

edited by F. Westphal

pars 129 Ephemeroptera

by M.D. Hubbard

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F. Westphal

Pars 129

M.D. Hubbard

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INTRODUCTION

The Ephemeroptera are an ancient group, and they may be useful tools to shed light on many important biological questions dealing with, among other issues, the evolution of flight, continental drift, and the historical biogeography of the insects, and the evolution of the Insecta in general.

This volume compiles references to the knowledge of the fossil Ephemeroptera, in order to facilitate studies on this group by interested researchers.

Many studies of fossil Ephemeroptera have been done by palaeontologists who were somewhat unfamiliar with the modern classification of Recent Ephemeroptera. As a result, the placement of some fossil taxa is open to question. No attempt has been made in this volume to review these placements from a systematic viewpoint. Major revisions have no place in a volume which is intended to be a strictly a catalog. This volume is intended to be a basis from which further systematic revisions may, and I hope will, be made in light of modern systematic knowledge.

This catalog lists all known fossil taxa which can be referred to the Ephemeroptera. Those taxa which have at some time been referred to the Ephemeroptera but which are now referred to other taxa are included for reference purposes in an appendix along with a selected, but not exhaustive, list of references.

The references given in this paper generally list only the first, or most important, page on which the taxon in question is mentioned.

References to family-level and higher taxa are given only when they are of special taxonomic interest or deal specifically with the fossil groups. No attempt is made to be all-inclusive with references to these higher taxa.

References to unnamed taxa are incorporated in this catalog only if they include a figure or description which might allow them to be identified at some time.

An effort has been made to examine each reference in the original. However, several of the more obscure references were able to be obtained only by copy and exact citations may be slightly incorrect. Those few references which were not seen are marked by an asterisk.

There has been no comprehensive catalog or listing of the species of the fossil Ephemeroptera since Handlirsch's (1922) *Insecta Palaeozoica* volume of the *Fossilium Catalogus*.

This paper is one in a continuing series of catalogs of the Ephemeroptera (cf. Hubbard & Peters 1978, Hubbard & Pescador 1978, Hubbard & Savage 1981, Hubbard 1982a,b).

MUSEUMS AND COLLECTIONS

The following abbreviations are used in this catalog for the various museums and collections where specimens are thought to reside.

- AMNH** - American Museum of Natural History, New York.
- APN** - Asociación Paleontológica Nireco, San Carlos de Bariloche, Río Negro, Argentina.
- Austr. Mus.** - Australian Museum, Sydney.
- BMNH** - British Museum (Natural History), London.
- BS** - Bayerische Staatssammlung, München.
- Bochum** - Geologisches Museum des Ruhrbergbaus in Bochum.
- Clayes** - Walter CLAYES private collection, Chicago, Illinois.
- Denver** - Denver Museum of Natural History, Colorado.
- DeWalsche** - J. DeWALSCHÉ private collection.
- Halle** - Geologisch-Paläontologischen Instituts der Universität Halle.
- Humboldt** - Humboldt-Universität, Berlin.
- ISM** - Illinois State Museum, Springfield.
- JKP** - Jarmila KUKALOVÁ-PECK private collection, Ottawa, Ontario.
- Kazan** - University of Kazan.
- København** - Zoologisk Museum, København.
- LA** - Los Angeles County Museum, California.
- Lewis** - S. E. LEWIS private collection, St. Cloud University, Minnesota.
- MCZ** - Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.
- NMP** - Národní Museum, Prague.
- Paris** - Institute de Paléontologie, Muséum National d'Histoire Naturelle, Paris.
- Peabody** - Peabody Museum, Yale University, New Haven, Connecticut.
- Peking** - Peking Geological Museum.
- PIN** - Palaeontologicheskii Institut Akademia Nauk SSSR, Moscow.

SAM - South African Museum, Capetown.

Senckenb. Mus. - Senckenbergischen Museum, Frankfurt am Main.

Stuttgart - Staatliches Museum für Naturkunde, Stuttgart.

Ting - Mr. T. H. TING private collection?

Teyler - Museum Teyler, Haarlem.

Walker - Walker Museum, University of Chicago, Illinois.

Wien - Geologisches-paläontologische Abteilung, Naturhistorisches
Museum, Wien.

Order **Ephemeroptera** HYATT & ARMS

Suborder **Protoephemeroptera** DEMOULIN

Superfamily **Triplosoboidea** HANDLIRSCH, 1906

Family **Triplosobidae** HANDLIRSCH, 1906

1906 HANDLIRSCH: 312.

Note. Contains one genus.

Triplosoba HANDLIRSCH, 1906

1893(1894) **Blanchardia** BRONGNIART: 325. (Type-species:
Blanchardia pulchella BRONGNIART, monotypy).

1906 HANDLIRSCH: 312. [new name for **Blanchardia** BRONGNIART non
CASTLEMAN]. (Type-species: **Blanchardia pulchella**
BRONGNIART, objective synonymy).

1917 LAMEERE: 43. (1917a).

1919 HANDLIRSCH: 573.

1921 HANDLIRSCH: 350.

1922 HANDLIRSCH: 59.

1924 MARTYNOV: 148.

1930 MARTYNOV: 251.

1932 TILLYARD: 100.

1932 ZALESSKY: 714.

1935 NEEDHAM, TRAVER, & HSU: 207

1938 MARTYNOV: 33. (1938b).

1939 HANDLIRSCH: 214.

1949 JEANNEL: 38.

1954 BRUES, MELANDER, & CARPENTER: 786.

1954 DEMOULIN: 558. (1954b).

1954 EDMUNDS & TRAVER: 397. (1954b).

1956 DEMOULIN: 1. (1956c).

1958 DEMOULIN: 5.

1960 GRANDI: 42.

1963 CARPENTER: 121.

- 1968 KUKALOVÁ: 311.
1972 EDMUNDS: 24.
1980 HUBBARD & KUKALOVÁ-PECK: 23.
1985 KUKALOVÁ-PECK: 944.
1985 LANDA & SOLDÁN: 87.

Note. Known from the Carboniferous of Commentry, France;
adult. Contains one species.

Triplosoba pulchella (BRONGNIART, 1893)

- 1893(1894) **Blanchardia pulchella** BRONGNIART: 328, fig. 14. (Type:
adult; Commentry, France, Carboniferous).
1906 HANDLIRSCH: 312, pl. 32 fig. 6-7.
1911 HANDLIRSCH: pl. 8 fig. 12. (1911a).
1917 **Blanchardia pulchella** LAMEERE: 43. (1917a).
1917 **Blanchardia pulchella** LAMEERE: 148. (1917b).
1919 HANDLIRSCH: 573.
1919 **Triplosoba (Blanchardia) pulchella** - PRUVOST: 308.
1920 HANDLIRSCH: 140, fig. 69.
1922 HANDLIRSCH: 59.
1924 MARTYNOW: fig. 3.
1932 TILLYARD: fig. 1.
1934 LAMEERE: 181, fig. 189-190.
1938 **Triplosoba (Blanchardia) pulchella** - MARTYNOW: 32. (1938b).
1949 JEANNEL: 37, fig. 25.
1953 LAURENTIAUX: 427, fig. 26.
1954 **Triplosoba** [unnamed] - BRUES, MELANDER, & CARPENTER: fig.
1126.
1954 DEMOULIN: 558. (1954b).
1954 GLEISS: 39.
1956 DEMOULIN: 1, fig. 1, pl. 1.
1960 GRANDI: 41.
1962 TSHERNOVA: fig. 55. (1962a).
1963 CARPENTER: 121, pl. 13-14. (Type: (Paris)).
1968 ILLIES: 4, fig. 4.
1969 LANDA: 52.
1970 DEMOULIN: 3. (1970b).
1970 TSHERNOVA: 125.

1980 TSHERNOVA: 31. (1980a).

1984 SINITSHENKOVA: 61.

Superfamily **Syntonopteroidea** HANDLIRSCH, 1911

Syntonopteroidea incertae sedis

1985 KUKALOVÁ-PECK: 940, fig. 15-16. Adult; Czechoslovakia,
Permian)

Family **Bojophlebiidae** KUKALOVÁ-PECK, 1985

1985 KUKALOVÁ-PECK: 934.

Note. Contains one genus.

Bojophlebia KUKALOVÁ-PECK, 1985

1985 KUKALOVÁ-PECK: 936. (Type species: **Bojophlebia prokopi**
KUKALOVÁ-PECK, original designation).

Note. Known from the Carboniferous of Bohemia; adult and
nymph. Contains one species.

Bojophlebia prokopi KUKALOVÁ-PECK, 1985

1985 KUKALOVÁ-PECK: 936, fig. 1-10, 30. (Holotype: adult, no.
1/1985 (NMP); Vropice, Bohemia, Carboniferous).

Family **Syntonopteridae** HANDLIRSCH, 1911

1911 HANDLIRSCH: 299.

1953 Order **Syntonopterodea** LAURENTAUX: 425.

Note. Contains two genera.

Lithoneura CARPENTER, 1938

1938 CARPENTER: 446. (Type species: **Lithoneura lameerei**
CARPENTER, original designation).

1943 CARPENTER: 13.

1954 BRUES, MELANDER, & CARPENTER: 785.

1954 EDMUNDS & TRAVER: 397. (1954b).

1956 RICHARDSON: 24.

1972 EDMUNDS: 24.

1980 HUBBARD & KUKALOVÁ-PECK: 27.

Note. Known from the Carboniferous of Illinois; adult and nymph. Contains five species.

Lithoneura carpenteri RICHARDSON, 1956

1956 RICHARDSON: 24, fig. 6-7. (Holotype: adult, no. 45248a,b (Walker); Illinois, Carboniferous).

Lithoneura clayesi KUKALOVÁ-PECK, 1985

1985 KUKALOVÁ-PECK: 942, fig. 18-21, 29. (Holotype: nymph, no. 5/1985 (Clayes); Illinois, Carboniferous).

Lithoneura lameerei CARPENTER, 1938

1938 CARPENTER: 446, fig. 1-2. (Holotype: adult, no. 4537 (MCZ); Illinois, Carboniferous).

1943 CARPENTER: 13.

1953 LAURENTAUX: 425, fig. 25.

1954 EDMUNDS & TRAVER: 398. (1954b).

1956 RICHARDSON: 24.

1980 HUBBARD & KUKALOVÁ-PECK: 27.

1985 KUKALOVÁ-PECK: 939, fig. 11-13, 37.

Lithoneura mirifica CARPENTER, 1943

1943 CARPENTER: 13, fig. 3, pl. 2. (Holotype: adult, no. 14880 (ISM); Illinois, Carboniferous).

1953 LAURENTAUX: 425.

1954 **Lithoneura** [unnamed] - BRUES, MELANDER, & CARPENTER: fig. 1123.

1954 EDMUNDS & TRAVER: 398. (1954b).

1956 RICHARDSON: 24.

1985 KUKALOVÁ-PECK: 940, fig. 14.

Lithoneura piecko KUKALOVÁ-PECK, 1985

1985 KUKALOVÁ-PECK: 942, fig. 17, 28. (Holotype: nymph, no. 4/1985 (JKP); Illinois, Carboniferous).

Syntonoptera HANDLIRSCH, 1911

- 1911 HANDLIRSCH: 299. (Type species: **Syntonoptera schucherti** HANDLIRSCH, monotypy).
- 1919 HANDLIRSCH: 524.
- 1922 HANDLIRSCH: 35.
- 1939 HANDLIRSCH: 213.
- 1943 CARPENTER: 13.
- 1954 BRUES, MELANDER, & CARPENTER: 785.
- 1954 EDMUNDS & TRAVER: 397. (1954b).

Note. Known from the Carboniferous of Illinois; adult.
Contains one species.

Syntonoptera schucherti HANDLIRSCH, 1911

- 1911 HANDLIRSCH: 299, fig. 3. (Holotype: adult, no. 19 (Peabody); Illinois, Carboniferous).
- 1919 HANDLIRSCH: 524.
- 1920 HANDLIRSCH: 131, fig. 58.
- 1922 HANDLIRSCH: 35.
- 1938 CARPENTER: 445.
- 1943 CARPENTER: 12, fig. 2.
- 1953 LAURENTAUX: 425.

Suborder **Permoplectoptera** TILLYARD

- 1932 TILLYARD: 118.

Superfamily **Prottereismatoidea** SELLARDS, 1907

Family **Prottereismatidae** SELLARDS, 1907

- 1907 **Prottereismephemeridae** SELLARDS: 345.
- 1970 **Kukalovidae** DEMOULIN: 6. (1970b).

Note. Contains three genera.

Kukalova DEMOULIN, 1970

- 1970 DEMOULIN: 6. (Type-species: **Kukalova americana** DEMOULIN, original designation). (1970 b).
- 1980 HUBBARD & KUKALOVÁ-PECK: 29.
- 1980 **Prottereisma** [partim] CARPENTER: 273.

1985 LANDA & SOLDÁN: 88.

Note. Known from the Permian of Oklahoma; nymph. Contains one nominal species.

Kukalova americana DEMOULIN, 1970

- 1968 "**Prottereisma** sp. (nymph no. 1)" KUKALOVÁ: 313, fig. 1-2, pl. 29. (Oklahoma, Permian).
- 1970 DEMOULIN: 6. (Holotype: nymph illustrated by KUKALOVÁ 1968, fig. 1-2). (1970 b).
- 1978 [unnamed] KUKALOVÁ-PECK: fig. 28.
- 1980 HUBBARD & KUKALOVÁ-PECK: 29, fig. 1, 3.
- 1980 **Prottereisma americanum** - CARPENTER: 274, fig. 6-7, 9-10. (Holotype: nymph, no. 631lab (MCZ); Oklahoma, Lower Permian).
- 1985 KUKALOVÁ-PECK: fig. 31.
- 1986 WOOTON: fig. 1b.

Kukalova sp. TSHERNOVA, 1980

- 1980 TSHERNOVA: fig. 7. (1980a).

Phthartus HANDLIRSCH, 1904

- 1904 HANDLIRSCH: 6. (Type-species: **Phthartus rossicus** HANDLIRSCH, original designation).
- 1906 HANDLIRSCH: 386.
- 1917 LAMEERE: 46. (1917a).
- 1919 HANDLIRSCH: 575.
- 1922 HANDLIRSCH: 61.
- 1934 LAMEERE: 199.
- 1937 HANDLIRSCH: 83.
- 1938 HANDLIRSCH: 174.
- 1938 MARTYNOV: 37. (1938b).
- 1962 TSHERNOVA: 57. (1962c).
- 1966 DEMOULIN: 4.
- 1968 KUKALOVÁ: 310.
- 1972 EDMUNDS: 24.
- 1985 LANDA & SOLDÁN: 88.

Note. Known from the Permian of the USSR and Africa; nymph. Contains three species. KUKALOVÁ (1968) stated that the familial placement of this genus is uncertain.

Phtartus africanus HAUGHTON, 1924

1924 HAUGHTON: 331, fig. 2. (Type: nymph, no. 5732 (SAM); South Africa, Permian).

Phtartus netschajevi HANDLIRSCH, 1904

1894 **Perla** sp. Netschajew: 382, fig. 3(4).

1904 HANDLIRSCH: 6. (Nymph; Russian Permian, Kargala im Orenburg).

1906 HANDLIRSCH: 387, pl. 37 fig. 17-18. (Type: nymph, (Kazan); Lower Permian).

1919 HANDLIRSCH: 575.

1922 HANDLIRSCH: 61.

1928 **Phtartus nečajewi** [sic] - MARTYNOW: 9.

