



# \* Keys and Bibliography to the Collembola

by J. T. Salmon

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## INTRODUCTION

The keys presented in this paper are intended to assist in the identification of Collembolan species down to the level of the genera. All generic names published to the end of the year 1949 are included.

Present systematic work on the Collembola is still based largely on Börner's "Das System der Collembolen," published in 1906, and his "Die Familien der Collembolen" of 1913. No attempt has been made in recent years to correlate the modern work of Bonet, Stach, and others into an up-to-date system of classification embodying the views of present-day workers in this field. The need for such a system has frequently impressed me and, over the last few years, I have attempted to revise the classification of these insects, which I now offer in the form of a system of keys. In these I have endeavoured to embody all the latest views on Collembolan systematics. I do not, however, claim that the result is perfect, but I do hope that it offers a new standard upon which future work in this field may be based.

A key, at its best, cannot contain, nor attempt to contain, all the features pertaining to each particular genus, but includes only those salient features most useful in identification. For this reason these keys, when final identification is at all in doubt, should always be used in conjunction with the original literature. To assist in this regard, I have included a bibliography which is cross-indexed to the keys by a system of numbers, and which should simplify the always difficult process of referring to the published works of past authors.

The bibliography was compiled, in the first place, from the *Zoological Record* and from *Biological Abstracts*, assisted by reference to Neave's *Nomenclature Zoologicus*, the *Catalogue of the Library of the British Museum of Natural History*, and bibliographies published by other authors. The great majority of the entries have been checked by actual reference to the papers themselves—either by consulting the works available in New Zealand libraries or by means of microfilm copies obtained from Australia, the United States of America, and England. In so far as is possible by searching, checking, and cross-checking, the bibliography is a complete list of all the published works and papers dealing in any way with the Collembola up to and including the year 1949.

For any inaccuracies or omissions that may have crept in, I can only apologise in advance, and ask that they be drawn to my notice by whomsoever may come across them.

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Wellington, New Zealand.  
27th July, 1950.

## KEYS TO THE GENERA OF THE COLLEMBOLA

In using these keys the bracketed number following each generic name refers to the entry in the bibliography in which the original generic description may be found. Only new synonymy is discussed in the footnotes, as space does not permit of a discussion of all the synonymy included in this work. Most of the synonymy indicated is accepted by specialists in this field of entomology, but, where there may be some doubt, a second bracketed number has been included to indicate works in which discussion may be found.

In working out the keys, the affirmative or the normal condition always takes precedence over the negative or abnormal condition, and is worked out to its conclusion first.

There has, in the past, been a certain amount of confusion in the interpretation of the furcula and the clothing among the Collembolan specialists. These structures are interpreted in these keys as defined below, and I suggest that the adoption of these definitions in future work may help to clarify this situation.

**FURCULA:** This organ is described extended at right-angles from the body, in a similar position to that adopted by the legs in repose, so that it presents an *anterior* and a *posterior* face. The anterior face is the surface usually described as dorsal when the organ is held in the resting position beneath the abdomen.

**CLOTHING:** The clothing of Collembola is extremely important in their systematic study, and may consist of scales, setae, spines, bristles, and hairs, all of which may or may not occur together on the one species.

*Scales*, when present, may be either hyaline or pigmented; plain, ribbed, fluted, striated, or ciliated, and of various shapes from round and blunt to oval or pointed.

*Setae* are the most common form of clothing occurring in the Collembola. Several distinct types of setae in addition to the normal *plain setae* can be recognized and defined as follows:—

*Ciliated setae*, in which the shaft of the seta is supplied with whorls of fine hairs.

*Serrated setae*, in which the shaft of the seta is, as its name implies, serrated or supplied with well-spaced tooth-like structures.

*Flexed setae*, in which the shaft of the seta is ciliated and bent over towards its apex, which is more or less flattened, and bears longer ciliations than does the shaft.

*Pubescent setae*, in which the shaft of the seta is densely clothed with short, even hairs, giving it the appearance rather of a squirrel's tail.

*Clavate or spathulate setae*, in which the apex is swollen into a knob or expanded into a spathulate form. The knob is sometimes divided.

Setae are readily recognized and differentiated from hairs and bristles in that they taper gradually from the base towards the apex, where they terminate in a fine point.

*Hairs* may be recognized by their even width for almost their entire length and by their flexible nature. Hairs in Collembola may be long or short, plain, ciliated, clavate, or spathulate. The hairs occurring at the apex of the tibio-tarsus, in association with the claw, though in structure more often of the tapering nature of setae, are referred to as tenent hairs and are generally either clavate or spathulate.

*Bristles* are really stout, stiff hairs. They may be plain, ciliated, or divided. *Divided bristles* are those in which the apex is subdivided into from three to seven short finger-like processes. This type of bristle is usually situated at the apex of the mesotergum, and is characteristic of the *Lepidophorcellinae*.

*Spines* commonly occur on the dentes, but sometimes also on the tibio-tarsi or on the body, and in certain genera of *Symphyleona* on top of the head. They may be plain, serrated, or ciliated, and either straight or curved.

*Lasiotrichia* is a new name I am proposing to differentiate the long, thin, wavy, ciliated sensory hairs from the similar but non-ciliated wavy hairs or *bothriotrichia*. *Bothriotrichia* always arise from small cups or mounds on the cuticle, whereas *lasiotrichia* generally arise direct from the cuticle as do ordinary setae and hairs.

*Tricobothria* are small sensory cups, domes, or swellings which occur commonly among the *Symphyleona*. They are situated on the sides of the body and generally give rise to *bothriotrichia* or short, stiff sensory bristles.

### KEY TO THE SUB-ORDERS, FAMILIES, SUB-FAMILIES, AND TRIBES OF THE ORDER COLLEMBOLA

- |  |  |               |
|--|--|---------------|
| 1. Trachea present, spiracular opening on posterior ventro-lateral portion of head .....   | Sub-order <i>Symphyleona</i> Börner<br>(Page 28)     | 2             |
| Trachea absent; body elongate; segmentation distinct, the abdominal segments generally separated .....   | Sub-order <i>Arthropleona</i> Börner .....           | 3<br>(Page 7) |
| 2. Body somewhat elongate; head hypognathous; Abd. III reduced, Abds. IV-VI fused; furcal segment with a pair of strong ridges   | Family <i>Actaletidae</i> Wahlgren<br>(Page 28)      |               |
| Body not elongate but distinctly globular; Abds. I-IV fused, Abds. V-VI usually demarcated from rest of body .....   | .....  | 28            |
| 3. All segments essentially similar; prothorax dorsally with setae, distinct and never hidden below mesotergum; scales absent; antennae short, with 3-4 segments; cuticle generally granulate or tuberculate; anal spines and pseudocelli often present; postantennal organ generally present .....                    | Super-family <i>Poduroidea</i> Womersley<br>(Page 7) | 4             |
| Body segments usually dissimilar; prothorax without setae dorsally and usually reduced and hidden under mesotergum; antennae normally long with 4-6 segments; cuticle smooth; scales present or absent; postantennal organ present in <i>Isotominae</i> , absent in other sub-families .....                           | Super-family <i>Mydonioidea</i> Salmon<br>(Page 17)  | 11            |
| 4. Head obliquely prognathous; ocelli, when present, situated on front half of head; postantennal organ usually present; furcula present or absent, when present usually short and straight, seldom reaching forward as far as ventral tube; dentes not annulated, without articulating apophyses with manubrium ..... | Family <i>Hypogastruridae</i> Börner<br>(Page 7)     | 5             |
| Head hypognathous; ocelli, when present, situated on posterior half of head; postantennal organ absent; furcula reaching forward beyond ventral tube; dentes bowed horizontally, annulated distally, and with articulating apophyses with manubrium .....  | Family <i>Poduridae</i> Börner<br>(Page 7)           |               |

