

THE
TRANSACTIONS
OF THE
ENTOMOLOGICAL SOCIETY
OF
LONDON

FOR THE YEAR 1871.

I. A *Monograph on the Ephemeroidea*. By the Rev. A.
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[Read 5th December, 1870.]

Part I. The Nomenclature of the *Ephemeroidea*.

The present communication is an introduction to a series of papers on the *Ephemeroidea*. In these papers I hope to give a detailed account of the organization and development of some characteristic British species of the Family. My original plan was to treat of the British Fauna alone. In the course of my investigations, however, I found that the nomenclature of the Family at large was corrupt, and therefore I have been led to review the synonymy of the whole group. In order to accomplish this, I have been obliged to give at second-hand descriptions of many foreign species. These incorporated descriptions I have, for sake of uniformity, translated into Latin.

It is always difficult, and sometimes impossible, to identify species by reference to mere colour descriptions and admeasurement, without recourse to the distinctions afforded by special structures. I have therefore avoided the use of analytic tables and diagnoses for the determination of species.

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Rev. A. E. Eaton's *Monograph*.

Structure has not hitherto received sufficient consideration in descriptive publications; which makes it necessary to examine all authentic specimens of described *Ephemeroidea* extant in collections, before the synonymy of the known species can be settled. With a view to reform, I have examined the undermentioned collections. Lists of the type specimens in each are given under the titles of the works in which they were originally described. Should I have opportunity, I will notice the contents of the principal French and German collections in some future part of my work.

Through the kindness of Dr. Gray, I had unlimited access to the collections in the British Museum, comprising Stephens' collection (see Steph. 1835-6), Mr. Wollaston's collection (see Hag. 1865), and the general collection of *Neuroptera* (see Walk. 1853 and 1858-9).

At the Linnæan Society's Library I examined the collection of Linné (see Lin. 1746).

Mr. R. McLachlan has given me every assistance, by placing in my hands his valuable foreign collection (McLach. 1868, Etn. 1871), and his British collection (Etn. 1870), and making them to all intents my own.

Through the hospitality of Mr. J. C. Dale, I had the pleasure of spending several days in gathering information concerning the geographical range of species in his British collection, and in describing the rarities in his foreign collection (see Etn. 1871).

In the Museum at Oxford, with the permission of Professor Westwood, I inspected the University's general collection (Etn. 1871), Prof. Westwood's collection (Westw. 1840), and Mr. A. Ronald's collection (Ron. 1836).

The cabinets of my own University contain no remarkable *Ephemeroidea*.

Some Australian species, sent by Professor McCoy, of Melbourne, to Mr. F. Walker, were forwarded to me (Etn. 1871); and Mr. P. C. Wormald obliged me with the loan of his collection.

At Geneva, M. A. E. Pictet very kindly submitted to me the remains of Professor J. F. Pictet's collection (Pict. 1843-5), and some Spanish *Ephemeroidea* which he had himself collected (Ed. Pict. 1865).

M. de Selys-Longchamps' collection, containing valuable typo specimens, was sent to me (see Int. 1805; Guer. 1829-43; Ramb. 1842; Hag. 1858-9, 1861, 1864; Etn. 1871).

The late Stato Entomologist of Illinois entrusted me with some authentic specimens of American species which he transmitted for the British Museum (Walsh 1862-3).

My own types of new species are placed in the British Museum.

In the subjoined list of publications relating to the *Ephemeroidea*, the titles of those which I have been unable to collate are distinguished by asterisks prefixed; and the names originated in each work are given after its title. My thanks are due to Mr. G. R. Crotch, of the Cambridge University Library, for the great assistance he has rendered me in the preparation of the bibliographical portion of this paper; and I am also under great obligations to Mr. J. C. Dale, Professor Westwood, Mr. C. O. Waterhouse, and Mr. R. M'Lachlan, for enabling me to give references to scarce books.

Authors anterior to those of the seventeenth Century are mentioned by Cladius (1634), and by Pictet (1843-5). The following lists are arranged in chronological order, and the abbreviations employed in the citations are given in brackets, immediately after the year of publication.

- 1634 (Clad.). Aug. Clavi, Opusc. duo singularia; ii. De Hemerobio sive Ephemero, pp. 61-103.
- 1663 (Mey.). J. de Meij, in J. Gohart's Metamorph. et Hist. Nat. Ins. i. Appendix, pp. 193-200.
- 1675 (Swam.). J. Swammerdam, Ephemeri vita.—[See Tyson, 1681.]
- *1680 (Dleg.). N. de Biegray, De quelques papillons qui paraissent une fois tous les ans sur les bords de la Meuse; in Temple d'Esculape, An. 2e, p. 188 (Hag.).
- 1681, E. Tyson, (a translation of) Ephemeri vita, by J. Swammerdam, pp. 44, pls. 8, 4th.
- *1718, J. J. Baier, De Ephemeri vita, Adagium medicamentum curaria, pp. 51 (Hag.).
- *1723 (Rud.). J. A. Kulmus, Von einem gewissen Fisch-Insect; in Beal. Natur. u. Kunstgesch. pp. 292-3 (Hag.).
- 1735 (Lin. S. N. i.). K. Linné, Systema Naturæ, ed. i.—Insecta,.... Angioptera,.... Ephemera.
- 1737-8 (Swam.). J. Swammerdam, Biblia Naturæ, i. 231-70; ii. pls. xiii-xv.
- 1740 (Lin. S. N. ii.). K. Linné, Systema Naturæ, ed. ii., p. 60. Gymnaptera.
- 1741 (Targ.). G. Targioni-Tozzetti, Lettera sopra una numerosissima specie dei farfalla vedutasi in Firenze; pp. 32, frontisp. figs. 1-5.

- 1742 (Reaumur.). R. A. F. de Réaumur, Des Mouches appelées Ephemères; Mémoires pour servir à l'hist. des Ins. vi., pp. 457-522, pls. xiii-xvii.
- 1746 (Col.). P. Collinson, Some observations on a sort of Libella or Ephemeron; in Phil. Trans. vol. xliii., p. 329, pl. II. 2-4.

- 1746 (Lin. F. S. i.). K. Linné, Fauna Suecica, ed. i. pp. 236-7, Nos. 750-5.

[In Linné's own interleaved copy of this work, MS. names are written before the index numbers; viz.:—"virgata" before 750; "bioculata" before 751; "nitida" after 753; "cuticiformis" before 753; "horvica" before 754, above "nitida" erased; and "vespertina" before 755. References are made in the text to some of his earlier publications; viz.:—after 751, Acta Upsal. (1736) p. 27. 2; after 751, Act. Ups. p. 27. 3; and to his Iter Germanicæ (Johannska Rees, 1745) p. 21.]

In his cabinet are—2 ♀ sub. spurious, and 1 ♂ sub. ticketed 750 (perhaps by Linné junr.) of *E. virgata*; 2 ♂ im. spurious, of *L. marginata*; 1 ♀ sub. spurious, and 1 ♀ sub. ticketed "nitida" in Linné's MS., of *L. marginata*; 2 ♀ im. spurious, labelled "cuticiformis," of a *Cenis*; 2 ♀ im. spurious, of *C. dytiscum*; 1 ♂ im. ticketed 751 (in the same handwriting as the 750 under the *E. virgata* ♂ sub.) of *Siphonaria Linneana*, nov. sp.; and 2 ♀ im., unlabelled, and spurious, of *Heptagenia elegans*.

The Librarian of the Linnæan Society (who rendered me every assistance during my examination of the collection), thinks that the numbers 750 and 751 are Linné's autograph, as the "nitida" undoubtedly is. There is a close resemblance between these figures and certain others in the handwriting in the Author's own books. However, notwithstanding that the tickets are apparently in Linné's autograph, and the specimens are seemingly Linnæan, it is evident that the specimens ticketed 751 and *nitida* are not authentic, because they altogether disagree with the diagnoses 751 in F. S. i., and 1478 *nitida* in F. S. ii., respectively. The MS. reference to "Schæf. ic. 175, t. 1, 2" under *E. bioculata* (an entirely different insect from the one figured) in the Author's own copy of S. N. xii., suggests the possibility of the specimens in question having been placed by Linné in his cabinet after the publication of S. N. xii.; and if this were the case, these specimens having been newer than the original types, it is likely that they may have been in a better condition than those, and thus have stood a greater chance than they of being kept by the owner.]

- 1747 (Lin. S. N. v.). K. Linné, Systema Naturæ, ed. v. [Reprinted in 1748.] Ordo 3, Neuroptera, p. 62. *E. maculata*, *E. mixta*.

- 1749 (Roesl.). A. J. Rösel, Insecten Beleuchtung. ii. 53-60, pl. xiii. 1-6.

[Pictet quotes certain names as of the authorship of Rösel (whose descriptions and figures are not named). These names probably originated in C. Schwarz's "Nomenclator liber die in den Rösselschen Insect. Belust. &c.," which was published many years later (1793-1830).]

- *1753 (Pontop.). E. Pontoppidan, Det første Forsøg paa Norges naturlige Historie. Vol. II. ch. II. (An edition in German, 1754, and another in 1765; see Pontop. 1765).

- 1755 (De G.). K. de Geer, Observations sur les Ephemères; in Mémoires. Etr. Acad. Paris, II. 461-9, pl. xvii. 1-2.

- *1757 (Schæf.). J. G. Schæffer, Das fliegende Uferas oder der Hautkec, p. 34. [Reprinted in his "Abhandlungen von Insecten," iii. 30, pl. I.] (Hag. and Pict.).

1758 (Lin. S. N. x.). K. Linné, Systema Naturæ, ed. x; i: 516-7. *E. vulgata*, *bicolorata*, *cuticiformis*, *horvati*, *mutica*, *respertina*.

[The author's interleaved copy of S. N. x contains the following MS. notes and references:—

E. vulgata, Note: *E. canda* 3-secta corpore luteo, alis hyalinis reticulatisque [= *E. donica*, Mut. 7?]; ref. after 750, Geof. 2, p. 238, n. 1, Sulz. Ins. t. 17, f. 103. Note: *E. _____*, Res. Ins. t. 12, f. 2, 6. *E. canda tristata* alis albis marginibus exterioribus fuscis. Habitat Upsalæ, Fabricii. Corpus fuscum [evidently *marginata*, L.]. On p. 547, and the opposite leaf—*E. bicolorata*, ref. after 751, Geof. 2, p. 239, n. 5, t. 13, f. 47. Note: 2 alis ut totum corpus pallide flavescensibus. *E. cuticiformis*, ref. after 753, Geof. 2, p. 240, n. 6; ref. after Kæsel, Podn. Ins. t. 1, f. 10. *E. horvati*, ref. after 754, [Geof.] 2, p. 240, n. 8. *E. mutica*; Note. *E. canda biseta*, alis albis hyalinis striatis, thorace fuscis, abdomine albo; ref. Geof. 2, p. 240 [n. 7]. *E. respertina*, Note; *cannda tristata*; ref. after Geol. 21, Geof. 2, p. 239, n. 4.

1760 (Kr.). O. C. Kramer, Dissertatio inauguralis, sistens specimen Insectologie Danicæ, ... jusside D. J. de Buckwald, M.D., p. 26. [A mere list.]

1761 (Lin. F. S. ii.). K. Linné, Fauna Suecica, ed. ii. pp. 376-8. Nos. 1472-80. *E. fuscata*, *dytteri*, *nigra*, *striata*. [The Author's copy has no MS. notes.]

1761 (Sulz. Ken.). J. H. Sulzer, Die Kennzeichen der Insekten, p. 43, pl. xvii. 103.

1761 (Pod. Mus. Gr.). N. Poda, Insecta Musei Grecensis, pp. 97-8, pl. 10. *E. ignita*, *maculata*, *speciosa*.

*1763 (Pontop. Atl.). E. Pontoppidan, Den Danske Atlas, pl. i. 1763 (Scop. E. Carr.). G. A. Scopoli, Entomologia Carniolica, pp. 263-4, Nos. 683-7, pl. xxxviii. 683. *E. geminata*, *alipiensis*, *portula*.

1764 (Geol.). E. L. Geoffroy, Histoire Abrégée des Insectes qui se trouvent aux environs de Paris, ii. 231-41, Nos. 1-8, pl. xlii. 4.

1764 (Mül. F. Fr.). O. F. Müller, Fauna Insectorum Friedrichsdalina, p. 63, Nos. 551-7. *E. danica*.

1765 (Pontop. Nat.). E. Pontoppidan, Die Naturhistorie in Danemark, p. 223, Nos. 1-3, pl. xvii. [A wretched figure.]

1766 (Schaebl. Elem.). J. C. Schaeffer, Elementa Entomologica, pl. liii. 1-8.

*1768-9 (Houtl.). M. Houttuyn, Natuurkundige Beschrijving der Insekten (Hag.).

1767 (Lin. S. N. xii.). K. Linné, Systema Naturæ, ed. xii, part ii. pp. 906-7, Nos. 1-11. *E. lutea*, *marginata*.

[Linné's own (not interleaved) copy of S. N. xii. contains the following MS. references. On p. 906.—*E. vulgata*, after Carr. 683, f. 683, De Geer 2, t. 16, f. 1-9, 1-13; after Sulz. f. 103, Schaebl. Ic. 9, f. 5. *E. respertina*, after Geol. 21, Res. Ins. aqu. t. 17, f. 14. *E. bicolorata*, after Scop. 1473, Schaebl. Ic. 175, f. 1, 2. On p. 907.—*E. nigra*, after Scop. 1478, Schaebl. Ic. 164, f. 1, 2. *E. dytteri*, after Scop. 1477, De Geer, 2, t. 18, f. 5.]

*1769-72, J. Berkenhout, Outlines of the Natural History of Great Britain and Ireland. [The Entomology is reproduced in ed. ii., 1789.]

1771 (De G. Mem.). K. de Geer, Mémoires pour servir à l'histoire des Insectes, t. ii. part 2, pp. 621-56, Nos. 1-5, pls. xvi-xviii. [Pl. xvii. fig. 13, is not that of a gill of a true *Leptophlebia*.]

*[1773], J. Hill, A decade of curious insects, pls. vii, viii. [*E. cuticiformis*, Hill, is a *Petia*; *E. rupestris*, Hill, is a *Trichopteron*.] (Hag.)

*1774 (Schaebl. Abb.). J. C. Schaeffer, Abhandlungen von Insekten, iii. 30. (Plat.).

1775 (Georg. Bem.). J. G. Georgi, Bemerkungen auf einer Reise im Russischen Reich, i. 190. [A mere list.]

1775 (Fab. S. E.). J. C. Fabricius, Systema Entomologie, pp. 303-304, Nos. 1-11. Ord. Sphindæ. *E. venosa*.

1776 (Schaebl. Ic.). J. C. Schaeffer, Icones Insectorum circa Patisbonam indigenorum. Vol. i. pl. ix. 5, 6; xli. 7. Vol. ii. pl. civ. 1, 2; cvi. 2, 3; cxxv. 1-3. Vol. iii. pl. civ. 3; cxxix. 2, 3; cxxxix. 4, 5. [For Panzer's nomenclature, see Pz. 1802.]

1776 (Mül. Pr.). O. F. Müller, Zoologie Danicæ Prodromus, pp. 142-3, Nos. 1640-51. *E. plumosa*, *sulphurea*, *diaphana*, *luteola*, *russida*, *annulata*, *berolinensis*. [*viridula*.]

1776 (Sulz. Gesch.). J. H. Sulzer, Abgekürzte Geschichte der Insekten, pp. 109-71, pl. xxv. 6, 7. *E. hirsuta*.

1776 (Schr. Beyl.). F. v. P. Schrank, Beyträge zur Naturgeschichte, p. 82. *E. flavo*.

1777 (Fab. Gen.). J. C. Fabricius, Genera Insectorum, p. 244. *E. hallerata*.

1781 (Barb.). J. Barbut, Les Genres des Insectes de Linné, pp. 209-13, pl. xi. 1-4.

1781 (Schr. En.). F. v. P. Schrank, Enumeratio Insectorum Austriae indigenorum, pp. 302-5, Nos. 602-6.

1782 (Fab. Sp.). J. C. Fabricius, Species Insectorum, i. pp. 388-9, Nos. 1-12.

1782 (Har. Exp.). M. Harris, An Exposition of English Insects, pl. vi. 1-3.

1783 (Natz.). A. J. Reizig, Caroli De Geer Genera et Species Insectorum, pp. 66-7, Nos. 180-4. *E. communis*, *alipiensis*, *cincta*, *fusco-grisea*.

1785 (Thunb.). K. P. Thunberg, Donationes Thunbergianæ; in Mus. Nat. Acad. Upsaliensis, p. 81. [A mere list.]

1785 (Fourc. E. Par.). A. F. Fourcroy, Entomologia Parisiensis, ii. 350-2, Nos. 1-8. *E. reticulata*, *viridescens*.

1787 (Fab. Man.). J. C. Fabricius, Manissa Insectorum, i. 243-4, Nos. 1-12.

1789 (Berl. Outl.). J. Berkenhout, Outlines of the Natural History of Great Britain and Ireland, ed. ii, i. 150, Nos. 1-5.

1789 (Raz.). G. de Razoumoussky, Histoire Naturelle du Jorsk, p. 210.

1789 (Vill.). C. J. de Villers, Caroli Linnei Entomologia, iii. 16-22, Nos. 1-20, pl. vii. 3. *E. nervosa*.

1789 (Raem. Gen.). J. J. Römer, Genera Insectorum Linnæi et Fabricii Iconibus Illustrata, pl. xxiv. 6, 7. Explic. p. 23. [Figures reproduced from Sulz. 1776.]

1789 (Zsch.). J. J. Zschach, Musæum Leskenum, i. 150, Nos. 13-20. [Names were assigned by Gmelin in 1790.]

1790 (Ros. F. Etr.). P. Rossi, Fauna Etrusca, II. 7-9, Nos. 672-7.

*1790, J. G. Georgi, Versuch einer Beschreibung der Residenzstadt St. Petersburg. (Hag.)

- 1720 (Gmel.). J. P. Gmelin, *Linnaei Systema Naturae*, ed. xiii, l. i. part v. pp. 2328-30, Nos. 1-18. *E. notata*, *testacea*, *serripennis*, *stigmaea*, *stans*.
- 1791 (Ol. Enc. Méth.). G. A. Olivier, Article "Ephemera," in *Encyclopédie Méthodique*, t. 401-22. *E. longicauda*, *trigo*.
- 1791 (Fisch. Vers.). J. B. Fischer, Versuch einer Naturgeschichte von Livland, pp. 337-8, Nos. 561-6.
- 1793 (Fab. E. S.). J. C. Fabricius, *Entomologia Systematica emendata et aucta*, t. iii part i. pp. 63-71, Nos. 1-16. *E. marocana*, *brevicauda*.
- *1794, D. J. Seebeck, Beitrag zur Naturgeschichte der Ephemera latæ, l. i; in Meyer's *Magaz. f. d. Thiergeschichte*, i. 41-63 (Erag.).
- 1795 (Don. H. I.). E. Donovan, *Natural History of British Insects*, iv. 53, pl. cxxviii.
- *1796 (Lichtl.). Lichtenstein, *Cat. Mus. Holthuisen*, iii. 193, No. 52. *E. norveboronana*. (Hag.)
- 1796 (Lat. Préc.). P. A. Latreille, Précis des Caractères Génériques des Insectes, p. 95.
- 1798 (Cur. Tab. Escr.). G. L. C. D. Curvier, *Tableau Elem. de l'Hist. Nat. des Animaux*, irr. vil. pp. 483-5. *Agrathes*.
- 1798 (Schr. F. B.). F. v. P. Schrank, *Fauna Boica*, pp. 196-9, Nos. 1937-49. *P. erythrocephala*, *fuscata*, *famifloris*.
- 1798 (Cud.). J. Cederhjelm, *Faune Insectica Prodromus*, pp. 133-5, Nos. 407-13.
- 1800-2. J. C. Geoffr. Geoff. physik. und naturhist. Beschr. des Russischen Reichs. *1800, TUL. iii. vl. 1802, p. 321. *E. fulvithorax*.
- 1801 (Wald.). F. W. W. W. W., *Observations Entomologiques*, pp. 99-100. *E. atrosciana*.
- 1802 (Will.). Dr. Williamson, On the Ephemera tenkon, usually called the White Fly of Fassak River; in *Trans. Amer. Soc. Philad.* v. 71-3.
- 1802 (Illig.). J. K. W. Illiger, *Magazin für Insektenkunde*, i. 187-8, No. 17. *E. flos-aquæ*.
- 1802 (Waldk.). C. A. Walckenaer, *Faune Parisienne*, ii. 7-10, Nos. 1-11.
- *1802. Elements of the Natural History of the Animal Kingdom; ed. anonym. [See 1817, Stewart.]
- 1804 (F. L. Exple. Schœf. Ic.). G. W. F. Panzer, in the explanation of Schœffer's Plates. (see 1776). *E. lyalina*, *Schœfflii*, *notata*.
- 1805 (Fz. F. Germ.). G. W. F. Panzer, *Faune Insectorum Germanicæ Initia*, Helt xiv, Nos. 16, 17.
- 1805 (Lat. H. S.). P. A. Latreille, *Hist. Nat. des Crustacés et des Insectes*, xiii. 93-100, Nos. 1-19. *E. Scandinavica*. *Subullocoræ*. [In M. de Selys-Longchamps' collection is Latreille's type of *E. Scandinavica*, *Pal. longicauda*, 1 ♂ subim.]
- 1806 (Dum. Z. Anst.). A. M. C. Duméril, *Zoologie Analytique*, pp. 246-7.
- 1806, G. Shaw, *General Zoology*, vol. vi. part ii. pp. 249-53, pl. 81-2. *E. Scandinaviana*.
- 1807 (Lat. Gen.). P. A. Latreille, *Genera Crustaceorum et Insectorum*, iii. 181.
- 1810 (Lat. Gen.). P. A. Latreille, *Considérations Générales sur l'Ordre Naturel des Insectes*, &c., p. 268 & p. 434.

- 1815, W. E. Leach, Article "Entomology" in Brewster's *Edinburgh Encyclopedia*, ix. 137. Tribe 2. Ephemerae. Fam. I. Ephemera. Gen. 488. *Hactis*; *B. bioculata*. Gen. 489. *Closon*; *C. pyralis*, Leach, MSS. *E. didera*, Lin. Fam. 2. Ephemera. *E. vitigata*, Lin. [The article being contributed anonymously, Leach quoted his own MSS.]
- 1817 (Cur. R. A. i.). G. L. C. D. Curvier, *Le Règne Animal*, ed. i., t. iii. pp. 425-30.
- 1817 (Lamarck. J.). J. D. P. A. de M. Lamarck, *Histoire Naturelle des Animaux sans Vertèbres*, iv. 218-22.
- 1817 (Sav.). J. C. L. de Savigny, *Description de l'Égypte, Histoire Naturelle, Planches*, t. ii. Névropières, pl. ii. 4-8. [In t. i. 194. *Ephie*, des Pis., he merely states that the figures belong to the Gen. *Ephemera*.]
- 1817 (Stew. Elem.). Stewart, *Elements of the Natural History of the Animal Kingdom*, ed. ii., vol. ii. pp. 224-6, Nos. 1-9.
- *1818, F. v. P. Gmelin, in *Salz. Medic. Zeit. No. 92*. *Ephem. larva*. (Hag.)
- 1819 (Sam. v. Corn.). G. Saunonelle, *The Entomologist's useful Compendium*, pp. 59-60, pl. vii. 2. Also p. 65. [An incorporation of Leach's MS. with modifications. Fam. *Ephemera* is put for Tribe *Ephemera*, Leach; and Leach's named Families are ranked as nameless *Stigees*.]
- 1821, W. Wool, *Illustrations of the Linnaean Genera of Insects*, ii. 21-3, pl. xviii.
- 1823 (Dum. Gen. Gen.). A. M. C. Duméril, *Considérations Générales sur la Classe des Insectes*, p. 204, pl. xviii. 4, 5.
- 1823 (Say, W. Q. R.). T. Say, *Descriptions of Neuroptera collected by the Expedition under Major S. H. Long*; in **The Western Quarterly Reporter*, vol. ii. p. 163-3; repr. by *Les Comte* 1859, vol. i. 171-2. *Pectis femorata*, *Closon posticata*, *Ephemera cupida*.
- 1824 (Say, *Long's 2d Exp.*). T. Say, *Narrative of an expedition to the source of St. Peter's River, under Major S. H. Long*; **W. Q. R.* vol. ii. 303-5; ed. *Le Comte* 1859, vol. i. 203-4. *Pectis vitticoda*, *atlenoida*, *albipennis*.
- 1824, J. Fleming, Article "Insecta," in *Encyclopaedia Britannica*, Supplement, vol. v. 63. *Ephemera*.
- 1825 (Lat. Fern.). P. A. Latreille, *Familles Naturelles du Règne Animal*, p. 434.
- 1825 (Dum. Elem.). A. M. C. Duméril, *Éléments des Sciences Naturelles*, ii. 142, pl. v. 16-7.
- 1827, C. G. G. G., *Entdeckung eines einst. Diatkreisl. &c.*, *p. 16, pl. iii. Isis, iv. 317, pl. iv. 3. [Circulation in an *Ephem. nymph.*]
- 1828, O. G. Costa, *Fauna di Aspromonte*, pl. i. 2.
- 1829 (Cur. R. A. ii.). G. L. C. D. Curvier, *Le Règne Animal*, ed. ii. t. v. pp. 241-2.
- 1829 (Ger. & Pril.). Goring and Pritchard, *Natural History Objects for the Microscope*, vol. i; ed. iii. pp. 61-9, pl. ii. 4-6.
- 1829, J. F. Stephens, *The Nomenclature of British Insects* (ed. i. of the *Catalogue*) ii. 305-7, Nos. 3369-3409. [A mere list.]
- 1829, J. Curtis, *A Guide to the Arrangement of British Insects*, columns 182-3. [A mere list.]
- 1829-43 (Gmel. Ic.). F. E. Gmelin-Ménéville, *Iconographie du Règne Animal*, vol. ii. part i. pl. lx. 7-9, vol. iii. 354. *E. lumbata*. [In M. de Selys-Longchamps' collections are Serville's types of *E. lumbata*, *Heterogentia*, 1 ♂ im.; *E. dirrera*, *Closon*, 1 ♂ im.]

- 1831, G. J. Gurns, *Pemore Untersuchungen über den Bluthant in Kerfen*; in *Act. Acad. Leopold. Carol. Abad. t. xv. Abth. ii. p. 11.* [A mere statement that circulation is observable in the wings of *E. lutea* and *marginata*.]
- 1832, R. Wagner, *Beobachtungen über den Kreislauf des Blutes und den Dan des Nickengefäßes bei den Insecten*; in *Isis, ix. 322, pl. ii. 1.*
- 1832 (Griff. A. K.), G. R. Gray, "The Class 'Insecta,'" in Griffith's *Animal Kingdom*, ii. 295 and 313-20, pl. xxiv. 7, 9. [Figures from Guér. l.e.]
- 1833 (Powerb.), J. S. Powerbank, *Observations on the circulation of blood in Insects*; in *Ent. Mag. i. 239-44, pl. ii. 1-6.*
- 1834, A. H. Davis, *Memorph. of Ephemera*; in *Ent. Mag. ii. 322-3.*
- 1831 (Sann. Ent. Cab.). G. Sannouelle, *Entomological Cabinet*, ii. No. 53, pl. xxiv. 1.
- 1831 (Curt. Phil. Mag.), J. Curtis, *Descriptions of some nondescript British species of May-flies of Anglers*; in *Lond. and Edinb. Philos. Mag. ser. 3, pp. 120-2.* *E. fusca, B. dispar, costalis, elegans, melica, straminea, parvula, lateralis, semicolorata, carnea, venosa, autumnalis, C. marginata, obscurum, nitidum, dimidiatum. Brachycreta Harrisella, chloromydromis, rubina.* [The numbers prefixed to the names in the text refer to the second ed. of the Guide.]
- 1831 (Curt. B. E.), J. Curtis, *British Entomology*, vol. xi. No. & pl. cccxxxiv.
- 1835, R. Newman, *The Grammar of Entomology*, pp. 243 and 255. *Ephemeres* and *Ephemera*.
- 1835 (Jannarek, ii.). J. D. P. A. de St. Jannarek, *List Nat. des Animaux Vertébrés*, ed. ii., t. iv. 122-5. *E. Sycameridameta*.
- 1835-6, Allen Thompson, Article "Circulation," in *Todd's Cyclopaedia of Anatomy and Physiology*, i. 651-2.
- 1835 (Ste. III.), J. F. Stephens, *Illustrations of British Entomology*, *Manth. vi. 53-70, pl. xxix. E. cognata, talcosa, submarginata, dispar, opifera, rufescens, rosea, heliops, dubia, minor. Cernis macrura, dimidiata, pennata, interrupta. Br. longicauda, sulcifera, obscura, cingulata. Cl. ocreatum, hyalinatum, albigenum, cognatum, virga.*
- [The specimens in Stephens' collection are named in accordance with his Catalogue, not with the Illustrations. The ticketed specimens, however, partake in some measure of the nature of type specimens. Many of them are no doubt the originals of the descriptions in the Illustrations; for Stephens had not access to many collections of Ephemeroidea; his descriptions are mostly taken from dried examples; and many of these specimens are of an older date than 1835. Those of them which conform to the descriptions in the Illustrations similarly named, may, therefore, be presumed to be virtually authentic.]
- The collection comprises:—*E. vulgata*, 5 ♂ im.; *coarctata*, 3 ♂, 5 ♀ im.; *stroma*, 2 ♂ im.; *variosa*, 1 ♀ im.; *lutea*, 1 *Heptagenia elegans*, ♂ im.; *marginata*, 2 *H. semicolorata*, 2 im.; *submarginata*, 1 *H. heliops*, ♀ im.; *1 B. phaeops*, ♂ im.; *dispar*, ♂ im.; 1 subim.; *nitidum*, 4 ♂ im.; (*Dalman*, absent); *avicularis*, 2 *Eph. ignita*, ♂ im., and 1 *B. phaeops*, ♂ im.; *rufescens*, 2 ♂, 8 ♀ im.; *donna*, 2 ♂ im.; *helviops*, 1 ♀ im.; *rosea*, 1 ♂, 1 ♀ im.; (*Vespa*, absent). (*Cernis macrura*, wanting); *C. pennata*, 1 ♀; *brachycreta*, 1 ♀; *chloromydromis*, 1 *macrura*, ♂; *dimidiata*, 2 ♂, 1 ♀. *Dalman*, 1 ♂, 2 ♀ im.; *variosa*, 1 ♂, 2 ♀ im.; *submarginata*, 1 ♀ im.; *nitidum*, 1 ♀ im.; *dispar*, 2 ♂ im.; *stroma*, 1 ♀ im.; *1 B. phaeops*, ♀ 1 im.; 1 subim.; *rufescens*, 1 ♀ im.; *obscura*, 1 ♀ im.; *longicauda*, 1 *Cleon*, sp. dub., ♀ subim. and

- Eph. ignita*, 1 ♂; 1 ♀ im.; *cuticularis*, 4 *B. phaeops*, ♂ im. and 1 *Cleon*, sp. dub., ♀ subim.; *rufescens*, 1 *brachycreta*, ♂ im.; 1 *C. luteolum*, ♂ im.; *nitidum*, ♂ im.; 1 subim.; 2 *phaeops*, ♂ im.; *nitidum*, 1 ♂ im.; *7 luteolum*, ♂ im.; *cinerularia*, 2 ♂ im.; *Cleon*, 2 *brachycreta*, 1 ♂ im.; *oculifera*, 2 ♂ im.; *luteolum*, ♀ im.; 1 *B. binoculata*, ♀ subim.; *obscura*, 1 *B. binoculata*, ♀ damaged; *hyalinata*, 3 *C. luteolum*, ♀ im.; *obscura*, 3 *C. luteolum*, ♂ im.; *coarctata*, 1 ♂ im.; *consonnata*, ♂ & im.; 1 subim.; *vinco*, 1 *diploera*, ♂ im.; 1 *variosa*, ♀ im.; *damaged*. [There are also *E. minor*, 1 ♀ im.; *R. lateralis*, 1 ♂ im.; *D. varicoides*, 1 ♀ im.; *D. parvula*, 1 ♂ im.; and *B. veneta*, 1 ♀ im.]
- *1836, F. J. Ehrenberger, *Dissertatio inauguralis Zoologica de Neuropterorum anatomia et physiologia.* (Hag.)
- 1836 (Westw. Part. Cyc.) J. O. Westwood, in *Parlington's British Cyclopaedia*, ii. 439. *Microcreta*.
- 1836 (Ronalds i.). A. Ronalds, *The Fly-fisher's Entomology*, ed. i. [Pls. ix, xii, & xiv, alone in this edition are worth citing. The figures in the later editions are mostly inferior to those in ed. i.]
- [The types comprise,—ii. *Boetis phaeops*, ♀ subim.; iii. *Heptagenia longicauda*, ♀ im.; viii. *H. venosa*, ♀ im.; xv. *H. longicauda*, subim.; xvi. *Boetis*, sp. dub., subim.; xvii. *Boetis*, sp. dub.; xix. *H. elegans*, ♀ im.; 1 subim.; xxii. *H. insignis*, ♂ subim.; xxiii. *Boetis*, sp. dub.; xxv. a fragment; xxviii. *E. danica*, ♀ subim.; xxix. *E. danica*, ♀ im.; xxxi. *E. vulgata*, ♂ im.; xxxii. & xxxiii. absent; xxxvii. & xlii. each *H. longicauda*, subim.; xliii. *Cl. ruficornis*, ♀ subim. The Roman numerals are index numbers to the work.]
- 1837, G. Dahlbom, *Kort Underretelser om skandinaviske Insekter*, pp. 227-8, No. 151.
- 1838 (Curt. B. E.). J. Curtis, *British Entomology*, vol. xv., No. & pl. deeviii.
- 1838, J. T. Lacordaire, *Introduction à l'Entomologie*, ii. 77. [Circulation described.]
- 1838 (Perch. Gen.). E. Guérin & A. R. Percheron, *Genera des Insectes*, &c., livr. vi. pl. iv. *E. albicans*.
- 1839 (Pursh. Handb.). H. C. G. Pursh, *Handbuch der Entomologie*, Bd. ii. Abth. ii. pp. 796-801 and 1015. *Oryzophya lactea, luctuosa, discolor. Cl. hallerata, pumila. (Boetis) fusca, marginata, aurantiaca, reticulata, lardigenis. Paltingenia horaria, dorsalis.*
- 1839, G. Newport, Article "Insecta," in *Todd's Cyclopaedia of Anatomy and Physiology*, ii. 861, fig. 345; and (circulation) p. 979.
- 1839, T. Say, *Descriptions of New N. American Neuropterous Insects*; in *Journ. Acad. Nat. Sci. Philadelphia*, viii. 41-4; ed. 1^o Curtis, 1839, ii. 411-13. *B. interpunctata, virida, verticis, obsca. E. nitida*.
- 1840 (Zell.). J. W. Zellweger, *Insecta Lapponica*, columnus 1041-6, Nos. 1-9. *E. hyalinata, virga*.
- 1840 (Westw. Int.). J. O. Westwood, *Introduction to the modern classification of Insects*, vol. ii. Addenda, p. viii. Text, pp. 24-34, fig. 1-20. *Generic Synopsis*, p. 47, Addenda to the *Generic Synopsis*, 158. *Neuropt. Biomorphotica. Leptoptelebia, Brachyptelebia*.
- [The types in Prof. Westwood's Cabinet, arg.—*Leptoptelebia*, 1 *marginata*, ♀ im.; and 1 *Eph. ignita*, ♂ im.; *Brachyptelebia*, 2 *B. binoculata*, ♂ im.; *Barnet*, *Heptag. elegans*.]
- 1840, Triepke, *Einige Bemerkungen über Ephemera fuscicornis*, Illiger; in *Stat. Ent. Zeit.* i. 64-8.
- 1840, F. S. Voigt, *Lehrbuch der Zoologie*, v. 309-11.

1840, G. A. W. Herrich-Schäffer, Fauna Ratisbonensis, von K. W. Koch, Dr. A. Schumfner, und F. Forster, p. 346, Nos. 161-88. [A list.]

1840 (Blanch. N. H.). E. Blanchard, Hist. Nat. des Insectes, t. 1, p. xxxviii. Introd. Anatomie et Physiologie (circulation by Drullm); t. iii. 52-5, Musc. 1-11, pl. ill. 1.

1841 (Duf. Rech.). Léon Dufour, Recherches anatom. et physiolog. sur les Orthoptères, les Hyménoptères, et les Névroptères, part. iii., in Mémoires divers savans. Institut de France, t. viii. pp. 509-5, 573-5, pl. xi. 167-8, anatom. P. 580, footnote, E. javanensis, nigricornis.

1841 (Darm.). H. C. C. Burmeister, Article "Ephemero," in Erschell & Gruber's Encyclopædie der Wissenschaften. Theil xxv. 312-16.

1842 (Ramb. Névr.). J. P. Rambour, Hist. Nat. des Ins. Névroptères. pp. 293-9, pl. viii. 2. E. japonica, angustipennis, fuscicornis, rufis, chlorosticta, obscura, subnigrescens, brunnea, cincta.

[The types sent to me by M. le Baron E. de Solms-Laubhamps were:—
E. LUTRA, 1 E. glaucops, ♀ im.; E. HISANICA, 1 E. danica, ♂ im.; E. LORACICUDA, 1 Ptilogenia longicauda, ♂ subim.; E. ANOSTROPERUS, 1 Heterogenia, ♀ subim.; E. PLAVICISS, 1 Potamophilus latens, ♀ im.; E. ALTA, 1 Heterogenia (tenosa?), ♀ im.; E. CIMBORICA, 1 Pol. latens, ♂ subim.; C. ORSCERRA, 4 C. COCA, ♀ subim.; C. SEMIVITICATA, 1 C. COCA, ♀ subim.; C. MURUSSEA, 1 Heterogenia lateralis, ♂ subim.; C. ALPINA, 1 C. COCA, ♂ im.; C. PUMILA, 1 C. COCA, ♂ im.; C. HAVANA, 1 C. COCA, ♂ im.; C. COCA, ♂ im.]

There were also C. COCA, 1 C. COCA, ♀ im.; E. MADAGASCENSIS (Ramb. MS.), 1 Heterogenia angustipennis, ♀ im.; E. LORACICUDA, 1 Pol. latens, ♂ im.; and a CENTROPHELYX LUTROVICA, ♂ im.; in the Rambour collection, not types.]

1843, J. Atkinson, Notes on Ephemera, in The Zoologist, i. 92-5.

1843-5 (Pict. Ephem.). F. J. Pictet, Hist. Nat. des Ins. Névroptères. Famille des Ephemérides. E. glaucops, gutturalis. Pol. puella, vulgata, Saragani. Br. fumibum, cyanica, mediana, purpurascens, semitrifida, semitrifida, cincta, plumbea, gutturalis, austriacalis. Pectanathus Ferreri, Geerii, crassa, tenuis, brunnea, gibbus, cinctus, (sub erythrocephalus, a misprint for erythrocephalus). (C. COCA) Rhodani, transalpicola, alpina, melanocephala, littoralis, throphthalma. (C. COCA) grisea, argentea, varicanda, ophiura. Ephemera nervia anomala. (C. COCA) grisea, argentea, varicanda, ophiura. Ephemera nervia anomala.

[As the authentic and spurious specimens are not distinguished in Pictet's collection, an accurate enumeration of them could not be made. The collection contained:—E. TURCICA, E. DANICA; DANICA, trifida, glaucops. Br. FUMIBUM, subim.; VESOSA, im.; CRASSA; PECTANATHUS, tenosus, ♂ im.; SEMITRIFIDA, ♂ and ♀ im.; SEMITRIFIDA, semitrifida, ♂ and ♀ im. For (Pectanathus), L. unannounced; GEERII, L. helveticus, ♂ im. subim.; CRASSA, L. cincta, and L. fusca; SEMITRIFIDA, E. grisea, im. subim.; CRASSA, L. rhodani, with ♀ C. lutea, im. subim., and in the form of C. COCA; TRANSALPICOLA, C. ITALICA; MELANOCEPHALA, C. CRASSA, im., ♂ im., var. I.; DIVERSA; CRASSA ALPINA; (Pectanathus) SAVATANA, unannounced.]

1845 (Sehn.). W. G. Schneider, Verzeichnis der von Herrn Zeller im Jahre 1841 in Sibirien und Italien gesammelten Neuropteren, &c.; in Schut. Ent. Zeit. vi. 840, Nos. 18-14. (C. COCA) fusca.

1846 (Rome.). E. L. J. H. Boyer de Fonscolombe, Notes sur huit espèces nouvelles d'Hyménoptères et de Névroptères trouvés aux environs de Rome, in Ann. Soc. Ent. Fr., ser. 2, t. iv. 49-51. E. caliceformis (a misprint for Schwell, Bd. iv. (one plate, not numbered).)

1847, M. G. Verhoren, Sur la circulation dans les Insectes; in Mém. Couron. Acad. Roy. Belg. t. xix. 49, pl. 1.

1847, Ant. & Gior. Dep. Villa, Comparsa periodica delle Efinore nelle Brianza; in Economista, Novemb. 1847, p. 1-6 (illustrated).

1847 (Lat. Nouv. Diet.). P. A. Latreille, Nouv. Diet. Hist. Nat., t. x. 343-9, pl. xix. 6.

1848 (Corn.). C. Cornelius, Beiträge zur näheren Kenntniss der Ptilogenia longicauda, Ol.: 38 pp., 4 pl.

1848 (Ouv. R. A. Crochard ed.). E. Blanchard, in Cuvier's Reg. Anim. by Crochard, t. xiii. 88-92, t. xiv. pl. cil. 1-14.

1848 (Cal.). L. Calori, Sulla generazione vivipara della C. COCA diptera; in Nouv. Ann. Sc. nat. Bologna, ix. 38-53, pls. iii. 1-18; separato, pp. 16, 18-19 (Hag. Ueber). H. A. Hagen, Uebersicht der neueren Literatur, betreffend die Neuropteren Linne's; in Stet. Ent. Zeit. x. 351-71. [In the critique of Pict. Ephem. (1843-5), Dr. Hagen indicated in this paper a genus Potamophilus, restricted (type P. gibbosa, Pict.); but he did not adopt the genus in his later writings. Mr. Walsh afterwards described this genus, with additional species, under the name Ephemera. I have passed by Dr. Hagen's usage, and have adopted the later name for the genus.]

*1850, L. H. Fischer, Beiträge zur Insecten-Fauna von Freiburg im Breisgau; in Jahrb. des Mannheimer Ver. für Naturg. pp. 60-70 (Hag.) 1851 (Sieb. Beitr. xii.). C. T. E. von Siebold, Beiträge zur Fauna der württembergischen Thiere Preussens (12th Beitr.); in *Nou. Preuss. Provinzial Blatt, Bd. xi. 3, Nos. 1-13. [A mere list.]

1851 (Blanch. Phil.). E. Blanchard, in C. Ury's Historie fisica y politica de Chile, vi. 103-7, Atl. Zool. Ent. Névropt. lam. ii. 2-3. (C. COCA) vitreiventris.

*1852 (Gmb. Bericht). L. Imhof, Oligoneuria rhenana; in Bericht über Verhandl. d. Naturf. Gesellschaft in Basel, x. 177-80. O. rhenana.

*1853, J. A. Herklotz, Het Hatf, de langgeantante Eendagsvlieg; in Jahrb. k. Zool. Genootsch. Amst. pp. 117-123.

*1853, Forster, Notiz über die Einlage-Artige; in Corresp. Bl. zool. mineral. Ver. Regensburg, vii. 91-3.

1853 (Kirsch. Ent. Misc.). G. L. Kirschbaum, Entom. Miscellen; in Jahrb. Verains f. Naturk. Nassau, Heft. ix. pp. 44-5.

1853 (Walk. Cat.). F. Walker, List of Neuropterous Insects in the British Museum. Part iii. pp. 525-88. E. stimulans, Colombio, decora, Jéles, australis. Pol. lada, vitreocens, ocellularis, natica, humeralis, bicolor, pallipes, conchinea, nebulosa, albiflora, latipennis, rufus. Br. angulata, remota, vicaria, basalis, tessellata, albivitta, annulata, Teyrobates, detrita, invaria, fusca, debilis, canadensis, fuscata, scabra, ferrida, ignota. Cen. dimidiata, strensis, parvustilla.

[The general collection of the British Museum contained in 1853:—E. TURCICA, ♂ im.; DANICA, ♀ im.; DANICA, 2 ♀ im.; DANICA, 1 ♂ im.; DECORA, ♂ subim.; COLOMBIO, 1 Leptophlebia, ♀ subim.; DECORA, 1 ♂ im.; (HEAES, walking); ASTRALIS, subim. 1 ♂ 3 ♀. For. LETTERS, 1 Leptophlebia marginata, ♂ subim.; MAJORATUS, 1 ♂ im.; CRASSA, 1 im.; ROSEUS, E. ignita, 1 ♀ im.; CRASSA, im. 1 ♂, 2 ♀. For. VINO, 1 ♂ subim.; ALPINA, 1 ♀ im.; CRASSA, im. 1 ♂, 2 ♀. For. VINO, bicincta, ♀ subim.; OCCIDENTA, binnata, 3 ♀ subim.; VINDOSSANA, 1 H. decora, ♀ subim.; HUMERALIS, 1 ♀ subim.; NATURA, 2 E. ♀ subim.; VICARIA, Leptophlebia ceylonica, 1 ♂ subim.; CONCHINEA, L. pida, 1 ♂ im.; NEBULOSA, 2 Leptophlebia, ♂ im.;

AMPHIURA, *Campyurus ellipticus*, 1 ♂ im. & *A. curvatus*, 1 ♂ im.; *MATREX*-
 KIS, 1 (♀ subim., ♀ im., ♂ im.), & 1 sp. dub. ♀ subim.; *VITREX*,
 1 *Hypogentia*, ♀ subim. *BA. FRIEDRICH*, *H. venosa*, 2 ♀ subim.; *VENOSA*,
 1 ♀ im.; *Loricifera*, ♂ ♀ im.; *NOCTANA*, 2 *H. insignis*, ♂ im.; *MARFAS*,
 1 ♀ im.; *SCYTHOCORAKIA*, 1 ♂ im.; *GENEA*, 1 *H. flaviventris*, ♂ ♀ im.;
FLAVENS, *H. l.* ♀ im. subim., sp. dub. 1 ♀ subim.; *ASTRALISIA*, 2
Leptophlebia, ♂ im.; *ELFOANS*, 1 *H.* ♀ subim.; *SWURSCA*, 1 *Leptophlebia*
marginata, ♂ im.; *LEUMPERENSIS*, 1 *H.* ♂ im.; *ASSOCIATA*, 1 *Hezogenia*
vitrea, ♂ im.; (*HEXORA*, *whittingi*); *VICANA*, 1 *H.* ♂ im.; *MARLUS*, 1 *H.*
 ♂ im.; *TRUSSILLATA*, 1 *H. vitrea*, ♀ subim.; *ALMYRITA*, *Hezogenia*, ♂ 1
 subim., 2 im.; *DREHMANSIATA*, 1 *H.* ♂ im. (now a fragment merely); *IN-*
SUBIDA, ♂ im.; *DREHMANSIATA*, 1 *H.* ♂ im. (a. b.) *H.* ♂ im., (c), *Leptophlebia*
varia, 3 *Phylomenella*, ♂ im.; *FESCA*, (a. b.) *H.* ♂ im., (c), *Leptophlebia*
varia, 1 ♂ im.; *DENILUS*, 1 *L. cupida*, ♂ im.; *CANADENSIS*, 2 *H.* ♂ im.;
FESCA, 1 *Ephemeroella tenax*, ♂ im. subim.; *SCITTA*, 2 *Leptophlebia* ♂
 im.; *ROMANA*, 1 *H.* ♀ im.; *ISSORA*, 1 *Leptophlebia*, ♂ im.; *NONDESCRIP-*
TOPHLEBIA *cupida*, ♀ im. *CL. BIROCCALTA*, (c), 2 ♂ im., (s) sp. nondescript.
 ♀ im.; *DIRENA*, (a-c) ♀ im.; *CYRICOPODUS*, 1 *Leptophlebia* *hetipeta*, ♀
 im.; *SIRIATA*, 2 *Ephemeroella ignita*, ♀ im.; *HYALINATA*, 1 *vitrealis* &
 1 *vitrea*, ♀ im.; *CEN. UNRETRACTA*, 1 ♀ im.; *MINUSITA*, 1 ♂ im.; *SI-*
NKENSIS, 1 *Cloeon ruscillum*, ♂ im.; *RETRUSILLA*, 1 ♂ im.]

1854 (Pict. Trait. de Pal.). F. J. Pictet, *Traité de Paléontologie* (ed. 2) II, p. 371. *Palingenia macrops*, *Baetis anomala*, *Palaemonanthus pyrenicus*.

*1854 (Leitz.). K. Leitzner, *Ueber Palingenia virgo*; in *Arbeit. schles. Gesellsch.* p. 101.

1854 (Hag.). H. A. Hagen, *Ueber die Neuropteren der Bernsteine Fauna*; in *Verh. zool.-bot. Ver. Wien*, iv, 521-52. [A more list, containing the new names.—*Palingenia gigas*, *Baetis longipes*.]

✓ 1854 (Hag.). H. A. Hagen, *Anfällige nützliches Vorkommen dreier Grosser suduropischer Insekten*; in *Stet. Ent. Zeit.* xv, 316-19.

1855 (Hag.). H. A. Hagen, *Die Ephemeroen-Gattung Origoneuria*; in *Stet. Ent. Zeit.* xvi, 267-70, tab. i. *O. rhemana*, var. *polluta*.

1856 (Pict. & Hag.). F. J. Pictet and H. A. Hagen; in C. G. Berendt's *Organische Reste im Bernsteine*, Bd. ii, 73-7, tab. vi, 1, 2; viii, 5. *Palaemonanthus grossus*.

1856 (Ronaldi's, v.). A. Ronaldi's 'Fly-fishers' *Entomology*, ed. v. [In this edition, names were added to the original explanations of plates, and No. 29 is an *Ephemerial*.]

1857 (Brann.). F. Brauer, *Neuropteren Anstriche*, pp. xv, xvii, xviii, 24-27.

1858-59 (Hag. Syn. Ceyl.). H. A. Hagen, *Synopsis der Neuropteren Ceylons*; in *Verh. zool.-bot. Gesells. Wien*, Part I, 1858, vol. viii, pp. 476-7, Nos. 22-31. *Pel. fasciatus*, *amantatus*, *femoratus*. (*Cloe*) *tristis*, *constricta*, *solida*, *signata*, *marginalis*. Part II, 1859, vol. ix, p. 206, Nos. 29-50.

[In the collection of M. de Selys-Longchamps are the types of:—*P. rasilvatus*, *Ephemera*, 1 ♀ subim.; *P. assurtaris*, *Leptophlebia*, 1 ♂ im.]
 1859 (Hag.). H. A. Hagen, *Ueber das Vorkommen von Palingenia loricifera* in Preussen; in *Stet. Ent. Zeit.* xx, 431.

1859 (Schub.). J. C. Schuböde; in *Berlin. Ent. Zeit.* iii, 143.

1859 (Say, Le Coule rep.). J. L. Le Coule, *The complete Writings of Thomas Say on the Entomology of N. America*, i, 171-2 (Say, W. Q. R.); i, 203-4 (Say, Long's 2d. Exp.); ii, 411-13 (Say, Journ. Acad. Nat. Sc. Philad. 1839).

1860 (Walk.). F. Walker, *Characters of undescribed Neuroptera in the collection of W. W. Saunders*, Esq., F.R.S.; in *Trans. Ent. Soc. Lond.* N. S. vol. v, pp. 198-9. *E. distocens*. *Pol. cespertans*. *Pal. confusa*, *annulifera*. (*Cloeon*) *debitis*.

[The types, now in the British Museum, are *E. distocens*, *Leptophlebia albivitta*, 1 ♀ im.; *P. hesperans*, *Ephemera*, 1 ♀ subim.; *P. constricta*, *Hezogenia Baetis*, 1 ♀ im.; *P. assurtaris*, *Leptogenia*, 1 ♀ im.; *O. denilus*, 1 ♂ im.]

1860 (Kolen.). F. A. Kolenati, *Einige neue Insekten-Arten von Alt-ruenells in Wien*. *Ent. Monatschrift*, iv, 383. *Ba. tridana*.

1860 (Hag.). H. A. Hagen, *Examen des Névroptères (non Odonates) recueillis en Suède par E. Bellier de la Chauxvignerie*; in *Ann. Soc. Ent. Fr.* 3 ser., viii, 746. *Ba. Bellieri*.

[The type in M. de Selys-Longchamps' collection is *B. Bellieri*, *Heptagenia*, 1 ♀ im.]

1861 (Hag.). H. A. Hagen, *Synopsis of the Neuroptera of N. America*, with a list of the S. American species; in *Smithsonian Miscellaneous Collections*, pp. 38-55. *E. pulchra*. *Pal. Heubei*, *decolorata*. *Ba. typura*. (*Cloe*) *molliis*, *pygmaea*, *retina*. *Cæ. canica*. [*Ba. tessellata* and *Cloe unicolor* are paratypes.]

[The types in the collection of M. de Selys-Longchamps are:—*P. Heubei*, *Euthyphocta*, 1 ♀ im.; *B. vicana*, *Heptagenia turridipennis*, 1 ♂ im.; *C. mollis*, *Leptophlebia*, 1 ♂ im.]

1861, F. Loew, *Beiträge zur Kenntniss der Orthopteren*; in *Verh. zool.-bot. Gesells. Wien*, xi, 409-10.

1862, B. D. Walsh, *List of the Pseudo-Neuroptera of Illinois*, contained in the cabinet of the writer, &c.; in *Proc. Acad. Nat. Sc. Philad.* pp. 367-81. *Ba. sicca*. *Pol. odonatus*. *Pal. vittigera*, *farrescens*, *pulchella*, *terminata*. *E. faricola*. *Ephemeroella caroliniana*, *constricta*. *Baetisca (obses)*, *Say*. (*Cloe*) *ferruginea*, *fluctans*, *clibata*, *mendax*.

[The types sent by the late Mr. Walsh to me were:—i. *PENTIA*, *VITRENA*, 1 ♂ im.; ii. *HEXAGA*, *LIXNATA*, 1 ♂ im.; iii. *HEPTA* *FRAYSCENS*, 1 ♂ im.; iv. *VII*. *BETISCA* *OBESA*, 4 ♂ im., ♀ im., ♂ subim., ♂ pupal shell; v. *VIII*. *EPHEMEROELLA* *EXCUCUCANS*, 2 *E. tenax*, ♂ im. The Roman numerals denote those on the tickets affixed to the types in the British Museum.]

1863 (Ting & Walsh). *Observations on certain N. American Neuroptera*, by H. A. Hagen; with notes and descriptions of new species of N. American Pseudo-Neuroptera, by B. D. Walsh; in *Proc. Ent. Soc. Philad.* ii, 189-179 (Hag. Obs.); and ii, 188-207 (Walsh, Notes). *Cænis nigra* (undescribed). *Palingenia*; *Hezogenia*; *Heplogenia*. *Pontog. quadripunctata*. *Heptag. simplex*, *cruentata*, *maculipennis*. *E. myopa*.

1863 (Hag. Brit. Syn.). H. A. Hagen, *Synopsis of the British Ephemeroidea*; in *Entomologist's Annual*, pp. 1-35.