1937 HANDLIRSCH: 117.

1953 LAURENTIAUX: 429.

1957 **Phtartus netschaejewi** [sic] - RHODENDORF: 76.

1968 KUKALOVÁ: 323.

Phtartus rossicus HANDLIRSCH, 1904

1904 HANDLIRSCH: 6. (Russian Permian, Kargala im Orenburg).

1906 HANDLIRSCH: 387, pl. 37 fig. 19. (Type: nymph, Kazan; Lower Permian).

1911 HANDLIRSCH: 183, pl. 8 fig 3. (1911a).

1919 HANDLIRSCH: 575.

1920 HANDLIRSCH: fig. 71.

1922 HANDLIRSCH: 61.

1928 **Phtarthus** [sic] **rossicus** - MARTYNOW: 9.

1934 LAMEERE, fig. 209.

1935 NEEDHAM, TRAVER, & HSU: 204, fig. 70.

1937 HANDLIRSCH: 37.

1939 HANDLIRSCH: 149.

1949 JEANNEL: 40, fig. 29.

1953 LAURENTIAUX: 429.

- 1956 VERRIER: 56, fig. 19.
1957 RHODENDORF: 76.
1962 TSHERNOVA: fig. 61. (1962a).
1966 DEMOULIN: 4.
1968 ILLIES: 5, fig. 6.
1968 KUKALOVÁ: 323.
1969 LANDA: 53.
1970 DEMOULIN: 2. (1970b).
1970 TSHERNOVA: 126
1973 LANDA: 156.
1979 DEMOULIN: 4. (1979a).

Note: TSHERNOVA (1970) stated that the taxonomic position of this species is uncertain.

Protereisma SELLARDS, 1907

- 1907 SELLARDS: 347. (Type-species: **Protereisma permianum** SELLARDS, original designation).
1907 **Protechma** SELLARDS: 349. (Type-species: **Protechma acuminatum** SELLARDS, original designation).
1907 **Prodromus** SELLARDS: 349. (Type-species: **Prodromus rectus** SELLARDS, original designation).
1907 **Bantiska** SELLARDS: 349. (Type-species: **Bantiska elongata** SELLARDS, original designation).
1907 **Rekter** SELLARDS: 349. (Type-species: **Rekter arcuatus** SELLARDS, original designation).
1907 **Pinctodia** SELLARDS: 352. (Type-species: **Pinctodia curta** SELLARDS, original designation).
1907 **Scopus** SELLARDS: 352. (Type-species: **Scopus g gracilis** SELLARDS, original designation).
1909 **Mecus** SELLARDS: 151. [new name for **Scopus** SELLARDS non MEGERLE]. (Type-species: **Scopus gracilis** SELLARDS, objective synonymy).
1909 **Recter** SELLARDS: 151. [unjustified emendation of **Rekter** SELLARDS]. (Type-species: **Rekter arcuatus** SELLARDS, objective synonymy).
1919 HANDLIRSCH: 573.
1919 **Bantiska** - HANDLIRSCH: 574.

- 1919 **Prodromus** - HANDLIRSCH: 574.
1919 **Recter** - HANDLIRSCH: 574.
1919 **Mecus** - HANDLIRSCH: 574.
1922 HANDLIRSCH: 60.
1922 **Protechma** - HANDLIRSCH: 60.
1922 **Bantiska** - HANDLIRSCH: 60.
1922 **Prodromus** - HANDLIRSCH: 60.
1922 **Recter** - HANDLIRSCH: 60.
1922 **Pinctodia** - HANDLIRSCH: 61.
1922 **Mecus** - HANDLIRSCH: 61.
1923 TILLYARD: 144.
1924 **Prodromites** COCKERELL: 136. [new name for **Prodromus** SELLARDS
non DISTANT]. (Type-species: **Prodromus rectus** SELLARDS,
objective synonymy).
1924 MARTYNOV: 152.
1924 **Protechma** - MARTYNOV: 152.
1928 **Loxophlebia** MARTYNOV: 8. (Type-species: **Loxophlebia apicalis**
MARTYNOV, original designation).
1930 MARTYNOV: 254.
1930 **Protechma** - MARTYNOV: 254.
1932 TILLYARD: 244.
1933 CARPENTER: 490.
1936 TILLYARD: 439.
1937 HANDLIRSCH: 116.
1937 **Protechma** - HANDLIRSCH: 116.
1937 **Bantiska** - HANDLIRSCH: 116.
1937 **Prodromus** - HANDLIRSCH: 116.
1937 **Recter** - HANDLIRSCH: 116.
1937 **Pinctodia** - HANDLIRSCH: 116.
1937 **Mecus** - HANDLIRSCH: 116.
1937 **Loxophlebia** - HANDLIRSCH: 116.
1939 HANDLIRSCH: 222.
1939 **Protechma** - HANDLIRSCH: 222.
1939 **Bantiska** - HANDLIRSCH: 222.
1939 **Prodromus** - HANDLIRSCH: 222.
1939 **Recter** - HANDLIRSCH: 222.
1939 **Pinctodia** - HANDLIRSCH: 222.

- 1939 **Mecus** - HANDLIRSCH: 222.
1939 **Loxophlebia** - HANDLIRSCH: 222.
1946 ZALESSKY : 351.
1953 LAURENTIAUX: 429.
1954 DEMOULIN: 562. (1954b).
1954 EDMUNDS & TRAVER: 398. (1954b).
1956 VERRIER: 88.
1958 DEMOULIN: 6.
1962 TASCH & ZIMMERMAN: 1327.
1962 TSHERNOVA: 56. (1962a).
1965 TSHERNOVA: 353.
1968 ILLIES: 5.
1970 DEMOULIN: 3. (1970b).
1970 TSHERNOVA: 125.
1972 EDMUNDS: 24.
1980 CARPENTER: 264.
1983 KUKALOVÁ-PECK: 1646.
1985 LANDA & SOLDÁN: 88.

Note. Known from the Permian of the USSR and Kansas; adult and nymph. Contains 14 nominal species.

Prottereisma apicale (MARTYNOV, 1928)

- 1928 **Loxophlebia apicalis** MARTYNOV: 8, pl. 1 fig. 5. (Adult; Russian Permian).
1937 **Loxophlebia apicalis** - HANDLIRSCH: 83.
1937 **Loxophlebia apicalis** - LAURENTIAUX: 429.
1938 **Loxophlebia apicalis** - MARTYNOV: 35. (1938b).
1957 RHODENDORF: 76.
1965 **Prottereisma apicalis** - TSHERNOVA: 353.
1980 CARPENTER: 264.

Note. CARPENTER (1980) stated that the placement of this species to family is uncertain.

Prottereisma arcuatum (SELLARDS, 1907)

- 1907 **Rekter arcuatus** SELLARDS: 349, fig. 6. (Type: adult; Kansas, Permian).
1919 **Recter arcuatus** - HANDLIRSCH: 574.

- 1922 **Recter arcuatus** - HANDLIRSCH: 60.
1932 TILLYARD: 255, fig. 17.
1933 CARPENTER: 497, fig. 28. (designates no. 3414 (MCZ) as neotype).
1937 **Recter armatus**[sic] - HANDLIRSCH: 116.
1980 CARPENTER: 266.

Prottereisma curtum (SELLARDS, 1907)

- 1907 **Pinctodia curta** SELLARDS: 352, fig. 11. (Type: adult; Kansas, Permian).
1919 **Pinctodia curta** - HANDLIRSCH: 574.
1922 **Pinctodia curta** - HANDLIRSCH: 61.
1937 **Pinctodia curta** - HANDLIRSCH: 117.

Prottereisma directum CARPENTER, 1980

- 1980 CARPENTER: 264, fig. 1-4. (Holotype: adult, no. 5180a, b (MCZ); Oklahoma, Lower Permian).

Prottereisma elongatum (SELLARDS, 1907)

- 1907 **Bantiska elongata** SELLARDS: 349, Fig. 7. (Type: adult; Kansas, Permian).
1919 **Bantiska elongata** - HANDLIRSCH: 574.
1922 HANDLIRSCH: 60.
1932 TILLYARD: 254.
1933 CARPENTER: 497. (designates no. 3424ab (MCZ) as neotype).
1937 **Bantiska elongata** - HANDLIRSCH: 116.

Prottereisma extensum (SELLARDS, 1907)

- 1907 **Recter(?) extensus** SELLARDS: 351, fig. 5. (Type: adult; Kansas, Permian).
1919 **Recter(?) extensus** - HANDLIRSCH: 574.
1922 **Recter (?)extensus** - HANDLIRSCH: 60
1937 **Recter extensus** - HANDLIRSCH: 116.

Prottereisma gracile (SELLARDS, 1907)

- 1907 **Scopus gracilis** SELLARDS: 352, fig. 12. (Type: adult; Kansas, Permian).

- 1919 **Mecus gracilis** - HANDLIRSCH: 574.
1922 **Mecus gracilis** - HANDLIRSCH: 61.
1932 TILLYARD: 252, fig. 15.
1937 **Mecus gracilis** - HANDLIRSCH: 117.
1946 ZALESSKY : 352.

Protereisma insigne TILLYARD, 1932

- 1932 TILLYARD: 259, fig. 18. (Holotype: adult, no. 1112
(Peabody); Kansas, Lower Permian).
1933 CARPENTER: 499.
1939 CARPENTER: 63.
1946 ZALESSKY: 351.

Protereisma latum SELLARDS, 1907

- 1907 SELLARDS: 349 (Type: adult; Kansas, Permian).
1919 HANDLIRSCH: 573.
1922 HANDLIRSCH: 60.
1932 TILLYARD: 256, fig. 7.
1933 CARPENTER: 498, fig. 29 (designates no. 3419ab (MCZ) as
neotype).
1937 HANDLIRSCH: 116.
1946 ZALESSKY: 352.
1962 TASCH & ZIMMERMAN: 1328, fig. 12.
1980 HUBBARD & KUKALOVÁ-PECK: 25, fig. 2.
1980 CARPENTER: 265, fig. 5.
1983 **Protereisma** sp. KUKALOVÁ-PECK: fig. 3.
1984 **Protereisma** sp. RIEK & KUKALOVÁ-PECK: 1157, fig. 10.

Protereisma minus SELLARDS, 1907

- 1907 SELLARDS: 348, fig. 9. (Type: adult; Kansas, Permian).
1919 HANDLIRSCH: 573.
1922 HANDLIRSCH: 60.
1932 TILLYARD: 254.
1937 HANDLIRSCH: 116.
1946 ZALESSKY: 352.

Note: TILLYARD (1932) suggested that this species might be
Protereisma permianum.

Prottereisma permianum SELLARDS, 1907

- 1907 SELLARDS: 348, fig. 3 (Type: adult; Kansas, Permian).
1907 **Protechma acuminatum** SELLARDS: 349, fig. 8. (Type: adult; Kansas, Permian).
1907 **Prodromus rectus** SELLARDS: 349, fig. 10. (Type: adult; Kansas, Permian).
1919 HANDLIRSCH: 573.
1919 **Protechma acuminatum** - HANDLIRSCH: 573.
1919 **Prodromus rectus** - HANDLIRSCH: 574.
1920 **Protechma acuminatum** - HANDLIRSCH: fig. 70.
1922 HANDLIRSCH: 60.
1922 **Protechma acuminatum** - HANDLIRSCH: 60.
1924 **Prodromites rectus** - COCKERELL: 136.
1932 TILLYARD: 247, fig. 5, 14.
1932 **Protechma acuminatum** - TILLYARD: 247.
1932 **Prodromus rectus** - TILLYARD: 247.
1932 **Prottereisma sellardsi** TILLYARD: 251, fig. 16. (Holotype: adult, no. 5434 (Peabody); Kansas, Permian).
1933 CARPENTER: 493, fig. 26-27 (designates no. 3405ab (MCZ) as neotype).
1934 LAMEERE: fig 210.
1935 NEEDHAM, TRAVER, & HSU: 202, fig. 67.
1937 HANDLIRSCH: 116.
1937 **Prodromus rectus** - HANDLIRSCH: 116.
1937 **Protechma acuminatum** - HANDLIRSCH: 116.
1938 MARTYNOV: fig. 11. (1938b).
1939 CARPENTER: 63.
1946 ZALESSKY: 352.
1946 **Prottereisma sellardsi** - ZALESSKY: 352.
1949 JEANNEL: fig. 27.
1953 LAURENTIAUX: 428, fig. 27.
1956 VERRIER: 88, fig. 20.
1962 TSHERNOVA: fig. 56. (1962a).
1969 **Prottereisma permiana** - LANDA: 53.
1974 KUKALOVÁ-PECK: fig. 7.
1978 KUKALOVÁ-PECK: fig. 15.

1979 DEMOULIN: 1. (1979 a).

1980 CARPENTER: 131, fig. 8.

Prottereisma rossenrayensis GUTHÖRL, 1965

1965 GUTHÖRL: 229, pl. 30. (Holotype: adult, no. 600 W.B. (Bochum); Permian).

1968 ILLIES: 5, fig. 5.

1980 CARPENTER: 264.

Note. CARPENTER (1980) stated that the placement of this species to genus is uncertain.

Prottereisma tillyardi HANDLIRSCH, 1937

1923 **Prottereisma** sp. TILLYARD: fig. 1a.

1937 HANDLIRSCH: 83.

Prottereisma uralicum ZALESSKY, 1946

1946 ZALESSKY: 351, fig. (Holotype: adult; Barda, Ural Mountains, Permian).

1957 RHODENDORF: 76.

1965 TSHERNOVA: 253.

1970 TSHERNOVA: 129.

1980 CARPENTER: 264.

Note. CARPENTER (1980) stated that the placement of this species to family is uncertain.

Prottereisma sp.

1985 KUKALOVÁ-PECK: fig. 38. (Nymph, no. 3411 (MCZ); Kansas, Lower Permian).

Family **Jarmilidae** DEMOULIN, 1970

1970 DEMOULIN: 7.

Note. Contains one genus.

Jarmila DEMOULIN, 1970

1970 DEMOULIN: 7. (1970b). (Type-species: **Jarmila elongata** DEMOULIN, original designation).

1980 HUBBARD & KUKALOVÁ-PECK: 29.

1985 LANDA & SOLDÁN: 88.

Note. Known from the Permian from Czechoslovakia; nymph.
Contains one species.

Jarmila elongata DEMOULIN, 1970

1968 "nymph (no. 6)" KUKALOVÁ: 320, fig. 7. (Czechoslovakia,
Permian).

1970 DEMOULIN: 7. (1970b). (Holotype: nymph illustrated by
KUKALOVÁ 1968, fig. 7).

1980 HUBBARD & KUKALOVÁ-PECK: 29.

Family **Misthodotidae** TILLYARD, 1932

1932 TILLYARD: 260.

1954 **Eudoteridae** DEMOULIN: 553. (1954b).

Note. Contains one genus.

Misthodotes SELLARDS, 1909

1907 **Dromeus** SELLARDS: 351. (Type-species: **Dromeus obtusus**
SELLARDS, original designation).

1909 SELLARDS: 151. [new name for **Dromeus** SELLARDS non REICHE].
(Type-species: **Dromeus obtusus** SELLARDS, objective
synonymy).

1919 HANDLIRSCH: 574.

1922 HANDLIRSCH: 60.

1932 TILLYARD: 261.

1933 CARPENTER: 500.

1935 NEEDHAM, TRAVER, & HSU: 203.

1936 **Eudoter** TILLYARD: 443. (Type-species: **Eudoter delicatulus**
Tillyard, original designation).

1937 HANDLIRSCH: 116.

1939 HANDLIRSCH: 222.

1946 ZALESSKY: 351.

1953 LAURENTIAUX: 429.

1953 **Eudoter** - LAURENTIAUX: 429.