5. Body normally with pseudocelli; Ant. III with complicated sense organ consisting of sense rods, sense clubs, papillae, and guard setae: ocelli absent; postantennal organ always present .....	5
Body without pseudocelli; sensory organ of Ant. III simple, having sense rods but neither sense clubs nor papillae and seldom with guard setae; both ocelli and postantennal organ present or absent .....	7
6. Sense organ of Ant. III with the two sense clubs bent towards each other and often with an accessory lateral club, without papillae: unguiculus present but generally reduced and with or without terminal bristle .....	
Sense organ of Ant. III with the two sense clubs straight, without lateral accessory club, but with papillae; unguiculus present and well developed .....	
7. Mandibles with well-defined molar area; maxillae normal .....	
Mandibles without molar area, or entirely absent .....	
8. Body of normal shape sparsely clothed with smooth setae and occasional serrated or clavate setae .....	
Body of abnormal shape, either plump or noticeably widened .....	
9. Body plump; posterior portion of head swollen, often with folds; pleural areas of body not swollen and separated off as paratergites .....	
Body widened and usually noticeably flattened, sometimes half as wide as long .....	
10. Abd. VI large and bilobed; integument tuberculate; body segments usually with large bosses .....	
Abd. VI either wholly or partly hidden beneath Abd. V or partly enclosed by Abd. V; pleural areas of body often more or less swollen and separated off as paratergites .....	
11. With either well-developed visible maxillary palpi or with well-developed cerci and long spines on Abds. V and VI .....	12
Without either visible palpi or cerci as above .....	13
12. With long three segmented maxillary palpi .....	
With long cerci and spines on Abds. V and VI .....	
13. Abds. V and VI reduced; antennae long 4-6 segmented .....	14
Abds. V and VI not reduced; antennae short and stout, four segmented .....	
	Sub-family <i>Tullberginae</i> Bagnall (Page 8)
	Sub-family <i>Onychiurinae</i> Börner (Page 9)
	Sub-family <i>Hypogastrurinae</i> Börner (Page 10)
	Sub-family <i>Neanurinae</i> Börner .....
	(Page 12) 8
	Tribe <i>Brachystomellini</i> nov. (Page 12)
	..... 9
	Tribe <i>Anuridini</i> nov. (Page 13)
	..... 10
	Tribe <i>Neanurini</i> Börner (Page 14)
	Tribe <i>Pseudachorutini</i> Börner (Page 15)
	..... 12
	..... 13
	Family <i>Palpigeridae</i> Olfers (Fossil Collembola) (Page 17)
	Family <i>Catastylidae</i> Olfers (Fossil Collembola) (Page 17)
	..... 14
	Family <i>Protentomobryidae</i> Folsom (Fossil Collembola) (Page 22)

14. \*Trochanteral organ present; inner edge of claw generally with basal groove; Abd. IV generally longer than Abd. III; furcula present; scales present or absent; scales and setae often ciliated ..... Family *Mydoniidae* Salmon ..... 24  
(Page 23)
- Trochanteral organ absent; inner edge of claw without basal groove; Abd. III and Abd. IV generally subequal or Abd. III a little longer ..... 15
15. Abd. III and Abd. IV approximately equal in length; Abd. IV sometimes a little longer; postantennal organ generally present; scales and lasiotrichia present or absent; furcula present ..... 16
- Abd. III longer than Abd. IV (rarely Abd. IV a little longer than Abd. III); scales present or absent, but if present, then with longitudinal striae; postantennal organ absent; furcula present ..... Family *Tomoceridae* Schaeffer ..... 19  
(Page 22)
16. Scales present; postantennal organ present; mucro long, with numerous teeth ..... Family *Oncopoduridae* Bonet  
(Page 17)
- Scales absent; postantennal organ present or absent; mucro short ..... Family *Isotomidae* ..... 17  
(Page 17)
17. Furcula present; Abds. V-VI either distinctly separated or fused ..... 18
- Furcula sometimes absent; when present, reduced, short, with mucrodens joint often indistinct; dentes never crenulate; Abd. VI reduced, sometimes hidden below Abd. V so that anus becomes more or less ventral; clothing of simple setae, serrated or ciliated setae absent ..... Sub-family *Anurophorinae* Börner  
(Page 17)
18. Furcula short, well developed, all joints distinct, manubrium usually longer than dentes; Abds. IV-VI or V-VI often fused; clothing of simple setae and, occasionally, longer serrated setae ..... Sub-family *Proisotominae* Stach  
(Page 18)
- Furcula longer, well developed, all joints distinct; dentes longer than manubrium, slender, with posterior face crenulate and anterior face with many setae; Abds. V-VI sometimes fused; clothing of simple or serrated setae ..... Sub-family *Isotominae* Schaeffer  
(Page 19)
19. Dentes at least indistinctly annulated and corrugated, but not segmented; mucro small and without setae; Ant. III not very much longer than Ant. IV ..... Sub-fam. *Lepidophorellinae* Börner 21  
(Page 22)
- Dentes not or only very slightly annulated and corrugated, usually 2-segmented and always spined; mucro long with setae ..... Sub-family *Tomocerinae* Salmon 22  
(Page 22)
21. Scales present and distinctly ribbed, though sometimes tending to hyaline; mucro falciform; dentes spined and generally with spine-like scales; unguiculus simple; antennae not annulated ..... Tribe *Lepidophorellini* Womersley  
(Page 22)

\*The trochanteral organ consists of a small area of specialized setae, hairs, or spines situated on the trochanter of each hind leg. Often it is a difficult character to see.

- Scales absent; mucro toothed; Ants. III and IV and distal part of Ant. II annulated; dentes without spines ..... Tribe *Neophorellini* Womersley (Page 22)
22. Ocelli eight to each side; Ant. III shorter than Ant. IV, not annulated; dentes lightly annulated and corrugated ..... Tribe *Novacerini* Salmon (Page 22)
- Ocelli less than eight to each side ..... 23
23. Ocelli six on each side; Ant. III much longer than Ant. IV; Ants. III and IV generally annulated ..... Tribe *Tomocerini* Salmon (Page 22)
- Ocelli four to each side; Ant. III only a little longer than Ant. IV; both Ants. III and IV annulated ..... Tribe *Paratomocerini* Salmon (Page 22)
24. Dentes long and slender, prominently annulated and corrugated; mucro small ..... Sub-family *Mydoniinae* Salmon 25 (Page 23)
- Dentes neither annulated nor corrugated, long but not or only slightly tapering ..... 26
25. Antennae with four segments ..... Tribe *Mydoniini* Salmon (Page 23)
- Antennae with five or six segments, I or II or both being subdivided; if only 4-segmented, then IV as long as body ..... Tribe *Orchessellini* Börner (Page 25)
26. Dentes with ciliated or fringed scales as well as setae or spines; unguiculus with three-winged edge or reduced; scales present on body; ocelli absent ..... Sub-family *Cyphoderinae* Börner 27 (Page 27)
- Dentes without ciliated or fringed scales, but with setae and with or without spines; unguiculus with four-winged edge; mucro plump and generally indistinctly separated from dens; body with or without scales; ocelli present ..... Sub-family *Paronellinae* Börner (Page 26)
27. Each dens with 1-2 rows of ciliated spines along posterior face; dens many times longer than mucro; mucro short ..... Tribe *Troglopedetini* Börner (Page 27)
- Dens without spines, but each dens with two rows of ciliated scales; mucro long and slender, with apical and usually ventral teeth ..... Tribe *Cyphoderini* Börner (Page 27)
28. Antennae arising from, or in front of, middle of head, four-segmented, and always very much shorter than head; head without elevated vertex; coxae of legs elongated and on outer side longer than trochanter; ocelli and postantennal organ absent; body with or without papillae; tenaculum without bristles; furcula present; bothriotrichia absent; very small species seldom more than 0.25 mm. long ..... Family *Neelidae* Folsom (Page 28)
- Antennae inserted behind middle of head, four-segmented, sometimes with subdivided segments, and generally much longer than head; head with distinctly elevated vertex; coxae not elongated; on outer side much shorter than trochanter; tenaculum usually with bristles; bothriotrichia present ..... Family *Sminthuridae* Lubbock ..... 29 (Page 28)

