnassius, *F.*, *Lat.*), D. Apollo. Ganoris (=Danaus, *L.*, *Lat.*), G. brassicæ. Zephyrus (=Plebeius, *L.*). Hesperia

(*Pamphila*, *Fab.*), *H. comma*. *Dilina* (= *Smerinthus*, *Lat.*), *O. Ocellata*. *Sphinx* (*L.*) *S. ligustri*. *Hemaris* (= *Sesia*, *Fab.*), *S. fueiformis*. *Sesia* (= *Trochilium*, *Scop.*) *S. apiformis*, &c. *Zygæna* (*Fab.*), *Z. filipendulae*. *Aglaope* (= *Procris*, *Fab.*) *A. statices*.

Zephyrus is sub-divided into three sub-genera.

a. *Aurotis* (= *Thecla*, *Fab.*), *A. betulae*. b. *Heodes*, *H. virgaureæ*. c. *Cyaniris*, (= *Plebeius*, *L.*), *C. semiargus*, *Hüb.*