1954 DEMOULIN: 561. (1954 b).

1954 **Eudoter** - DEMOULIN: 561. (1954 b).

1956 VERRIER: 88.

- 1958 DEMOULIN: 6.
1958 **Eudoter** - DEMOULIN: 6.
1966 DEMOULIN: 1.
1970 TSHERNOVA: 125.
1980 CARPENTER: 277.
1985 LANDA & SOLDÁN: 88.

Note. Known from the Permian from Kansas and the USSR; adult and nymph. Contains seven species.

Misthodotes biguttatus TILLYARD, 1932

- 1932 TILLYARD: 265, fig. 21. (Holotype: adult, no. 1122 (Peabody); Kansas, Lower Permian).
1966 DEMOULIN: 2.
1980 CARPENTER: 281.

Misthodotes delicatulus (TILLYARD, 1936)

- 1936 **Eudoter delicatulus** TILLYARD: 444, fig. 2-4. (Holotype: male imago, no. 1014a, b (Peabody); Kansas, Lower Permian).
1962 **Eudoter delicatulus** - TSHERNOVA: fig. 58. (1962a).
1966 **Eudoter delicatulus** - DEMOULIN: 1.
1980 CARPENTER: 282. (Type: no. 1014a,b (Peabody)).
1985 KUKALOVÁ-PECK: fig. 32.

Misthodotes edmundsi CARPENTER, 1980

- 1980 CARPENTER: 280, fig. 14-15. (Holotype: adult, no. 5184ab (MCZ); Oklahoma, Permian).

Misthodotes obtusus (SELLARDS, 1907)

- 1907 **Dromeus obtusus** SELLARDS: 351. (Type: adult; Kansas, Permian).
1919 HANDLIRSCH: 574.
1922 HANDLIRSCH: 60.
1932 TILLYARD: 261, fig. 19-20.
1933 CARPENTER: 500. (designation of no. 5470 (Peabody) as neotype).
1935 NEEDHAM, TRAVER, & HSU: fig. 68.
1937 HANDLIRSCH: 116.

- 1953 LAURENTIAUX: 429.
1956 VERRIER: fig. 21(d).
1962 TSHERNOVA: fig. 57. (1962a).
1966 DEMOULIN: 2.
1969 LANDA: 53.
1979 DEMOULIN: 2. (1979a).
1980 CARPENTER: 278, fig. 11-12, 13b.

Misthodotes ovalis TILLYARD, 1932

- 1932 TILLYARD: 266, fig. 3-4, 22. (Holotype: adult, no. 1118a-b (Peabody); Kansas, Permian).
1939 CARPENTER: 63.
1980 CARPENTER: 281.

Misthodotes sharovi TSHERNOVA, 1965

- 1965 TSHERNOVA: 355, fig. 3-8, pl. 1 fig. 2, pl. 2. (Holotype: imago, no. 1700/3209 (PIN); USSR, Permian).
1966 DEMOULIN: 2.
1970 DEMOULIN: 2. (1970 b).
1970 TSHERNOVA: 129.
1979 DEMOULIN: 4. (1979 a).
1980 CARPENTER: 277.
1980 TSHERNOVA: fig. 8.

Note. CARPENTER (1980) stated that the assignment of this species to **Misthodotes** is doubtful. He also felt that there is little reason to place the nymph assigned to this species in the Misthodotidae.

Misthodotes zalesskyi TSHERNOVA, 1965

- 1965 TSHERNOVA: 354, fig. 1-2, pl. 1 fig. 1. (Holotype: imago, no. 1700/389 (PIN); USSR, Permian).
1966 DEMOULIN: 2.
1970 TSHERNOVA: 129.
1980 CARPENTER: 277.

Family **Oboriphlebiidae**

HUBBARD & KUKALOVÁ-PECK, 1980

1980 HUBBARD & KUKALOVÁ-PECK: 29.

Note. Contains one genus.

Oboriphlebia HUBBARD & KUKALOVÁ-PECK, 1980

1980 HUBBARD & KUKALOVÁ-PECK: 29. (Type-species: **Kukalova moravica** DEMOULIN, original designation).

1985 LANDA & SOLDÁN: 88.

Note. Known from the Permian of Czechoslovakia; nymph. Contains four species.

Oboriphlebia moravica (DEMOULIN, 1970)

1968 "**Protoreisma** sp. (nymph no. 2)" KUKALOVÁ: 316, fig. 3.
(Czechoslovakia, Permian).

1970 **Kukalova moravica** DEMOULIN: 6. (1970b). (Holotype: nymph illustrated by KUKALOVÁ 1968, fig. 3).

1980 HUBBARD & KUKALOVÁ-PECK: 29.

1980 CARPENTER: 273.

Oboriphlebia quarta HUBBARD & KUKALOVÁ-PECK, 1980

1968 "**Protoreisma** sp. (nymph no. 4)" KUKALOVÁ: 318, fig. 5.
(Czechoslovakia, Permian).

1970 "**Kukalova** sp., larve no. 4" DEMOULIN: 7. (1970b).

1980 HUBBARD & KUKALOVÁ-PECK: 29. (Holotype: nymph illustrated by KUKALOVÁ 1968, fig. 5).

Oboriphlebia quinta HUBBARD & KUKALOVÁ-PECK, 1980

1968 "**Protoreisma** sp. (nymph no. 5)" KUKALOVÁ: 318, fig. 6.
(Czechoslovakia, Permian).

1970 "**Kukalova** sp., larve no. 5" DEMOULIN: 7. (1970b).

1980 HUBBARD & KUKALOVÁ-PECK: 29. (Holotype: nymph illustrated by KUKALOVÁ 1968, fig. 6).

Oboriphlebia tertia HUBBARD & KUKALOVÁ-PECK, 1980

1968 "**Protoreisma** sp. (nymph no. 3)" KUKALOVÁ: 318, fig. 4.
(Czechoslovakia, Permian).

- 1970 "Kukalova sp., larve no. 3" DEMOULIN: 7. (1970b).
1980 HUBBARD & KUKALOVA-PECK: 29. (Holotype: nymph illustrated by KUKALOVÁ 1968, fig. 4).

Superfamily **Mesephemeroidea** LAMEERE

Family **Mesephemeridae** LAMEERE, 1917

- 1917 LAMEERE: 47. (1917a).
1938 **Palingeniopsidae** MARTYNOV: 35.
1955 DEMOULIN: 1.

Note. Contains two genera.

Mesephemera HANDLIRSCH, 1906

- 1906 HANDLIRSCH: 600.
1917 LAMEERE: 47. (1917a).
1920 HANDLIRSCH: 177.
1932 CARPENTER: 100.
1935 NEEDHAM, TRAVER, & HSU: 205.
1953 LAURENTIAUX: 430.
1954 DEMOULIN: 565. (1954b).
1955 DEMOULIN: 4. (1955b).
1955 DEMOULIN: 33. (1955d).
1956 VERRIER: 90.
1958 DEMOULIN: 6.
1962 TSHERNOVA: 57. (1962a).
1970 TSHERNOVA: 126.
1980 TSHERNOVA: 36. (1980a).
1981 HUBBARD: 69. (designates **Ephemerula procera** HAGEN as type-species).
1985 LANDA & SOLDÁN: 89.

Note. Known from the Jurassic of Solenhofen, Germany; adult. Contains two species.

Mesephemera lithophila (GERMAR, 1842)

- 1842 **Tineites lithophilus** GERMAR: 8, pl. 9 fig. 8. (Adult).
1862 **Termes lithophilus** - HAGEN: 115.

- 1862 **Ephemera procera** HAGEN: 116, pl. 15 fig. 2.
(Lithographischen Schiefer, Bayern).
- 1868 **Dictyoneura procera** - BRAUER: 389.
- 1869 **Ephemera procera** - WEYENBERGH: 252.
- 1874 **Anomalon palaeon** [partim] WEYENBURGH: 86, 91, fig. 8.
- 1876 **Anomalon palaeon** - WINKLER: 85.
- 1882 **Ephemera procera** - FRITSCH: 3.
- 1886 **Ephemera ? procera** - DEICHMÜLLER: 25.
- 1888 **Ephemera procera** - OPPENHEIM: 225, pl. 30 fig. 12.
- 1890 **Ephemeris** [sic] **procera** - HAASE: 2.
- 1890 **Termes lithophilus** - HAASE: 2.
- 1895 MEUNIER: ccxxiii.
- 1896 **Ephemera** sp. WINKLER: 302.
- 1896 **Ephemera procera** - WINKLER: 303.
- 1897 **Ephemera procera** - MEUNIER: 227.
- 1898 **Ephemera procera** - MEUNIER: 114.
- 1906 HANDLIRSCH: 600. (Eichstätt oder Solnhofen in Bayern.
Lithogr. Kalk Malm, Jurassic).
- 1906 **Mesephemera procera** - HANDLIRSCH: 600.
- 1906 **Mesephemera weyenberghi** HANDLIRSCH: 601. (Solnhofen in
Bayern. Lithogr Kalk. Malm). (Type: female of **Anomalon**
palaeon illustrated by WEYENBERGH, 1874).
- 1932 **Mesephemera procera** [partim]- CARPENTER: 101. (States "type"
no. 6280a, b (MCZ)).
- 1934 **Mesephemera procera** - LAMEERE, fig. 211.
- 1939 **Mesephemera procera** - HANDLIRSCH: 165. (Type: (Senckenb.
Mus.)).
- 1953 **Mesephemera procera** - LAURENTIAUX: 430.
- 1955 DEMOULIN: 4. (1955 b).
- 1981 HUBBARD: 69.

Mesephemera prisca (GERMAR, 1839)

- 1839 **Sciara prisca** GERMAR: 211, pl. 13 fig. 11.
- 1852 **Sciara prisca** - GIEBEL: 640.
- 1862 **Ephemera prisca** - HAGEN: 117.
- 1869 **Ephemera prisca** - WEYENBERGH: 252.
- 1874 **Anomalon palaeon** WEYENBURGH: 86, 91, pl. 3 fig. 7-8.

- 1888 **Ephemera speciosa** OPPENHEIM: 225, pl. 30 fig. 13. (Type: adult; Germany, Bayern).
1890 **Ephemeris**[sic] **prisca** - HAASE: 3.
1898 **Ephemera speciosa** - MEUNIER: 114.
1898 MEUNIER: 223.
1906 ?**Mesephemera prisca** - HANDLIRSCH: 601.
1906 ?**Mesephemera palaeon** - HANDLIRSCH: 601.
1906 **Mesephemera speciosa** - HANDLIRSCH: 601. (Eichstätt in Bayern, Lithog. Kalk. Malm, Jurassic).
1932 **Mesephemera speciosa** [partim] - CARPENTER: 101.
1955 DEMOULIN: 4, fig. 1, pl. 1. (1955b).
1962 TSHERNOVA: fig. 60. (1962a).

Palingeniopsis MARTYNOV, 1932

- 1932 MARTYNOV: 10. (Type-species: **Palingeniopsis praecox** MARTYNOV, original designation).
1935 NEEDHAM, TRAVER, & HSU: 204.
1938 MARTYNOV: 35. (1938b).
1954 DEMOULIN: 562. (1954b).
1955 DEMOULIN: 8. (1955b).
1956 VERRIER: 88.
1958 DEMOULIN: 6.
1962 TSHERNOVA: 57. (1962a).
1968 ILLIES: 6.
1970 TSHERNOVA: 126.
1980 TSHERNOVA: 33. (1980a).
1985 LANDA & SOLDÁN: 89.

Note. Known from the Permian of northern USSR; adult.

Contains one species.

Palingeniopsis praecox MARTYNOV, 1932

- 1932 MARTYNOV: 10, fig. 6, pl. 1 fig 2.
1935 NEEDHAM, TRAVER, & HSU: fig. 69.
1938 MARTYNOV: 35, fig. 12. (1938b).
1949 JEANNEL: 40, fig. 28.
1953 LAURENTIAUX: 429.
1954 DEMOULIN: 562. (1954b).

- 1955 DEMOULIN: 8. (1955b).
1956 VERRIER: fig. 21(a).
1957 RHODENDORF: 76.
1962 TSHERNOVA: fig. 59. (1962a).
1969 LANDA: 53.

Family **Mesoplectopteridae** DEMOULIN, 1955

- 1955 **Mesoplectopterinae** DEMOULIN: 345. (1955g).
1984 SINITSHENKOVA: 62.

Note. Contains one genus.

Mesoplectopteron HANDLIRSCH, 1918

- 1918 HANDLIRSCH: 112 (Type-species: **Mesoplectopteron longipes** HANDLIRSCH, original designation).
1939 HANDLIRSCH: 13.
1958 DEMOULIN: 9.
1962 TSHERNOVA: 57. (1962a).
1970 TSHERNOVA: 126.
1985 LANDA & SOLDÁN: 88.

Note. Known from the Triassic and Permian of western Europe; nymph and adult. Contains one described species.

Mesoplectopteron longipes HANDLIRSCH, 1918

- 1918 HANDLIRSCH: 112, fig. (Sulzbach in Elsass, Triassic).
1920 HANDLIRSCH: 176.
1939 HANDLIRSCH: 13.
1954 GLEISS: 40.
1955 DEMOULIN: 345. (1955g).
1962 TSHERNOVA: fig. 62. (1962a).
1968 ILLIES: 6.
1968 KUKALOVA: 323.
1969 TSHERNOVA: 153.
1970 DEMOULIN: 1. (1970b).
1970 TSHERNOVA: 126.
1980 TSHERNOVA: 32. (1980a).

Note. TSHERNOVA (1969) stated that the taxonomic position of this species is uncertain.

Mesoplectopteron sp.

1959 "Insekts" VÖLKEL: 394, fig. 6-7.

1980 "imago" TSHERNOVA: 32. (1980a).

Family **Hexagenitidae** LAMEERE, 1917

1917 **Hexagenitinae** LAMEERE: 74. (1917a).

1917 **Paedephemeridae** LAMEERE: 49. (1917a).

1924 **Ephemeropsinae** COCKERELL: 136.

1954 **Stenodicranidae** DEMOULIN: 533. (1954b).

Note. Contains four genera.

Ephemeropsis EICHWALD, 1864

1864 EICHWALD: 21. (Type-species: **Ephemeropsis trisetalis** EICHWALD, monotypy).

1906 **Phacelobranchus** HANDLIRSCH: 604. (Type-species: **Phacelobranchus braueri** HANDLIRSCH, monotypy).

1909 REIS: 27.

1917 LAMEERE: 47. (1917a).

1917 **Phacelobranchus** - LAMEERE: 47. (1917a).

1924 COCKERELL: 136.

1928 PING: 38.

1935 NEEDHAM, TRAVER & HSU: 205.

1938 **Phacelobranchus** - MARTYNOV: 24. (1938a).

1953 **Phacelobranchus** - LAURENTIAUX: 524.

1954 DEMOULIN: 566. (1954b).

1955 DEMOULIN: 11. (1955f).

1956 DEMOULIN: 2. (1956d).

1956 VERRIER: 91.

1956 **Phacelobranchus** - VERRIER: 91.

1958 DEMOULIN: 8.

1960 GRANDI: 43.

1961 MESHKOVA: 164.

1961 TSHERNOVA: 861.

1962 TSHERNOVA: 59. (1962a).

1967 DEMOULIN: 4. (1967a).

1967 DEMOULIN: 5. (1967b).

- 1967 TSHERNOVA: 322.
 1968 KUKALOVÁ: 310.
 1968 TSHERNOVA: 24.
 1970 TSHERNOVA: 126.
 1971 DEMOULIN: 2.
 1972 EDMUNDS: 25.
 1974 TSHERNOVA & SINITSHENKOVA: 135.
 1975 SINITSHENKOVA: 83.
 1978 ZHERICHIN: 18.
 1980 KALUDINA: 233.
 1980 LIN: 214.
 1982 LIN: 74. (1982a).
 1982 LIN: 148. (1982b).
 1985 LANDA & SOLDÁN: 102.

