

PROCEEDINGS
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GENERA OF THE EUPTERYGIDAE
(HOMOPTERA; JASSOIDEA).

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The group of leaf-hoppers here called the Eupterygidae has been treated variously by recent authors as a family, subfamily or tribe. Some of the earliest writers included all the forms in a single genus. Without going into the history of the group names* that have been applied to the Eupterygidae, it may be said that Kirkaldy† appears to have been the first to use a name (Eupteryginae) based upon that of the oldest genus.

It has been a very general practise to base family names on the earliest available genus name and probably the only reason it was not previously done for this group is that the question of priority between two of the oldest genera (published in the same year) was very generally disregarded. Kirkaldy realized the situation, in part, but apparently did not know the whole truth. Indeed the present paper contains more evidence as to the exact dates of publication of these two names than has been cited in any other discussion of the subject.

Codes of nomenclature do not specify methods of selecting family names and practise varies, although as above stated, most of the names in current use are those based on the oldest genera. The writer believes that this should be the rule, for several reasons. First a definite method is needed and one in accord with the majority of precedents has much to recommend it. The fact that many of the family names have been selected because they were the oldest as such, does not weaken the argu-

*These can be learned by consulting Oshanin, Verzeichnis, 1908, p. 187, and Van Duzee, Catalogue, 1917, p. 698. References in full to these and other works mentioned in the introduction are given on later pages.

†Bul. 1, Pt. 9. Exp. Sta. Hawaiian Sugar Planters' Asso. 1906, p. 356.

ment for basing them on the oldest genera, but on the contrary strengthens it since it is clearly evident that this principle itself guided the founders of most family names. When selection of the oldest family name is made the exact form of the name is ignored, and there may be chosen as a base a name quite unlike our modern standardized family names. This being true and the effort being merely to find the earliest group name, why not select as root name the name which has genuine priority, namely that of the earliest genus especially since in many cases this has about the same scope as what we now regard as families. This name embodies the first effort at classification in the group concerned and formation of the family name from it is fitting recognition of pioneer work.

Hence I prefer for the group of leaf-hoppers here considered the name Eupterygidae, based upon the oldest genus, *Eupteryx*, and I put it in family form, because I believe the group can logically be treated only as a family. In keys to leaf-hoppers this group is contrasted to all others by the veins of the tegmen running without branching or juncture of any kind (except theoretical or rarely actual juncture at base), to the apical cross veins, there being therefore no anteapical cells. This is a clear cut and important character separating the Eupterygidae from all other leaf-hoppers. Moreover it is one scarcely subject to intergradation. It is supported by another peculiarity in venation which distinguishes this group from all Homoptera Auchenorrhynchi, namely the possession of only one vein on disc of clavus, the first anal practically coinciding with claval suture and the third anal with claval margin. Ocelli are seldom conspicuous, sometimes lacking.

A feature of less importance, but one which has not received attention from writers on Eupterygidae is the general occurrence in some genera of costal plaques. These are encrustations of a substance, between pruinosity and wax in consistency, on definite elliptical areas at about the middle of each costa. They suggest the much heavier and more conspicuous plaques observed on many specimens of *Oncometopia*. The areas on which these plaques occur in Eupterygidae are regarded as definite, because of repeated observations of their location, because they may be recognized when the encrustation is lacking, and most important of all because these areas are often distinctly colored. The

color is modified or obscured by its covering. The plaques flake off naturally, stages in the process being easily found, and they may be removed readily with a needle.

The venational characters by which the Eupterygidae are distinguished from other Jassoidea result from simplification. That this reduction in wing veins is specialization is the belief of Hansen, Kirkaldy, and Metcalf, and if so accepted gives the Eupterygidae an advanced position among the Jassoidea of the world, and the most advanced among the groups inhabiting the United States. In this case at least being specialized does not mean having comparatively fixed characters. On the contrary the Eupterygidae are truly protean and now evidently in active evolution. From the synopsis of genera (page 122) it will be seen that practically all the possible combinations of the principal venational characters of the family are realized in the genera now known. The venation usually is variable in details, and as for range and variation in color there seems to be no limit. The total number of species in the group, a great share of which await discovery and description, no doubt is extremely large.

GENERA PROPOSED FOR EUPTERYGIDAE AND THEIR TYPE SPECIES.

1833, JANUARY. EUPTERYX. Curtis, John. Characters of some undescribed Genera and Species indicated in the "Guide to an Arrangement of British Insects." The Entomological Magazine, 1, No. 2, Jan., 1833, p. 192.

Curtis here describes as new the species *hortensis* and remarks: "the type of our genus *C. picta* Fab." Curtis may not have had in mind the reasons for designating a type species that we now recognize as so important, but certain it is that the action he took must be recognized as a definite type selection. The species he mentions *Cicada picta* Fabricius* is considered a synonym of *C. atropunctata* Goeze.†

Eupteryx atropunctata Goeze therefore is the genotype by original designation of its synonym.

Emendation: *Eupterix*. Fieber, F. X. Neue gattungen und arten in Homoptern (Cicadina Bur.). Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien. 16, 1866, p. 509.

