

A LIST OF THE LIBELLULIDÆ (DRAGON FLIES)
OF AUSTRALASIA.

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WITH ANNOTATIONS ON SOUTH AUSTRALIAN
SPECIES.

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The Libellulidæ form a part of the Odonata or Pseudo-Neuroptera. They are classed now with the Orthoptera, but were formerly included among the Neuroptera, which they resemble in appearance of the mature forms, but their metamorphosis is quite different. The Thripsidæ, Psocidæ, Embidæ, Termitidæ, Perlidæ, and Ephemeridæ embrace the remaining families.

Very little appears to have been published hitherto in Australia on the species of Odonata occurring endemically in this region, excepting several papers by Mr. W. W. Froggatt in Proc. Linn. Soc., N.S.W. (vol. X., 1895-6), on the "Termites" or "White Ants." The chief reasons for this paucity are that not only are the specimens rather difficult to capture, collect, and preserve, but that the literature relating to the suborder is so widely scattered in mostly foreign publications as to be almost inaccessible for any local student. The means are therefore lacking to learn which forms are known to occur in the district or province, or to classify them when collected. To meet this want to some extent this list of the most important and conspicuous family has been drawn up, as a preliminary step towards a better knowledge.

Naturally the work is somewhat imperfect, it being quite impossible for one not in possession either of all the necessary literature or extensive collections to discriminate whether a species appearing in various genera, under different authors, or from dissimilar localities (or *vice versa*), be one and the same or not, or whether different species have been included under similar names. This can ultimately only be determined by European workers to whom both literature and collections are accessible.

The present list is chiefly based on the essays of Fr. Brauer, published in the "Verhandlungen der Botan. und Zool. Gesell-

schaft, Wien," between 1862 and 1868, and the "Zoological Record" from 1868 to 1897. A few species were gleaned from Burmeister's "Handbuch," 1838, and one from the British Museum Catalogue. The dates attached refer to the earliest notice observed in the works above cited.

The arrangement of the genera follows mainly that of Brauer's "Verzeichniss" (Abh. Bot. u. Zool. Ges. 1868).

Respecting the numerical extent of the Libellulidæ, it may be remarked that in 1871 Selys recorded (as known) some 1,357 species, but may have been considerably added to since. The Australian species, of which 139 in 65 genera are listed below, appear to be those least known; and it is hoped that this paper may lead to a better study of the family ere rendered impracticable through more or less total extinction, with which all endemic life in Australia is threatened, either directly or indirectly.

The Dragon-flies attract the attention of many persons, partly on account of the large size of some, the brilliant colours of some of the smaller, and the ceaseless graceful flight of most, and partly through the groundless fear of injury, which produced the vernacular name of "Horse-stingers" for them; yet they are rarely taken by collectors. They deserve, however, serious study on account of the important rôle they act in Nature as tireless consumers of flies, mosquitoes, and other large and small insects wherever water more or less abounds.

The larvæ and nymphs are wholly aquatic, living in fresh to brackish stagnant pools, ponds, or morasses. Whenever practicable to connect them with the mature form they should be collected also, at least the cast skin of the nymph, which the imago leaves attached to some object on emerging. They are very much stouter in body than the latter, move about in the water by walking on the bottom, climbing plants, &c., and contribute largely to the reduction of other and more noxious insect life.

During 1898 specimens of the South Australian Libellulidæ were sent by permission of the Board of Governors to Mons. René Martin (Le Blanc, Indre, France), a noted specialist, who kindly identified them, and furnished the notes which are indicated under each species-name by inclusion within inverted commas (" "). These I have supplemented by remarks, &c., and the localities whence the specimens in the Museum collection were obtained. The species hitherto recognised in South Australia, and of which specimens are in the Museum collection, are denoted by an asterisk.

SUBORDER ODONATA (PSEUDO-NEUROPTERA).

FAMILY I.--LIBELLULIDÆ.

SUBFAMILY 1. — LIBELLUNINÆ.