Note. Known from the Jurassic of Siberia, China, and Mongolia; adult and nymph. Contains two species.

***Ephemeropsis martyновae* TSHERNOVA, 1961**

- 1961 TSHERNOVA: 864, fig. 7-8, pl. 2 fig. 2.
 1962 TSHERNOVA: fig. 65.
 1967 DEMOULIN: 4. (1967a).
 1971 DEMOULIN: 7.
 1974 TSHERNOVA & SINITSHENKOVA: 131.

***Ephemeropsis trisetalis* EICHWALD, 1864**

- 1847 "Insectenlarve" MÜLLER: 261, pl. 11 fig. 7.
 1864 EICHWALD: 21. (Eastern Siberia, Jurassic).
 1868 ***Ephemeropsis orientalis* EICHWALD** (Eastern Siberia,
Jurassic).
 1889 ***Ephemeropsis orientalis* - BRAUER, REDTENBACHER, &**
GANGLBAUER: 5, fig. 4.
 1906 HANDLIRSCH: 603.
 1906 ***Ephemeropsis middendorfi* HANDLIRSCH:** 604 (Byrka, Siberia;
Jurassic).
 1906 ***Ephemeropsis orientalis* - HANDLIRSCH:** 604.
 1906 ***Phacelobranchus braueri* HANDLIRSCH:** 604, pl. 46 fig. 33.
(Turga in Siberia; Jurassic).

- 1907 **Phacelobranchus braueri** - HANDLIRSCH: pl. 46 fig. 33.
- 1909 **Ephemeropsis orientalis** - REIS: 27, pl. 3 fig. 1-18.
- 1924 COCKERELL: 137, fig. 2-4, pl. 1 fig. 1-9.
- 1924 **Ephemeropsis melanurus** COCKERELL: 139, pl. 1 fig. 10. (Type: (AMNH); Mongolia, Jurassic).
- 1927 **Ephemeropsis trisetalis berkeyi** COCKERELL: 2. (Type: (AMNH); Mongolia, Jurassic).
- 1927 **Ephemeropsis trisetalis chaneyi** COCKERELL: 2, fig. 2. (Type: (AMNH); Mongolia, Jurassic).
- 1928 PING: 38, fig. 17-18, pl. 2 fig. 1-2.
- 1935 UENO: 1, fig. 1, pl. 1-3.
- 1938 MARTYNOV: 23. (1938a).
- 1938 **Ephemeropsis orientalis** - MARTYNOV: 23. (1938a).
- 1938 **Ephemeropsis middendorfi** - MARTYNOV: 23. (1938a).
- 1939 **Ephemeropsis reisi** HANDLIRSCH: 149.
- 1939 HANDLIRSCH: 164.
- 1939 **Ephemeropsis melanurus** - HANDLIRSCH: 165.
- 1939 **Ephemeropsis trisetalis** var. **chaneyi** - HANDLIRSCH: 168.
- 1954 DEMOULIN: 366. (1954a).
- 1955 DEMOULIN: 11. (1955b).
- 1956 DEMOULIN: 2, fig. 1. (1956d).
- 1956 **Ephemeropsis orientalis** - DEMOULIN: 2. (1956d).
- 1956 **Ephemeropsis middendorfi** - DEMOULIN: 2. (1956d).
- 1956 **Phacelobranchus braueri** - DEMOULIN: 2. (1956d).
- 1956 **Ephemeropsis melanurus** - DEMOULIN: 3. (1956d).
- 1956 **Ephemeropsis reisi** - DEMOULIN: 3. (1956d).
- 1957 RHODENDORF: 5, 76.
- 1957 **Phacelobranchus braueri** - RHODENDORF: 76.
- 1957 **Ephemeropsis middendorfi** - RHODENDORF: 76.
- 1957 **Ephemeropsis orientalis** - RHODENDORF: 76.
- 1961 MESHKOVA: 165, fig. 1-3.
- 1961 TSHERNOVA: 862, fig. 2-6, pl. 1, pl. 2 fig. 1.
- 1962 TSHERNOVA: fig. 64, 66. (1962 a).
- 1967 DEMOULIN: 4. (1967a).
- 1967 TSHERNOVA: 325.
- 1968 DEMOULIN: 1. (1968b).
- 1968 ILLIES: fig. 7.

- 1968 KUKAIOVÁ: 323.
1971 DEMOULIN: 7.
1974 TSHERNOVA & SINITSHENKOVA: 131, fig. 1-2, pl. fig. 5.
1975 SINITSHENKOVA: 83, fig. 1a-b, pl. 10 fig. 1-2.
1976 LIN: 98, pl. 1 fig. 10.
1978 ZHERICHIN: 18.
1980 KALUDINA: 232, fig. 98.
1980 LIN: 212.
1980 TSHERNOVA: fig. 9. (1980a).
1982 LIN: 74, fig. 9, pl. 30 fig. 3-5. (1982a).
1982 LIN: 149, pl. 65 fig. 1, 6. (1982b).
1982 MA, LIN, YEH, & SHEN: 113.

Hexagenites SCUDDER, 1880

- 1880 SCUDDER: 6. (Type-species: **Hexagenites weyenberghii** SCUDDER, original designation).
1906 **Paedephemera** HANDLIRSCH: 601.
1917 LAMEERE: 47, 74. (1917a).
1917 **Paedephemera** - LAMEERE: 47. (1917a).
1920 **Paedephemera** - HANDLIRSCH: 177.
1932 **Paedephemera** - CARPENTER: 100.
1932 CARPENTER: 101.
1935 **Paedephemera** - NEEDHAM, TRAVER, & HSU: 205.
1953 LAURENTIAUX: 430.
1953 **Paedephemera** - LAURENTIAUX: 430.
1954 **Paedephemera** - DEMOULIN: 565. (1954b).
1954 DEMOULIN: 566. (1954b).
1954 **Stenodicranum** DEMOULIN: 571. (1954b). (Type-species: **Ephemera cellulosa** HAGEN, original designation).
1955 **Paedephemera** - DEMOULIN: 4. (1955c). (designates **Ephemera multinervosa** OPPENHEIM as type-species).
1955 DEMOULIN: 5. (1955c).
1956 **Paedephemera** - VERRIER: 90.
1958 **Hexagenites** - DEMOULIN: 8.
1958 **Paedephemera** - DEMOULIN: 8.
1960 GRANDI: 43.
1960 **Paedephemera** - GRANDI: 43.

- 1961 **Paedephemera** - TSHERNOVA: 859.
1967 DEMOULIN: 1. (1967a).
1967 **Paedephemera** - DEMOULIN: 6. (1967a).
1967 DEMOULIN: 5. (1967b).
1967 **Paedephemera** - DEMOULIN: 5. (1967b).
1968 ILLIES: 6.
1968 **Paedephemera** - ILLIES: 6.
1970 **Paedephemera** - DEMOULIN: 1. (1970c).
1970 DEMOULIN: 7. (1970c).
1970 TSHERNOVA: 126.
1971 DEMOULIN: 2.
1972 EDMUNDS: 25.
1974 TSHERNOVA & SINITSHENKOVA: 132.
1980 KALUDINA: 228.
1985 LANDA & SOLDÁN: 102.

Note. Known from the Jurassic of Solenhofen, Bavaria; adult.
Contains one species.

Hexagenites cellululosus (HAGEN, 1862)

- 1862 **Ephemera cellulosa** HAGEN: 115, pl. 15 fig. 3. (Adult;
lithographischen Schiefer, Bayern).
1862 **Ephemera mortua** HAGEN: 117, pl. 15 fig. 5. (Adult;
lithographischen Schiefer, Bayern).
1866 **Ephemera mortua** - DEICHMÜLLER: 20, pl. 2 fig. 13.
1868 **Dictyoneura cellulosa** - BRAUER: 389.
1869 **Ephemera cellulosa** - WEYENBERGH: 252.
1869 **Ephemera mortua** - WEYENBERGH: 252.
1871 [unnamed] EATON: 38. pl. 1 fig 10.
1873 **Ephemera cellulosa** - HAGEN: 388.
1873 **Ephemera mortua** - HAGEN: 388.
1874 **Ephemera mortua** - WEYENBERGH: 96.
1876 **Ephemera mortua** - WINKLER: 89.
1880 **Hexagenites weyenberghii** SCUDDER: 6. (Holotype: (BMNH);
Solenhofen, Jurassic).
1886 **Ephemera mortua** - DEICHMÜLLER: 29.
1888 **Ephemera mortua** - OPPENHEIM: 225, pl. 30 fig. 18.

- 1888 **Ephemera? multinervosa** OPPENHEIM: 225. (Type: adult; Bayern).
- 1896 **Ephemera mortua** - WINKLER: 302.
- 1897 **Ephemera mortua** - MEUNIER: 227.
- 1898 **Ephemera multinervosa** - MEUNIER: 114, pl. 18 fig. 48.
- 1898 **Ephemera mortua** - MEUNIER: 115.
- 1904 "Insekt" WALThER: 203, fig. 18.
- 1906 **Mesephemera cellulosa** - HANDLIRSCH: 601.
- 1906 **Paedephemera oppenheimi** HANDLIRSCH: 602. (Bavaria, Jurassic).
- 1906 **Hexagenites weyenberghii** - HANDLIRSCH: 603, pl. 46 fig. 29.
- 1932 **Paedephemera multinervosa** - CARPENTER: 100.
- 1932 **Mesephemera cellulosa** - CARPENTER: 101. (Type: no. 6281a,b (MCZ)).
- 1932 **Paedephemera mortua** - CARPENTER: 102. (Type: no. 6283 (MCZ)).
- 1932 **Hexagenites weyenberghii** - CARPENTER: 102, fig. 1. (Type: no. 6277 (MCZ)).
- 1934 **Paedephemera multinervosa** - LAMEERE: fig. 212.
- 1935 **Paedephemera multinervosa** - NEEDHAM, TRAVER, & HSU: fig. 71.
- 1939 **Paedephemera mortua** - HANDLIRSCH: 163. (Type: (Senckenb. Mus.)).
- 1949 **Paedephemera multinervosa** - JEANNEL: fig. 30.
- 1953 **Hexagenites weyenberghii** - DEMOULIN: pl. 1 fig. 1.
- 1953 LAURENTIAUX: 430.
- 1953 **Paedephemera multinervosa** - LAURENTIAUX: 430
- 1953 **Paedephemera mortua** - LAURENTIAUX: 430.
- 1953 **Hexagenites weyenberghii** - LAURENTIAUX: fig. 29.
- 1953 **Mesephemera cellulosa** - LAURENTIAUX: 430.
- 1954 **Hexagenites weyenberghii** - DEMOULIN: 326. (1954a).
- 1954 **Mesephemera cellulosa** - DEMOULIN: 565. (1954b).
- 1954 **Paedephemera oppenheimi** - DEMOULIN: 565. (1954b).
- 1954 **Paedephemera multinervosa** - DEMOULIN: 565. (1954b).
- 1954 **Hexagenites weyenberghii** - DEMOULIN: 566. (1954b).
- 1954 **Stenodicranum cellulosum** - DEMOULIN: 571. (1954b).
- 1955 **Paedephemera multinervosa** - DEMOULIN: 4. (1955c).
- 1955 **Hexagenites weyenberghii** - DEMOULIN: 5. (1955c).

- 1955 **Hexagenites mortua** - DEMOULIN: 5, fig. 1, pl. 1. (1955c).
- 1956 **Paedephemera multinervosa** - VERRIER: fig. 21(b).
- 1961 **Paedephemera multinervosa** - TSHERNOVA: 859.
- 1961 **Hexagenites weyenberghi** - TSHERNOVA: 861, fig. 1.
- 1961 **Hexagenites mortua** - TSHERNOVA: 861.
- 1962 **Paedephemera multinervosa** - TSHERNOVA: fig. 63. (1962a).
- 1962 **Hexagenites weyenberghi** - TSHERNOVA: fig. 67. (1962a).
- 1967 **Hexagenites weyenberghii** - DEMOULIN: 1. (1967a).
- 1967 **Hexagenites weyenberghi** - DEMOULIN: 1, fig. 1, pl 1. (1967a). (Holotype female (BMNH)).
- 1967 **Ephemera multinervosa** - DEMOULIN: 6. (1967a).
- 1967 **Ephemera mortua** - DEMOULIN: 7. (1967a).
- 1967 **Paedephemera oppenheimi** - DEMOULIN: 7. (1967a).
- 1967 **Ephemera cellulosa** - DEMOULIN: 7. (1967a).
- 1970 **Paedephemera multinervosa** - DEMOULIN: 1. (1970c).
- 1970 DEMOULIN: 5, fig. 1, pl. 1. (1970c).
- 1970 **Paedephemera multinervosa** - TSHERNOVA: 126.
- 1970 **Hexagenites weyenberghi** - TSHERNOVA: 126.
- 1970 **Hexagenites mortua** - TSHERNOVA: 126.
- 1971 DEMOULIN: 1, fig. 1.

Hexameropsis TSHERNOVA & SINITSHENKOVA, 1974

- 1974 TSHERNOVA & SINITSHENKOVA: 132. (Type-species: **Hexameropsis selini** TSHERNOVA & SINITSHENKOVA, original designation).
- 1975 SINITSHENKOVA: 85.
- 1984 SINITSHENKOVA: 64.

Note. Known from the Lower Cretaceous of the USSR and Algeria (probably also from Brazil and Mongolia); nymph and adult. Contains two species.

Hexameropsis africana SINITSHENKOVA, 1975

- 1975 SINITSHENKOVA: 86, fig. 1e, pl. 10 fig. 6 (Holotype: nymph, no. 3394/3 (PIN): Algeria, Lower Cretaceous).
- 1978 **Hexameropsis africanus** - ZHERICHIN: 11.
- 1984 SINITSHENKOVA: 64.

Hexameropsis selini TSHERNOVA & SINITSHENKOVA, 1974

- 1974 TSHERNOVA & SINITSHENKOVA: 133, fig. 3-4, pl. fig. 6-7.
(Holotype: no. 2990/1 (PIN); Southern Ukraine, Lower
Cretaceous).
1975 SINITSHENKOVA: 85, fig. 1v-d, pl. 10 fig. 3-5.
1984 SINITSHENKOVA: 64.

Siberiogenites SINITSHENKOVA, 1985

- 1984 SINITSHENKOVA: 63. [nomen nudum].
1985 SINITSHENKOVA: 20. (Type species: **Siberiogenites angustatus**
SINITSHENKOVA, original designation).

Note. Reported from the Jurassic of Transbaikal and Western
Mongolia; nymph. Contains two species.

Siberiogenites angustatus SINITSHENKOVA, 1985

- 1984 SINITSHENKOVA: 63. [nomen nudum].
1985 SINITSHENKOVA: 21, fig. 8, pl. 2 fig. 2. (Holotype: nymph,
no. 3000/646 (PIN); Novospasskoe, Jurassic).

Siberiogenites rotundatus SINITSHENKOVA, 1985

- 1984 SINITSHENKOVA: 63. [nomen nudum].
1985 SINITSHENKOVA: 21, fig. 9, pl. 2 fig. 3. (Holotype: nymph
no. 3792/15 (PIN); Oshin-Boro-Udzyur-Ula, Jurassic).