1863, J. Linnbock, *On the development of Chloeon [Ephemera] dimidiatum*, Part I; in *Trans. Inn. Soc. Lond.* xxiv, 61-78, pls. xvii-xviii.

1864, B. D. Walsh, *On the pupa of the Ephemeron genus Baetisca*; in *Proc. Ent. Soc. Philad.* pp. 200-6.

1864, J. P. Stein, *Beitrag zur Neuropteren-Fauna Griechenlands*; in *Berlin. Ent. Zeit.* vii, 411. *Pol. Krueperi*.

1864 (Meyer). L. R. Meyer-Dür, *Zusammenstellung der auf meiner Reise durch Tessen und Ober Engadine, &c.; in Müllh. Schw. Ent. (nos. i, 219-21. Pa. Pictet).*

1864 (Mag.). H. A. Hagen, Névroptères (non Odonates) de la Corse, etc.; in An. Soc. Ent. Fr. ser. 4, vol. iv. pp. 38-9. *Ba. fumivivum*, var. ? *felti*, *zebrata*. *Tr. modestus*.

[In the collection of M. de Selys-Longchamps are Dr. Hagen's types of *B. FUCHSIUM*, *Hopl. zebrata*, 1 ♂ im.; *B. FALLAX*, 1 *zebrata*, ♂ subim.; *B. ZENARA*, 1 ♂ subim.; 1 ♀ im.; *B. VEXOSA*, 1 subim.; 1 ♀ im.; *P. NODOSUS*, 1 *Leptoplectica*, ♂ im., and 1 *B. Rhodani*, ♀ subim.; *C. FUCHSI*, 1 ♀ subim.; *C. RUOYANUS*, 1 ♀ im.; *C. DERRANI*, 2 *Closon*, ♂ im.]

1865 (Mag.). H. A. Hagen, The Neuroptera of Madeira; in The Entomologist's Monthly Magazine, i. 25-6. (*Cloce moderata*).

[In Mr. Vollenkist's collection (Brit. Mus.) are *C. DERRANI*, 2 *Closon*, ♀ im.; *C. MADENSIUS*, *B. Rhodani*, ♂ 4 im., ♀ 2 im., 1 subim.]

1865 (Ed. Pict.). A. E. Pictet, Synopsis des Névroptères d'Espagne, pp. 22-6, pl. iii. *Ba. farvula*, *sylvicola*.

[In M. Ed. Pictet's collection were *B. FARVULA*, *Siphonurus*, ♂ im.; *B. SYLVICOLA*, *Hopl. zebrata*, ♂ im., named; and *Ephemerella ignita*, ♂ im., from San Ildefonso, unnamed.]

1865 (A. Mull.). A. Müller, Observations on the habits of *Oligoneuria rhemana*; in Ent. Mo. Mag. i. 262.

1865 (Etn.). A. E. Eaton, Occurrence of the female imago of *Closon* under submerged stones; in Ent. Mo. Mag. ii. 14. (*Pactis*.)

1865, Lubbock (see 1863), Part. II, in Trans. Linn. Soc. xxv. 477-92, pl. lxxi-lii.

1865, W. Houghton, *Ephemera*, the May Fly; in The Intellectual Observer, vi. 17-5, pls. 1, ii.

1866, Tuffan West, Description of the Skin cast by an *Ephemeron* in its Pseudimago condition; in Trans. Microscop. Soc. Lond. xiv. 69-70, pl. vii. 8-11.

1866 (A. Mull.). A. Müller, Further Notes on *Oligoneuria rhemana*; in Ent. Mo. Mag. ii. 182.

1866, F. Loew, in Verh. zool.-bot. Ges. Wien, xvi. 947.

1866 (Etn.). A. E. Eaton, On some species of the Orthopteron genus *Closon*, Lenth, (as limited by M. Pictet); in Ann. & Mag. Nat. Hist. ser. 3, vol. xviii. pp. 145-8 (illustrated). *Cloezopsis*.

1867 (Etn.). A. E. Eaton, On some British Neuroptera; in Ann. & Mag. Nat. Hist. ser. 3, vol. xix. p. 401.

*1867, M. T. Ratzeil; in Zeitsch. f. wiss. Zool. xviii. 99. [On the egg of an *Ephemerid*.]

1867 (Oul.). R. Oulianine, (in Russian), Neuroptera and Orthoptera of the province of Moscow, pp. 25-9.

1868 (M'Lach.). R. M'Lachlan, On a new species belonging to the Ephemeroidea (Genus *Oligoneuria*); in Ent. Mo. Mag. iv. 177-8. *O. Throniana*. [The type is 1 ♀ im., in Mr. M'Lachlan's collection.]

*1868, H. Gernacher, Beiträge zur Kenntnis des Eies der Ephemeroidea; in Zeits. f. wiss. Zool. xix. 95.

1868 (Bun. Ver.). F. Brunner, Verzeichniss der bis jetzt bekannten Neuropteren im Sinne Linnaeus; in Verh. zool.-bot. Gesellsch. Wien, xviii. 361, 363, 367-9.

1868 (Bun. Reise Novara). F. Brunner, Reise der Fregatte Novara, Zool. Theil, Bd. ii. Abth. I. 104. [A list.]

1868, B. D. Walsh, The Bug-hunter in Egypt (S. Illinois); in The American Entomologist, i. 6, fig. i. b. c.

1868 (Mag.). H. A. Hagen, On *Lochmone ulanensis*, a new Genus and Species from Cuba, belonging to the Ephemeroidea; in Proc. Boston Soc. Nat. Hist. pp. 372-4, fig.

1868 (Etn.). A. E. Eaton, in Trans. Ent. Soc. Lond. 1868, p. 142. *Ecdyonurus* (misreading for *Pedynurus*).

1868 (Etn.). A. E. Eaton, An outline of a re-arrangement of the genera of Ephemeroidea; in Ent. Mo. Mag. v. 82-91. *Tricyrtus*, *Campyurus*, *Pelymniarces*, *Coloburus*, *Siphonurus* (mis-spelt *Siphonurus*).

1868 (Etn.). A. E. Eaton, On some points in the anatomy of the immature *Cenis macrura* of Stephens; in Trans. Ent. Soc. Lond. 1868, pp. 279-82.

1869 (Anser. Neur. Tirol.). C. Ausserer, *Neuroteri Tirolensi*; in Annuario della Soc. Natur. Modena, An. iv. 131-7.

1869 (Etn.). A. E. Eaton, On *Centropilum*, a new genus of the Ephemeroidea; in Ent. Mo. Mag. vi. 132. *Centropilum (Austrosum)*.

1870 (Etn.). A. E. Eaton, On some new British species of Ephemeroidea; in Trans. Ent. Soc. Lond. 1870, pp. 1-8. *E. tinctoria*, *Cl. similis*, *Centrop. pennulatum*. *Ba. scambus*, *arabianus*, *phacops tenax*, *buceraus*, *niger*. *Siph. armatus*, *luculentus*, *Heptag. vittatus*, *insignis*.

1870 (Etn.). A. E. Eaton, A Catalogue of British Neuroptera. [The Fam. Ephemeroidea]. Pp. 7-11. [A mere list.]

1871 (Etn.). A. E. Eaton. In this present monograph I describe the following new genera and species. (*Campyur*) *cuspidatus*, *quadridentatus*; *Ashenopus curtus*; (*Polyml.*) *Sarjini*; *Euthyphoca*; (*Ephem.*) *immaculata*, *sericea*; (*Leptoph.*) *furcifera*, *inconspicua*, *dartata*, *strigata*, *nodularis*, *auriculata*, *mollis*; (*Centrop.*) *stenopteryx*; (*Pactis*) *fruticans*, *garricus*, *pictus*; (*Siph.*) *Lanuvanus*; *isonychia manca*; (*Colobur.*) *halicticus*; *Oreatus*; (*Heptag.*) *nitida*, *borealis*, *cupulata*, *alpicola*; in all, four new genera, twenty-four species.

[The types of new species described in (Etn. 1870) and (Etn. 1871) are in the following collections:—

In Mr. Wormald's, *S. armatus*; in Linnæus's, *S. Lanuvanus*; in Mr. Walker's, *L. furcifera*, *C. halicticus*; in Mr. Dale's, *C. Adentatus*, *S. Lanuvanus*, *H. borealis*; in M. de Selys-Longchamps's, *C. cuspidatus*, *Euthyphoca*, *L. mollis*; in the Oxford Museum, *E. immaculata*, *L. inconspicua*; in Mr. M'Lachlan's, *P. Sarjini*, *Euthyphoca*, *L. strigata*, *nodularis*, *auriculata*, *mollis*, *C. stenopteryx*, *B. pictus*, *L. manca*, *S. armatus*; the rest are in the British Museum.]

Nominibus homonymicis signa anteposita significant:—

|| nomen preoccupatum.

† nomen absum.

Signo i nomeni auctoris premissio, me exemplar typicum insecti sui videris, significatur.

Ante nomina generum numeralia loca systematica generum designant.

INDEX SPECIERUM.

Operibus supra enumeratis descripturam.

IV. *Asphondylia*, n. g. = *Palingenia*, n. g., p. Typ. *A. curtus*, *curtus*, 1 nov. sp.; in *Palingenia*, Hng., *Campoceras*, Elm. [not described]; *3 im.*

hirsuta, Burm. in *Palingenia*, Burm.

XX. *Davria*, Leach, 1815; Sam. 1819; Elm. 1868. Typ. *D. binoculatus*.

† *Baetis*, Say, Curt., et ancl., p. = *Heptagenia*, &c.

albivittata, 1 Walk. Cat. 506; Hng. Am. Syn. 304, list; = *Heptagenia*, ♂ im.

albus (albus), Say, Long's 2d Exp. ii. 305; 1^o Conte, rep. i. 204; Walsh, Proc. Ent. Soc. Philad. ii. 170, 193, Note 12, in *Cloe* (A.); in *Palingenia*, Hng. ♀.

alpinus, Pict.: in *Cloe*, Pict.; *Closon*, Walk.

altranda, Say, Long's 2d Exp. ii. 304; Le Conte, rep. i. 203; Hng. Am. Syn. 49; Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 369, & Proc. Ent. Soc. Philad. ii. 169, 189 = *Siphonurus*.

amurensis, 1 nov. sp.

angulata, 1 Walk. Cat. 564 = *Heptagenia bilineata*, ♂ im.

angustipennis, 1 Ramb. in *Ephemera*; Ed. Pict. Nov. d'Esp. 23 = *Heptagenia*, ♀ subim.

annulata, Tr., in *Ephemera*; — indeterminate.

11 *annulata*, 1 Walk. Cat. 557; Hng. Am. Syn. 48 = *Siphonurus*; ♂ im.

anomala, Pict. Trait. de Pol. vol. 2, ii. 371; Hng. Verh. zool.-bot. Ver. Wien. 1851, p. 227; Hng. & Pict. Org. Nest. im. Bernst. ii. 76, pl. vt. 1, b. c. = *Cronichus*, ♂ im.

arida, Say, Journ. Acad. Nat. Sc. Philad. viii. 42; Walk. Cat. 562; 1^o Conte, rep. ii. 412; Hng. Am. Syn. 46; Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 370, & Proc. Ent. Soc. Philad. ii. 170, 191, Note 8, 192, Note 11 = *Siphonurus*.

atrelatinus, 1 Elm. Trans. Ent. Soc. 1870, p. 4, ♂.

aurantiaca, Burm. Handb. ii. 801; Her.-Schell. 316; Pict. Ephem. 191; Walk. Cat. 560 = *Heptagenia tridana*?

auratolastica, Pict. Ephem. 169, pl. xxiv. 1, 2; Walk. Cat. 559 = *Leptophlebia*, ♂.

autumnalis, Curt. Phil. Mag. 1834, p. 121; Ste. III. vi. 67 = [probably] a monstrous ♂] *binoculatus*.

brevia, 1 Walk. Cat. 565 (see Ste. Cat.); Hng. Am. Syn. 50 = *Heptagenia*, ♂ im.

betleri, 1 Hng. Am. Soc. Ent. Fr. 1860, p. 746 = *Heptagenia*, ♀ im.

bilineata, Say, Long's 2d Exp. ii. 303; Le Conte, rep. i. 203 = *Heptagenia*, ♂ im.

binoculatus (*binoculatus*), Lin., in *Ephemera*, Lin.; Leach, E. Enc. ix. 137; Sam. E. Comp. 259, Ent. Cab. ii. n. 53, pl. xxiv. 1; Ste. III. vi. 65.

bueroctis, 1 Elm. Trans. Ent. Soc. 1870, p. 5; ♂ im.

canadensis, 1 Walk. Cat. 569; Hng. Am. Syn. 47 = *Heptagenia*, ♂ im.

Baetis (continued).

carnea, Curt. Phil. Mag. 1834, p. 121; Ste. III. vi. 65; Pict. Ephem. 193; Walk. Cat. 560; indeterminate.

cerea, Pict. Ephem. 183, pl. xxiii. 2; Walk. Cat. 558 = *Heptagenia*, *part-pennis*, ♂ im.

cingulata, 1 Ste. III. vi. 67 = *Leptophlebia fusca*, ♂ im.

costalis, Curt. Phil. Mag. 1834, p. 120; Ste. III. vi. 64; Pict. Ephem. 191; Walk. Cat. 561 = *Heptagenia elegans* (♀ im. s. w., Curt.; ♂ im., Ste.).

11 *costalis*, Burm. Handb. ii. 800; Burm. Reise Novara (1869) = *Leptophlebia*, subim.

cuticiformis, Lin., in *Ephemera*, Lin.; sp. dub.

† *cuticiformis*, 1 Ste. III. vi. 66 = *phaeops*, ♂ im.

cyanops, Pict. Ephem. 171, pl. xx. 2; Walk. Cat. 556 = *Heptagenia elegans*, ♂ im.

debilis, 1 Walk. Cat. 569; Hng. Am. Syn. 46 = *Leptophlebia euryta*, ♀ im.

11 *debilis*, 1 Walk. in *Closon*, Walk. = *Baetis*, ♀ im.

† *debilis*, Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 371; Proc. Ent. Soc. Philad. ii. 170; (in *Baetis* [C]), Walsh = *Siphonurus*?

determinata, 1 Walk. Cat. 567 = *Heptagenia*, ♂ im.

dispar, Curt. Phil. Mag. 1834, p. 120; B. E. xi. 484; 1 Ste. III. vi. 63 = *Heptagenia venosa*, ♂ im.

elegans, Curt. Phil. Mag. 1834, p. 120; 1 Ste. III. vi. 64; Pict. Ephem. 193; Walk. Cat. 560; Hng. Brit. Syn. 75 = *Heptagenia*.

fallax, 1 Hng. Am. Soc. Ent. Fr. 1864, p. 38 = *Heptagenia separata*, ♂ subim.

fasciata, Pict.: in *Cloe*, Pict.; *Closon*, Walk.

femorata, Say, W. Q. R. ii. 162; Le Conte, rep. i. 171; Hng. Am. Syn. 48; Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 368, & Proc. Ent. Soc. Philad. ii. 169, 188, Note 6 = *Siphonurus*.

† *ferrugineus*, Walsh; in *Cloe* (A), Walsh; ♂ im.

frutinus, 1 nov. sp.

fulvella, Pict. Ephem. 186, pl. xxiii. 4; 1 Walk. Cat. 559; Hng. Am. Syn. 44 = *Heptagenia*; ♀ im. Pict., ♀ subim. & im. Walk.

fulvescens, Curt. Phil. Mag. 1834, p. 121; Pict. Ephem. 193; Walk. Cat. 561; probably *binoculatus*, subim.

garrida, 1 Ed. Pict. Nov. d'Esp. 24, pl. iii. 1-6 = *Siphonurus*, im.

gustians, Walsh; in *Cloe* (B), Walsh.

huminum, Pict. Ephem. 164, pl. xvi. xix.; Lab. & Truh., Bd. iv.; Walk. Cat. 556; Brant. N. Aust. 26; Meyer-Dür. Mitt. Schw. Ent. Ges. i. 221; Ausser. Neur. Throl. 134 = *Heptagenia*.

† *feminum*, 1 Hng. Am. Soc. Ent. Fr. 1864, p. 39; Ste. Ent. Zeit. xxxv. 229 (list) = *Heptagenia schrota*, ♂ im.

forcipata, Pict. Ephem. 169, Note = *Heptagenia venosa*?, ♂ im.

fusca, Burm. Handb. ii. 800; Her.-Schell. 316; Steb. Beitr. xii. 3; [misprinted *fusa*, Walk. Cat. 541, in synonym.] = *Leptophlebia vesperina*.

11 *fusca*, 1 Walk. Cat. 568; Hng. Am. Syn. 45 = *Heptagenia*, im.

fuscata, Lin., in *Ephemera*; 1 Ste. III. vi. 66 = *binoculatus*, ♂ im.

BARRIS (continued).

- || *fusca*, 1 Walk. Cat. 570; Hag. Am. Syn. 47 = *Ephemere* *inveria*, im. ♂, & subim.
- ? || *fuscus*, Schum.; in *Cloe*, Schum.
- gigantea*, Hag. & Piet. Org. Reste im Bernst. ii. 75; incertae sedis.
- grossa*, Hag. & Piet. Org. Reste im Bernst. ii. 75; incertae sedis.
- guttata*, Piet. Ephem. 187, pl. xxiv. 3; Walk. Cat. 559 = *Heptagenia*, ♀ im.
- horaria*, 1 Ste. III. vi. 66; a *Cloeon*, ♀ subim, indeterminate.
- ignara*, 1 Hag. Am. Syn. 47 = *Leptophlebia cupida*, ♀ subim.
- ignora*, 1 Walk. Cat. 571 = *Heptagenia*, ♂ im.
- interlineata*, Walsh. Proc. Ent. Soc. Philad. ii. 183; [for *Siphurus femoratus*, Walsh, if distinct from *S. femoratus*, Say].
- interpunctata*, Say, Journ. Acad. Nat. Sc. Philad. viii. 41; Piet. Ephem. 184; Walk. Cat. 562; Le Conte, rep. ii. 411; Hag. Am. Syn. 44 = *Heptagenia*.
- inveria*, 1 Walk. Cat. 568; Hag. Am. Syn. 48 = *Ephemere* *inveria*, ♂ im.
- iridana*, Kolen. Wien. Ent. Monatschr. iv. 338 = *Heptagenia*.
- lateralis*, Curt. Phil. Mag. 1834, p. 121; 1 Ste. III. vi. 65; Piet. Ephem. 175, pl. xxi.; Walk. Cat. 557; Hag. Brit. Syn. 28 = *Heptagenia*.
- longicauda*, 1 Ste. III. vi. 63; Piet. Ephem. 193; Walk. Cat. 560 = *Heptagenia*.
- ? || *longicauda*, Hag. Brit. Syn. 24 = *Heptagenia fascipennis*, ♀ im.
- ? || *longicauda*, 1 Ronalds, ed. v. pl. ix. = *Heptagenia venosa*, ♀ im.?
- longipes*, Hag. Verh. zool.-bot. Ver. Wien. 1854, p. 7; Hag. & Piet. Org. Rest. im Bernst. ii. 76; incertae sedis.
- luridigenis*, Burm. Handb. ii. 801; Piet. Ephem. 192; 1 Walk. Cat. 563, ♂ im.; Hag. Am. Syn. 49 = *Heptagenia*.
- lutea*, Hag. Brit. Syn. 23 = *Heptagenia elegans*.
- luteolus*, Müll.; in *Ephemera*, Müll.; 1 Etn. Ent. Mo. Mag. v. 88 = *Centropilum marginalis*, Burm. Handb. ii. 801; Her.-Schäuf. 349; Sieb. Beil. xii. 3; — description = *Heptagenia elegans*? — [reference = *Potamanthus tatesi*?]
- melanomyza*, Piet.; in *Cloe*, Piet.; *Cloeon*, Walk.
- metica*, Curt. Phil. Mag. 1834, p. 121 = *Potamanthus luteus*, subim.
- montana*, Piet. Ephem. 172, pl. xx. 3; Walk. Cat. 557; Burm. N. Aust. 26; Ausser. Neur. Tirol. 134 = *Heptagenia*, ♂ im.
- ? || *montana*, Hag. Brit. Syn. 26 = *Heptagenia vasyugis*, im.
- niger* (*nigra*), Lin.; in *Ephemera*, Lin.; Ste. III. vi. 67; (Ronalds, ed. 1 pl. ix. 16-17 [? 17, 17ve]); 1 Etn. Trans. Ent. Soc. 1870, p. 6.
- || *nigra*, Hag. Sieb. Ent. Zeit. xxvi. 229 = *Heptagenia*?
- noctovacuata*, Licht.; in *Ephemera*, Licht.; Hag. Am. Syn. 50 = *Heptagenia* *genita* *terridipennis*?
- obesa*, Say, Journ. Acad. Nat. Sc. Philad. viii. 43; Piet. Ephem. 195; Walk. Cat. 553; Le Conte, rep. ii. 412; Hag. Am. Syn. 45 = *Baetis*-*ca*, subim.
- obscura*, 1 Ste. III. vi. 65; Walk. Cat. 558 = *Ephemere* *ignara*, ♀ im.
- ? || *obscura*, Hag. Brit. Syn. 27; 1 Piet. Ephem. 189, pl. xliii. 1 = *Heptagenia lateralis*, ♂ im.

BARRIS (continued).

- phaeops*, 1 Etn. Trans. Ent. Soc. 1870, p. 4.
- picus*, 1 nov. sp.?
- Picteti*, Meyer-Dür, Mitt. Schw. Ent. Ges. i. 221 = *Heptagenia*, subim.
- posticatus*, Say; in *Cloeon*, Say; *Cloe*, Hag.
- proclivata*, Fuessly, in *Ephemera*; Hag. Sieb. Ent. Zeit. xxvi. 229; sp. incertae sedis.
- propinquus*, Walsh; in *Cloe* (β), Walsh.
- pumilus*, Burm.; in *Cloe*, Burm.; *Cloeon*, Walk.
- purpurascens*, Piet. Ephem. 174, pl. xx. 4; Walk. Cat. 557; Burm. N. Aust. 26; Ausser. Neur. Tirol. 135 = *Heptagenia venosa*?
- pygmaeus*, Hag.; in *Cloe*, Hag.
- renata*, Walk. Cat. 564 = *Coloburus humeralis*, im.
- reticulata*, Burm. Handb. ii. 801; Her.-Schäuf. 343; Piet. Ephem. 192; Sieb. Beil. xii. 3; Walk. Cat. 561 = *Leptophlebia helveta*, subim.?
- Rhodani*, 1 Piet.; in *Cloe*, Piet.; *Cloeon*, Walk.
- scarabus*, 1 Etn. Trans. Ent. Soc. 1870, p. 3.
- setta*, 1 Walk. Cat. 570 = *Leptophlebia*.
- semitolorada*, Curt. Phil. Mag. 1834, p. 121; 1 Ste. III. vi. 64, pl. xix. 2, ♂ im.; Piet. Ephem. 178, pl. xxii. 4-9; Walk. Cat. 557; Hag. Brit. Syn. 20 = *Heptagenia*.
- semitincta*, Piet. Ephem. 180, pl. xii. 1-3; Walk. Cat. 558; Burm. N. Aust. 26; Ausser. Neur. Tirol. 133; misprinted *semitiveta* in Hag. Uebers. 369) = *Heptagenia semicolorata*, var. ?
- sicca*, Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 371, Proc. Ent. Soc. Philad. ii. 170, 191, Notes 9, 10, 192, Note II = *Siphurus speciosus*, Pod.; in *Ephemera*, Pod.; sp. incerta.
- straminea*, Curt. Phil. Mag. 1834, p. 121 = *Heptagenia elegans*, subim. *sicca*.
- strida*, 1 Ste. III. vi. 65 = *phaeops*, ♀.
- subfusca*, 1 Ste. III. vi. 64; Piet. Ephem. 194; Walk. Cat. 561 = *Heptagenia longicauda*, ♀ im.
- sulplurea*, Piet. Ephem. 185, pl. xxiii. 3; Walk. Cat. 558; Ausser. Neur. Tirol. 134 = *Heptagenia elegans*, ♂ im.?
- styliscula*, 1 Ed. Piet. Neur. d'Esp. 24, pl. iii. 7-12 = *Heptagenia*, im.
- Tapolonae*, 1 Walk. Cat. 567; Hag. Ceyl. Syn. 476 = *Leptophlebia*, ♂ im.
- teraa*, 1 Etn. Trans. Ent. Soc. 1870, p. 5; 3 im.
- tessellata*, 1 Walk. Cat. 566 = *Heptagenia vicaria*, ♀ subim.?
- || *tessellata*, Hag. Am. Syn. 50 = either a *Heptagenia*, or *Leptophlebia Co-* *lonitica*, ♀ subim. (preserved in alcohol).
- torrida*, 1 Walk. Cat. 571 = *Heptagenia*, ♀ im.
- undatus*, Piet.; in *Cloe*, Piet.; *Cloeon*, Walk.
- unicolor*, Hag.; in *Cloe*, Hag.
- venosa*, 1 Ste. III. vi. 63; Burm. Handb. ii. 801; Her.-Schäuf. 346; Piet. Ephem. 167, pl. xx. 1; Sieb. Beil. xii. 3; Walk. Cat. 556; Burm. N. Aust. 26; Hag. Brit. Syn. 22; Meyer-Dür, Mitt. Schw. Ent. Ges. i. 221; 1 Hag. Am. Syn. Ent. Ent. Fr. 1864, p. 38; Oul. 1867, p. 27; Ausser. Neur. Tirol. 133 = *Heptagenia*.

Berris (continued).

- terna, 1 Ste. Pl. vi. 65 = *phemera*.
 verna, Curt. Phil. Mag. 1834, p. 121 = *prae*.
 ? *verticis*, Say, Journ. Acad. Nat. Sc. Philad. viii. 42; Walk. Cat. 562
 Le Conte, rep. ii. 412; Hag. Am. Syn. 46; Walsh, Proc. Ent.
 Soc. Philad. ii. 204, Note 19.
 vicaria, 1 Walk. Cat. 565; Hag. Am. Syn. 48 = *Heplogenia*, ♂ im.
 zborata, 1 Hag. An. Soc. Ent. Fr. 1861, p. 38 = *Heplogenia*, ♂ subim. ♀ im.
 XVIII. Berrisa, Walsh; in *Baetis*, Say. Typ. B. obsesa.
 obsesa, Say, in *Baetis*. Say; 1 Walsh, Proc. Acad. Nat. Sc. Philad. 1863,
 p. 378; Proc. Ent. Soc. Philad. ii. 187, iii. 200-6, fig.
 Diacurvercus, Curt. Phil. Mag. 1834, p. 122 = *Cenis*.
 chironomiformis, Curt. Phil. Mag. 1834, p. 122 = *Cenis*.
 Harrisella, Curt. ib.; (Har. Exp. pl. vi. 1-3) = *Cenis lactuosa*, ♀, ?
 miriana, Curt. ib. = *Cenis dimidiata* ?
 Brachurmeria, Westw. (1840) = *Baetis*, Leach (1815).
 bioculata, 1 Westw. Intr. ii. 25, Add. to Gen. Syn. 158 = *Baetis unocou-*
latus, ♂ im.
 XV. Cenis, Ste. (1835-6); in *Ephemera*, Lin.; *Brachycurcus*, Curt.;
Orygma, Burm. Typ. C. *macrura*.
 aurtica, Hag. Am. Syn. 55 = *diminata*, ♂ im. ?
 argentea, Piet. Ephem. 279, pl. xiii. 6; Walk. Cat. 581; ♀ subim.
 brevicornis, 1 Ste. Pl. vi. 61; Piet. Ephem. 286; Walk. Cat. 582 = *dimi-*
diata, ♀ im.
 chironomiformis, Curt. in *Brachycurcus*; 1 Ste. Pl. vi. 62; ♀ im. (mis-
 printed *chironomiformis*, Hag. Brit. Syn. II, in synon.).
 dimidiata, 1 Ste. Pl. vi. 61; Piet. Ephem. 286; Walk. Cat. 582; Hag.
 Brit. Syn. 12; Oul. 1867, p. 27; im.
 dimidiata, 1 Walk. Cat. 584; Hag. Am. Syn. 55; ♀ im.
 discolor, Burm.; in *Orygma*, Burm.
 grisea, Piet. Ephem. 278, pl. xiv. 1, 2; Walk. Cat. 581; Burm. N. Anst.
 25; Anseer. Neur. Tirol. 133 = *macrura*.
 halterata, Hag. Brit. Syn. 11 = *chironomiformis*.
 ? halterata, 1 Etn. Trans. Ent. Soc. 1868, pp. 279, 280, 281 = *lactuosa*,
 ♂ im. & nymph.
 Harrisella, Ste. Pl. vi. 61; Piet. Ephem. 286; Walk. Cat. 583 = *luc-*
tiosa, ♀.
 Harris, Say; in *Ephemera*, Say; Walk. Cat. 583; Hag. Am. Syn. 54;
 Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 381, Proc. Ent.
 Soc. Philad. ii. 179.
 intermedia, Ste. Pl. vi. 62; Piet. Ephem. 287; Walk. Cat. 583 = *macrura*, ♀.
 lactea, Burm.; in *Orygma*, Burm.; 1 Piet. Ephem. 276, pl. xiii. 1-4 &
 xiv.; Walk. Cat. 581; Hag. Ste. Ent. Zeit. xxvi. 229 = *chirono-*
miformis.
 lactuosa, Burm.; in *Orygma*, Burm.; Piet. Ephem. 283, pl. xiv. 3;
 Walk. Cat. 583; Hag. Ste. Ent. Zeit. xxvi. 229.
 macrura, Ste. Pl. vi. 60, pl. xv. 1; Walk. Cat. 583; Hag. Brit. Syn.
 10; 1 Etn. Trans. Ent. Soc. 1868, pp. 279-82.

Cenis (continued).

- [*nigra*, Hag. MS, Walsh, Proc. Ent. Soc. Philad. ii. 179; not described.]
 oophora, Piet. Ephem. 284, pl. xiv. 4; Walk. Cat. 582; ♀ im.
 pennata, 1 Ste. Pl. vi. 61; Piet. Ephem. 286; Walk. Cat. 583 = *dimidiata*, ♀.
 porusilla, 1 Walk. Cat. 585; Hag. Ceyl. Syn. 477; ♀ im.
 sinensis, 1 Walk. Cat. 581 = *Cloeon ruscitulum*, ♂ im.
 varicanda, (Say. 1817, pl. ii. 6, 7), Piet. Ephem. 281, pl. xiii. 5; Walk.
 Cat. 581 = *Tricorythus*, ♂ im. ♀.
 III. Campurus, Etn. 1868; in *Ephemera*, Perch.; *Palingenia*, auct.
 Typ. C. *latipennis*.
 albicans, Perch.; in *Ephemera*, Perch.; *Palingenia*, Piet.; ♂ im.
 albigulum, 1 Walk.; in *Palingenia*, Walk.; ♂ im.
 curtus, 1 Etn. Ent. Mo. Mag. v. 84 [not described] = *Athenopus*, ♂ im.
 cuspidatus, 1 nov. sp., ♂ im.
 latipennis, 1 Walk.; in *Palingenia*, Walk.; ♂ im.
 ? puella, Piet.; in *Palingenia*, Piet.; ♀ im.
 quadridentatus, 1 nov. sp., ♂ im.
 XIX. GENTROPITUM, Etn. 1869; *Baetis* (A), Etn. 1868. Typ. C. *lu-*
teolum.
 litratum, Piet.; in *Cloe*, Piet.; *Cloeon*, Walk.
 luteolum, Mül.; in *Ephemera*, Mül.; *Baetis*, Etn. 1868; 1 Etn. Ent. Mo.
 Mag. vi. 132.
 penulatum, 1 Etn. Trans. Ent. Soc. 1870, p. 2.
 stenopétryx, 1 nov. sp.
 CLOEON, Imhoff (1863) = *Cloeon*, Leach (1815).
 dimidiatum, Etn. Trans. Lin. Soc. xxiv. 61-7, pls. xvii-xviii; id. xxv.
 477-95, pl. xvii-ix. 18 = *Cloeon ruscitulum*.
 dypterum, Lab. ib. cit. xv. pl. Hk. 19-21 = *Cloeon dypterum*.
 Cloe, Burm. (1839) = *Baetis* & *Cloeon*, Leach, 1815, & *Centropitium*,
 Etn. 1869.
 affine, 1 Ramb. Nevr. 298 = *Cloeon dypterum*, im.
 albipennis, 1 Ste. in *Cloeon*; Piet. Ephem. 271 = *Centropitium luteolum*, ♂ im.
 alpina, Piet. Ephem. 257, pl. xi. 5 = *Baetis*, ♂ im.
 autiformis, 1 Ronalds, v. No. 25 [misprint for *cutiformis*] = *Baetis*,
 [sp. indeternminable].
 autumnalis, Curt. in *Cloeon*; Piet. Ephem. 270; vide *Baetis*.
 bioculata, Lin., in *Ephemera*, L.; Piet. Ephem. 244, pl. xxiv-v.; Hag.
 Am. Syn. 52 (testis Walk, sed vide Walk. Cat. 572); Stet. Ent.
 Zeit. xxvi. 229; Oul. 1867, p. 28 = *Baetis unoculatus*.
 brunnea, 1 Ramb. Nevr. 298; Walk. Cat. 577, var. ? *halterata*; Ed. Piet.
 Nevr. d'Esp. 26 = *Heplogenia lateralis*, ♂ subim.
 cingulata, 1 Ste. in *Cloeon*; Piet. Ephem. 271 = *Leptophlebia juca*, ♂ im.
 eognata, 1 Ste. in *Cloeon*; Piet. Ephem. 272 = *Cloeon dypterum*, ♂ im.
 consuetu, Hag. Ceyl. Syn. 477; incert. gen. (Gen. XXIX).
 cutiformis, Lin., in *Ephemera*, L.; Piet. Ephem. 270; Hag. Am. Syn.
 54 = *Baetis*, sp. dab.
 dimidiata, Curt. in *Cloeon*; Piet. Ephem. 272 = *Cloeon ruscitulum*.

Cloe (continued).

- diptera*, Burm. Handb. ii. 793; Her-Schaf. 346; 1 Piet. Ephem. 266, pl. xiii.; Schn. Stet. Ent. Zeit. vi. 340; Gal. (1843); Sieb. Beitr. xii. 3; Brunn. N. Anst. 26; 1 Hag. An. Soc. Ent. Fr. 1864, p. 39, and Ent. Mo. Mag. ii. 25; Ent. Piet. Neur. d'Esp. 25; Oul. 1867, p. 27; Ausser. Neur. Tirol. 135=Cloeon *dipterum*.
- † *diptera*, Ronalds, v. No. 16=Baetis *niger*, subim.
- lubia*, Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 390, Proc. Ent. Soc. Philad. ii. 178=Cloeon.
- fasciata*, Piet. Ephem. 263, pl. xii. 4; Hag. An. Syn. (list) 301=Baetis, ♀ im.
- ferruginea*, Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 379=? Baetis, im, subim.
- fluctans*, Walsh, l. c., & Proc. Ent. Soc. Philad. ii. 178=Baetis, ♀ im.
- fusca*, Schn. Stet. Ent. Zeit. vi. 340=? Baetis, ♀ im.
- fusca*, Piet. Ephem. 251, pl. xl. 1; Oul. 1867, p. 28=Leptophlebia *cincta*, ♀ im.
- halterata*, Burm. Handb. ii. 798; Her-Schaf. 316; 1 Ramb. Neur. 299; (misprinted *halterata* in Sieb. Beitr. xii. 3)=Centropitium *tutoolum*, ♂ im.
- horaria*, Oul., in *Ephemera*. L.; Ramb. Neur. 299; Piet. Ephem. 270; Oul. 1867, p. 29=? *Cenis dimidiata*.
- hyalina*, 1 Ste., in Cloeon, Ste.; Piet. Ephem. 271=Centropitium *luteolum*, ♀ im.
- litura*, Piet. Ephem. 260, pl. xii. 1-3=Centropitium.
- madrasensis*, 1 Hag. Ent. Mo. Mag. ii. 25=Baetis *Rhodant*.
- marginata*, Hag. Ceyl. Syn. i. 477, ii. 206; incert. sed. (Gen. XXII, ♀).
- nuchanonyx*, Piet. Ephem. 258, pl. xl. 6=Baetis, ♂ im.
- mendax*, Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 381, & Proc. Ent. Soc. Philad. ii. 178=Cloeon.
- molis*, 1 Hag. An. Syn. 52 [not described]=Leptophlebia, ♂ im.
- obscura*, 1 Ramb. Neur. 297=Cloeon, ♀ subim.
- ochracea*, 1 Ste., in Cloeon, Ste.; Piet. Ephem. 271=Centropitium *luteolum*, ♀ im.
- pectinata*, Say, in Cloeon, Say; Hag. An. Syn. 53=Baetis, ♂ im.
- propinqua*, Walsh, Proc. Ent. Soc. Philad. ii. 207; [for *vicina*, Walsh] = Baetis.
- pumila*, Burm. Handb. ii. 799; Her-Schaf. 346; Piet. Ephem. 253, pl. xl. 2; Sieb. Beitr. xii. 3; Brunn. N. Anst. 26; 1 Hag. An. Soc. Ent. Fr. 1864, p. 39; Meyer-Dür. Mitt. Schw. Ent. Ges. i. 221; Ausser. Neur. Tirol. 136=Baetis.
- † *pumila*, Hag., in Cloeon; Oul. 1867, p. 28=Baetis *binoculata*.
- † *pumila*, 1 Ramb. Neur. 298=Cloeon *russulum*, ♂ im.
- pygmaea*, Hag. An. Syn. 64; Walsh, Proc. Ent. Soc. Philad. ii. 178=Baetis, ♀ im.
- Rhodanti*, 1 Piet. Ephem. 243, pl. xxxix.; Brunn. N. Anst. 26; 1 Hag. An. Soc. Ent. Fr. 1864, p. 39; Meyer-Dür. Mitt. Schw. Ent. Ges. i. 221; Oul. 1867, p. 28; Ausser. Neur. Tirol. 136=Baetis.

Cloe (continued).

- signata*, Hag. Ceyl. Syn. i. 477, ii. 206; incert. gen. (Gen. XXII.)
- spilata*, Hag. Ceyl. Syn. i. 477; incert. gen. (Gen. XXII, ♀).
- striata*, Linn., in *Ephemera*, L.; Piet. Ephem. 270; Oul. 1867, p. 28=Baetis *pumilus*, ?; vide *Ephemera*.
- † *subfusca*, 1 Ramb. Neur. 298; Walk. Cat. 577 (var. ? *halterata*) = Cloeon, ♀ subim.
- translucida*, 1 Piet. Ephem. 255, pl. xl. 3, 4=Centropitium *tutoolum*, im.
- tristis*, Hag. Ceyl. Syn. i. 476; incert. gen. (Gen. XXII, ♀ subim.).
- undata*, Piet. Ephem. 264, pl. xii. 5; Hag. An. Syn. 53=Cloeon?, ♂ im.
- unicolor*, Curt., in Cloeon, Curt.; Burm. Handb. ii. 798; Piet. Ephem. 271; Sieb. Beitr. xii. 3=Cloeon, sp. dub.
- || *unicolor*, Hag. An. Syn. 64=? Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 380, & Proc. Ent. Soc. Philad. ii. 178=Baetis.
- vana*, Curt., in Cloeon, Curt.; Piet. Ephem. 270=Baetis *phragma*?
- vespertina*, Linn., in *Ephemera*, L.; Oul. 1867, p. 29=Leptophlebia?
- vicina*, Hag. An. Syn. 54; Walsh, Proc. Ent. Soc. Philad. ii. 178=Cloeon.
- † *vicina*, Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 380, & Proc. Ent. Soc. Philad. ii. 207, Note 20=Baetis *propinqua*.
- virgo*, 1 Ste., in Cloeon, Ste.; Piet. Ephem. 272=Cloeon *dipterum*, ♂ im.
- XVIII CLOEON, Leach (1815), in *Ephemera*, Linn.; Cloe, Burm. p.; Cloeopsis, Ehn., olim. Typ. C. *dipterum*.
- albipennis*, 1 Ste. III. vi. 69; *albipennis*, Walk. Cat. 573=Centropitium *tutoolum*, ♂ im.
- ayana*, Piet., in Cloe; Walk. Cat. 574=Baetis.
- autumnalis*, Curt., in Baetis, Curt.; Walk. Cat. 578; vide Baetis.
- bicincta*, L., in *Ephemera*, L.; Walk. Cat. 572, 1 a-f=Baetis *binoculata*.
- † *bicinctum*, Hag. Brit. Syn. 34; 1 Ehn. An. & Mag. Nat. Hist. 1866, p. 147=Centropitium *tutoolum*.
- cingulata*, Ste., in Baetis, Ste.; Walk. Cat. 578=Leptophlebia *fusca*, ♂ im.
- cognata*, 1 Ste. III. vi. 69; *cognata*, Walk. Cat. 579=dipterum, ♂ im.
- consobrinum*, 1 Ste. III. vi. 69=dipterum, ♂ im.
- caliciformis*, 1 Walk. Cat. 576=Leptophlebia *heteripes*, ♀ im.
- debilis*, 1 Walk. Trans. Ent. Soc. N. S. v. 199=Baetis, ♀ im.
- dimidiatum*, Curt. Phil. Mag. 1834, p. 121; Hag. Brit. Syn. 32; *dimidiata*, Walk. Cat. 580=russulum.
- † *dimidiatum*, 1 Ste. III. vi. 69=dipterum, ♂ im.
- dipterum*, Linn., in *Ephemera*; Leach, E. Enc. ix. 137; Curt. Phil. Mag. 1834, p. 121; 1 Ste. III. vi. 68, pl. xix. 3; Hag. Brit. Syn. 29; *diptera*, Walk. Cat. 575.
- discolor*, Burm., in Cloe; Walk. Cat. 577=Cenis.
- dubium*, Walsh; in Cloe (C), Walsh.
- fasciata*, Piet., in Cloe; Walk. Cat. 575=Baetis?
- fusca*, Walk. Cat. 573=Leptophlebia *cincta*.
- halterata*, Burm., in Cloe; Walk. Cat. 577=Centropitium *tutoolum*, ♂ im.
- horaria*, Linn., in *Ephemera*, Linn.; Walk. Cat. 570; vide *Ephemera*.

Cloëos (continued).

- hydratatum, 1 Ste. III. vi. 68; *hyalina*, Walk. Cat. 579 = *Centropitium luteolum*, ♀ im.
litura, Pict., in Cloë; Walk. Cat. 574 = *Centropitium macronotatum*, Curt. Phil. Mag. 1834, p. 121 = *dipferum*, ♀ im.
macronotum, Pict., in Cloë; Walk. Cat. 574 = *Dactis mendax*, Walsh; in Cloë (C), Walsh.
obscurum, Curt. Phil. Mag. 1834, p. 121 = *dipferum*, subim.
 || *obscurum*, 1 Ramb.; in Cloë, Hamb.; ♀ subim.
ochraceum, 1 Ste. III. vi. 68; *ochracea*, Walk. Cat. 578 = *Centropitium luteolum*, ♀ im.
pellida, Leach, E. Enc. ix. 137; Sam. E. Comp. 259 = *dipferum posticata*, Say, W. Q. R. ii. 162; Le Coule, repr. i. 172 = *Dactis*, ♂ im.
pumila, Durm., in Cloë; Walk. Cat. 573 = *Dactis punctatum*, Hag. Brit. Syn. 33; 1 Ehn. An. & Mag. Nat. Hist. 1806, p. 147 = *Dactis binoculatus*.
Rhodani, Pict., in Cloë; Walk. Cat. 573; Hag. Brit. Syn. 31; 1 Ehn. An. & Mag. Nat. Hist. 1806, p. 147 = *Dactis*.
russicum, Müll.; in *Ephemera*, Müll.
rimula, 1 Ehn. Trans. Ent. Soc. 1870, p. 2.
striata, Lin., in *Ephemera*; Walk. Cat. 576 = *Dactis punctus*?
subinfusentum, 1 Ramb.; in Cloë, Hamb.; ♀ subim.
transiendia, Pict., in Cloë; Walk. Cat. 574 = *Centropitium luteolum undata*, Pict., in Cloë; Walk. Cat. 575 = *Dactis unicolor*, Curt. Phil. Mag. 1834, p. 121; 1 Ste. III. vi. 69; *unicolor*, Walk. Cat. 579 = sp. anceps.
vena, Curt. Phil. Mag. 1834, p. 121; 1 Ste. III. vi. 69; 1 Walk. Cat. 578 = *Dactis phaeops*, ♂ im.
vicinum, Hag.; in Cloë, Hag.
virgo, 1 Ste. III. vi. 70; Walk. Cat. 580 = *dipferum*, ♂ im.
viripennis, Blanch.; in *Ephemera* (Cloë), Blanch.
 CLOËOSIS, Ehn. (1866) = Cloëos, Leach.
dipferi, Ehn. An. & Mag. Nat. Hist. 1806, p. 146 = *Cloëos dipferum*.
dipferi, var., Ehn. op. cit. 1807, p. 401 = *Cloëos russicum*.
 XXIV. COLOECUS, Ehn. (1869); in *Paltingenia*, Walk. Typ. C. *humeralis*, 1 nov. sp., ♂ im.
humeralis, 1 Walk.; in *Paltingenia*, Walk.
 XXV. CROSTICUS, nov. gen.
anomelus, Pict.; in *Dactis*, Pict.
Ecortucus, Ehn. (1869); [mis-spelt *Ecdyornis*?] = *Heptagenia venosus*, Fab., in *Ephemera*, Fab.; Ehn. Trans. Ent. Soc. 1868, p. 141, n. X. *EPHEMERA*, Lin. 1735; Sam. 1819; Pict. 1813-5; Hag.; Durm.; Walsh; Houghton, 1865; Ehn. = *Ephemera*, Lin. 6. 3-sect. p. Typ. E. *virigata*.

Ephemera (continued).

- albicans*, Perch. vi. pl. iv. 1 = *Campurus*, ♀ im.
albipennis, Reitz, n. 181 = *Leptophlebia vespertina*.
 || *albipennis*, Ath. Zool. i. 272-5 = *Canis dimidiata*.
 || *albipennis*, Fab. E. S. III. i. 70 = *Leptophlebia cineta*.
 || *albipennis*, Voigt, v. 310; Blanch. H. N. iii. 54, pl. iii. 1; Ramb. *albipennis*, Nér. 296 = *Polymitaraga virgo*.
 † *albipennis*, Walk. ii. 9; Lat. H. N. xii. 98? = *Dactis culiciformis*.
alvipes, Scop. E. Carn. 264; Vill. iii. 22; Ol. Enc. Meth. vi. 421 = *Centropitium luteolum*, ♂ subim.?
argusipennis, 1 Ramb. Nér. 295; Walk. Cat. 571 = *Heptagenia*, subim. ♀.
annulata, Müll. Pr. 143 = *Cloëos dipferum*.
 || *annulata*, Pz. Expl. Schmet. Ic. et. = *Dactis*, sp. anceps.
apicalis, 1 Ste. III. vi. 69 = *Ephemera ignita*, ♂ im.
astrotona, Weh. 90 = *Heptagenia*, subim.
australis, 1 Walk. Cat. 538 = *Leptophlebia herolimentis*, Müll. Pr. 143, n. = *Heptagenia venosa*?
bioculata, Lin. (Ach. Ups. 27); (F. S. 751); r. S. N. i. 647; ii. F. S. 1473; (Geor. ii. 239, 6, pl. xii. 4); Müll. F. Pr. 566; Lin. xii. S. N. 406; Geor. Bern. i. 190; Fab. S. E. 304 & Sp. Lu. i. 834; Thunb. 81; Fab. Mant. i. 244; Vill. iii. 18; Gmel. 2639; Ol. Enc. Meth. vi. 419; Fab. E. S. III. i. 70; Scher. P. B. II. ii. 199; Cod. 134; Walk. ii. 9; Lat. H. N. xii. 97; Shaw, pl. lxxxi.; Lam. ed. 1, iv. 221; Stew. (Ehm. II. ii. 225; Quer. Ic. ii. pl. lx. 9; Grt. ii. pl. xciv. 9; Zett. 1045; Westw. Intr. ii. 26; Blanch. H. N. iii. 54 = *Dactis binoculata*, Fourc. E. Par. ii. 352 = *Dactis phaeops*, subim.?
 † *bioculata*, Pz. Expl. Schmet. Ic. coxix = *Heptagenia fumivum*.
 † *bioculata*, var., Pz. Expl. Schmet. Ic. coxix & F. Germ. helv. xciv. 17 = *Heptagenia elegans*?
 † *bioculata*, Rom. 23, pl. xiv. 7 = *parc*.?
brevicauda, Fab. E. S. III. i. 69; Walk. ii. 9; Lat. H. N. xii. 96;
 † *brevicauda*, Blanch. H. N. iii. 54 = *Canis luctuosa*.
 [Cellulosa, Hag. = *Diagoneura*.]
chlorotica, 1 Ramb. Nér. 296; Walk. Cat. 540 = *Potamanthus luteus*, ♂ subim.
cineta, Reitz, n. 189; (De G. Mem. ii. 650, pl. xvii. 17-18) = *Leptophlebia cognata*, 1 Ste. III. vi. 56; Curt. B. E. xv. 709 = *denticata*.
Colombia, 1 Walk. Cat. 537 = *Leptophlebia*, ♀ subim.
communis, Reitz, n. 180 = *virigata*.
culiciformis, Lin. (G. F. S. 753); r. S. N. i. 647; ii. F. S. 1473; (Pod. Mus. Gr. 98, pl. i. 10, ?; or is this *Leptophlebia murigena*?)
Scop. E. Carn. 264; (Geor. ii. 210, 9); Lin. xii. S. N. 907; Fab. S. E. 304; Müll. Pr. 143; Fab. Sp. In. 385; Thunb. 91; Fourc. E. Par. ii. 352; Fab. Mant. i. 244; Derx. Syn. i. 150; Vill. iii. 20; Gmel. 2630; Ol. Enc. Meth. vi. 420 (excl. note); Fab. E. S. III. i. 71; Lat. H. N. xii. 98 ?; Stew. Mem. II. ii. 225; Zett. 1046; Schli. Berl. E. Zeit. iii. 143 = *Dactis*, sp. anceps.

Ephemerina (continued).

- [*culticiformis*, Hill, Dec. pl. vii. = *Perla*.]
 † *culticiformis*, Ol. Enc. Meth. vi. 420, n.; Lat. H. N. xiii. 93? = *Baetis binoculatus*.
 † *culticiformis*, Blanch. H. N. iii. 55 = *Cloeon russiaham*.
 † *culticiformis*, Fonscol. An. Soc. Ent. Fr. 1846, p. 49 = *Cloeon dytiscum*.
 † *culticiformis*, Scop. E. Carn. 261 = *Centroptilum lituratum*.
cupida, Say, W. Q. R. ii. 163; Le Conte, rep. i. 172 = *Leptophlebia*.
janica, Müll. F. Frl. 63, & Pr. 142; Vill. iii. 18; (Ronalds I., pl. xiii. 28-29); Walk. Cat. 535; Hag. Brit. Sp. 15.
 † *janica*, Pict. Ephem. 180, pl. vii.; Oul. 1867, p. 26 = *liturata*.
 † *janica*, Ronalds V., No. 31 = *virgata*.
decora, 1 Walk. Cat. 537; Hag. Am. Syn. 38; Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 376, & Proc. Ent. Soc. Philad. ii. 177 = *gut-tulata*.
diaphana, Müll. Fr. 143 = *Baetis binoculatus*, ♂.
diata, Ste. III. vi. 58 = *Ephemerella ignita*.
dytiscus, Lin. ii. F. S. 1477; (Ramm. vi. pl. xlv.); (Pontop. Nat. Dan. 223, pl. xvii. 7); Lin. xii. S. N. 907, diag., nec obs.; (De G. Mem. ii. 666, pl. xvii. 1-9); Fab. S. E. 304 & Sp. In. i. 385; Reitz. n. 184; Thunb. 81; Fab. Mant. i. 244; Latz. 210; Vill. iii. 20; (Zsch. i. 51, No. 19); Gmel. 2630; Kos. F. Etr. ii. 9; Ol. Enc. Meth. vi. 430; Fab. E. S. III. i. 71; Schur. F. B. II. ii. 199; Lat. H. N. xiii. 93; Shaw, 233; Lat. Gen. iii. 154; Leach, E. Ephem. ix. 137, inter Etm.; Cur. H. A. ed. i., iii. 430; Janssen, ed. i., iv. 221; Sam. E. Comp. 259; Cur. R. A. ed. ii., 244; Blanch. R. A. (ed. Crochard) xiii. 52; Zel. 1045; Vaygt., v. 311; Blanch. H. N. iii. 55; Duf. Rech. 589, note; Lat. Nouv. Dict. H. N. x. 349; Verl. Mem. 49, pl. i. = *Cloeon dytiscum*.
distocans, 1 Walk. Trans. Ent. Soc. N. S. v. 193 = *Leptophlebia*, ♀ im.
disjors, 1 Ste. III. vi. 58 = *Leptophlebia helveta*, im. & subim.
dactyla, 1 Ste. III. vi. 59 = *Baetis phaeops*, ♂ im.
erythrophtalma, Schur. F. B. II. ii. 197 = *Ephemerella ignita*, ♂ im.
expedans, 1 Walk.; in *Potamanthus*; Walk.; ♀ subim.
familiaris, Schur. F. B. II. ii. 200, indelermittable.
fasciata, 1 Hag.; in *Potamanthus*, Hag.
fortuginea; (Zsch. i. 50, No. 18); Gmel. 2630; Ol. Enc. Meth. vi. 422 = *Heptagenia elegans*?
fulvibrata, Bremi, MS.; Hag. Stet. Ent. Zeit. xxvi. 229, not described.]
gana, Schur. Ber. S. 2 & En. n. 605; Vill. iii. 22; Ol. Enc. Meth. vi. 421; Schur. F. B. II. ii. 200 = *Baetis binoculatus*.
janicola, Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 377, & Proc. Ent. Soc. Philad. ii. 178.
janicus, 1 Ramb. Név. 296; Walk. Cat. 536, ♀ var. = *Potamanthus tin-tus*, ♀ im.
janipennis, Duf. Rech. 580, n. = *Heptagenia*, ♀ subim.
jaosque, Illig. Mag. i. 187; Triepke, Stet. Ent. Zeit. i. 54-3 = *Palingenia longicauda*.
longicauda.
fuliginosa, Geogr. (1862), p. 324 = *Palingenia longicauda*.

Ephemerina (continued).