* Fabricius, J. C. Systema Rhyngotorum secundum Ordines, Genera, Species, adiectus, Synonymis, Locis, Observationibus, Descriptionibus, 1803, No. 75, p. 77.

† Goeze, J. A. E. Entomologische Beytrage zu des Ritter Linne zwölfte Ausgabe des Natursystems. II, 1778, pp. 161-2. Based on *Cicada viridi-flava*, elytris punctis tribus nigris apice fuscis. Geoffroy, E. L. Histoire abregee des Insectes, etc., I, 1762, p. 426.

Synonyms:* *Typhlocyba* Germar 1833 (in part); *Diomma* Motschoulsky, 1863. Which see under those dates.

1833, JULY OR LATER. TYPHLOCYBA. Germar, E. F. Conspectus generum Cicadariarum. Revue Entomologique (Silbermann), 1, 1833, p. 180.

There has been some difference of opinion as to priority between this name and *Eupteryx* Curtis; as both were published in the year 1833. However the internal evidence to be found in the volumes of the respective references leave one in amazement that any misunderstanding could have arisen as to the dates of publication of the names *Eupteryx* and *Typhlocyba*. The Entomological Magazine was inaugurated as a quarterly and the first issue was for September, 1832. The difficulties attending the launching of a new publication were, therefore, out of the way before time for the second number, that in which we are specially interested, since it contains on page 192 the original description of *Eupteryx*. This issue of the Magazine is dated January, 1833, and it is certain not only that it was published in that month but early in the month (before the 10th) as evidenced by a communication dated January 10, 1833, published in the April issue, which criticises the "admission into your last number" of certain of the generic names of Curtis in the very article with which we are concerned. Thus the January, 1833, issue of the Entomological Magazine was not only published before the 10th of the month, but had reached a subscriber in time to enable him to write a letter of criticism by that date.

Evidence derived from the pages of Silbermann's Revue Entomologique leaves no doubt whatever that Germar's genus *Typhlocyba* was published some months later than Curtis's *Eupteryx*. In the first place the volume was issued in 6 (if not more†) brochures and it is fair to presume that then as now the separate issues were distributed through the year. We should expect therefore that in a 6 part volume, part 4 (in which the genus *Typhlocyba* was originally described) would have been issued after the middle of the year. That this was in fact the case is shown by dates signed to communications in the various numbers. Thus at page 140 in brochure 3 is an exchange list dated May, 1833, and on page 247 in part 6 a postscript dated October 29, 1833. Of greatest interest in this connection, and absolutely convincing as to the earliest possible date of Germar's paper (on page 184, brochure 4) is his signature to the article dated Halle, July 3, 1833.‡. If the Conspectus Generum Cicadariarum was published

* The genera of Eupterygidae have received different treatment from practically every author. I cite only the important synonymy and usually only that supported by my own investigations.

† Bibliographie de la France 22, No. 16, April 20, 1833, p. 254, states that the Revue is promised monthly, but from the volume I have examined the number of brochures appears to have been six.

‡ How this date has been overlooked and ignored is hard to understand. Even Kirkaldy, a nomenclatorial specialist, who appreciated the priority of *Eupteryx*, remarks (Bul. 1, Part 9, Exp. Sta. Hawaiian Sugar Planters' Assoc., 1906, p. 357) that Germar's paper was published "before Easter."

in the month of July (certainly it was no earlier) it is clear that *Eupteryx* Curtis has at least 6 months' priority over *Typhlocyba* Germar.

Confusion has arisen between the two genera, also because the original description of neither was sufficient, and because the species originally included in them, were, with a single exception, the same. This has led to their being synonymized back and forth, without reference to priority or other merits of the case.

Woodworth in 1889* appears to be the first who thoroughly realized the difficulty and saw the necessity of designating a type. He says: "In proposing the name (*Typhlocyba*) Germar simply mentions the following species as forming the genus: *Cicada aurata*, *urticae*, *vittata*, *picta*, *quercus* Fab. etc. Now it is evident that one of these species must be taken as the type of the genus and as all except *quercus* belong to *Eupteryx* in its most restricted sense this species is the type."

Distant† (1908) and Oshanin‡ (1912) concur in this designation.

Westwood§ in 1840 selected *C. [icada] ulmi* Linnaeus as the typical species of *Typhlocyba*, but the choice is invalid as *ulmi* is not one of the originally included species. Similarly even if Fieber's use|| of *T. lineatella* Fallen as an illustration of the genus could be construed as a type designation it would be invalid for the same reason.

Van Duzee's placing¶ *Eupteryx* as a synonym of *Typhlocyba* is a repetition of an old error; this course is prevented by priority and by the fact that the two genera are distinct on the basis of validly selected types. His choice of [*Cicada*] *aurata* Linnaeus as type is of course barred by Woodworth's previous valid designation of *quercus* Fabricius.**

Synonyms: *Anomia* Fieber, 1866; *Empoa* Fitch, 1851; *Zyginella* Löw, 1855. Which see.

1850. DIKRANEURA. Hardy, James. Descriptions of some new British Homopterous Insects. Transactions of the Tyneside Naturalists' Field Club. I, p. 423, 1850.