Family **Aenigmephemeridae** TSHERNOVA, 1968

- 1968 TSHERNOVA: 23.
Note. Contains one genus.

Aenigmephemera TSHERNOVA, 1968

- 1968 TSHERNOVA: 23. (Type-species: **Aenigmephemera demoulini**
TSHERNOVA, original designation).
1969 DEMOULIN: 1. (1969a).
1972 EDMUNDS: 25.
1985 LANDA & SOLDÁN: 102.

Note. Known from the Jurassic of the USSR; adult. Contains
one species.

Aenigmephemera demoulini TSHERNOVA, 1968

- 1967 TSHERNOVA: 326. [nomen nudum].
1968 TSHERNOVA: 24, fig., pl. 1 fig.1. (Holotype: no. 2239/25
 (PIN); Karatau, USSR, Jurassic).
1969 DEMOULIN: 1, fig. 1. (1969a).
1970 TSHERNOVA: 126.

Suborder **Schistonota** McCAFFERTY & EDMUNDS, 1979

Superfamily **Baetoidea** LEACH, 1815

Family **Baetidae** LEACH, 1815

- 1815 **Baetida** LEACH: 137.
1853 **Cloeonidae** NEWMAN: 187.

Note. Contains one fossil genus and two extant genera with fossil species. Also contains other extant genera.

Baetis LEACH, 1815

- 1815 LEACH: 137.
1840 **Brachyphlebia** WESTWOOD: 25. (Type-species: **Ephemera fuscata** Linnaeus as **Ephemera bioculata**, monotypy).
1966 International Commission on Zoological Nomenclature: 209.
 (designates **Ephemera fuscata** Linnaeus as type-species).
1976 EDMUNDSS, JENSEN, & BERNER: 158.
Note. Known from Eocene Baltic amber; adult. Contains two fossil species. Also contains extant species.

Baetis gigantea HAGEN, 1856

- 1856 HAGEN in PICTET-BARABAN & HAGEN: 75 (Amber).
1871 EATON: 134.
1907 HANDLIRSCH: 906. (Baltic amber).
1955 DEMOULIN: 1. (1955a).

Baetis grossa HAGEN, 1856

- 1856 HAGEN in PICTET-BARABAN & HAGEN: 75.

- 1871 EATON: 134.
1907 HANDLIRSCH: 906. (Baltic amber).
1955 DEMOULIN: 1. (1955a).

Cloeon LEACH, 1815

- 1815 LEACH: 137. (Type-species: **Ephemera diptera** Linnaeus as **Cloeon pallida** LEACH, monotypy).
1839 **Cloe** BURMEISTER: 797. [unjustified emendation of **Cloeon** LEACH]. (Type-species: **Ephemera diptera** LINNAEUS, objective synonymy).
1866 **Cloeopsis** EATON: 146. (Type-species: **Ephemera diptera** LINNAEUS, monotypy).
1932 **Austrocloeon** BARNARD: 217. [nomen nudum].
1932 **Neocloeon** TRAVER: 365. (Type-species: **Neocloeon alamance** TRAVER, original designation).
1940 **Austrocloeon** BARNARD: 616. (Type-species: **Cloeon africanum** ESBEN-PETERSEN, original designation).
1976 EDMUNDS, JENSEN, & BERNER: 172.
Note. Fossils known from the Pliocene of Australia; nymph. Contains one fossil species. Also contains extant species.

Cloeon emmavillensis RIEK, 1954

- 1890 **Ephemera culleni** [partim] ETHERIDGE & OLLIFF: pl. 1 fig. 9.
1954 RIEK: 160, pl. 10 fig. 6-7. (Holotype: nymph, no. D52 (Austr. Mus.); New England, Australia, Upper Tertiary).

Mesobaetis BRAUER, REDTENBACHER, & GANGLBAUER, 1889

- 1889 BRAUER, REDTENBACHER, & GANGLBAUER: 5. (Type-species: **Mesobaetis sibiricus** BRAUER, REDTENBACHER, & GANGLBAUER, monotypy).
1917 LAMEERE: 47. (1917a).
1934 LAMEERE: 200.
1935 NEEDHAM, TRAVER & HSU: 205.
1953 LAURENTIAUX: 524.
1956 VERRIER: 91.
1958 DEMOULIN: 10.
1962 TSHERNOVA: 62. (1962a).

- 1968 KUKALOVÁ: 310.
1969 LANDA: 53.
1972 EDMUNDS: 25.
1980 KALUDINA: 228.
1981 HUBBARD & SAVAGE: 812.
1985 LANDA & SOLDÁN: 98.
1985 SINITSHENKOVA: 12.

Note. Known from the Jurassic of Siberia, Transbaikal, and Mongolia; nymph and adult. Contains two described species.
SINITSHENKOVA (1985) places this genus in the Siphlonuridae.

Mesobaetis allatus SINITSHENKOVA, 1985

- 1985 **Mesobaetis allata** SINITSHENKOVA: 15, fig. 2, pl. 1 fig. 2.
(Holotype nymph n. 2375/57 (PIN); Ust Balei in Siberia).

Mesobaetis sibiricus

BRAUER, REDTENBACHER, & GANGLBAUER, 1889

- 1889 **Mesobaetis sibirica** BRAUER, REDTENBACHER, & GANGLBAUER: 5,
fig. 3. (nymph; Eastern Siberia, Jurassic).
1906 **Mesobaetis sibirica** - HANDLIRSCH: 603, pl. 46 fig. 30. (Ust
Balei in Siberia. Dogger).
1924 **Mesobaetis sibirica** - COCKERELL: 134.
1954 **Mesobaetis sibirica** - DEMOULIN: 326. (1954a).
1957 **Mesobaetis sibirica** - RHODENDORF: 76.
1962 **Mesobaetis sibirica** - TSHERNOVA: fig. 76. (1962a).
1968 **Mesobaetis sibirica** - DEMOULIN: 5. (1968b).
1969 **Mesobaetis sibirica** - TSHERNOVA: 153.
1969 **Epeoromimus beybienkoi** TSHERNOVA: 156, fig. 3, pl. 6 fig. 2.
(Holotype: nymph, no. 1811/6-7 (PIN): Eastern Siberia,
Lower Jurassic).
1969 **Epeoromimus beybienkoi** - DEMOULIN: 4. (1969c).
1970 **Mesobaetis sibirica** - TSHERNOVA: 126.
1980 **Mesobaetis sibirica** - KALUDINA: 230.
1980 **Epeoromimus beybienkoi** - KALUDINA: 230.
1981 **Mesobaetis sibirica** - HUBBARD & SAVAGE: 812.
1984 **Mesobaetis sibirica** - SINITSHENKOVA: 63.

1985 **Mesobaetis sibirica** - SINITSHENKOVA: 14, fig. 1, pl. 1 fig. 1.

Family **Siphlonuridae** ULMER, 1920(1888)

1888 **Siphlurines** ALBARDA in SELYS-LONGCHAMPS: 150.

1920 ULMER: 131.

1945 **Aphelophlebidae** PIERCE: 3.

1977 PETERS & HUBBARD: 1.

Note. Contains ten fossil genera and one extant genus with fossil species. Also contains other extant genera.

Subfamily **Siphlonurinae** ULMER, 1920(1888)

Note. Contains five fossil genera and one extant genus with a fossil species. Also contains other extant genera.

Aphelophlebodes PIERCE, 1945

1945 PIERCE: 3. (Type-species: **Aphelophlebodes stocki** PIERCE, original designation).

1962 DEMOULIN: 1.

1985 LANDA & SOLDÁN: 102.

Note. Known from the Miocene of California; adult. Contains one species.

Aphelophlebodes stocki PIERCE, 1945

1945 PIERCE: 4, pl. 2. (Holotype: adult, no. A4709, S9006 (LA): California, Upper Miocene).

1962 DEMOULIN: 1, fig. 1.

1968 ILLIES: 7.

Baltameletus DEMOULIN, 1968

1968 DEMOULIN: 238. (1968c). (Type-species: **Baltameletus oligocaenicus** DEMOULIN, original designation).

1970 TSHERNOVA: 126.

1985 LANDA & SOLDÁN: 90.

Note. Known from Eocene Baltic amber; adult. Contains one species.

Baltameletus oligocaenicus DEMOULIN, 1968

1968 DEMOULIN: 238, fig. 3. (1968c). (Type: adult; Baltic amber, Eocene).

Olgisca DEMOULIN, 1970

1935 **Paedephemera** [partim] NEEDHAM, TRAVER & HSU: 205.

1970 DEMOULIN: 6. (1970c). (Type-species: **Paedephemera schwertschlageri** HANDLIRSCH, original designation).

1972 EDMUNDIS: 25.

1974 SINITSHENKOVA: 148.

1980 TSHERNOVA: 36. (1980a).

1985 LANDA & SOLDÁN: 90.

Note. Known from the Jurassic of Bavaria; adult. Contains one species.

Olgisca schwertschlageri HANDLIRSCH, 1906

1906 **Paedephemera schwertschlageri** HANDLIRSCH: 602, pl. 46 fig. 28. (Eichstätt in Bayern; Jurassic).

1932 **Paedephemera schwertschlageri** - CARPENTER: 100.

1935 **Paedephemera schwertschlageri** - NEEDHAM, TRAVER & HSU: 205, fig. 71.

1953 **Paedephemera swcherchlageni** [sic] - LAURENTIAUX: 430.

1954 **Paedephemera schwertschlageri** - DEMOULIN: 565. (1954b).

1955 **Paedephemera schwertschlageri** - DEMOULIN: 7. (1955c).

1956 **Paedephemera schwertschlageri** - VERRIER: fig. 21(c).

1970 DEMOULIN: 7, fig. 2. (1970c).

1970 **Paedephemera schwertschlageri** - DEMOULIN: 4. (1970c).

Proameletus SINITSHENKOVA, 1976

1976 SINITSHENKOVA: 86. (Type-species: **Proameletus caudatus** SINITSHENKOVA, original designation).

1978 ZHERICHIN: 46.

1985 LANDA & SOLDÁN: 90.

Note. Known from the Cretaceous of Transbaikal; adult and nymph. Contains one species.

Proameletus caudatus SINITSHENKOVA, 1976

- 1976 SINITSHENKOVA: 87, fig. 1-2, pl. 6 fig. 1-2. (Holotype: male imago, no. 3015/395 (PIN); Transbaikal, Lower Cretaceous).
1978 ZHERICHIN: 46.
1980 TSHERNOVA: pl. 1 fig. 2-3. (1980a).
1984 SINITSHENKOVA: 65.

Siphlonurus EATON, 1868

- 1868 EATON: 89. (Type-species: **Baetis flavidus** PICTET, original designation).
1871 **Siphlurus** EATON: 125. (unjustified emendation of **Siphlonurus** EATON). (Type-species: **Baetis flavidus** PICTET, objective synonymy).
1912 **Andromina** NAVÁS: 416. (Type-species: **Andromina grisea** NAVÁS, original designation).
1976 EDMUNDS, JENSEN, & BERNER: 138.

Siphlonurus (Siphlonurus) EATON, 1868

Note. Fossils known from Eocene Baltic amber; adult. Contains one fossil species. Also contains extant species.

Siphlonurus (S.) dubiosus DEMOULIN, 1968

- 1968 **Siphlonurus? dubiosus** DEMOULIN: 240, fig. 4. (Holotype: male(?) subimago (Humboldt); Baltic amber, Eocene). (1968c).

Subfamily **Acanthametropodinae** EDMUND

in EDMUND, ALLEN AND PETERS, 1963

- 1963 EDMUND in EDMUND, ALLEN, AND PETERS: 10.
Note. Contains one fossil genus. Also contains extant genera.

Stackelbergisca TSHERNOVA, 1967

- 1967 TSHERNOVA: 323. (Type-species: **Stackelbergisca sibirica** TSHERNOVA, original designation).
1968 DEMOULIN: 1. (1968a).
1968 ILLIES: 6.

- 1968 KUKALOVÁ: 310.
1972 EDMUNDS: 25. (Places in Acanthametropodinae).
1972 EDMUNDS & KOSS: 136.
1973 EDMUNDS: 146. (Places in Acanthametropodinae).
1974 DEMOULIN: 1. (1974a).
1980 KALUDINA: 228.
1980 TSHERNOVA: 36. (1980a).
1985 LANDA & SOLDÁN: 90.
1985 SINITSHENKOVA: 18.

Note. Known from the Jurassic from USSR; adult and nymph.
Contains one species. DEMOULIN (1974a) stated that the
subfamilial placement of this genus was uncertain.

Stackelbergisca sibirica TSHERNOVA, 1967

- 1967 TSHERNOVA: 323, fig. 1-2. (Holotype: imago, no. 2022/720/2
(PIN); Buryatskaya ASSR, Jurassic).
1968 DEMOULIN: 1. (1968a).
1970 TSHERNOVA: 126.
1980 KALUDINA: 230.
1984 SINITSHENKOVA: 63.
1985 SINITSHENKOVA: 18, pl. 1 fig. 4.

Subfamily **Ameletopsinae** EDMUNDS, 1957

- 1957 EDMUNDS: 246.

Note. Contains one fossil genus. Also contains extant
genera.

Balticophlebia DEMOULIN, 1968

- 1968 DEMOULIN: 237. (Type-species: **Balticophlebia hennigi**
DEMOULIN, original designation). (1968c).
1969 DEMOULIN: 7. (1969b).
1970 TSHERNOVA: 126.
1972 EDMUNDS: 25.
1985 LANDA & SOLDÁN: 93.
- Note. Known from Eocene Baltic amber; adult. Contains one
species.

Balticophlebia hennigi DEMOULIN, 1968

1968 DEMOULIN: 238, fig. 2. (Holotype: female imago (Stuttgart); Baltic amber, Eocene).

Subfamily **Coloburiscinae** EDMUNDS, 1963

1963 EDMUNDS in EDMUNDS, ALLEN & PETERS: 11.

Note. Contains four fossil genera. Also contains extant genera.

Cronicus EATON, 1871

1871 EATON: 133. (Type-species: **Baetis anomala** PICTET, monotypy).
1921 HANDLIRSCH: 216.
1954 DEMOULIN: 550. (1954b).
1955 DEMOULIN: 1. (1955a).
1956 DEMOULIN: 95. (1956a).
1958 DEMOULIN: 8.
1962 TSHERNOVA: 61. (1962a).
1968 DEMOULIN: 241. (1968c).
1970 DEMOULIN: 3. (1970c).
1970 TSHERNOVA: 126.
1972 EDMUNDS: 25.
1985 LANDA & SOLDÁN: 94.

Note. Known from Eocene Baltic amber; adult. Contains two species.

Cronicus anomalous (PICTET, 1856)

1854 **Baetis anomala** PICTET: 371. [nomen nudum].
1854 **Baetis anomala** HAGEN: 227. [nomen nudum].
1854 **Baetis longipes** HAGEN: 227. [nomen nudum].
1856 **Baetis anomala** [partim] PICTET in PICTET-BARABAN & HAGEN: 75, pl. 6 fig. 1. (Amber).
1856 **Baetis longipes** HAGEN in PICTET-BARABAN & HAGEN: 76.
1871 EATON: 133, pl. 6 fig. 8.
1871 **Baetis longipes** - EATON: 134.
1885 SCUDDER: fig. 976.
1907 HANDLIRSCH: 906.
1907 **Baetis longipes** - HANDLIRSCH: 906.