- Pantala flavescens*, *Fabricius*. New South Wales, Fiji, New Caledonia, Tahiti (Brauer, 1864-8; R. Martin, 1896). The species is widely distributed in the Old World, being met with from Europe to Kamschatka, and reported from Natal.
- **Tramea carolina*, *L.* Northern Territory of S.A., New Caledonia, India, America (Brauer, 1864-8).
- Tramea Loewi*, *Brauer* (1866). Queensland, Ceram.
- Tramea brevistyla*, *Brauer* (1865). New South Wales.
- Tramea transmarina*, *Brauer* (1866). Fiji.
- Tramea samoensis*, *Brauer* (1866). Samoa.
- Rhyothemis* (*Celithemis*) *apicalis*, *Kirby*. New Hebrides (Zool. Rec., 1889).
- Rhyothemis* (*Celithemis*) *chalcoptilon*, *Brauer*. Samoa (1868).
- Rhyothemis* (*Celithemis*) *pygmæa*, *Brauer* (1866-8). New Guinea.
- Rhyothemis* *Chloë*, *Kirby*. Queensland (Z.R., 1894).
- Rhyothemis* *crapula*, *Brauer*. Fiji.
- Rhyothemis* *graphiptera*, *Rambur*. Queensland (Br., 1868).
- Rhyothemis* *dispar*, *Brauer* (1867). Fiji.
- Rhyothemis* *princeps*, *Kirby*. Queensland (Z.R., 1894).
- Rhyothemis* *resplendens*, *Selys*. Queensland, New Guinea (Z.R., 1878).
- Rhyothemis* *Turneri*, *Kirby*. Queensland (Z.R., 1894).
- Zyxomma multinervis*, *Carpenter*. New Guinea (Z.R., 1897).
- Zyxomma* (*Tholymis*) *tillarga*, *Fabr.* Tahiti, Samoa, India, Chili, Madagascar, Mauritius (Br., 1868).
- Perithemis* (*Microthemis*) *Duivenbodei*, *Brauer* (1866). New Guinea.
- Calothemis* (*Orchithemis*) *Meyeri*, *Selys*. New Guinea (Z.R., 1878).
- Neurothemis elegans*, *Guérin*. New Guinea (Brauer, 1866).
- Neurothemis fluctuans*, *Burmeister*, 1838; Brauer, 1866. Pele Islands.
- Neurothemis innominata*, *Brauer* (1867). New Guinea, Ceram. (To this species belongs *N. diplax*, Br., as a heteromorphous form.)
- Neurothemis oligoneura*, *Brauer* (1867). North Australia.
- Neurothemis oculata*, *Fabricius*. North Australia (Brauer, 1867).
- Urothemis nigrilabris*, *Selys*. New Guinea (Z.R., 1878).
- **Nesoxenia Libellula*) *braminea*, *Fabr.* Australia (S.A.), India, &c. (Brauer, 1868). Colour bright-blue when alive; expanse of wings, 3-3½ in. (75 mm.). "Un mâle d'Adelaide.

- L'espèce habite les Indes orientales et l'Australie. Elle paraît être commune dans New South Wales." Specimens obtained at Magill and Mount Lofty.
- Nesoxenia (Libellula) cingulata*, Kirby. Alu Islands (Z.R., 1889).
- Prothorthemis Wahnesi*, Foerster. New Guinea (Z.R., 1897).
- Trithemis festiva (infernalis)*, Brauer. New Guinea, India, &c. (Brauer, 1868).
- Orthemis pectoralis*, Brauer (1868). Fiji, Ceram.
- Nesocria Woodfordi*, Kirby. Solomon Islands (Z.R., 1889).
- Crocothemis (Hydronympha) servilia*, Drury. Queensland, China, India (Brauer, 1868).
- Hydronympha (Orthetrum) nigrifrons*, Kirby. Queensland (Z.R., 1894).
- Brachydiplax denticauda*, Brauer (1868). New Guinea.
- Brachymesia australis*, Kirby. Queensland (Z.R., 1889, 1894).
- Diplacina smaragdina*, Selys. New Guinea (Z.R., 1878).
- Libella (Hydronympha) caledonica*, Brauer. Queensland (1868).
- Lepthemis sabina*, Drury. North-Eastern Australia, Fiji, Java, Celebes, India, China, Japan, Philippine Islands; and some varieties in Arabia, Syria, and Asia Minor.
- Erythemis oblita*, Rambur. South and Central Australia (Brauer, 1868).
- Erythemis haematodis*, Burm., (? *oblita*, var.) .Australia (Brauer 1868).
- **Erythemis (Trithemis) rubra*, Kirby. Australia (S.A.), New Guinea (Z.R., 1889). Colour of male when alive bright to dull-red, of female ochre-yellow. Expanse of wings, $1\frac{3}{4}$ ins. to $2\frac{1}{4}$ ins. (40 to 56 mm.). Specimens from Adelaide and Magill. "Un mâle. Elle habite toute l'Australie et probablement la New Guinea et les îles voisines."
- **Erythemis* sp. Adelaide, South Australia. Wings brownish, body stouter than that of the last, colour yellowish.
- Diplax bipunctata*, Brauer. Queensland, New Caledonia, Samoa (1868).
- Diplax (Trithemis) trivialis*, Rambur. Queensland, N. Guinea, Fiji, Java (Brauer, 1866).
- Nannodiplax rubra*, Brauer. Queensland (Brauer, 1868).
- Nannodiplax Finschi*, Karsch. New Guinea (Z.R., 1889).
- Nannophya australis*, Brauer. New South Wales (1865).
- Nannophya* (?) *pygmæa*, Rambur. Queensland, Amboyna, Malacca, &c. (Brauer, 1868).
- Nannophya* (?) *exigua*, Hagen. Queensland, Celebes (Brauer, 1868).
- Nannodythemis australis*, Karsch. Australia (Z.R., 1889).
- Nannothemis* (?= *Nannophya*) *australis*, Brauer. New South Wales (1868).