Monobasic: *D. variata* new species, Hardy op. cit. pp. 423-4, genotype.

Emendations: *Dicranoneura*, Douglas, J. W. Notes on British Homoptera, with descriptions of additional species (Part 2). The Entomologists' Monthly Magazine, 12, July, 1875, p. 27.

* Woodworth, C. W. North American Typhlocybini. Psyche 5, May-July, 1889, p. 211.

† The Fauna of British India, Rhynchota Vol. IV, 1908, p. 409.

‡ Oshanin, B. Katalog der paläarktischen Hemipteren (Heteroptera, Homoptera-Auchenorrhyncha and Psylloidea) 1912, p. 113.

§ Westwood, J. O. An introduction to the modern classification of Insects founded on the natural habits and corresponding organisation of the different families. Vol. II, 1840, Synopsis of the genera of British Insects, p. 117.

|| Verh. K. K. Zool.-Bot. Ges. Wien. 16, 1866, p. 509.

¶ Van Duzee, E. P. Check list of the Hemiptera (excluding the Aphididae, Aleurodidae and Coccidae) of America, North of Mexico. 1916, p. 77: Catalogue of the Hemiptera of America north of Mexico, excepting the Aphididae, Coccidae and Aleurodidae. 1917, p. 707.

** *Cicada quercus* Fabricius, J. C. Entomologia Systematica emendata et aucta secundum Classes, Ordines, Genera, Species, adiectus Synonymis, Locis, Observationibus, Descriptionibus, IV, 1794, p. 47.

Dicraneura, Puton, A. Catalogue des Hemipteres (Heteropteres, Cicadines et Psyllides) de la Faune Palearctique, 3rd ed. 1886, p. 86.

Dicroneura, Woodworth, C. W. On the genus *Cicadula* Zett. Psyche, 5, July-Aug., 1888, p. 75.

Synonyms: *Chloroneura* Walsh 1862 (in part); *Erythria* and *Notus** Fieber, 1866. Which see.

1851. ERYTHRONEURA. Fitch, Asa. Catalogue with references and descriptions of the Insects collected and arranged for the State Cabinet of Natural History. Fourth Annual Report of the Regents of the University of the State of New York on the State Cabinet of Natural History, 1851, p. 62. Reprint Ninth Report on Insects of New York, J. A. Lintner, 1893, p. 402.

Described to include the new species *E. vulnerata* op. cit. pp. 62-63, and 402-3, *E. affinis* and *E. tricineta* op. cit. p. 63 and 403, and *Tettigonia vitis* Harris, *T. obliqua* Say and *T. fabae* Harris.

The type species of this genus was not designated until 1912, when Oshanin chose† *E. tricineta* Fitch.

Synonyms: *Zygina* and *Idia* Fieber, 1866.‡ Which see.

1851. EMPOA. Fitch, Asa. Catalogue Fourth Ann. Rep. Regents Univ. N. Y. on State Cabinet Nat. Hist. 1851, p. 63, Reprint Ninth Rep. Ins. N. Y. Lintner, 1893, p. 403.

Established to include the new species *E. querci* and *E. coccinea* op. cit. p. 63 and 403.

Woodworth§ synonymizes this genus with *Typhlocyba* Germar, an action concurred in by Distant, 1908 (see below), and Oshanin 1912.||

Van Duzee, 1916, because of his erroneous application of the names *Typhlocyba* and *Eupteryx* to the same genus, keeps *Empoa* in use. He cites¶ *E. querci* Fitch as genotype. Later in his Catalog** Van Duzee inadvertently gives Distant as the authority for the selection of "*quercus*" Fitch as the type species. What Distant really did†† was to cite as genotype of *Typhlocyba* of which he placed *Empoa* as a synonym, *T. quercus* Fabricius.

The question as to whether a change of name is called for because of the presence of *quercus* Fabricius and *querci* Fitch in the same genus is a nice one. The name *quercus* was originally given as a noun in apposition however, and will retain this form, its own nominative singular, whatever shifts of genera it may undergo. The name *querci*, given originally as an

* These two genera were declared synonymous with each other by Fieber, himself in Katalog der Europäischen Cicadinen, 1872, p. 14.

† Kat. Pal. Hemip. 1912, p. 114.

‡ These two groups were declared synonymous with each other by Fieber, Katalog, 1872, p. 15.

§ Psyche, V, 1889, p. 212.

|| Kat. Pal. Hemip. 1912, p. 113.

¶ Check-list, 1916, p. 77.

** Catalogue, 1917, p. 708.

†† Fauna British India Rhynchota IV. 1908, p. 409.

adjective in the genitive, will always have a genitive ending irrespective of the genus to which it may be assigned. No change in nomenclature therefore will make the two names exactly alike; hence they would appear to differ sufficiently so that both may be retained. Advocates of the "one-letter rule," at least, will take this view.

1862. EMPOASCA. Walsh, Benj. D. Fire-blight. Two new foes of the apple and pear. The Prairie Farmer, 10, No. 10, Sept. 6, 1862 (Entomological note, pp. 148-9), p. 149, Fig. V. Reprinted with slight changes in Proceedings of the Boston Society of Natural History, 9, Feb.-March, 1864, p. 315.