- 1923 COCKERELL: 172.
1954 DEMOULIN: 550. (1954b).
1955 DEMOULIN: 1, fig. 1. (1955a).
1955 **Baetis longipes** - DEMOULIN: 1. (1955a).
1956 DEMOULIN: 95. (1956a).
1962 TSHERNOVA: fig. 74. (1962a).
1968 DEMOULIN: 241, fig. 5-9. (1968c). (designation of lectotype:
male imago (Humboldt)).
1968 **Baetis longipes** - DEMOULIN: 243. (1968c). (designation of
lectotype: male imago (Humboldt)).
1974 DEMOULIN: 1, fig. 1. (1974b).

Cronicus major DEMOULIN, 1968

- 1856 **Baetis anomala** [partim] PICTET in PICTET-BARABAN & HAGEN:
75.
1968 DEMOULIN: 245, fig. 10. (1968c). (Holotype: female imago,
(Humboldt)).
1970 DEMOULIN: 1, fig. 1. (1970a).

Mogzonurella SINITSHENKOVA, 1985

- 1985 SINITSHENKOVA: 16. (Type species: **Mogzonurella dissimilis**
SINITSHENKOVA, original designation).
Note. Known from the Jurassic of Transbaikal; nymph.
Contains two species.

Mogzonurella dissimilis SINITSHENKOVA, 1985

- 1985 SINITSHENKOVA: 16, fig. 4, pl. 1 fig. 3. (Holotype: nymph,
no. 3084/44(PIN); Mogzon, Transbaikal, Jurassic).

Mogzonurella longa SINITSHENKOVA, 1985

- 1985 SINITSHENKOVA: 16, fig. 5. (Holotype: nymph, no. 3053/379
(PIN); Uda, Transbaikal, Jurassic).

Mogzonurus SINITSHENKOVA, 1985

- 1985 SINITSHENKOVA: 15. (Type species: **Mogzonurus elevatus**
SINITSHENKOVA, original designation).

Note. Known from the Jurassic of Transbaikal, adult.
Contains one species.

Mogzonurus elevatus SINITSHENKOVA, 1985

1985 SINITSHENKOVA: 15, fig. 3. (Holotype: male, imago no. 3084/2
(PIN); Mogzon, Transbaikal, Jurassic).

Siphlurites COCKERELL, 1923

1923 COCKERELL: 170. (Type-species: **Siphlurites explanatus**
COCKERELL, original designation).

1954 DEMOULIN: 553. (1954b).

1958 DEMOULIN: 8.

1962 TSHERNOVA: 61. (1962a).

1970 DEMOULIN: 1 (1970c).

1970 TSHERNOVA: 61.

1972 EDMUNDS: 25.

1974 DEMOULIN: 3 (1974b).

1985 LANDA & SOLDÁN: 94.

Note. Known from the Miocene of Florissant; adult. Contains
one species.

Siphlurites explanatus COCKERELL, 1923

1923 COCKERELL: 171. (Florissant, Miocene).

1970 DEMOULIN: 1, fig. 1. (1970c). (Holotype (Denver)).

1971 DEMOULIN: 4.

Family **Ametropodidae** BENGTSSON, 1913

1913 **Ametropidae** BENGTSSON: 305.

Note. Contains one fossil genus. Also contains extant
genera.

Brevitibia DEMOULIN, 1968

1968 DEMOULIN: 245. (1968c). (Type-species: **Brevitibia intricans**
DEMOULIN, original designation).

1970 TSHERNOVA: 126.

1985 LANDA & SOLDÁN: 93.

Note. Known from Eocene Baltic amber; adult. Contains one

species. TSHERNOVA (pers.comm.) states that this genus is indeterminable and does not belong to the Ametropodidae.

Brevitibia intricans DEMOULIN, 1968

1968 DEMOULIN: 247, fig. 11. (Holotype: male subimago (Stuttgart); Baltic amber, Eocene).

Family **Metretopodidae** TRAVER, 1935

1935 **Metretopinae** TRAVER in NEEDHAM, TRAVER & HSU:433.

1938 **Siphloplectidae** LESTAGE: 180.

Note. Contains two extant genera with fossil species. Also contains other extant genera.

Metretopus EATON, 1901

1901 EATON: 253. (Type-species: **Metretopus norvegicus** EATON, original designation).

1970 TSHERNOVA: 126.

1976 EDMUNDS, JENSEN, & BERNER: 148.

Note. Fossil species known from Oliogocene Baltic amber; adults. Contains two fossil species. Also contains extant species.

Metretopus henningseni DEMOULIN, 1965

1965 DEMOULIN: 144, fig. 1. (Holotype: adult (København); Baltic amber, Eocene).

1968 DEMOULIN: 249. (1968c).

Metretopus trinervus DEMOULIN, 1968

1968 DEMOULIN: 247, fig. 12-13. (1968c). (Holotype: male subimago (Stuttgart); Baltic amber, Oliogocene).

Siphloplecton CLEMENS, 1915

1915 CLEMENS: 258. (Type-species: **Siphlurus flexus** CLEMENS, original designation).

1970 TSHERNOVA: 126.

1976 EDMUNDS, JENSEN, & BERNER: 149.

Note. Fossils known from Eocene Baltic amber; adult.

Contains two nominal fossil species. Also contains extant species.

Siphloplecton jaegeri DEMOULIN, 1968

- 1968 DEMOULIN: 252, fig. 18. (1968c). (Holotype: male imago (Humboldt); Baltic amber, Eocene).
1970 DEMOULIN: 3, fig. 3-4.

Siphloplecton macrops (PICTET, 1856)

- 1854 **Palingenia macrops** PICTET: 371. [nomen nudum].
1854 **Palingenia macrops** HAGEN: 227. [nomen nudum].
1856 **Palingenia macrops** PICTET in PICTET-BARABAN & HAGEN: 74, pl. 6 fig. 2, pl. 8 fig. 5.
1907 **Palingenia macrops** - HANDLIRSCH: 906.
1928 **Palingenia macrops** - BACHOFEN-ECHT: fig. 21.
1955 **Palingenia macrops** - DEMOULIN: 1. (1955a).
1968 DEMOULIN: 249, fig. 14-17. (1968c).
1970 **Siphloplecton ?macrops** - DEMOULIN: 2, fig. 2. (1970a).
1974 DEMOULIN: 4. (1974b).

Siphloplecton sp. DEMOULIN, 1968

- 1968 DEMOULIN: 254, fig. 19. (1968c). (Female (Stuttgart)).

Family **Oligoneuriidae** ULMER, 1914

- 1914 ULMER: 97.

Note. Contains one fossil genus and one extant genus with fossil species. Also contains other extant genera.

Subfamily **Oligoneuriinae** ULMER, 1914

Protoligoneuria DEMOULIN, 1955

- 1955 DEMOULIN: 271. (Type-species: **Protoligoneuria limai** DEMOULIN, original designation; Brazil, Etat de Ceara, Calcareous). (1955e).
1958 DEMOULIN: 9.
1962 TSHERNOVA: 62. (1962a).
1985 LANDA & SOLDÁN: 95.

Note. Known from limestone of Brazil; nymph. Contains one species.

Protoligoneuria limai DEMOULIN, 1955

1950 (unnamed nymph) da COSTA LIMA: 419, fig. 1-3.

1955 DEMOULIN: 271. (1955e). (Type: nymph; Brazil).

Subfamily **Isonychiinae** BURKS, 1953

1953 BURKS: 108.

Note. Contains one extant genus with fossil species. Also contains other extant genera.

Isonychia EATON, 1871

1871 EATON: 33, 134. (Type-species: **Isonychia manca** EATON, original designation).

1881 **Jolia** EATON: 192. (Type-species: **Palingenia roeselli** JOLY, original designation).

1881 **Chirotonetes** EATON: 21. [new name for **Isonychia** EATON].

(Type-species: **Isonychia manca** EATON, objective synonymy).

1970 **Eatonia** ALI: 121. [preoccupied]. (Type-species: **Eatonia khyberensis** ALI, monotypy).

1972 EDMUNDS: 25.

1976 EDMUNDS, JENSEN, & BERNER: 144.

Note. Known from the Oligocene of Montana, USA; nymph. Contains one fossil species. Also contains extant species.

Isonychia alderensis LEWIS, 1977

1977 LEWIS: 585, fig. 2. (Holotype: nymph, no. C-3 (Lewis); Montana, Oligocene).

Family **Heptageniidae** NEEDHAM in NEEDHAM & BETTEN, 1901

1901 **Heptageninae** NEEDHAM in NEEDHAM & BETTEN: 419.

1905 **Ecdyuridae** YAKOBENOM & BIANKI: 877.

1917 **Rhithrogeninae** LESTAGE: 266.

1920 **Ecdyonuridae** ULMER: 136.

Subfamily **Heptageniinae**

NEEDHAM in NEEDHAM & BETTEN, 1901

Note. Contains two fossil genera and three extant genera with fossil species. Also contains other extant genera.

Cinygma Eaton, 1885

- 1885 EATON: 247. (Type-species: **Cinygma integrum** Eaton, original designation).
1932 ULMER: 218.
1974 TSHERNOVA: 810.
1974 BAJKOVA: 815.
1976 TSHERNOVA: 332.
1976 EDMUNDS, JENSEN & BERNER: 186.
1980 TSHERNOVA: 107.

Note. Contains one fossil species. Also contains extant species.

Cinygma baltica (DEMOULIN, 1968)

- 1968 **Cinygma baltica** DEMOULIN: 254, fig. 20. (1968c). (Holotype: male imago (Humboldt); Baltic amber, Eocene).

Note. TSHERNOVA (pers.comm.) places this in Rhithrogena because of genitalia.

Heptagenia WALSH, 1963

- 1863 WALSH: 197.
1868 EATON: 90. (designates **Palingenia flavescens** WALSH as type-species).
1931 **Kageronia** MATSUMURA: 1479. (Type-species: **Kageronia suzukiella** MATSUMURA, monotypy).
1970 TSHERNOVA: 126.
1976 EDMUNDS, JENSEN, & BERNER: 194.

Note. Fossils known from Eocene Baltic amber. Contains five fossil species. Also contains extant species.

Heptagenia atypica DEMOULIN, 1968

- 1968 **Heptagenia atypica** DEMOULIN: 258, fig. 24. (Holotype: male imago (Humboldt); Baltic amber, Eocene).

Note. TSHERNOVA (pers.comm.) places this in **Epeorus** because of genitalia.

Heptagenia bachofeni DEMOULIN, 1968

- 1949 "Eintagsfliege oder Ephemeride" BACHOFEN-ECHT: 77, fig. 66.
1965 **Oligophlebia** [sp.] DEMOULIN: 150.
1968 DEMOULIN: 256, fig. 22-23. (1968c). (Holotype: male (BS); Baltic amber, Eocene).
1970 **Heptagenia ?bachofeni** - DEMOULIN: 5.

Heptagenia gleissi DEMOULIN, 1968

- 1954 "In Bernstein eingeschlossene Eintagsfliege" GLEISS: 40, fig. 23.
1968 DEMOULIN: 259, fig. 25. (1968c). (Holotype: male imago (Humboldt); Baltic amber, Eocene).

Heptagenia ligata DEMOULIN, 1968

- 1968 DEMOULIN: 260, fig. 26. (1968c). (Holotype: female imago (Stuttgart); Baltic amber, Eocene).

Heptagenia senex DEMOULIN, 1968

- 1968 DEMOULIN: 255, fig. 21. (1968c). (Holotype: male imago (Humboldt); Baltic amber, Eocene).

Miocoenogenia TSHERNOVA, 1962

- 1962 TSHERNOVA: 944. (1962b). (Type-species: **Miocoenogenia gorbunovi** TSHERNOVA, original designation).

1962 TSHERNOVA: 64 (1962a).

1985 LANDA & SOLDÁN: 95.

Note. Fossil known from Oligocene of Siberia; nymph. Contains one species.

Miocoenogenia gorbunovi TSHERNOVA, 1962

- 1962 TSHERNOVA: 944, fig. 1. (1962b). (Holotype: nymph no. 437/8 (PIN); West Siberia, Oligocene).
1962 TSHERNOVA: 64, fig. 83. (1962a). (Nymph).

Rhithrogena EATON, 1881

1881 EATON: 23. (Type-species: **Baetis semicoloratus** CURTIS, original designation).

1970 TSHERNOVA: 126.

1976 EDMUNDSEN, JENSEN, & BERNER: 198.

Note. Fossils known from Eocene Baltic amber; adult. Contains one nominal fossil species. Also contains extant species.

Rhithrogena sepulta DEMOULIN, 1968

1968 DEMOULIN: 261, fig. 27. (1968c). (Holotype: male imago (Humboldt); Baltic amber, Eocene).

Rhithrogena sp. 1 DEMOULIN, 1968

1968 **Rhithrogena** sp. DEMOULIN: 261, fig. 28. (male imago (Humboldt); Baltic amber, Eocene). (1968c).

Rhithrogena sp. 2 DEMOULIN, 1968

1968 **Rhithrogena?** sp. DEMOULIN: 262, fig. 29. (1968c). (Female imago (Stuttgart)).

Succinogenia DEMOULIN, 1965

1965 DEMOULIN: 151 (Type-species: **Succinogenia larssoni** DEMOULIN, original designation).

1968 DEMOULIN: 236. (1968c).

1970 TSHERNOVA: 126.

1985 LANDA & SOLDÁN: 95.

Note. Known from Eocene Baltic amber; nymph. Contains one species.

Succinogenia larssoni DEMOULIN, 1965

1965 DEMOULIN: 151, fig. 5. (Holotype: nymph (København); Baltic amber, Eocene).

1968 ILLIES: fig. 10.

Subfamily **Arthropleinae** BALTHASAR, 1937

1937 **Arthropleidae** BALTHASAR: 204.

Note. Contains one fossil genus. Also contains extant genera.

Electrogenia DEMOULIN, 1956

1956 DEMOULIN: 95. (1956a). (Type-species: **Electrogenia dewalschei** DEMOULIN, original designation).

1958 DEMOULIN: 9.

1962 TSHERNOVA: 64. (1962a).

1968 ILLIES: 7.

1970 TSHERNOVA: 126.

1985 LANDA & SOLDÁN: 95.

Note. Known from Eocene Baltic amber; adult. Contains one species.

Electrogenia dewalschei DEMOULIN, 1956

1956 DEMOULIN: 96, fig. 1. (1956a). (Holotype: male imago (DeWalsche); Baltic amber, Eocene).

1962 TSHERNOVA: fig. 82. (1962a).

1968 ILLIES: fig. 7.

Family **Epeoromidiidae** TSHERNOVA, 1969

1969 TSHERNOVA: 154.

Note. Contains two genera.

Epeoromimus TSHERNOVA, 1969

1969 TSHERNOVA: 156. (Type-species: **Epeoromimus kazlauskas** TSHERNOVA, original designation).

1970 TSHERNOVA: 126.

1972 EDMUNDS: 25.

1974 SINITSHENKOVA: 148.

1980 KALUDINA: 228.

1980 ZHERICHIN: 41.

1985 LANDA & SOLDÁN: 93.

1985 SINITSHENKOVA: 21.

Note. Known from the Jurassic and Cretaceous of Siberia and Transbaikal; nymph. Contains three species.

Epeoromimus cretaceus SINITSHENKOVA, 1976

1976 SINITSHENKOVA: 92, fig. 3i-1, pl. 6 fig. 6. (Holotype: nymph, no. 3015/411 (PIN); Transbaikal, Lower Cretaceous).

Epeoromimus kazlauskasi TSHERNOVA, 1969

1969 TSHERNOVA: 155, fig. 1-2, pl. 6 fig. 1. (Holotype: nymph, no. 2791/1 (PIN); Western Siberia, Lower Jurassic).

1969 DEMOULIN: 2. (1969c).

1980 KALUDINA: 230.

1984 SINITSHENKOVA: 63.

Foliomimus SINITSHENKOVA, 1985

1985 SINITSHENKOVA: 21. (Type species: **Epeoromimus tertius** TSHERNOVA, original designation).

Note. Known from the Jurassic of Siberia; nymph. Contains two species.