29. Vesicles of ventral tube with smooth walls; cuticle of body granular; tenaculum with lateral appendages at base of rami; traces of thoracic segmentation present ..... Sub-family *Sminthuridinae* Börner 30  
(Page 28)
- Vesicles of ventral tube with tuberculate or "warted" walls; traces of thoracic segmentation absent ..... 31
30. Anal and genital segments fused and bearing two sensory setae on each side ..... Tribe *Sminthuridini* Börner  
(Page 28)
- Anal and genital segments separated, sometimes the latter fused with the furcal segment; genital segment bearing one sensory seta only to each side ..... Tribe *Katiannini* Börner  
(Page 29)
31. Antennae bent between segments II and III; Ant. IV shorter than Ant. III; furcal segment bearing large dorsal papilla and three pairs of sensory setae; tenaculum with basal appendages ..... Sub-family *Dicyrtominae* Börner  
(Page 30)
- Antennae bent between segments III and IV; Ant. IV longer than Ant. III; tenaculum without lateral appendages; furcal segment without dorsal papilla ..... Sub-family *Sminthurinae* Börner 32  
(Page 30)
32. Clavate tenent hairs present, 2-3, appressed; unguiculus present or absent ..... Tribe *Bourlettiellini* Börner  
(Page 30)
- Clavate tenent hairs generally absent; if present, then separated and outstanding; claw sometimes with tunica or sheath; unguiculus always present ..... Tribe *Sminthurini* Börner  
(Page 30)

Sub-order *ARTHROPLEONA* Börner, 1901  
Super-family *PODUROIDEA* Womersley, 1934  
Family *PODURIDAE* Börner, 1906

*Aphoruridae* Scherbakov, 1898.

Genus *Podura* Linné, 1758 (722)

*Hypogastrura* Bourlet, 1839 (159).

*Hydropodura* Börner, 1901 (136).

*Podurella* Motschulski, 1850 (812).

Genotype: *Podura aquatica* L., 1758

The family Poduridae is known only from this single genus *Podura*, which contains one species, *Podura aquatica* Linné, commonly found on the surface of stagnant water, often in such immense numbers as to form the appearance of a scum over ponds and pools. The designation of *P. aquatica* L. as the genotype of the genus *Podura* L. was made by the International Commission on Zoological Nomenclature at its Paris meeting in 1947.

FAMILY \**HYPOGASTRURIDAE* BÖRNER, 1913

*Achorutidae* Börner, 1901.

\*This family name is adopted here pending the final decision of the International Commission on Zoological Nomenclature concerning the validity of the generic name *Hypogastrura* Bourlet, 1839. See *Science*, 1947, 106 (2673), p. 584.



\*SUB-FAMILY *TULLBERGINAE* BAGNALL, 1935  
KEY TO THE GENERA OF THE *TULLBERGINAE*

- |   |       |       |       |       |       |       |       |       |   |
|---|-------|-------|-------|-------|-------|-------|-------|-------|---|
| 1. Sense organ of Ant. III <i>entirely exposed</i> , consisting of 2-3 (rarely 4) superior sense rods which are either straight or slightly curved, with their sides either sub-parallel or converging, and two inferior sense rods between them; antennal base generally present and distinguished by having cuticular granules smaller than those of the rest of the head .....                           | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | 2 |
| Sense organ of Ant. III <i>protected by cuticular fold or pocket</i> . Antennal base generally absent .....   | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | 3 |
| 2. Unguiculus reduced, rudimentary .....  | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |   |
| Unguiculus well developed .....   | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |   |
| 3. Sense organ of Ant. III with sense clubs or sense rods or both .....   | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | 4 |
| Sense organ of Ant. III without sense rods but with two large papillae, each in a separate but adjacent cuticular pocket, and each bent towards the other; Ant. IV without apical sensory knob; pseudocelli of peculiar form .....  | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |   |
| 4. Sense organ of Ant. III with two inferior bent sense clubs, two superior bent sense clubs and two outer large sense rods, the whole behind a cuticular fold; claw with two groups of clavate hairs; unguiculus absent; Ant. IV with apical exsertile knob .....  | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |   |
| Sense organ of Ant. III with fewer clubs and rods; claw without clavate tenent hairs; unguiculus present or absent .....  | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | 5 |
| 5. Abd. VI with at least seven spines; Ant. IV with two sensory knobs at apex; sense organ of Ant. III with 3-4 sense clubs protected by a cuticular fold; pseudocelli almond-shaped, with the border confined to only half the periphery .....   | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |   |
| Abd. VI with fewer than seven spines .....  | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | 6 |
| 6. Ant. IV with only one apical sensory knob; sense organ of Ant. III with two superior, strongly curved sense rods which curve towards each other, sometimes with a single accessory rod, all protected and partially covered by a cuticular fold or by papillae; two inferior sense rods either straight, curved, or clavate, and partly or completely hidden behind the cuticular fold or papillae ..... | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | 7 |
| Ant. IV without apical sensory knob; sense organ Ant. III with only one sensory rod, which is blade-like and transversely directed; Abd. VI with 3-5 rudimentary spines .....   | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |   |
| 7. Abd. VI with two <i>branched</i> spines. Postantennal organ with at least 20 fusiform tubercles arranged in two or four rows lying at less than right-angles to the axis .....   | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |   |
| Abd. VI with <i>simple</i> spines .....   | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | 8 |

*Tullbergia* Lubbock, 1876 (711)  
= *Boerneria* Willem, 1902 (1138)  
*Protullbergia* Bagnall, 1947 (86)

*Paratullbergia* Womersley, 1930 (1160)

*Clavaphorura* Salmon, 1943 (914)

*Dinaphorura* Bagnall, 1935 (78)

*Austraphorura* Bagnall, 1947 (86)

*Neotullbergia* Bagnall, 1935 (78)

\*Bagnall, in 1935, while studying the British *Tullberginae*, gave one of the characters of this sub-family as "the fact that in no position is there more than 1 + 1 pseudocelli." If this character is regarded as valid for the sub-family, it becomes necessary to separate off *Tullbergia trisetosa* Schaeffer and *Tullbergia australica* Wom., both of which have 2 + 2 pseudocelli on some segments, together with *Clavaphorura septemseta* Salmon from New Zealand, into a further new sub-family. As all these species agree in body form, sensory organ of Ant. III, and form of postantennal organ with the rest of the species of the *Tullberginae*, I do not think such a separation is desirable.