SUBFAMILY 2.—CORDULINÆ.

- Epophthalmia* (*Cordulia*) *elegans*, *Hagen*. Australia, China, &c. (Brauer, 1864).
- Epophthalmia* (*Cordulia*) *australis*, *Hagen*. Australia, Celebes (Brauer, 1868).
- Cordulia novæzealandiæ*, *Brauer*; (*Smithii*, *White*). New Zealand (Brauer, 1864).
- Hemicordulia affinis*, *Selys*. North-Western Australia (Z.R., 1871).
- Hemicordulia assimilis*, *Selys*. Solomon Islands, Celebes (Z.R., 1871).
- **Hemicordulia australasiæ*, *Rambur*. Queensland (Brauer, 1868).
- Hemicordulia fidelis*, *Selys*. Loyalty Islands (Z.R., 1886).
- **Hemicordulia intermedia*, *Selys*. South Australia, Queensland (Z.R., 1871).
- Hemicordulia Jacksoni*, *Rambur*. Australia (Brauer, 1868).
- Hemicordulia novæhollandiæ* *Selys*. Australia (?).
- Hemicordulia oceanica*, *Selys*. Tahiti (Brauer, 1868).
- **Hemicordulia tau*, *Selys*. Australia (S.A. incl.) (Brauer, 1868).
 “Le genre *Hemicordulia*, remarquable en ce que les mâles ont le bord anal des ailes inférieures arrondi, comprend une douzaine d'espèces. Parmi elles, deux habitent Madagascar et Maurice, une autre voisine les îles Seychelles. Dans l'Inde, on a observé une autre espèce, de même qu'une autre se trouve assez communément à Java. Contes les autres habitent les îles australes ou le grand continent Australien. Ainsi, l'*oceanica*, *Selys*, a été prise à Taïti, *assimilis*, *Selys*, à Celebes et dans les îles Solomon, *fidelis*, M'Lachlan, les îles Loyauté, les quatre dernières espèces ont été trouvées en Australie.”
- “Les *H. australiæ*, *Rambur*, et *H. novæhollandiæ*, *Selys*, ne portent pas sur le front une tache en forme de I (Grec *tau*), tandis que *H. intermedia* et *H. tau*, *Selys*, à la tache noire du front en forme de I plus ou moins épais. Enfin *H. intermedia* se distingue de notre espèce '*tau*' par une bande jaune en demi-aureau au second segment de l'abdomen. La taille de toutes les espèces est à peu près la même.”
- Epitheca* (*Cordulia*) *Grayi*, *Selys*. New Zealand, (?) Australia — (Z.R., 1871).
- Epitheca* (*Cordulia*) *Braueri*, *Selys*. New Zealand (Z.R., 1871). —
- **Synthemis eustalacta*, *Burmeister*. South Australia, Victoria, &c. (Brauer, 1868). A specimen from Wilmington appears to represent another species. “Le groupe *Synthemis*, reconnaissable par ce que les espaces basilaire et médian sont réticulés avec quatre ailes, est absolument Australien et n'a jamais été observé qu'en Australie, ou les îles Fiji et de la N. Caledonie.”