- fusca*, Curt. Phil. Mag. 1834, p. 120 = *Leptophlebia*.
 † *fusca*, 1 Ste. III. vi. 58 = *Ephemerella ignita*, ♂ im.
fusca, Lin. ii. F. S. 1474; Müll. F. Frl. 557; Lin. xii. S. N. 907; Thunb. 81; Vill. iii. 19; Gmel. 2629; Ol. Enc. Meth. vi. 419; Fab. E. S. III. i. 70; Walk. ii. 9; Lat. H. N. xiii. 97 = *Baetis binoculatus*.
fusco-grisea, Reitz. n. 183 = *Heptagenia rufosa*, subim.
fuscula, Schur. F. B. II. ii. 199 = *Heptagenia semicolorata*, subim.?
geminata, Scop. E. Carn. 261; Müll. Pr. 143; Vill. iii. 22; Ol. Enc. Meth. vi. 421 = *Heptagenia*, ♀ incert. sp.
 [Ergantung, Illig. Mag. i. 188; not described.]
glauca, 1 Pict. Ephem. 132, pl. viii. 1-3; Walk. Cat. 536; Brann. N. Mitt. Schur. Ent. Ges. i. 221; Oul. 1867, p. 26; Ausser. Neur. Titol. 132.
guttata, Blanch. Ohiol. vi. 106, Atl. Név. ii. 2; in § *Baetis*, Blanch. = *Heptagenia*, ♀ im.
guttulata, Pict. Ephem. 135, pl. viii. 4; Walk. Cat. 536.
halterata, Fab. Gen. 244, & Sp. In. 384, & Mant. i. 243; Vill. iii. 18; Gmel. 2629; Ol. Enc. Meth. vi. 418; Fab. E. S. III. i. 69; Schur. F. B. II. ii. 198; Lat. H. N. xiii. 95; Shaw, pl. lxxxi; Zel. 1015 = *Leptophlebia cincta*? (supposing *palustris* speci-men to have been unflattened).
Hebes, Walk. Cat. 538; Hag. Am. Syn. 39 = *Leptophlebia cupida*?
helveta, 1 Ste. III. vi. 59 = *Leptophlebia*, ♀ im.
helveta, Sutz. Gesch. 171, pl. xiv. 7; Doern. Gen. pl. xxiv. 7 = *Heptagenia helveta*, ♂ im.
helveticus, Say, Journ. Acad. Nat. Sc. Philad. viii. 43; Le Conte, rep. ii. 413 = *Cenis*.
hispinica, 1 Ramb. Név. 294; Walk. Cat. 535 (*virgata*, var. ?); E. Pict. Név. d'Esp. 23 = *dactyla*, ♂ im.
horaria, Lin. (Acc. Ups. 27; i. F. S. 750); r. S. N. i. 547; ii. F. S. 1477; (Geof. ii. 240.5); Pontop. Nat. Dan. 223; Lin. xii. S. N. 907; Fab. S. E. 304; Müll. Pr. 143; Fab. Sp. In. i. 385; Fourc. E. Par. ii. 852; Fab. Mant. i. 244; Berk. Synop. i. 150; Vill. iii. 20; Gmel. 2630; Jos. F. Etr. 9; Ol. Enc. Meth. vi. 419; Fisch. Vers. 666; Fab. E. S. III. i. 71; Schur. F. B. II. ii. 199; Gmel. 135; Walek. ii. 10; Lat. H. N. xiii. 98; Stew. Elem. II. ii. 226? = *Cenis dimidiata*?
hyalina, Pz. Expl. Schmel. Te. xiii. = *Potamanthus laticus*.
hyalinata, Zel. 1044 = *Leptophlebia cincta*.
ignita, Pod. Mus. Gr. 97 = *Ephemerella*, ♂ im.
inmaculata, 1 nov. sp., ♂ im.
inanis; (Zsch. i. 50, No. 15); Gmel. 2629; Ol. Enc. Meth. vi. 421 = *Lepto-phlebia cincta*, ♂ im. (the abdominal segments being constricted from behind forwards).
imboda, 1 Guer. Ic. ii. pl. lx. 7, & iii. 384; Gray, Grif. Cl. Ins. ii. pl. xlv. 7; 1 Ramb. Név. 295, pl. viii. 2 = *Heptagenia*, ♂ im.
 [*limbata* and *limosa*, Zel. MS., for *E. vespertina*, Zel.]
limbata, 1 Ehn. Trans. Ent. Soc. 1870, p. 1.

EPHEMERA (continued).

- longicauda, Ol. Enc. Meth. vi. 418; Lat. II. N. xiii. 96; Lamarck, ed. i., iv. 221; 1 Ramb. Nevr. 295 = *Palingenia*.
- lutea, Linn.: (Geol. ii. 238. 2); Linn. xii. S. N. 906; Fab. S. E. 303; (Schult. Ic. h. pl. xiii. 7); Schr. Ent. 603; Fab. Sp. In. i. 383, & Mant. i. 213; Vill. iii. 17; Ramm. 23; (Zsch. i. 50, No. 13); Gmel. 2628; Ros. F. Ent. ii. 8; Ol. Enc. Meth. vi. 417; Fisch. Verh. 565; Fab. E. S. III. i. 68; Suetzen (1791); Schr. F. B. II. ii. 197; Walk. ii. 8; Lat. H. N. xiii. 95; Blanch. H. N. iii. 54; Duf. Rech. 580, n. = *Potamanthus luteus*.
- † lutea, Pr. Expl. Schult. Ic. cxxxv. = *Polymeris virgo*.
- † lutea, Fourc. E. Par. ii. 352 = *Daetis binoculatus*.
- † lutea, Sulz. Gesch. 171, pl. xxiv. 6; Ramm. xxiv. 6; Damm. Handb. ii. 804; 1 Ramb. Nevr. 294; Her. Schult. 346; Stüb. Dett. xii. 3 = *glaucois*, ♀ im. ?
- † lutea, 1 Ste. III. vi. 55 = *Heptagenia elegans*, ♂ im.
- † lutea, Müll. Pr. 143 = *Centrotitum luteolum*, ♀ im.
- maculata, Linn. v. S. N. 632 = *calyda*.
- maculata, Pol. Mns. Gr. 97 = *Heptagenia* (? venosa), subim.
- || maculata, Vill. iii. 22 = *E. danica*, ♂ im.
- † maculata, Vill. iii. 22 = *E. danica*, ♂ im.
- [*maculata*, 1 Ramb. MS. = *Heptagenia angustipennis*, ♀ im. ?]
- marginata, Linn. xii. S. N. 906; Fab. S. E. 308, & Sp. In. i. 384, & Mant. i. 213; Vill. iii. 17; Gmel. 2628; Ol. Enc. Meth. vi. 417; Fab. E. S. III. i. 63; Schult. F. B. II. ii. 198; Cud. 124; Walk. ii. 8; Lat. H. N. xiii. 95; Shaw, pl. lxxxvi. f. Suet. Fiesm. II. ii. 225, pl. xvii. 14, 15; 1 Ste. III. vi. 57; Zet. 1044; Blanch. H. N. iii. 54 = *Leptophlebia*, ♂ im.
- † marginata, Müll. Pr. 142 = *Potamanthus luteus* ?
- † marginata, Gor. & Pril. 61-9, pl. ii. 46; Doreh. E. M. i. 233-44, pl. ii. 1-6; Lacord. ii. 77; Brullé, Blanch. H. N. i. pl. xxiv. = *Cloeon dipterum* (agnab.).
- marcescens, Fab. E. S. III. i. 63 = *Polymeris* (? *virgo*).
- minima, Linn. v. S. N. 62; Müll. Pr. 142; Schr. F. B. II. ii. 198 = *Cemis dimidiata* ?
- nitens, 1 Ste. III. vi. 68 = *Leptophlebia fusca*, ♀ im.
- nitida, Linn. (f. F. S. 52); x. S. N. i. 547; ii. F. S. 1479; (Geol. ii. 240. 7) = *Daetis punctatus*, ♂ subim. ?
- nyops, Walsh. Proc. Ent. Soc. Philad. ii. 207, note 20; ♂ im.
- notata, 1 Walk. i. in *Palingenia*, Walk.; Hag. Arn. Syn. 39; Walsh. Proc. Ent. Soc. Philad. ii. 177 = *guttulata*, ♀ subim.
- venosa, Vill. iii. 22 = *Heptagenia venosa*.
- virga, Linn. ii. F. S. 1478; xii. S. N. 907; Fab. S. E. 304; (Schult. Ic. h. pl. clix. 1, 2?); Schr. Ent. 606; Fab. Sp. In. 385, & Mant. i. 214; Vill. iii. 19; Gmel. 2629; Ros. F. Ent. ii. 8; Ol. Enc. Meth. vi. 419; Fab. E. S. III. i. 70; Cud. 135; Walk. ii. 9; Lat. H. N. xiii. 95; Pr. Expl. Schult. Ic. clix.; Stew. Elouv. II. ii. 225; Ste. III. vi. 67; Blanch. H. N. iii. 54 = *Daetis nigra*, subim.
- † nigra, Fourc. E. Par. ii. 352 = *Leptophlebia cincta*, subim.
- nigriventris, Duf. Rech. 680, n. = *Heptagenia* (♀, sp. ?) im.

EPHEMERA (continued).

- notata (Zsch. i. 50, No. 16); Gmel. 2630; Ol. Enc. Meth. vi. 422 = *Daetis binoculatus*, ♀ im.
- norboracana, Licht. Cat. Mus. Holth. iii. 193 = *Heptagenia luridipennis* ?
- parvula, Scop. E. Carn. 264; Vill. iii. 22; Ol. Enc. Meth. vi. 421 = *Centrotitum luteolum* ?
- plumosa, Müll. Pr. 142 = *Cemis* (sp. ?).
- proclivata, Schwarz, Nouvel. Ross. Ins. Del. pl. xii. 1-3 = *Leptophlebia marginata* ?
- [*proera*, Hag. = *Drygonura*.]
- prudica, Hag. Arn. Syn. 39; Walsh. Proc. Ent. Soc. Philad. ii. 177; ♀ subim.; incerta sedis.
- [*pusilla*, Zet. MS. = *Cemis macrura*, ♀ subim. ?]
- reticulata, Fourc. E. Par. ii. 350 = *Potamanthus luteus*.
- rossa, 1 Ste. III. vi. 59 = *Ephemerella ignita*, im.
- rufo, 1 Ramb. Nevr. 296 = *Heptagenia venosa*, ♀ im. ?
- russeus, 1 Ste. III. vi. 59 = *Ephemerella ignita*, im.
- [*rusticaria*, Hill, Dec. 8; a *Trichopteron*.]
- rusula, Müll. Pr. 143 = *Cloeon*, ♂ im.
- serica, 1 nov. sp.
- simulans, 1 Walk. Cat. 586; Hag. Arn. Syn. 38 = *guttulata*, ♂ subim.
- speciosa, Pol. Mns. Gr. 98; Schr. Ent. 604; Vill. iii. 22; Ol. Enc. Meth. vi. 418; Lat. H. N. xiii. 97 = *Daetis*, sp. incert.
- stigma (Zsch. i. 50, No. 20); Gmel. 2630; Ol. Enc. Meth. vi. 422 = *Heptagenia lateralis* or *semicolorata*, subim. ?
- || stigma, 1 Ste. III. vi. 56 = *Leptophlebia marginata*, ♂ im.
- strigata, Linn. xii. S. N. 907; Fab. S. E. 304, & Sp. In. i. 385, & Mant. i. 214; Berk. Syn. i. 150; Vill. iii. 20; Gmel. 2630; Ol. Enc. Meth. vi. 420; Fab. E. S. III. i. 71; Cud. 135; Lat. H. N. xiii. 99; Stew. Elem. II. ii. 226 = *Daetis punctatus*, ♂ im. ?
- † strigata, Müll. Pr. 143 = *Cloeon dipterum*, ♀ im.
- † strigata, Blanch. H. N. iii. 55 = *Cloeon rufulum*, im. ?
- † strigata, Walk. ii. 10 = *Daetis binoculatus*, subim. ?
- submarginata, 1 Ste. III. vi. 58 = *Leptophlebia helveta*, ♀ im.
- sulphurea, Müll. Pr. 142 = *Heptagenia elegans*, ?
- Swammerdamiana, Shaw, vi. pl. lxxxii. = seg.
- Swammerdamiana, Lat. II. N. xiii. 96, & Gen. iii. 184; Cur. R. A. ed. 1, iii. 430; ed. ii. 244; Lamarck, ed. i, iv. 221; Blanch. H. A. ed. Crochard, xiii. 91, & H. N. iii. 54 = *Palingenia longicauda*.
- testacea (Zsch. i. 50, No. 17); Gmel. 2630; Ol. Enc. Meth. vi. 422 = *Daetis phaeops* ?
- venosa, (Do G. Mem. ii. 625, pl. xviii. 1-4); Fab. S. E. 304, & Sp. In. i. 384; Thunb. St. f. Fab. Mant. i. 213; Gmel. 2629; Ol. Enc. Meth. vi. 418; Fab. E. S. III. i. 70; Lat. H. N. xiii. 97 = *Heptagenia venosa*, Zet. 1045, ♂ = *Siphurua*, sp. incert.
- vespertina, Linn. (It. GEN. 21 i. F. S. 755); x. S. N. i. 547; ii. F. S. 1480; (Geol. ii. 239. 4); Linn. xii. S. N. 906; (Do G. Mem. ii.

Ephemerella (continued).

616, pl. xvii. 11-16); Fab. S. E. 303 & Sp. In. 1. 351, & Mant. l. 213; Derk. Synop. l. 1507; Vill. iii. 17; Gmel. 2638; Ros. F. Ebr. ii. 8; Ol. Enc. Meth. v. 417; Fab. E. S. III. l. 69; Schr. F. R. II. ii. 197; Céd. 131; Walck. ii. 9; Lat. II. N. xiii. 95; Stew. Elem. II. ii. 225; Zett. 1015; Westw. Introd. ii. fig. 61, 19 (gill) = *Leptophlebia* (agnat. ?), im.

virgo, Ol. (Curt. title p. fig. & pp. 61, 67, 90?; Mfj. 1973; Targ. 1741 figs. 1, 44; Reann. vi. pls. xlii-xliiv; Schmf. 1557, 1779, 1c. ii. pl. cxxx. 1-3; Abb. iii. 30 pgs. pl. i.); Ol. Enc. Meth. vi. 419; Lat. H. N. xiii. 98, & Nouv. Dict. H. N. x. pl. xli. 5 = *Polunitercus*.

viridescens, Fourn. E. Par. ii. 351 = *Leptophlebia marginata*, subim.

virrea, Zett. 1015 = *Leptophlebia cincta*, im.

viripennis, Bianch. Chili. vi. 107, Atl. Neur. ii. 3; in *Ephemerella* (Cloe), Bianch. = *Cloeon*.

vulgata, Lin. (l. F. S. 750); De G. Obs. 463, pl. xvii. 2); Lin. x. S. N. l. 546; Kr. (1760) 26; Lin. ii. F. S. 1472; Sala. (1761) 43, pl. xvii. 103; Scop. E. Carn. 263 (dang.), pl. xxxviii. 683; Geol. pl. 238. 1); Mul. F. Frid. 63; Pont. Nat. Dan. 223; Schmf. Elem. pl. xii. 1-3; Lin. xii. S. N. 906; Hout. (1766-9) (De G. Mem. ii. 621. pl. xvi. xvii. 1-10); Geogr. Bem. i. 120; F. R. 303; (Schmf. l. i. pl. ix. 5-6); Mul. Pr. 142; Schr. Ea. 602; Fab. Sp. In. l. 383; Thunb. 81; Fourn. E. Par. ii. 351; Fab. Mant. l. 243; Berk. Syn. l. 130; Vill. iii. 16; (Zsch. l. 50, No. 13); Gmel. 2638; Ros. F. Ebr. ii. 7; Ol. Enc. Meth. v. 417; Fisch. Vers. 564; Fab. E. S. III. l. 68; Schr. F. R. II. ii. 196; Céd. 131; Walck. ii. 8; Lat. H. N. xiii. 94; Pz. Expl. Schmf. 1c. ix. 5-6, & F. Germ. Lett. xiv. 16; Shaw. v. pl. lxxxi. Lat. Gen. iii. 134; Zsch. l. E. Enc. ix. 137; Chev. R. A. ed. 1, iii. 430; Lamarck, ed. 1, iv. 221; Stew. Elem. II. ii. 225; Chev. R. A. ed. 2, v. 214; Guér. 1c. ii. pl. 1. 8 (agnat.); Gray, Grif. Cl. Ins. ii. pl. xciv. 8 (agnat.); Ste. III. vi. 65; (Ronalds l. pl. xiv. 30-31); Dalman, 228; Pusch. v. pl. iv. lxx. i. Burm. Dauid. ii. 804; Zett. 1014; Voigt, v. 311; Her. Schmf. 346; Bianch. H. N. iii. 53; Duf. Rech. 680, c.; Lat. Nouv. Dict. H. N. x. 348; Stob. Beitr. xii. 3; Wale. Cat. 534; Hag. Dnt. Syn. 14; Stein, Berl. Ent. Zeit. vii. 41; Dag. Stet. Ent. Zeit. xvii. 229.

† *vulgata*, Don. B. I. iv. 53, pl. cxxviii.; Sam. E. Comp. 260, pl. vii. 2; Wood, ii. 21-3, pl. xviii.; Dmn. Cons. Gen. 204, pl. xxviii. 4, 5; Bianch. R. A. ed. Crochard. xii. 91, xiv. pl. cii. 1c; Newport, Tod's Cyc. ii. 864, fig. 315; Westw. Introd. ii. fig. 61, 1 (the abdominal spots being reversed); Bianch. H. N. iii. 53; l. Ramb. Neur. 233; Mcl. Ephem. 126, pls. 1-11; Ronalds V. no. 28; Brann. N. Anst. 25; E. Pich. Névr. d'Esp. 22; Oul. 1867, p. 25; Auser. Neur. Throl. 131 = *danica*.

† *vulgata*, Wagner, Isie. 1832, p. 332, pl. ii. 1 = *Baetis* (agnat.).

XVI. *variegata*, Walsh (1862), in *Ephemerella*, c. 3-sect., Pod.; *Potamonitius*, Pict.; *Baetis*, Walkser. Typ. Z. *invaria*.

viridis, Pict.; in *Potamonitius*, Pict.
viridis, Pict.; in *Ephemerella*, Pod.
invaria, l. Walk.; in *Baetis*, Walk.

Ephemerella, Will.

Lenon, Will. Trans. Am. Soc. Philad. v. 71-3 = *Baetis* ?

IX. *Ephemerella*, nov. gen. Typ. Z. *Hebe*.

Hebe, l. Hag.; in *Palingenia*, Hag.; ♀ im.

HEMERONIS, Curt. cap. viii. fig. & p. 100 = *Palingenia longicauda*.

XXVI. *HERRIGENIA*, Walsh (1863); in *Ephemerella*, Poda; *Baetis*, Say; *Palingenia*, Walk. Typ. H. *fuscens*.

alpicola, l. nov. sp.

angustipennis, l. Ramb.; in *Ephemerella*, Ramb.; *Baetis*, Ed. Pict.

annulifera, l. Walk.; in *Palingenia*, Walk.

basalis, l. Walk.; in *Baetis*, Walk.

Baltieri, l. Hag.; in *Baetis*, Hag.

boradisi, l. nov. sp., ♂ im.

canadensis, l. Walk.; in *Baetis*, Walk.

cruentata, Walsh, Proc. Ent. Soc. Philad. ii. 205, note 19.

cynipifera, l. nov. sp.

determinata, l. Walk.; in *Baetis*, Walk.

elegans, Curt.; in *Baetis*, Curt.

faroola, Pict.; in *Baetis*, Pict.

fuscens, l. Walsh; in *Palingenia* (C), Walsh.

fuscipennis, Duf.; in *Ephemerella*, Duf.

fluminum, Pict.; in *Baetis*, Pict.

fusca, l. Walk.; in *Baetis*, Walk.

gutkata, Pict.; in *Baetis*, Pict.

insignis, l. (Ronalds l. pl. xi. 22); Em. Trans. Ent. Soc. 1870, p. 7.

interpunctata, Say; in *Baetis*, Say; *Palingenia* (C), Walsh (1862).

viridana, Kolon.; in *Baetis*, Kolon.

lateralis, Curt.; in *Baetis*, Curt.

longicauda, l. Ste.; in *Baetis*, Ste.

luridipennis, Burm.; in *Baetis*, Burm.

maculipennis, Walsh, Proc. Ent. Soc. Philad. ii. 206, note 19.

montana, Pict.; in *Baetis*, Pict.

nigrimana, Duf.; in *Ephemerella*, Duf.; sp. dub.

nivata, l. nov. sp.

Picteti, Meyer-Dür.; in *Baetis*, Meyer-Dür.

pulchella, Walsh; in *Palingenia* (C), Walsh.

semicolorata, Curt.; in *Baetis*, Curt.

simplex, Walsh, Proc. Ent. Soc. Philad. ii. 204, note 19.

syriaca, l. Val. Pict.; in *Baetis*, Ed. Pict.

tessellata, Hag.; in *Baetis*, Hag.; *inertis sillis* (perhaps a *Leptophlebia*).

torrida, l. Walk.; in *Baetis*, Walk.

venosa, Fab.; in *Ephemerella*, Fab.; *Baetis*, Ste.

vicaria, l. Walk.; in *Baetis*, Walk.

virrea, l. Walk.; in *Palingenia*, Walk.

HERZEGIA (continued).

velutans, 1 Ein. Trans. Ent. Soc. 1870, p. 7, ♂ im.

zobovata, 1 Hag.; in Baetis, Hag.

XIII. HERZEGIA, Walsh (1863); in Ephemera, Web.; Baetis, Say;
Palingenia, Pict.

albivitta, 1 Walk.; in Baetis, Walk.

? atrostoma, Web.; in Ephemera, Web.

bitinosa, Say; in Baetis, Say; Palingenia, Walsh, 1863.

decolorata, Hag.; in Palingenia, Hag.

limbata, 1 Guér.; in Ephemera, Guér.; Palingenia, Pict.

XXIII. ISOZYCHIA, nov. gen. Typ. I. manca.

manca, 1 nov. sp.

ignota, 1 Walk.; in Baetis, Walk.

II. TACHILIA, Hag. (1863). Typ. L. abnormis.

abnormis, Hag. Proc. Bost. Soc. Nat. Hist. 1868, p. 372-4, fig.; ♀ im.

XII. LYTROMYZINA, Westw. (1840); in Ephemera, Reanum; Baetis,
Ste.; Potamanthus, Pict.; Palingenia, Walk.

annulata, 1 Hag.; in Potamanthus, Hag.

auriculata, 1 nov. sp.; ♂ im.

australatica, Pict.; in Baetis, Pict.

australis, 1 Walk.; in Ephemera, Walk.

castanea, Pict.; in Potamanthus, Pict.

cineta, Reitz; in Ephemera, Reitz.

Colombica, 1 Walk.; in Ephemera, Walk.; Palingenia, Hag.

costalis, Burm.; in Baetis, Burm.

cupida, Say; in Ephemera, Say; Potamanthus, Hag.

denticata, 1 nov. sp.; ♂ im.

discoloris, 1 Walk.; in Ephemera, Walk.

femorilis, Hag.; in Potamanthus, Hag.

fascia, Curt.; in Ephemera, Curt.; Potamanthus, Pict.

furefura, 1 nov. sp.; ♂ im.

holotypes, 1 Ste.; in Ephemera, Ste.

inconspicua, 1 nov. sp.; ♂ im.

Krueperi, Stein; in Potamanthus, Stein.

marginata, Lin.; in Ephemera, Lin.; Potamanthus, Hag.

snodgrassi, 1 Hag.; in Potamanthus, Hag.

mollis, 1 Hag.; in Cloc, Hag. [not described].

nebulosa, 1 Walk.; in Palingenia, Walk.

nodularis, 1 nov. sp.; ♂ im.

Picteti, Ein.; for Potamanthus; marginatus, Pict.

prisca, Pict.; in Potamanthus, Hag. & Pict.

scita, 1 Walk.; in Baetis, Walk.

strigata, 1 nov. sp.; ♀ im.

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D

LEPTOPHEBIA (continued).

Traprobes, Walk.; in Baetis, Walk.

vespertina, Lin.; in Ephemera, Lin.; Cloc, Oul.

Macroceres, Westw. Partingt. Cyc. Nat. Hist. (1839) ii. 439=Cenis.

I. OLIGOMYZINA, Pict. (1843-5).

anomala, Pict. Ephem. 260, pl. xviii; Walk. Cat. 585; Hag. Stet. Ent.
Zeit. xvi. 269, pl. i.; Ann. Syn. Hist. 301; ♀ im.

† anomala, Pict. Ephem. pl. xvi; Kirsch. Jahrb. Naturk. Nassau. heft
ix. 41-5=rhenana.

pellida, ♀ Costa, Faun. Asprom. pl. i. 2; O. rhenana, var. pellida, Hag.
Stet. Ent. Zeit. xvi. 268, pl. i.

rhenana, Imb. Bericht. x. 180; Hag. Stet. Ent. Zeit. xvi. 267, pl. i.; Burm.
N. Aust. 33; Mtl. Ent. Mo. Mag. i. 262, ii. 182; 1 Ein. Ent. Mo.
Mag. v. 83.

Trimeniana, 1 Mtl. Ent. Mo. Mag. iv. 177-8; Ein. op. cit. v. 83; ♀ im.

Oxyceph, Burm. (1839) [misprinted Oxyceph, Ramb. Nevr.] =Cenis.

†icolor, Burm. Handb. ii. 797=Cenis.

†icolor, Burm. Handb. ii. 797=Cenis.

†icolor, Burm. Handb. ii. 797; Har. Schael. 316; Sieb. Beil. xii. 3=Cenis,
Cenis, ♂ im.

VI. PALANGENIA, Burm. (1839); in Ephemera, Ol. Typ. P. longicauda.

alba, Say, in Baetis, Say; Hag. Am. Syn. 40=Baetis, ♀.

albicans, Burm. Handb. ii. 803; Pict. Ephem. 149, pl. xiii. 1-3; 1 Walk.
Cat. 548 (excl. ♀?); Hag. Am. Syn. Hist. 301=Campisura.

albiflora, 1 Walk. Cat. 554 (excl. var.); Hag. Am. Syn. Hist. 304=Campisura,
sura.

† albiflora var., 1 Walk. loc. cit.=Astheneus curvata, ♂ im.

annulifera, 1 Walk. Trans. Ent. Soc. N. S. v. 159=Hexagenia, ♀ im.

atrostoma, Web.; in Ephemera, Web.; Pict. Ephem. 157; Walk. Cat. 550;
Hag. Am. Syn. Hist. 301=Hexagenia?

bicolor, 1 Walk. Cat. 552; Hag. Am. Syn. 43=Siphurus, ♀ subim.

bitineda, Say in Baetis, Say; Walsh. Proc. Acad. Nat. Sc. Philad. 1862,
p. 373, & Proc. Ent. Soc. Philad. ii. 171-5, 189, 199=Hexagenia.

† bitineda, Hag. Am. Syn. 41=Hexagenia limbata.

Colombica, 1 Walk.; Hag. Am. Syn. list, 304=Leptophlebia, ♀ subim.

concinna, 1 Walk. Cat. 553=Leptophlebia cupida, ♂ im.

continua, 1 Walk. Trans. Ent. Soc. N. S. v. 199=Hexagenia albivitta,
♂ im.

curta, 1 Hag. Am. Syn. list, 301; for albiflora, var., Walk.=Astheneus.

decolorata, Hag. Am. Syn. 43=Hexagenia, ♀ subim.

doszalis, Burm. Handb. ii. 803, 1015; Pict. Ephem. 163, pl. xiii. 5; Walk.
Cat. 649; Hag. Am. Syn. list, 301=Astheneus, ♀.

[doszingeri, Hag. Am. Syn. list; not described.]

† doszingeri, Hag. Am. Syn. list; not described.]

† doszingeri, 1 Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 373, & Proc.
Ent. Soc. Philad. ii. 177=Hexagenia.

† doszingeri, 1 Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 373, & Proc.
Ent. Soc. Philad. ii. 177=Hexagenia.

PARASAXIA (continued).

- fuliginosa*, Georg. in *Ephemera*, Georg. = *longicauda*.
grisea, Hag. Zool.-bot. Ver. Wien, 1854, p. 227; insecta sedis.
lucida, 1 Hag. Ann. Syn. 40 = *fuliginea*, ♀ im.
horaria, Burm. Handb. ii. 803; Her. Scherf. 345; Stob. Det. xi. 3; Hag. Stet. Ent. Zeit. xxvi. 229; Loew, Verh. zool.-bot. Ges. Wien, xvi. 947 = *Polymeris virgo*.
humeralis, 1 Walk. Cat. 552 = *Coloburra*, ♀ subim.
indica, Piet. Ephem. 151, pl. xiii. 4; Walk. Cat. 519 = *Polymeris*, ♀ im.
interjuncta, Say, in *Boettl.*, Say; Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 374, & Proc. Ent. Soc. Philad. ii. 177, 190 = *Hypogentia*.
Java, 1 Walk. Cat. 550, ♂.
latipennis, 1 Walk. Cat. 554 (excl. var.); Hag. Ann. Syn. list, 304 = *Compurra*, im., subim.
limbata, 1 Piet. Ephem. 146, pl. xii.; Walk. Cat. 548; 1 Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 373, & Proc. Ent. Soc. Philad. ii. 166, 166, with No. 2 = *Herogenia*.
 † *limbata*, Hag. Ann. Syn. 42 = *Herogenia bifurcata*.
longicauda, Ol. in *Ephemera*, Ol. (Swann, 1675; ed. Tyson, p. 44, pl. i. v. 2 [quod] pl. v. 1. 3 et seq. viii. fac. 3; Blegny, 1689; Scherf. loc. cit. pl. ecir. 3); Burm. Handb. ii. 803; Her. Scherf. 345; Piet. Ephem. 155, pls. xiv. xiv bis, xvi.; Germ. (1848); Walk. Cat. 553; Hag. Stet. Ent. Zeit. xv. 316-9, xx. 431; Loew, Verh. zool.-bot. Ges. Wien, xi. 409-10.
macrops, Piet. Trait. d. Paleont. II. ii. 371; Hag. Verh. zool.-bot. Ver. Wien, 1854, p. 227; Piet. & Hag. Orig. Rest. im. Derris. ii. 74, pl. vi. 2 b, pl. viii. 5 = *Polymeris*.
nudata, 1 Walk. Cat. 551 = *Ephemera guttulata*, ♀ subim.
obscurosa, 1 Walk. Cat. 553 = *Leptophlebia*, ♂ im.
occidentalis, 1 Walk. Cat. 551; Hag. Ann. Syn. 43 = *Herogenia bifurcata*, ♀ subim.
patiens, 1 Walk. Cat. 553 = *Leptophlebia cupida*, ♀.
pellata, Piet. Ephem. 145, pl. xi. 4-5; Walk. Cat. 548; Hag. Ann. Syn. 40 = *Compurra*, ♀ im.
putellata, Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 375, & Proc. Ent. Soc. Philad. ii. 177, 203 = *Herogenia*.
Sarigny, Piet. Ephem. 157; Walk. Cat. 550 [not described] = *Polymeris*.
terminata, Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 376, & Proc. Ent. Soc. Philad. ii. 177 = *Herogenia putellata* ?
umbata, Hag. Ann. Syn. list, 304; not described.]
virgo, Ol. in *Ephemera*, Ol.; Piet. Ephem. 141, pl. ix. xi. 3; Villa, 1647, 1-6; Walk. Cat. 547; Letzner, 1851; Burm. N. Aust. 25; Oul. 1867, p. 26; Ausser. Neur. Tirol. 132 = *Polymeris*.
viridescens, 1 Walk. Cat. 550 = *Herogenia bifurcata*, ♀ subim.
vittigera, 1 Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 373, & Proc. Ent. Soc. Philad. ii. 174 = *Pentogenia*.
vitrea, 1 Walk. Cat. 555 = *Herogenia*, ♀ subim.

ROV. A. E. FATOR'S MONOGRAPH

- VII. *PARASAXIA*, Walsh (1863); in *Palingenia* (A), Walsh (1862).
 Typ. *P. vittigera*.
quadripunctata, Walsh, Proc. Ent. Soc. Philad. ii. 198, note 16; subim., ♀ im.
vittigera, 1 Walsh; in *Palingenia*, Walsh.
 V. *PARASAXIA*, Elm. (1868); in *Ephemera*, Ol.; *Palingenia*, Burm. Typ. *P. virgo*.
indicus, Piet.; in *Palingenia*, Piet.; ♀ im.
macrops, Hag.; in *Palingenia*, Hag.
Sarigny, 1 nov. sp. (Sarigny, pl. ii. 5, *Ephemera*; in *Palingenia*, Piet.; not described).
virgo, Ol.; in *Ephemera*, Ol.; *Palingenia*, Piet.
 XI. *PARASAXIA*, Piet. (1843-5); restricted, Elm. (1868); in *Ephemera*, aut.—Typ. *P. luteus*.
canus, Piet. Ephem. 229, pl. xxxiii.; Walk. Cat. 545 = *Ephemerella*, ♀ im.
annulatus, Hag. Ceyl. Syn. i. 476 = *Leptophlebia*, ♂.
opicalis, Ste., in *Ephemera*, Ste.; Piet. Ephem. 236; Walk. Cat. 544 = *Ephemerella ignita*, ♂ im.
brunneus, Piet. Ephem. 217, pl. xxvii.; Walk. Cat. 542 = *Leptophlebia fusca*.
castaneus, Piet. Ephem. 215, pl. xxvi. 4, 5; Walk. Cat. 542 = *Leptophlebia*, ♀ im.
cinctus, Reitz, in *Ephemera*, Reitz; Piet. Ephem. 219, pl. xxviii. (excl. 5); Walk. Cat. 543; Burm. N. Aust. 27; Hag. Brit. Syn. 20; Ausser. Neur. Tirol. 137 = *Leptophlebia*.
concinus, 1 Walk., in *Palingenia*, Walk.; Hag. Ann. Syn. 51 = *Leptophlebia cupida*, ♂ im.
costalis, Burm., in *Boettl.*, Burm.; Piet. Ephem. 207; Walk. Cat. 546 = *Leptophlebia*, subim.
cupida, Say, in *Ephemera*, Say; Hag. Ann. Syn. 51; Walsh, Proc. Acad. Nat. Sc. Philad. 1862, p. 372, & Proc. Ent. Soc. Philad. ii. 172, 189, 194, notes 14, 15 = *Leptophlebia*.
dilatatus, Ste., in *Ephemera*, Ste.; Walk. Cat. 545; Hag. Brit. Syn. 19; [misprinted *dilatatus*, Piet. Ephem. 236] = *Ephemerella ignita*.
dispar, 1 Ste., in *Ephemera*, Ste.; Piet. Ephem. 234; Walk. Cat. 542 = *Leptophlebia heterops*, ♂ im.
erythrothlaminus, Schr., in *Ephemera*, Schr.; Piet. Ephem. 222, pl. xix. (misprinted *erythrocephalus*) aquat., pl. xxx.; Walk. Cat. 544; Hag. Brit. Syn. 21 = *Ephemerella ignita*.
espectans, 1 Walk. Trans. Ent. Soc. N. S. v. 198 = *Ephemera*, ♀ subim.
fasciatus, 1 Hag. Ceyl. Syn. i. 476 = *Ephemera*.
femoratus, Hag. loc. cit. = *Leptophlebia*.
horreus, Piet. Ephem. 203, pl. xxv. 1; Walk. Cat. 539; ♂ im.
fuscus, Curt., in *Ephemera*, Curt.; Piet. Ephem. 235; Walk. Cat. 543; Hag. Brit. Syn. 19 = *Leptophlebia*.
Geordi, Piet. Ephem. 211, pl. xxvi. 1-3; Walk. Cat. 541; Burm. N. Aust. 27; Hag. Brit. Syn. 18; Ausser. Neur. Tirol. 136 = *Leptophlebia heterops*.
globus, Piet. Ephem. 226, pl. xxxi.-xxxii. (aer.); Walk. Cat. 544 = *Ephemerella*.
hatteratus, Feb., in *Ephemera*, Feb.; Piet. Ephem. 236; Walk. Cat. 540 = *Leptophlebia cinctus*, ♂ im.

POTAMANTHUS (continued).

- heteripes*, ! Ste., in *Ephemera*, Ste.; *Pict. Ephem.* 235; *Walk. Cat.* 513=
Leptophlebia, ♀ im.
hyalinus, Zett., in *Ephemera* (Thyridata), Zett.; *Pict. Ephem.* 237=*Lepto-*
phlebia cinerea.
inanis, Gmel., in *Ephemera*, Gmel.; *Pict. Ephem.* 235; *Walk. Cat.* 514=
Leptophlebia cinerea, ♂ im.
inanis, *Pict. Ephem.* 232, pl. xiv. 4; *Walk. Cat.* 517; *inocellus* sedis
 (allied to *Tricorythus*); *Gen. XIII.*
Kriegeri, Stein, *Berl. Ent. Zeit.* vii. 414=*Leptophlebia*?, im.
luteus, Lin., in *Ephemera*, Lin.; *Pict. Ephem.* 205, pl. xxv. 2, 3; *Walk.*
Cat. 539; *Hug. Stet. Ent. Zeit.* xxii. 229.
marginalis, Lin., in *Ephemera*, Lin.; *Hug. Brit. Syn.* 17, & *Stet. Ent.*
Zeit. xxvi. 229=*Leptophlebia*.
 † *marginalis*, *Pict. Ephem.* 208, pl. xxv. 4, 5; *Walk. Cat.* 540; ? *Oul-*
minor, ! Ste., in *Ephemera*, Ste.; *Pict. Ephem.* 237; *Walk. Cat.* 516=
Leptophlebia fusca, ♀ im.
modestus, ! *Hug. An. Soc. Ent. Fr.* 1864, p. 39=*Leptophlebia*.
rebullans, ! *Walk.*, in *Palingenia*, *Walk.*; *Hug. Ann. Syn.* 52; *Walsh,*
Proc. Ent. Soc. Philad. ii. 193, note 13, 194, note 15=*Lepto-*
phlebia, ♂ im.
odoratus, *Walsh*, *Proc. Acad. Nat. Sc. Philad.* 1862, p. 372, & *Proc. Ent.*
Soc. Philad. ii. 171=*nebulosus*, ♂ im.
priscus, *Pict. Trait. d. Paleont.* II. ii. 371; *Hug. Verh. zool.-bot. Ver-*
Wien, 1834, p. 227; *Pict. & Hug. Org. Nocte im Bernst.* ii. 77, pl.
 vi. 3, b=*Leptophlebia*.
rosens, Ste., in *Ephemera*, Ste.; *Pict. Ephem.* 236; *Walk. Cat.* 545=
Ephemeroidea ignita, im.
stigma, ! Ste., in *Ephemera*, Ste.; *Pict. Ephem.* 235; *Walk. Cat.* 541=
Leptophlebia marginata, ♂ im.
submarginatus, ! Ste., in *Ephemera*, Ste.; *Pict. Ephem.* 236; *Walk. Cat.*
 545=*Leptophlebia heteripes*, ♀ im.
talcosus, ! Ste., in *Ephemera*, Ste.; *Pict. Ephem.* 234; *Walk. Cat.* 541=
Leptophlebia nigrinata, ♀ im.
 † *Saxanus*, *Pz. Expl. Schatz. Ic.*
 † *marginalis*, *Pz. op. cit. Ic. cit.* = *Palingenia longicauda*.
 XXI. *Syrinx*, *Elm.* (1868) [mis-spelt *Styloxenus*]; in *Beetis*,
Say; *Ephemera*, Zett.; *Palingenia*, *Walk.* *Typ. S. faevidae*.
alternatus, *Say*; in *Beetis*, *Say*; *Beetis* (A), *Walsh*.
annulatus, ! *Walk.*; in *Beetis*, *Walk.*
aridus, *Say*; in *Beetis*, *Say*; *Beetis* (B), *Walsh*.
crinitus, ! *Elm.* *Trans. Ent. Soc.* 1870, p. 6; ♂ im.
vicolor, ! *Walk.*; in *Palingenia*, *Walk.*
 ? *debitis*, *Walsh*; in *Beetis* (C), *Walsh*.
femoratus, *Say*; in *Beetis*, *Say*; *Beetis* (A), *Walsh*.
foetus, ! *Ed. Pict.*; in *Beetis*, *Ed. Pict.*
laevistris, ! *Elm.* *Trans. Ent. Soc.* 1870, p. 7.
Linnæus, ! *nov. sp.*; ♂ im.
 ? *siccus*, *Walsh*; in *Beetis* (B), *Walsh*.
 XIV. *Truncorhynchus*, *Elm.* (1868); in *Ephemera*, *Savigny*; *Ceratis*, *Pict.*
caricula, *Pict.*, *Savigny*, pl. ii. 6, 7; in *Ceratis*, *Pict.*

Fossil Ephemeroidea.

The oldest known fossil of this Family has been discovered in the Solenhofen slate. It is a fragment of a wing [Pl. I, fig. 10] and is in the British Museum. The best preserved of the extinct *Ephemeroidea* are those found in Slethin Amber. These species are such as would be likely to occur in a large river. They differ but slightly from extant species, and some of them are referable to recent European genera.

Many remains of insects from formations older than the Tertiary have been referred to the *Ephemeroidea*, but with doubtful accuracy. The following works contain notices of such fossils.

1845. Brodie's History of Fossil Insects, p. 127, pl. x. 4. [The actual specimen is in the British Museum; it exhibits an affinity to the *Planipennis*.]

1856. F. Gollenberg, in *Duncker & Meger's Paläontographica*, iv. 33-5, pl. iii. 5 & vi. 5, 6, described and figured three species of a genus *Didymoneura*.

[I consider this genus not to belong to the *Ephemeroidea*, because the subcosta ends abruptly at the nodus in the anterior wing; and because the thickened basal venule is absent. Dr. Dolin ranks it with *Eugereon*.] 1861. H. A. Hagen, in *Meger's Paleontogr.* x. 115-119, pl. xv. 2, 3, 5, described and figured *Ephemera cellulosa*, *E. ? procerca*, and *E. morinda*, together with *E. priscæ* (*Syn. Scintilla priscæ*, *Germar*, *Nov. Act. Leopold.* xix. 211-212, pl. xxiii. 11; *Id.*, *Giebel*, *Insect. d. Yorck*, p. 230; *Dentischl.* *Peiretanka*, p. 610). [*Cethalosa* and *procerca* have since been referred to *Pedegoneura*. It is impossible to determine the nature of the others, from the figures.]

1854. J. D. Dana, in *Silliman's American Journal of Science*, xxxvii. 34, described the genus *Atantia* and *Zemmersta*.

[In 1866, Mr. S. H. Scudder erected a Family *Paleopterina* for those. Dr. Branner, in 1866, cited them amongst the *Ephemeroidea*. Perhaps these genera are related to the *Planipennis*, as Mr. McLachlan suggests, or perhaps (but this is hardly probable) to *Didymoneura*.]

1868. Dr. A. Dolin, in *Meyer's Palæontogr.*, gave a figure and description of *Eugereon Beckingii*. [He referred it to the same group as *Didymoneura*. Dr. Branner, in the same year, ranked it amongst the *Ephemeroidea*. The condition of the mouth-organs clearly separates it from the *Ephemeroidea*; and the neutration of the wings favours Dr. Dolin's determination of its relationship.]

1867. J. W. Dawson, in the *Geological Magazine*, iv. 385-388, pl. xvii. 1-5, described and figured *Haplophlebitum Barnesi*, *Platphemera antiqua*, *Homocheilus fossilis*, and *Xenoneura antiquorum*. [They have all been regarded as allies of the *Ephemeroidea*. *Haplophlebitum*, however, on account of the well-marked nodus in the fore-wing, and the character of the reticulation between the principal longitudinal nervures is, I think, related to *Didymoneura* and *Eugereon*; *Platphemera* and *Homocheilus* may possibly be of the *Ephemeroidea*, but there is nothing in the figures to make this certain; and there is no reason for considering that *Xenoneura* belongs to this Family.]

1868. S. H. Scudder, in Geol. Mag. v. 175-7, and 218-19, catalogued three genera in addition to those of Prof. Dawson's paper. [*Geryoneura simplex* is represented by a slight fragment of the tip of a wing; the wing must have been large and broad; the veins distant, weak and simple. It is apparently a member of the family Ephemeroidea." *Platophanera antiqua* is referred to the same family, although the base of the wing is wanting, as well as a piece of the tip. A fragment of what is "probably" a portion from the middle of a wing is named *Dyscritia's reticulata*, notwithstanding that "it is impossible to determine" from it "either the approximate size of the insect, or the family to which it belongs." *Lithocnema Horviti* is also described. Mr. Scudder correctly observes at p. 218, that *Platophanera medietata*, Hitchcock (previously named *Memobricoides antiquum*, Hitchcock) is not a nymph of an Ephemeroidea].

1868. S. H. Scudder described, in the Paleontology of Illinois, p. 571-2, figs. 8-16, a genus *Ephemeroidea* with two species, *E. gigas* and *affinis*, which he ranks among the Ephemeroidea.

Paleontologists have adopted a ridiculous course with regard to some insect fossils. Whenever an obscure fragment of a well-reticulate insect's wing is found in a rock, a genus is straightway set up, and the fossil named as a new species. The species is then referred to the *Ephemeroidea*, and is immediately pronounced to be a synthetic type of insects at present distantly related to one another in organization. This enunciation of synthetic types is often nothing less than a resort to random conjecture respecting the affinities of animals which the writer is at a loss to classify. An insect allied to the *Ephemeroidea* which chirped like a Locust (such as *Xenoneura* is imagined to have been), is a tolerable sample of these synthetic types.

When a fossil comprises only a fragment, or even a complete wing of an Ephemeroidea, it is hardly possible to determine the genus, and impossible to assert the species. The utmost that can be learned from such a specimen is the approximate relations of the insect. Nomenclature by itself is not sufficient to define the species or even the genera of recent *Ephemeroidea*.

The following list contains the names of the fossils hitherto reputed *Ephemeroidea* upon questionable grounds. I shall take no further notice of them.

- Genus DICTYOSPERMA, Goldenb. 1856.
- anthracophita*, Uddenb. 1856.
- cellulosa*, Hag. 1861.
- Humboldtiana*, Goldenb. 1856.
- lichthidites*, Goldenb. 1856.
- procerus*, Hag. 1861.

Genus DISCARTEUS, Send. 1863.

retusus, Send. 1863.

Genus EPERMERA, Hag. 1861; (nec Lin.).

cellulosa, Hag. 1861 = *Dichoneura*.

? *notata*, Hag. 1861; incertae sedis.

prisca, Germar, Hag. 1861; vide *Sciaria*.

procerus, Hag. 1861 = *Dichoneura*.

Genus EUEREMERUS, Dolm.

beckingii, Dolm. 1868.

Genus EUPHEMERITES, Gemilz, Hag. 1865; in Leonhard & Gemilz, Jahrb. f. Mineral. &c., 1865, p. 355 [Brauer].

Genus EUPHEMERITES, Send. 1863.

affinis, Send. 1863.

gigas, Send. 1863.

Genus GERSPERMERA, Send. 1863.

simplex, Send. 1863.

Genus PARROPIEDERUS, Dawson, 1867.

parvius, Dawson, 1867.

Genus HEMERISMA, Send. 1864.

Brownsoni, Send. 1864.

Genus HOMOTHEUS, Dawson, 1867.

fossilis, Dawson, 1867.

Genus LITHENOTOCORUS, Send. 1863.

Harti, Send. 1863.

Genus MIMULA, Send. 1864.

Brownsoni, Send. 1864.

Genus MONOLOCODES, Hitchcock.

antiquorum, Hitchcock.

Genus PALERPERERA, Hitchcock = *Monolocoides*.

mediata, Hitchcock = *M. antiquorum*.

Genus PLATERPERERA, Dawson, 1867.

antiqua, Dawson, 1867.

Genus SCIARIA, Germar.

prisca, Germar; cf. *Ephemera*, Hag; *incertae sedis*.

Genus XENONEURA, Dawson, 1867.

antiquorum, Dawson, 1867.

Family EPHEMERIDÆ.

(ARRIETRA, Brullé; ANISOTETRA, Stephens).

The *Ephemeridae* are hexapod insects which have many-jointed caudal setae; which carry their fore-wings erect and unfolded; and which in the imago have abortive mouth organs.

Antennae aristate; the basal two joints the largest, the bristle many-jointed. Ocelli three. Ocelli compound or complex. Legs slender, the anterior pair the longest; tarsi distinctly jointed, terminated by claws. Anterior wings large, creased lengthwise, but never folded together; costa united by a stout cross-veinlet to the radius near the base of the wing; subcosta uninterrupted at the nodus. Posterior wings sometimes absent, sometimes rudimentary, at the utmost small. Abdomen ten-jointed: the first abdominal segment joined immovably to the metathorax; the ninth provided in the male with a pair of abdominal legs in the form of claspers (forceps); the tenth bearing (two at the fewest, three at the most) multifurcate caudal setae, which are used as balancers; the alimentary canal straight, apparently destitute of salivary glands, and inflated with gas; many short excretory tubules are appended to the large intestine; the penis is situate at the apex of the ninth segment, and is either hidden or exposed; the oviducts terminate in the joining of the eighth and seventh segments.

In coition, the male flies under the female and seizes her prothorax with his elongate anterior legs, simultaneously bending the tip of his abdomen upwards and forwards, and clasping the proper segment of her body with his forceps. During their connexion, which is of brief duration, the pair are chiefly supported by the female, and they gradually descend slowly in the air, sometimes even to the ground. When they separate, the male rejoins his companions. The female retires to the water, and deposits the eggs impregnated, settling again and again upon the surface of the water with extended setae, until the extruded eggs become detached from the rest. This done, she, in some genera, returns to the general assembly, and pairs again, and then again deposits eggs; and so on, until all the eggs are disposed of: thus the same female may be served by several males; and likewise the same male may frequently serve several females,

not being exhausted by one union. But in other genera, the coitus once consummated, the eggs are deposited in one mass altogether.

The egg laid in the water, after some time develops into a nymph, which at first has only the two outer caudal setae, and respire through the integument at large. But, subsequently, when the nymph increases in bulk, special breathing organs grow out from the posterior-lateral region of some of the abdominal segments, as well as from the hinder segments of the thorax. These are usually lamellar in form, and nearly always external. The thoracic out-growths persist as the wings; those belonging to the abdominal segments are deciduous with the integument, and they are not reproduced after the insect emerges from the water as the sub-imago.* A cloaca at the end of the intestine is a supplementary breathing organ. From the tenth segment, between the two setae first formed, a third seta grows, which in some genera is afterwards cast off at the same time as the mouth-organs, and the gills. The tarsi are jointless, and end in a movable claw. The food of the insect is obtained from the large quantities of mud which it swallows.

The adult nymph sometimes floats on the surface of the water, with the dorsum of the thorax exposed to the air, buoyed up by gas which at that time accumulates between the old and the young integuments, and in the emptied alimentary canal: and sometimes it crawls a short distance out of the water. In either case, the thorax opens along the middle dorsal suture. Through this opening the subimago extricates its head and fore-legs from the old skin: the wings suddenly expand fully; the hinder legs are freed, and then the insect creeps out, and flies heavily to some convenient resting place, where on alighting it assumes the posture characteristic of its genus. In some genera, the subimago is the permanent aerial state of the female; in most cases, however, the subimaginal pellicle is cast sooner or later, according to the temperature of the air and the habit of the genus. The dingy appearance of the subimago, the comparative shortness of its setae and tarsi, and the ciliate terminal border of the wings, nearly always distinguish it from the imago.

* The term "pseudimago" used by some authors is spurious, and "subimago" has precedence over "pro-imago."

It is well known that, in some genera, differences between the sexes are apparent in the oculi, setae, and tarsi. The oculi are always smallest in the female, and in the male are sometimes divided into two parts. The female usually has shorter setae than the male. The middle seta is often shorter than the two outer setae, or altogether absent. Sometimes the male wants the middle seta, whilst the female has it equal to, or only shorter than, the others; frequently neither sex possesses the central seta. The proportions of the tarsal joints of the male are not the same as those of the female; and his anterior legs exceed hers in length.

The composition of the abdomen of *Ephemeroidea* has been the subject of much dispute. Some consider it to be ten-jointed, others reckon nine joints. The "tenth joint" throughout this paper means the dorsal arcs immediately above the setae, the part from which the setae proceed, and the ventral arc often formed of two valve-like pieces under the anus—the intermediate appendices of M. Pictet. The ninth joint is that which bears the forceps in the male, and which, in the female, is sometimes prolonged behind into a broad lobe beneath, concealing the tenth joint. This lamina has been mistaken for the egg-valve in some species. The eighth joint is the first posterior to the opening of the oviducts. From the apical edge of the seventh joint, beneath, the egg-valve grows out. The next five segments are not peculiar in joint of structure. The first joint is immovably united with the metathorax, and often resembles it in colour. Hence certain Entomologists have reckoned this joint a part of the thoracic region. That this joint belongs to the abdomen may, however, be demonstrated in the nymphs of some genera, in which it is furnished with a moveable pair of branched plates. Now the branched out-growths of the thorax are always fixtures in the nymph. In certain four-winged genera, those branched plates of the first segment are present, and may be contrasted with the rudimentary hind-wings.

In drying, the colour and form of *Ephemeroidea* soon change. Colour is of little importance, even in fresh examples; but form is necessary to the distinguishing of the species. They are, therefore, best preserved in a liquid. It is sufficient for ordinary purposes to dip the freshly-killed specimen into dilute spirits, and then

transfer it to a tube, or haemorrhagic globule bottle, partly filled with water. Next, Price's glycerine is added to the water,—one or two drops a day,—until the bottle is gradually filled. A small drop of acetic acid may be added finally, to prevent the growth of mould. The name of the species may be written on the disk of the cork, the date and locality of capture round its side. Hind-wings of the species of *Baetis* and *Gentophetium* should be mounted on slips of glass, for microscopic examination. Pinned specimens are often difficult to determine, in consequence of their shrinking; to card them is to render them fit for nothing.

GENERAL DISTRIBUTION GEOGRAPHICA.

Symbols () species fossilis, [] nondescriptis, claudant.

	Europa.	America.	Asia.	Africa.	Austral- asia.	Oceania.
Oligoneuria	2 ♀	1	0	1	0	0
Tachania	0	1	0	0	0	0
Campanus	0	6	0	0	0	0
Asthenopus	0	2+[1]	0	0	0	0
Polymitareys	1+(1)	0	0	1+[1]	0	0
Palligenia	1	1	1+[2]	1+[1]	0	0
Pentagenia	0	2	0	0	0	0
Hexagenia	0	5	[1]	0	0	0
Euthyplocia	0	1	0	0	0	0
Ephemera	4	3+[1]	0	0	0	0
Potamanthus	2	0	0	0	0	0
Leptophlebia I	0	0	3	2	9	0
" II	0	1	0	0	0	0
" III	7+(1)	2	0	0	0	0
" IV	0	2	0	0	0	0
" V	2	0	0	0	0	0
Coans [XIII]	0	0	0	0	0	0
Tricoerthus	0	0	0	1	0	0
Gams	0	2	1	1	0	0
Ephemereilla	6	2	0	0	0	0
Baetis	0	1	0	0	0	0
Glocon	5	4	1	0	[1]	0
Centropeltium	4	1	1+[1]	1	0	0
Baetis	16	13+[2]	0	0	0	0
Siphurina	3+[2]	7 ♀	1+[1]	[1]	[2]	0
Genus [XXII]	0	0	0	0	0	0
Isocyba	0	1+1	0	0	0	0
Coloburus	0	0	0	0	2	0
(Gronicus)	(1)	0	0	0	0	0
Hydracma	20	16	0	0	0	2

SPECIENUM DISTRIBUTIO GEOGRAPHICA.

Symbola () species fossiles, [] ambigue definitas, claudant.