- 8. Abd. VI with medio-ventral process and two large anal spines on papillae; postantennal organ with complex bifurcate vesicles set at an acute angle with the axis ..... *Metaphorura* Bagnall, 1936 (81)
- Abd. VI without medio-ventral process ..... 9
- 9. Postantennal organ with triunguate unilocular lobes; Abd. VI with four anal spines and two spine-like papillae ..... *Neonaphorura* Bagnall, 1935 (78)
- Postantennal organ with elongate or fusiform lobes, never triungulate ..... 10
- 10. Postantennal organ with at least 25 tubercles.  
Abd. VI with four anal spines ..... *Stenaphorura* Absolon, 1900 (6)
- Postantennal organ with at least 20 tubercles;  
Abd. VI with two simple anal spines ..... *Mesaphorura* Börner, 1901 (139)

SUB-FAMILY *ONYCHIURINAE* BAGNALL, 1935  
KEY TO THE GENERA OF THE *ONYCHIURINAE*

- 1. Pseudocelli present ..... 2
- Pseudocelli absent ..... \**Pachytullbergia* Bonet, 1947 (131)
- 2. Large species with furcula present and well developed ..... 3
- Smaller species; furcula if present very much reduced ..... 4
- 3. Postantennal organ present; sense organ Ant. III with 4-5 papillae ..... *Homaloproctus* Börner, 1909 (150)
- Postantennal organ absent; sense organ Ant. III with 14-15 papillae arranged in three rows ..... *Tetrodontophora* Reuter, 1882 (880)
- 4. Pseudocelli with distinct chitinous borders; cuticle finely granulate; furcula present or absent ..... 5
- Pseudocelli without distinct chitinous borders; cuticle coarsely granulate; furcula always present ..... *Kalaphorura* Absolon, 1901 (14)
- 5. Vesicles of postantennal organ arranged as two parallel rows, often more or less covered by secondary tubercles ..... 6
- Vesicles of postantennal organ generally simple, sometimes few in number, not arranged in parallel rows ..... 11
- 6. Pseudocelli numbering at least 24, often more, and present on hind margin of head ..... 7
- Pseudocelli reduced in number (12-18) and absent from hind margin of head ..... 10
- 7. Small species; postantennal organ with up to 30 vesicles ..... 8
- Very large species; postantennal organ with up to 90 vesicles ..... 9
- 8. Sense organ Ant. III with coarsely tuberculate capitate sense clubs ..... \*\**Protaphorura* Absolon, 1901 (14)  
= *Onychiuroides* Bagnall, 1935 (76)
- Sense organ Ant. III with smooth capitate sense clubs ..... *Onychiurus* Gervais, 1841 (1232) (484)  
= *Lipura* Burmeister, 1838 (198)  
*Anurophorus* Nicolet, 1841 (797)  
(in part)  
*Adicranus* Bourlet, 1843 (160)  
(in part)  
*Augenius* Gistel, 1848 (510)  
*Aphorura* MacGillivray, 1893 (724)  
*Lophognathella* Börner, 1908 (149)

\*This genus is inserted here following Bonet's diagnosis.

\*\*I can detect no significant difference that will serve to separate *Onychiuroides* from *Protaphorura*, and must therefore synonymize the former genus with the latter.

9. Postantennal organ with 30-38 vesicles; sense organ Ant. III with elongated, roughened sense rods, elongated papillate sense clubs, and one or more truncated papillae ..... *Absolonia* Börner, 1901 (138)  
 Postantennal organ with 70-90 vesicles; sense organ Ant. III with lamellate sense clubs ..... *Spelaphorura* Bagnall, 1948 (87)
10. Small species; postantennal organ with up to 24 vesicles; anterior pseudocelli of head outside antennal base area; lateral thoracic pseudocelli absent ..... *Paronychiurus* Bagnall, 1948 (87)  
 Large species; postantennal organ with 100 or more vesicles arranged as an elongated mass; anterior pseudocelli of head within antennal base area; all thoracic pseudocelli absent ..... *Pseudonychiurus* Bagnall, 1948 (87)
11. Postantennal organ simple, with few vesicles ..... 12  
 Postantennal organ compound, with many irregular vesicles arranged as a rectangular mass ..... *Psyllaphorura* Bagnall, 1948 (87)
12. Vesicles of postantennal organ simple, separated, 8-11 in number ..... *Hymenaphorura* Bagnall, 1948 (87)  
 Vesicles of postantennal organ of varied form, 17-25 in number ..... *Heteraphorura* Bagnall, 1948 (87)

## SUB-FAMILY \*HYPOGASTRURINAE BÖRNER, 1906

## KEY TO THE GENERA OF THE HYPOGASTRURINAE

1. Postantennal organ present ..... 2  
 Postantennal organ absent ..... 17
2. Furcula present ..... 3  
 Furcula absent ..... 16
3. Postantennal organ simple, more or less elliptical, without well-defined peripheral lobes ..... 4  
 Postantennal organ with either well-developed or rudimentary peripheral lobes ..... 5
4. Anal spines present; three clavate tenent hairs to each foot ..... *Gomphiocephalus* Carpenter, 1908 (225)  
 Anal spines absent; two clavate tenent hairs to each foot ..... *Chorentimula* Paclt, 1944 (1216)  
 = *Beckerellodes* Salmon, 1945 (918)  
*Beckerella* Axelson, 1912 (690)
5. Peripheral lobes of postantennal organ well developed ..... 6  
 Peripheral lobes of postantennal organ poorly developed, indistinct ..... 15
6. Cuticle very strongly granulate ..... 7  
 Cuticle finely granulate or smooth ..... 8
7. Unguiculus present, well developed; anal spines, two, small ..... *Proxenyllodes* Denis, 1926 (359)  
 Unguiculus rudimentary or absent; anal spines, three, on large papillae ..... *Triacanthella* Schäffer, 1897 (934)  
 = *Triacanthurus* Willem, 1903 (1138)
8. Not more than four peripheral lobes to each postantennal organ ..... 9  
 More than four peripheral lobes to each postantennal organ ..... 14
9. With large eversible sac between antennal segments III and IV ..... *Ceratophysella* Börner, 1932 (1203)  
 Without eversible sac ..... 10

\*This sub-family name is adopted here pending the final decision of the International Commission on Zoological Nomenclature concerning the validity of the generic name *Hypogastrura* Bourlet, 1839. See *Science*, 1947, 106 (2673), p. 584.

10 Ocelli eight to each side	11
Ocelli less than eight to each side	12
11. Anal spines when present simple, either straight or curved, with or without papillae	† <i>Hypogastrura</i> Bourlet, 1839 (159) = <i>Podura</i> Linné, 1758 (722) (in part) <i>Achorutes</i> Templeton, 1835 (1055) <i>Achoreutes</i> Templeton, 1842 (1056) <i>Rathumoutes</i> Templeton, 1842 (1056) <i>Achorutes</i> Tullberg, 1872 (1074) <i>Podurhippus</i> Megnin, 1878 (751) <i>Schoturus</i> MacGillivray, 1893 (724) <i>Neohypogastrura</i> Paclt, 1944 (825) <i>Neogastrura</i> Stach, 1949 (1028) * <i>Agreniella</i> Bagnall, 1949 (88) * <i>Lubbockiella</i> Bagnall, 1949 (88)
Anal spines present and of unusual form, there being two stout spines arranged on a large common base, like a pair of pincers, each spine with a secondary smaller spine on its dorsal face	<i>Ancistracanthella</i> Gisin, 1949 (509)
12. Anal spines present, two shorter than claw; ocelli, two to each side	<i>Xenyllogastrura</i> Denis, 1932 (371)
Anal spines present, two longer than claw	13
13. Ocelli 2-5 to each side; pigmented species	<i>Schäfferia</i> Absolon, 1900 (7) = <i>Octomma</i> Willem, 1902 (1138, 1028)
Ocelli absent; pigment absent	<i>Spelaeogastrura</i> Bonet, 1945 (128)
14. Ocelli present, two to each side; body pigment absent; unguiculus bristle-like, without lamella	<i>Mesachorutes</i> Absolon, 1900 (7)
Ocelli absent; body pigment weak or absent; unguiculus with broad inner lamella	<i>Typhlogastrura</i> Bonet, 1930 (115)
15. Ocelli eight to each side; unguiculus absent or reduced to small bristle only; pigmented species	<i>Schötella</i> Schäffer, 1896, (933)
Ocelli two to each side; unguiculus present as long bristle; body pigment weak or absent	<i>Mesogastrura</i> Bonet, 1930 (115)
16. Clavate tenent hairs present, usually three to each foot; ocelli absent	<i>Tafallia</i> Bonet, 1946 (130)
Clavate tenent hairs absent	<i>Willemia</i> Börner, 1901 (137)
17. Furcula present, but reduced	18
Furcula absent	19
18. Ocelli present, five or eight to each side; pigmented species	<i>Xenylla</i> Tullberg, 1869 (1072)
Ocelli absent; pigment absent	<i>Acherontides</i> Bonet, 1945 (128)
19. Ocelli present, five to each side; some body setae serrate; pigmented species	<i>Propexenylla</i> Salmon, 1944 (917)
Ocelli absent; pigment absent; body setae smooth	20
20. Tenent hairs and anal spines present	<i>Acherontiellina</i> Delamare-Deboutteville, 1948 (334)
Tenent hairs and anal spines absent	<i>Acherontiella</i> Absolon, 1913 (21)

†The name *Hypogastrura* is reverted to here pending the decision of the International Commission on Zoological Nomenclature concerning the case for its retention on the official list.