- “*S. eustalacta* a été observé sur plusieurs points du continent et paraît assez rare partout.”
- Synthemis miranda*, *Selys*. New Caledonia (Z.R., 1871).
Synthemis macrostigma, (*Hagen*) *Selys*. Fiji (Z.R., 1871).
Synthemis Leachi, *Selys*. Australia (Brauer, 1868; Z.R., 1871).
Synthemis guttata, *Selys*. Australia (Brauer, 1868; Z.R., 1871).
Synthemis brevistyla, *Selys*. Queensland (Z.R., 1871).
Synthemis regina, *Selys*. Queensland (Z.R., 1874).
Synthemis virgula, *Selys*. Victoria (Z.R., 1874).
Cordulephya pygmæa, *Selys*. Victoria (Z.R., 1871).

FAMILY II.—ÆSCHNIDÆ.

SUBFAMILY 1. — GOMPHINÆ.

- **Austrogomphus Guérini*, *Rambur*. S. Australia, &c., Tasmania (Brauer, 1868).
 **Austrogomphus collaris*, *Selys*. Australia (Brauer, 1868).
Austrogomphus (? *Hemigomphus*) *ochraceus*, *Selys*. Victoria (Z.R., 1869).
Austrogomphus (? *Hemigomphus*) *amphiclitus*, *Selys*. Queensland (Z.R., 1873). “Les quatre espèces qui composent le genre *Austrogomphus* sont propre a l’Australie. Le *A. Guérini* habite aussi la Tasmanie.”
Hemigomphus lateralis, *Selys*. North Australia (Z.R., 1873).
Ictinus australis, *Selys*. Queensland (Z.R., 1871).
Petalura (*Diastatomma*) *gigantea*, *Leach*. Australia (Brauer, 1864).
Uropetala Carovei, *White*. New Zealand (Burmeister, 1838; Brauer, 1864).

SUBFAMILY 2.—ÆSCHNINÆ.

- Anax guttatus*, *Burmeister*. N. Guinea, India, Java, Seychelles, &c. (R. Martin, Mem. Soc. Zool. de France, IX., p. 105).
 **Hemianax* (*Æschna*; *Anax*) *papuensis*, *Burm.* (*congener*, *Ramb.*). Northern Territory, S.A. (nec Adelaide), N.S. Wales, Queensland (Brauer, 1864). There is also one specimen each from Blinman, S.A., and Fremantle, W.A. Colour, grey, with black and yellow markings; expanse, 4 ins. (95-102 mm). Another still larger species, of which a defective specimen is in the collection, is possibly *Petalura gigantea*.
Acanthagyna subinterrupta, *Rambur*. New Guinea (Brauer, 1866). (*Acanthagyna*, *Kirby*, is intended to replace *Gynacantha*, *Selys*, nec *Rambur*.)
Æschna brevistyla, *Rambur*. New Zealand (Brauer, 1864).
Æschna tahitensis, *Brauer*. Tahiti (1865).

- **Austroaeschna parvistigma*, *Selys.* South Australia, Victoria, N.S. Wales (Z.R., 1883). This is the largest of the commoner of the S.A. species, resembling *H. papuensis* in general aspect, and is occasionally seen in great number at the sea coast (Ardrossan, 1880) and the vicinity of larger expanses of water. "Cette espèce semble assez commune dans les différents contrées du continent Australien, notamment en Victoria et New South Wales."
- **Austroaeschna* (?) sp. S. Australia; locality unknown. Colour of all the wings clear brown; size rather larger than preceding.

FAMILY III.—AGRIONIDÆ.

SUBFAMILY 1.—CALOPTERYGINÆ.

- Hemiphlebia mirabilis*, *Selys.* Queensland (Z.R., 1869).
Rhinocypha tincta, *Rambur.* New Guinea, Philippine Islands (Brauer, 1866).
Diphlebia sp. Australia. "La subfamily Calopteryginæ n'est représentée en Australie que par le genre *Diphlebia* qui comprend une espèce, et par quelque rares espèces de plusieurs autres genres. Certaines groupes de cette son famille sont pourtant fortement représentés à Celebes et même à la New Guinea."

SUBFAMILY 2.—AGRIONINÆ.