<i>Oligoneuria anomala</i> . . .	Rio Janeiro.
" <i>rhonana</i> . . .	Germany; Turin.
" [pallday] . . .	Hungary.
" <i>tridentina</i> . . .	Umroi; District, Natal.
<i>Lachania anomalis</i> . . .	Cuba.
<i>Campystrus latipennis</i> . . .	Pará.
" <i>albiflora</i> . . .	Pará.
" <i>albicans</i> . . .	Brazil.
" <i>cuspidatus</i> . . .	Gnatemala.
" <i>quadridentatus</i> . . .	Santarem, Brazil.
" ? [pocell] . . .	New Orleans.
<i>Asiencopus curtus</i> . . .	Pará.
" <i>arsenilis</i> . . .	Brazil.
<i>Polyneura virgo</i> . . .	France; Germany; Madrid.
" <i>Savignii</i> . . .	The Nile.
" <i>indicus</i> . . .	Hindostan.
" (macrops) . . .	Fossil in Amber.
<i>Palingenia longicauda</i> . . .	Central Europe; Caucasus.
" <i>lata</i> . . .	Sibbet; Sarawak.
<i>Pentagenia vittigera</i> . . .	Illinois; Texas.
" <i>quadripunctata</i> . . .	Illinois.
<i>Hexagenia albivittæ</i> . . .	The Amazonas; Texas.
" ? [atrostoma] . . .	Brazil.
" <i>humbata</i> . . .	Matamoras; Tawanhipas.
" <i>bilineata</i> . . .	Texas; Illinois; Maryland.
" . . .	Hudson's Bay Terr.; Canada; Texas; Mexico; Illinois.
<i>Euthyplocia Beccba</i> . . .	Vera Cruz; Mexico; Veraqua.
<i>Ephemera vulgata</i> . . .	Northern & Central Europe.
" <i>guttulata</i> . . .	Albany River; Canada; Northern United States.
" . . .	Illinois; New York.
" <i>larcola</i> [nyrops] . . .	Illinois.
" <i>limbata</i> . . .	S. England; France; Switzerland.
" <i>larvica</i> . . .	Northern & Central Europe & Spain.
" <i>glaucoeps</i> . . .	Moscow; Germany; Switzerland; North Italy.
" <i>immaculata</i> . . .	Cuna, Hindostan.
" <i>exspectans</i> . . .	Hindostan.
" <i>fasciata</i> . . .	Ceylon; Masuri, North India.
" <i>sericea</i> . . .	North China.
<i>Potamanthus tubans</i> . . .	England; France; Germany.
" <i>Ferreri</i> . . .	Turka.

<i>Leptophlebia australis</i> . . .	Tasmania.
" <i>australasia</i> . . .	Sidney; (Moreton Bay?).
" <i>fulvicornis</i> . . .	Melbourne?
" <i>incouspicua</i> . . .	Adelaide.
" <i>dentata</i> . . .	New Zealand.
" <i>strigata</i> . . .	New Zealand.
" [costalis] . . .	North Australia.
" <i>nodularis</i> . . .	Christ Church, New Zealand.
" <i>seita</i> . . .	New Zealand.
" <i>Taprobanes</i> . . .	Ceylon.
" <i>annulata</i> . . .	Rainbodge, Ceylon.
" <i>femorialis</i> . . .	Rainbodge, Ceylon.
" <i>dislocans</i> . . .	Cape of Good Hope.
" <i>auriculata</i> . . .	Cape of Good Hope.
" <i>Colombica</i> . . .	British Columbia.
" <i>marginata</i> . . .	Temperate & Arctic Europe & America.
" <i>helvipes</i> . . .	Et. Britain; Germany; Switzerland.
" <i>castanea</i> . . .	Villeneuve, Vand.
" <i>Freresi</i> . . .	Greece.
" <i>Picteti</i> . . .	Geneva.
" <i>(prisci)</i> . . .	Fossil in Amber.
" <i>cineta</i> . . .	Northern & Temperate Europe.
" <i>vespertina</i> . . .	Scandinavia.
" <i>molis</i> . . .	West Farms, New York.
" <i>cupida</i> . . .	Nova Scotia; Cincinnati; Washington.
" <i>nebulosa</i> . . .	Albany River; Illinois.
" <i>fusca</i> . . .	Et. Britain; Switzerland.
" <i>modesta</i> . . .	Carinthia; Corsica.
" <i>Gen. XIII. inanis</i> . . .	Brazil.
<i>Tricoerthus varicanda</i> . . .	Upper Egypt.
<i>Oecis macrura</i> . . .	Temperate Europe.
" <i>chloromiformis</i> . . .	England; Passai; Geneva.
" <i>dilatata</i> . . .	Temperate Europe.
" <i>diminuta</i> . . .	E. Florida.
" <i>hilaris</i> . . .	Indiana.
" <i>pepusilla</i> . . .	Ceylon.
" [discolor] . . .	Cape of Good Hope.
" [argentalata] . . .	Sialty.
" <i>hictuosa</i> . . .	Sardinia.
" <i>Ephemeraella ignita</i> . . .	England; Berlin; L. of Thun.
" <i>Gibba</i> . . .	Temperate Europe; Madrid.
" <i>lancea</i> . . .	Villeneuve, Vand.
" <i>invaria</i> . . .	Mt. Salève, Geneva.
" [concolorata] . . .	Nova Scotia; Illinois.
" <i>obesa</i> . . .	Illinois; Indiana; Upper California.
<i>Betisca diphyra</i> . . .	Europe; the Madagras; Egypt.
" <i>simile</i> . . .	England.
" [submissicatum] . . .	Provence.

Clocon	[obscurum]	France; near Paris?
"	russicum	Europe; North China.
"	meritx	Illinois.
"	dubium	Illinois.
"	vicinum	Washington.
"	viripennis	Chile.
Centrophthum	intercolum	Allen; Temperate Europe.
"	pennulatum	England.
"	hiuratum	Mt. Salève, Geneva.
"	stenopteryx	Carinthia.
Lactis	binoctatus	Temperate & Arctic Europe; Hudson's Bay Territory.
"	debilis	Hindustan.
"	scambus	England.
"	fulvipes	Val Montjoie.
"	alveolatus	England.
"	Rhodani	Temperate Europe; the Madeiras.
"	phreops	England.
"	tenax	England.
"	heterotris	England.
"	annicus	Mt. Blanc District.
"	alpinus	Val d'Entrevaux; Faucigny.
"	melanonyx	Temperate Europe; Madrid; Corsica.
"	pumilus	England; ? Sweden.
"	niger	Sweden.
"	[uliciformis]	Sweden.
"	[speciosus]	ineog. (Europe).
"	fusus	Messina.
"	posticatus	Shippingport.
"	unicolor	Illinois; Washington; ? Porto Rico.
"	probulgus	Illinois.
"	[veridis]	Indiana.
"	hyemans	The S. Lawrence.
"	fructans	Illinois.
"	piclus	Texas.
"	undatus	Red River; New York; Mexico.
"	fasciatus	Brazil.
"	ferrugineus	Illinois.
"	[albus]	Vancouver River.
"	[?]	Deville on the Passaic.
"	[Ephoron leukon]	Spain.
Siphurans	flavivus	Ireland; England.
"	armatus	Wales.
"	lucustris	ineog.
"	lanucannus	Freonk Falls, New York.
"	annulatus	Albany River.
"	[ulceor]	Illinois; Ohio.
"	ferocitars	Illinois; S. Peter's River; Washington.
"	alternatus	Illinois; Indiana.
"	aridus	Illinois; Indiana.

Siphurans?	sciens	Illinois.
"	debilis	Illinois.
"	[tristis]	Rainbowde, Ceylon.
Gen. XXII.	[consuetus]	Rainbowde.
"	[foliata]	Rainbowde.
"	[signata]	Rainbowde.
"	[marginatis]	Rainbowde.
"	manca	Texas.
Isonychia	[ignota]	? United States.
"	humeralis	Otago, New Zealand.
Coloburus	halenticus	? Melbourne.
"	anomalous	Fossil in Amber.
(Cronius	semicolorata	Gl. Britain; Switzerland; Austria.
Hephaegia	[feminitata]	Yersoy; Lake Lemna.
"	nivata	Mt. Blanc District.
"	borealis	Finmark.
"	canadensis	Canada.
"	fusa	Albany River.
"	cupulata	N. China.
"	bassalis	Lake Winnifac.
"	maculipennis	Illinois; New York.
"	orientata	Illinois.
"	simplex	Illinois.
"	putellata	Illinois.
"	[ferminata]	Illinois.
"	interpunctata	Illinois; Indiana.
"	aveseens	Illinois.
"	virea	Albany River.
"	[infirmans]	France.
"	flavipennis	England; France; Switzerland.
"	elegans	Temperate Europe; Hammerfest.
"	fluminum	Germany; Lake Lemna.
"	stylicola	Spain.
"	vollans	England.
"	alpicola	Mt. Blanc District; Carinthia.
"	iridana	Altvater.
"	fauvilliers]	Hindustan.
"	juridipennis	Albany River; S. Lawrence.
"	havetola	Tennessee; West Farms, New York.
"	vicaria	Canada.
"	[fessellata, Dug.]	Puget Sound; Washington.
"	venosa	Scandinavia; Corsica; and Temperate Europe.
"	longicauda	Cl. Britain.
"	[augustipennis]	Madrid.
"	Picteti	Tessin; Ober Engadine.
"	insignis	England.
"	montana	Mt. Brevent; Austria.
"	lateralis	England, Wales; Carinthia; ? I. Lemna;
"	[Bellieri]	Spain.
"		Sicily.

- Hemigenia zebra* Corsica.
- " [Guamata] "Circu aqueductum Polinarum Iden-
sim."
- " guttata Yalluvia, Chili.
- " torrida Philippine Isles.
- " determinata Java.

Thus, the number of described recent species of *Ephemeride* is about 178, exclusive of ten which are either hardly determinable, or probably mere conditions of well-characterised forms which have been otherwise named. There are three fossil species determinable.

ЭПHEMЕРИДЕН ГЕШУВУН НЕГЕСИВУН СЕЗУМА АНАЛИТИКА.

- 1 { Metathoracic wings present 4
- { Mesothoracic wings wanting 2
- 2 { 3 long subequal caudal setae 3
- { 2 long caudal setae; the third rejected; Gen. XXII. ♀ ?; Closon, Pl. II. f. 7.
- 3 { Cross-veinlets of wings numerous towards the anterior margin; Gen. XIII; *Tricorythis*, Pl. II. f. 3.
- { Cross-veinlets of wings disposed in very few transverse rows; Curtis, Pl. II. f. 4.
- 4 { Longitudinal venation of posterior wings considerably complex
- { Longitudinal venation of posterior wings sparse (2-3 principal nervures only) 5
- 5 { Lateral margins of the hinder abdominal segments simple
- { Lateral margins of the hinder abdominal segments produced into a slender subulate process on each side; *Lecklunia*, Pl. I. f. 1; *Oligoneuria*, Pl. I. f. 2.
- 6 { Posterior wings very narrow; *Centropodium*, Pl. II. f. 8.
- { Posterior wings oblong, obtuse; Gen. XXII. ♀ ?; *Doctis*, Pl. II. f. 9, Pl. III. f. 1.
- 7 { Posterior pairs of legs well developed 10
- { Posterior pairs of legs very short and feeble 8
- 8 { Cross-veinlets in the marginal area before the nodus of the anterior wing, few and indistinct 9
- { Cross-veinlets in marginal area before the nodus of anterior wing, numerous and well defined; *Polyntarctes*, Pl. I. f. 5.
- 9 { Terminal margin of anterior wing free from cross-veinlets; *Conspicua*, Pl. I. f. 4.
- { Terminal margin of anterior wing here and there met by cross-veinlets; *Aethocera*, Pl. I. f. 3.

- 10 { Ocelli green in both sexes 14
- { Ocelli in ♂ asenclaphoid; i. e., intersected by a slightly impressed line 11
- 11 { Penultimate segment in ♀ beneath prolonged into a short lamellar process 12
- { Penultimate segment in ♀ beneath simple; *Potamanthus*, Pl. II. f. 1.
- 12 { Proximal joint of leg of forelegs of ♂ short 13
- { Proximal joint of leg of forelegs of ♂ the longest; Gen. XXII. ♂ ?; *Leptophlebia*, Pl. II. f. 2-2c.
- 13 { Hinder tarsi 4-jointed; *Ephemera*, Pl. II. f. 5.
- { Hinder tarsi 5-jointed; *Coloburra*, Pl. III. f. 3.
- 14 { Penultimate segment in ♀ beneath prolonged into a short lamellar process 15
- { Penultimate segment in ♀ beneath simple 16
- 15 { Cross-veinlets crowded, well-defined; *Barisera*, Pl. II. f. 6.
- { Cross-veinlets regular, well-defined; *Kenyobia*, Pl. III. f. 4; *Hypogenia*, Pl. III. f. 5.
- 16 { 3 long caudal setae 17
- { 2 long caudal setae 18
- 17 { Cross-veinlets crowded, well-defined; *Euthyplocia*, ♀, Pl. I. f. 8.
- { Cross-veinlets regular, well-defined; *Pentagenia*, ♀, Pl. I. f. 6; *Ephemera*, Pl. I. f. 9.
- 18 { Hinder tarsi 5-jointed; *Siphonurus*, Pl. III. f. 2.
- { Hinder tarsi 4-jointed 19
- 19 { Middle seta very short; *Pentagenia*, ♂, Pl. I. f. 6; *Herzogenia*, Pl. I. f. 7.
- { Middle seta rejected; *Palingenia*.

Materials for a complete analysis of the genera of the *Ephemeroidea* are not at hand. Of some, only one sex is at present known: of others, only mutilated specimens deprived of legs, or examples with the legs shrivelled up in drying, so as to prevent their proportions being made out, are in European collections. Our grounds for establishing comparisons between the genera are consequently very limited.

In determining from the image the affinities of a genus, the principal points to be noted are,—First, the position of the anterior wing; Secondly, the structure of the hinder pairs of legs; and, Thirdly, sexual peculiarities.

In the nomenclature of the anterior wing, the most important features are the disposition of the nervures dis-

tributed to the inner and terminal margins. It should be noted whether the longitudinal neurition is sparse and simple, or plentiful and complex: next, whether the cross-veinlets are scanty or numerous (especially in the costal and subcostal areas before the node); and then, whether the interneural veinlets of the terminal margin (if there be any of them) are derived from the longitudinal nerves, or from the cross-veinlets, or from the terminal margin only; and if they are only from the margin, it should be ascertained whether they are solitary or in pairs. Minute details of neuritation are valueless; only the general aspect or style of the neuritation need be studied.

In the hinder pairs of legs, the length of the tibiae, as compared with the femora, should be noted; then the number of the tarsal joints, and the form of the ungues. If a fifth joint is present in the tarsus, its joining with the tibia may be obliterated, or indistinct, or clearly defined.

As to the sexual peculiarities, it is important to examine first the *ovuli*. Do the ocelli of the male differ from those of the female in size only? or are they also divided into two parts? If they are divided, it must be ascertained whether the divisions are only ascalaphoid (as in *Leptophlebia*), or whether the upper part is elevated into a turbinate protuberance (as in *Baetis*). Next the *forcipes sessile* should be examined. Are the legs of the forceps sessile (as in *Baetis*)? or are they inserted upon a lamellar extension of the penultimate segment (as in *Stiphodon*)? What are the relative proportions of their joints? It is also very important to note whether the female has or has not a lamellar extension of the ventral margin of the apex of the penultimate segment. Next the *setae* should be examined. Are their joints long, or short? Have they long or short pubescence towards their tips? Is the middle seta as long as the others in both sexes? or abbreviated in both, or rejected in both? Or is it rejected by, or abbreviated in, the male only? Then it should be noted whether the anterior legs of the male have the femora unusually short, or not; and whether the anterior legs of the female are well developed or rudimentary. It should be ascertained also whether the eggs are extruded all at once, or not.

Last of all, the form and neuritation of the posterior wings (if there be any) should be taken into consideration.

The abdomen may further be examined as to the mode in which the last segment is finished off beneath; whether by a simple membrane, or by plate-like folds of the integument beneath the insertion of the setae (as in *Ephemera* and *Baetis*). In *Tachlania*, *Oligoneuria*, and *Cenis*, the posterior segments are furnished at the tip with slender lateral processes; on account of this and other reasons (e.g., the structure of the setae), I am inclined to consider the first two genera to be allied to *Cenis* more closely than might be inferred from the arrangement of the genera adopted by me. *Heptagenia* is the only genus known which possesses a true egg-valve.

In the immature insect, the attitude assumed by the subimago during repose is of value in classification. The points to be noted are whether it elevates the anterior legs, or not. If it does, are they held together, or separated? Are the wings spread abroad, or held upright? Are the caudal setae laid together, or separated? The average duration of the subimago stage should also be taken into consideration. Does it last only a few minutes, or an hour or two, or a whole day, or longer? or is it the permanent state of the female?

In the nymph, the habit of the insect is of first importance. Does it burrow, or creep? or does it run and swim actively? These points can be inferred from the structure of its mandibles, legs (especially the anterior legs), setae, and antennae. Next in importance is the structure of the branchial organs. Are they laminae fringed with short slender processes? and, if so, are they simple (as in *Cenis*), or compound laminae (as in *Ephemera*)? Or are the laminae fringedless? If so, are the laminae simple (as in *Baetis*), or compound (as in *Cloeon*), or complex (as in *Ephemera*)? or are they furnished at the base with a fasciculus of branchial filaments (as in *Heptagenia*)? *Baetisca* has the branchial concealed under an extension of the dorsum of the thorax. The labium, with the two pairs of maxillae and their palpi, have next to be considered. Are the palpi of the lower maxillae two-jointed, or three-jointed? Last of all, the number and position of the branchial organs must be noted.

and their relative sizes. In some genera there is a minute pair of branchial processes on the first abdominal segment, which is very liable to be overlooked. Sometimes the anterior pairs of plates differ in texture and form from those of the segments behind them. These last items have more to do with the determination of the order of succession of genera closely allied to one another, than with the determination of the position of a genus in the family at large.

Arrangements of genera founded upon the structure of the imago, or of the nymph, alone, can be only temporary. The relations of genera can be definitely ascertained, only by taking into consideration all the peculiarities presented by the structure of representative species at the principal epochs in the course of their development from the eggs.

NOTANDA.

long. al. = longitudo costae alae antice.
exp. al. = expanseio alarum anteriorum.

set. = longitudo setarum caudalium: 4.ª, sub *Ephemerata fuligata* longitudo set. 33 & 31-32 & 36 mm. 1.ª, longitudo setarum exteriorum 33-32 mm., interiorum 34-36 mm.

mm. = millimetris; mensuræ Gallicæ adhibitæ.
lin. & sublin. = unguo et subungo.

Symbola descriptionibus præposita significant, —

v. s. = vivum specimen.

v. v. s. = vivum specimen vivum.

s. s. = specimen siccum.

v. s. s. = vivum specimen siccum.

! = vidi specimen genuinum siccum.

Cum terminologia doctoris Julii Müller, * terminologia colorum una et eadem est, præter in locis sequentibus: —

Testaceus et luridus concolores putantur.

Isabellinæ, Müll. = fulværens (*Anglice*, brn-colour).

Fuscæ et umbrinæ, Müll. similitudine olivæana et pistaciinæ, Müll. concolores esse putantur.

Ferruginous = *Anglice*, steel-blue.

Rubiginosus = *Anglice*, rust-red.

* Terminologia Entomologica. J. Müller. Bremen, 1860.

Genus *LACHLANIA*.

(Ala, Pl. I. fig. 1.)

Lachlania, Hag. 1868.

Imago ♀. Caput transversum, oculis subæqualibus; prothorax etiam transversus. Alæ quatuor. Setae duæ. In dentibus segmentorum abdominis latera producuntur.

Lachlania abnormis.

L. abnormis, Hag. 1868.

Imago ♀, s. s. "Fusca, sublus pallida, capite, prothorace atque pedibus nigris. Alæ griseæ, pellucide, crassioribus nervorum griseo-fuscis: in anticis prima, secunda, et quarta venarum longitudinalium furcatæ sunt, et serie unâ transversarum intersecantur; in posticis venarum tritæ longitudinalium media furcata est, et nervi transversales absunt. Setae albidæ." (Hag. abstract.)

Long. corp. ♀ 6-7, set. 5, exp. al. 13-19 mm.

Hab.—Cuba.

Dr. Hagen gives "ovivalvula transversa" as a character: but as he called the ventral process of the penultimate segment of *Leptophlebia* an egg-valve, it is uncertain whether *Lachlania* has a true egg-valve or not.

Genus *OLIGONEURIA*.

Oligoneuria, Pict. 1843-5.

Neuratio alarum, in hoc genere, pro singulâ specie diversa est.

Imago. Oculi integri; prothorax transversus. Alæ quatuor; antica nervis longitudinalibus robustis parum divisis, et nervis transversibus marginem costalem soluta et alæ apicem versus: in processu tenui libero basis alæ antica supra singulariter excurrit. Pedes debiles, tibiis anticis femoribus multo longioribus; tarsi prociptue infirmi, quadri-articulati, unguibus cæcis. Abdominis segmenta singula intermedia lateribus in processu tenui utrinque producta. Setae tres æquales. Pedes forcipis maris quadri-articulati, proximo articulorum longissimo. Ovipalvula femina caret.

The curious species comprised in this genus appear in considerable numbers towards evening. The males of the extra-European species being at present unknown, I have not separated the group, in spite of the differences of their wings. My divisions of the genus may be tabulated as follows:—

Ala antica radius et subcosta confluentes: nervorum longitudinalium sequentium primus—

et tertius bifidi; secundus obsolescens bipartitus:—

O. Trimeniana:

bipartitus; secundus simplex; tertius—
bifidus:—*O. rheinana* et *pallida*, (Pl. I. fig. 2).
simplex:—*O. anomala*.

Oligoneuria anomala.

O. anomala, Pict. 1843-5.

Imago ♀, s. s. "Corpus fuscum vel brunneum. Ala pallide griseae; antice nervi transversalibus circa sex. Setae longe pubescentes, pube sparsâ bases versus." (Hag.)

Long. corp. ♀ 13, set. 3, exp. al. 32 mm.

Hab.—Rio Janeiro (Koll. MS.).

Oligoneuria rheinana.

(Genitalia maris, Pl. III. fig. 7; caput, fig. 7a.)

O. rheinana, Imh. 1852. *O. anomala*, pars, Pict. 1843-5.

Subimago, v. v. s. Ala fumata, costas versus saturatior. Setae rursus glabrae, apices pilosi.

Imago, v. v. s. Oculi atrii; caput et thorax intescentes. "Abdomen albicans, segmentorum apices versus ochraceo fuscum," juncturis obscuris, et setis albis. Pedum antici fuliginosi; posteriores albi, femoribus cretaceis et unguibus obscuris. Alarum crassiores nervorum saturate fumati.

♀. "Corporo lutescenti, setis flabris; et nervis alarum albicantium lutescentibus." (Hag.)

Long. corp. ♂ 9-12, ♀ 7-9; set. ♂ im. 15, subim. 10; set. ♀ im. circa 4, subim. circa 3; exp. al. ♂ 28, ♀ 28 mm.

Hab.—The large rivers of Germany; and at Turin (Hag.). July and August. I have taken specimens between Cologne and Bonn, in the evening, at the end

of July, on a Rhine steamer; but, unfortunately, I neglected to make a memorandum of the posture of the subimago; they were blown along the deck of the steambout helplessly, being unable to maintain their footing.

Oligoneuria pallida.

(Genitalia, Pl. III. fig. 8. a-c; caput, fig. 8.)

O. rheinana, var. *pallida*, Hag. 1855.

Imago, s. s. *O. rheinana* similibus esse videtur. Dr. Hagen foreipem delineavit; sed figura a foreipe *O. rheinana* longe discrepat.

Long. corp. ♂ 9, ♀ 7; set. ♂ 10, ♀ 4; exp. al. ♂ 20, ♀ 24 mm.

Hab.—Hungary.

I have some doubt about the correctness of Dr. Hagen's figure of the forceps; for the relative proportions of the joints resemble those of the forceps of *Baetis* or *Ephemerella*. There is great danger of misrepresentation being the utmost that one can extort from dried specimens.

Oligoneuria Trimeniana.

(Processus ventralis penultimi segmentorum, ♀, Pl. III. fig. 9, 9a.)

O. Trimeniana, McLach. 1868.

Imago, v. v. s. s. ♀. Caput et thorax lutei, pectore lutescenti. Ala pelucida, venis fumato-albis. Pedes albicantes, femoribus furfurosis. Setae cretaceae, ad juncturas apices versus sub-pilose. Ova virides.

Long. corp. ♀ 12, exp. al. 41½ mm.

Hab.—Mapulnulo Mission Station, Umroth District, Natal. March.

The wings have a satiny lustre.

Genus *CAMPSEURUS*.

(Ala antica, Pl. I. fig. 4.)

Ephemerella, Forch. 1836; *Palingenia*, pars, Pict. 1843-5; *Campseurus*, Etn. 1868.

Imago. Oculi integri. Ala quatuor, antica reticulo subtili. Pedes debillimi, unguibus longis tenuibus obtusis

conformibus. ♂ seta media caret; pedum posteriores brevissimi, antici longi femoribus inprimis brevissimis; ultimi segmentorum latera breviter producuntur. ♀ setae tres aequales; pedes breves debilissimi (etiam antici); ovariola caret.

The genus *Campysurus* occupies in America the position of *Polynitarsis* in the Old World. Many species of this genus are so alike in colour that it is difficult to discover the females. Their habitat is probably limited to large rivers of a tolerably high temperature.

Campysurus latipennis.

(Genitalia maris, Pl. III. fig. 10, 10a.)

Palingenia latipennis, Walk. 1853 (non var.).

Imago, v. s. s. ♂ ♀. Thorax fusco-luteus; prothorax tumescens, a fronte angustus, sulco longitudinali medio, et foveis lateralibus, alterâ pone oculos subtriangularem, alterâque apud coxam utrinque. Alarum anticarum area marginalis usque ad tertiam partem ab apice fuscescens, nervis transversalibus tenuibus subrectis simplicibus paucis claudentibus. Pedes antici fusci. Abdomen supra lineâ elevatâ longitudinali mediâ, et posterioribus segmentorum fuscis; infra testaceum. Setae cretaceae.

Long. corp. ♂ ♀ 7; al. ♂ 8, ♀ 9; set. ♂ 22 mm.

Hab.—Parâ.

Campysurus albiflum.

(Genitalia maris, Pl. III. fig. 11.)

Palingenia albiflum, Walk. 1853.

Imago, v. s. s. ♂. Thorax fusco-testaceus; prothorax veluti in sp. precedente. Alae pellucidae, anteriores nervorum cretacei; transversales apicales area marginalis anticae pauci subrecti. Pedes antici fusci, coxis stipitatis. Abdomen ochraceum, setis albis; segmentorum apicalium quatuor, caeterum juncturae, et lineae longitudinales elevatae dorsalis margines, cinereo tinctae. Porrocs et penis pallide lutescentes. Setae albae.

Long. corp. ♂ 12, al. 13, set. 47 mm.

Hab.—Parâ.

Campysurus albicans.

Ephemera albicans, Perch. 1836; *Palingenia albicans*, Burm. 1839.

Imago, s. s. Prothorax lutescens, latera versus violaceus; meso-etmeta-thoraces fulvi. Alae anticae albicantes, crassioribus nervorum et bases versus violaceo tinctae; alae posticae fere in toto albae. Pedes albicantes, tibiis et femoribus anticis solum violaceis. Caput nigrum. Abdomen pallidum, apicem versus fulvum.

Femina in Cat. Brit. Mus. descripta a mare *C. albicans* longe discrepat. Pro specie innominatâ optime habebitur.

Long. corp. ♂ 10, exp. al. 50 mm.

Hab.—Brazil. (Perch.)

Campysurus cuspidatus, n. sp.

(Genitalia maris, Pl. III. fig. 12.)

Imago, v. s. s. ♂. Prothorax gibbus, virescenti-nervinus. Alae albae, vtrinque, invariae. Abdomen supra fumate-albidum, infra fere cretaceum.

Long. corp. ♂ 10.5, al. 11 mm.

Hab.—Guatemala. (Do Selys Longchamps.)

The name *cuspidatus* indicates the form of the last ventral plate.

Campysurus quadridentatus, n. sp.

(Genitalia maris, Pl. III. fig. 13.)

Imago, v. s. s. ♂. Thorax et pedes pallide testacei. Alae opacae; anticae subcostis et radiis nigricantibus. Abdomen ochraceum, atrescenti-umbratum, praecipue apicem versus, et lineâ longitudinali mediâ atrâ in segmentorum primis sex.

Long. corp. ♂ 12, al. 13 mm.

Hab.—Santarem, Brazil. (Bates.) June.

Named from the form of the last ventral plate.

Campysurus puella.

Palingenia puella, Pict. 1848-5.

Imago, ♀ s. s. "Caput et thorax lutescentes; pedes fusciscentes, spicibus femorum pallidis. Prothorax

tumescens, margine antico in angulo prominente pro-
ducto." (Pict.)

Exp. al. ♀ 26 mm.

Hab.—New Orleans.

It is doubtful whether this species can be re-determined.

Genus *ASTHENOPUS*, nov. gen.

(*Ala antica*, Pl. I. fig. 3.)

Palingenia, p., Walk. 1853; *Campsiurus* (D), Ehn. 1868.

Imago. Oculi integri. Alæ quatuor. Pedes debiles
veluti in *Campsiuro*. ♂ Setae duæ longæ; pedes forcipis
tri-articulati; prothorax transversus. ♀ Seta intermedia
brevissima, vel obsoleta.

The wing figured belongs to an undescribed species
from Texas, specimens of which are in Mr. McLachlan's
collection.

Asthenopus curtus, n. sp.

(*Genitalia maris*, Pl. III. fig. 14, 14 a b.)

Palingenia albiflam, var., Walk. 1853; *P. curta*, Hag.
MS. 1861; *Campsiurus curtus*, Ehn. 1868.

Imago ♂, v. s. s. Prothorax transversus piceus; meso-
et meta-thoracelutei. Alæ antice obscuratæ costas versus,
nervis transversalibus areæ marginalis apicis paucis, sim-
plicibus et subrectis. Pedum antici fusci; posteriores
lutei. Abdomen supra nigricans, subtus ochraceum,
immaculatum; segmentum singulum supra lineâ longitu-
dinali mediâ, punctoque rotundato utrinque, pallidioribus.
Setæ albæ.

Long. corp. ♂ ♂, al. 10, set. 35 mm.

Hab.—Pará.

Asthenopus dorsalis.

Palingenia dorsalis, Burm. 1839.

Imago ♀, h. s. Prothorax transversus, tumescens,
lutescens, maculâ in medio violaceâ. Caput nigricans.
Alæ antice nervis fusciscentibus, et margine costali vio-

laceo-fusco. Pedes antici nigricantes. Abdomen fulvo-
griseum, strigâ supra fuscâ in medio, postico quam antice
latiori. Setae albicantes. (Pict.)

Long. corp. ♀ 11, exp. al. 33 mm.

Hab.—Brazil. (Burm.)

Genus *POLYMERUS*.

(*Ala antica*, Pl. I. fig. 5.)

Ephemera, p., Ol. 1791; *Palingenia*, p., Burm. 1839;

Polymerus, Ehn. 1868.

Imago. Oculi integri; alæ quatuor; pedes debillimi,
femoribus brevissimis. ♂ Forcipes pes vel quadri- vel
tri-articulatus, secundo articulorum longissimo. Setae
media est brevissima. Ungues antici tenues, obtusi et
imparis. ♀ caret ovivalvulâ, et setas tres æquales habet.

Polymerus virgo.

(*Genitalia maris*, Pl. III. fig. 15, 15 a b.)

Ephemera virgo, Ol. 1791. *E. marocana*?, Fab. 1793. *E.*
lutea, Pz. 1804. *Palingenia horaria*, Burm. 1839. *E. albi-*
pernis, Voigt, 1840. *Palin. virgo*, Pict. 1843-5.

Subimago, v. s. s. Imagine pallidior, setis pubes-
centibus.

Imago, v. s. s. ♂. "Oculi atri; caput infra in fronte
atrum." Prothorax testaceus; meso- et meta-thoraces
lutescentes. Alæ albæ; nervi transversales apicales
areæ marginalis simplicis et subrecti. "Pedes albi-
cantes, femoribus anticis infra cum tibiis suis fere in toto
atris." Abdomen cretaceum, griseo-nubulosum apicem
versus. Setae et forfex albæ.

Long. corp. ♂ ♀ 16-17; exp. al. ♀ 33; set. ♂ im.
23, subim. 18; set. ♀ im. 13 mm.

Hab.—Central Europe, in largo rivers (*e. g.*, Paris,
Cologne, and Mannheim); Madrid.

The subimagines rise from the rivers in immense
numbers late in the evening, in August, and soon moult.
The species from Moreoco is possibly distinct from *P.*
virgo.

Polymitareys Saevigni, n. sp.

(Genitalia maris, Pl. III. fig. 16, 16 a.)

(Ephemera, Sav. 1817; Palingenia Saevigni, Pict. 1843-5.)

Imago ♂, v. s. s. Capitis vertex cinereus. Prothorax murinus, linea longitudinali in medio atra; meso- et meta-thoraces lutescentes. Alae albae; antecae costis et subcostis in majore parte nigricantibus. Pedum antici griseo-functi, posteriores cretacei. Abdomen cinerascens, juncturis, lateribus, ventrique sub-ochraceis, et setis albis. Nervi transversales apicales areae marginalis anticae simplices et subrecti.

Long. corp. 10, al. 11 mm.

Hab.—The Nile.

M. E. Pictet has several specimens of this species.

Polymitareys indicus.*Palingenia indica*, Pict. 1843-5.

Subimago ♀, s. s. "Caput parvum, nigricans. Prothorax brevis, gibbosus, et fulvus, in medio fuscus. Mesothorax fulvus, strigis longitudinalibus tribus, quarum duae alarum radices versus prodeunt. Area nunguinis antica violaceo-lincta. Pedes antici fulvi, tibus strigisque in femoribus singulis nigricantibus. Setae parum ciliatae, fulvae." (Pict.)

Long. corp. ♀ 12, exp. al. 30 mm.

Hab.—The East Indies.

Mr. McLachlan possesses specimens of two other species, undescribed, from N. W. India and Bombay.

Polymitareys macrops.*Palingenia macrops*, Hag. 1856.

Apex areae marginalis anticae nervis reticulatis.

Species in electro.

Long. corp. ♂ subim. 11, exp. al. 23 mm.

Genus PALINGENIA.

Ephemera, P., Ol. 1791; *Palingenia*, P., Burm. 1839; restricted, Westw. 1840.

Nympha fodicens. Segmentorum abdominalis 2-7 brachiffera; laminae branchiales duplices, et bene flumbratae.

Palpi maxillares tri-articulati; inferiores ultimis articulorum late expansis. Mandibulae antice longe prolongatae, perrobustae, extinsecus serratae. Frons bicornuta, cornibus dentatis, dentibusque lateralibus. Labrum subrotundatum, apice acuto. Tibiae antice intus dentatae. (Corn.)

Inter ultimam metamorphosin exuvias alarum mas sepe evertit; feminae tamen subimago sepiissime status adultus est, pelle retenta. (Swam.)

Imago. Oculi integri. Setarum media est brevissima. Alae quatuor. Tarsi postici quadri-articulati. Oviparula femina carot. Foveolis pedes pedicillati, quadri-vel forsan quinque-articulati, proximis articulorum longissimis.

The nymphs live in burrows which they excavate a little below the water-mark, in the clayey banks of large and tranquil rivers.

Palingenia longicauda.

(Genitalia maris, Pl. III. fig. 17, 17a.)

Hemerobius, Clut. 1634. *Ephemera longicauda*, Ol. 1791. *E. fuliginosa*, Geortz, 1802. *E. foscagae*, Illig. 1802. *Serblis marginata*, Pz. 1804. *E. Swammerdiana*, Lat. 1805; *E. Swammerdianiana*, Shaw, 1806.

Pedes postici bi-unguiculati.

Imago, v. s. s. ♂. Also cervinae, nervis laevibus. "Thorax luteus; prothorax longitudinaliter quinque-striatus," (Pict.). Tarsorum posticorum primus, secundus et tertius articulorum subaequales, quarto paulo breviores. Ungues tenues conformes. Abdomen supra saturato umbrinum. Pedes, venter, setaeque, pallido lurido-ochracei.

Long. corp. ♂ 23, al. 24, set. 70 mm. (Pict.)

Hab.—The large rivers of Central Europe (e. g. in Germany, Hungary, Austria, and the Netherlands); also in the Caucasus. About Midsommer.

Swammerdam's supposition, that the aquatic stages of development occupy three years, seems merely a gratuitous surmise; for he found no specimens, and founded his conjecture upon the differences of size presented by the nymphs alone. But though in this instance Swammerdam was inaccurate, his famous treatise will remain a monument of his perseverance, and his extraordinary powers of research.

Palingenia lata.

(Genitalia maris, Pl. III. fig. 18, 18 a b.)

Palingenia lata, Walk. 1853.

Tarsi postici uni-unguiculati.

Adult. ♂, v. s. s. Alæ et thorax fuliginosi. Prothorax lineis longitudinalibus fuscis impressis quinque, viz.: in medio unâ, latero-dorsalibus duabus, alterisque internodiis duabus. Pedes sub-fuliginosi, vel testaceo-cervini; tarsorum posteriores uni-unguiculati, proximis articulorum paulo cæteris longioribus. Abdomen supra fuscum. Setæ Intescentes pilosæ.

Long. corp. ♂ 20, set. supra 70, exp. al. 43 mm.

Hdb.—Sibet and Sarawak.

The specimens from Borneo have paler legs than those from India.

Genus PENTAGENIA.

(Ala antica, Pl. I. fig. 6.)

Palingenia (A), Walsh, 1862; *Pentagenia*, Walsh, 1863.

Imago. Alæ quatuor. Oculi integri. Setarum media in ♂ brevissima, in ♀ cæteris parum brevior. Tarsus posticus quadri-articulatus; articulorum tres priores æquales, et quarto breviores; ungues dissimiles. Femina caret ovivalvula. Pedes forcipis quadri-articulati, secundo articulorum longissimo.

Pentagenia vittigera.

(Genitalia maris, Pl. IV. fig. 1.)

Pal. vittigera, Walsh, 1862; *Pent. vittigera*, Walsh, 1863.

Subimago. "Alæ opacæ, flavescentes."

Imago, v. s. s. ♂. "Oculorum partes superiores exemplaris videntis flavescentes, inferiores rubiginosæ." (Walsh.) Medium dorsi fuliginosum; latera venterque testacea, paucis segmentorum apicalium flavis exceptis. Nervi laterum pallidissime testacei, vel electo colorati; plurimis nervorum transversulium in arcâ marginali, paulo nodali subcostæ, lineæque infra eandem in quatuor nervorum (præter unum) sequentium duorum, atris. Pedes

subtestacei; antici apicibus femorum junctrisque tarsorum fuscis. Apud segmentorum abdominalis juncturas dorsales, lineæ flavescens duæ breves divergentes sunt. Setæ albæ pubescentes.

♀ similima, pedibus sub-gambosis. Alæ, bases versus, et in areis marginalibus imprimis, lurido tinctæ.

Long. corp. ♂ 17-19, ♀ 17-20; al. 18-19; set. ♂ 40-50 & 5, subim. 18 & 4-5; set. ♀ 13 & 10-5-20 & 15 mm.

Hdb.—Illinois and Texas.

Pentagenia quadripunctata.*P. 4-punctata*, Walsh, 1863.

Subimago. "Alæ opacæ albicantes."

Imago ♀. "Striga dorsalis picea in segmento singulo abdominalis hexagonum symmetricum format. Ala antica in medio serie curvata punctorum fuscorum nobilis parvis cinctorum; viz.—in costa uno, unoque in nervorum sequentium quarto, sexto, et nono.

Long. corp. 19-5; exp. alar. 40; set. ♀ 22-5 & 19-5, subim. 17 & 14; set. ♂ subim. 15 & 3 mm.

Hdb.—Illinois.

Genus HEXAGENIA.

(Ala antica, Pl. I. fig. 7.)

Pactis, P., Say, 1824; *Ephemeræ*, Guér. 1829-43; *Palingenia*, P., Pict. 1843-5; *Palingenia* (B), Walsh, 1862; *Hexagenia*, Walsh, 1863.

Nymphæ fodiens a Don. Walsh, in "The American Naturalist, Oct. 1863," figuratur.

Imago. Oculi integri. Setarum media brevissima. Alæ quatuor. Tarsus posticus quadri-articulatus; primo articulorum vix secundo longiore; ungues dissimiles. Ovivalvula femina caret. Pedes forcipis quadri-articulati; articulorum secundus est longissimus.

Hexagenia albivitta.

(Forceps, Pl. IV. fig. 2, 2 a.)

Bæcis albivitta, Walk. 1853. *Palingenia continua*, Walsh, 1850.

Subimago paulo imago obscurior.

Imago ♂, v. s. s. Dorsum atrum, strigâ longitudinali latâ mediâ niveâ, in prothoraco oblongâ; in

meso- et meta-thoracibus nitiformi, et in abdomino marginibus serratis, claudente in segmentis singulis apicibus lineas duas breves divergentes atras. Venter sub-hepaticoloratus, striga longitudinali testacea, atque apicibus segmentorum obscuratis. Alae vitrinæ, pallide fuliginose tinctæ, nervis piceis; antecurram costæ fusca; posticorum nervi transversales obscure marginati. Pedes testacei; antici fuscocentes, tarsi atris, ultimis articulorum fuscis. Setæ cervinæ, fusco cinctæ.

Long. corp. ♂ 15, al. 15; set. im. 35, subim. 23 mm.

Hab.—The Amazons and Texas.

Mr. McLachlan has a specimen of an undescribed Indian species, in some respects closely related to this.

Hexagenia (?) *atrostoma*.

Ephemerata atrostoma, Weber, 1801; *Palingenia atrostoma*, Pict. 1843-5.

"E. flavâ, dorso alisque fuscis, ore oculisque atris. Thorax marginatus canaliculatusque. Abdomen caudâ biseit, setis longissimis flavis." (Weber.)
Hab.—Brazil (Weber).

Hexagenia decolorata.

Palingenia decolorata, Hag. 1861.

Imago in spirith ætheris conservata. "Intera; caput fusco-nigrum; pedum antici nigricantes, posteriores hateri; abdomen luteum, strigis lateralibus obscure fuscis, et setis luteis; alæ vitrinæ, flavescenti tinctæ, nervis luteis, subcostis fuscis exceptis." (Hag.)

Long. corp. 16, set. 30 (?); exp. ai. 30 mm.

Hab.—Mexico; Matamoras; Tamulipas. Common. (Hag.)

Perhaps this is only a colour variety of the following species, but I am unable to decide the point.

Hexagenia limbata.

(Foreps, Pl. IV. fig. 3, 3a.)

Ephemerata limbata, Guer. 1829-43; *Palingenia limbata*, Pict. 1843-5. *Palingenia bilineata*, Hag. 1861.

Subimago, v. s. s. Alæ pallide flavicantes, plurimis nervorum transversalium covrinis. Setæ pilosæ.

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Imago, v. s. s. ♂ "Oculorum partes superiores acuto virescenti-flavæ, partes inferiores nigra. Setæ fusca, proximis dimidiarum articulorum pallidis." (Walsh, v. s.) Strigæ laterales dorsi prothoracis nigrae retro producuntur, et fundentes juxta bases alarum, circa mesothoracis apicem desinunt. Alarum nervi plerumque picei, bases versus pallidi; interdum vero longitudinales lutei, et transversales solum picei sunt. "Pedes antici fusci, basibus plerumque articulorum tarsalium 2, 3, 4, albi-cantibus vel flavescantibus; posteriores acute flavocentes, panicis articulorum tarsalium cum apicibus, quin-tuque in toto, fuscis. Abdomen supra striga in medio fusca, lineisque lateralibus obliquis ab apicibus segmentorum "quibus in trigonis parvis flavicantibus vel fulvescentibus latera dorsi funduntur."

♀. A ♂ in nervis alarum vitrinis ("hyalino" Walsh) vel flavescantibus discrepat. Setæ flavæ.

Long. corp. ♂ 20-21, ♀ 22; set. ♂ 40, ♀ subim. 20; exp. al. ♂ 38, ♀ 30 mm. (Pict.)

Hab.—Arctic America, Texas and Mexico; in large rivers. Mr. McLachlan has many specimens.

Hexagenia bilineata.

(Foreps, Pl. IV. fig. 4.)

Baetis bilineata, Say, 1824. *Palingenia viridescens* & *occulata*, Walk. 1853. *Baetis angulata*, Walk. 1853.

Palingenia limbata, Hag. 1861. *Palingenia bilineata*, Walsh, 1863.

Subimago, v. s. s. Alæ griseæ, nervis piceis, bases versus lutescentes. Alarum posteriores apud margines terminales atro limbato.

Imago, v. s. s. ♂ "Oculorum dimidiarum superiora cinanomeo-fusca, inferiora atra" (Walsh, v. s.). Pedum antici picei, apicibus tiliarum et proximis articulorum tarsorum atris; "interdum 2, 3 et 4tus articulorum bases versus pallidiores sunt; posteriores in s. s. ochracei; vel (veluti in v. s.) femoribus obscure virescentibus, cum genubus, tibiis, tarsisque fuscis. Nervi alarum picei; harum anterior areis marginali et submarginali, atque posterior margine terminali, fuscis.

♀ s. s. "Dorsum prothoracis in fronto et ad latera nigrum. Abdominis striga dorsalis maculam cretaceam

oblongam vel triangulam apud latera segmenti singuli utrinque relinquit; striga ipsa segmentorumque apicibus fuscis." (Walsh.)

Long. corp. ♂ 17-21, ♀ 21-29; set. ♂ 42-51, subim. 18; set. ♀ 20, subim. 18-19; al. ♂ 17-20, ♀ 21-23 mm.

Hab.—Arctic America, to New Orleans; in lakes and rivers.

The *Hexagenia* are said to appear in suitable localities in astounding profusion. The late Mr. Walsh says he has seen shrubs broken down by the accumulated masses of one species upon them! The name of the shrub, and how many thousand specimens of the *Hexagenia* in question go to the pound, are unfortunately omitted from his observations.

Genus EPHEMERA, nov. gen.

(Alia antice partes, Pl. I. fig. 8, 9a.)

Palingenia, P., Hag. 1861.

Imago ♀. Alæ quatuor. Setae tres, longæ, subæquales.

Euthylocia Tecuba.

Palingenia Tecuba, Hag. 1861.

Imago, v. s. s. ♀. "Capite nigro-fusco; prothorace fusco, polito; coxis luteis; alis magnis opacis, cervinotinctis, costas versus obcuratoribus, nervis griseis. Abdomen supra nigro-fuscum, subtus lutescens; setis saturato fumatis." (Hag.)

Long. corp. 22, exp. al. 78 mm.

Hab.—Vera Cruz (Salle); Yereguua.

There is a specimen of this insect in Mr. McLachlan's collection, and another (the type) in that of Baron De Selys Longchamps. The legs are lost, and the colours are so faded, that I have preferred citing the old description to redescriving the species. In what Dr. Hagen suspects to be the male, the undivided eyes are almost contiguous, the median seta is very long, and the anterior legs are long and feeble.

Genus EPHEMERA.

(Alia antice, in parte, Pl. I. fig. 9.)

Ephemera, Lin. 1735.*

Nympha fodiens. Segmentorum abdominis 1-7 brachifera: laminarum primæ minutissimæ, bipartite, dimidiis linearibus marginibus integris; posteriores quoque duplices, sed dimidiis acute hincobalitis, marginibus bene fimbriatis. Palpi maxillares bi-articulati: superiores longi, hirsuti, secundo articulorum primo longiore; inferiores apicibus articulorum ultimorum dilatatis, obliquis. Mandibulæ latus externum in cornu prorecto longissimo valde prorexis productur. Frons breviter bicornuta, cornibus simplicibus.

Alis conniventibus erectis, pedibus anticis elevatis et prorexis, setisque caudalibus subparallelis, subimago quiescit. Setaeque laterales inter se approximantur vel subtus vel supra medianam.

Imago. Oculi integri; alæ quatuor; setæ tres longæ, subæquales. Tarsi postici quadri-articulati; articulorum tres anteriores subæquales; ungues dissimiles. Pedes forcipis quadri-articulati, secundo articulorum longissimo. Oviparvult femina caret.

Species of this genus usually appear in moderate numbers. The apical cross-venlets of the marginal area of the fore-wing are variable in the same species. The pale spots of the thorax of the subimago, mentioned in the description of *E. vulgata*, are found in the other European species.

Ephemera vulgata.

(Gentilia maris, Pl. IV. fig. 5, 5a. Maculæ abdominales, fig. 5b.)

Ephemera maculata, Lin. 1747. *E. vulgata* [De G. 1755]; Lin. 1758. *E. communis*, Rekt. 1783. *E. danica*, Ronalds, 1856.

Subimago, v. v. s. Alæ vel flavo-virentes, vel virescenti-griseæ, vel cineræ, nervis fuscis; antice in medio fusco vel piceo maculata; nervi transversales maris corvino marginati; margines terminales lato griseo tincti.

* *Ephemera*, Trampe (1841), is a genus of the Phasceli, an Order of the Acrocurion Mosca.

Vertex capitis maculâ luteâ: prothorax lineis longitudi-
nalibus duabus atris; mesothorax supra maculâ magnâ
lutescente, ex quâ in fronte et a posteriore strigâ cur-
vata duæ producuntur; metathorax luteus, maculis
L-formatis nigris duabus.

Imago, v. v. s. ♂. Caput atrum, oculis supra fulgri-
nosis, infra vel paulo saturatioribus vel nigris. Thoracis
tergum atrivittum nitens. Alæ virescenti-griseæ vel
pallidissime flavo-virentes, maculis piceis et nervis atris:
posteriores marginibus terminalibus late, et nervis trans-
versalibus unguis, griseo tinctis. Pedes olivacei; antici
femoribus atro-piceis, et tarsis fuscis; posteriores tibiis
tarsisque fulvis, apicibus articulorum ultimum et ungui-
bus fuscis. Abdomen nubilino-olivaceum, juncturis et
apicibus segmentorum plus aut minus ochraceis: trian-
gulos acutos duos, lineasque interpositas breves duas,
segmentorum posteriorum supra quidque habet, infraque
lineas longitudinales atras quatuor, viz., duas longas
sub-parallelas, et duas breves divergentes: in anteriori-
bus segmentorum trianguli in strigis curvatis se conver-
tunt, et notule interpositæ obscurantur. Setæ fuscæ,
juncturis fuliginosis, atque pubescentes, præcipue apices
versus. Forceps fuscus.

♀ plane omnino mari similis, alis pallidioribus ex-
ceptis.

Var. ♂ et ♀, v. v. s. Pro maculis trigonalibus, lineas
curvatas segmentis singulis sunt.

Long. corp. 14-22; al. ♂ 16-17, ♀ 18-24; set. ♂ im.
33 & 34-32 & 36, subim. 16 & 17-19.5 & 21; set. ♀ im.
22 & 24-26, subim. 17 & 16-18 & 19 mm.

Hab.—Moscow (Oul.); Scandinavia (Zett.); England,
Germany, France, and Switzerland. May and June.

This species is plentiful in warm rivers and tranquil
streams in England, and in some of the Swiss lakes (e. g.,
near Brunnig).

Ephemerella guttulata.

(Genitalia maris, Pl. IV. fig. 6, Ga. Macule abdominales,
fig. 6b.)

Ephemerella guttulata, Pict. 1843-5. *Ephemerella decorata*,
E. simulans & *Palingenia natala*, Walk. 1853. *Ephemerella*
natala, Hag. 1861.

Subimago, v. s. s. ♂ ♀. Alæ vix nigricantes,
maculis et marginibus nervorum transversalium piceis.
Pedes purpureo-brunnei. Setæ fuliginosæ, juncturis
obscuris.

Imago, v. s. s. ♂. Alæ vitine, in nervis transverse-
ribus piceo crebre maculata. Pedes et setæ lutei, jun-
cturis fusciscentibus. Maculæ magnæ dorsi abdominis
transverse, subquadrate, angulis posticis retro pro-
ductis, et lateribus emarginatis: venter lividus.

♀ similima, alis sparse maculatis.

Long. corp. ♂ 11, ♀ 13-15; al. ♂ 13-15, ♀ 15-19;
set. ♂ im. 25, subim. 14; set. ♀ subim. 15 mm.

Hab.—From Northern Illinois and from Connecticut
northwards; in rivers.

This species resembles *E. vulgata* in having the back
of the abdomen spotted instead of being merely streaked,
and also in the general formation of the male genital
organs. M. Pictet's specimen seems, from the figure, to
have been a male imago.

Ephemerella flavicollis.

E. flavicollis, Walsh, 1862.

Subimago, v. s. s. "Alæ fumatae. Setæ obscure et
pallide virescentes."

Imago, v. s. s. ♂. "Vertex capitis rubiginosus; ter-
gum thoracis pallidius. Alæ vitine; antice apud costas
flavescenti-tinctæ, et tribus prioribus nervorum longitu-
dinalium flavescentibus. Pedes flavescentes; antici
apicibus femorum et tibiarum, proximis articulorum tar-
salium et apicibus juncturisque cæterum, rubiginosis.
Abdomen flavescens, strigâ pallidâ utrinquo segmentorum
3-7. Setæ albicantes, juncturis fuscis."

♀ v. s. "Abdomen vitelli-coloratum. Nervi trans-
versales alarum fuscæ, eis ad apices et apud margines
terminales exceptis."

Long. corp. ♂ 7.5-9.5, ♀ 9-10.5; set. ♂ im. 20 &
14, subim. 12 & 10; set. ♀ im. 12 & 10; exp. al. ♂ 17-
19, ♀ 19-20. (Walsh.)

Hab.—Rock Island, Illinois (Walsh); and New York.

Ephemerella mygops.*E. mygops*, Walsh, 1863.

"*Ephemerella Maecoli* major; oculi eis speciei filius minore, et ab ipsis remoti. Segmentorum abdominis 1-5 rubiginosa, sextum et nonum pallidiora, septimum et octavum flavoscentia: vel omnia segmentorum flavoscentia sunt.

Long. corp. ♂ 12-13; exp. al. 26-27; set. 27 & 19-29 & 21 mm.

Tab.—Rock Island, Illinois." (Walsh.)

Dr. Hagen ad paginam 177 operis supra citati (Walsh 1863) diagnosim quam forsam ad *E. mygops* varietatem pertinere donavit:—

"Ala vitinae, maculose. Abdomen flavum, immaculatum. *E. danica* subsimilis."

Long. corp. 19, exp. al. 42 mm.

Tab.—New York. (Hag.)

Ephemerella lineata.

(Genitalia maris, Pl. IV. fig. 7, 7a. Notae abdominales, fig. 7b.)

E. danica, Pict. 1843-5 (aes Müll.). *E. lineata*, Ehn. 1870.

Subimago, v. v. s. Ala virescenti-griseo, marginibus terminalibus pallido griseo late finctis, et nervis transversibus atris. Horum pauci in medio alae anticee atrorubrunneo marginati sunt, ideoque seriem macularum formant.

Imago, v. v. s. ♂. Thorax supra fusco-piceus. Alae vitinae, nervis et maculis atris; anticee in arcis marginali submarginali, abque late marginem terminalem versus, corvino tincte. Pedum anteriores femoribus piceis, tibiis tarsisque atris: posteriores virescentigrisei, coxis, maculis utrinque femorum, et apicibus juncturisquæ tarsorum, atris. Abdomen fusco-virescentigriseum, apicem versus lutescens: segmentorum posteriora singula strigis atris dorsalibus sex, infraque lineis longitudinalibus atris duabus; illarum duæ longioræ unaquæ brevis utrinque supra medium dorsi sunt. Setæ fuscae, juncturis atris; forceps lutescens. Strigarum duæ breves ab anterioribus segmentorum absunt.