Foliomimus imitans SINITSHENKOVA, 1985

1985 SINITSHENKOVA: 22, fig. 10, pl. 2 fig. 6. (Holotype: nymph, no. 2245/14 (PIN); Chernii Etap-1, Jurassic).

Foliomimus tertius (TSHERNOVA, 1969)

1969 **Epeoromimus tertius** TSHERNOVA: 157, fig. 4, pl. 6 fig. 3. (Holotype: nymph, no. 2744/1605/41 (PIN); Eastern Siberia, Lower Jurassic).

1969 **Epeoromimus tertius** - DEMOULIN: 4. (1969c).

1980 **Epeoromimus tertius** - KALUDINA: 230.

1985 SINITSHENKOVA: 21.

Superfamily **Leptophleboidea** BANKS, 1900

Note. Contains two fossil genera and three extant genera with fossil species. Also contains other extant genera.

Family **Leptophlebiidae** BANKS, 1900

1900 **Leptophlebini** BANKS: 246.

Subfamily **Leptophlebiinae** BANKS, 1900

Paraleptophlebia LESTAGE, 1917

- 1917 LESTAGE: 340.
- 1924 LESTAGE: 42. (designates **Ephemera cincta** RETZIUS as type-species).
- 1965 **Oligophlebia** DEMOULIN: 146. (Type-species: **Oligophlebia calliarcys** DEMOULIN, original designation).
- 1968 **Oligophlebia** - DEMOULIN: 265. (1968c).
- 1968 DEMOULIN: 265. (1968c).
- 1970 DEMOULIN: 7. (1970a).
- 1970 TSHERNOVA: 126.
- 1970 **Oligophlebia** - TSHERNOVA: 126.
- 1976 EDMUNDS, JENSEN, & BERNER: 230.

Note. Known from Eocene Baltic amber; adult. Contains one fossil species. Also contains extant species.

Paraleptophlebia prisca (PICTET, 1856)

- 1854 **Potamanthus prisca** HAGEN: 277. [nomen nudum]. (Amber).
- 1854 **Potamanthus prisca** PICTET: 371. [nomen nudum].
- 1856 **Potamanthus prisca** PICTET in PICTET-BARABAN & HAGEN: 77, pl. 6 fig. 3 (Amber).
- 1871 **Leptophlebia prisca** - EATON: 37, 87.
- 1907 **Leptophlebia prisca** - HANDLIRSCH: 906. (Baltic amber).
- 1955 **Potamanthus prisca** - DEMOULIN: 1. (1955a).
- 1965 **Oligophlebia? calliarcys** DEMOULIN: 146, fig. 2. (Holotype: male imago (København); Baltic amber, Eocene).
- 1965 **Oligophlebia? longiceps** DEMOULIN: 147, fig. 3a. (Holotype: male imago (København); Baltic amber, Eocene).
- 1965 **Oligophlebia?** sp. 1 DEMOULIN: 149, fig. 3b. (male imago? (København); Baltic amber, Eocene).
- 1965 **Oligophlebia?** sp. 2 DEMOULIN: 149, fig. 4. (subimaginal exuvia (København); Baltic amber, Eocene).
- 1968 DEMOULIN: 263, 275, fig. 30-32, 33c-d, 39. (1968c). (Lectotype designation: male imago (Humboldt)).
- 1968 **Oligophlebia calliarcys** - DEMOULIN: 266, fig. 33a-b. (1968c).

1970 DEMOULIN: 9, fig. 7-9. (1970a).

1981 HUBBARD & SAVAGE: 810.

Subfamily **Atalophlebiinae** PETERS, 1980

1980 PETERS: 38.

Atalophlebia EATON, 1881

1881 EATON: 193. (Type-species: **Ephemera australis** WALKER,
original designation).

Note. Fossils known from the Upper Tertiary of Australia and
the Eocene of Argentina; fossils known from adult and nymph.
Contains one nominal fossil species. Also contains extant
species.

Atalophlebia culleni (ETHERIDGE & OLLIFF, 1890)

1890 **Ephemera culleni** [partim] ETHERIDGE & OLLIFF: 8, pl. 1 fig.
3-8.

1907 (Perlidae) **culleni** - HANDLIRSCH: 896.

1954 RIEK: 159, pl. 10 fig. 1-5. (Lectotype designation, no. D112
(Austr. Mus.); New England, Australia, Upper Tertiary).

1981 HUBBARD & SAVAGE: 810.

Atalophlebia sp. ROSSI de GARCIA, 1983

1983 **Atalophlebia** sp. A ROSSI de GARCIA: 29, fig. 4, 6. (nymph
(APN); Argentina, Eocene).

Blasturophlebia DEMOULIN, 1968

1968 DEMOULIN: 268. (1968c). (Type-species: **Blasturophlebia**
hirsuta DEMOULIN, original designation).

1970 TSHERNOVA: 126.

1981 HUBBARD & SAVAGE: 811.

1985 LANDA & SOLDÁN: 97.

Note. Known from Eocene Baltic amber. Contains one species.

Blasturophlebia hirsuta DEMOULIN, 1968

1949 "Ephemeride oder Eintagsfliege" BACHOFEN-ECHT: 74, fig. 64.

1968 DEMOULIN: 270, fig. 36. (Holotype: male subimaginal exuvia (BS); Baltic amber, Eocene).

1981 HUBBARD & SAVAGE: 811.

Choroterpes EATON, 1881

1881 EATON: 194. (Type-species: **Choroterpes lusitanica** EATON, original designation).

1976 EDMUNDS, JENSEN, & BERNER: 214.

Note. Known from Eocene Baltic amber, adult. Contains one unnamed fossil species. Also contains extant species.

Choroterpes subgenus incertus

Choroterpes sp. DEMOULIN, 1968

1968 **Choroterpes?** sp. DEMOULIN: 267, fig. 34. (female subimaginal exuvia (Humboldt); Baltic amber, Eocene).

1970 TSHERNOVA: 126.

1981 HUBBARD & SAVAGE: 812.

Xenophlebia DEMOULIN, 1968

1968 DEMOULIN: 267. (1968c). (Type-species: **Xenophlebia aenigmatica** DEMOULIN, original designation).

1970 TSHERNOVA: 126.

1985 LANDA & SOLDÁN: 97.

Note. Known from Eocene Baltic amber; adult. Contains one species.

Xenophlebia aenigmatica DEMOULIN, 1968

1968 DEMOULIN: 268, fig. 35. (1968c). (Holotype: male imago (BS); Baltic amber, Eocene).

1970 DEMOULIN: 6, fig. 6. (1970a).

1981 HUBBARD & SAVAGE: 811.

Subfamily **Mesonetinae** TSHERNOVA, 1969

1969 Mesonetidae TSHERNOVA: 158.

Note. Contains two genera.

Cretoneta TSHERNOVA, 1971

- 1971 TSHERNOVA: 614. (Type-species: **Cretoneta zherichini** TSHERNOVA, original designation).
1979 DEMOULIN: 2. (1979b).
1980 ZHERICHIN: 42.
1980 TSHERNOVA: 36. (1980a).
1981 HUBBARD & SAVAGE: 811.
1985 LANDA & SOLDÁN: 97.

Note. Known from the Cretaceous of Siberia; adult. Contains one species.

Cretoneta zherichini TSHERNOVA, 1971

- 1971 TSHERNOVA: 614, fig. 1-4. (Holotype: adult, no. 3130/4 (PIN); Polar Siberia, Cretaceous).
1979 DEMOULIN: 1. (1979b).
1981 HUBBARD & SAVAGE: 811.

Mesoneta BRAUER, REDTENBACHER, & GANGLBAUER, 1889

- 1889 BRAUER, REDTENBACHER, & GANGLBAUER: 4. (Type-species: **Mesoneta antiqua** BRAUER, REDTENBACHER, & GANGLBAUER, monotypy).

- 1953 LAURENTIAUX: 524.
1958 DEMOULIN: 10.
1962 TSHERNOVA: 62. (1962a).
1968 DEMOULIN: 1. (1968b).
1968 ILLIES: 6.
1968 KUKALOVÁ: 310
1969 TSHERNOVA: 159.
1971 TSHERNOVA: 616.
1972 EDMUNDS: 25.
1973 ZHERICHIN & SUKACHEVA: 24.
1974 SINITSHENKOVA: 148.
1976 SINITSHENKOVA: 90.
1979 DEMOULIN: 2. (1979b).
1980 KALUDINA: 228.
1980 TSHERNOVA: 35. (1980a).
1980 ZHERICHIN: 42.

1981 HUBBARD & SAVAGE: 811.

1985 LANDA & SOLDÁN: 97.

1985 SINITSHENKOVA: 18.

Note. Known from the Jurassic and Cretaceous of Siberia, Transbaikal, China, and Mongolia; nymph. Contains five nominal species.

Mesoneta antiqua

BRAUER, REDTENBACHER, & GANGLBauer, 1889

1889 BRAUER, REDTENBACHER, & GANGLBauer: 4, fig. 2. (nymph;
Eastern Siberia, Jurassic).

1906 HANDLIRSCH: 603, pl. 46, fig. 31-32.

1924 COCKERELL: 134.

1957 RHODENDORF: 76.

1962 TSHERNOVA: fig. 79. (1962a).

1968 DEMOULIN: 1. (1968b).

1969 DEMOULIN: 1. (1969c).

1969 TSHERNOVA: 159, fig. 5.

1970 TSHERNOVA: 126.

1976 SINITSHENKOVA: pl. 6 fig. 5.

1979 DEMOULIN: 3 (1979b).

1980 KALUDINA: 230.

1981 HUBBARD & SAVAGE: 811

1984 SINITSHENKOVA: 63.

1985 SINITSHENKOVA: 13, pl. 1 fig. 5. (designation of lectotype
no. MB.1.96 (Humboldt)).

Mesoneta lata SINITSHENKOVA, 1976

1976 SINITSHENKOVA: 90, fig. 3a-g, pl. 6 fig. 4. (Holotype:
nymph, no. 3015/813 (PIN); Transbaikal, Cretaceous).

1981 HUBBARD & SAVAGE: 811.

Mesoneta magna SINITSHENKOVA, 1985

1985 SINITSHENKOVA: 20, fig. 7, pl. 2 fig. 1. (Holotype: nymph,
no. 3436/13 (PIN); Borzhe-II, Jurassic).

Mesoneta undina SINITSHENKOVA, 1976

- 1976 SINITSHENKOVA: 90, fig. 3d-e, pl. 6 fig. 3. (Holotype: nymph, no. 3015/814 (PIN); Transbaikal, Cretaceous).
1981 HUBBARD & SAVAGE: 811.

Mesoneta utriculata SINITSHENKOVA, 1985

- 1985 SINITSHENKOVA: 19, fig. 6, pl. 1 fig. 6. (Holotype: nymph, no. 2375/64 (PIN); Ust Balei).

Mesoneta sp.

- 1976 LIN: 99, pl. 1 fig. 13.

Leptophlebiidae subfam. incertus

Lepismophlebia DEMOULIN, 1968

- 1968 DEMOULIN: 7. (1968b). (Type-species: **Lepisma platymera** SCUDDER, original designation).
1985 LANDA & SOLDAN: 97.

Note. Known from the Florissant; nymph. Contains one species.

Lepismophlebia platymera (SCUDDER, 1890)

- 1890 **Lepisma platymera** SCUDDER: 102, pl. 12 fig. 18. (Holotype: nymph, no. 1693; Florissant).
1956 **Mesobaetis(?) platymera** - DEMOULIN: 263 (1956a).
1968 DEMOULIN: 7. (1968b).
1981 HUBBARD & SAVAGE: 812.

Superfamily **Ephemeroidae** LEACH, 1815

Family **Ephemeridae** LEACH, 1815

- 1815 **Ephemerida** LEACH: 137.
1957 **Ichthybotidae** DEMOULIN: 336.

Note. Contains one fossil genus and three extant genera with fossil species.

Ephemera LINNAEUS, 1758

1758 LINNAEUS: 546.

1836 WESTWOOD: 439. (designates **Ephemera vulgata** LINNAEUS as type-species).

1922 **Nirvius** NAVÁS: 56. (Type-species: **Nirvius punctatus** NAVÁS, original designation).

1976 EDMUNDIS, JENSEN, & BERNER: 282.

Note. Contains eight nominal fossil species. Also contains extant species. Known from the Florissant of Colorado and the Jurassic of Germany.

Ephemera subgenus incertus

Ephemera deposita

1874 WEYENBERGH: 86, 96, pl. 3 fig. 14. (Type: adult no. 6501 (Teyler); Solenhofen).

1876 WINKLER: 89.

1907 (**Ephemera deposita**) - HANDLIRSCH: 647. (Solenhofen in Bayern, Lithogr. Kalk. Malm, Jurassic).

Ephemera exsucca SCUDDER, 1890

1890 SCUDDER: 124, pl. 12 fig. 9. (Holotype: adult No. 5587; Florissant).

1907 (**Ephemera**) **exsucca** - HANDLIRSCH: 905.

1923 COCKERELL: 172.

Ephemera howarthi COCKERELL, 1923 [nomen nudum]

1923 COCKERELL: 171. [nomen nudum].

Ephemera immobilis SCUDDER, 1890

1890 SCUDDER: 121. (Larva; Florissant).

1907 (**Ephemera**) **immobilis** - HANDLIRSCH: 905.

Ephemera interempta SCUDDER, 1890

1890 SCUDDER: 123. (Larva; Florissant).

1907 (**Ephemera**) **interempta** - HANDLIRSCH: 905.

Ephemera macilenta SCUDDER, 1890

1890 SCUDDER: 122, pl. 12 fig. 4, 10. (Larva, Florissant).
1907 (**Ephemera**) **macilenta** - HANDLIRSCH: 905.

Ephemera oenningensis HEER, 1865 [nomen nudum]

1865 HEER: 370. [nomen nudum].
1879 HEER: 395. [nomen nudum].
1890 SCUDDER: 119. [nomen nudum].
1907 (**Ephemera**) **oenningensis** HANDLIRSCH: 906. [nomen nudum].

Ephemera pumicosa SCUDDER, 1890

1890 SCUDDER: 122, pl. 12 fig. 7, 15-16. (Larva, Florissant).
1907 (**Ephemera**) **pumicosa** - HANDLIRSCH: 905.

Ephemera tabifica SCUDDER, 1890

1890 SCUDDER: 120 (Holotype: larva, no. 13238; Florissant).
1907 (**Ephemera**) **tabifica** - HANDLIRSCH: 906.

Ephemera sp. BENASSI, 1896

1896 BENASSI: 318.

Hexagenia WALSH, 1863

1863 WALSH: 197.
1868 EATON: 85. (designates **Ephemera limbata** SERVILLE as type-species).
1976 EDMUNDS, JENSEN, & BERNER: 284.

Note. Contains one undescribed fossil species. Also contains extant species.

Hexagenia sp. LEWIS, 1978

1978 LEWIS: 479, fig. 1 left. (Montana, Oligocene).

Litobrancha McCAFFERTY, 1971

1971 McCAFFERTY: 45. (Type-species: **Hexagenia recurvata** MORGAN, monotypy).

Note. Fossils known from the Oligocene of Far Eastern USSR; nymph. Contains one fossil species. Also contains extant species.