\*In Bagnall's descriptions of these two genera I can find no characters of sufficient importance to warrant their retention as separate genera, and I am forced, therefore, for the present at least, to include them as synonyms only.

## SUB-FAMILY NEANURINAE BÖRNER, 1906

## TRIBE BRACHYSTOMELLINI nov.

## KEY TO THE GENERA OF THE BRACHYSTOMELLINI

1. Mandibles present, with some apical teeth, but without molar area .....	2
Mandibles absent .....	8
2. Unguiculus present; ocelli six to each side; post-antennal organ present, with four peripheral lobes; furcula present .....	<i>Microgastrura</i> Stach, 1922 (1005)
Unguiculus absent .....	3
3. Postantennal organ present .....	4
Postantennal organ absent .....	5
4. Ocelli five to each side; anal spines present, six, on papillae .....	<i>Subantarctica</i> Salmon, 1949 (925)
Ocelli eight to each side; anal spines absent .....	<i>Schoettellodes</i> Becker, 1905 (1202)
5. Anal spines present .....	6
Anal spines absent; furcula present, very long and slender; antennae three times as long as head .....	<i>Pseudanurida</i> Schött, 1901 (959) = <i>Neachorutes</i> Womersley, 1933 (1167) * <i>Pseudachorutides</i> Becker, 1905 (100) <i>Pseudachorutoides</i> Womersley, 1931 (1181)
6. Furcula present; anal spines 2-7 in number, straight and without papillae .....	<i>Polyacanthella</i> Schaeffer, 1897 (934) = <i>Oudemansia</i> Schött, 1901 (959) <i>Conotelsa</i> Denis, 1925 (354) <i>Fricsea</i> Denis, 1931 (368)
Furcula absent or greatly reduced .....	7
7. Anal spines four, needle-like, without papillae; furcula absent .....	<i>Colonavis</i> Salmon, 1949 (925)
Anal spines up to five, evenly curved and on papillae; furcula greatly reduced or absent .....	<i>Friesea</i> Dalla Torre, 1895 (280) = <i>Triaena</i> Tullberg, 1871 (1073) <i>MacGillivraya</i> Grote, 1894 (514) <i>Pseudotullbergia</i> Schaeffer, 1897 (934) <i>Achorutoides</i> Willem, 1901 (1135) <i>Triaenura</i> Olfers, 1907 (805)
8. Furcula present .....	9
Furcula absent .....	17
9. Abds. V and VI separated, distinct .....	10
Abds. V-VI fused; ocelli seven to each side; mucro tapering to tip .....	<i>Gaucharis</i> Jackson, 1927 (614)
10. Dens with setae only; unguiculus present or absent .....	11
Dens with spines as well as setae .....	21
11. Ocelli eight to each side; postantennal organ with up to seven peripheral separated lobes arranged as a star or rosette; furcula present; mucro tapering with lamella .....	<i>Brachystomella</i> Agren, 1903 (40) = <i>Chondrachorutes</i> Wahlgren, 1906 (1107)
Ocelli five or fewer to each side .....	12
12. Ocelli, two or five to each side .....	13
Ocelli absent .....	16
13. Unguiculus present, short, bristle-like; postantennal organ with three lobes; ocelli, two or five to each side; two small anal spines .....	<i>Xenyllodes</i> Axelson, 1903 (55)
Unguiculus absent .....	14

\*This genus was described in the Zool. Anz., 29, p. 72, for a species *P. bogoyawlensky* from the Persian Gulf, which I consider, from the original description, is synonymic with *Pseudanurida*. Womersley (1939, *Primitive Insects of South Australia*, p. 315) referred to this under the name *Pseudachorutoides*. The spelling used by Becker, however, was *Pseudachorutides*.

14. With three large anal spines on papillae; ocelli, five to each side	-----	-----	-----	-----	-----	<i>Triondontella</i> Stach, 1949 (1028)	
With only two anal spines	-----	-----	-----	-----	-----	-----	15
15. Anal spines well developed, with or without papillae; mucro reduced, simple, pointed, without lobes; postantennal organ with 3-5 lobes; ocelli, five to each side	-----	-----	-----	-----	-----	<i>Zealandella</i> Salmon, 1942 (913)	
Anal spines reduced to two large cuticular granules; mucro with two lobes; postantennal organ with four lobes; ocelli, five to each side	-----	-----	-----	-----	-----	<i>Odontella</i> Schaeffer, 1897 (934)	
16. Postantennal organ present with 6-8 separated peripheral lobes	-----	-----	-----	-----	-----	<i>Folsomiella</i> Bonet, 1930 (115)	
Postantennal organ absent	-----	-----	-----	-----	-----	<i>Bonetella</i> Stach, 1949 (1028)	
17. Abds. V and VI separated, distinct	-----	-----	-----	-----	-----	-----	16
Abd. VI very small and more or less enclosed anteriorly and laterally by Abd. V; posterior borders of Abds. IV and V with four minute anal spines; ocelli, eight to each side	-----	-----	-----	-----	-----	<i>Quatacanthella</i> Salmon, 1945 (918)	
18. The longer setae of the body and appendages clavate, the clavate portion divided into four lobes; ocelli, eight to each side	-----	-----	-----	-----	-----	<i>Setanodosa</i> Salmon, 1942 (913)	
Setae not clavate, normal	-----	-----	-----	-----	-----	-----	19
19. Body rather stout; Ant. IV with large apical trilobed papilla	-----	-----	-----	-----	-----	-----	20
Head and Thor. I very small with body swelling to relatively large size posteriorly; ocelli, five to each side; postantennal organ with four separated peripheral lobes	-----	-----	-----	-----	-----	<i>Pseudontella</i> Salmon, 1942 (913)	
20. Ocelli, eight to each side; postantennal organ generally with four peripheral lobes, rarely 6-8	-----	-----	-----	-----	-----	<i>Salmonella</i> Stach, 1949 (1028)	
Ocelli, five to each side; postantennal organ with five peripheral lobes around central boss	-----	-----	-----	-----	-----	<i>Odontellodes</i> Stach, 1949 (1028)	
21. Postantennal organ present	-----	-----	-----	-----	-----	-----	22
Postantennal organ absent; ocelli, eight to each side	-----	-----	-----	-----	-----	<i>Subclavontella</i> Stach, 1949 (1028)	
22. Ocelli, eight to each side	-----	-----	-----	-----	-----	<i>Austrella</i> Stach, 1949 (1028)	
Ocelli, five to each side	-----	-----	-----	-----	-----	-----	23
23. Ant. IV with apical sensory swellings and complicated sense organs of rods, clubs, and sometimes sacs	-----	-----	-----	-----	-----	<i>Clavontella</i> Salmon, 1944 (917)	
Ant. IV without apical or other sense organs; legs and sides of head with conical spines	-----	-----	-----	-----	-----	<i>Superodontella</i> Stach, 1949 (1028)	