♀. Simillima maris. Prothoracis tergum virescentigriseum, strigis lateralibus atris duabus. Mesos- et metathoraces late, strigis obscuris inter alas duabus. Alae vitinae, nervis transversibus atris, et nervis longitudinalibus cum arcis marginalibus et submarginalibus, virescentigriseis. Pedos antioi fusci, apicibus femoris, tibiae, articulorumque tarsalium, atque tibiae basi, atris. Caput ochraceum, circa oculos luteum, oculis (veluti in ♂) fuliginco-umbrinis.

Long. corp. ♂ 15-20, ♀ 21-25; al. ♂ 16, ♀ 20-21; set. ♂ 30 & 35-6; set. ♀ im. 24 & 26-25 & 24, subim. 15 mm.

Tab.—The Thames, and the Kennet, near Reading; near Paris; and Genethod, near Geneva. June and July. It frequents rivers or tranquil waters.

I have no doubt that the two females referred by Dr. Hagen to *E. glaucops*, Pict. subim. (Hag. 1863), were specimens of *E. lineata*. The *E. danica* of M. Pictet's collection is *E. vulgata*, Linn.

Ephemerella danica.

(Genitalia maris, Pl. IV. fig. 8. Maculae abdominales, fig. 8a.)

E. danica, Müll. 1764. *E. maculata*, Vill. 1789. *E. vulgata*, Don. 1795. *E. cognata*, Ste. 1835-6. *E. hispanica*, Rbr. 1842.

Subimago, v. v. s. Alae fumate, nervis atris, lutescentibus bases versus; vel flavo-virescentibus. Pedes late, tibiis et tarsis posteriorum flavo-virescentibus, apicibus articularum nigricantibus. Abdomen flavicans, maculis corvinis, et setis piceis.

Imago, v. v. s. ♂. Caput et tergum thoracis aterrima vel picea; os et prosternum straminea; oculi fuliginosi. Alae vix corvinae; anticee arcis marginalibus et submarginalibus anthracinis, maculis fuscis, et nervis atris. Pedum antioi atris; posteriores atro-fusci, juncturis saturioribus. Abdomen cretaceum, postico serpo fusco suffusum; posteriora segmentorum strigis quatuor supra habent, infraque lineas longas, atras vel fuscas, duas; anteriora lineis intermediiis supra carent, vel etiam omnibus. Setæ piceae.

♀ abdomine pallido ochraceo, lineis et strigis fuscis. Alæ vitrinæ: antice in areis marginalibus et submarginalibus, postice margines terminales versus, nigricanti tinctæ. Pedum posteriores saturato virescente grisei, juncturis atris.

Long. corp. ♂ 16, ♀ 16-23; al. ♂ 16, ♀ 14-22; set. ♂ 35 & 30, ♀ 14-25, subim. 17 mm.

Hab.—Spain (Rhr.); France (Blanch.); England; Lapland (Plet.); Moscow (Oul.); Belgium and Germany. In brooks, streams, and cold swift rivers; from May to July.

This is the May-fly of anglers. Fishermen apply various names to it, according to the state and sex; thus the "Green Drake" (♀ subim.), "Pastard Drake" (♂ subim.), and the "May-fly" (♀ im.). It frequents colder and more rapid streams than *E. vulgata*. Mr. E. Brown, of Burton-on-Trent, tells me that on one occasion he saw the River Dove almost covered with the subimago, at a part where it is upwards of twenty or thirty feet broad.

Ephemerella glaucops.

(Forceps, Pl. IV. fig. 9.)

E. lata, Sulz. 1776: (nec Lin.). *E. glaucops*, Pict. 1843-5.

Subimago, v. s. s. Alæ pallide corvino tinctæ, nervis transversalibus atris rufo-cervino marginatis, illeoque in medio alæ antice et prope basin maculus formantibus; margines terminales, vel griseo vel rufo-cervino lato tincti; nervi longitudinales flavoscentes. Oculi saturato casii.

Imago ♂, v. v. s. Oculi supra vel olivacei vel rubiginco-lutescentes, infra saturato olivacei vel purpureo-rubriginei: os flavescens. Corpus rubiginco-luteum vel luteum; "prothorax maculis fuscis duabus" (Pict.). Alæ vitrinæ, maculis paucis, et margines terminales versus tinctæ, longitudinalibus nervorum (transversalibus ipsis atris) et marginalibus transversalium, atque areis marginalibus et submarginalibus, plus aut minus lutescentibus. Pedum antici lutescentes, apud juncturas atris; posteriores testacei, juncturis saturatioribus vel virescenti-grisei. Segmentorum abdominis posteriora singula strigis atris

quatuor supra habent, infraquo lineas duas; strigis intermedii duabus anteriora segmentorum carent. Forfex lutea, juncturis atris vel piceis. Setæ fuliginosæ, juncturis obscuris.

♀ v. s. s. Simillime, sed mari pallidior.

Long. corp. ♂ 16-17, ♀ 16; al. ♂ 14-15, ♀ 16; set. ♂ 23, subim. 17, ♀ im. 14 mm.

Hab.—Moscow (Oul.); Germany (Burm.); Switzerland and North Italy. In lakes; the end of July, and August.

Ephemerella immaculata, n. sp.

♂ (Forceps, Pl. IV. fig. 10.)

Imago, v. s. s. ♂. Thoracis tergum brunneo-luteum. Pedum antici picei, femoribus bases versus pallidioribus; posteriores brunneo-testacei. Alæ vitrinæ, immaculatæ; antice areis submarginalibus, postice apud margines terminales, fuliginose tinctæ; nervi obscuri. Abdomen fuscum, apicibus segmentorum lineisquo spiracularibus saturatioribus. Setæ umbrinæ, invariæ.

Long. corp. ♂ 10.5, al. 11 mm.

Hab.—Cuna, Hindostan.

In the Oxford Museum.

Ephemerella craspectans.

Potamanthus craspectans, Walk. 1860.

Subimago, v. s. s. Alæ pallido furfurose, nervis transversalibus purpureo-brunnis. Tergum thoracis fulvoscens, strigâ utrinque fuscâ. Abdomen lineis longitudinalibus tenuibus atris, supra quatuor, infra duabus. Setæ olivaceo-luteæ, juncturis fuscis. Pedes lurido-ochracei.

Long. corp. ♀ subim. 11, al. 14 mm.

Hab.—Hindostan.

Ephemerella fasciata.

(Genitalia maris, Pl. IV. fig. 11, 11a.)

Potamanthus fasciatus, Mag. 1858.

Subimago, v. s. s. ♀. Alæ corvino; antice nervis transversalibus atris, paucis in areâ marginali juxta sub-

costam obscure marginatis, et arcis submarginibus cum crassioribus nervorum longitudinalium lutescentibus. Pedes pubescentes.

Imago, v. s. s. ♂. Thoracis tergum testaceum. Alae vitrinae; anticae apud costas et apices versus pallide luteo tinctae; nervorum longitudinalium furfurosi, transversales atrii, puncto nodali subcostae subfuliginoso. Pedes pallide testacei; antici tarsi nigricantibus (prioribus articulo- rum fuscis exceptis) et tibiis fuscis. Abdomen sub-ochraceum vel stramineum, supra lineis longitudinalibus duabus, et macula parvâ trigonali ad apicem cujusque segmentorum posteriorum utrinque, atris: prioribus segmentorum trianguli absunt. Setae furfurosae, juncturis saturatio- ribus.

Long. corp. ♂ 13-14, al. 14-15, set. ♂ im. 32-40, ♀ 15 mm.

Hab.—Rainbode, Ceylon; Masuri, North India.

Ephemera serica, n. sp.

(Genitalia maris, Pl. IV. fig. 12, 12a.)

Subimago, v. s. s. Alae pallide testaceae; feminae plures nervorum transversalium, qui tres priores nervorum longitudinalium alae anticae interjacent, et pauci caeterorum, atrii; in mari quidem plures etiam caeterorum atrii sunt.

Imago, v. s. s. ♂. Caput lutescens, circa ocellos rufo-brunneum. Tergum thoracis furfurosum vel brunneo-ochraceum, macula elongata utrinque prothoracis atra. Alae vitrinae, nervis veluti in subimagine; punctum rotundatum apud punctum nodale, et alia in mediis nervorum transversalium circa medium alae picea; alae posticae immaculatae. Pedes ochracei, coxis singulis maculis, apicibus femorum et tibiarum anticarum, atque basibus harum, atris. Abdomen pallide ochraceum, lineis longi- tudinalibus atris tribus infra et supra. Setae ochraceae, irregulariter atro annulatae.

♀ similis.

Long. corp. ♂ 11, ♀ 14; al. ♂ 13, ♀ 18; set. ♀ subim. 17 mm.

Hab.—Northern China.

Genus POTAMANTHUS.

(Ala antica, in parte, Pl. II. fig. 1.)

Ephemera, P., Lin. 1767. *Baetis*, P., Curt. 1834. *Potamantulus*, P., Pict. 1843-5; Etn. 1868.

Imago. Oculi maris subpartiti. Alae quatuor. Setae tres subaequales. Artus foreipis tri-articulati, proximo articulo- rum longissimo. Tarsi postici quinque-articulati: articulo- rum primus brevissimus, tibiae adnatus, vix obso- letus; secundus tertio vel quarto longior: ungues dissimiles. Ovipositoria femina caret.

Potamantulus luteus.

(Genitalia maris, Pl. IV. fig. 13, 13a.)

Ephemera lutea, Lin. 1767. *E. marginata*,? Mil. 1776. *E. reticulata*, Fourn. 1785. *E. lyalina*, Pz. 1804. *Baetis melles*, Curt. 1834. *P. marginatus*, Burm. 1839. *E. flavicans* & *E. chlorotica*, Ramb. 1842. *P. luteus*, Pict. 1843-5.

Subimago, v. s. s. ♂. Alae flavae, costas versus paulo saturatiores, nervis transversalibus nigris.

♀. Alae viriscenti-grisco tinctae, apud bases flavescentes, nervis flavescentibus.

Imago, v. s. s. ♂. Thoracis tergum luteum vel ochraceo-furfuratum. Alae vitrinae, flavescentes costas versus; nervorum longitudinalium flavi, transversales atrii. Podum atrici sub-furfurati, tarsi pallidis, sed apicibus tibiarum, juncturis et proximis articulo- rum tarsalium fuscis; posteriores straminei, unguibus juncturis- que tarsorum obscuris. Abdominis dorsum furfurosum, juncturis saturatioribus: segmentum singulum puncto sub- laterali apicali fusco, et puncto basali in linea spiraculari nigro, utrinque. Forceps flavus vel stramineus. Setae sub-furfurosae, juncturis piceis, breviterque pubescentes.

♀. "Clarior mari, macula fusca super prothoracem, et juncturis tarsorum anticorum obscure fuscis." (Pict.)

Long. corp. ♂ 10-11, ♀ 9; al. ♂ 12-13; exp. al. ♀ 29; set. ♂ im. 15-19, ♀ 12 mm.

Hab.—England (Curt. & N. Lach.); Franco (Geoff.); Germany (Sulz, Pict.).

Potamanthus Ferreri.

P. Ferreri, Pict. 1843-5.

Imago, ♂. "Thorax pallide fufuriosus, maculâ dorsali pone prothoracem fuscâ. Alæ vitrinæ, nervis pallidissime flavescensibus, et pluribus transversalium indiseretis. Pedum antici pallide fuscî, femoribus coxisque saturatioribus, et juncturis flavis; posteriores pallide fufuriosi, invari. Abdominis dorsum fuscum, latera versus fulvum, maculâ mediâ trigonali super singula segmenta; venter fulvus. Setæ et forceps pallide flavæ."

Long. corp. ♂ 13, set. 18, exp. al. 30 mm.

Hab.—Turin (Pict.).

Genus LEPTOPHLEBIA.

(*Ala antica*, Pl. II. fig. 2a.)

Ephemera, P., In. 1746. *Dactis*, P., Burm. 1839. *Leptophlebia*, P., Westw. 1840. *Potamanthus*, P., Pict. 1843-5. *Palingenia*, P., Walk. 1853. *Leptophlebia* (restricted), Em. 1868.

Imago. Alæ quatuor. Scellarum media est longa vel abbreviata. Oculi maris sub-parvissimi.

It is with very great hesitation that I venture provisionally to retain in this genus the majority of the species placed in it. Ignorance of their preparatory stages of development compels one to class them all together, for the present. The group to which *L. fusca* belongs seems at first sight to be clearly distinct from the rest; but the nymph of *L. fusca* resembles that figured by Professor Pictet as the nymph of *L. cincta*; and besides this, in the closely allied genus *Dactis*, it is found that considerable differences in the form and venation of the posterior wings of species are compatible with their being in the same genus: therefore *L. fusca*, in spite of appearances, can hardly be separated from the group of which *L. marginata* is the type, with safety. On the other hand, the differences between the group last mentioned, and that of which *L. eyrida* is the type, are, upon the whole, equivalent to those between *Ephemera* and *Meragena*; therefore it may be a mistake to consider them as sections merely of one genus. When the nymphs are known, all doubts will be set at rest; but not until then. Most likely

differences will be detected between the maxilla and maxillary palpi of the typical species of the several series, sufficiently marked to require their generic separation.

Series 1. *Sp. typica*, *L. australis*.

Imago. Tarsus posticus veluti in *Potamantho*, sed unguibus conformibus uncinatis. Scellarum trium media quidem est longa, et ceteris subæqualis: plerumque tamen abruptatur, igiturque cauda biseta esse videtur. Forcipis artus tri-articulati, proximo articulorum longissimo. Costæ alarum posticarum haud exsertæ sunt (nisi in *L. auriculata*).

Occurrunt species in Australia, et circa litora Oceani Indici usque ad Promontorium Spei Bence.

Leptophlebia australis.

(*Genitalia maris*, Pl. IV. fig. 14, 14a. *Ala antica* areæ marg. apox, fig. 14b.)

Ephemera australis, Walk. 1853.

Subimago, v. s. s. Alarum anticarum nervi transversales fusco vel virescenti-griseo marginati, marginibus plus aut minus confluentibus: paucitas illorum spatium lambda-formæ clarum relinquunt, quod apicem angulorumque anatem oblique interquirit, atque ad basin alæ cruris brevo emittit.

Imago, v. s. s. ♂. Tergum thoracis piccum, politum. Alæ vitrinæ, nervis luteo-piccis, et apice areæ marginalis anticæ sub-virescenti-griseo, nervis transversalibus numerosis obliquis et subrectis. Pedum antici fusco-picci, posteriores flavescentes, femoribus obscure nigro-bicinctis, et tarsis testaceis. Abdomen luteo-fuscum vel luteo-castaneum. Setæ picæ.

Long. corp. ♂ 7-10, al. 9-11, set. 23 & 22 mm.

Hab.—Tasmania. (Brit. Mus.)

Leptophlebia australasica.

(*Ala antica*, Pl. II. fig. 2. *Genitalia maris*, Pl. IV. fig. 15, 15 a, b.)

Dactis australasica, Pict. 1843-5.

Subimago, s. s. "Alæ nigricantes, nervis saturatioribus." (Pict. o figura.)

Imago, v. s. s. ♂. Thoracis tergum atro-piceum. Ala vitinea, lurida sub-tincta, nervis atro-piceis; margines virescenti-grisei nervorum simplicium transversalium in areis marginalibus et submarginalibus, in apicibus illarum confluent. Pedum antici atro-picei; posteriores rufolitei, femoribus atro-biincis. Abdominis dorsum rufosum, venter rufo-luteus; segmentorum 2-8 singula maculis apicalibus utrinque juxta median rotundatis atris, hincisque obscuris obliquis ex apicibus retrorsum fere ad bases productis.

♀. Similima. Processus ventralis o segmentorum penultimo excisus.

Long. corp. ♂ 9-10; al. ♂ ♀ 11; set. ♂ 32 mm.

Hab.—Sidney and (?) Melbourne.

Leptophlebia fereferæ, nov. sp.

(Genitalia maris, Pl. IV. fig. 16, 16b. Area marginalis apex, fig. 16a.)

Imago, v. s. s. ♂. Tergum mesothoracis brunco-luteum: metathorax aterrimo-sanguineus. Petlum posteriores (exemplar anticis caruit) testacei, femoribus fusco biincis, at trochanteribus juxta bases obscure fuscis. Ala vitinea, iridi-colorata, nervis piceis: antica apex aree marginalis rufo-fusco tincta, nervis transversalibus simplicibus numerosis subrectis et obliquis; ceteri nervorum transversalium inter costam, subcostam, duosque nervorum longitudinalium sequentium rufo-fusco marginati: puncta nodalia subcostæ nervique sequentis nebulis parvis fahgynosis, veluti etiam punctum bifurcationis quarti nervorum pono costam, circumfunduntur. Abdomen sanguineo-atrum, lineâ in medio longitudinali, lineis spiracularibus, maculisque trigonalibus latero-apicalibus segmentorum 2-6, pallidis. Setæ cretaceæ, juncturis in vices atris.

Long. corp. ♂, et al. 11, set. 13 & 16 mm.

Hab.—Melbourne. (McCoy.)

Leptophlebia inconspicua, nov. sp.

(Genitalia maris, Pl. IV. fig. 17, 17b. Area marginalis apex, fig. 17a.)

Imago, v. s. s. ♂. Thoracis tergum politum. Ala vix lacteo tincta, nervis piceis. Pedes picei; internum

bursi antici et posteriores pedum pallidiores sunt. Abdomen apicem vortens piceum, segmentis internodiis pallidioribus, maculis parvis ovalibus ad latera dorsii flavescens. Setæ fuscæ, juncturis saturatioribus.

Long. corp. ♂ 5-6, al. 6-7 mm.

Hab.—Adelaide.

Leptophlebia dentata, nov. sp.

(Genitalia maris, Pl. IV. fig. 18, 18a, b; feminae, fig. 18c. Area marginalis apex, fig. 18d.)

Imago, v. s. s. ♂. Thoracis tergum furfurosum. Alacano tincta, nervis transversalibus anguste marginalis: juxta punctum nodale subcostæ, atque in areæ marginalis apice, sunt labeculae atræ: areæ marginalis et submarginalis obscura luteæ. Pedes lutei, juncturis tarsarum piceis, et apicibus tibiarum anticearum atris. Abdomen adusto-vaerbrum, apicibus segmentorum saturatioribus. Setæ pilosæ, celitraceæ, juncturis obscuris.

♀ similima. Processus ventralis penultimi segmentorum emarginatus.

Long. corp. ♂ 8, ♀ 7-9; al. ♂ 11, ♀ 7-13; set. ♂ 18, ♀ 15-16 mm.

Hab.—New Zealand.

Leptophlebia strigata, nov. sp.

(Lamina penult. segment, Pl. IV. fig. 19.)

Imago, v. s. s. ♀. Thoracis tergum fusco-falvum, lineis longitudinalibus duabus utrinque prothoracis atris, quarum exteriores ad bases alarum anticearum prodeunt. Ala vitineæ, nervis piceis, juxta bases luride; anteriores prope costas umbrino-falvæ. Pedes saturato furfurosi, femoribus obscure biincis, cingulis anticorum plus minus confluentibus; tibiæ tarsisque pallidi, juncturis saturatioribus. Abdomen aureorum, strigis duabus longitudinalibus atris (o trilinguis truncatis continuis constructis), lineâque utrinque singulo segmento apicali obliquâ nigra: subtus lineâ longitudinali simplici in medio aterrimâ. Setæ pallide rubiginosæ, juncturis obscuris.

Long. corp. ♀ 22, al. 16, set. 23 & 19 mm.

Hab.—North Australia.

Leptophlebia costalis.

Paelis costalis, Burm. 1839; *Potamanthus costalis*, Pict. 1843-5.

Subimago, s. s. ♂. "Nigra, linea thoracis anto alas albeda, abdomine pedibusque rufo-cingulatis; alis subfurnatis, venis omnibus areæ marginalis primæ et secundæ infuscatis." (Burm.)

Long. corp. ♂ 6."

Hab.—New Holland. Perhaps allied to *I. dentata*.

Leptophlebia nodularis, nov. sp.

(Genitalia maris, Pl. IV. fig. 20, 20 b, c. Ala postica, fig. 20a.)

Subimago, v. s. s. Alæ vix nigricantes; anticæ nervis transversalibus anguste nigricanti marginalis, marginalibus plus minuste apud medium alæ et inter medium apicemque confluentibus; posticæ unicolores.

Imago, v. s. s. ♂. Thorax supra atro-piceus. Alæ vitinæ, nervis atris; nervi transversales areæ marginalis areæque submarginalis anguste et obscure marginati, atque inter se apud medium costæ iterumquo paulo ante apicem approximantes, ita ut pene maculas fingant; areæ pars basalis fusca. Pedum antici obscure lutescentes, femora in medio, genu, tibiaeque apice nigro circumdati; posteriores furfuriosi, femoribus solum nigro cinctis. Abdomen decoloratum. Setae albicantes, bene nigro annulata.

Long. corp. ♂ 9; al. 10-12; set. 16 mm.

Hab.—Christchurch, New Zealand (Fereday). The penis has no appendages.

Leptophlebia scita.

(Genitalia maris, Pl. IV. fig. 21, 21a.)

Paelis scita, Walk. 1853.

Subimago, v. s. s. Alæ vel nigricantes, vel fuliginosæ, nervis atris (transversalibus marginalibus saturatoribus); anticæ maculâ pallidâ in medio: apud punctum nodale subcostæ hujus, et in apice quoque areæ marginalis, tres vel quatuor nervorum transversalium ferro inter se approximant, ita ut maculas saturatiores duas faciunt.

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Imago, v. s. s. ♂. Thoracis tergum fuliginosum. Alæ vitinæ, cano tinctæ, nervis fuscis: antica maculâ basali, marginalibus angustis nervorum areæ marginalis, maculisque super costam duabus quasi in subimagine, fuscis. Posteriores pedum lutei, femoribus in mediis obscure punctatis, tarsisquo fusciscentibus. Abdomen saturate fuscum, apicibus segmentorum saturatioribus; segmentorum intermedia singula maculis brevibus trigonalibus duabus juxta bases, favescentibus. Setae albæ, vel cer-vinæ, juncturis subinde saturatis. Forceps luteus.

♀ mari similima.

Long. corp. ♂ 6, al. 7-8 mm.

Hab.—New Zealand.

Leptophlebia Taprobaneæ.

(Genitalia maris, Pl. IV. fig. 22, 22a.)

Paelis Taprobaneæ, Walk. 1853.

Imago, v. s. s. ♂. Corpus atrum. Pedum antici atræ, posteriores piceæ. Alæ vitinæ, pallidissime fusco tinctæ, nervis fuscis: antica areis marginali atque submarginali fuscis, apicibus saturatioribus, nervis transversalibus in apice illius simplicibus rectisque. Abdominis juncturæ pallidæ. Setae fuscæ.

Long. al. ♂ 12, set. super 30 mm.

Hab.—Ceylon.

Leptophlebia annulata.

(Genitalia maris, Pl. IV. fig. 23, 23 a, b.)

Potamanthus annulatus, Hag. 1858.

Subimago, s. s. ♂. "Alis nigro fumosis." (Hag.)

Imago, v. s. s. ♂. Tergum thoracis fuscum. Alæ vitinæ, nervis atris: antica juxta costas fusco tinctæ, nervis transversalibus numerosis curvatis simplicibusquo in areis marginalibus apices versus. Pedes saturate fusci. Abdomen testaceum, apicibus segmentorum fuscis. Setae fuliginosæ.

Long. corp. ♂ 9, al. 10, set. 35 & 37 mm.

Hab.—Rainboddlo, Ceylon.

Leptophlebia femoralis.*Potamanthus femoralis*, Hag. 1858.

Subimago, s. s. "Alis griseo fumatis."

Imago, s. s. "Capite thoraceque fusco-æneis, pedibus pallidis, femoribus cingulo medio nigro, setis brunneis, abdomine albedo, apice fusco, segmentis omnibus apice fusco marginatis; alis viridis, venis fuscis." (Hag.)

Long. set. ♂ 33, ♀ 15; exp. al. ♂ & ♀ 18 mm.

Hab.—Rainbode.

Leptophlebia distocans.*Ephemera distocans*, Walk. 1860.

Imago, v. s. s. ♀. Alæ vitrinæ, vix lacteo tinctæ, nervis umbrinis: horum transversales in medio atque apud costam alæ anticæ fusco marginatæ, et apicem areæ marginalis versus recti, obliqui et fere simplices. Podes luteo-piceæ, femoribus annulis in mediis piceis. Abdomen luteo-castaneum, apicibus segmentorum piceis: segmentum singulum strigâ obliquâ indiscretâ laterali; Setae piceæ.

Long. al. ♀ 6, set. 18 mm.

Hab.—The Cape of Good Hope.

Leptophlebia arviculata, nov. sp.

(Genitalia maris, Pl. IV. fig. 24, 24a. Alæ postica, fig. 24b.)

Imago, v. s. s. ♂. Picea, thorace atro. Alæ vitrinæ, nervis atro-piceis; nervi transversales in apice areæ marginalis simplices; alæ posticæ piceo tinctæ, spatulo subcostali incolorato. Pedum antici piceæ; posteriores rufo-piceæ: femora omnia atro-bicincta (vel? bimaculata). Abdomen juncturis saturatioribus, et setis vel atro-piceis, vel corvino-atris.

Long. corp. ♂ et al. ♀, set. 20 mm.

Hab.—Graham's Town.

The form of the hind-wing rather closely resembles that of one of the less oblique species of *Arvicula* or *Perna*. The name has reference to the excessive dilatation of the marginal area, which reminds one of the "ears" of such shells.

Series 2. Sp. typica, *L. Colombica*.

Subimago, ♀. Tarsorum antici quinque-articulati, posteriores quadri-articulati: articulorum penultimus cæteris brevior, duo priores æquales. Alæ posticæ minime. Setae tres æquales.

Leptophlebia Colombica.

Ephemera Colombica, Walk. 1853; *Palingenia Colombica*, Hag. 1861.

Subimago, v. s. s. ♀. Thoracis tergum luteum. Alæ semi-opacæ, sub-testaceæ; nervi transversales apicales areæ marginalis anticæ numerosi, simplices, obliqui, et curvati. Pedum antici saturate caryophyllæ, tarsis luteis; posteriores lutei. Abdomen supra castaneum, infra lutescens; segmenta intermedia singula apicibus strigisque lateribus obliquis atris. Seta fuliginosa, juncturis et mediis articulorum saturatioribus.

Long. corp. ♀ 10, al. 15, set. 9 mm.

Hab.—British Colombia.

Perhaps *Diætis tessellata*, Hag., is to be referred to this species (see *Heptagenia tessellata*).

Series 3. Sp. typica, *L. marginata*.

Nympha reptans, lamina branchialibus pinnati-partitis pene filiforme-dissectis. (Pict.)

Alis erectis, setisq̄o lateralibus a media variis, etans super pedes omnes, subimago quiescit.

Imago. Pedibus anticis elevatis et divergentibus nas dormit. ♀ Tarsi femæ quadri-articulati (rarissimo articulus quintus tibiæ adnatus obscure indicatur): articulorum penultimus cæteris brevior, duo priores subæquales; ungues postici dissimiles. Setae tres æquales vel subæquales. Pedum forcipis numerus articulorum a duobus ad quatuor pro specie variat, primus lamen semper longissimus est. Costæ alarum posticarum haud oxiscæ.

Leptophlebia marginata.

(Genitalia maris, Pl. IV. fig. 25, 25 a, b. Alæ anticæ pars, Pl. II. fig. 2a.)

Ephemera marginata, Im. 1767. *E. viridescens*, Fourc. 1785. *E. procellaria*, Schwarz, Nommencl. Rösel. Insect.

Belust. *E. stigma* & *talcosa*, Ste. 1835-6; *Potamanthus stigma* & *talcosus*, Pict. 1843-5. *P. marginatus*, Hag. 1863.

Subimago, v. v. s. Alæ fuliginosæ vel corvinæ, venis flavescens, transversalibus anguste nigricante marginatis; posticæ bases versus vel in toto pallidiores, nervis transversalibus apud margines terminales nigricantibus.

Imago, v. v. s. δ. Oculi piceo-hepaticolores, vel rufifulginosi. Tergum thoracis fuscum vel aterrimum, politum. Alæ vitrinæ, nervis fuscis: antica apicibus arcuè marginalis et arcuè submarginalis fuscis vel subfuliginosis. Pedum antici nigro-picei, tarsi cinereis: posteriores picei vel fusco-lutei, tibiis interdum brunneis, tarsisque plus minusve fuliginosis. Abdomen ferme supra fuscum vel fusco-piceum, juncturis flavescens, infra fuliginosum, juncturis pallidis, et maculis saturatioribus sub plexus nervorum: interdum tamen segmentorum 2-7 cinerea sunt, lineis spiracularibus saturatis, maculisque sub plexus nervorum luteis, atque cætera sunt fusco-picea. Setæ atræ, vel cinereæ, juncturis vix obscuratis. Forceps fuliginosus vel testaceus.

♀ vel mari similis; vel abdomine supra piceo, apicibus segmentorum saturatioribus, et sublus atro-fuliginoso, tibiis anticis testaceis. Processus ventralis penultimi segmentorum incisus est.

Long. corp. ♂ 6-12, ♀ 6-11; al. ♂ 7-11, ♀ 7-12; set. ♂ im. 12-20, subim. 9; set. ♀ im. 8-16 mm.

Hab.—Temperate and Arctic Europe and America. In England it appears in April, May, July, September and October, and frequents rivers.

Leptophlebia heltypes.

(Genitalia maris, Pl. IV. fig. 26, 26 a-c. Alæ posticæ, fig. 26d.)

Ephemerella heltypes, dispar & submarginala, Ste. 1835-6. *Potamanthus Gueri*, *heltypes*, dispar, & submarginalis, Pict. 1843-5. *Rachis reticulata*, ? Burm. 1839. *Glocon culiciformis*, Walk. 1858.

Subimago, v. v. s. Alæ cervinæ vel nigricantes, nervis transversalibus lato nigro-marginatis; paucibus horum in medio alæ antice maculam transversalem circa costæ medium pollucidam facit.

Imago, v. v. s. Oculi supra saturate purpureo-brunnei, subtus fusc. Tergum thoracis aterrimum, politum. Alæ vitrinæ, crassioribus nervorum furfurosus. Pedum antici atræ, tarsi corvinis; posteriores picei, tibiis tarsisque fuliginosis. Abdomen supra fusco-piceum, juncturis intermedii pallidis; subtus fusco-fuliginosum, maculis obscuris sub plexus nervorum. Forceps furfurosus. Setæ testaceæ, juncturis saturatis.

♀ similissima mari, processu ventrali penultimi segmentorum acute exciso.

Long. corp. ♂ 10-11, ♀ 9-11; al. ♂ 10-11, ♀ 10-13; set. ♂ im. 12 & 13-14 & 16, subim. 7; set. ♀ im. 9-13, subim. 9 & 10-10 & 12 mm.

Hab.—Great Britain; Germany; and Switzerland (Pict. Mus.). In May, June, July, and August, frequenting streams, rivers and lakes. The name is applicable to dried specimens.

Leptophlebia castaneæ.

Potamanthus castaneæ, Pict. 1843-5.

Subimago, v. s. "Precedenti similis, macula tamen cordiformi super mesothoracis apicem, et juncturis thoracis, pallidis."

Imago, ♂ v. s. "Oculi latericio-rubentes; aliter femine similis."

♀. "Tergum thoracis striga pallida longitudinali. Pedes setæque pallide fusci." (Pict.)

Long. corp., al., et set. ♀ circa 8 mm.

Hab.—A small stream near the marsh of Villeneuve, at the upper end of the Lake of Geneva, in July. The body of this species is of a maroon-brown colour. (Pict.)

Leptophlebia (?) *Krueperi*.

Potamanthus Krueperi, Stein, 1864.

Imago, s. s. ♂. "Piceæ, plenis pedibus abdomineque aurantiacis, alis posticis lato fuscis, setis candidibus flavescens, obscure annulatis. Alæ anticae apud costas vix flavescens."

Long. corp. ♂ 10-5, exp. al. 12 mm.

Hab.—Grecco. In the collection of the Berlin Museum.

Leptophlebia Picteti.*Polamanthus marginatus*, Pict. 1845-5 (nec Lin.).

Subimago. "Ala obscure grisea; antica areâ marginali pallide fusca."

Imago, ♂. "Oculi obscuri. Tergum thoracis atrum, prothorace fusco. Ala vitrina, nervis longitudinalibus rufescentibus; anticae areis marginalibus et submarginalibus fuscis. Pedes rufescentes; tibiae singulae basibus lineisque ex eis productis, et punctis prope apices, atris. Abdomen acute fuscum supra, apicibus segmentorum saturatoribus, praecipue latera versus. Forfex setarumque fusca."

♀ "mare saturator." (Pict.)

Long. corp. ♂ 8, ♀ 7; set. ♂ 10, ♀ subim. 9; al. exp. ♂ 18, ♀ 20 mm.

Hab.—Near Geneva, principally in October.

Leptophlebia prisca.*Polamanthus prisca*, Pict. 1854.

Exp. al. 13 mm.

Species in electro.

Leptophlebia cincta.

(Genitalia maris, Pl. IV. fig. 27.)

Ephemerella hallerata (?), Fab. 1777. *E. cincta*, Retz. 1783. *E. nigra*, Fourn. 1785. *E. vianis*, Gmel. 1790-3.*E. albipennis*, Fab. 1793. *E. lignalata* & *vitrea*, Zolt. 1840.*Polamanthus cinctus*, vianis, *halleratus*, *lypatus*, & *Cloe fuscata*, Pict. 1843-5. *Cloeon fuscata*, Walk. 1853.

Subimago, v. v. s. Ala atra, nervis obscuro flavo-centibus. Thorax picus vel atro-picus. Abdomen (♂) cinereum, apicem versus fuscum, apicibus segmentorum obscuro canis.

Imago, v. v. s. ♂. Oculi supra fuliginosi, infra atrii. Tergum thoracis aterimum, politum. Ala vitrinae, crassioribus nervorum vix electro-coloratis. Pedes albi vel cretacei, femoribus anticis saturatoribus, et tibiis tarsisque sub-testaceis. Abdomen rarisimo in toto fuscum; plerumque tamen segmentorum 2-7 vitrea sunt,

apicibus interdum lutescenti suffusis, lineis spiracularibus in parte atris, et plexibus nervorum rubiginosis; atque apicalia sunt fusca vel picea, juncturis vel flavescensibus vel rufescentibus. Setae forfexquo albicantes; haec vel tri-vel quadri-articulata, et basin versus nigricana.

♀. Nervi crassi alrum picei. Pedes setoquo testacei, posterioribus tarsorum albicantibus. Abdomen saturate fusco-piceum, juncturis flavescensibus, et processu penultimi segmentorum lato exciso.

Long. corp. ♂ & ♀ 7-8; al. ♂ & ♀ 7-9; set. ♂ im. 8 & 9 -8 & 11, subim. 9 & 7; set. ♀ im. 7 & 10-8 & 11 mm.

Hab.—Northern and Temperate Europe, in streams and rivers. June, July, and August.

Leptophlebia respertina.*Ephemerella respertina*, Lin. 1758. *E. albipennis*, Retz. 1783. *Baetis fusca*, Burm. 1839. *Cloe respertina*, Oul. 1867.

Subimago, s. s. "Nigra, alis posticis albis. Est inter minores generis sui, toto corpore et alis anticis nigris; sola ala posticae albae, quibus ab omnibus generis sui speciebus manifeste differt.

Hab.—Copiose in Smolandia ad fluvium Sathaelle." (Lin. abstract.)

Leptophlebia mollis, n. sp.

(Forceps maris, Pl. IV. fig. 28.)

Cloe mollis, Hag. 1861; not described.

Subimago, v. v. s. s. Ala pallidissime brunnescenti-alba. Abdomen feminea fuscum.

Imago, v. v. s. s. ♂. Tergum thoracis vel luteo-picuum, vel saturate fuscum. Pedum antici testacei, tarsis albis; posteriores pallidissime testacei. Alae vitreae. Segmentorum abdominis 2-7 alba, juncturis obscuris; cetera luteo-picea.

Long. corp. ♂ 6, ♀ 5; al. ♂ 7, ♀ 7-5 mm.

Hab.—West Farm, New York.

Series 4. Sp. typica, *L. cupida*.

Imago. Alae posticae, et genitalia, ois specierum in serie precedenti similes. Setaarum media manifesto

brevissima. Tarsorum posteriores quinque-articulati; articulum primum obsolescens, tibiae adnatus, secundus tertio subaequalis, quartus ceteris brevior; itaque saepe quadri-articulati esse videntur.

Leptophlebia cupida.

(Genitalia maris, Pl. IV. fig. 29, 29a; feminae, fig. 29b.)

Ala antice pars, Pl. II. fig. 2b.)

Ephemera cupida, Say, 1823. *Palingenia concinna*, *pallipes*, *Daetis debilis* & (?) *E. hebes*, Walk. 1853. *Potamanthus cupidus*, *concinus*, & *Daetis ignava*, Hag. 1861.

Subimago, v. s. s. Ala pallide nigricantes; "posteriores apices versus vix saturatiores." (Say.)

Imago, v. s. s. ♂. "Oculi supra fusciscentes, infra atrii" (Say, e v. s.). Tergum thoracis piccum vel fuscum. Ala vitrineae, nervis et apice areae marginalis antice pallide fusco-piceis. Pedum antici fusciscentes vel vix rufescentes, tursis atris; posteriores testacei, tursis nigricantibus. Abdomen piccum, "supra juncturis, linea longitudinali in medio strigisque brevibus duabus apud basin segmenti singuli, pallidis" (Say, e v. s.). Setae fuscae, juncturis obscuris.

♀. Ala vitrineae, vix lurido tincte. Processus ventralis penultimi segmentorum emarginatus.

Long. corp. ♂ 8, ♀ 10; al. ♂ 8, ♀ 11; set. ♂ subim. 14, ♀ 15 mm.

Hab.—Nova Scotia (Walk.); the Ohio River near Cincinnati (Say); Washington (Hag.), &c.

Leptophlebia nebulosa.

(Genitalia maris, Pl. V. fig. 1, 1a.)

Palingenia nebulosa, Walk. 1853; *Potamanthus nebulosus*, Hag. 1861. *Pot. adonatus*, Walsh, 1862.

Imago ♂, v. s. s. Thoracis tergum piccum. Ala vitrineae, nervis piceis; antice singulae nebulis magnis rotundatis apices versus subfusciscentibus. Pedum antici fusci, posteriores testacei. Abdomen supra piccum, subus subtestaceum. Setae testaceae, juncturis piceis.

Long. corp. ♂ 10, al. 10-11, set. 80 & 6 mm.

Hab.—S. Martin's Falls, River Albany, Hudson's Bay (Walk.); Illinois (Walsh).

Series 5. *Sp. typica, L. fusca.*

Nympha reptans. Segmentorum abdominalis 1-7 branchifera; laminae branchiales simpliciter, pinnati-partite quidem, sed paene filiforme-dissocta. Palpi maxillares tri-articulati; superioris primus articulum largus ceterisque conjunctim longior, secundus tertio subaequalis; inferioris ultimus articulum penultimo longior.

Imago. Posteriorum alarum margo costalis valde excisus. Tarsorum posteriores quinque-articulati; articulum primum obsolescens, tibiae adnatus, brevis, secundus longior, tertius et quartus secundo sensim breviores; ungues dissimiles. Artus forcipis primus articulum alis longitulline subaequalis.

Leptophlebia fusca.

(Ala antica, Pl. II. fig. 2c. Genitalia maris, Pl. V. fig. 2, 2a. Ala postica, fig. 2b.)

Ephemera fusca, Curt. 1834. *E. minor* & *Daetis cingulata*, Ste. 1835-6. *Potamanthus brunneus*, *fuscus*, *minor* & *Cloe cingulata*, Pict. 1843-5. *Cloeon cingulata*, Walk. 1853.

Subimago, v. v. s. Ala cinerea, nervis piceis. Thorax piccus; tibiarum antice subfuliginosae, posteriores cervinae.

Imago, v. v. s. ♂. Oculi saturate fuliginosi. Tergum thoracis aeternum politum. Ala vitrineae, nervis fuscis. Pedes brunneo-olivacei, femoribus et tibiis anticis piceis. Abdomen fusco-piccum, juncturis flavescens, setis et forcipis fuscis (in s. s. saturate fulvis).

♀ mari similibis, tarsis anticis pallidis. Setae fuliginosae, juncturis vix saturatioribus. Processus ventralis penultimi segmentorum lato excisus.

Long. corp. ♂ 5-7, ♀ 6-7; al. ♂ ♀ 6-7; set. ♂ 8 & 12-11 & 12, ♀ 8-9, subim. 6 mm.

Hab.—Great Britain; Interlaken; Mt. Salève (Pict.). In brooks and rivers. The end of May to August.

A pair of branchial plates is omitted from Professor Pictet's figure of the nymph, which is, in other respects, a good representation of it.

Leptophlebia modesta.

(Genitalia naris, Pl. V. fig. 3, 3 a, b.)

Potamanthus modestus, Hag. 1864.Subimago, v. s. s. Alarum anticae murinae, posticae
cervinae.Imago, v. s. s. ♂. Thoracis tergum piceum vel ater-
rinum. Alae vitinae, venis testaceis vel fuscis; posticae
vix lacto tinctae. Pedum antici picei; posteriores satu-
rato fuscis. Abdomen fusco-piceum. Setae virescenti-
griseae vel fuliginosae, juncturis atris.♀. "Processus ventralis penultimi segmentorum
bifidus." (Hag.)Long. corp. ♂ 6-7; al. ♂ ♀ 8-9; set. ♂ circa
10 mm.*Hab.*—Carinthia (Zeller MS.); Corsica (Hag.).Dr. Hagen's diagnosis of the subimago seems to suit
I. modesta; but the specimen associated with the types
of the imago in M. de Selys Longchamps' collection is
Baetis Rhodani, ♀ subim.

Genus [—————].

Imago diptera, caudâ trisetâ; *Leptophlebia* approxime
affinis.[—————] *inanis*.*Potamanthus inanis* !!, Pict. 1843-5.Imago, s. s. "Caput nigrum; thorax acute fuscus.
Alae vitreae, nervis tenuibus, fuscis; vix griseo tinctae,
sed apud costas obscuriores, et ad bases flavescentes.
Pedes fuscis. Abdomen albidum, apice fusco; segmenta
pallida, singula maculâ magnâ fuscâ utrinque. Setae
griseae, nigro-punctatae." (Pict.)*Hab.*—Brazil. (Pict.)

In the Vienna Museum.

Professor Pictet thought that the forceps had little
lamellar limbs: but he was not sure that the shape of
these might not have become changed after death.

Genus TRICOERYTHUS.

(Ala mesothoracica, Pl. II. fig. 3.)

Ephemerella, Sav. 1817. *Cenis*, Pict. 1843-5. *Tricoerythus*,
Etn. 1868.Imago. Alae duae; setae tres aequales; oculi maris
integri. A nervis alarum facillimo e *Ceni* distinguitur.*Tricoerythus varicauda*.*Cenis varicauda*, Pict. 1843-5.Imago, s. s. "Pallide luteus, vel ochraceus; oculis
maculæque in vertice atris; suturis (?) mesothoracis dorsa-
linoque atris; alis vix flavescensibus, costis subcostisque
paulo saturatioribus; et pedibus luteis vel ochraceis
griseo variis. Segmentorum abdominis quinque apicalia
punctis singulis ventralibus nigris. Setae albae, anguste
nigro annulatae." (Pict.)

Long. corp. ♂ 4, set. 9; exp. al. 10 mm.

Hab.—Upper Egypt.

Genus CENIS.

Cenis, Ste. 1835-6. *Brachygerus*, Curt. 1834. *Ma-
crocerus*, Westw. 1836. *Oxygypsa*, Burm. 1839. *Cenisus*,
Agassiz, Nomenclat.*

(Ala antica, Pl. II. fig. 4.)

Nympha fodiens. Segmentorum abdominis 1, 3, 4,
5, 6, 7 branchifera: laminarum anticae minutae, erectae;
secundae magne, crassae, ceteras tegentes; reliquae tenuis-
sima, semiovatae, bene fimbriatae, imbricatae, graduatim
minores & fronte retrorsum; omnes simpliciores. Pedes
femoribus vel compressis vel gracilibus secundum
speciem. Caput vel inermis, vel cornibus tribus fronta-
libus armatum. Palpi maxillares tri-articulati: supe-
rioris proximus articulus longus, tertio longitudine* *Brachygerus* being a sexual name gives place to *Cenis*: *Cenia*,
Newman, 1838, is a genus of *Diptera*. *Ceni* was changed by Poseidon
into an invertebrate man named *Cenisus*, one of the *Lepithae*. He being
buried alive by the Centaurs in the course of the famous battle, was
thereupon transformed into a bird. She however seems to have regained
her original form; for Virgil narrates the meeting of Aeneas with *Cenis*
in Hades, in *Aen.* vi. 448.

regualis; secundus brevior: inferioris primus articulo-rum multo largissimus, cæteris conjunctim longitudine subæqualis; tertius conicus, secundo semi-æqualis.

Pedibus anticis depressis, alis duobus late expansis (fere nunquam erectis), et setis tribus subæqualibus pubescentibus parallelis, subimago quiescit.

Imago. Caput et prothorax transversus; oculi remoti, integri. Alæ duæ magne, in longitudinem marginum terminalium ciliatæ. Tarsi quinque-articulati (intermedii interdum tamen quadri-articulati): posticus proximo articulo-rum brevissimo, tibiæque adnato, secundo tertio et quarto brevibus subæqualibus, quinto cæteris longiore: anticorum ungues breves, obtusi, conformes; posteriorum ungues dissimiles. Setæ tres subæquales, internodis (in ♂) longis. Forcipis pedes inarticulati. Oviparâ femina caret. Latera segmentorum abdominis plus minusve retro producta.

These insects live a very short time in their adult state. They fly in dense crowds over gentle streams, rivers and lakes, early in the morning and late in the day, at the beginning and end of summer. Dr. Hagen says that, in Prussia, the English species sometimes appear "in such quantities that objects near the water are covered as thick as with pig's." With us, they are less abundant.

Cenis macrura.

(Genitalia maris, Pl. V. fig. 4.)

Ephemera brevicauda, Fab. (♀ sub. ?) 1793. *C. macrura* & *interrupta*, Ste. 1835-6. [*E. pusilla*, Zet. MS., 1840.] *C. grisea*, Pict. 1843-5.

Subimago, v. v. s. Alæ griseæ vel nigricanti tinctæ, præcipue costas versus. Setæ nigricantes.

Imago, v. v. s. Caput nigrum, articulis antennarum proximis duobus, et junctura capiti-thoracis, cervinis. Prothorax corvius: meso- et meta-thoraces atricrini nitentes. Pedes & femoribus atris, tibiis tarsisque pallide nigricantibus: ♀ femoribus anticis griseis, posticis cretaceis. Abdomen ♂ griseum, latera versus corvium; segmentorum intermedia singula supra hinc in mediis longitudinalibus, punctis duobus apud bases duo-

busque subtus circa media, pellucidis: ♀ abdomine nigricante, latera juncturasque versus ochraceo, et subtus virescenti-griseo tincto. Et lateribus segmentorum apicalium setulæ tenues pallidæ breves producuntur. Setæ obscuræ, juncturis nigricantibus.

Long. corp. ♂ 4-5, ♀ 6; al. ♂ 4-5, ♀ 7; set. ♂ im. 14 & 15-15 & 16, subim. 3; set. ♀ im. 3-5 & 2, subim. 3 mm.

Hab.—England; Switzerland; Voslau (Brauer); Lapland (Zet.). May to September.

Spiders' webs and painted surfaces have provided me with dried specimens in widely distant localities. They fly at Reading from about 4-45 until 8 or 9 a.m., and again in the cool of the afternoon and evening, in June. I have seen subimagines with the dew thick upon their wings, resting on a flood-gate of the canal at 5.30 a.m. in June; and when the sunlight reached them, they immediately began to moult.

Cenis (?) chironomiformis.

(?) *Brachycercus chironomiformis*, Curt. 1834; (?) *Cenis chironomiformis*, Ste. 1835-6. *Oxygypsa lactea*, Burm. 1839; *Cenis lactea*, Pict. 1843-5. (?) *C. halterata*, Hag. 1863.

(Marginæ membranæ subgenitalis ♂ anguste furfureso, haud nigro veluti in precedente.)

Imago, v. v. s. Caput et thorax brunneo-lutescentes, nervis alarum obscuris. Pedes albicantes, femoribus anticis brunneis. Abdomen supra griseum, apicibus segmentorum et linea longitudinali media albicanibus, "strigisque indistinctis e spiraculis atris; venter flavescens" (Hag.). Setæ sub-fuscæscutes; forceps et margo membranæ subgenitalis anguste furfurosi absque macula basali obscura.

Long. corp. ♀ 4; exp. al. ♀ 7; set. ♀ 11 mm (Pict.).

Hab.—England (Curt.); Prussia (Burm., Hag.); Lako of Geneva (Pict.). In May.

The only specimens I have seen of this insect are in M. Pictet's collection: one (or more) of them is in spirits. The penis of this specimen was very similar in form to that of a dried specimen of *C. macrura*.

Cenis diminuta.

(Genitalia maris, Pl. V. fig. 5. Alia antica, Pl. II. fig. 4.)

Ephemerella minima, (?) Lin. 1747. *E. horaria*, (?) Lin. 1758. *Brachycercus minima*, (?) Curt. 1834. *Cenis diminuta*, *brevicauda* & *pennata*, Stc. 1835-6. *Cloe horaria*, (?) Ramb. 1842. *E. albipennis*, Atk. 1843. *Cloeon horaria*, (?) Walk. 1853.

Subimago, v. v. s. Alia canae, areis et marginali et submarginali fuliginosis pene usque ad apices. Setae albae, pubescentes.

Imago, v. v. s. Caput et prothorax fusci, obscuri, antennae albis, oculis atris. Meso- et meta-thoraces picei. Pedum antici sub-fuliginosi, femoribus griseis; posteriores cani, puncto atro ante femoris apicem. Abdomen vel in toto album vel cretaceum; scapissime tribus segmentorum apicalium tantum cretaceis, et caeteris griseis, juncturis lineaque longitudinali media cretaceis. Ventris segmenta saepe griseo bi-punctata sunt. Genitalia et setae albae.

Long. corp. ♂ 3-5, ♀ 4; al. ♂ 4, ♀ 3; set. ♂ 18 & 13, subim. 3 & 2-5-3 & 3-5; set. ♀ 3, subim. 2-25 mm.

Hab.—England; Visp in the Valais; Belgium (De Selys Mus.); Prussia (Hag.); Moscow (Oul.). From June to August.

Cenis diminuta.

C. diminuta, Walk. 1853. *C. amica*, (?) Hag. 1861.

(Genitalia maris eis precedentis parum similia.)

Imago, v. v. s. Thorax luteus: alis vitreis, costas versus nigricantibus; pedibus albis, femoribus anticis cinerascensibus. Segmentorum abdominis anteriora sub-virescenti-grisea, posteriora cretacea; segmentis singulis ad latera lineis obscuris longitudinalibus. Genitalia et setae albae.

Long. corp. ♂ 2-5, al. 3, set. 10-5 mm.

Hab.—S. John's Bluff, East Florida (E. Doubleday); Pennsylvania (Hag.).

The posterior femora of *C. amica*, Hag., have each a superior subapical black spot; but I suspect it will be found to be identical with *C. diminuta*, Walk.

Cenis hilaris.

Ephemerella hilaris, Say, 1839; *C. hilaris*, Walk. 1853.

Imago, v. v. s. ? "Thorax pallido fulvus, alis costas versus obscuris. Abdomen album, segmentis apicalibus singulis utrinque punctis tribus fuscis." (Say, abstract.)

Long. corp. 2 mm.

Hab.—Indiana. September. (Say.)

Cenis perpusilla.

C. perpusilla, Walk. 1853.

Imago, v. v. s. ♂. "Testacea; alae antice sub-cinereae: pedes setaeque albi."

Long. corp. 2-5, set. 12, exp. al. 6 mm.

Hab.—Ceylon. (Walk.)

Cenis discolor.

Oxygypha discolor, Burm. 1839; *Cenis discolor*, Pict. 1843-5; *Cloeon discolor*, Walk. 1853.

Subimago, ♀ s. s. "Supra cinerea, subtus pallida; alis infuscatis, costa obscuratori; his filamentisque analibus longius pilosis."

Long. corp. ♀ 2-5 lin.

Hab.—Cape of Good Hope. (Burm.)

Cenis argentalis.

C. argentalis, Pict. 1843-5.

(Confer cum *C. macerurii* et *C. dimidiati*.)

Subimago, s. s. "Caput et thorax grisei, fulgore argenteo; prothorax vix clarior. Alae griseae, costis suboscatisque nigris. Pedum antici grisei; posteriores albi. Abdomen basin versus griseum, apice albo. Setae albae, vix nigro annulatis." (Pict.)

Long. corp. ♀ 4, exp. al. 8, set. 3 mm.

Hab.—Sicily. (Pict.)

*Cœnis oophora.**C. oophora*, Pict. 1843-5.

Fusca; alis albicantibus, pedibus flavescensibus. (Pict.)

Long. corp. ♀ im. 4, exp. al. 11 mm.

Irb.—Sardinia. (Kollar.)

It is just possible that this species may be rediscovered, and determined by comparison with Pictet's figure; but the chances are small.

Cœnis luctuosa.

(Forcys maris, Pl. V. fig. 6.)

(?) *Brachytercus Harrisella*, Curt. 1834; (?) *C. Harrisella*, Ste. 1835-6. *Oxygijula luctuosa*, Burm. 1839. *Ephemera brevicornis*, Blanch. 1840. *Cœnis luctuosa*, Pict. 1843-5. *C. halterata* (nymphæ), Etn. 1858.

Subimago, v. v. s. Caput et thorax corvini; meso- et meta-thoraces atrii. Alæ nigricantes; nervis obscuris. Pedes albi, interdum vix fumati; antici tibiis tarsis et femoribus apicibus anthracinis. Abdomen pallide fulvum, setis atris.

Imago, v. v. s. ♂ & ♀. Caput et thorax picei, suturis et lateribus fuliginosis; tarsis anticis fuliginosis, et pedibus posticis nigricantibus juncturis atris. Abdomen rufo-fuliginosum, lineâ obscurâ brevi ad latera utrinque in singulis juncturis; forcipe setisque griseis vel nigricantibus.

Long. corp. ♂ 6·5, ♀ 5·7; al. ♂ 6, ♀ 5·5; set. ♂ im. 2½, subim. 4; set. ♀ subim. 3 & 4 mm.

Hab.—Somersetshire and Berkshire; Berlin (Burm.); Lago of Thun (Pict.).

The name of this species probably has reference to the pale oblong spots near the bases of the long bristle-like processes from the lateral edges of segments 7, 8 & 9. These bristles are found in all the English species, and are longer in the imago than in any other stage of development.

Genus EPHEMERELLA.

(Ala antica, Pl. II. fig. 5.)

Ephemerella, P., Pod. 1761; *Potamanthus*, P., Pict. 1843-5; *Potamanthus*, restrict., Hag. 1849; *Ephemerella*, Walsh, 1862.*

Nymphæ reptans, lamina branchialibus complexis quatuor. Segmentorum branchifera sunt 4, 5, 6 et septimum. Palpi maxillares tri-articulati: superiores brevissimi, ultimis articulorum penultimis longioribus; inferiores duobus prioribus articulorum subæqualibus, ultimis brevissimis.