- Amphipteryx lestoides*, *Selys.* Queensland (Brit. M.C., p. 654).
Archibasis (*Stenobasis*) *occipitalis*, *Selys.* New Guinea (Z.R., 1877).
 **Lestes analis*, *Rambur.* "Egalement in South Australia et Victoria."
 **Lestes annulosa*, *Selys.* South Australia, Victoria (Brauer, 1864). "Jolie espèce observée en Victoria et S.A., sur les marécages."
Lestes albicauda, *McLachlan.* New Guinea (Z.R., 1895).
Lestes Colenonis, *White.* New Zealand (Brauer, 1864). —
Lestus Leda, *Selys.* Queensland (Brauer, 1868).]

There are two or three undetermined species besides the above in South Australia, of which specimens are in the collection from the Lakes and Kangaroo Island.

- Synlestes Weyeri*, *Selys.* Queensland (Z.R., 1869).
Argiolestes obscura, *Selys.* New Guinea (Z.R., 1878).
Argiolestes ornata, *Selys.* New Guinea (Z.R., 1878).
Argiolestes pallidistyla, *Selys.* New Guinea (Z.R., 1878).
Argiolestes postnodalis, *Selys.* New Guinea (Z.R., 1878).
Argia australis, *Guérin.* New South Wales (Brauer, 1864).
Onychargia flavovittata, *Selys.* New Guinea (Z.R., 1878).
Onychargia rubropunctata, *Selys.* New Guinea (Z.R., 1878).

- Ichnura (Agrion) aurora*, *Brauer*. Tahiti, Samoa (1865).
Ichnura distigma, *Brauer*. Queensland (1868).
Ichnura spinicauda, *Brauer*. Polynesia (1865).
Ichnura tahitensis, *Selys*. Tahiti (Z.R., 1878).
Pericnemis annulata, *Brauer*. Samoa (1868).
Idiocnemis bidentata, *Selys*. New Guinea (Z.R., 1878).
Idiocnemis inornata, *Selys*. New Guinea (Z.R., 1878).
Agrion æruginosum, *Brauer*. Queensland (1868).
Agrion cingillum, *Brauer*. Queensland (1868).
Agrion cingulatum, *Burmeister*. Australia (Handb., 823, 1838).
Agrion heterostictum, *Burmeister*. Australia (Handb., 820, 1838).
Telebasis eximia, *Selys*. New Guinea (Z.R., 1878).
Telebasis Laglazei, *Selys*. New Guinea (Z.R., 1878).
Telebasis recurva, *Selys*. New Guinea (Z.R., 1877).
Telebasis sobrina, *Selys*. New Zealand (Z.R., 1873).
Telebasis (Teinobasis) zealandica, *McLachlan*. New Zealand (Z.R., 1873).
Agrionemis exsudans, *Selys*. New Caledonia, Labuan, Java (Z.R., 1877).
Argiocnemis australis, *Selys*. Queensland (Z.R., 1877).
Argiocnemis nigricans, *Selys*. New Guinea (Z.R., 1877).
Argiocnemis rubescens, *Selys*. Queensland (Z.R., 1877).
Platysticta auriculata, *Selys*. New Guinea (Z.R., 1878).
Platysticta bicornuta, *Selys*. New Guinea (Z.R., 1878).
Alloneura erythroprocta, *Selys*. New Guinea (Z.R., 1886).
Alloneura Wallacei, *Selys*. New Guinea (Z.R., 1886).
Caconeura eburnea, *Foerster*. Key Islands, New Guinea (Z.R., 1895).
Caconeura finisterræ, *Foerster*. New Guinea (Z.R., 1895).
Isosticta (Alloneura) spinipes, *Selys*. New Caledonia (Z.R., 1885).
Xanthagrion antipodum, *Selys*. New Zealand (Z.R., 1878).
Xanthagrion zealandicum, *Selys*. New Zealand (?).
Xanthagrion sp. New Zealand.
 **Xanthagrion erythroneurum*, *Selys*. South Australia, Victoria (Z.R., 1878). This, the smallest of the S.A. species, is remarkable for the bright red and green tints of the males, and has been obtained at Adelaide, Goolwa, and Strathalbyn. "Cette espèce qui habite, Melbourne, Adelaide et un grand nombre de points sur le continent Australien, est très commune en Victoria, dans les marais et sur les étangs en Octobre-Novembre. Les males semblent être plus nombreux que les femelles; ce qui est un cas fréquent chez beaucoup d'espèces d'Odonates."
 "C'est la seule espèce du genre qui soit purement Australienne, les trois autres espèces habitent New Zealand."