## Tribe ANURIDINI nov.

## KEY TO THE GENERA OF THE ANURIDINI

1. Postantennal organ present	-----	-----	-----	-----	-----	-----	2
Postantennal organ absent	-----	-----	-----	-----	-----	-----	8
2. Postantennal organ circular or elliptical with 5-40 peripheral lobes	-----	-----	-----	-----	-----	-----	3
Postantennal organ with three contiguous lobes; one ocellus to each side; unguiculus absent; furcula reduced to simple fork-like structure	-----	-----	-----	-----	-----	-----	
3. Maxilla head with toothed median shaft and two to three lateral subapical lobes either serrated or ciliated	-----	-----	-----	-----	-----	-----	4
Maxilla needle-like; postantennal organ with five to twelve peripheral lobes arranged as a rosette or 16 to 22 arranged as an ellipse; ocelli one to five to each side	-----	-----	-----	-----	-----	-----	
						<i>Micranurida</i> Börner, 1901 (136)	

4. Mandible with single hook-like apical tooth and subapical lamella, ocelli absent, postantennal organ with eight to twenty peripheral lobes	<i>Anuridella</i> Willem, 1906 (1142)	5
Mandible with several apical teeth	.....	.....
5. Furcula rudimentary, reduced to a pair of small tubercles; ocelli, five to each side	<i>Hypanurida</i> Denis, 1931 (369)	6
Furcula absent	.....	.....
6. Ocelli five to each side	<i>Anurida</i> Laboulbene, 1865 (653) = <i>Achorutes</i> Guérin, 1838 (515) <i>Anoura</i> Nicolet, 1847 (801) <i>Aphoroma</i> Dalla Torre, 1895 (280)	7
Ocelli less than five to each side	.....	.....
7. Ocelli three to each side	* <i>Gastranurida</i> Bagnall, 1949 (88)	
Ocelli absent	* <i>Aphoromma</i> MacGillivray, 1893 (724) = <i>Anurodes</i> Bagnall, 1949 (88)	
8. Mandible present, with some apical teeth; maxilla needle-like; furcula, unguiculus, and anal spines absent	<i>Paranura</i> Axelson, 1902 (54) = <i>Börneria</i> Axelson, 1902 (54)	
Mandibles absent; ocelli, eight to each side; postantennal organ absent; Abd. VI narrow and tapering to a point dorsally	.....	9
9. Furcula present	<i>Anuritelsa</i> Womersley, 1939 (1181)	
Furcula absent	<i>Meganurida</i> Carpenter, 1935 (242)	

TRIBE NEANURINI BÖRNER, 1906

KEY TO THE GENERA OF THE NEANURINI

1. Mandibles present, each with two parallel toothed lamellae; Abd. VI bilobed	<i>Womersleya</i> Denis, 1948 (400)	2
Mandibles absent	.....	.....
2. Head of maxilla without teeth or lamellae, lancet-like; unguiculus absent; furcula absent; sixth abdominal segment visible from above	.....	3
Head of maxilla with both teeth and lamellae	.....	7
3. Ocelli present	.....	4
Ocelli absent	.....	6
4. With both dorsal and lateral bosses and setae	<i>Neanura</i> MacGillivray, 1893 (724) = <i>Achorutes</i> Templeton, 1835 (1055) <i>Blax</i> Koch, 1840 (633) <i>Anoura</i> Gervais, 1843 (483) <i>Anura</i> Nicolet, 1847 (801), Tullberg, 1869 (1072) <i>Biclavella</i> Willem, 1902 (1138) † <i>Lobella</i> Börner, 1906 (147)	5
Without dorsal bosses or setae	.....	.....
5. Lateral bosses and setae present	<i>Gnatholonche</i> Börner, 1906 (147)	
Bosses absent except for a single ocular boss to each side of head; body very broad and flat	<i>Phylliomeria</i> Delamare-Deboutteville, 1948 (331)	
6. Abd. VI bilobed; head and body with very long simple setae; Abds. I-V fused	<i>Sericanura</i> Carpenter, 1935 (242)	
Abd. VI hidden below Abd. V; Abd. V truncate posteriorly; head and body with stout spines dorsally	<i>Echinanura</i> Carpenter, 1935 (242)	

\*With the establishment of *Gastranurida* by Bagnall for those *Anurida*-like species with three ocelli to each side, it becomes necessary to re-establish the genus *Aphoromma* MacGillivray for those species previously included within *Anurida* but without ocelli. From Bagnall's description of the genus *Anurodes*, it would appear that this genus is a synonym of *Aphoromma*—Genotype *A. granaria* (Nic.).

†The sub-genus *Lobella* proposed by Börner in 1906 is, in my opinion, untenable, as the grounds of distinction given—the fusion or non-fusion of the latero-dorsal bosses on Abd. V—are not constant among the known species of *Neanura*.

- |  |  |    |
|--|--|----|
| 17. Mucro boat-like; mandible with two apical teeth                          | <i>Pseudachorutella</i> Stach, 1949 (1029) |    |
| Mucro long, slender; mandible with eight apical teeth                        | <i>Montachorutes</i> Stach, 1949 (1029)    |    |
| 18. Furcula present  | .....                                      | 19 |
| Furcula absent; ocelli, six to each side; Abd. VI almost hidden below Abd. V | <i>Brasilimeria</i> Stach, 1949 (1029)     |    |
| 19. Ocelli, five to each side; mandible with not more than four apical teeth | <i>Arlesia</i> Handschin, 1942 (563)       |    |
| Ocelli, seven to each side; mandible with 25-30 teeth at apex                | <i>Handschinia</i> Stach, 1949 (1029)      |    |

## SUPER-FAMILY MYDONIOIDEA SALMON, 1945

## FAMILY PALPIGERIDAE OLFERS, 1907 (FOSSIL COLLEMBOLA)

## KEY TO THE GENERA OF THE PALPIGERIDAE

- |  |                                       |   |
|--|---------------------------------------|---|
| 1. Ants. I-III annulated; Abd. IV longer than Abd. III; body elongate, cylindrical | <i>Palpigerina</i> Olfers, 1907 (805) |   |
| Antennae not annulated   | .....                                 | 2 |
| 2. Abd. IV longer than Abd. III; Ant. II with sharp, apical spine                  | <i>Palpiger</i> Olfers, 1907 (805)    |   |
| Abdominal segments approximately equal and swollen, being wider than the thorax    | <i>Palpigerida</i> Olfers, 1907 (805) |   |

## FAMILY CATASTYLIDAE OLFERS, 1907

## KEY TO THE GENERA OF THE CATASTYLIDAE (FOSSIL COLLEMBOLA)

- |  |                                      |   |
|--|--------------------------------------|---|
| 1. Scales present; Ants. III and IV annulated  | <i>Cuculliger</i> Olfers, 1907 (805) |   |
| Scales absent  | .....                                | 2 |
| 2. Abd. IV with two spines and Abd. V with two long cerci                                    | <i>Catastylus</i> Olfers, 1907 (805) |   |
| Abd. V with either a spine or long setae   | .....                                | 3 |
| 3. Abd. V with two long cerci bearing basal papillae, and one long median upturned spine     | <i>Polystylus</i> Olfers, 1907 (805) |   |
| Abd. V on posterior border and Abd. VI on each side with a short papilla bearing a long seta | <i>Omophora</i> Olfers, 1907 (805)   |   |