Ei Leptophlebie subimaginis habitus similis est.

Imago. Alæ quatuor; setæ tres, subæquales; oculi maris sub-parviti. Tarsi quinque-articulati; articulorum proximus obsolens, tibiæ adnatus, secundus tertio subæqualis, quartus brevior; ungues dissimiles. Pes forcipis tri-articulatus, secundo articulorum longissimo. Lamina ♀ ventralis e penultimo segmentorum; sed oviavalvula caret.

Ephemerella ignita.

(Genitalia maris, Pl. V. fig. 7. Ala postica, fig. 7a.)

Ephemerella ignita, Pod. 1761. *E. erythrophthalma*, Schr. 1798. *E. fusca*, dilata, apicalis, rufescens, rosca & *Bacis obscura*, Ste. 1835-6; *Potamanthus erythrophthalmus*, apicalis, dilata, rosca & *erythroccephalus*, Pict. 1843-5.

Subimago, v. v. s. Alarum antice saturate cinerea, postice albo-cervina.

Imago, v. v. s. ♂. Oculi supra brunneo-carnei, vel carnei; partes inferiores olivaceæ vel flavo-olivaceæ. Thoracis tergum fuscum. Ala vitrina, crassioribus nervorum longitudinalium cum punctis nodalibus vix piceis, vel albeo-coloratis. Pedes pene sulphurei; antici tibiis Intescensibus, et tarsis obscure testaceis; posteriores tarsis testaceis. Abdomen supra saturate fuscum, lateribus juncturisquo ochraceis; subtus hepaticoloratum, interdum fuliginoso tinclum, lineis brevibus divergentibus

* *Ephemerella*, Schimp (1850, or 1850), is a genus of the Phasari, an order of the Acrocaripus section of the Mosses.

duabus punctisquo sequentibus duobus apud basin singuli segmenti obscure indicatis. Setae fuliginosae, juncturis saturatoribus; forcops testaceus.

♀. Oculi flavo-olivacei. Tibiæ anticae testaceae. Puncta nodalia alarum eis maris distinctiora. Processus ventralis ponulitini segmentorum retusus.

Long. corp. ♂ 8-9; al. ♂ 9, ♀ 10-11; set. ♂ 10 & 11-12 & 11, subim. 8 & 7; set. ♀ 8 & 9, subim. 7 & 9 mm.

Hab.—Great Britain, Germany, Switzerland; also Madrid (E. Pict. Mus.). Frequent streams and rivers. June to September.

Ephemera gibba.

Potamanthus gibbus, Pict. 1843-5.

Subimago. "Ala saturate griseæ, apud bases lutescentes."

Imago, v. s. ♂. "Oculi acute rubri. Corpus fuscovirginosum; alis vitreis; pedibus fulvis, anticis femoribus tarsisque fuscis; setis fulvis, juncturis atris."

♀. "Pallidior mare; capite thoraceque fulvis, illo atro-punctato, punctis super vericem confluentibus, hoc punctis parvis duobus fuscis in medio prothoracis tergi, et pluribus commissurarum dorsalium mesothoracis fuscis. Abdomen rufescens, supra punctis obscuris duobus in medio segmenti singuli." (Pict.)

Long. corp. ♂ 6-7, ♀ 7; set. ♂ 9, subim. 7; set. ♀ 8, subim. 7; exp. al. ♂ 15-16, ♀ 21 mm.

Hab.—A streamlet near Villeneuve, at the head of the Lake of Geneva; in July (Pict.).

Ephemera gena.

Potamanthus genæ, Pict. 1843-5.

Subimago. "Alæ griseæ; antica basi subcoarctata fulva."

Imago, ♀. "Caput et oculi fulvi, maculâ supra fuscâ. Prothorax maculâ utrinque fuscâ; mesothorax æneus, politus. Alæ vitreæ, iridicolarate; nervorum longitudinalibus fulvi, transversales grisei. Pedes fulvi, juncturis tarsisque nigricantibus. Abdomen olivaceo-fuscum; setæ testaceæ, juncturis atris." (Pict.)

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Long. corp. ♀ 6, set. 8; exp. al. 18 mm.

Hab.—Mt. Saleve. (Pict.)

Professor Pictet's figure of the nymph of *E. gena* closely resembles a dark variety of the nymph of *E. ignita*.

Ephemera invaria.

(Genitalia maris, Pl. V. fig. 8, 8a.)

Dactis invaria & *fuscula*, Walk. 1853. *Ephemera exarctiana*, Walsh, 1862.

Subimago, v. s. s. Alæ setisque pallide nigricantes.

Imago, v. s. s. ♂. "Oculi supra flavi, infra fuscii" (Walsh, v. s. s.). Tergum thoracis saturate luteum, vel fuscum. Alæ vitreæ, vix flavo apud costas; crassioribus nervorum lutescentibus vel fuscis. Pedum antici piceii; posteriores testacei, tarsis subtestaceis, apicibus juncturisque fuscis vel rubiginosis-luteis. Abdomen supra piceum vel fuscum, vel rubiginosum, apicibus segmentorum saturatoribus; subtus testaceum. "Setæ albicantes, juncturis fuscis." (Walsh.)

♀ mari similis.

Long. ♂ 5.5-7.5, ♀ 5.5-6.5; set. ♂ 11-13, ♀ 10-12.5; exp. al. ♂ 14.5-20, ♀ 15-19 mm.

Hab.—Nova Scotia (Walker); Illinois (Walsh).

Ephemera consimilis.

E. consimilis, Walsh, 1862.

Imago, ♂. "Pedes immaculati; antici apicibus tibiarum et proximis articularum tarsalium fuscis." (Walsh.)

Mr. Walsh describes the prescutum of the mesothorax as being "half as long again as wide," and the mesothorax itself as "being 4-5 times as long as wide;" whereas, in the preceding species, the one "is scarcely longer than wide," the other is "scarcely three times longer than broad."

Long. corp. ♂ 5, set. circa 5; exp. al. 14 mm.

Hab.—Rock Island, Illinois (Walsh).

Genus *Baetisca*.

(Ala antica, Pl. II. fig. 6.)

Baetis, p., Say, 1839; *Baetisca*, Walsh, 1862.

Nympha reptans: "adulta laminis branchialibus externis caret; primum tamen segmentorum laminam duplicem obtectam utrinque habet. A thorace segmentorum abdominalis quinque priorum dorsa obteguntur, elementis tergi thoracis confluentibus et retrorsum productis; itaque non quidem alae, nodum thoracis commissuræ, videri possint" (Walsh). Caput a fronte bicornie; labium integrum; maxillarum inferioris palpus bi-articulatus, ultimo articulorum singulariter bifido, et prae cheliformi.

Imago. Alae quatuor; setarum media abortiva; oculi maris integri. Tarsi quinque-articulati; articulorum primus longus, tibiae adnatus, secundus primo brevior sed tertio aequalis, quartus paulo brevior; ungues dissimiles. Pes forcipis tri-articulatus; articulorum primus longus, secundus longissimus, et tertius brevissimus. Femina ovivalvula caret; processus ventralis penultimo segmentorum excurrit.

Baetisca obesa.

(Genitalia maris, Pl. V. fig. 9.)

Baetis obesa, Say, 1839; *Baetisca obesa*, Walsh, 1862.

Subimago, v. s. s. Alae corvine, lineolis brevibus transversalibus numerosis pellucidis; antica semifasciis transversalibus pellucidis duabus, una e costa prope apicem, altera quoque basi proprore. (Say & Walsh.)

Imago, v. s. s. ♂. Rufo-fusca. Ala vitreae, nervis tenuissimis; "anticarum costa subcosto-tegno lutescentes." Pedes testacei; antici gambose tincti, juncturis et ultimo articulorum tarsalium obscuris; posteriores ultimis articulorum quoque obscuris. Prosternum prominens, bidentatum. Abdomen subtus, praecipue apicem versus, rubido-albo tinctum; segmentorum penultimum linea longitudinali in medio ventris fusca. Setae pubescentes, albæ, juncturis obscuris.

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♀ similissima maris, processu ventrali segmentorum penultimi breviter inciso.

Long. corp. ♂ 7-8, ♀ 6-8; set. ♂ ♀ im. 6-7, ♀ subim. 4-5; exp. al. ♂ 20-22, ♀ 22-25 mm.

Hab.—Illinois (Walsh), Indiana (Say); and California.

Genus *Cloeon*.

(Ala mesothoracica, Pl. II. fig. 7.)

Ephemera, P., Lin. 1761; *Cloeon*, Leach, 1815; *Cloe*, P., Burm. 1839; *Cœnis*, P., Walk. 1853; *Ciloeon*, Lubbock, 1863; *Cloeopris*, Ehn. 1866.

Nympha natans, laminis branchialibus utrinque septem; laminarum septima simplex, caeteræ bilamellares, omnes marginibus integris. Palpi biarticulati, articulis longitudine aequalibus; inferiores depressi, apicibus obliquis; superiores tenuissimi, filiformes.

Alis erectis setisque divergentibus subimago quiescit stans in pedes omnes.

Imago. Alae setaeque duae. Oculi maris bipartiti, parte superiori sub-turbinata. Tarsorum posteriores quadri-articulati; articulorum primus multo longissimus, tibiae adnatus, secundus brevis, tertius brevissimus; ungues dissimiles. Pes forcipis tri-articulatus, secundo articulorum longissimo; penis occultus. Ovivalvula femina caret.

Cloeon dipterum.

(Forceps, Pl. V. fig. 10.)

Ephemera dipterum, Lin. 1761. *E. striata* & *annulata*, Müll. 1776. *Cloeon pallida*, Leach, MS., 1815. *M. marginata*, Gor. & Pritch. 1829. *C. marmoratum* & *obscurum*, Curt. 1834. *C. cognatum*, *dumidatum*, *virgo* & *consobrinum*, Ste. 1835-6. *Cloe diptera*, Burm. 1839. *Cloe affinis*, Ramb. 1842. *Cloe virgo* & *cognata*, Pict. 1843-5. *E. culiciformis*, Fonscol. 1846. *C. diptera* & *cognata*, Walk. 1853. *Cloeon dipterum*, Lubbock, 1863-5; *Cloeopris diptera*, P., Ehn. 1866.

Subimago, v. s. s. Alae pallide corvino tincto.

Imago, v. v. s. ♂. Oculi turbinati sub-carnosi, vel rufo-hepaticolorati; inferi atropiceo. Torgum tho-

racis aeterrimum, politum. Alæ vitrinæ, nervis quasi atris; horum tres priores incolorati: nervula apicales areæ marginalis recte, pauce (3-5), atque vix obliquæ. Pedum antici femoribus vel albidis apicibus cretaceis, vel virescenti-cinereis, singulis maculis pro-apicalibus rufescentibus, et tibiis tarsisque vel cinereis vel femoribus sepe indistreta, atque juncturis et articulis terminalibus tarsorum (proxima juncturam excepta) atris. Abdomen supra atro-piceum, juncturis ochraceis; infra saturato cinereum, maculis rubiginosis duabus in juncturis albidis singulis. Setæ albe, juncturis in vices late atris. Forceps cinerascens, proximis articulorum fuscis.

Var. ♂. v. s. s. Parvum. Segmentorum abdominis 2-7 grisea, apicibus strigisque trigonali ex eis utrinque producta rubiginosis: tria apicalia picea.

Hab.—Belgium.

♀. Corpus luteum. Oculi olivacei, obscure bicincti. Capitis vertex rufescente bi-strigatus. Alæ vitrinæ, areis et marginalibus et submarginalibus tripusque prioribus nervorum longitudinalium electro-coloratis, nervis transversalibus inclausis albis; cæteri nervorum atrii: horum plures transversalium incrassati. Pedum antici gambosi, tibiis tarsisque testaceis juncturis obscuris; posteriores femoribus fere electro-coloratis, cingulis et præapicali et apicali rufescentibus, tibiis tarsisque testaceis, unguibus et 2-4-juncturam obscuris. Setæ rubido-albe, juncturis in vices late atris.

Long. corp. ♂ 5-10, ♀ 11; al. ♂ 6-11, ♀ 10; set. ♂ 13-20, subim. 14; set. ♀ 12-15, subim. 12 mm.

Hab.—Europe, and the Madagascars. In tranquil waters: May to July.

I have seen female specimens of two species of *Cloeon* very closely related to *C. dypteron*; one inhabits N. W. India, the other Kafsna, S. Africa.

Cloeon simula.

(Forceps, Pl. V. fig. 11.)

O. simile, Ehn. 1870.

Subimago, v. v. s. Alæ murinæ, apud costas et bases vix subflavescentes, nervis furfurosus. Setæ fusco-atræ. Oculi turbinati maris subolivacei.

Imago, v. v. s. ♂. Oculi turbinati olivacei, vel saturate virescenti-sulphurei; inferiores atro-piceo, vel atro-virentes. Thoracis tergum vel aeterrimum, vel fuscum, politum. Alæ vitrinæ; subcosta tertiusque nervorum longitudinalium substraminei; nervula apicales areæ marginalis multæ, sparsim conjunctæ. Pedes olivacei; posteriores tarsis saturatoribus; antici tibiis viridigriseis vel atro-virentibus, et tarsis griseis vel atris. Abdominis dorsum piceo-fuscum; venter cinereus, apice vix fulvescens. Forceps virescenti-albus. Setæ rubido-albe, juncturis rubescentibus.

♀ mari simillima. Oculi atrii. Caput circa ocellos castaneum, lineis vel strigis duabus concoloribus super verticem: carina facialis tuberculos duos parvos piceos utrinque habet. Abdomen supra luteo-fuscum, juncturis atris, ultimo segmentorum penultimoque stramineis. Pedes viridi-olivacei, tibiis tarsisque saturatoribus.

Long. corp. ♂ 9, ♀ 10; al. ♂ 8, ♀ 10-11; set. ♂ 14-15, subim. 9; set. ♀ 10-14, subim. 7-9 mm.

Hab.—Near Ketterford, in Nottinghamshire, and at Quy Fen, near Cambridge. September and October; in still water.

The name *simile* has reference to the similarity between the sexes.

Cloeon subinfuscatum.

Cloe subinfuscatæ, Ramb. 1842.

Subimago, v. s. s. ♀. Alæ saturate corvinae, nervis longitudinalibus luteis: nervulae apicales areæ marginalis multæ (circa 12) sparsimque divise. Thorax lutescens, pedibus luteo-juridis. Setæ juncturis obscuris.

Long. corp. ♀ 9, al. 11 mm.

Hab.—Provence. (Rambur.)

Cloeon obscurum.

Cloe obscuræ, Ramb. 1842: nec Curt.

Subimago, ♀, v. s. s. Alæ murinæ, nervis luteis: nervulae apicales areæ marginalis simplices (circa 8 in numero), et irregulariter flexuosæ. Thorax rufo-testaceus: pedes testacei.

Long. al. 9, corp. 6 mm.

Hab.—France; probably near Paris.

The name will not obtain, Curtis having previously applied "*C. obscurum*" to *C. dipterum*, subim.

Cloeon russiaum.

(Forceps, Pl. V. fig. 12.)

Ephemerella russiaum, Afil. 1776. *Cloeon dimidiatum*, Curt. 1834. *E. culiciformis* & *striata* (?), Blanch. 1840. *Cloe panula*, Ramb. 1842. *Cloe dimidiata*, Pict. 1843-5; *Cloeon dimidiata* & *Cecis sinensis*, Walk. 1853; *Cillocon dimidiatum*, Lubbock, 1863 & -5. *Cloeopsis dipterum*, var., Ebn. 1866 & -7.

Subimago, v. v. s. Alae canae; apud crassiores nervum saepe gramineo tincte. Setae cinerascetes.

Imago, v. v. s. Variabilissima colore: ♂ maribus *Cloeon similis*, *Baetis binoculati* atque varietatum hujus, ♀ uxoribus *Centropthili luteoli* et *Baetis binoculati* colore similis.

Var. 1. ♂. *Cloeon similis* similis. Oculi turbinati fuliginosi. Tergum thoracis aterrimum politum. Pedes pallide virescenti-flavescetes, tursis nigricantibus. Abdomen saturate fuscum, juncturis flavescantibus, tracheisque subcutaneis atris. Setae albae, juncturis rufescentibus. Forceps albus, apices versus nigricans.

Hab.—Reading (Berkshire), and near Cambridge; as well as in the Valais Canton, near Visp.

Var. 2. ♂. *Baeti binoculato* similis. Oculi turbinati sulphurei vel flavi; inferiores fuliginosi, vel virescenti-cinerei, vel etiam glauci. Tergum thoracis fuscum, vel fusco-luteum, vel saturate fulvifuscum vel testaceo-fulvifuscum. Alae vitrine; nervulae apicales areae marginalis (6-8) oblique, interdum sparse furcatae prope subcostam. Pedum antici virescenti-grisei, tibiis tarsisque griseis vel canis; posteriores cretaei vel sulphurei, tibiis tarsisque obscure albis. Segmentorum abdominalis 3-6 vel 7 alba, furosa vel fusca, juncturis ochraceis, et subtus plus aut minus ochracea. Setae albae, juncturis interdum anguste obscuris.

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Hab.—Temperate Europe, and North China. This is the normal form.

Var. 3. ♂ feminae similis, oculis thoraceoquo eis ♂ var. 2 similibus.

♀. Oculi caesi, vel atro-fuliginosi. Capitis vertex strigis longitudinalibus rufescentibus datus. Thoracis tergum fulvifuscum, vel pallidissimo sub-flavum, interdum aterrimum, politum: mesothoracis apex nonnunquam gramineus. Alae vitrine, bases versus saepe gramineo tincte. Femora gramineo-alba, tibiae tarsisque albi, ulimis articulorum cinereis. Abdomen supra vel pallide sub-olivaceum, vel fulvifusco-illum: segmentorum 2-7 singula macula parva in medio dorsii, datus apud juncturam apicalem, et linea curvata indisereta utrinque, fulvifusis; striga juxta spiracula cum tracheis subcutaneis atris. Interdum abdomen est fuscum. Setae albae.

Hab.—Temperate Europe.

Long. corp. ♂ 5-9, ♀ 7-8; al. ♂ & 7-8; set. ♂ 13-15, subim. 9; ♀ 10-12, subim. 6-8 mm.

Hab.—Temperate Europe and Northern China.

Cloeon mendax.

Cloe (C) mendax, Walsh, 1862.

Subimago. "Alae sub-opaeae, vix nigricanti tincte."

Imago, ♂. "Pallide rubiginosum, alis vitreis. Pedes pallidi, apicibus tarsorum obscuris. Abdomen subtus pallide virescens, pellucidum, apicem versus opacum."

♀. "Supra pallidior; interdum thorace sub-virescenti." (Walsh.)

Long. corp. ♂ 4, ♀ 4-5; set. ♀ 9, ♂ subim. 8; exp. al. ♂ & ♀ 14 mm.

Hab.—Rock Island, Illinois. (Walsh.)

Cloeon dubium.

Cloe (C) dubia, Walsh, 1862.

Subimago. "Alae fumatae, nervis longitudinalibus saturatioribus."

Imago, ♂. *Baeti propinqua* similis (*g. cf.*) sed minor. Maculae laterales in abdominalis medio pollu-

cidae. Inter nervos longitudinales, super marginem terminalium, nervula forsan duplice sint."

♀. "Caput, thorax et abdomen pallide rubiginosi: horum primum et ultimum interdum obscurata. Femur anticum plus aut minus rubiginosum. Venter pallide flavus vel virescens." (Walsh.)

Long. corp. ♂ 2.5-4, ♀ 2.5-3; set. ♂ 4.5-5.5, ♀ 3-4.5; exp. al. ♂ ♀ 8-10.5 mm.

Hab.—Rock Island, Illinois. (Walsh.)

Cloeon vicinum.

Cloe vicina, Hag. 1861.

Imago. ♂. Oculi rufi. Thorax fulvus, alis vitreis. Pedes albicantes; antici bases versus fulvi. Abdomen album, pellucidum, tribus segmentorum apicalium supra fuscis, et setis albidis."

♀. "Corpus cretaceum, alis vitreis, pedibus et setis albicantibus." (Hag.)

Long. corp. ♂ 4; set. ♂ 10, ♀ 6; exp. al. 10 mm.

Hab.—Washington. (Hag.)

Cloeon vitripenna.

Ephemera (Cloe) vitripennis, Blanch. 1851.

Imago. "Fusco-virescens; capite supra flavo-rufo; alis vitreis, indicoloratis; pedibus pallide testaceis, modis et apicibus femorum plus aut minus fuscis." (Blanch.)

Hab.—Chili. (Blanch.)

Genus CENTROPTILUM.

(Ala antica, Pl. II, fig. 8.)

Ephemera, P., Mil. 1776; *Cloeon*, P., Ste. 1835-6; *Cloe*, P., Burm. 1839; *Baetis* (A), Etn. 1868; *Centroptilum*, Etn. 1869.

Nympha agilis; segmentorum abdominis 1-7 laminis branchialibus simplicibus et integris, ovatis vel obovatis. Maxillarum superiores palpis quadri-articulatis; articularum primus brevissimus, secundus longus et ceteris conjunctum aequalis. Maxillarum inferiores dimidiis labii

subaequales, acuto subtriangulares, angustae, palpis biarticulatis, depressis, articulis longitudine subaequalibus; articulorum ultimus apice lato expanso subtruncato.

Ei *Cloeonis* submarginis habitus admodum similis est.

Imago. *Cloeoni* similima; nisi alis posticis binerviatis, et per-angustis.

Centroptilum luteolum.

(Forceps et ala postica, Pl. V, fig. 13, 13a.)

Ephemera luteola, Mil. 1776. (?) *E. albipes* & *parvula*, Scop. 1763. *Cloeon ochraceum*, *hyalinatum* & *albipenne*, Ste. 1835-6. *Cloe halterata*, Burm. 1839. *Cloe translarida*, *ochracea*, *hyalinata* & *albipennis*, Pict. 1843-5; *Cloeon transluida*, *hallerata*, *lucidinata*, *albipennis* & *ochracea*, Walk. 1853. *Cloeon bioculatum*, Hag. 1863. *Baetis luteolus*, Etn. 1868; *Centroptilum luteolum*, Etn. 1869.

Subimago, v. v. s. Alae vix fumatae, vel pallidissime flavescentes. Femora ochracea, tibiae cinercae, tarsi nigricantes; setae fumatae vel cinercae.

Imago, v. v. s. ♂. Oculi turbidati acuto vel saturate carnei, inferiores sub-olivacei. Tergum thoracis fuscum, vel piceum, vel atrum. Alae vitreae, nervis longitudinalibus vix flavescens. Pedes cretacei, tibiis tarsisque plus aut minus canis vel fumatis. Segmentorum abdominis sex priora vitrea, alba, maculis apud apices utrinque furfurosis, aut apicibus in toto furfurosis; cetera furfurosa vel fusca, juncturis oclivaceis; venter pallidus, apice testaceo. Setae forcepsque albae.

♀. Dorsum furfurosum, vel testaceum, vel fusco-olivaceum; venter pallidus. Oculi olivacei, vel atro-virentes, vel atrii. Thoracis tergum umbrinum, vel fusco-olivaceum. Pedes vel virescenti-flavi, tibiis tarsisque pallide virescenti-griseis, vel flavescens, tibiis tarsisque canis. Abdomen interdum ochraceo-furfuratum; tracheae subcutanea saturatiores.

Long. corp. ♂ 6-7, ♀ 5-6; al. ♂ ♀ 6-7; set. ♂ 10-14, subim. 7; set. ♀ subim. 6-9 mm.

Hab.—Switzerland, Germany, Great Britain and Norway (Alten); also Hudson's Bay territory. April to November.

Centropetillum pennulatum.

(Forceps et ala postica, Pl. V. fig. 14, 14a.)

C. pennulatum, Etn. 1870.

Imago, v. v. s. ♂. Oculi turbinati carnei, inferiores olivacei vel atrii. Prothorax supra nigricans vel fulvifuscus; meso- et meta-thoraces fusci vel fulvifusci. Alae vitrinae. Femora alba, apicibus cretaceis; tibiae tarsique albi, ultimis articularum vix cervinis. Segmentorum abdominalis 2-6 vitrina, alba, juncturis vix castaneis; caetera supra castaneo-rubiginosa, infra ochro-leuca. Setae forefexque albae.

♀. Oculi virescenti-grisei: vertex capitis flavus, striga lata longitudinali saturato rubiginosa. Tergum thoracis fulvifuscum. Pedes cani, femoribus suberetaeis, vel gamboso-albidis. Abdomen supra pallide virescenti-griseum, juncturis pallidioribus; infra pallidum humaculatum: striga dorsalis longitudinalis in medio, apices segmentorum, et maculae triangulares ex his ad latera prorecte, lutescentes. Setae pedesque eis maris similes.

Long. corp. ♂ 8-9, ♀ 8; al. ♂ ♀ 8; set. ♂ 14-17, ♀ 11 mm.

Hab.—The Manifold, Lam, Staffordshire, and Grazyly, near Reading. August to October.

Centropetillum lituratum.

Ephemerella eulitiformis, Scop. 1763 (*nee* Lin.). *Clas litura*, Pict. 1843-5; *Clocon litura*, Walk. 1853.

Subimago. "Ala pallide fuscocenti-grisea. Setae fusca."

Imago, ♂. "Oculi turbinati sulphurei. Tergum thoracis fuscum, striga atrii in medio a fronte retrorsum sed non metathorace tenuis attingente: metathorax punctis atris duobus. Alae vitrinae; pedes flavescentes. Abdomen rufiflavum, apicem versus obscurius, maculis lateralibus. Setae flavescences, juncturis atris."

♀. "Flava, oculis nigris, lineis rufescentibus parvis duabus super mesothoracem, et maculis paucis lateralibus super abdomen." (Pict.)

Long. corp. ♂ 8, set. 12, exp. al. 17 mm.

Hab.—Mt. Salevo (Pict.); in the autumn.

Centropetillum stenopteryx, n. sp.

(Ala postica et forceps, Pl. V. fig. 15, 15a.)

Subimago, v. s. s. ♀. Alae vix fimbriatae. Thorax ochraceus, pedibus testaceis, tarsis pallidis.

Imago, v. s. s. ♂ unoxi simillimus, corpore fulvifusco, setis albis. [Oculi turbinati olim rufescentes?]

Long. corp. ♂ 4, ♀ 4.5; al. ♂ 4, ♀ 5.5; set. ♂ ♀ 5-6 mm.

Hab.—Carinthia (Zeller's MS.).

Genus BARRIS.

(Ala antica, Pl. II. fig. 9.)

Ephemerella, P., Lin. 1746; *Baetis*, Leach, 1815; *Clas*, P., Burm. 1839; *Brachyphlebia*, Westw. 1840; *Clocon*, P., Walk. 1853.

Nympha agilis, laminae branchialibus simplicibus, integris, ovatis vel obovatis, septem utrinque. Palpi maxillares biarticulati, articulis longitudine subaequalibus; superiores teretes; inferiores proximis articularum subcylindricis, apicalibus depressis et spatulatis atque lateraliter incis. Dimidia labii acuta, subulata, maxillis angustiora.

Subimago inter quatuor *Cloconi* vel *Centropetilio* simulat.

Imago. Oculi maris partiti, superioribus dimidiatum sub-turbatis. Alae quatuor; posteriores minimae, oblongae, costae unidentatae, atque tribus vel duobus nervorum longitudinalium, quorum secundus vel simplex vel divisus sit. Setae duae (*B. ferrugineus* tamen tertiam medianam brevissimam habet). Forcipis artus quadrarticulati, penultimis articularum plerumque longissimis. Remina ovarialium caret; nisi fugax sit.

The species mostly inhabit rivers and streamlets. They appear principally in spring and early in the autumn; but the exact period depends upon climate. Moustous specimens seen to be more frequently met with in the autumn than in the spring; they throw much light upon the morphology of insects in general.

Baetis lineolatus.

(Forceps et ala postica, Pl. V. fig. 16, 16a.)

Ephemerella lineolata, Lin. 1758. *E. fuscata*, Lin. 1761. *E. diaphana*, Müll. 1776. *E. flavu*, Schm. 1776. *M. lutea*, Fourc. 1785. *E. notata*, Guél. 1790-3. *E. cuticiformis*, P., Ol. 1791. *E. striata*, (?) Walk. 1802. *Baetis lineolatus*, Leach, 1815; *B. lineolata*, Sam. 1819. *B. fusca* (subim.) & *autumnalis* (monstr. ♂), Curt. 1834. *B. fuscata*, (?) Ste. 1835-6. *Brachyphlebia lineolata*, Westw. 1840; *Cloa lineolata* & *autumnalis*, Pict. 1843-5; *Cloea lineolata* (excl. ♂), *autumnalis* & *striata*, (?) Walk. 1853. *Cloea punctulum*, Hag. 1863; *Cloa punctata*, Oul. 1867.

Subimago, v. v. s. Alarum anticae fumatae, posteriores cretaceae. Pedes maris femoribus virescenti-albis, tibiis viridi-olivaceis, maculis obscuris singulis apices versus, atque posterioribus femorum et tibiarum stramineis, tarsis omnibus corvinis. Setae fumatae.

Imago, v. v. s. ♂. Oculi turbinati citrini, vel acute flavi; inferiores flavo-, vel atro-virentes.

Var. 1. ♂. Thoracis tergum fulviferosum, vel fuscum, vel atro-piceum. Alae vitinae, fulgore auroreo, et nervis albicantibus. Pedes cretacei; tibiae tarsisque antici atque unguis fumati; posteriores tibiarum albae. Segmentorum abdominis 2-6 vel 7 cretacea vel flavo-alba, spinaculis rubiginosis vel atris; caetera supra vel furfu-rosa, vel fusca, vel fusco-olivacea, juncturis sulphureis; subtus ochracea vel saturate-olivacea. Setae albae.

♀ et Var. 2 ♂. Corpus pallide fuscum, vel fusco-olivaceum; subtus olivaceum. Oculi feminae atrii, vel atro-piceae. Alae vitinae, nervis fuscis, vel piceis. Pedum antica femoribus fusco-olivaceis, tibiis et tarsis fulgri-femoribus prasinio-olivaceis, obscurae apud apices maculatis, bus segmentorum anguste fuscis; et brachia supra apici-vel atris vel fuliginosis; segmentum singulum subtan- apud basin punctis obscuris duobus. Setae vel virescenti-atque bases versus corvinas vel atris.

Long. corp. ♂ 6-8, ♀ 4-7; al. ♂ 6-8, ♀ 6-7; set. ♂ 12-14, subim. 7-10, ♀ 10-12, subim. 8-10 mm.

Hab.—Great Britain, France, Switzerland (Pict.), Germany, Moscow (Oul.), Scandinavia, and Hudson's Bay (Dale Mus.). May to October. In rivers.

Mr. Walker's specimen from N. America (G., Brit. Mus. Cat.) represents a distinct and undescribed species.

Baetis debilis.

Cloea debilis, Walk. 1860.

Imago ♀, v. v. s. "Fulva, capite nigro, abdomine testaceo; setis pedibusque albis, alis vitreis, renis albis."

Long. corp. 5, exp. al. 12 mm.

Hab.—Hindustan. (Walk.)

This species can only be identified by the type.

Baetis scambus.

(Forceps et ala postica, Pl. V. fig. 17, 17a.)

B. scambus, Ehn. 1870.

Subimago, v. v. s. ♂. Alae setaeque cinerere. Pedes cretacei vel virescenti-albi, tibiis tarsisque cinereis. Forceps cretaceus.

♀. Femora maculis vix discretis, subapicalibus cinereis. Imago, v. v. s. ♂. Oculi turbinati caryophyllacei, vel caryophyllaceo-fuliginosi: inferiores nigri. Tergum thoracis aterimum vel piceum: alae vitinae. Pedes cretacei vel virescenti-grisei; tarsis anticis fumosis, posterioribusque tibiarum et tarsorum virescenti-albis, juncturis et unguibus vix obscuris. Abdominis segmentorum quatuor apicalia fusca, caetera alba vel virescenti-alba, fusco vix suffusa. Setae albae, prioribus juncturarum vix obscuris.

♀. Corpus olivaceo-fuscum. Alae vitinae, nervis atro-piceis. Oculi saturate olivacei. Femora olivacea; tibiis tarsisque saturate fumosi. Setae quoque fumosae, juncturis vix obscuris.

Long. corp. ♂ 6, ♀ 6-5; al. ♂ 6, ♀ 7; set. ♂ 12, subim. 7; set. ♀ 9-10, subim. 5 mm.

Tab.—Ashbourne and Norbury, Derbyshire. June and September.

Daelis fatitimus, nov. sp.

(Forceps et ala postica, Pl. V. fig. 18, 18a.)

Imago, v. v. s. ♂. Oculi turbinati fuliginosi. Thoracis tergum aterimum politum. Alæ vitineæ, nervis pellucidis. Pedes albi; antici femoribus cretaceis. Abdomen album, tribus segmentorum apicalium fasciis. Setæ forcepsquo albæ.

Var. v. v. s. Abdomen fuscum. Pedes virescenti-grisei, femoribus apices versus punctis singulis paulo obscuris, et tarsis anticis fere griseis.

♀, v. v. s. Oculi atro-fuliginosi. Pedes virescenti-nigri, tibiis et tarsis saturate albis. Abdomen piccum, apicibus segmentorum obscuratis. Setæ albæ.

Long. corp. ♂ ♀ 5; al. ♂ ♀ 6; set. ♂ 12-16, ♀ 7 mm.

Hab.—The streamlet by the Oratory, on the right-hand side of the Val Monjoie, between Contamines and Notre Dame de la Gorge. July.

Daelis atrebatinus.

(Forceps et ala postica, Pl. V. fig. 19, 19a.)

D. atrebatinus, Em. 1870.

Subimago, v. v. s. Alæ ♂ cinereæ; ♀ saturate fumam. Pedes ♂ olivacei vel saturate virescenti-grisei, posterioribus tibiarum cinereis et lineis singulis brevibus externo-basalibus atris: tarsorum anticæ atris, posteriorum saturate nigricantes juncturis atris, omnes ultimis articulorum piccis: ♀ tarsis rufo-picceis, juncturis atris. Setæ ♂ corvinæ, ♀ atro-picceæ.

Imago, v. v. s. ♂. Oculorum turbinati rufo-hepaticolorati, inferiores fuliginosi. Tergum thoracis aterimum politum. Alæ vitinæ; anticeo tribus prioribus nervorum longitudinalium virescenti-griseis. Pedum anticæ femoribus atro-virentibus, tibiis atris singulis maculis pallidis sub-apicalibus, et tarsis saturatissime cinereis; posteriores saturate olivacei, apicibus tibiarum tarsorumque virescenti-griseis. Segmentorum abdominis 2-7 fumata, singula lineis brevibus punctisquo obscuris duo-

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bus dorsalibus, subtus strigis atris dantibus, atque juncturis virescenti-albis; cætera fusco-picca, juncturis flavis. Setæ rubido-albæ, juncturis obscuris. Forceps fumatus.

♀ mari simillima; secundo articulorum antennalium fore omnino rubiginoso, vertice capitis inter ocellos picco; abdomine vel luteo-vel rufo-picco, juncturis oclraceis, setisque fuliginosis.

Long. corp. ♂ 7, ♀ 8; al. ♂ 6-7, ♀ 8; set. ♂ 11-13, subim. 8-5; set. ♀ 8-10, subim. 7-5 mm.

Hab.—The river Kennet near Reading, Berkshire; in October.

Daelis Rhodani.

(Forceps et ala postica, Pl. V. fig. 20, 20a.)

Cloe Rhodani, Pict. 1843-5; *Cloeon Rhodani*, Walk. 1853. *Cloe naderensis*, Hag. 1865.

Imago, v. v. s. ♂. Oculi turbinati lenticulo-fuliginosi. Thoracis tergum aterimum politum. Alæ vitreæ, nervis vix fasciis. Pedum anticæ tibiis tarsisque nigricantibus; posteriores pallidiores, femoribus saturate virescenti-griseis vel pallide olivaceis, et tarsis vel atris vel nigricantibus. Dorsum abdominis fusco-virescenti-griseum, juncturis oclraceis vel canis, et tribus segmentorum apicalium saturatioribus; subtus saturate virescenti-griseum, segmentis singulis sæpe strigis brevibus divergentibus propæ bases, punctisque sequentibus duobus, nigricantibus. Setæ virescenti-griseæ, juncturis fuliginosis vel rubiginosis.

Var. ♂ im. v. v. s. Oculi turbinati carneo-hepaticolorati; inferiores saturate virescenti-grisei. Thoracis tergum luteum, postico nigro maculatum. Pedes cretacei, unguibus atris; anticæ gamboso tincti, tarsis fumatis. Alæ vitinæ, nervis virescenti-griseis, subcostis radiisque bases vorsus atris. Abdomen album, quatuor segmentorum apicalium luteis; segmenta pallida, apicibus luteo marginatis, marginibus ad latera antice productis. Forceps albus. Setæ albæ, juncturis rubiginosis.

Hab.—In the same stream as *D. fatitimus* (p. 113).

♀ im. mari simillima. Tergum thoracis interdum brunneo-fuscum. Abdomen opacum.

Subimago, v. v. s. ♂. Alæ cinereæ. Pedum antici virescenti-grisei, maculis singulis crescentiformibus femoribus apices versus obscuris, tibiis nigricantibus, et atris. Setae atro-corrineæ.

Long. corp. ♂ 5.5-9, ♀ 6-8; al. ♂ 5.5-9, ♀ 12; set. ♂ 13-19, subim. 10-5; set. ♀ 16 mm.

Hab.—Dovedale, Derbyshire, and Dorset; Geneva and Contamines; Corsica (Bellet); and Madeira (Wollaston). April to October.

The Wollastonian specimens ticketed 69 & 70 appear to me the same species as the others.

Baetis phaeops.

(Forceps et ala postica, Pl. V. fig. 21, 21a.)

Ephemerella bioculata (?), Fourn. 1785. *E. testacea* (?), Gmel. 1790-3. *Baetis venus* (?), Curt. 1834. *B. culiciformis*, (phaeopa), striata, venus, & *E. dubia*, Ste. 1835-6. *Cloe venus*, Pict. 1843-5; *Cloeon venus*, Walk. 1853. *Baetis phaeops*, Etn. 1870.

Subimago, v. v. s. Alæ fumatae vel murinae. Femora testaceo-vel prasino-grisea, vel etiam virescenti-alba, maculis singulis obscuris v-formatis prope apices; tibiæ fumatae, apicibus anticarum atris; tarsorum antici atris, posteriores cinerei juncturis atris. Setae forficisque fumatae.

Imago, v. v. s. ♂. Oculorum turbinati fuliginosi, inferiores corvini. Tergum thoracis aterrimum vel piccum, politum, in exemplari recens nato fuscum. Alæ vitrinæ, nervis longitudinalibus sub-fuscis, et fulgore hyacinthino. Pedum antici femoribus sub-olivaceis, tibiis tarsisque canis, maculâ rotundatâ obscurâ prope apicem cujusque illarum; posteriores femoribus vel virescenti-griseis vel prasino-erctaceis, tibiis albis, et tarsis canis. Abdomen vel dorso fusco et ventre cinereo; vel dorso picco-fusco, juncturis canis; vel virescenti-griseo, tribus segmento-rum apicalium saturate fuscis. Setae albæ vel fumatae. Pes forcipis duobus prioribus articulorum canis, et cæteris albis.

♀ mari simillima. Oculi atro-fuliginosi, vel atrii. Tergum thoracis vel atrum, vel piccum, vel picco-fuscum.

Pedes femoribus olivaceis; crura cana vel anthracina juncturis atris, sed antica saturatiora. Setae albæ, corrine bases corvinae.

Long. corp. ♂ & ♀ 6-8; al. ♂ 6-7, ♀ 7-9; set. ♂ 14-16, subim. 5; set. ♀ 10-12, subim. 7 mm.

Hab.—Great Britain, and Norway (Hammerfest and Allen). It mostly inhabits streams and rivulets, and appears in England in May, June, September and October.

Baetis tenax.

(Forceps et ala postica, Pl. V. fig. 22, 22a.)

B. tenax, Etn. 1870.

Imago, v. v. s. ♂. Oculorum turbinati saturate fuliginosi, inferiores nigro-fuliginosi. Tergum thoracis aterrimum, politum. Alæ vitrinæ, nervis albidopellucidis. Pedes femoribus olivaceis, anticis crurum cinereis, et posterioribus fumosis juncturis vix obscuris. Abdomen fusco-olivaceum, juncturis pallidis, et setis albis. Pes forcipis albicans, proximo articulorum interdum obscuriori.

♀ mari simillima.

Long. corp. ♂ 6-8, al. 7, set. 14-16 mm.

Hab.—Ashbourne Green, Derbyshire; in rills and streamlets. June.

Baetis buceratus.

(Forceps et ala postica. Pl. V. fig. 23, 23a.)

B. buceratus, Etn. 1870.

Subimago, v. v. s. Alarum anticae fumatae, postice pallidiores. Pedum antici femoribus olivaceis, tibiis nigricantibus, et tarsis atris; posteriores vel olivacei tarsis et maculis præ-apicalibus femorum crescentiformibus atris, vel femoribus saturate erctaceis, tibiis fumosis, et tarsis atris. Setae piccae. Pes forcipis primo et secundo articulorum pallidis, reliquis fumosis.

Imago, v. v. s. ♂. Oculi turbinati saturato fuliginosi, vel fuliginoso-hepaticolorati. Tergum thoracis

aterrimum. Alæ vitineæ, tribus prioribus nervorum longitudinalium vix obscuris. Pedum antici saturate olivacei, cruribus atro-corymbis, vel nigricantibus maculis præ-apicalibus tibiæ atriis, et juncturis tibio-tarsalibus albicantibus: posteriores vel femoribus et tibiis olivaceis atque tarsis fumosis, vel tarsis atro-corymbis juncturis atris; vel cruribus pallide nigricantibus, juncturis vix obscuris; vel cruribus albis, juncturis atris. Abdomen supra vel fusco-piceum, juncturis pallidis; vel cum 2-6 segmentorum virescenti-griseis, et interdum apicibus, lineis divergentibus duabus dorsalibus, atque strigis e spiraculis, obscuris: infra nigricans, juncturis albidis, sæpe duobus segmentorum apicalium ochraceis. Pes forecipis primo et secundo articulorum olivaceis, et cæteris plus aut minus nigricantibus; aut primo solum olivaceo. Setæ nigricantes, sæpe albicantes apices versus.

I neglected to describe the female.

Long. corp. ♂ 8-9, al. 8, set. 10-16 mm.

Hab.—The Holybrook and Kennet, near Reading. April and May.

Baetis annicus, nov. sp.

(Forceps et ala postica, Pl. V. fig. 24, 24a.)

Imago, v. v. s. ♂. Oculi turbinati saturate fuliginosi; inferiores atro-fuliginosi. Thoracis tergum aterrimum, suturis pallidis. Alæ vitineæ, lurido tinctæ, nervis atro-olivaceis; antice areis marginalibus apices versus paulo obscurioribus. Pedum antici saturate virescenti-grisei, tibiis tarsisque fumatis vel nigricantibus; posteriores femoribus interdum vix ochraceo-tinctis, genubus rufo-fescenti strigatis, tibiis fere corymbis, et tarsis obscuris juncturis nigris. Abdomen supra fuscum, juncturis vix pallidis; subtus in majore parte cinereum. Setæ albæ vel cineræ, bases versus juncturis obscuris. Forceps ator, apices versus saturata fuliginosus.

♀. Alæ vitineæ, nervis virescenti-griseis. Pedes virescenti-grisei vel olivacei, tibiis tarsisque nigricantibus. Setæ nigricantes.

Long. corp. ♂ 9-10, ♀ 7; al. ♂ 10, ♀ 8; set. ♂ 26, ♀ 13 mm.

Ital.—Barberine, Nant Bourant, and Motet, at an altitude of some 4500 feet. July. In mountain torrents, whence the specific name.

Baetis alpinus.

Cloe alpina, Pict. 1843-5; *Cloeon alpina*, Walk. 1853.

Imago, ♂. "Oculi rufi. Tergum thoracis saturate fuscum. Alæ vitineæ, nervis fulvis, paucis distinctioribus in areæ marginalis apice. Abdomen fuscum, juncturis albidis; setæ albæ, juncturis fuscis." (Pict.)

Long. corp. ♂ 10, set. 11, exp. al. 23 mm.

Ital.—A stream from Mt. Prevent in the valley of Chamounix, in August. (Pict.)

Baetis melanonyx.

Cloe melanonyx, Pict. 1843-5; *Cloeon melanonyx*, Walk. 1853.

Imago, ♂. "Corpus saturate fuscum, ventre pallidior. Oculi turbinati rufi. Pedum antici fusci; posteriores cretacei, unguibus atris. Alæ vitineæ, nervis fuscis, transversalibus subtilissimis. Setæ flavescetes, juncturis fuscis." (Pict.)

Long. corp. ♂ 7, set. 9, exp. al. 18 mm.

Hab.—La Valle d'Entremont, Faucigny; at the end of June. (Were the eyes reddened in alcohol?)

Baetis punnitus.

(Forceps et ala postica, Pl. V. fig. 25, 25a.)

Ephemera natica (?), Lin. 1758 = *E. strigata*, Lin. 1761. *Cloe punnita*, Burm. 1839. *O. strigata* (?), Pict. 1843-5. *Cloeon punnita*, Walk. 1853. *B. punnitus*, Etn. 1870.

Subimago, v. v. s. Alæ anthracina; pedes virescenti-grisei, tarsis nigricantibus; setæ nigricantes.

Imago, v. v. s. ♂. Oculi turbinati atro-fuliginosi. Tergum thoracis aterrimum, politum. Alæ vitineæ, fulgore talcoso. Pedes albi, tarsis, apicibus tibiæ, femoribusque antice, nigricantibus. Segmentorum abdominalis 2-7 albi, pellucida; cætera supra fulvifusco-fusca vel fusco-castanea, subtus fusca. Forceps et setæ albæ.

♀. Capitis vertex strigis duabus piceo-rufescentibus. Tergum thoracis atrum. Pedes virescenti-grisei, tarsis fuscis. Abdomen supra fusco-furiosum, juncturis, et

sæpe lineâ longitudinali in medio, strigisque curvatis duabus ad bases segmentorum singularum intermediorum, ochraceis; subtus sæpe notularum L-formatarum hepaticoloratarum utrinque. Setae vix cervinae. Oculi olivacei.

Long. corp. ♂ ♀ 5-7; al. ♂ 4-6, ♀ 6-8; set. ♂ 11-13, subim. 10; set. ♀ 7-5-10, subim. 10 mm.

Hab.—Wales, England, Belgium, Germany, Austria, Switzerland and Corsica. It frequents rivers, from May to October.

Dactis niger.

(Foreeys et ala postica, Pl. V. fig. 26, 26a.)

Ephemera niger, Lin. 1761. *Cloe diptera*, Ronalds, 1856. *B. niger*, Ehn. 1870.

Subimago, v. v. s. Alae atrescentes. Pedes ♂ pallide fumati; ♀ femoribus prasinis, strigis singularis brevibus obscuris ab apicibus anteriorum, tibis fumatis, et tarsis cervinis ultimis articulorum fumatis. Setae ♂ griseae, ♀ cinerea.

Imago, v. v. s. ♂. Oculi turbinati fuliginosi. Terga thoracis aterrima, politum. Alae vitinae. Pedes vel fumati, vel saturate virescenti-albi, vel prasini; posterioribus crurum fumatis, anticis cinereis cum apicibus tibiarum obscuris. Segmentorum abdominis 2-7 fumata; caetera supra vel rubiginoso-fusca, vel piceo-fusca, subtus virescenti-grisea. Setae albae vel caerae, sæpe juncturis vix obscuris.

♀. Oculi fusco-fuliginosi. Pedes virescenti-testacei, juncturis tarsorum nigricantibus. Abdomen supra castaneo-piceum, juncturis et supra strigis brevibus tribus ad bases paucorum intermediorum ochraceis; subtus fuliginosum vel hepaticoloratum, pallidum, sæpe notulis lateralibus L-formatis obscuris. Setae fumatae, vel caerae, vel caerae juncturis rufescentibus.

Long. corp. ♂ ♀ 6-7-5; al. ♂ ♀ 6-7; set. ♂ 10-11, subim. 9; set. ♀ 6-8-5, subim. 7 mm.

Hab.—England, and perhaps Sweden. May and June, and also September.

I have seen an undescribed Australian species, which is allied to some of the foregoing European species.

Dactis (?) fuscus.

Cloe fusca, Schn. 1845.

Imago, ♀. "Tergum thoracis fuscum; alae vitinae, nervis fuscis, antica area costali apicem versus fulvescente, et nervis transversalibus pluribus. Pedes saturate testacei. Abdomen supra rufescens, apicibus segmentorum brunneis; subtus testaceum. Setae saturate testaceae, fusco annulate."

Long. corp. ♀ 2-7.5, "set. 6-25."

Hab.—Messina. April. (Schn.)*

Dactis posticata.

Cloe posticata, Say, 1823; *Cloe posticata*, Hag. 1861.

Imago, v. v. s. ♂. "Oculi turbinati saturate rufo-fusci. Tergum thoracis aterrimum. Alae vitinae. Pedes albi; antici vix obscuriores bases (femorum ?) versus. Segmentorum abdominis 2-7 pallide caerulescenti-hyalina, caetera saturate fusca. Setae albae." (Say.)

Long. corp. ♂, set. 19 mm.

Hab.—"Shippingport. End of May."

Dactis unicolor.

Cloe unicolor, Hag. 1861 (nec Curt., Burm.).

Imago, v. v. s. ♂. "Corpus saturate piceum. Alae vitinae, interdum nervis longitudinalibus obscuris; posterioribus obscuris."

* The following European species are of uncertain position, and hardly recognizable.

1. *Dactis cuticiformis.*

Ephemera cuticiformis, Lin. 1758. *E. albivennis*, Walck. 1802. *Cloe cuticiformis*, Pict. 1843-5.

Imago. "Eph. cauda biseta, alis albis, corpore fusco." (Lin. 1758.)

"Cutice paulo major. Thorax nigricans. Abdomen fuscum. Setae caudales longitudine corporis. Tubercula duo supra oculos, crassa, magna, livida." (Lin. 1761.)

Hab.—Sweden.

2. *Dactis speciosa.*

Ephemera speciosa, Pod. 1761.

Imago. "E. speciosa, pedibus anticis longissimis cyaceis, alis albis, corpore fusco." (Pod.)

Long. corp. 3 lin.

Hab.—Inoog.

tica inter nervos duos sub-opacæ. Pedes pallido flavescents, apicibus tarsorum obscuris. Setæ pallidæ, apices versus obscuræ.

♀. "Vertex capitis strigis longitudinalibus latis duabus. Abdomen acute rubiginosum, juncturis et maculis lateralibus pallidis." (Walsh.)

♀. s. s. "Fusco-fuscescens, alis vitreis, pedibus pallide flavescens, et setis albis." (Hag.)

Long. corp. ♂ 2.5, ♀ 4.5; set. ♂ 5, ♀ 6-10; exp. al. ♂ 9, ♀ 10-13 mm.

Hab.—Washington, and (?) Porto Rico (Hag.); Rock Island, Illinois (Walsh).

Baetis propinquus.

Cloe vicina, Walsh, 1862 (nec Hag. 1861). *O. propinqua*, Walsh, 1863.

Subimago. "Alæ fumatæ, nervis longitudinalibus saturatioribus."

Imago. ♂. "Ficens. Alæ vitrinæ; posticæ inter nervos duos opacæ. Pedes pallidi, femoribus anticis pallide rubiginosis et apicibus tarsorum obscuris. Segmentorum abdominis 2-7 alba, pellucida, punctis lateralibus (ad spiracula?) obscuris; cætera supra picea, subtus opacæ albicantha. Setæ albicantes, interdum annulatae."

♀. "Corpus supra vel rubiginoso-piceum, vel rubiginosum. Abdomen subtus rubido-album. Femora antice fere nunquam maculata." (Walsh.)

Long. corp. ♂ 3.5, ♀ 3.5-4.5; set. ♂ 7.5-10, subim. 5; set. ♀ 5-9, subim. 4; exp. al. ♂ 9-11, ♀ 8.5-14 mm.

Hab.—Rock Island, Illinois. (Walsh.)

Mr. Walsh considers it to be very closely related to *B. posticatus*.*

* The same author supposes that the following may be a *Baetis*.

Baetis verticis.

B. verticis, Say, 1839.

"Corpus ochroleumum vel cretaceum. Thorax strigis rubiginosis densis, antice confluentibus et postice obsolutescentibus; plurimi nervorum albrum atrii; pedes albi, antici apicibus femorum rubiginosis, et apicibus tuborum juncturisque tarsorum fasciis."

Long. corp. et set. supra 6 mm.

Hab.—Indiana (Say).

Baetis pygmaeus.

Cloe pygmaea, Hag. 1861.

Imago, s. s. ♀. "Corpus fusco-griseum, alis vitreis, pedibus setisque albis." (Hag.)

Long. corp. ♂, exp. al. 6 mm.

Hab.—The St. Lawrence. (Hag.)

Baetis fluctans.

Cloe (B) fluctans, Walsh, 1862.

Imago, ♀. "Corpus brunneo-album. Thorax supra strigis longitudinalibus brunneis duabus, posticæ confluentibus. Alæ vitrinæ, nervis longitudinalibus plerumque brunneis, interdum quoque brunneo marginatis bases versus: area marginalis anterioris maculis parvis brunneis quindecim vel sedecim, paucis confluentibus; striga pallida brunnea pone subcostam, cujus margo posticus variabilis et irregularis, interdum sex- vel septem-dentatus, maculas rotundas pellucidas (extra m.), paucis confluentibus, includit. Abdomen plerumque brunneo-album, interdum brunneo varium, interdum etiam pallido brunneum, sexto segmentorum brunneo. Tarsorum apices juncturæque fusci." (Walsh.)

Long. corp. ♀ 6-7, set. 10.5-12, exp. al. 13.5-17 mm.

Hab.—Rock Island, Illinois.

Baetis pictus, nov. sp.

(Ala posticæ, Pl. V. fig. 27.)

Subimago, v. s. s. ♂ ♀. Alæ nigricantes, nervis transversalibus marginalibus anguste obscuris. Pedes pallidi, juncturis tarsorum obscuris. Corpus subpiceum.

Imago, v. s. s. ♂. Thorax supra fusco-piceus. Alæ vitrinæ, invarie, nervis pellucidis. Pedes veluti in ♀. Abdomen olivaceo-fuscum, in medio paulo pallidius; subtus saturato rubido-album, rubido creberrime punctatum. Setæ albe, juncturis obscuris.

♀. Tergum thoracis saturato lutescens. Alæ vitrinæ, nervis longitudinalibus piceis, et transversalibus opacæ

albis: area marginalis anticeo fusco variegata; area submarginalis plus aut minus fusca, interdum maculis rotundis pellucidis inclausis, apice fusco nebuloso; margino terminalis peranguste fuscus et albo invicem marginatus: ala postica saepe apud basin et usque ad costam medium fuscescens. Pedes testacei, vel cervino-albicanter, femoribus punctis rotundis fuliginis irroratis, parvis confluentibus, atque curvis albicanibus juncturis et ultimis articulorum fuliginosis. (Abdomen decoloratum.) Setae albae, juncturis atris.