Litobrancha palearctica

McCAFFERTY & SINITSHENKOVA, 1983

1983 McCAFFERTY & SINITSHENKOVA: 205, fig. 1-4, 6, 8-9.

(Holotype: nymph, no. 3429/1614+- (PIN); Far Eastern USSR, Oligocene).

Parabaetis HAUPT, 1956

1956 HAUPT: 32. (Type-species: **Parabaetis eocaenicus** HAUPT, original designation).

1985 LANDA & SOLDÁN: 100.

Note. Known from the Eocene of Europe; adult. Contains one species.

Parabaetis eocaenicus HAUPT, 1956

1956 HAUPT: 32, fig. 31 (Holotype: adult, G55/23 (Halle); Geiseltales, Eocene).

1957 DEMOULIN: 1, fig. 1. (1957a).

1958 DEMOULIN: 7.

1968 ILLIES: 6, fig. 8.

1970 TSHERNOVA: 127.

Family **Behningiidae** MOTAS & BĀCESCO, 1937

1937 MOTAS & BĀCESCO: 29.

Note. Contains one fossil genus. Also contains extant genera.

Archeobehningia TSHERNOVA, 1977

1977 TSHERNOVA: 94. (Type-species: **Archeobehningia edmundsi** TSHERNOVA, original designation).

1980 KALUDINA: 229.

1980 TSHERNOVA: 33. (1980a).

1985 LANDA & SOLDÁN: 99.

1985 SINITSHENKOVA: 22.

Note. Known from the Jurassic from Transbaikal; nymph. Contains one species.

Archeobehningia edmundsi TSHERNOVA, 1977

1977 TSHERNOVA: 95, fig. 2. pl. 10 fig. 2. (Holotype: nymph, no. 3053/329 (PIN); Transbaikal, Jurassic).

1984 **Archaeobehningia edmundsi** [sic] - SINITSHENKOVA: 63.

1985 SINITSHENKOVA: 22.

Family **Polymitarcyidae** BANKS, 1900

1900 **Polymitarcini** BANKS: 246.

1935 TRAVER in NEEDHAM, TRAVER, and HSU: 241.

Subfamily **Asthenopodinae** EDMUNDS and TRAVER, 1954

1954 EDMUNDS and TRAVER: 239. (1954a).

Note. Contains one fossil genus. Also contains extant genera.

Asthenopodichnium THENIUS, 1979

1979 THENIUS: 185. (Type-species: **Asthenopodichnium xylobiontum** THENIUS, original designation.

Note. Known from Miocene of Austria; known only from burrows in fossil wood. Contains one species.

Asthenopodichnium xylobiontum THENIUS, 1979

1979 THENIUS: 185, fig. 1-2, pl. 1 fig. 3, pl. 2. (Holotype: burrows in fossil wood, no. 1905/VII/8 (Wien); Austria, Miocene.

Family **Palingeniidae**

ALBARDA in SELYS-LONGCHAMPS, 1888

1888 **Palingenines** ALBARDA in SELYS-LONGCHAMPS: 147.

Note. Contains one fossil genus and one extant genus with a fossil species. Also contains other extant genera.

Mesogenesia TSHERNOVA, 1977

1977 TSHERNOVA: 92. (Type-species: **Mesogenesia petersae** TSHERNOVA, original designation).

1980 KALUDINA: 229.

1980 TSHERNOVA: 33. (1980a).

1985 LANDA & SOLDÁN: 101.

1985 SINITSHENKOVA: 22

Note. Known from the Jurassic of Transbaikal; nymph.
Contains one species.

Mesogenesia petersae TSHERNOVA, 1977

1977 TSHERNOVA: 93, fig. 1, pl. 10 fig. 1. (Holotype: no. 3053/333 (PIN); Transbaikal, Jurassic).

1984 SINITSHENKOVA: 63.

1985 SINITSHENKOVA: 22.

Palingenia BURMEISTER, 1839

1839 BURMEISTER: 802.

1863 HAGEN in WALSH: 173. (designates **Ephemera longicauda** OLIVIER [as SWAMMERDAM] as type-species).

Note. Contains one fossil species (as a nomen nudum). Also contains extant species.

Palingenia gigas HAGEN [nomen nudum]

1854 HAGEN: 227. [nomen nudum]

1907 HANDLIRSCH: 906. [nomen nudum]

1955 DEMOULIN: 1. [nomen nudum]

Suborder **Pannota**

Superfamily **Ephemerelloidea** Klapálek, 1909

Family **Ephemerellidae** Klapálek, 1909

1909 Klapálek: 13.

Subfamily **Ephemerellinae** Klapálek, 1909

Note. Contains one fossil genus and one extant genus with a fossil species. Also contains other extant genera.

Timpanoga

- 1927 **Ephemerella (Timpanoga)** NEEDHAM: 115. (Type-species:
Ephemerella hecuba EATON, monotypy).
1970 ?**Timpanoga** - TSHERNOVA: 126.
1972 **Ephemerella** [partim] - EDMUNDS: 25.
1980 ZHERICHIN: 42.
1976 **Ephemerella (Timpanoga)** - EDMUNDS, JENSEN, & BERNER: 251.
1980 ALLEN: 88.

Note. Fossils known from Eocene Baltic amber; adult.
Contains one fossil species. Also contains extant species.

Timpanoga viscata (DEMOULIN, 1968)

- 1968 **Ephemerella (Timpanoga) viscata** DEMOULIN: 270, fig. 37.
(Holotype: male subimago (Humboldt); Baltic amber,
Eocene).

Turfanerella DEMOULIN, 1954

- 1954 DEMOULIN: 324. (Type-species: **Ephemeropsis tingi** PING,
original designation). (1954a).
1958 DEMOULIN: 10.
1962 TSHERNOVA: 64. (1962a).
1968 ILLIES: 6.
1968 **Turfinella** - KUKALOVÁ: 310.
1972 EDMUNDS: 25.
1980 **Turfanella** - ZHERICHIN: 42.
1985 **Turfanella** - LANDA & SOLDÁN: 103.
Note. Known from the Jurassic of China; nymph. Contains one
species.

Turfanerella tingi (PING, 1935)

- 1935 **Ephemeropsis tingi** PING: 109, fig. 2. (China, Jurassic).
1954 DEMOULIN: 322, fig. 1. (1954a).
1962 TSHERNOVA: fig. 80. (1962a).
1970 TSHERNOVA: 126.
1972 EDMUNDS: 24.

Superfamily **Caenoidea** NEWMAN, 1853

Family **Neoephemeridae** TRAVER, 1935

1935 **Neoephemerinae** TRAVER in NEEDHAM, TRAVER & HSU: 288.

Note. Contains one extant genus with fossil species. Also contains other extant genera.

Potamanthellus LESTAGE, 1931

1931 LESTAGE: 120. (Type-species: **Potamanthellus horai** LESTAGE, original designation).

1931 **Rhoenanthodes** LESTAGE: 136. (Type-species: **Rhoenanthodes amabilis** EATON, original designation).

1972 EDMUNDS: 25.

Note. Fossils known from the Oligocene of Montana; nymph. Contains one fossil species. Also contains extant species.

Potamanthellus rubiensis LEWIS, 1977

1977 LEWIS: 583, fig. 1 (Holotype: nymph no. B-60 (Lewis); Montana, Oligocene).

INCERTAE SEDIS

Dyadentomum HANDLIRSCH, 1904

1904 HANDLIRSCH: 7. (Type-species: **Dyadentomum permense** HANDLIRSCH, original designation).

1937 HANDLIRSCH: 83.

1939 HANDLIRSCH: 222.

1968 KUKALOVÁ: 310.

Note. Known from the Permian of the USSR; nymph. Contains one species. KUKALOVÁ (1968) stated that the familial placement of this genus is uncertain.

Dyadentomum permense HANDLIRSCH, 1904

1885 "Orthoptera" KROTOVA: 189, pl. 1 fig. 1.

1894 "Orthopteron gen. et sp. indet." NETSCHAJEW: 380, fig. 3(1).

- 1904 HANDLIRSCH: 7.
1906 HANDLIRSCH: 387, pl. 37 fig. 20. (Dorf Kolpakovo am Flusse Iren in Gouv. Perm. Unteres Perm).
1928 MARTYNOV: 9. (Russ. Perm, Ufimian horizon of Kungurian).
1957 RHODENDORF: 76.

Note. I see little reason to place this taxon in the Ephemeroptera and even less to include it in the Prottereismatidae.

Huizhougenia LIN, 1980

- 1980 LIN: 216. (Type species: **Huizhougenia orbicularis LIN**, original designation).

Note. Known from the late Jurassic or early Cretaceous of China; adult.

Huizhougenia orbicularis LIN, 1980

- 1980 LIN: 216, fig. 1, pl. 1 fig. 1. (Holotype: adult; China, Late Jurassic or early Cretaceous).

Philolimnias HONG, 1979

- 1979 HONG: 336. (Type-species: **Philolimnias sinica HONG**, original designation).

Note. Known from Eocene Chinese amber; adult. Contains one species.

Philolimnias sinica HONG, 1979

- 1979 HONG: 336, fig. 3-8, pl. 1-2. (Holotype: male, no. IV10054 (Peking); Chinese amber, Lower Eocene).

APPENDIX I

The following taxa have been referred at one time or another to the Ephemeroptera but are believed to belong elsewhere. The list of references is intended to be representative, but not exhaustive.

Doter SELLARDS, 1907

- 1907 SELLARDS: 355. (Type-species: **Doter minor** SELLARDS, original designation).
1954 DEMOULIN: 331. (1954c).
1958 DEMOULIN: 5.
1980 CARPENTER: 282.

Doter minor SELLARDS, 1907

- 1907 SELLARDS: 355, fig. 13. (Adult; Kansas, Permian).
1937 HANDLIRSCH: 81.
1985 CARPENTER: 282.

Note. Carpenter (1980) considers this taxon to be be Palaeoptera **incerti ordinis**.

Ephemeraria meyeri WEYENBERGH, 1874

- 1874 WEYENBERGH: 86, 96, pl. 3 fig. 13. (Type: no. 6462 (Teyler); Solenhofen, Jurassic).
1876 WINKLER: 89.
1907 (**Ephemeraria meyeri**) - HANDLIRSCH: 647.

Note. Correct placement uncertain, definitely not Ephemeroptera.

Ephemerites GEINITZ, 1865

- 1865 GEINITZ: 385.

Ephemerites ruckerti GEINITZ, 1865

- 1865 GEINITZ: 385.
1906 HANDLIRSCH: 386. [Protodonata, Meganeuridae].
1882 FRITSCH: 3.

Note. Placement uncertain, perhaps Protodonata.

Esca SELLARDS, 1909

- 1907 **Therates** SELLARDS: 354. (Type-species: **Therates planus** SELLARDS, original designation).
- 1909 SELLARDS: 151. (new name for **Therates** SELLARDS non LATREILLE).
- 1919 HANDLIRSCH: 574.
- 1922 HANDLIRSCH: 61.

Esca plana (SELLARDS, 1907)

- 1907 **Therates planus** SELLARDS: 354. (Kansas, Permian).
- 1919 HANDLIRSCH: 574.
- 1922 HANDLIRSCH: 61.

Note. Placement uncertain, not Ephemeroptera.

Kamia MARTYNOV, 1928

- 1928 MARTYNOV: 4. (Type-species: **Kamia angustovenosa** MARTYNOV, original designation).

Kamia angustovenosa MARTYNOV

- 1928 MARTYNOV: 4, pl. 1 fig. 1. (Adult; Tikhie Gory, Permian).
- 1937 HANDLIRSCH: 81.

Note. Placement uncertain, probably Paleodictyoptera.

Litophlebiidae HUBBARD & RIEK, 1977

- 1977 HUBBARD & RIEK: 260. [New name for **Xenophlebiidae** RIEK].

Litophlebia HUBBARD & RIEK, 1977

- 1976 **Xenophlebia** RIEK: 150. (Type-species: **Xenophlebia optata** RIEK, original designation).
- 1977 HUBBARD & RIEK: 260. (Type-species: **Xenophlebia optata** RIEK objective synonymy). [New name for **Xenophlebia** RIEK non DEMOULIN].
- 1985 LANDA & SOLDÁN: 89.

Litophlebia optata (RIEK, 1976)

1976 **Xenophlebia optata** RIEK: 150, fig. 1-3.

1977 HUBBARD & RIEK: 260.

1980 HUBBARD & KUKALOVÁ-PECK: 29.

Note. Belongs in Megasecoptera.

Mesonetopsis PING, 1935

1935 PING: 112. (Type-species: **Mesonetopsis zingi** Ping, original designation).

Mesonetopsis zingi PING, 1935

1935 PING: 113, fig. 4. (Nymph (Ting); Sinkiang, Jurassic).

1954 DEMOULIN: 325. (1954a).

Note. Probably belongs in Odonata.

Propalingenia HANDLIRSCH, 1906

1906 HANDLIRSCH: 86. (Type-species: **Palingenia feistmanteli** FRITSCH, monotypy).

1919 HANDLIRSCH: 25.

1922 HANDLIRSCH: 38.

1987 HUBBARD.

Propalingenia feistmanteli FRITSCH, 1880

1880 **Palingenia feistmanteli** FRITSCH: 241, fig a,b. (Adult; Bohemia, Carboniferous).

1882 **Palingenia feistmanteli** - FRITSCH: 2, pl. 1 fig. 2-6 [not fig. 1]. (Adult; Bohemia, Carboniferous).

1890 **Palingenia feistmanteli** [partim] - SCUDDER: 119.

1906 HANDLIRSCH: 87, pl. 10 fig. 17.

1922 HANDLIRSCH: 39.

1987 HUBBARD.

Note. Belongs in Paleodictyoptera.

Pseudopalingenia HANDLIRSCH, 1906

1906 HANDLIRSCH: 124. (Type-species: **Palingenia kerrieae** HUBBARD, monotypy).

1919 HANDLIRSCH: 15.

1922 HANDLIRSCH: 56.

1987 HUBBARD.

Pseudopalingenia kerrieae HUBBARD, 1987

1882 **Palingenia feistmanteli** - FRITSCH: 2, pl. 1 fig. 1 [not fig. 2-6]. (Adult; Bohemia, Carboniferous).

1890 **Palingenia feistmanteli** [partim] - SCUDDER: 119.

1906 **Pseudopalingenia feistmanteli** HANDLIRSCH: 124, pl. 13 fig. 3.

1922 **Pseudopalingenia feistmanteli** - HANDLIRSCH: 57.

1987 HUBBARD.

Note. Belongs in Paleodictyoptera.

Sinoephemera PING, 1935

1935 PING: 111. (Type-species: **Sinoephemera kingi** PING, original designation).

Sinoephemera kingi PING, 1935

1935 PING: 111. (Nymph (Ting); Sinkiang, Jurassic).

1954 DEMOULIN: 324. (1954c).

Note. Probably belongs in Plecoptera.

Thnetus HANDLIRSCH, 1904

1904 HANDLIRSCH: 7. (Type-species: **Thnetus stuckenbergi** HANDLIRSCH, original designation).

1919 HANDLIRSCH: 574.

1922 HANDLIRSCH: 61.

Thnetus stuckenbergi HANDLIRSCH, 1904

1904 HANDLIRSCH: 7. (Adult (Kazan); Kazan).

1906 HANDLIRSCH: 386, pl. 37 fig. 16.

1919 HANDLIRSCH: 574.

1922 HANDLIRSCH: 61.

1928 MARTYNOV: 9..

1937 HANDLIRSCH: 81.

Note. Probably belongs in Paleodictyoptera.

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