Described to include the new species *E. viridescens*, *E. consobrina* and *E. obtusa* op. prim. cit. p. 149.

Distant, 1908, cites* as genotype *E. viridescens* Walsh, a valid designation. Oshanin, 1912, states† that *Cicada smaragdula*‡ is the type of this genus. This of course is incorrect as *smaragdula* is not one of the originally included species.

Synonyms: *Chloroneura* Walsh, 1862 (in part); *Chloria* and *Kybos* Fieber, 1866; *Chlorita* Fieber, 1872. Which see.

1862. CHLORONEURA. Walsh, Benj. D. Prairie Farmer, 1862, p. 149, Fig. VI. Reprint Proc. Bost. Soc. Nat. Hist. 1864, p. 315. Established to include the new species *C. abnormis*, *C. malefica* and *C. maligna*, op. prim. cit. p. 149.

In part a synonym§ of *Dikraneura* Hardy in part of *Empoasca* Walsh.§

1863. DIOMMA. Motschoulsky, Victor de. Essai d'un Catalogue des Insectes de l'Ile Ceylan. Part 2. Bulletin de la Societe Imperiale des Naturalistes de Moscou. 36, 1863, p. 102.

Monobasic. *D. ochracea* new species Motschoulsky, op. cit. pp. 102-3, Pl. 2, fig. 21, genotype.

Melichar, 1903,|| places *Diomma* as a synonym of *Eupteryx* Curtis.

1863. CONOMETOPUS. Motschoulsky, Victor de. Bul. Soc. Imp. Nat. Moscou. 36, 1863, pp. 103-4.

Monobasic: *C. inspiratus* new species, Motschoulsky, op. cit. p. 104, Pl. 2, fig. 22, genotype.

* Fauna of British India. Rhynchota, IV, 1908, p. 401.

† Kat. Pal. Hemip. 1912, p. 112.

‡ Kirkaldy's remark (Bul. 1, Part 9, Exp. Sta. Hawaiian Sugar Planters' Assoc., 1906, p. 357) that Sahlberg made this species the type of *Cicadula* is unfounded. Sahlberg's action (Notiser Fauna et Flora Fennica Forh. 12, 1871, p. 159) by no means can be construed as fixation of a type. What happened is this: Fieber, 1866, removed to other genera certain species of Zetterstedt's (1838) *Cicadula* complex; Sahlberg, 1871, merely put some of them back, a procedure in no wise affecting ultimate disposition of the genera, nor their nomenclature. *Cicadula* was definitely excluded from the Eupterygidae by type fixation, by Woodworth, 1888, if not earlier.

§ Woodworth, C. W. Psyche 5, 1899, pp. 212, 213.

|| Melichar, L., Homopteren-Fauna von Ceylon, 1903, p. 210.

In 1905* Kirkaldy changes this name on account of preoccupation to *Motschulskyia*. *Conometopus* Motsch. is preoccupied by *Conometopus* Blanchard† in the Orthoptera.

The position of this genus is uncertain; it may be an equivalent of *Heliona* Melichar, 1903. Which see.

1866. COMPSUS. Fieber, F. X. Neue gattungen. Verh. K.-K. Zool.-Bot. Gesell. Wien 16, 1866, p. 507, Pl. VII, fig. 22.

In this paper Fieber describes 8 groups of Typhlocybae as new genera and lists from one to three species in each. These must be considered therefore merely as illustrations of the genera, the author having no intention of designating definite types. In case only one species is mentioned however this becomes the type by reason of being the only originally included species.

For *Compsus* the illustrations given are *C. [icada] elegantula* Zetterstedt, *C. discicollis* Herrich-Schäffer and *C. albostriella* Fallen. *C. elegantula* is considered a synonym and *C. discicollis* a variety of *albostriella*, hence *Compsus* is fortuitously monobasic and the type species is *albostriella* Fallen, 1826.‡

In 1872, Fieber having found the name *Compsus* preoccupied,§ proposed|| in its place *Alebra*.

1866. ERYTHRIA. Fieber, F. X. Neue gattungen Verh. K.-K. Zool.-Bot. Gesell. Wien 16, 1866, p. 507, Pl. VII, fig. 23.

Monobasic: *C. [icada] aureola* Fallen,¶ the only species included.

In 1872 Fieber places** *Erythria* as a synonym of *Notus*, an invalid action as it has page priority over the latter name. Puton considers†† it a synonym of *Dikraneura*, an action supported by Gillette.‡‡

1866. NOTUS. Fieber, F. X. Neue gattungen. Verh. K.-K. Zool.-Bot. Gesell. Wien. 16, 1866, pp. 507-8, Pl. VII, fig. 24.

The species given as examples of this group are [*Cicada*] *flavipennis* Zetterstedt and its synonym *C. orichalcea* Dahlbaum, and *T. [yphlocyba] forcipata* Flor.

This group is considered synonymous with *Dikraneura* Hardy.§§

* Kirkaldy, G. W. Neue und wenig bekannte Hemiptera. Wiener Entomologische Zeitung, 24, 1905, p. 266.