## FAMILY \*ONCOPODURIDAE DENIS, 1934

## KEY TO THE GENERA OF THE ONCOPODURIDAE

- |  |  |   |
|--|--|---|
| 1. Ocelli and pigment present; mucro with two basal ciliated setae                                       | <i>Harlomillsia</i> Bonet, 1944 (125)<br>= <i>Millsia</i> Bonet, 1943 (124) (not of Womersley) |   |
| Ocelli and pigment absent  | .....  | 2 |
| 2. Mucro with two basal scales and ventral lamellae; dens with a single spine on outer edge              | <i>Oncopodura</i> Carl et Leb, 1905 (206)<br>= <i>Cyphoderellopsis</i> Yosii, 1939 (1194)      |   |
| Mucro without scales or lamellae; dens apically with two scales extending sometimes beyond apex of mucro | <i>Borecus</i> Folsom, 1923 (461)  |   |

## FAMILY ISOTOMIDAE SCHAEFFER, 1896

## SUB-FAMILY †ANUROPHORINAE BÖRNER, 1901

## KEY TO THE GENERA OF THE ANUROPHORINAE

- |                                      |       |   |
|--------------------------------------|-------|---|
| 1. Anal spines present on Abds. V-VI | ..... | 2 |
| Anal spines absent                   | ..... | 4 |

\*The *Oncopoduridae* were first recognized as a distinct family by Denis in 1934, but later workers continued to refer to it as a sub-family either of the *Cyphoderidae* or the *Isotomidae*, and much confusion has resulted. Bonet, in 1943, has discussed the situation at some length and produced convincing evidence to support Denis's view, with which I concur, that the *Oncopoduridae* is a family.

†This name is reverted to here pending the decision of the International Commission on Zoological Nomenclature regarding the retention on the official list of the genus *Anurophorus* Nicolet.



7. Sixth abdominal segment visible from above ..... *Protanura* Börner, 1906 (147)  
 Sixth abdominal segment hidden beneath fifth ..... *Morulina* Börner, 1906 (147)

TRIBE *PSEUDACHORUTINI* BÖRNER, 1906  
 KEY TO THE GENERA OF THE *PSEUDACHORUTINI*

- |   |       |       |       |       |       |       |       |       |       |       |   |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
| 1. Postantennal organ present   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2   |
| Postantennal organ absent   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 15  |
| 2. Paratergal areas and body segments dorsally with many long finger-like or short spine-like processes of the cuticle  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3   |
| Without such finger-like or spine-like processes  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 4   |
| 3. Paratergal areas very strongly developed, greatly swollen and prolonged laterally into strong elongated finger-like processes, there being one to each pleural area or body segment  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |   |
|   |       |       |       |       |       |       |       |       |       |       | * <i>Acanthanura</i> Börner, 1906 (147)<br>= <i>Anoura</i> Lubbock, 1899 (715) (in part)<br><i>Ceratrimeria</i> Börner, 1906 (147)<br>(in part)<br>* <i>Womersleymeria</i> Stach, 1949 (1029) |
| Paratergal areas well developed but not so swollen and not prolonged into finger-like processes; instead, covered with numerous short, blunt, spine-like processes, of which there are several to each pleural area or body segment | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |   |
|   |       |       |       |       |       |       |       |       |       |       | * <i>Holacanthella</i> Börner, 1906 (147)<br>= <i>Anoura</i> Lubbock, 1899 (715) (in part)<br><i>Ceratrimeria</i> Börner, 1906 (147)<br>(in part)   |
| 4. Postantennal organ with the lobes arranged in either a circle or ellipse or as a cross   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 5   |
| Postantennal organ with the lobes arranged in a cluster   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 12  |
| 5. Body segments with distinct paratergal areas that are often greatly swollen or enlarged  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 6   |
| Body segments without prominent paratergal areas, but with indications of such  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 11  |
| 6. Abd. VI completely hidden below Abd. V, not visible from above   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 7   |
| Abd. VI not completely hidden, partly visible from above  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 9   |

\*The first species belonging to the genus *Holacanthella* was described by Lubbock in 1899, along with two other species from Tasmania, all of which he placed in the genus *Anoura*. As the name *Anoura* was a homonym, Börner, in 1906, proposed the new name *Holacanthella* for the New Zealand species and *Acanthanura* for the two Tasmanian species. Later, it was suggested that these "spiney" species and the more usual flattened, plain, species described under the name *Ceratrimeria* Börner were apparently the same generically. This view was upheld by Womersley (*Jour. Linn. Soc.*, XI, 1937), and all species with paratergal swellings or prominent pleural areas were lumped together under the generic name *Ceratrimeria*. In 1925, Carpenter erected a new genus *Platanurida* for a *Ceratrimeria*-like species, and Womersley, in 1937, erected a genus *Tasmanura* for another closely related form from Tasmania. In 1941, I included *Platanurida* in the genus *Ceratrimeria*. Later, in 1942, I recognized that the genus *Ceratrimeria*, as then visualized, contained in New Zealand two clearly defined groups, which I designated the *spinosa* and *lata* groups respectively. From further careful study of these two groups, I am convinced that two genera are involved, and that Börner's earlier diagnosis, in which the "spiney" forms were placed in the genera *Holacanthella* and *Acanthanura*, was correct. There seems no doubt whatever that the species belonging to the genera *Holacanthella* and *Acanthanura* were incorrectly included in the genus *Ceratrimeria*, as, in addition to the differences in body structure between them and the latter genus, there also is the complete absence of the furcula. The two genera are confined to the southern regions, *Holacanthella* being peculiar to New Zealand and *Acanthanura* to Tasmania, as distinct from *Ceratrimeria*, which is much more cosmopolitan in distribution. Stach differentiates the genus *Womersleymeria* from *Acanthanura* principally on the form of the postantennal organ, which is a cluster instead of an ellipse as in *Acanthanura*. I do not consider this difference of sufficient weight in view of the similarity of the paratergal structures which are the principal feature of these genera.

7. Ocelli, eight to each side .....	8
Ocelli, five to each side; body noticeably flattened, with distinct paratergal areas; post-antennal organ with 9-13 lobes in a rosette; furcula greatly reduced to two small knobs .....	
	<i>Platanurida</i> Carpenter, 1925 (237)
8. Furcula present, well developed; paratergal areas well developed; postantennal organ with 12-28 lobes in an ellipse .....	
	<i>Ceratrimeria</i> Börner, 1906 (147) = <i>Schoetella</i> Schaeffer, 1897 (933)
Furcula absent; paratergal areas well developed and rounded; postantennal organ with up to 30 lobes in an ellipse; body densely clothed with fine setae .....	
	<i>Meganura</i> Handschin, 1942 (563)
9. Posterior margin of Abd. V straight .....	10
Posterior margin of Abd. V emarginated and surrounding the median portion of Abd. VI visible from above; furcula present but short .....	
	<i>Megachorutes</i> Handschin, 1942 (563)
10. Furcula well developed; paratergal areas distinct; body rather plump; postantennal organ with 8-20 lobes in a rosette or ellipse .....	
Furcula reduced, stump-like; body broad and flat, with prominent lateral paratergites; post-antennal organ with four lobes arranged as a cross .....	
	<i>Zealandmeria</i> Stach, 1949 (1029)
	<i>Tasmanura</i> Womersley, 1937 (1179)
11. Maxilla with distinct head and two lamellae; ocelli, eight to each side; postantennal organ with 15-20 lobes in an ellipse; mucro usually wedge-like .....	
Maxilla without distinct head or lamellae; ocelli, 5-8 to each side; postantennal organ with 3-20 lobes arranged as a circle or an ellipse; mucro generally spoon-like .....	
	<i>Pseudachorudina</i> Stach, 1949 (1029)
	<i>Pseudachorutes</i> Tullberg, 1871 (1073) = <i>Gnathocephalus</i> MacGillivray, 1893 (724)
	<i>Brachysius</i> MacGillivray, 1893 (724) * <i>Sphragiphora</i> Houlbert, 1924 (597)
12. Abd. VI partly visible from above .....	13
Abd. VI completely hidden below Abd. V and not visible from above; ocelli, six to each side; postantennal organ with about 80 lobes; furcula short .....	
	<i>Cryptotrimeria</i> Stach, 1949 (1029)
13. Ocelli, eight to each side; postantennal organ with 17-40 lobes .....	
Ocelli, fewer than eight to each side .....	14
	<i>Aethiopella</i> Handschin, 1942 (563)
14. Furcula well developed; ocelli, five to each side .....	
Furcula reduced, with elongated mucro; ocelli, 5-6 to each side .....	
	<i>Americotrimeria</i> Stach, 1949 (1029)
	<i>Neotropiella</i> Handschin, 1942 (563)
15. Ocelli, eight to each side .....	16
Ocelli, fewer than eight to each side .....	18
16. Furcula well developed; posterior margin of Abd. V straight .....	17
Furcula reduced, very short; dens wart-like; mucro hook-like and not separated from dens; body usually flattened and with paratergal areas strongly marked; posterior border of Abd. V emarginated .....	
	<i>Linnaniemia</i> Philpitschenko, 1926 (855)