Long. corp. ♂ 5-6-5; al. ♂ 6-5-7, ♀ 7; set. ♂ circa 14, ♀ circa 15 mm.

Hab.—Texas.

Baetis (?) undatus

Cloa undata, Pict. 1843-5; *Clocon undata*, Walk. 1853.

Imago, ♀. s. s. "Pallide flavescens. Alae vitrinae; antica apud marginem costalem fusca, maculis rotundis pellucidis variata, fasciâ transversali in medio nebulosa, et nebula magna super marginem terminalem, fuscationibus. Setae albae, juncturis in ♂ atris, in ♀ fuscis" (Pict.). "Pedes flavescentes; tarsorum apices obscuri" (♂, Hag.).

Long. corp. ♀ 7, set. 10, exp. al. 15-19 mm.

Hab.—Red River, and New York (Hag.); Mexico (Pict.).

Baetis fasciatus

Cloa fasciata, Pict. 1843-5; *Clocon fasciata*, Walk. 1853.

Imago, ♀. s. s. "Tergum thoracis pallide fuscum. Alae vivere: antica margine costali, fascis transversalibus obliquis duabus, strigis transversali obliquâ propo marginum terminalem alterâque brevi super marginem terminalem ita conjunctis ut maculas pellucas claudunt, et macula trigonali e costa inter strigam et ultimam fasciarum fasciae ipsi conjuncta, et denique macula conspicua in medio inter basin et primam fasciarum, fuscis. Abdomen saturate fuscum, setis lutescentibus fusco annulatis" (Pict.)

Long. corp. ♀ 7, set. 8, exp. al. 19 mm.

Hab.—Brazil. (Pict.)

Some undescribed Australian species, which have the anterior wings more or less coloured along the costa, have been submitted to my inspection. I have seen, besides these, a Californian undescribed species, with the wings very distinctly marked with fuscous blotches along the costa, and with an unusual number of cross-veinlets in the wing. Their wings are figured in Pl. V. fig. 28, 29; Pl. III. fig. 1.

Baetis ferrugineus.

Cloa (A) ferruginea, Walsh, 1862.

Subimago. "Alae fumatae; posteriores et anticae postcoae pallidiores. Ala antica crassioribus nervorum et paucis aliis, bases versus, fuscis, atque nervis transversalibus cum horum marginibus alido-pellucidis"

Imago, s. s. ♂. "Corpus ferrugineum (rubiginosum). Alae vitrinae; antice apud costas vix flavescenibus, sed prioribus nervorum longitudinalium flavescenibus, sed paucis aliis fuscationibus. Pedes pallide flavescen-tes, apicibus tibiarum et tarsorum, juncturis tarsorum, et proximo articulorum tarsi antici, fuscis. Abdomen supra-rufescenti-brunneo irroratum, interdum parte piceam; subtus pallide rubido-album. Setae forcepsque albicanter; illarum intermedia brevissima." (Walsh.)

Long. corp. ♂ 6-5-9-5; set. 15-17; al. exp. 15-18 mm.

Hab.—Rock Island, Illinois (Walsh).*

* Mr. Walsh thinks that the following species may be allied to *B. ferrugineus*.

Baetis albus.

B. alba, Say, 1824; *Palisgenia alba*, Hag. 1861.

♀. Album; vertice fusco. Thorax vix flavescenti-brunneo tinctus; "prothorax quadratus, cretaceus" (Hag.). Alae albae, nervis apud costas obscuris. Pedes albi; antici breves, obscuri.

Long. corp. 11, exp. al. 22 mm. (Hag.)

Hab.—The North Red River (Hag.); Winnipeg River (Say).

Ephoron leuken, Williamson, 1802.

"Oculi nigri. Thorax fuscus. Alae, abdomen, et pedes albi. Alae patentes, reticulatae; setae duae."

Long. corp. 12 mm.

Hab.—The River Passatek, in the immediate vicinity of Belleville; from the end of July to the middle of August. They begin to rise about forty minutes after sunset, mouth about half a minute afterwards, and fly nearly as fast as dragon-flies. (Williamson.)

I have reasons for supposing that *Typha* are called dragon-flies in some parts of England; and if the *Ephoron leuken* flies as fast as these, its habits conform, thus far, to those of British species of *Heptagenia*.

Genus *Siphonurus*.

(Ala antica, Pl. III. fig. 2.)

Pactis, p., Say, 1823; *Ephemera*, p., Zet. 1840; *Palingenia*, p., Walk. 1853; *Siphonurus* (err.), Eln. 1868.

Nympha agilis, laminae branchialibus utrinque septem: laminarum duarum priores duplices, ceterae simplices, omnes integre. Palpi tri-articulati, superiores proximo articulorum caeteris subaequali, et ultimo penultimo breviori; inferiores proximo articulorum quoque caeteris subaequali et valde depresso, secundo fere obconico apice obliquo, et vix tertio longiori.

Super pedes omnes, alis erectis, schisque divergentibus subimago stat.

Imago. Oculi ♂ integri; setae duae longae (residuum intermediae interdum articulatam); alae quatuor; tarsi quinque-articulati, proximo articulorum interdum tibiae adnato. Forepisp pedes quadri-articulati (nisi articulus quintus basalis laminae ventrali penultimi segmentum obtegitur); articulorum primus largus, secundus longissimus. Femina caret ovi-valvula; neque lamina ventralis penultimi segmentorum habet.

The species inhabit lakes and rivers, in the Palearctic and Nearctic Regions.

From having omitted to note down the tarsal characters of all the species examined by me, I am, unfortunately, unable to adopt Mr. Walsli's convenient sections of the genus; which are founded upon the structure of the tarsus.

Siphonurus flavidus.

(Apex abdominis supra, Pl. V. fig. 30.)

Pactis flavida, Ed. Pict. 1865.

Imago, v. s. s. ♂. "Oculi caeruleo-atri. Corpus furiosum vel lutescens. Alae vix opacae, nervis fuscis; anticae juxta bases, et in areis marginali et submarginali apices versus, pallide flavicantes. Pedes fulvi, juncturis fuscis. Abdomen juncturis, et maculis longitudinalibus apicem versus, fuscis;" subtus macula U-formata in segmento singulo: "processum depressum

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acutum, penultimum segmentorum utrinque habet. Setae flavescens, juncturis vix obscuris."

"♀ pallidior." (E. Pict.)

Long. corp. ♂ ♀ 12, exp. al. ♂ 27, ♀ 31 mm.

Hab.—San Ildefonso. July.

Siphonurus armatus.

(Forepisp, Pl. VI. fig. 1, 1a.)

S. armatus, Eln. 1870.

Imago, v. s. s. ♂. Tergum thoracis luteo-piccum. Alae virescenti-griseo suffusae, nervis piceis. Pedum anticae piceae; posteriores lutei vel fulvescenti. Abdomen supra fuscum, juncturis latera versus pallidis; subtus lutescens vel ochraceum, strigis U-formatis in posterioribus segmentorum. Setae cervino-albidae, vel subfulvae, juncturis fuscis, pubescentes. Forepisp piccus.

Long. corp. ♂ 14-15, al. 16, set. 24-25 mm.

Hab.—Killarney (Mr. Mac.), and Bishop's Wood, Middlesex (Wormald). In July.

Mr. MacLachlan has an undescribed foreign species closely allied to *S. armatus*, probably from Germany.

Siphonurus laeustris.

(Forepisp maris, Pl. VI. fig. 2.)

S. laeustris, Eln. 1870.

Subimago, v. v. s. ♂. Alae cinereae vel nigricantes.

Imago, v. v. s. ♂. Oculi supra saturate fuliginosi, subtus saturate virescenti-grisei. Tergum thoracis atrerimum, politum. Alae vitinae, nervis piceis, fulgore hyacinthino; apex areae marginalis et areae submarginalis anticae pallido virescenti-albis. Pedum anticae atrivientes, cruribus saturate corvinis; posteriores saturate virescenti-grisei, tarsis infra spinulosi.* Abdomen supra piceo-fuscum, juncturis ochraceis; subtus saturate virescenti-griseum, tribus segmentorum apicalium fulvescentibus, singulis strigis U-formatis obscuris; sub prioribus segmentorum strigae duae, anticae convergentes, obscurae. Setae virescenti-griseae, bases versus fuliginosae, juncturis vix obscuris.

Long. corp. ♂ 15, al. 14, set. 20, subim. 11 mm.

Hab.—Llyn Llydaw, Snowdon. August.

* Several other species likewise have the tarsi spinulose beneath.

Anglers in Wales, mistaking this for *Ephemerella danica*, are greatly astonished at seeing the subimago rise out of the cold tranquil "llyn." One of my specimens remained a subimago during the greater part of two days.

There are some specimens of a small undescribed (probably German) species in Mr. MacLachlan's possession, which is very similar to *S. leucostriata*.

Siphonurus Linnaeanus, nov. sp.

(Forceps maris, Pl. VI. fig. 3. Notulae ventrales, fig. 3a.)

Imago, v. s. s. ♂. Tergum thoracis fusco-rubiginosum. Alae vitinae, vix fusco suffusae, nervis longitudinalibus piceis, bases versus testacis. Pedes ochracei, femoribus singulis cingulis mediis obscuris. Dorsum abdominis fuscum, apicibus segmentorum saturatoribus, et triangulis pallidis ad latera segmentorum intermediorum: subtus 2-8 segmentorum pallide ochracea, singula signis obscuris bicurvatis punctisque atris duobus eleganter notata; caetera subtus saturate rubiginosa. Setae ochro-lanceae, juncturis fuscis.

Long. corp. ♂ 15, set. 26, al. exp. 26 mm.

Hab.—Incog. There is a specimen in the Linnaean cabinet, and the abdomen of a male in Mr. Dale's collection.

Siphonurus annulatus.

(Forceps maris, Pl. VI. fig. 4a. Notulae ventrales, fig. 4.)

Baetis annulatus, Walk. 1853.

Imago, v. s. s. ♂. Tergum thoracis brunneo-luteum. Alae vitinae, vix lactescentes, nervis piceis: apex areae marginalis anticae nebula pallidissima fuscâ. Pedes ochracei, juncturis et femorum cingulis mediis piceis. Dorsum abdominis pallide fuscum, latera versus ochraceum: venter ochraceus, segmento singulo intermedio strigis longitudinalibus duabus punctisque tribus fuscis. Setae ochraceae, juncturis piceis.

Long. corp. ♂ 13, al. 15, set. 18 mm.

Hab.—Trenton Falls, New York.

Siphonurus bicolor.

Palingenia bicolor, Walk. 1853.

Subimago, ♀. v. s. s. Alae fuscae, nervis transversalibus marginalibus saturatoribus, iis in apice areae marginalis anticae subrectis. Tergum thoracis luteum. Pedum antici luteo-fusci, tarsi pallidioribus; posteriores ochracei. Setae luteae.

Long. corp. ♀ 11, al. 14 mm.

Hab.—St. Martin's Falls, River Albany, Hudson's Bay (Barnston).

Siphonurus femoratus.

Baetis femorata, Say, 1823; *D. femorata*, (?) Walsh; vel (?) *Baetis* (A) *interlineata*, Walsh, 1863.

Subimago. "Alae 4. niveae, nervis cum marginalibus suis fuscis; ♀ alae albicantes, nervis fuscis fusco marginalis." (Say.)

Imago, v. s. ♂. "Piceus. Oculi supra margaritacei, singuli maculâ moxii atrâ; subtus pallide fusci. Alae vitinae: anticae tribus prioribus nervorum longitudinalium et paucis sequentium, atque nervis transversalibus areae submarginalis cum paucis aliis bases alarum versus, fuscis; macula brunnea in disco, hincque atra in costae medio, interdum quoque arcis marginalibus apices versus, obscuratis: posticae serielibus singulis brevibus nervorum transversalium fuscorum ad bases costarum brunneo nebulosis. Pedum antici pallide brunnei, interdum proximis dimidieram saturatoribus; posteriores pallidiores; omnes femoribus brunneo bi-cinctis, tibiis ad bases et apices tarsisq. ad juncturas brunneis. Segmentorum abdominalis 4-5 alba, pelliceida, singula fascis apicalibus angustis piceis, maculis dorsalibus in mediis utrinque obscuris, maculisque lateralibus pallidis; venter albicans, pelliceidus. Setae albae, annulatae."

♀. "Segmentorum abdominalis 1-5 supra piceo-brunnea, bases versus pallidiora. Alae posticae in toto vitinae." (Walsh.)

Long. corp. ♂ 12-13.5, ♀ 12.5-14; set. ♂ 20-24, ♀ 13-16; exp. al. ♂ 25-28, ♀ 28-29 mm.

Hab.—Cincinnati (Say); Rock Island, Illinois (Walsh).

Siphurus alternatus.

Paelis alternata, Say, 1824; in sect. A, Walsh.

Subimago. "Ala fumate, apicibus posticarum pallide virescentibus."

Imago, s. s. ♂. "Piceo-brunneus. Ala vitrine, nervis fuscis. Pedum antici pallide brunnei, coxâ, cingulo præapicali femoris, juncturisque tarsorum, brunneis: posteriores pallidiores. Segmentorum abdominis 2-9 vel 4-9 singula maculis trigonalibus lateralibus flavescentibus dabus supra juxta bases, plus aut minus confluentibus; subtus pallida, singula maculis parvis basilibus in mediis, punctis transversalibus in mediis duobus, lineisque utrinque obliquis sub-abbreviatis, brunneis. Setæ albicantes, juncturis brunneis."

♀. "Caput carinis divergentibus inter ocellos dabus, marginalibus antico et laterali verticis (vel etiam interdum carina in medio hujus), strigisque brevibus utrinque dabus, flavescentibus." (Walsh.)

Long. corp. ♂ 10.5-12.5, ♀ 10-12; set. ♂ 19-31, subim. 13; set. ♀ 18-19, subim. 14-15; exp. al. ♂ 23-30, ♀ 26-32 mm.

Hab.—Rock Island, Illinois, and the River Des Plaines near Chicago (Walsh); Washington (Hag.); St. Peter's River (Say).

Siphurus arida.

Paelis arida, Say, 1839; in sect. B, Walsh.

Subimago. "Ala nigricante suffuso, præcæpne apices versus, et nervis transversalibus fusco marginatis."

Imago. ♂. "Caput pallidum, maculâ magnâ intra posteriores ocellorum orbitas utrinque atrâ. Thorax piceus. Ala vitrine, nervis pallidissimo hyalinis, interdum bases costarum versus fuscescentibus. Pedum antici vel apicibus tarsorum, tibiis, et femoribus usque ad media, obscure virescenti-fuscis; vel pallide virescentibus, vix ad apices versus obfuscatis; vel in toto fuscis vel piceis: posteriores virescenti-albi, apicibus tarsorum vix obscuris. Segmentorum abdominis 1-8 supra picea, singula maculis

lateralibus trigonalibus vel semi-orbicularibus pallide rubiginosis ad bases; albinum pallide rubiginosum. Setæ virescenti-albeæ."

♀. "Nervi alarum pallide fuscis. Segmentorum abdominis 1-8 supra saturate rubiginosa et maculata veluti in ♂." (Walsh.)

Long. corp. ♂ 8-12, ♀ 9-13; set. ♂ 18-23, subim: 12-14; set. ♀ 17-20, subim. 10-14; exp. al. ♂ 20-25.5, ♀ 23.5-32 mm.

Hab.—Rock Island, Illinois (Walsh); Indiana, about the middle of Juno (Say).

Siphurus siccus.

Paelis (B) siccus, Walsh, 1862.

Imago, ♂. "A præcedente discrepat in orbitis ocellorum posticorum intus hand plano obscuris; in nervis alarum fuscis; in pedibus anticis piceis, apicibus tibiarum atris, et proximis articularum tarsalium pallidis (juncturis suis exceptis); in dorso abdominis piceo, innaculato; et in scâis virescenti-albis, juncturis anguste fuscis."

♀. "Tarsus anticus fuscus, proximo articularum pallido. Dorsum abdominis saturate rubiginosum, innaculatum." (Walsh.)

Long. corp. ♂ 8.5-10, ♀ 8.5-11.5; set. ♂ 19, ♀ 15; exp. al. ♂ 19-22, ♀ 23-27 mm.

Hab.—Rock Island, Illinois (Walsh).

Siphurus debilis.

Paelis (C) debilis, Walsh, 1862; (nec Walk, 1853).

Subimago. "Ala fumate, nervis fuscis."

Imago, v. s. ♂. "Oculi supra brunnei, subius fuscis. Thorax piceus. Ala vitrine, nervis pallide hyalinis, tibus prioribus nervorum longitudinalium, bases (et interdum quoque apices) versus, fuscis. Pedes pallide virescentes, genubus cingulisque femorum fuscis; antici apicibus tibiarum, juncturis, et ultimis articularum tarsalium, fuscis; posteriores apicibus articularum tarsalium piceis. Abdomen rubiginosum, apicibus segmentorum piceis. Setæ albicantes."

♀. "Pallidior. Thorace flavescens. Nervi alarum costas et apices versus nigricantes." (Walsh.)
 Long. corp. ♂ 4-5.5, ♀ 5-7; set. ♂ 13-14, subim. circa 5; set. ♀ 8-12; exp. al. ♂ 13-15, ♀ 15-16 mm.
 Hab.—Rock Island, Illinois (Walsh).

At this point is resumed the series of genera which have a short ventral lamina, produced from the tip of the penultimate segment of the female; which series comprises *Leptophlebia*, *Ephemerebella*, *Baetisca*, *Longychia*, *Coloburus* and *Heptagenia*.*

* Species generis incerti.

The following Chinese species have been classed in *Cloe* by Dr. Hagen; but most likely a new genus will have to be erected for them. I have seen therefore I am not in a position to describe the genus. This female has hind-wings unconvertible to those of *Baetis*, and a ventral plate produced from the apex of the penultimate segment; but no eye-vein. According to Dr. Hagen, the male has three long setae. The name *Cloe* cannot be retained for them. Some of them may belong to *Leptophlebia*.

Secio I. Aie quatuor.

No. 1. ——— *tristis*.

Cloe tristis, Hag. 1858.

Subimago ♀, s. s. "Nigra, pedibus lateris, femoribus anticis nigris; nervis griseis, incisuris nigris; alis nigris, opacis."

Long. set. ♀ subim. 15, exp. al. 13 mm.

Hab.—Rainboedde. (Hag.)

No. 2. ——— *consuetata*.

Cloe consuetata, Hag. 1858.

Subimago. "Alis paulo griseis opacis."

Imago. "Capite nigro, thorace brunneo, pedibus pallidis, abdomine pallido, episternis segmentorum anguste brunneo marginatis, setis pallidis incisuris basilibus nigris; alis vitreis (hyalinis), venis pallidis; ♀ (♀) tho-race medio latero, abdomine brunneo."

Long. set. ♀ 10, exp. al. 12 mm.

Hab.—Rainboedde. (Hag.)

No. 3. ——— *solida*.

Cloe solida, Hag. 1858.

Subimago (♀). "Alis griseis opacis, thorace abdomineque lateris."

Imago ♀. "Fusca-rufa, abdomine subitus pallido, pedibus lateris, setis griseis incisuris nigris, alis vitreis."

Long. set. ♀, exp. al. 10 mm.

Hab.—Rainboedde. (Hag.)

Genus *Coloburus*.

(Ala antica, Pl. III. fig. 3.)

Palingenia, P., et *Baetis* P., Walk. 1853; *Coloburus*, Etn. 1868.

Imago. Oculi ♂ sub-partiti; alae quatuor; setarum media brevissima, articulata. Tarsi postici quinque-articulati: articulorum primus tibiae adhaeret, vix discretus, secundo longior; secundus in ♀ tertio aequalis; secundus, tertius et quartus in ♂ primo gradatim minores. Femina caret ovarialulâ; processus ventralis tamen brevis laminae e penultimi segmentorum apice producitur. Pedes foreipis quadri-articulati; articulorum proximus longus, secundo brevior; secundus reliquis longitudo subaequalis.

Coloburus haemeralis.

(Genitalia maris, Pl. VI. fig. 6, Ga; feminae, Gb.)

Palingenia haemeralis & *Baetis remota*, Walk. 1853; *Coloburus haemeralis*, Etn. 1868.

Subimago, v. s. s. ♀. Ala antica carne, juxta bases ochraceae, apices versus fuscosecentes, nervis transversalibus murino marginatis, praecipue costas versus. Setae rubiginose, juncturis obscuris.

Imago, v. s. s. ♂. Thorax supra fuscus, politus. Ala cano tincte, pellucida, nervis atris, juxta bases ochraceae; antica area submarginali et arcae marginalis apice sub-fuscis, atque pluribus nervorum transversalium inter-

No. 4. ——— *signata*.

Cloe signata, Hag. 1858.

Imago. "Capite nigro, thorace fusco-rufescente, abdomine fusco, sublimbus segmentorum pallidis; pedibus albis, femoribus in medio, cum long. set. 8, exp. al. 13 mm.

Hab.—Rainboedde. (Hag.)

Secio II. Aie duae.

No. 5. ——— *marginata*.

Cloe marginata, Hag. 1858.

Subimago. "Intero-fusca, abdomine fusco, pedibus lateris, setis griseis; alis vitreis, margine costali fusco."

Imago, ♀. "Nigra, pedibus anticis nigris, posticis lateris; setis albis, nigro articulatis; alis vitreis, margine costali vix obscuriori."

Long. set. ♀ 16, subim. 7; exp. al. 10-14 mm.

Hab.—Rainboedde. (Hag.)

costam duosque nervorum sequentium fusco marginatis. Pedum antici fusci; posteriores fulvo-lutei, apicibus tibiarum et articulorum tarsalium fuscis. Abdomen supra fuscens.

♀. Alae cis maris simillime, sed juxta bases luteam. Pedum antici brunneo-lutei; posteriores lutei, apicibus tibiarum ultimisque articulorum tarsalium subfuscis.

Long. corp. ♂ 10, ♀ 7-10; al. ♂ 15, ♀ 13-17; set. ♂ 20 & 2, ♀ 15 & 1, subim. 12-13 & 1 mm.

Hab.—Otago, New Zealand.

Coloburus haleuticus, nov. sp.

(Forceps maris, Pl. VI. fig. 7, 7a.)

Imago, v. s. s. ♂. Thorax supra fulvifuscus. Alae vitinae, lacteo tinctae, juxta bases subfuscae, nervis atro-piceis; apices areae marginalis et area submarginalis virrescenti-grisei. Pedum antici rufo-picei; posteriores brunneo-lutescentes. Abdomen supra rufo-fuscum, juncturis paulo obscuris, lineis spiracularibus testaceis, ventre rufo-lutescenti. Seto fuscae, pubescentes: forceps testaceus, apices versus piceo tinctus.

Long. corp. ♂ 11, al. 15, set. 20 & 5 mm.

Hab.—Molbourne (?) [M'Coy].

Genus *CHONICES*, nov. gen.*

Baetis, p., Pict. 1854.

Imago. *Hepitagenica* affinis. Forceps maris pedes quadr-articulati; articulorum penultimus longus, secundo vix brevior, primus et ultimus brevissimi. Setae media brevissima.

Chronice anomala.

(Forceps, Pl. VI. fig. 8)

Baetis anomala, Pict. 1854.

Long. corp. ♂ 10, exp. al. 20 mm.

Species in electro.

* Derivation.—*Kronikos*, old-fashioned, out of date.

Whether the *Baetis gigantea*, *grossa*, and *longipes* of M. M. Pictet and Hagen (1856) belong to this genus or not, I am unable to say, because they are not figured, and I have not seen the types.

Genus *ISONYCHIA*, nov. gen.

(Ala antica, Pl. III. fig. 4.)

Baetis, p., Walk: 1833.

Imago, ♀. Alae quatuor: setarum media crispissime rejicitur, interdum tamen rudimentum brevissimum retinetur. Tarsi quinque-articulati; articulorum posteriorum primus secundo subaequalis, et tertius etiam quarto subaequalis, sed secundus tertio paulo longior: ungues uncinati, conformes. Ovipalvula caret; sed processus laminaris ventralis e penultimi segmentorum apice protrahitur. Oculi ♂ integri.

Forsan ad *Isonychia* species *Siphur* in *Baetis* serie B (Walsh), et *Ephemerella pudica* (Hag.), pertinere inventantur.

Isonychia manca, nov. sp.

(Genitalia, Pl. VI. fig. 5, 5a.)

Subimago, ♂ ♀ v. s. s. Alae nigricantes, venis saturate et anguste marginatis; post-costas versus pallidiores.

Imago, v. s. s. ♂. Thoracis tergum luteo-fulvifuscum. Alae vix lurido tinctae, nervis vix luridis. Pedum antici femoribus olivaceo-piceis, apicibus saturate piceis, tibiis atro-piceis, tarsis testaceis juncturis atris; posteriores stramineo-gambosi, unguibus vix obscuris. Abdomen decoloratum. Seto pallidissime oclraceae, proximi juncturarum obscuris.

♀. Thoracis tergum et caput fulvifusa, apud latera interdum fusco-picea. Alae vitinae, vix lacteo vel lurido tinctae; nervorum longitudinaliales picei, transversales atrii. Pedum antici apicibus femorum piceis, tibiis atris, duobus proximis articulorum tarsalium albicanibus, ceteris nigricantibus; posteriores oclracei, unguibus obscuris. Abdomen rufo-piceum, setis oclraceis, breviter pubescentibus. Interdum pedes antici sunt picei, tarsis minutis.

Long. corp. ♂ 10, ♀ 7-12, al. ♂ 10, ♀ 11-13, set. ♂ 18, ♀ 20-22 mm.

Hab.—Texas (ATLach.).

Isonychia ignota.

(Genitalia maris, Pl. VI. fig. 29.)

Baetis ignota, Walk. 1853.

Imago, v. s. s. ♂. Thoracis tergum brunneo-piceum. Alæ vitrinæ, nervis testaceis. Pedum antici fusco-piceo, juncturis pallidis; posteriores lurido-straminei. Abdomen supra piceum, apicibus segmentorum obscuris: "venter rubiginosus" (Walk.). Setæ basos versus sub-fulgurosæ.

Long. corp. ♂ 10·5, al. 12 mm.

Hab.—Incoq. (? United States.)

Genus HEPTAGENIA.

(Ala antica, Pl. III. fig. 5.)

Ephemera, P., Pod. 1761; *Baetis* (A), Curt. 1834 (nec Lærch, 1815); *Heptagenia*, Walsh, 1863; *Ecdyurus*, Ehn. 1868.

Nymphæ agile reptans, laminis branchialibus utrinque septem; laminae simplices integre, fasciculis 6 radicibus singulis filamentorum branchialium. Femora late compressa, ciliata. Caput late depressum: labrum induplicatum, transversum, obtuse triangulari, apice emarginato. Palpi maxillares bi-articulati: maxillarum superiores laminares, intus ciliatæ, antice (i. e., apud apices) pectinatæ, palpis tenuibus; inferiores palpis robustis ultimis articulorum bifidis, dimidiis imbricatis. Labium ovale minutum, palpis inarticulatis, brevissimis, ob-ovatis.

Subimago in habitâ *Siphura* admodum similis est.

Imago. Alæ quatuor: setarum media caret: oculi maris simplices. Thoraxum posteriores quinque-articulati; articulorum secundus, tertius, et quartus gradatim decrescentes: unguis dissimilis. Forcipis maris artus tri-articulati, proximis articulorum longissimis, ex apice processus ventralis procedentes. Oviposulam et processum ventralem penultimi segmentorum femina habet.

The species frequent streams and rivers in the Palearctic and Nearctic regions, the Andes, and the Malay Archipelago.

Heptagenia semicolorata.

(Genitalia maris, Pl. VI. fig. 9.)

Ephemera stigma (?), Gmel. 1790-3. *E. fuscula* (?), Schr. 1798 (subim.). *Baetis semicolorata*, Curt. 1834. *E. seminata* (?), Pict. 1843-5.*

Subimago, v. v. s. Alæ antice griseæ; posticæ pallide corvinæ vel fumatæ. Pedes virescenti-grisei, femoribus in mediis obscure punctatis, tarsisque corvinis vel atro-virescentibus. Setæ nigricantes. Oculi maris saturate olivacei, cingulis atris in mediis.

Imago, v. v. s. ♂. Oculi supra saturate piceo, cingulis subtus atris marginibus cernulescenti-griseis. Tergum thoracis fusco-luteum. Alæ vitrinæ, nervis et basibus rubiginosis. Pedes virescenti-grisei, strigis abbreviatis longitudinalibus in mediis femorum, cruribus anticis nigricantibus, sed posterioribus tarsorum vel ochraceo-fumosis, vel stramineis plus aut minus corvino tinctis, vel fulvis unguibus obscuris. Abdomen supra fuscum, apicibus segmentorum obscuris et juncturis pallidis; subtus saturate murinum. Setæ fuliginosæ, vel nigricantes.

♀. Alæ vitrinæ, crassioribus nervorum longitudinalium testaceis, tenuioribus atro-fuscis, et transversibus atris; vel omnibus testaceis. Oculi atro-olivacei. Abdomen supra ochraceo-furiosum, juncturis pallidissimis; subtus testaceum. Processus ventralis penultimi segmentorum emarginatus.

Long. corp. ♂ 7·5-10, ♀ 7·5-9; al. ♂ 10, ♀ 10·5; set. ♂ 23-25, subim. 8-9; set. ♀ 14, subim. 10 mm.

Hab.—Great Britain, Switzerland, and Austria; in cold streams and the rapids of rivers. June to September.

* The specimens labelled *semitincta* in M. Ed. Pictet's collection, are indistinguishable from a pale variety of *semicolorata*, which occurs in the Lake District of England. It seems advisable, notwithstanding, to state M. Pictet's criteria of *semitincta*, in case the species should be readily distinct from one another.

Subimago. "Ala pallide flavescenti-griseæ. Corpus virescenti-flavescens."

Imago. "Thorax striga dorsali pallida. Femora antica ante fulva."

Hab.—A small stream at Versoix, on the Lake of Geneva, in the middle of June. (Pict.)

One can hardly doubt that it is a species distinct from *semicolorata*.

Heptagenia nivala, nov. sp.

(Genitalia maris, Pl. VI. fig. 10.)

Subimago, v. v. s. ♂ ♀. Alarum antice saturate cinerere; posteriores pallidiores. Pedes olivacei, tarsis nigricantibus; antici obscuriores. Setae nigrae.

Imago, v. v. s. ♂. Oculi atro-fulginei, infra paulo olivaceo tincti. Tergum thoracis aterimum, pollinum. Alae vitinae, invariae; nervi virescenti-grisei, post-cubitales recti. Pedum antici atro-olivacei, tibiis et tarsis atris; posteriores olivacei, tibiis saturate virescenti-albis vel cretaceis, atque tarsis olivaceo tinctis. Abdomen supra fuscum, juncturis paulo pallidioribus; subtus olivaceum. Setae nigricantes, juncturis anguste obscuris.

♀. Post-cubitales vix irregulares. Pedum antici tibiis tarsisque saturate nigricantibus; posteriores tibiis cretaceis, et tarsis nigricantibus unguibus pallidis. Abdomen subtus olivaceum, maculis gangliabus paulo obscurioribus. Lamina ventralis penultimi segmentorum apice lente emarginato.

Long. corp. ♂ ♀ 11; al. ♂ 12, ♀ 17; set. ♂ 27, subim. 8; set. ♀ 12-15 mm.

Hab.—The stream at Barberine; and Lac de Combal, July. It is named *nivala* from its haunts being chilled with snow.

Heptagenia borealis, nov. sp.

(Genitalia maris, Pl. VI. fig. 11.)

Imago, v. v. s. ♂. Thoracis tergum piceum. Alae vitinae; nervorum longitudinales pallide fusci. Pedes pallide fusci. Abdomen ochraceum, pellucidum; supra apicibus et paucis segmentorum apicibus fuscis. Setae cervinae, juncturis fuscis.

Long. corp. & al. ♂ 10 mm.

Hab.—Finmark, between Kautokoino and Karasvando. (Walk. MS.) July or August.*

* An account of Messrs. Walker and Christy's journey is given in the Entomological Magazine (1837) iv. 462-83.

Heptagenia canadensis.

(Genitalia maris, Pl. VI. fig. 12, 12a.)

Paedis canadensis, Walk. 1853.

Imago, v. v. s. ♂. Thorax supra saturate luteus. Alae vitinae, nervis fuscis; arcae marginalis et submarginalis vix fuscascentes, nebulae apicali breviter apud marginem terminalem producta, et duobus nervorum transversalium prope punctum nodale nebulis singulis rotundatis obscuris, nobulis interdum tamen conflentibus. Pedes pallide testacei, juncturis tarsorum fuscis, apicibus tibiarum atris, et femoribus obscuro bicingulatis. Abdomen supra sub-ochraceum, apicibus segmentorum strigisque lateralibus obliquis fuscis; subtus stramineum. Setae pallidae, juncturis fuscis.

Long. corp. ♂ ♀ 9, al. 10, set. supra 18 mm.

Hab.—Canada.

Heptagenia fusca.

(Genitalia maris, Pl. VI. fig. 13, 13a, b.)

Paedis fusca, Walk. 1853.

Imago, v. v. s. ♂ ♀. Tergum thoracis castaneo-piceum. Alae vitinae, nervis pallide fuscis, et apice arcae marginalis antice vix fuscascente. Pedum antici fusci; posteriores saturate testacei; femora strigis singulis brevibus in mediis longitudinalibus atris. Abdomen fuscum, apicibus segmentorum saturatioribus.

Long. corp. ♂ ♀ 6-7, al. 9-10 mm.

Hab.—St. Martin's Falls, Albany P., Hudson's Bay.

Heptagenia cupulata, nov. sp.

(Genitalia maris, Pl. VI. fig. 14, 14a.)

Subimago, v. v. s. s. Alae testaceae, nervis fuscis.

Imago, v. v. s. ♂. Thoracis tergum luteum. Alae vitinae; antice arcae marginalibus et submarginalibus apices versus fuscascentibus, longitudinalibus nervorum piceis et transversalibus atris, (basi subcostae et nervo transversali crasso juxta basin arcae marginalis aurantiacis

exceptis); posticæ nervis bases versus testaceis, et apud marginis terminales angusto corvino tinctæ. Pedes saturatissimo lutei. Abdomen supra furfurosum, strigis longitudinali mediâ, apicibus segmentorum, strigisque lateralibus obliquis, fuliginosis. Setæ saturate hepaticolorate.

♀ Oviparvità acutâ, processuque ventrali penultimi segmentorum integro, sinu longitudinali.

Long. corp. ♂ 18, ♀ 16, set. ♂ 48, ♀ 54 mm.

Hab.—Northern China.

The nervation of the fore-wing is peculiar.

Heptagenia basalis.

(*Genitalia maris*, Pl. VI. fig. 15, 15a.)

Basalis, Walk. 1853; *nee* Steph. MS.

Imago, v. s. s. ♂. Tergum thoracis piccum. Alæ vitreæ, nervis piccis: antice vix fusco tinctæ marginem anteriorem versus, nervis transversalibus in areis marginalibus et submarginalibus plus aut minus obscure marginatis, marginibus nonnunquam confluentibus, itaque maculam formantibus ad punctum nodale alteraque inter hoc et alæ apicem; posteriores bases versus vix fusco-picce tinctæ. (Exemplar pedibus caret). Abdomen piccum, juncturis pallidis. Setæ ceryine, juncturis fuscis.

Long. corp. ♂ 15, al. 13, set. 21 mm.

Hab.—Lake Winnipeg.

Heptagenia maculipennis.

H. maculipennis, Walsh, 1863.

Subimago. "Alæ griseo tinctæ, nervis transversalibus obscure marginalis."

Imago. ♂. "Pallide flavicans. Capitis vertex rubiginosus; orbitæ ocellorum griseæ. Tergum thoracis rubiginosum. Alæ vitreæ, nervis longitudinalibus tenuibus obscuris, et pluribus transversalibus atris: horum, ii super anteriorem submarginem alæ antice, atque omnes in area marginali alæ antice adco collocantur ut quasi maculas formant; viz., nervi circa quatuor propò basin,

quorum primus aream submarginalem quoque transit, marginalibus late anthracinis; deinde spatium; postea tres ad punctum nodale, paucis sequentibus; deinde circa medium spatii sequentis alii quatuor vel quinque; denique nervi ad spatia solita positi usque ad apicem. Pedes albicantes, femoribus flavescensibus, sæpissime strigis tenuibus singulis brevibus subtus apices; ungues apices que tibiarum anticarum fuscis. Dorsum abdominis apicem versus piccum; setæ forcepsque albide."

♀. "Pallidior. Abdominis segmenta apicalia supra albicantia, plus aut minus rubiginoso tincta. In posterioribus tarsorum primus articularum tarsalium secundo aequalis: tibia antice apice fere nunquam fusco. Maculæ costales alæ antice eis maris paulo pallidiores" (Walsh). Penultimi segmentorum processus ventralis integer esse mihi videbitur.

Long. corp. ♂ 4.5-6, ♀ 5-6; set. ♂ 12-15, subim. 7-5; set. ♀ 9-12, subim. 8; exp. al. ♂ 14-17, ♀ 13-17 mm.

Hab.—Rock Island, Illinois (Walsh); New York (M'Leach. Mus.).

Heptagenia cruentata.

H. cruentata, Walsh, 1863.

Subimago. "Alæ opacè flavescens. Setæ nigricantes (vel griseæ?), juncturis vix fuscis."

Imago, v. s. s. ♂. Flavescens. Oculi cernubescens-grisei, lineis singulis atris intersectis. Tergum thoracis sanguineum. Alæ vitreæ, nervis fuscis, bases versus vitreis, costisque in majore parte flavescensibus; subcosta apud punctum nodale incrassata atque obfuscala. Femorum dimidia apicula annulis confluentibus pallide sanguineis bicincta; tibia quoque bases et apices versus pallide sanguineæ; tarsorum junctura atque ungues obscuri. Abdomen supra sanguineum, juncturis setatioribus. Forceps pallidus, apicibus fuscis. Setæ albide, juncturis in vices angusto lateque obscuris."

♀. "Plerumque rari pallidior. Venter interdum sanguineus." (Walsh.)

Long. corp. ♂ 7-8, ♀ 8-9; set. ♂ 25-27, subim. 12-15; set. ♀ 17-20; exp. al. ♂ 19-20, ♀ 22-23.5 mm.

Hab.—Rock Island, Illinois (Walsh).

Heptagenia simplex.II. *simplex*, Walsh, 1863.

Subimago. "Alæ flavescens; costæ femine unius fusca."

Imago, v. s. ♂. "Ab acute flavo ad albidum varians. Oculi virescenti-sulphurei; orbitæ ocellorum nigricantes. Tergum thoracis carneum. Alæ vitrinæ, nervis apicalibus, et interdum quoque eis in arcis marginalibus, fuscis. Pedes albi, femoribus flavis vel cretaceis, apicibusquo tarsorum fuscis; antici apicibus tibiærum atque interdum juncturis tarsorum fuscis. Abdomen vitreum, segmentis apicalibus (2-3) flavescens vel albidis. Setæ albe, nigricantes apices versus. Forceps albus."

♀. "Abdomen flavum, nisi vacuum sit, setis albis. Pedes apicibus tarsorum solum fuscis. Nervus alarum anticarum vitrei, costis subcostisque flavescens; paucisque nervorum transversalium inter horum apices obscuris, exceptis." (Walsh.)

Long. corp. ♂ 6-8, ♀ 6.5-9; set. ♂ 14-18.5, subim. 10.5; set. ♀ 14-16, subim. 10-15; exp. al. ♂ 16-20.5, ♀ 19-25.5 mm.

Hab.—Rock Island, Illinois (Walsh).

Heptagenia pulchella.*Palingenia* (C) *pulchella*, Walsh, 1863. (?) *Pal.* (C) *terminata*, Walsh, 1862.*

Subimago. "Alæ sub-opacæ, fusco nebulosæ, nervis transversalibus fuscis, obscure marginatis. Setæ vix pilosæ, nisi juxta bases."

Imago, v. s. ♂. "Oculi margaritaci, vel ætatescentes. Trioracis tergum rubiginico-piccum, meso- et meta-thoracis scutellis albidis. Alæ vitrinæ: antice arcis marginalibus apiceo versus pallide brunneo nebulosis, et nervis transversalibus fuscis, eis prope basin arcu marginalis lutescentibus exceptis; postice pluribus nervorum palucidis. Pedum antici pallide flavescens, femoribus fusco bicornetis, apicibus tibiærum tarsorumquo cum junctura

*Ternum II. *terminata* sit varietas *H. pulchelle*, an species vera, Dominus Walsh dubitat. In *H. terminata* sex priora segmentorum abdominalium immutata, pedumque postiorum pallide flavescens sunt. Poram quoque eanti imaris flavescens fuerunt.

laris horum fuscis; posteriores albidis, similiterquo signati. Segmentorum abdominalium 1-6 albidis, punctis singulis lateralibus prope apices magnis fuscis; cœtera rubiginoso-picca: venter albicans. Setæ fusca, pallidiores apices versus."

♀. "Vertex capitis et tergum thoracis albicantes: ille luteo, hoc vel luteo vel rubiginoso variat. Abdomen flavum, maculis veluti in mari." (Walsh.)

Long. corp. ♂ 5-8, ♀ 5.5-8; set. ♂ 17-21, subim. 10-15; set. ♀ 15-16, subim. 8-13; exp. al. ♂ 15-21, ♀ 17-23 mm.

Hab.—Rock Island, Illinois (Walsh).

Heptagenia interpenulata.*Bactis interpenulata*, Say, 1839; *Palingenia* (C) *interpenulata*, Walsh, 1862.

Subimago. "Alæ primo flavescens tinctæ; demumque fuscæ, opacæ."

Imago, v. s. ♂. "Flavescens. Oculi pallide virescenti-sulphurei; macula atra inter oculos, atque infra antennas; orbitæ ocellorum fusca. Tergum thoracis piccum, brimacula basali lineisque singulis lateralibus prothoracis atris. Alæ vitrinæ; antice prope costas, præcipue apices versus, lutescenti-brunneo nebulosæ; in medio alæ, inter tertium atque quartum nervorum longititudinalium, striga brevis crassa atra jacet; nervi fusci, æsta in majore parte flavescens excepta: postice apud apices brunneæ. Pedum antici pallide virescenti-flavivirescenti-sulphurei (?), femoribus fusco bicornetis, apicibus juncturisque tibiærum et tarsorum quoque fuscis; posteriores pallidiores. Abdomen pallide opaco viridescens, strigâ tarsali et dimidiis apicalibus segmentorum piccis; subtus apicibus segmentorum obscuris. Setæ pallidæ, virescentes, juncturis fuscis."

♀. "Tergum thoracis luteum, plerumque puncto tantum super prothoracem nigro. Abdomen supra flavum, notis angustioribus, et subtus notis & pallidioribus. Setæ albidæ. Alæ antice apud costas flavescens, nervis transversalibus e postcostâ (sicut nervi alarum prædicarum) pollucidis et flavescensibus" (Walsh).

Long. corp. ♂ 7-10, ♀ 5-10; set. ♂ 20-25, subim.
9-15; set. ♀ 14-24, subim. 7-14; exp. al. ♂ 17-25, ♀
18-5-30 mm.

Hab.—Rock Island, Illinois (Walsh); Indiana (Say).

Heptagenia flavescens.

(Genitalia maris, Pl. VI. fig. 16.)

Palingenia (C) flavescens, Walsh, 1852.

Subimago. ♂. "Alæ vel subfuscæscentes, colore nervorum indistinctiori quam in imagine; vel subflavescentes, sub-opacæ, nervis flavescoulibus, transversalibus in mediis apicesque versus excavatis. Segmentorum abdominalis sex priora flava, strigis carentia. Setae invariæ."

Imago, v. s. s. ♂. Thoracis tergum luteum, vel "rubiginosum vel piceum." Alæ vitrina, fulgore lacteo; nervi piceæ, costis et subcostis majoro parte flavoscentibus exceptis; punctum nodale indistinctum; areæ marginalis apex virescenti-griseo vel "pallide rubiginoso" nublatus. Pedum antici sub-granulosi, vel "pallide rubiginosi," femoribus lincinctis, apicibus juncturisquo tibiarrum et tarsorum fuscis; posteriores testaceæ, "apicem supra rufo-fuscum vel "rubiginosum," juncturis obscuris; sex priora segmentorum strigis pallidis duabus sub-distinctis, cætera lutescentia: subtus testaceum, apicem versus lutescens. Setae albicanules, juncturis fuscis. "Venter in v. s. pallide virescens, apice excepto."

♀. "Pallidior, abdomine supra pallide fusco vel rubiginoso, cæcis vittis. Plurimi nervorum transversalium areæ marginalis pellucidi." (Walsh.)

Long. corp. ♂ 9-13, ♀ 10-13; set. ♂ ♀ 27-38, subim.
♂ 17, ♀ 18; exp. al. ♂ 24-29, ♀ 27-34 mm.

Hab.—Rock Island, Illinois (Walsh).*

* *Heptagenia vitrea.*

Palingenia vitrea, Walk. 1853.

Subimago, v. s. s. ♀. "Testacea; femora fusco sub-notata; alæ albidæ, sub-opacæ, nervis testaceis" (Walker).

Long. corp. ♀, exp. al. 13 mm.

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

This species can be recognized in no other way, than by comparing specimens with the original type in the British Museum.

Heptagenia nigripennis.

Ephemera nigripennis, Duf. 1841.

Imago, v. s. s. ♂. "Subtestacea, oculis fusco-cæcis flavo circumdati; alis diaphanis, costâ subflavescenti, venis obscuris; abdomine testaceo, segmentis utrinque lineola obscura obliqua; pedibus pallidis, anticis nigris; setis nigris." (Duf.)

Long. corp. 5 lin. Gallic.

Hab.—In cog.; probably France.

Heptagenia flavipennis.

(Genitalia ♂, Pl. VI. fig. 17, 17a; ♀ 17b, c.)

Ephemera flavipennis, Duf. 1841. *Daak's cæcæ*, Pict. 1843-5. *P. longiranda*, Hag. 1863; (*see* Steph. 1835-6).

Subimago, v. v. s. s. ♂. Oculi graminei. Alæ acuto virescenti-flavæ, marginibus terminalibus viridi-nigris, cantî anguste limbatis, atque strigis transversalibus duabus interdum abruptis anticarum apices versus ejusdem coloris; puncta nodalia costæ subcostique, atque nervi transversales in areâ marginalis apice, atrî. Pedes furfurosi, femoribus obscure carneo bincinctis, et tarsis apicibusquo tibiarrum anticarum corvinis. Setae furfurose, juncturis vix obscuris.

♀. Caput maculâ trigonali utrinque apud oculos supra et infra obscurâ.

Imago, v. v. s. s. ♂. Oculi flavo-prasini, vel viridivivacei. Thoracis tergum furfurosam. Alæ vitrinæ, flavo-virenti suffusæ, præcipue costas versus; nervorum longitudinaliales saturate virescentes, transversales punctaque nodalia atrî. Pedes veluti in subimagine; tarsi antici tamen brunneo-fulginosi, apicibus articulorum obscuris. Abdomen supra vel virescenti-griseum, vel flavo-virens, vel sulphureum, apicibus segmentorum anguste corvinis, atque tribus segmentorum apicalium furfurosis; subtus immaculatum. Setae luteæ, juncturis obscuris.

♀. Pallidior. Alæ anticæ vitrinæ, fulgore pruinoso, areis marginalibus et submarginalibus virescenti-griseo fuscis. Abdomen supra pallidissime virescenti-flavum, apicibus segmentorum anguste corvinis. Oviparivalva processusquo ventralis penultimi segmentorum integri.

Long. corp. ♂ 12-13, ♀ 14; al. ♂ 14-15, ♀ 17; set. ♂ 20-33, subim. 24, ♀ 21 mm.

Hab.—The Kennel and Holybrook, near Reading; and the Lake of Geneva (Pict.). June and July. The subimago rises mostly in the evening after sunset.

Heptagenia elegans.

(Genitalia ♂, Pl. VI. fig. 13; ♀ 18a, b.)

(?) *Ephemera sulphurea*, Müll. 1776 = *E. helvola*, Sulz. 1776 = *E. bioculata*, Röm. 1789 (nec Lin.). (?) *E. ferruginea*, Guél. 1790-3. *E. bioculata*, var. (?), Pz. 1804 (nec Lin.). *Baetis elegans*, costalis & straminea, Curt. 1834. *E. lutea*, Ste. 1835-6 (nec Lin.). (?) *B. marginalis*, Burm. 1839. *B. cyanops* & (?) *sulphurea*, Pict. 1843-5. *P. lutea*, Hag. 1863.

Subimago, V. V. s. Oculi saturate olivacei, vel graminei; caput macula parvâ utrinque infra oculos atrâ, atque alia rhombicâ supra juxta oculos luteâ. Lineola pone coxas anticae, et punctum ante poneque coxas internema utrinque, atra. Alae primo unicolores, sulphureae; striga transversalis vix distincta nascitur apud angulum interno-terminalem alae anticae, alteraque inter hanc et alae apicem, atque limbus griseus medioeris super marginem terminalem; denique nervi transversales atrifunt. Pedes pallidissime ochracei, tarsi pallide nigricantibus. Setae nigricantes.

Imago, V. V. s. ♂. Oculi supra saturato virescentibus, et subtus subgraminei, maculis singulis rotundis mobilibus lineolis curvatis concentricis circumjectis; vel atris. Caput macule tum veluti in subimagine. Thoracis tergum fulvrosuum. Alae vitrinae, fulgore pruinoso, nervis plerumque curvatis vel atris; anticae areis marginalibus et submarginalibus flavicantibus, apicibus virescentibus; anticae furfuroso tincti, tarsi fumatis, obtenturis fuscis, nervis apicibusque femorum atris; posterioribus tibiarum et tarsis fumatis, juncturis atris. Segmentorum abdominis sex priora supra pallide fusciscentia, vel virescenti-olivacea, juncturis atro-piceis, saepe

vasi dorsali, lineisque curvatis ex basi cujusque duabus, indistincte pallidioribus, atque lateribus ventraeque pallidissimo olivaceis; caetera supra fulvrosa, subtus ochracea. Setae albo-fumatae, juncturis fuscis.

♀. Oculi prasinii, vel glauci, vel etiam atrii. Alae vitrinae, parum sulphureo vel gamboso tinctae apud areas marginales et submarginales, nisi in toto vix sulphureae; nervis atris, crassioribus longitudinalium gambosis exceptis. Pedes gambosi, tarsi fumatis, juncturis atris. Dorsum abdominis flavo-virens vel flavo-ochraceum, juncturis obscuris, et tribus segmentorum apicalium flavis vel ochraceis; venter immaculatus. Setae albae, vel fumato-albae, juncturis obscuris. Oviparula obtusa; processus ventralis penultimi segmentorum paulo reclusus.

Long. corp. ♂ 9-10, ♀ 9-11; al. ♂ 10-12, ♀ 11-13; set. ♂ 19-23, ♀ 14-19, subim. ♂ & ♀ 13-15 mm.

Hab.—Switzerland, Germany, Belgium, Great Britain, and Norway (Hammerfest). May to September; in streams and rivers.

Heptagenia fuminum.

Ephemera bioculata, Pz. 1804 (nec Lin.). *Baetis fuminum*, Pict. 1843-5.

Subimago (e figurâ Pict.). ♂. "Alae coervinae; anterior striga transversali abbreviata ex angulo interno-terminali, alteraque paulo postea e costa, deinde lineis transversalibus e costa tribus apicem versus, atque nebula transversali inter strigas et basin, atrescentibus."

♀. "Alae virescenti-griseae, intraria."

Imago, ♂. "Oculi cyanei (Pict.) vel graminei (Lab. & Imh.). Thoracis tergum lutescens vel saturate fulvrosuum. Alae vitrinae, nervis tenuibus atris, et areis marginalibus anticarum flavescens tinctis. Pedes lutescentes, tarsi fusciscentibus. Abdomen lutescens, apicibus segmentorum et maculis trigonalibus latero-apicalibus fuscis. Setae lutescentes vel fulvrosae, juncturis pallide fuscis."

♀. "Simillima mari; abdominis segmenta singula lineolis dorsalibus abbreviatis atris in modis longitudinalibus."

Long. corp. ♂ 12-13, ♀ 12; set. ♂ 30, subim. 13, ♀ 20, subim. 13; exp. al. ♂ 25-27, ♀ 30 mm.

Hab.—Germany (Panzer); the Rhone about Geneva, to the further extremity of the Lake. (Pict.)

Heptagenia stylivola.

Baetis stylivola, Ed. Pict. 1865.

Imago, v. s. s. ♂. "Tergum thoracis luteum, metathoraco flavescenti. Alae vitinae, nervis lutescentibus; apex area marginalis flavescens. Pedes lutei; antici ultimoque segmentorum flavo. Setae fulvae, juncturis nigricantibus. Forceps nigricans." (Ed. Pict.) Venter serie macularum triangularium, quarum apices ante diriguntur.

♀. "Smillina maris. Proecessus ventralis penultimi segmentorum abdominis integer." (Ed. Pict. & e fig.)

Long. corp. ♂ 12, ♀ 13; exp. al. ♂ 31, ♀ 33 mm.

Hab.—San Ildefonso, in July (Ed. Pict.).

Heptagenia rollans.

(Genitalia maris, Pl. VI. fig. 20.)

H. rollans, Ehn. 1870.

Imago, v. v. s. ♂. Oculi supra fusco-picei, subtus testacei. Thoracis tergum atro-fuscum. Alae vitinae, nervis atris, tribus prioribus longitudinalium nigricantibus exceptis; apex areae marginalis vix virescenti-griseo tinctus. Pedum antici tibiis tarsisque fuscis, et femoribus saturate carneo bichetis; posteriores fumato-lavidi. Femoribus testaceis. Abdomen supra fuscum, apicibus segmentorum fuliginoso-fuscis, maculisque triangularibus lateralibus saturate virescenti-griseis; subtus saturate virescenti-griseum, immaculatum, vel pennaro locis plezorum nervorum strigisque sequentibus duabus vix obscure indicatis; interdum quoque infra penultimum segmentorum notato L-fornatae dno fuscae sunt. Setae pallide virescenti-griseo, juncturis atris vel atro-fuscis.

Long. corp. ♂ 12-15; al. 13-14; set. 25-28 mm.

Hab.—The Thames above Partridge, and the Holybrook near Reading; in May. The name has reference to a habit of the *Heptagenia* of hovering steadily when there is a gentle breeze.

Heptagenia alpicola, nov. sp.

(Genitalia maris, Pl. VI. fig. 19.)

Imago, v. v. s. ♂. Oculi fuliginosi. Thoracis tergum fusco-luteum. Alae vitinae, nervis piceis, interdum areae marginalis apice nigricante. Pedes rufo-picei; antici tarsis corvinis, vel tibiis et tarsis atris; posteriores tarsis paulo obscuratis, vel saturate piceis. Abdomen supra luteum vel saturate griseum, marginibus hinc segmentorum apicalibus, strigaeque in medio longitudinali, sub-fuscis vel fuscis. Venter pallidus, striga longitudinali angulatum in medio segmenti singuli dilatata subfusca; segmentorum penultimum luteum. Setae fuliginosae. Forceps fumatus, proximis articulorum fuliginosis.

Long. corp. ♂ 13-14; al. 15-16; set. 41-44 mm.

Hab.—Near Contamines, Val Montjoie; Carinthia.

Heptagenia iridana.

(?) *Baetis aurantiaca*, Burm. 1839. * *B. iridana*, Koln. 1860.