† Blanchard, Emilio. Fauna Chilena Insectos. Ortopteros. Historia Fisica y Politica de Chile. (C. Gay.) Zoologia Tom. VI, 1851, pp. 67-68.

‡ Fallen, C. F. Hemiptera Sueciae. Cicadariae, 1826, p. 54.

§ By *Compsus*, Schoenherr, C. J. Curculionidum Dispositio Methodica cum generum characteribus, descriptionibus atque observationibus seu Prodromus ad Synonymiae Insectorum IV, 1826, pp. 109-110.

|| Fieber, F. X. Katalog der europäischen Cicadinen, 1872, p. 14.

¶ Fallen, C. F. Hemiptera Sueciae. Cicadariae, 1826, p. 39. Based on Acta Holmiana 1806, p. 25.

** Katalog Cicadinen, 1872, p. 14.

†† Catalogue. 3rd Ed. 1886, p. 86.

‡‡ Gillette, C. P. American Leaf-hoppers of the subfamily Typhlocybinae. Proc. U. S. Nat. Mus. 20, p. 709, April 20, 1898.

§§ First so placed by Douglas, Ent. Mo. Mag. 12, July, 1875, p. 27.

1866. CHLORIA. Fieber, F. X. Neue gattungen. Verh. K.-K. Zool.-Bot. Gesell. Wien. 16, 1866, p. 508, Pl. VII, fig. 25.

The illustrations of this genus are *Cic.[ada] viridula* Fallen and *Typhl.[ocyba] pura* Stal.

In 1872, Fieber having found the name *Chloria* preoccupied,* proposed† in its place *Chlorita*. Which see.

1866. KYBOS. Fieber, F. X. Neue gattungen. Verh. K.-K. Zool.-Bot. Gesell. Wien. 16, 1866, p. 508. Pl. VII, fig. 26.

The examples of this group are *Cic.[ada] smaragdula* Fallen and *Typhl.[ocyba] commissuralis* Stal.

Emendation: *Cybus*, Douglas. Ent. Mo. Mag. 12, July, 1875, p. 26.

A synonym of *Empoasca* according to Gillette,‡ Oshanin,§ and Van Duzee.||

1866. ANOMIA. Fieber, F. X. Neue gattungen. Verh. K.-K. Zool.-Bot. Gesell. Wien. 16, 1866, pp. 508-9, Pl. VII, fig. 27.

The species cited as illustrations of *Anomia* are *Cic.[ada] quercus* Linnaeus and *cruenta* Herrich-Schäffer.

Placed as a synonym of *Typhlocyba* Germar by Lethierry,¶ an action concurred in by Puton** and Oshanin.††

1866. ZYGINA. Fieber, F. X. Neue gattungen. Verh. K.-K. Zool.-Bot. Gesell. Wien. 16, 1866, p. 509, Pl. VII, fig. 28.

Monobasic [*Typhlocyba*] *nivea* Mulsant the only species cited.

Gillette synonymizes‡‡ this name with *Typhlocyba* Germar and Van Duzee with *Erythroneura* Fitch.§§

1866. IDIA. Fieber, F. X. Neue gattungen. Verh. K.-K. Zool.-Bot. Gesell. Wien. 16, 1866, p. 509, Pl. VII, fig. 29.

A single species *Typhlocyba scutellaris* Herrich-Schäffer (with its synonym *T. pullula* Boheman) only is cited for *Idia*, the group therefore being monobasic.

In 1872 Fieber places||| *Idia* as a synonym of *Zygina* Fieber, 1866. This action has been acquiesced in by later writers who according to their points of view synonymize it either with *Erythroneura* or with *Typhlocyba*.

* By *Chloria* (Diptera) Schiner, J. R. Vorläufiger Commentar zum dipterologischen Theile der Fauna Austriaca. IV. Wien. Ent. Monats. VI, No. 5, May, 1862, p. 151.

† Fieber, F. X. Katalog Cicadinen, 1872, p. 14.

‡ Proc. U. S. Nat. Mus. 1898, p. 709.

§ Verzeichnis der Palaearktischen Hemipteren mit besonderer Berücksichtigung ihrer Verteilung im Russischen Reiche. II, 1908, p. 197.

|| Checklist, 1916, p. 76.

¶ Lethierry, L. as editor of Fieber, F. X., Description des Cicadines d'Europe. Revue d'Entomologie, III, 1884, p. 120.

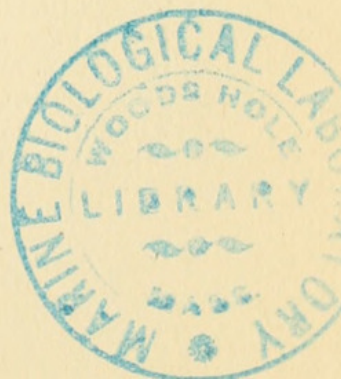
** Catalogue. 3rd Ed. 1886, p. 88.

†† Verzeichnis, 1908, p. 208.

‡‡ Proc. U. S. Nat. Mus. 1898, p. 709.

§§ Checklist, 1916, p. 77.

||| Katalog Cicadinen, 1872, p. 15.



The only peculiar character assigned for the genus, an extra cell on tegmen basad from fourth apical cell, must be either of freakish occurrence, or the genus does not pertain to the Eupterygidae.

1872. ALEBRA. Fieber, F. X. Katalog Cicadinen, 1872, p. 14.

Proposed as a substitute for *Compsus* Fieber, 1866, not *Compsus* Schoenherr, 1826, Coleoptera. Which see under *Compsus* 1866.

Alebra automatically takes the genotype of *Compsus*, namely *Cicada albostriella* Fallen.

1872. CHLORITA. Fieber, F. X. Katalog Cicadinen, 1872, p. 14.

Proposed as a substitute for *Chloria* Fieber, 1866, not *Chloria* Schiner, 1862, Diptera. Which see under *Chloria* 1866.

Gillette* and Van Duzee† synonymize this with *Empoasca* Walsh.

1886. ZYGINELLA. Löw, Paul. Beiträge zur Kenntniss der Cicadinen. Verh. K.-K. Zool.-Bot. Gesell. Wien. 25, 1886, p. 346.

Monobasic, *Z. pulchra* new species, Löw, op. cit. pp. 346-7.

Gillette considers‡ this a synonym of *Typhlocyba* Germar. European authorities have kept it separate.

1899. PROTALEBRA. Baker, C. F. On Alebra and related genera. Psyche 8, p. 402, Sept., 1899.

Type by original designation *Alebra curvilinea* Gillette.§

1899. EUALEBRA. Baker, C. F. Psyche 8, p. 402, Sept., 1899.

Monobasic, *E. smithii* new species Baker, loc. cit., genotype.

1900. NIRVANA. Kirkaldy, G. W. Notes on some Singhalese Rhynchota. The Entomologist, 33, Nov., 1900, p. 293.

Monobasic, *N. pseudommatus* new species, Kirkaldy, op. cit. pp. 293-4, genotype.

This genus was placed by Kirkaldy near the genus *Spangbergiella*, that is among the Dorydiid Jassini. Melichar, 1903, locates|| it among the *Acocephalini*. His description and figures of the venation, however, are very suggestive of the Eupterygidae, where Kirkaldy locates the genus in 1907¶ in which he is followed by Oshanin, 1912.** The genus *Kosasia* (Distant, W. L. Insecta Transvaaliensia, I, p. 240, 1910) said to be related to *Nirvana* is not an *Eupterygid*, while the latter apparently is.

* Proc. U. S. Nat. Mus. 1898, p. 709.

† Checklist, 1916, p. 76.

‡ Proc. U. S. Nat. Mus. 1898, p. 709.

§ Proc. U. S. Nat. Mus. 20, 1898, pp. 710-11.

|| Homopteren Ceylon, 1903, p. 165.

¶ Bull. III, Exp. Sta. Hawaiian Sugar Planters' Assoc., 1907, pp. 67. 68.

** Katalog, 1912, p. 111.

1903. HELIONA. Melichar, L. Homopteren Ceylon. 1903, p. 215.

Described to include two new species, *H. constricta* Melichar, op. cit., pp. 216-6, Pl. 6, figs. 5a, b; and *H. bioculata*, op. cit., p. 216, Pl. 6, fig. 8.

By naming a new genus *Apheliona*,* with *biocula*[ta] as type, Kirkaldy thereby makes *constricta* the type species of *Heliona*. This is a wise choice as in *H. constricta* the generic characters mentioned by Melichar are most marked. Distant apparently independently chose *constricta* as genotype in 1908† and remarked that *bioculata* could scarcely be considered as congeneric.

1903. TYPHLOCYBELLA. Baker, C. F. A new genus of Typhlocybini. Invertebrata Pacifica, 1, p. 3, Sept. 15, 1903.

Monobasic, *T. minima* new species, Baker, loc. cit., genotype.

1905. MOTSCHULSKYIA. Kirkaldy, G. W. Wien. Ent. Zeit. 24, 1905, p. 266.

Proposed as a substitute for *Conometopus*, Motschoulsky, 1863, not *Conometopus* Blanchard of the Orthoptera. Which see under *Conometopus* 1863. This name may be a synonym of *Heliona* Melichar, 1903.

1906. ANEONO. Kirkaldy, G. W. Leaf-hoppers and their Natural Enemies (Pt. IX, Leaf-Hoppers-Hemiptera). Bull. No. 1, Part 9, Division of Entomology, Experiment Station of the Hawaiian Sugar Planters' Assoc., Feb. 3, 1906, pp. 358-9, Pl. 22, fig. 12, Pl. 31, figs. 2-3.

Monobasic, *A. pulcherrima* new species, Kirkaldy, op. cit. pp. 359-60, genotype.

Judging from Kirkaldy's figures of the elytral venation (Pl. 31, figs. 2-3), it does not seem possible that *Aneono* belongs to the Eupterygidae. If these drawings are correct the venation is extremely anomalous, and it would seem much better to create a new family to receive the genus, than to attempt to modify the characters of so homogenous a group as the Eupterygidae, in order to make them cover such an aberrant form. The anastomosing of veins and consequent formation of cells on the disk of the tegmen would seem to exclude *Aneono* from a group which has always been principally characterized by lack of such cells, the apparent 3 principal veins of the elytra (theoretically united at base) running without other connection or division up to the apical cross-veins.