Imago. "Corpore rufo-brunneo, segmentis abdominis dorsalibus postice late brunneo marginalis; alis iridinis, tribus nervorum anteriorum flavis, reliquis brunneis, pterostigmate [i. e., apice areae marginalis] infumato vel flavescenti. Venter luteo-brunneus, setis obscurior." (Koln.)

Long. corp. 3.5; al. 5; set. 12."

Hab.—Altwater, in August and September, at an altitude of 4000 feet. The type is in the Royal Polytechnic, Bruun.

Heptagenia annulifera.

Palingenia annulifera, Walk. 1860.

Imago, v. s. s. ♀. Thorax furfurosus, lateribus proet metathoracis dorsis pallidioribus. Alae vitinae, nervis

* Burmeister's diagnosis of *B. aurantiaca* is as follows:—
Imago. "Rufo-testaceo, segmentis abdominalibus strigae lineae colli-gua nigra; alis graecibus hyalinis."

Long. corp. 3.5 lin.
Hab.—Halle.

piceis, ethorum transversalibus fusco marginatis. "Pedes albi, [femoribus] nigro-fasciatis." Abdomen testaceum, strigis singulis trigonalibus obliquis utrinque segmentum, punctisque dorsalibus atris. Setae cervinae, juncturis atris. Processus ventralis penultimi segmentorum integer.

Long. corp. ♀ 6; al. 8; set. supra 10 mm.

Hab.—Hindustan.

Heptagenia luridipennis.

(Genitalia maris, Pl. VI. fig. 21, 21a.)

(?) *Ephemeru noreboracana*, Licht. 1796. *Pactis luridipennis*, Burm. 1839. (?) *B. noreboracana*, Hag. 1861.

Subimago, v. s. s. Alae pallide fusco tinctae, nervis obscuris.

Imago, v. s. s. ♂. Thoracis tergum brunneo-luteum; abdomen paulo obscurius. Alae vitrine, crassioribus nervorum longitudinalium brunneis vel testaceis, ob transversalibus piceis; apices areae marginalis et areae submarginalis paulo infuscati. Pedum antici sub-testacei vel granulosi, femoribus obscure bidentatis, apicibus fibrarum fuscis, et tarsis pallidis; posteriores pallidiores. Abdomen supra brunneo-luteum, vel fuscum, apicibus segmentorum strigisque lateralibus obliquis obscuris. Setae pallidissime cervinae, juncturis obscuris.

♀. Similima mari. Venter immaculatus. Processus ventralis penultimi segmentorum emarginatus esse videtur.

Long. corp. ♂ 11, ♀ 10; al. ♂ 13, ♀ 15; set. ♂ circa 25, ♀ subim. circa 15 mm.

Hab.—St. Martin's Falls, Albany River, Hudson's Bay (Barnston); the St. Lawrence, Canada (De Selys).

Heptagenia faveola.

(Genitalia maris, Pl. VI. fig. 22, 22a.)

Pactis faveola, Pict. 1843-5.

Subimago, v. s. s. Alae cervino-albo; nervorum longitudinalium testacei, transversales in mari nigricantos, in femina atris.

Imago, v. s. s. ♂. Thoracis tergum rufo-luteum. Alae vitrine; anticae nervis atris, tribus prioribus longitudinalium testaceis exceptis; posticae nervis pellucidis. Pedes lividi vel straminei, femoribus fusco bidentatis, juncturisque obscuris; tarsi antici albicantes, juncturis obscuris. Abdomen tribus segmentorum apicalium rufo-luteis, et caeteris ochroleucis juncturis fuscis; venter immaculatus. Setae albo-cervinae, juncturis vix obscuris.

♀. Corpus ochraceum, juncturis abdominalibus anguste nigricantibus. Processus ventralis penultimi segmentorum vix emarginatus. Alae fulgore fere talcoso.

Long. corp. ♂ 9, ♀ 8-10; al. ♂ 10, ♀ 11-13; set. ♂ 20, ♀ subim. 16 mm.

Hab.—St. Martin's Falls (Barnston); Tennessee (Pep-pig); West Farms, New York (Angus, MS.).

Heptagenia vicaria.

(Genitalia maris, Pl. VI. fig. 23, 23a.)
Pactis vicaria, Walk. 1853 (imago). (?) *B. tessellata*, Walk. 1853 (subimago, ♀).*

Subimago ? (*tessellata*, Walk.), v. s. s. Alae pallidissime fusco suffuse, nervis testaceo-brunneis, et horum transversalibus fuliginoso marginatis.

Imago, v. s. s. ♂. Thoracis tergum brunneo-luteum. Alae vitrine, nervis fusciscentibus; apex areae marginalis anticae pallidissime fuscescente vel virescenti-griseo tinctus. Abdomen supra pallide fuscum; dorsum ventrique utrinque serie signorum 6-formatorum fulvorum,

* From one or two particulars in the description, I am inclined to think that *Pactis tessellata*, Hag., may be a *Leptophlebia*. It may be *L. colymba*, Walk., on the point of casting the submarginal peltate.

Pactis tessellata, Hag. 1861; (v. c. Walk. 1853).

Subimago. ♀. "Alae griseae, nervis luridis, et maculis quadratis peltatis numerosis; positione minimae. Thorax luteus; mesothorax linea fusca utrinque. Pedes lutei, apicibus tarsorum fuscis. Abdominis segmenta lutea, maculis trigonalibus latero-dorsalibus utrinque fuscis duabus." (Hag.)

Long. corp. ♀ 16, exp. al. 26 mm.

Hab.—Pegot Sound, Washington Territory (Hag.)
As the type is in alcohol (in the Berlin Museum) its affinities can be easily determined.

et apud basin segmenti singuli supra lineolæ pallidæ longitudinales duæ sunt. Setæ fuscæ, juncturis obscuris. Pedes saturate rubiginosi, femoribus brunnis.

♀. Processus ventralis penultimi segmentorum integer.

Long. corp. ♂ 12; al. ♂ 13, ♀ 14.5; set. ♂ 35 mm.

Hab.—The St. Lawrence; Chicago; Washington (Hagen); Savannah (Osten Sacken).

Heptagenia venosa.

(*Genitalia maris*, Pl. VI. fig. 24.)

(?) *Ephemerella maculata*, Pod. 1761. *E. venosa*, Fab. 1775.

(?) *E. berolinensis*, Mill. 1776. *E. fusco-grisea*, Reetz. 1783. *E. nervosa*, * Vill. 1789. *Baetis dispar*, Curt.

1834. *B. venosa*, Ste. 1835-6. *E. virga*, Ramb. 1842.

(?) *B. purpurascens* & *formosa*, Pict. 1843-5. *B. longicauda*, Hon. 1856 (*see* Ste.). *Ecdyurus venosus*, Lth. 1868.

Subimago, v. v. s. Alæ pallidissime cærinæ; nervis transversalibus fuscis nigricanti marginalis, fuscis transversalibus pallidis indistinctis dantibus trajectis; arca submarginalis arcæque marginalis apex flavescenti tincti, fuscis obscuris interrupti. Pedes cinereo-olivacei, tarsis cinereis. Setæ fuscae.

Imago, v. v. s. ♂. Oculi supra atro-piceo, vel piceo; subus apud orbilas ochraceo, linea grisea interposita. Thoracis tergum fuscum. Alæ vitinae; nervis corvini; apex arcæ marginalis nigricanti tinctus. Pedum antici fuscocorvini, tarsis corvini; posteriores saturate virescenti-grisei, genibus tarsisque corvini. Abdomen supra fuscum, vel fuliginoso-hepaticoloratum, latera versus pallide testaceum, strigis inferalibus fuscis obliquis; subus saturate brunneo-hepaticoloratum. Setæ fuscae.

♀. Mari simillima. Processus ventralis penultimi segmentorum integer.

Long. corp. ♂ 12-14, ♀ 12-18; al. ♂ 13, ♀ 15-17; set. ♂ 30-48, ♀ 15, subim. 17 mm.

Hab.—Scandinavia (Zett.); England; Belgium (De Selys); France; Switzerland; Dalmatia (Pict.); Corsica (Hag.). In streams. Juno.

* M. Pictet (1813-5) unfortunately cited this synonym as one originated by Kuhn.

Var. (?) *forcipula*.

(*Baetis forcipula*, Pict. 1843-5.)

Hab.—Germany, Austria, Bohemia, Bavaria, and Piedmont (Pict.). Undescribed.

Specimens probably exist in the Vienna Museum.

Heptagenia longicauda.

(*Genitalia maris*, Pl. VI. fig. 25.)

Baetis longicauda & *subfusca*, Ste. 1835-6.

Subimago, v. v. s. ♀. Alæ pallide fumato-nigricantes, nervis sub-fufifrosis, transversalibus anguste cinereo marginalis. Pedum antici piceo, tibus nigricanti tinctis, et tarsis anthracinis; posteriores femoribus olivaceis, tibus nigricantibus, et tarsis corvini.

Imago, v. v. s. ♂. Oculi atro-fuliginosi. Thoracis tergum aterrimum, vel atro-fuscum, pollitum. Alæ vel vitinae, vel vix virescenti-griseo tinctæ, nervis atro-piceis; apex arcæ marginalis. Antice vix virescenti-griseus. Pedum antici atro-piceo, femoribus apud bases pallidioribus; posteriores femoribus fuscis, vel fuscoluteis, tibus testaceis, et tarsis vel corvini vel saturate hepaticoloratis. Abdomen supra umbrinum vel rubido-fuscum, juncturis pallidis, et apicibus segmentorum fuscis; latera dorsi bases segmentorum versus flavescitæ, strigis singulis saturate fuscis obliquis ex horum apicibus; venter fuliginoso-hepaticoloratus. Setæ et forceps atro-piceæ.

♀. Simillima mari sed pallidior. Alæ vitinae, nervis fusco-piceis; arcæ marginalis et submarginalis antice tantum apices versus vix virescenti-griseo tinctæ. Processus ventralis penultimi segmentorum integer.

Long. corp. ♂ 11-12, ♀ 9; al. ♂ 11, ♀ 11-15; set. ♂ 27, ♀ 15, subim. 12 mm.

Hab.—Great Britain. July to September. In cold streams and rivers.

Heptagenia angustipennis.

Ephemerella angustipennis, Ramb. 1842; *Baetis angustipennis*, Ed. Pict. 1865.

Subimago, v. v. s. ♀. Alæ cærinæ; nervorum longitudinalinales testacei, transversales digricantes, angusto mar-

ginit. Pedes lutescentes, femoribus obscure annulatis, anticis tibiurum luteis, posterioribus testaceis, et tarsis fuscis. Setae fuliginosae.

Imago, (?) (*Ephemerella maderiensis*, Ramb. MS.) v. s. s. ♀. Thoracis tergum luteum. Alae vitrinae; nervorum longitudinalis testacei, transversales picei. Pedes postici femoribus luteis, singulis cingulis nigris, tibiis testaceis, et tarsis luteis. Processus ventralis penultimi segmentorum vix retusus.

Long. al. im. 14, subim. 11 mm.

Hab.—Madrid (Ramb.).

Heptagenia Picteti.

Baetis Picteti, Meyer-Dür, 1864.

Subimago, s. s. "Alae albicantes, nervis longitudinalibus atro-fuliginosis, et caeteris atris; antica parte tertia basali, fasciisque transversalibus quatuor (quarum prima atque tertia abbreviate sunt), et vestigio quoque quintae apud apicem, griseis. Tergum thoracis fuscum, politum. Pedes fuscocentes, cruribus pallidioribus. Abdomen fuscum, juncturis pallidis. Setae albicantes, annulis pallidis."

Long. corp. 5.5, al. 7, set. 5-6 lin.

Hab.—Tessin and Ober Engadino (Meyer-Dür).

Heptagenia insignis.

(Genitalia maris, Pl. VI. fig. 26, 26a; nota ventrales abdominis, fig. 26b.)

Baetis montana, Hag. 1863; (nec Pict.). *E. insignis*, Ehn. 1870.

Subimago, v. v. s. Alae pallide ceryinae, apud bases et costas vix sulphureo tinctae, nervis ipsis sulphureis vel olivaceis; antica apud marginem terminalem cinerea, marginibus nervorum transversalium atris.

Imago, v. v. s. ♂ & ♀. Oculi sub-olivacei, strigis singulis fuscis intersociis. Thoracis tergum fuscum vel sub-olivaceum [piceum in s. s.]. Alae vitrinae, nervis piceis, costis et subcostis plus aut minus fuscis; areae anterioris marginalis et submarginalis vix virescenti-griseo basae versus tinctae, apicibus nigricantibus. Pedum antici atro-picei vel corvini, juncturis apicalibus tarsorum

pallidioribus; posteriores sub-olivacei, vel virescenti-olivacei, tarsis atrescentibus. Abdomen sub-olivaceum, vel pallide virescenti-griseum, apice lutescenti; segmentorum apices, strigaeque laterales ex his oblique productae, atri; saepe quoque series centralis est femine strigatum brevium nigricantium: venter maculatus similiter ac in Tab. VI., fig. 26b, effingitur. Setae atrae, piceae apices versus. Forceps corvina. Processus ventralis penultimi segmentorum integer.

Long. corp. ♂ 11-12, ♀ 12-14; exp. al. ♂ 13-17, ♀ 13-15; set. ♂ 22-23, subim. 14-20, ♀ 20, subim. 15 mm.

Hab.—England. May, June, and July or August. In rivers.

Heptagenia montana.

Baetis montana, Pict. 1843-5.

Imago, v. s. ♂. "Caput nigrum, oculis cyanæis. Prothorax supra rufescens, maculâ in medio nigri: meso- et meta-thoraces supra atrî. Alae vitrinae, nervis tenuibus nigris; apex areae marginalis antice fuscocens. Pedum antici nigri; posteriores fulvi. Abdomen supra griseo-fuscum (in figura ocellarum-olivaceum, juncturis et strigis lateralibus obliquis obscuris), setis fuscis" (Pict.).

Long. corp. ♂ 13, set. 30, exp. al. 28 mm.

Hab.—Near a small stream from Brevent, above Chamoux (Pict.); and on the Austrian mountains (Brauer).

Heptagenia Bellieri.

Baetis Bellieri, Hag. 1860.

Imago, v. s. s. ♀. Alae vitrinae, lacteo tinctae, nervis piceis; apex areae marginalis paulo infuscatus. Pedum antici picei; posteriores testacei, tarsis fuscis. Setae piceae. Processus ventralis penultimi segmentorum integer.

Long. al. 14 mm.

Hab.—Sicily (Hag.). According to Dr. Hagen, this species somewhat resembles the preceding one in colour.

Heptagenia zebra.

(Genitalia maris, Pl. VI. fig. 28.)

Baetis zebra (♂ subim., ♀ im.), *fallax* (♂ subim.), *munium* [nec Pict.] (♂ im.), Hag. 1864.

Subimago, v. s. s. ♂. Alæ cervinae; nervorum longitudinalinales testacei, transversales per-anguste nigro marginati.

Imago, v. s. s. ♂. Thoracis tergum fuscum. Alæ vitinae, nervis piceis. Pedum antici femoribus fuscis, cingulis et apicibus atro-piceis, tibus atro-piceis, et tarsis fuliginosis; posteriores femoribus fusco-testaceis, cingulis in mediis et apicibus sub-piceis, cruribusque fuliginosis. Abdomen supra pallide olivaceo-fuscum, latera versus flavescens, apicibus segmentorum angusta piceis. Setæ fuliginosæ.

♀. Thoracis tergum fufurosum. Alæ vitinae, crassioribus nervorum longitudinalinalium testaceis, et transversalibus atris. Pedes lutescenti-electrini, cingulis et apicibus femorum nigris. Abdomen supra fuscum, apicibus segmentorum obscuris; strigæ laterales oblique o basibus segmentorum utriusque atræ; subtus segmentum singulum maculis trigonalibus basalibus duabus atris. Setæ albicantes, juncturis nigris. Processus ventralis penultimi segmentorum integer.

Long. al. ♂ 9-10, ♀ 12; set. ♂ 20, subim. 12, ♀ 15 mm.

Hab.—Corsica (Hag.).

Heptagenia lateralis.

(Genitalia maris, Pl. VI. fig. 27.)

(?) *Ephemerella stigma*, Gmel. 1790-3. *Baetis lateralis*, Curt. 1834. *Cloe urumna*, Ramb. 1842. *B. obscura*, Hag. 1863; (?) Pict. 1843-5; (nec Sto.).

Subimago, v. s. s. Alæ saturate cervinae, invaria; interdum tamen tribus prioribus nervorum longitudinalinalium ochraceis.

Imago, v. v. s. ♂. Oculi atro-fuliginosi. Pedum antici atro-fusci, cruribus atro-piceis; posteriores sub-

fusci, tarsis piceis. Nervi alarum fusci. Venter virecenti-fuliginosus; forceps ater; setæ saturate fuliginosæ. Reliqua veluti in femina.

♀. Oculi atro-fuliginosi. Thoracis tergum aterimum, politum. Alæ vitinae, nervis piceis. Pedum antici atro-piceis, tarsis atris; posteriores saturate picee, femoribus vix annulatis, et tarsis atris. Abdomen supra hepaticofuscum, apicibus segmentorum vix obscuris, nisi maculis trigonalibus apud latera obscuris; venter fuscus, juncturis virecenti-griseis, et interdum plexu nervorum ventralium penultimi segmentorum vix hepaticolorato. Setæ corvinae. Processus ventralis penultimi segmentorum integer.

Long. corp. ♂ 5-9, ♀ 7; exp. al. ♂ ♀ 6-9; set. ♂ 19, subim. 10, ♀ 8 mm.

Hab.—England and Wales; Carinthia; Switzerland (Pict.); the South of Spain (Ramb.). July and August. In mountain torrents, and cold streams.

M. Pictet's description of *B. obscura* was probably drawn up from a dried specimen.*Heptagenia guttata*.*Baetis guttata*, Pict. 1843-5; *Ephemerella (Baetis) guttata*, Blanch. 1851.

Imago, s. s. ♀. Caput et thorax fusci, flavo variegati ('punctati,' Pict.). Alæ vitinae, nervis atris; area marginalis pallidissime fuscens. Pedes flavescents; femora apicibus maculisque singulis in mediis, tibiisque apicibus, nigris. Abdomen flavum (in figurâ fuscum), apicibus segmentorum strigisque lateralibus ex his oblique productis, atque seriebus strigarum longitudinalium supra subtusque duabus, atris. Setæ flavescents, juncturis in vicos late et anguste nigro annulatis." (Pict. & Blanch.)

Long. corp. ♀ 12, set. 18, exp. al. 29 mm.

Hab.—Valdivia, Chili (Blanch.).

The following is probably an indeterminate species of *Heptagenia*.*Ephemerella geminata*, Scop. 1763.

Imago, s. s. ♀. "E. geminata. Tubercula tria frontalia, diaphana, crystallina, nigra, punctulata [ocelli]. Corpus rufum. Incisura abdominalis marginibus flaviventribus. Setæ caudales nuchales."

Long. 7.5."

Hab.—Circu aqueductum Fodinarum Idrentium (Scop.).

Heplagenia torrida.

Baetis torrida, Walk. 1853.

Imago, v. s. s. ♀. Thoracis tergum castaneo-piceum, Alae vix fusco suffusae: antica arcis marginali submarginatiliquo saturatioribus. Pedum antici rufo-piceae; posteriores saturate furfuriosi, apicibus femorum rufo-piceis. Abdomen (decoloratum) apicibus segmentorum obscuris; setis carens. Processus ventralis penultimi segmentorum integer.

Long. corp. ♀ 8, exp. al. circa 20 mm.

Hab.—The Philippine Islands.

Heplagenia determinata.

Baetis determinata, Walk. 1853.

Imago, v. s. s. ♂. (reliquiae typi). Picoa. Thorax strigâ dorsali longitudinali fulvâ. Alae vitrine: antica costâ apud basin saturate ochracea, nervis fuscis, atque arcis marginali submarginatiliquo quasi incrassatis et fuscis. Pedes furfuriosi, tursis et apicibus femorum fuscis. "Abdomen strigâ latâ flavescenti, notis paucis piceis inclausis." (Walk.)

Long. corp. ♂ 11, al. 24 mm.

Hab.—Java.

In this genus the cross-reinlets in the apex of the marginal area of the anterior wing vary in character in the same species, so much so, that they may be simple and free, or divided and conjoined, in either sex of a species, indifferently. Sometimes, however, they are of slight service. *H. elegans* and some other yellowish species have two evanescent dark triangular dorsal dashes between the wings of the subimago, which I have purposely omitted to mention in the descriptions.

EXPLICATIO TABULARUM.

Signum asterisci * his figuris appositum est quas ex aliis operibus recepinus; omnes relique icones sunt originales, a nobis secundum naturam opipose camera lucida delineatae, et magnitudinis auctae.

Tab. I. Venae alarum antillarum.

- Fig. *1. *Laetionia abnormis*.
 2. *Oligoneuria thenera*.
 3. *Asphenopi* (sp. nondescript.) in Mus. Wl. Lach.; de Texas.
 4. *Campsur latipennis* (in parte).
 5. *Polymitaerogis virginitis*.
 6. *Pentagenia vittigera*.
 7. *Herogenia timbalae* (in parte).
 8. *Euphylocia Heerde* (in parte); ♂, apex alae.
 9. *Ephemera vulgata* (in parte).
 10. Fragmentum fossile Oolithicum, speciei generis incerti *Ephemera affinis*, de Schuchter. Ex exemplari in Museo Britannico; magnitud. auct. (7x7).

Tab. II. Venae alarum antillarum.

- Fig. 1. *Potamanthi lateri* (in parte).
 2. *Leptophlebia australasica*.
 2a. *Leptophlebia marginata* (in parte).
 2b. *Leptophlebia cupida* (in parte).
 2c. *Leptophlebia fusca*.
 *3. *Arctophila varicanda*, ♀. *3a ♂.
 4. *Cemis dimidiata*.
 5. *Ephemeraella syntax* (in parte).
 6. *Botiscæ obsca* (in parte).
 7. *Cleocentis similis* (in parte).
 8. *Centropeltis lateralis* (in parte).
 9. *Baetis binoculati*.

* Note:—

Tab. I. fig. 1 is from..... Packard's Guide to the Study of Insects. Fig. 578.

Tab. II. fig. 3, 3a " Savigny's Description de l'Égypte (1817), Tab. II. fig. 6, 7.

Tab. III. fig. 7a-8a " Dr. Hagen, in Stet. Ent. Zeit. (1855), Tab. I. C. Cornelius (1848).

Tab. III. fig. 17a " Ed. Pictet, in Synopsis des Névropteres d'Espagne, Tab. III. fig. 1.

Tab. V. fig. 30 " Hagen, in Berendt's Organische Reste im

Tab. VI. fig. 8 " Bernstein (1856) Bd. II. Tab. VI. fig. 1.

" " Hagen, in Berendt's Organische Reste im

TAB. III.

Figs. 1-5. *Yema alarum anticarum.*

Fig. 1. *Bectis* (sp. nondescript.) in parte; de California.

2. *Siphuri leucostri.*

3. *Coloburi humeralis.*

4. *Isonychia manca.*

5. *Heptagenia elegantis.*

6. *Meurina gallica* (centimetres and millimetres).

7a. *Oligoneurina rhenana*, ♂ im. genitalia infra.

7b. " " " caput oblique.

8a. " " " penis.

8b. " " " pes forcipis.

8c. " " ♀ im. processus ventralis penultimi segmentorum.

9a. " " *Trimeniana*, " processus ventralis penult. segm. infra.

10a. *Campurini latipennis*, ♂ im. genitalia infra.

11. " " " " "

12. " " *cuspidata*, " " "

13. " " *quadridentata*, " " "

14a, b. *Asthenopteri curti*, " " "

15a. *Polymitarcos virginis*, " partes apicales penis.

15b. " " subim. pes forcipis.

16. " " *Novogenia*, im. penis.

16a. " " " pes forcipis.

17. *Palingenia longicauda*, " im. pes forcipis.

18. *latex*, " pes forcipis; subim. & im.

18a. " " " penis infra.

18b. " " " " "

18c. " " " " "

18d. " " " " "

18e. " " " " "

18f. " " " " "

18g. " " " " "

18h. " " " " "

18i. " " " " "

18j. " " " " "

18k. " " " " "

18l. " " " " "

18m. " " " " "

18n. " " " " "

18o. " " " " "

18p. " " " " "

18q. " " " " "

18r. " " " " "

18s. " " " " "

18t. " " " " "

18u. " " " " "

18v. " " " " "

TAB. IV.

Fig. 1. *Pentagenia vittiger*, ♂ im. genitalia infra.

2. *Hexagenia albivittata*, " " "

2a. " " " pedis forcipis articuli apicales.

8. " " *limbata*, " pes forcipis.

8a. " " " pedis forcipis articuli apicales.

TAB. IV.—contin.

Fig. 4. *Hexagenia lineata*, ♂ im. pes forcipis.

5a. *Ephemero vulgata*, " genitalia infra.

5b. " " " penis.

6. " " " maculae dorsales abdominis.

6a. " " *guttulata*, " genitalia infra.

6b. " " " pedis forcipis articuli apicales.

7. " " " maculae dorsales abdominis.

7a. " " *lineata*, " genitalia infra.

7b. " " " pedis forcipis articuli apicales.

8. " " *danica*, " nota dorsales abdominis.

8a. " " " genitalia infra.

9. " " *glaucoptis*, " maculae dorsales abdominis.

10. " " *immaculata*, " pes forcipis.

11. " " *fasciata*, " " "

11a. " " " penis oblique.

12. " " *sericea*, " genitalia infra.

12a. " " " pes forcipis.

13. *Potamocentrus luteus*, " " "

13a. " " " penis infra.

14. *Leptophlebia australis*, " pes forcipis.

14a. " " " penis.

14b. " " " apex areae marginalis al. ant.

15. " " *australastice*, " pes forcipis.

15a. " " " pedis forcipis articuli apicales.

15b. " " " penis infra.

16. " " *furcifera*, " pes forcipis.

16a. " " " apex areae marginalis.

16b. " " " penis infra.

17. " " *inconspicua*, " pes forcipis.

17a. " " " apex areae marginalis.

17b. " " " penis infra.

18. " " *denticata*, " pes forcipis.

18a. " " " pedis forcipis articuli apicales.

18b. " " " penis infra.

18c. " " " apex processus ventralis penulti. segment.

18d. " " " " "

19. " " *strigata*, " apex areae marginalis.

20. " " *notularis*, ♂ im. segment.

20a. " " " pes forcipis.

20b. " " " ala postica.

20c. " " " penis oblique.

20d. " " " penis infra. (Anad. appendiculatus).

Tab. IV—contin.

Fig. 21. *Leptophlebia setifera*, ♂ im. pes forcipis.

21a.	"	"	penis infra.
22.	"	<i>Tuprobena</i> ,	pes forcipis.
22a.	"	"	penis oblique.
23.	"	"	pes forcipis.
23a.	"	"	pedis forcipis apex.
23b.	"	"	penis infra.
24.	"	<i>auriculata</i> ,	pes forcipis.
24a.	"	"	penis infra.
24b.	"	"	ala postica.
25.	"	<i>marginata</i> ,	pes forcipis.
25a.	"	"	pedis forcipis apex.
25b.	"	"	penis infra appendiculatus.
26.	"	<i>heteropedis</i> ,	pes forcipis.
26a.	"	"	penis supra.
26b.	"	"	penis oblique.
26c.	"	"	pedis forcipis apex.
26d.	"	"	ala postica.
27.	"	<i>cincta</i> ,	genitalia infra.
27a.	"	"	pedis forcipis apex.
28.	"	<i>mollis</i> ,	forcipis infra.
28a.	"	"	latus penis infra.
29.	"	<i>cupida</i> ,	pes forcipis.
29a.	"	"	penis infra.
29b.	"	"	♀ im. processus ventralis penult. seg- ment.

Tab. V.

Fig. 1. *Leptophlebia nebulosa*, ♂ im. pes forcipis infra.

1a.	"	"	latus penis infra.
2.	"	<i>fuscata</i> ,	pes forcipis.
2a.	"	"	penis infra.
2b.	"	"	ala postica.
3.	"	<i>modesta</i> ,	pes forcipis infra.
3a.	"	"	penis infra.
3b.	"	"	penis oblique.
4.	"	<i>caenis macrurus</i> ,	genitalia infra.
5.	"	<i>dimidiata</i> ,	genitalia infra.
6.	"	<i>luctuosa</i> ,	forcipis et membrana infra geni- talia.

Tab. V—contin.

Fig. 7. *Ephemera ignita*, ♂ im. genitalia infra.

7a.	"	"	ala postica.
8.	"	<i>invaria</i> ,	pes forcipis.
8a.	"	"	penis infra.
9.	"	<i>Betiscoe obesa</i> ,	genitalia infra.
10.	"	<i>Cleonis dykleri</i> ,	pes forcipis.
11.	"	<i>sinilis</i> ,	pes forcipis.
12.	"	<i>russuli</i> ,	pes forcipis.

[13-26, pedes forcipium; 18a-26a, ala postica;]—

13, 13a.	<i>Centropilii luteoli</i> ,	♂ im.
14, 14a.	"	<i>pennulati</i> ,
15, 15a.	"	<i>stenopterygis</i> ,
16, 16a.	<i>Baetis binoculati</i> ,	♂ im.
17, 17a.	"	<i>scambi</i> ,
18, 18a.	"	<i>fatimi</i> ,
19, 19a.	"	<i>decebatini</i> ,
20, 20a.	"	<i>Rhodani</i> ,
21, 21a.	"	<i>pharepsis</i> ,
22, 22a.	"	<i>faucis</i> ,
23, 23a.	"	<i>bucervati</i> ,
24, 24a.	"	<i>annici</i> ,
25, 25a.	"	<i>granitii</i> ,
26, 26a.	"	<i>nycti</i> ,
27.	"	<i>picini</i> ,
28.	"	sp. nondescript. de Californiâ, ala postica. (Pro ala antica vide Tab. III. fig. 1.)
29.	"	sp. nondescript. ex Australia, ala postica.
*30.	<i>Siphurii furtivi</i> ,	♂ im. apex abdominalis supra.

Tab. VI.

Fig. 1. *Siphurii armati*, ♂ im. pes forcipis infra.

1a.	"	"	latus penis infra.
2.	"	<i>lacustris</i> ,	pes forcipis infra.
3.	"	<i>limosani</i> ,	pes forcipis infra.
3a.	"	"	nota ventralis abdominalis.
4.	"	<i>annulati</i> ,	nota ventralis abdominalis.
4a.	"	"	pes forcipis infra.
5.	"	<i>Isonychia manca</i> ,	pes forcipis infra.
6a.	"	"	♀
			processus ventralis penult. seg- ment.

Tab. VI.—*contin.*

Fig. 6. *Coloburi humeralis*, ♂ im. pes forcipis oblique.

6a.	"	"	♂	pes infra.
6b.	"	"	♀	processus ventralis penult. segmenti.
7.	"	<i>halentici</i> ,	♂	pes forcipis oblique.
7a.	"	"	"	penis apex infra.
*8.	"	<i>Cronici anomali</i> ,	"	forceps infra.
9.	"	<i>Heplogenia semicolorata</i> ,	"	genitalia infra.
10.	"	<i>nitata</i> ,	"	genitalia infra.
11.	"	<i>borealis</i> ,	"	genitalia infra.
12.	"	<i>canadensis</i> ,	"	genitalia infra.
12a.	"	"	"	intus penis supra.
13.	"	<i>fusca</i> ,	"	penis supra.
13a.	"	"	"	penis infra.
13b.	"	"	"	pedis forcipis apex.
14.	"	<i>cupulata</i> ,	"	genitalia infra.
14a.	"	"	"	latus penis supra.
15.	"	<i>basalis</i> ,	"	pes forcipis infra.
15a.	"	"	"	penis supra.
16.	"	<i>faescentis</i> ,	"	genitalia infra.
17.	"	<i>favipennis</i> ,	"	genitalia infra.
17a.	"	"	♂ subim.	penis infra.
17b.	"	"	♀ im.	processus ventralis apex.
17c.	"	"	"	ovivalvula apex.
18.	"	<i>elegantis</i> ,	♂ im.	genitalia infra.
18a.	"	"	♀ im.	processus ventralis apex.
18b.	"	"	"	ovivalvula apex.
19.	"	<i>apicalis</i> ,	♂ im.	genitalia infra.
20.	"	<i>volutantis</i> ,	"	genitalia infra.
21.	"	<i>luridigenis</i> ,	"	penis.
21a.	"	"	"	penis infra.
22.	"	<i>faesolæ</i> ,	"	pes forcipis.
22a.	"	"	"	penis infra.
23.	"	<i>vicaræ</i> ,	"	penis infra.
23a.	"	"	"	latus penis supra.
24.	"	<i>venosæ</i> ,	"	genitalia infra.
25.	"	<i>longicaudæ</i> ,	"	genitalia infra.
26.	"	<i>insignis</i> ,	"	genitalia infra.
26a.	"	"	"	penis.
26b.	"	"	"	nota ventrales abdominis.

Tab. VI.—*contin.*

Fig. 27. *Heplogenia lateralis*, ♂ im. genitalia infra.

28.	"	<i>sebrata</i> ,	"	genitalia infra.
29.	"	<i>Isonychia ignota</i> ,	"	apex penis infra.

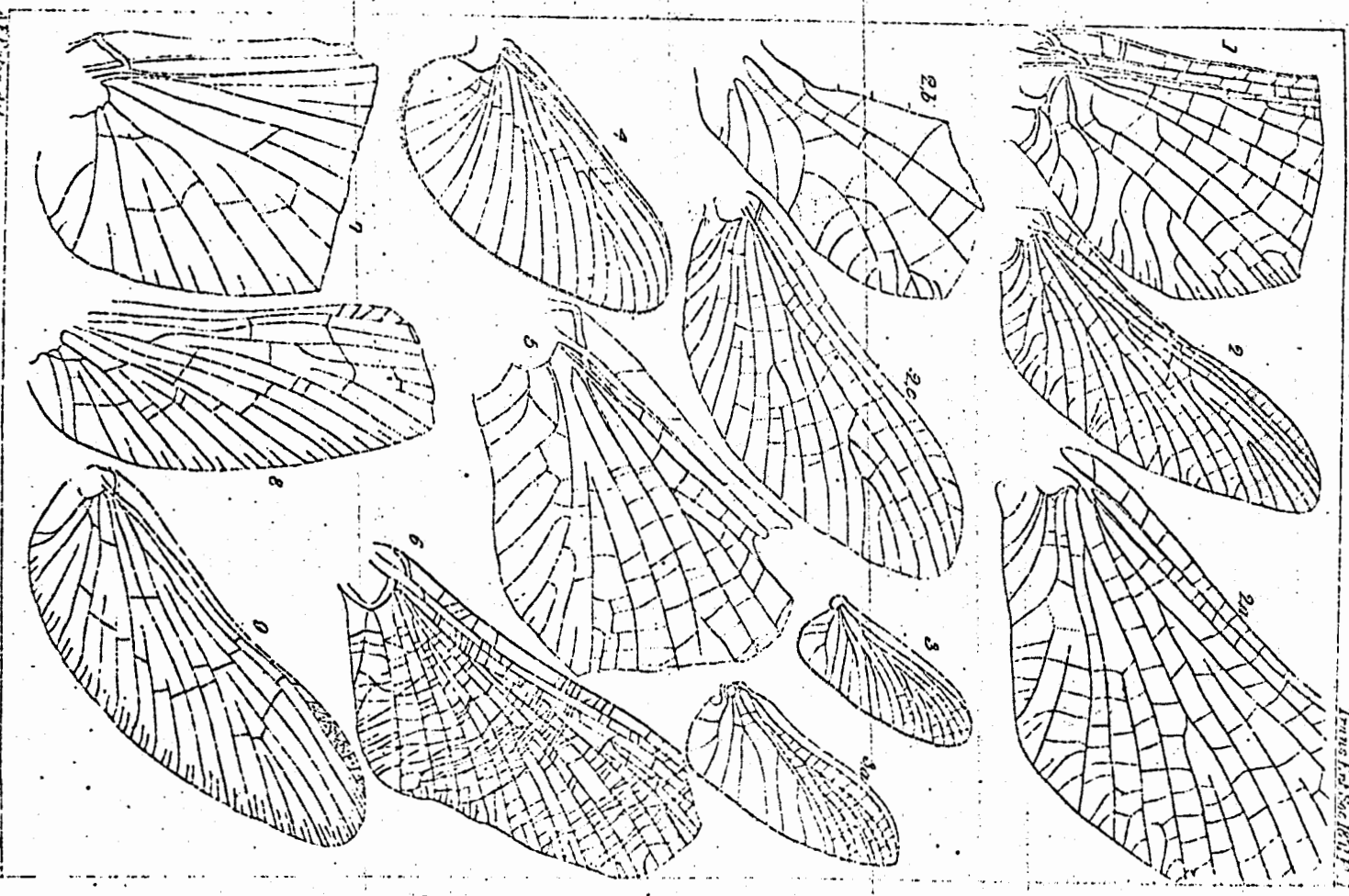
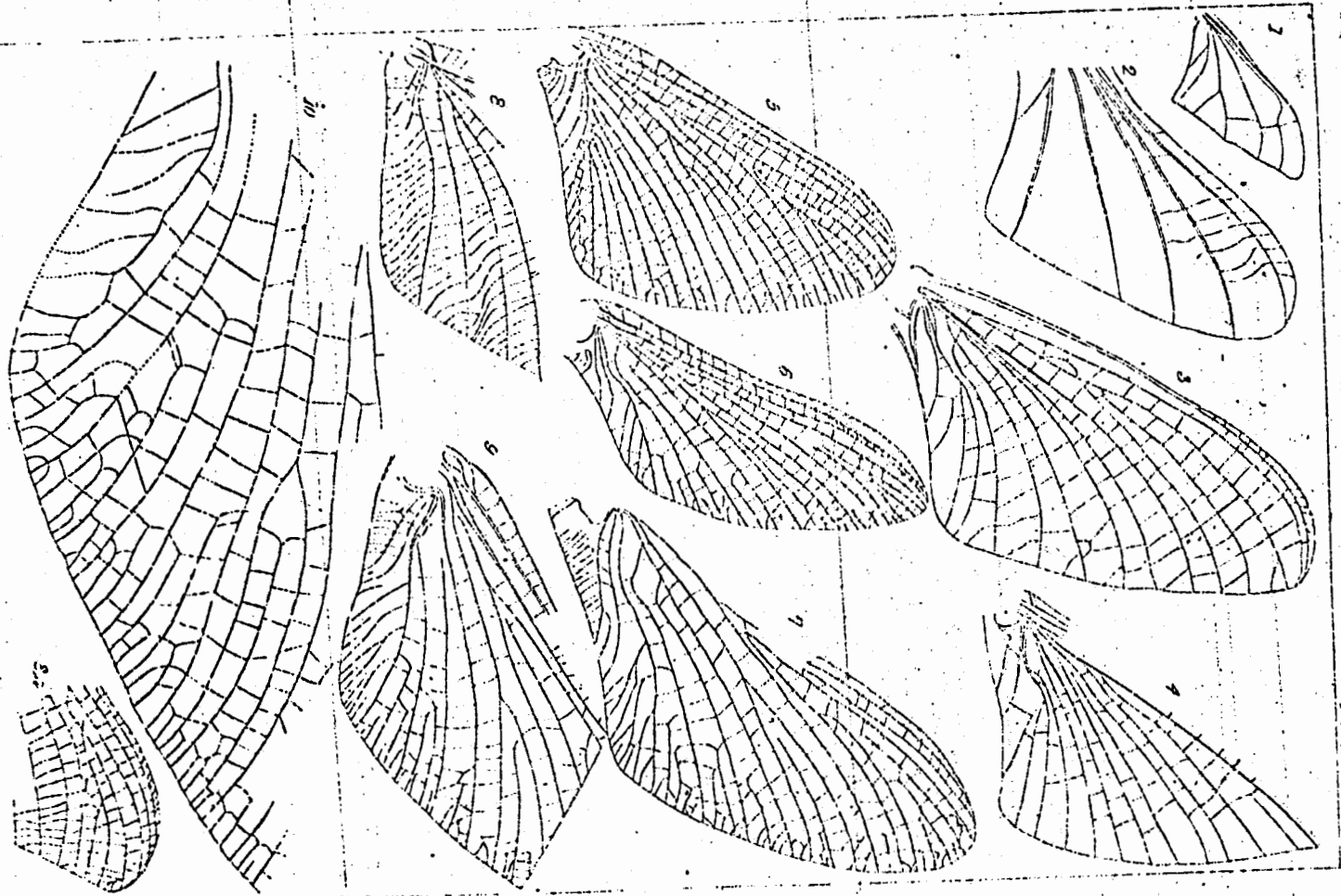
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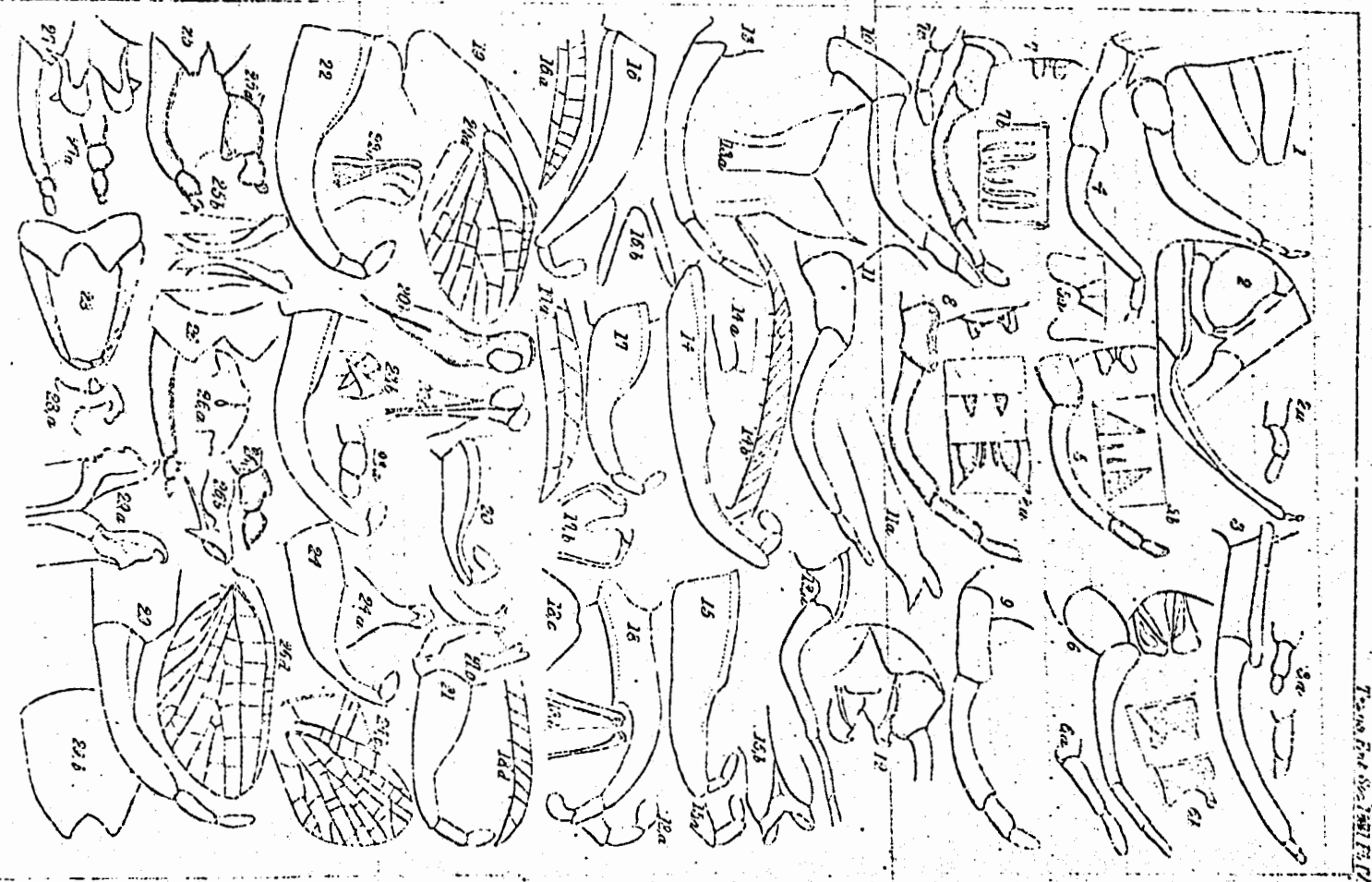
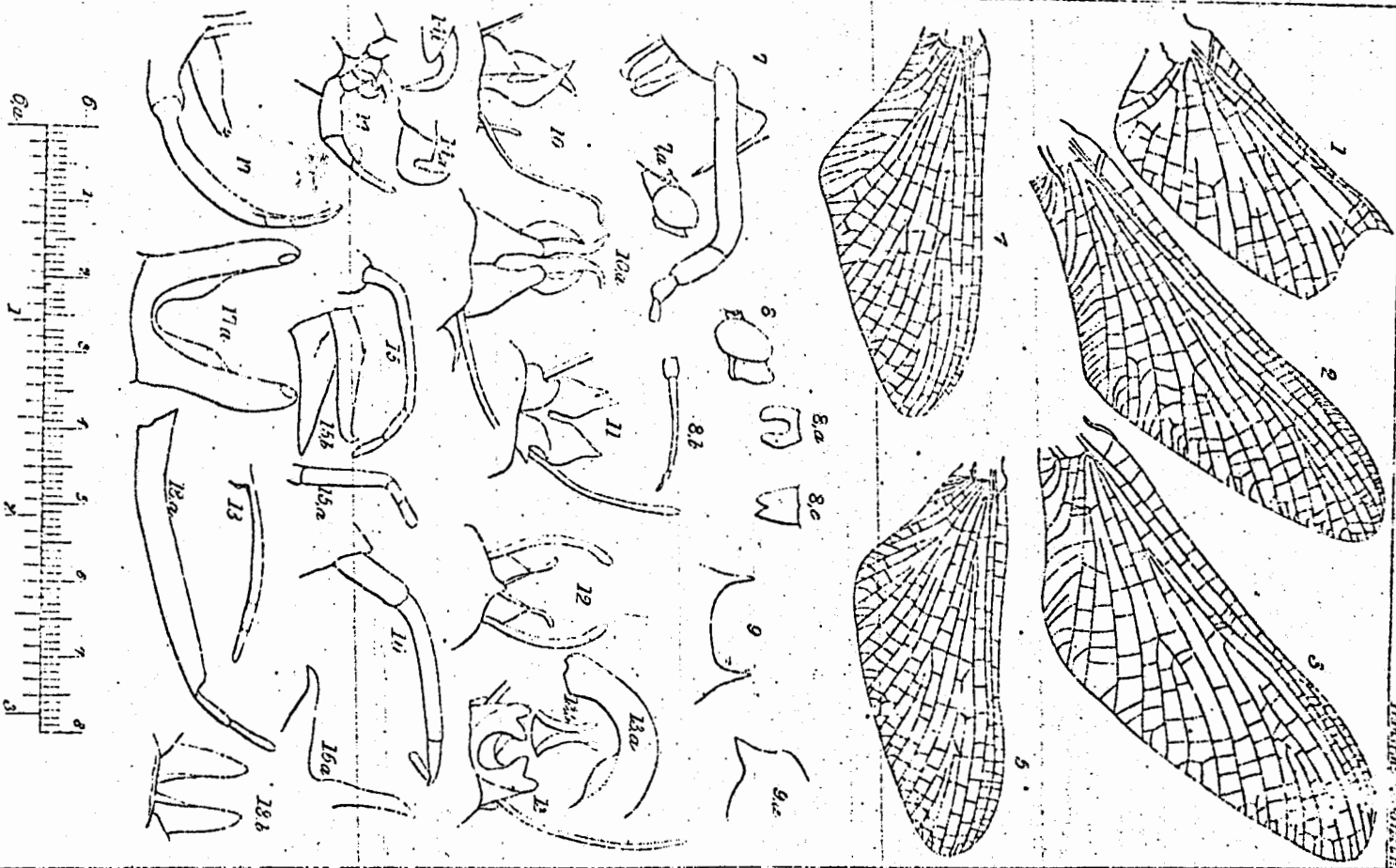
Page 47. To *Centroglyptum luteolum*, add Hudson's Bay Territory.

To *Centroglyptum phaeops*, add Norway (Hummelst and Allen).

Page 68, note * Add—*Ephemera*, Tournfort (1694-1700) = *Tridascantia*, Lin., is the typical genus of *Ephemera*; Batsch (1802) = *Comptopneuste*, an Order of Endogens. *Ephemera*, DeDon (Ersel & Gruber) or Reichenbach (Lindley) = *Lysinactia*, Lin., a genus of *Trinidascantia*.

Page 134. In *Isonychia*, the termination *-onychia* is adopted on account of *-onyx* being used as a generic termination in the names of some Cheloni. *Ephemera putica*, Hag., is almost certain to be identical with *I. manca*, this species often has a close relation contiguous to the veins of the inner margin of the fore-wing somewhat like that in the wing of *Polyhydrax*.





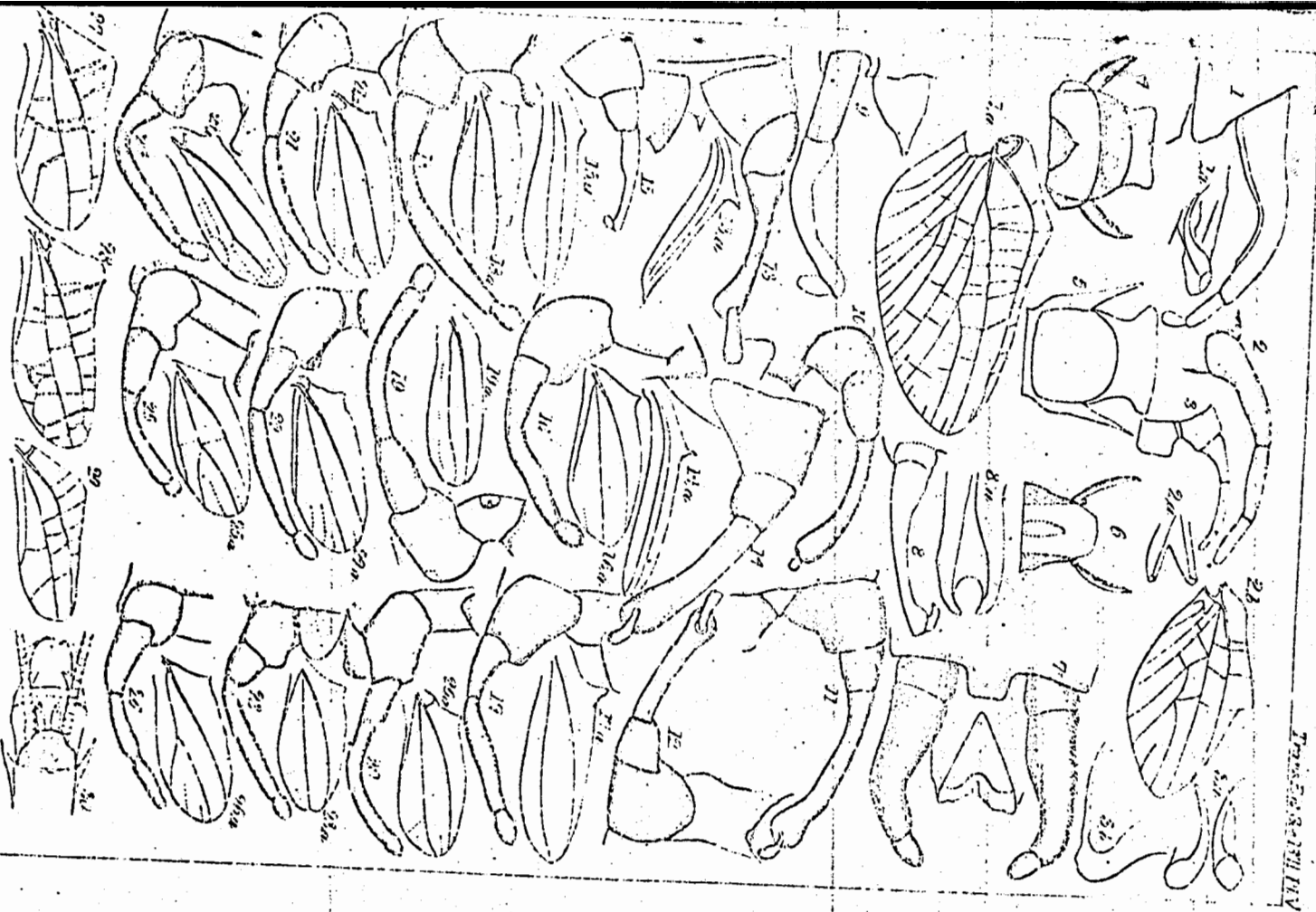


PLATE 10

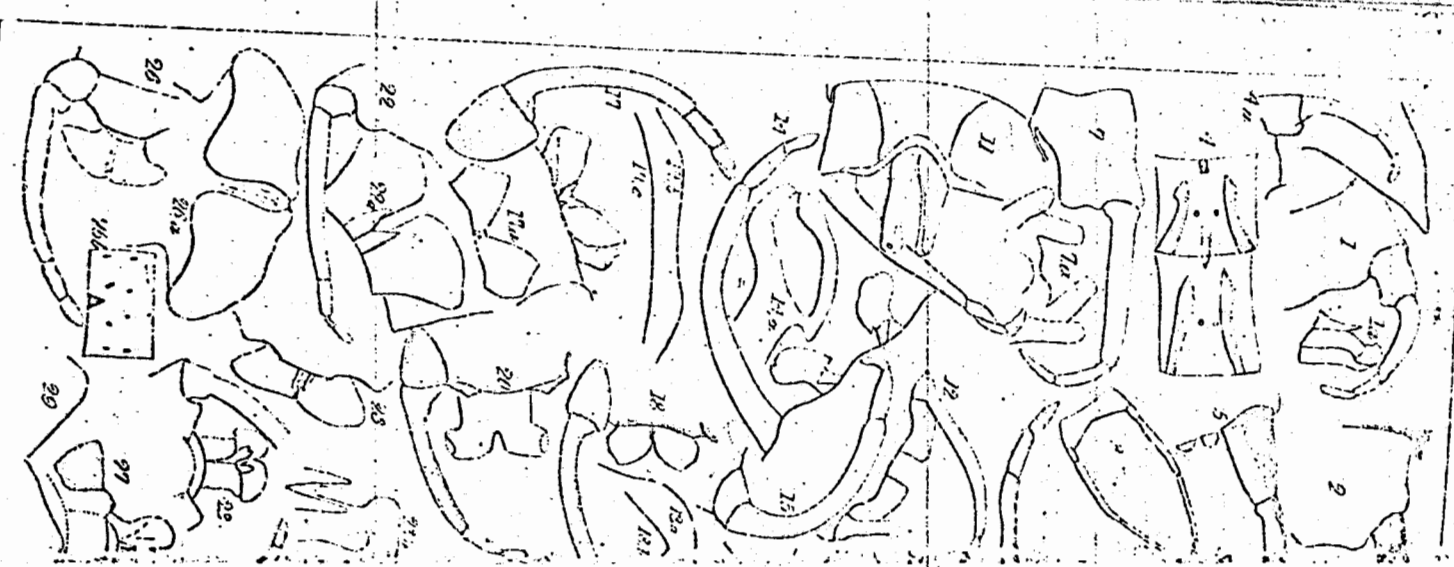


PLATE 11