1906. KAHAAONO. Kirkaldy, G. W. Bul. 1, Part 9, Div. Ent. Exp. Sta. Hawaiian Sugar Planters' Assoc., Feb. 3, 1906, p. 361.

Monobasic, *K. hanuala* new species, Kirkaldy loc. cit.

1907. APHELIONA. Kirkaldy, G. W. Bul. III, Div. Ent. Exp. Sta. Hawaiian Sugar Planters' Assoc., Sept., 1907, p. 67.

* Kirkaldy, G. W. Leaf-Hoppers-Supplement (Hemiptera). Bull. No. III, Division of Entomology, Experiment Station Hawaiian Sugar Planters' Association, September, 1907, p. 67.

† Fauna British India. Rhynchota IV, 1908, p. 407.

Monobasic, *Heliona biocula*[ta] Melichar, Homopteren Ceylon, 1903, p. 216, genotype.

1907. DIALECTICOPTERYX. Kirkaldy, G. W. Bul. III, Div. Ent. Exp. Sta. Hawaiian Sugar Planters' Assoc., September, 1907, p. 71, Pl. 1, figs. 6-7.

Monobasic, *D. australica* new species, Kirkaldy, op. cit. p. 72, genotype.

Kirkaldy separates this genus and *Aneono* from the other genera he includes in the Eupterygidae by their having the second and third sectors of the tegmen united in a stalk apically. His figures of the venation of *Aneono* bear out his characterization for that genus, but further show so extremely anomalous a venation as to exclude the group from this family.

In *Dialecticopteryx* the case is not so clear, however. From his figure it is seen that the 2nd and 3rd sectors are united near the base, but this is not a surprising departure for an Eupterygid. Theoretically all the sectors join near or at the base, although usually they are visible nowhere near that point. Now as to the other point of peculiarity claimed by Kirkaldy his figure does not bear out his statement. The union of the second and third sectors in an apical fork is merely their connection by the usual crossvein. There is really nothing strikingly peculiar about the venation of the apical part of the tegmen. The venation of the wing in this genus is unknown and for that reason assignment to its proper place in the family (if it really belongs here) is impossible.

1908. HOMA. Distant, W. L. The Fauna of British India, Rhynchota Vol. IV, 1908, p. 400.

Monobasic, *H. insignis* n. sp. genotype, pp. 400-401.

1910. MOLOPOPTERUS. Jacobi, Arnold. Wissenschaftliche Ergebnisse der Schwedischen Zoologischen Expedition nach dem Kilimandjaro, dem Meru und dem umgebenden Massaisteppen Deutsch-Ostafrikas 1905-1906 (Y. Sjöstedt). 2. 1910, 12 Hemiptera, 7 Homoptera, pp. 133-134.

Monobasic, *M. nigriplaga* n. sp. op. cit. p. 134, genotype.

The chief character advanced for this genus, the large, elliptical swelling on costa, is, I suspect, nothing but a pronounced costal plaque such as I have discussed on pp. 110-111. The genus deserves recognition however because the veins of the elytra are thickened and conspicuous basally, something true of no other Eupterygid.

1914. AIDOLA. Melichar, L. Homopteren von Java, gesammelt von Herrn Edw. Jacobson. Notes from the Leyden Museum, 36, Nos. 1-2, March 31, 1914, pp. 142-3.

Type by original designation, *Typhlocyba orbata*, Melichar (Homopteren Ceylon, 1903, p. 216); one other included species. *A. fumistriga* n. sp. op. prim. cit., pp. 143-4.

Aidola seems to be very closely related to *Erythroneura*, from which the chief character advanced for distinguishing it is the presence of

large, deep punctures on the basal parts of tegmina. Melichar states that *Kybos* is a recognizable genus on the same character. In the writer's opinion this character is subject to intergradation to such an extent as to invalidate it for the separation of genera.

ALPHABETICAL LIST OF THE GENERA OF EUPTERYGIDAE WITH THEIR TYPE SPECIES AND SYNONYMS AS

NOW UNDERSTOOD.

Accepted name Synonyms indented	Author	Date	Genotype	Author	Date
<i>Alebra</i>	Fieber	1872	<i>albostriglia</i>	Fallen	1826
<i>Compsus</i>	Fieber				
<i>Apheliona</i>	Kirkaldy	1907	<i>bioculata</i>	Melichar	1903
<i>Dialecticopteryx</i>	Kirkaldy	1907	<i>australica</i>	Kirkaldy	1907
<i>Dikraneura</i>	Hardy	1850	<i>variata</i>	Hardy	1850
<i>Chloroneura</i> (in part)	Walsh	1862			
<i>Erythria</i>	Fieber	1866			
<i>Notus</i>	Fieber	1866			
<i>Empoasca</i>	Walsh	1862	<i>viridescens</i>	Walsh	1862
<i>Chloria</i>	Fieber	1866			
<i>Chloroneura</i> (in part)	Walsh	1862			
<i>Kybos</i>	Fieber	1866			
<i>Chlorita</i>	Fieber	1872			
<i>Erythroneura</i>	Fitch	1851	<i>tricincta</i>	Fitch	1851
<i>Idia</i>	Fieber	1866			
<i>Zygina</i>	Fieber	1866			
<i>Aidola</i>	Melichar	1914			
<i>Eualebra</i>	Baker	1899	<i>smithii</i>	Baker	1899
<i>Eupteryx</i>	Curtis	1833	<i>atropunctata</i>	Goeze	1778
<i>Diomma</i>	Motschoulsky	1863			
<i>Typhlocyba</i> (in part)	Gernar	1833			
<i>Heliona</i>	Melichar	1903	<i>constricta</i>	Melichar	1903
<i>Homa</i>	Distant	1908	<i>insignis</i>	Distant	1908
<i>Kahaono</i>	Kirkaldy	1906	<i>hanuala</i>	Kirkaldy	1906
<i>Molopopterus</i>	Jacobi	1910	<i>nigriplaga</i>	Jacobi	1910
<i>Motschulskyia</i>	Kirkaldy	1905	<i>inspiratus</i>	Motschoulsky	1863
<i>Conometopus</i>	Motschoulsky	1863			
<i>Nirvana</i>	Kirkaldy	1900	<i>pseudommatos</i>	Kirkaldy	1900
<i>Protalebra</i>	Baker	1899	<i>curvilinea</i>	Gillette	1898
<i>Typhlocyba</i>	Gernar	1833	<i>quercus</i>	Fabricius	1794
<i>Anomia</i>	Fieber	1866			
<i>Empoa</i>	Fitch	1851			
<i>Zyginella</i>	Löw	1885			
<i>Typhlocybella</i>	Baker	1903	<i>minima</i>	Baker	1903

SYNOPSIS OF THE GENERA OF THE EUPTERYGIDAE.

- A. Membrane appendiculate.
 - B. Wing with submarginal vein; apical wing cells 3. *Alebra.*
 - BB. Wing without submarginal vein; apical wing cells 3. *Protalebra.*
- AA. Membrane not appendiculate.
 - C. Wing with submarginal vein.
 - *Apical wing cells 3.
 - D. Vertex shorter than pronotum *Eualebra.*
 - DD. Vertex twice as long as pronotum *Nirvana.*
 - **Apical wing cells 2.
 - E. More than one apical vein arising from cross-veins of tegmen *Dikraneura.**
 - EE. Only one apical vein arising from cross-veins of tegmen, it 3-parted *Kahaono.*
 - ***Apical wing cell 1.
 - F. Margins of front not prominent *Empoasca.†*
 - FF. Margins of front prominent, united above.
 - G. Front not twice as long as wide, rounded above *Apheliona.*
 - GG. Front three times as long as wide, acute above *Heliona.*
 - CC. Wing without submarginal vein
 - *Apical wing cells 3; first two wing veins not confluent, joined by a cross-vein *Eupteryx.*
 - **Apical wing cells 2; first 2 wing veins confluent.
 - H. Fourth apical vein of tegmen curving to radial margin; second apical cell triangular usually stalked *Typhlocyba.*
 - HH. Fourth apical vein of tegmen paralleling radial margin ending in apical margin; second apical cell oblong, based on cross vein
 - I. Veins of tegmen thickened and conspicuous basally *Molopopterus‡*
 - II. Veins of tegmen invisible basally *Erythroneura.§*
 - ***Apical wing cell 1.
 - J. Tegmen rounded apically *Dialecticopteryx?*
 - JJ. Tegmen angulate apically; second apical cell diamond-shaped *Typhlocybella.*

SUMMARY OF STATISTICS AS TO GENERA.

Of the 33 generic names proposed for Eupterygidae, one in my opinion does not pertain to the family, and another may not. Of the remaining 31 names, 3 were preoccupied, and 12 are considered synonyms. In the purview of this paper, therefore, 16 generic names are held entirely valid; of which 9 were monobasic, and 7 had their type species subsequently assigned.

* Sometimes with a so-called supernumerary cell, on outer apical margin of wing, nearly or quite enclosed. (*Notus*, *Erythria*.)

† *Homa* Distant, said to be related to *Empoasca*, differs from the other genera in this section by having the pronotum shorter than vertex.

‡ This is hardly the true systematic position of this genus, which is nearer the other Jassoidea in the venation of tegmen than any of the remaining genera of Eupterygidae. More probably it should be regarded as belonging to a different line of descent from groups B, BB, C, and CC, having the tegminal venation more primitive, and the wing venation comparatively much simplified, which we take to be an evidence of specialization.

§ The characters separating these genera, while much the same as those upon which Fieber established *Kybos* and *Chlorita* (now considered synonyms of *Empoasca*), seem to hold, especially that of the fourth apical vein. If found unstable, it will be necessary to range *Erythroneura* with all its synonyms under *Typhlocyba*, as done by Gillette. This would result in a series of seven synonymous names.



McAtee, W. L. 1918. "Genera of the Eupterygidae (Homoptera; Jassoidea)." *Proceedings of the Biological Society of Washington* 31, 109–123.

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