\*The sub-genus *Sphragiphora* Houlbert, 1924. This sub-genus was proposed by Houlbert ("Thysanoures, Dermapteres, et Orthopteres de France et de la Faune européenne," p. 67) for those species belonging to the genus *Pseudachorutes* Tullb., in which the postantennal organ was present, while those species without a postantennal organ were left in the genus *Pseudachorutes*. However, this separation proposed by Houlbert must be invalid, as *P. subcrassus* Tullb., the type species of the genus *Pseudachorutes* has a well-developed postantennal organ. The sub-genus *Sphragiphora* Houlbert falls, therefore, as a synonym of the genus *Pseudachorutes* Tullberg, 1871.

2. Anal spines on Abd. V, 15-30, arranged as a crown; dens and mucro fused .....	<i>Proctostephanus</i> Börner, 1902 (142)	
Anal spines on Abd. VI; furcula present or absent; ocelli, eight to each side .....	.....	3
3. Anal spines, two, small; unguiculus absent; furcula absent .....	<i>Uzelia</i> Absolon, 1901 (13)	
	= <i>Pentapleotoma</i> Börner, 1903 (144)	
	<i>Protanurophorus</i> Womersley, 1925 (1150)	
Anal spines, four, large; unguiculus present; furcula present or absent .....	<i>Tetracanthella</i> Schött, 1891 (951)	
	= <i>Lubbockia</i> Haller, 1880 (524)	
	<i>Deuterolubbockia</i> Dalla Torre, 1895 (280)	
4. Furcula present, sometimes partially reduced .....	.....	5
Furcula absent or sometimes represented by a papilla .....	.....	12
5. Abdominal segments distinctly separated and visible from above .....	.....	6
Abds. IV-VI fused or VI more or less concealed beneath Abd. V .....	.....	11
6. Ocelli present, but reduced in number .....	.....	7
Ocelli absent; furcula reaching to middle of Abd. III only; mucro and dens indistinctly separated; claw with tunica .....	<i>Womersleyella</i> Salmon, 1944 (917)	
7. Body extremely elongate or posteriorly flexed downwards .....	.....	8
Body not so; more normal; ocelli, six to each side .....	.....	9
8. All Abdominal segments sub-equal; ocelli, one, two, or five to each side; unguiculus simple Abds. V and VI bent downwards; ocelli, five or eight to each side .....	<i>Folsomides</i> Stach, 1922 (1004)	
	<i>Subisotoma</i> Stach, 1947 (1027)	
9. Unguiculus normal, simple .....	.....	10
Unguiculus three winged; dens with 4-5 transverse posterior folds .....	<i>Jacksoniella</i> Denis, 1931 (368)	
10. Furcula well developed; integument very granular .....	<i>Astephanus</i> Denis, 1927 (360)	
Furcula reduced; mucro hook-like; integument reticulate .....	<i>Coloburella</i> Latzel, 1917 (665)	
11. Abd. VI concealed beneath Abd. V .....	<i>Cryptopygus</i> Willem, 1902 (1138)	
Abds. IV-VI fused; anus ventral; ocelli absent; body extremely elongate; furcula short, not reaching to Abd. III .....	<i>Isotomodes</i> Axelson, 1907 (60)	
12. Furcula represented by a papilla .....	.....	13
Furcula absent .....	.....	14
13. Cuticle with honeycombed appearance; clavate tenent hairs absent from foot .....	<i>Paranurophorus</i> Denis, 1929 (363)	
Cuticle very granulate; clavate tenent hairs present on foot; papilla of furcula with two short ridges .....	<i>Boernerella</i> Denis, 1925 (351)	
14. Anal papillae present; body elongate; ocelli reduced .....	<i>Pseudanurophorus</i> Stach, 1922 (1004)	
Anal papillae absent; body normal; ocelli normal .....	<i>Anurophorus</i> Nicolet, 1841 (797)	
	= <i>Adicranus</i> Bourlet, 1843 (160)	
	<i>Bourletia</i> MacGillivray, 1893 (724)	

## SUB-FAMILY PROISOTOMINAE STACH, 1947

## KEY TO THE GENERA OF THE PROISOTOMINAE

1. Abds. V-VI or IV-VI fused, forming a single mass .....	.....	2
All abdominal segments distinctly separated or segments V and VI partly fused, with a trace of dorsal suture still visible .....	.....	7

2. Abds. V-VI fused; body setae arranged as transverse bands around posterior margins of thoracic and first four abdominal segments	<i>Parafolsomia</i> Salmon, 1949 (925)	
Abds. IV-VI fused; postantennal organ present, elliptical	.....	3
3. Mucro dentate	.....	4
Mucro falciform	.....	6
4. With eight ocelli to each side	* <i>Bagnallella</i> nov.	
With fewer than eight ocelli to each side	.....	5
5. With 2-5 ocelli to each side	<i>Folsomidiella</i> Bagnall, 1949 (88)	
Ocelli absent; postantennal organ long, elliptical, and usually narrow	* <i>Folsomia</i> Willem, 1902 (1141) = * <i>Litsteria</i> Bagnall, 1949 (88)	
6. Ocelli present, reduced in number; postantennal organ present; Ant. IV without sense clubs	<i>Arlea</i> Womersley, 1939 (1181)	
Ocelli absent; postantennal organ absent; Ant. IV with 5-6 large sense clubs and two broad sense lobes	<i>Folsomia</i> Denis, 1931 (368) = <i>Denisia</i> Folsom, 1932 (466)	
7. Body form normal, without bulging segments or deep intersegmental constrictions	.....	8
Body with the segments bulging and deep intersegmental constrictions; unguiculus three-winged; ocelli, eight to each side.	<i>Guthriella</i> Börner, 1906 (147)	
8. Dens normal without terminal expansions	.....	9
Dens with a large terminal bladder-like lateral lobe on outer edge; ocelli, eight to each side; Abds. V-VI fused with dorsal suture	<i>Appendisotoma</i> Stach, 1947 (1027)	
9. Bothriotrichia present on abdominal segments	.....	10
Bothriotrichia absent	.....	11
10. With one pair dorsal bothriotrichia on Abd. IV; hind femur normal; mucro with apical, sub-apical, and proximal teeth and four lamellae	<i>Hydroisotoma</i> Stach, 1947 (1027)	
With two pairs dorsal bothriotrichia on Abds. V-VI; hind femur with large spine-like process; mucro with three teeth in which one is apical and the others form a pair side by side near base	<i>Archisotoma</i> Linnaniemi, 1912 (690)	
11. Dentes shorter than manubrium, usually granulate, coarsely tuberculate, crenulate, or notched; mucro with 2-4 teeth and with or without lamellae; Abds. V-VI separate or partly fused; ocelli, eight to each side	<i>Proisotoma</i> Börner, 1901 (140)	
Dentes longer than manubrium, usually smooth, but heavily clothed with setae; mucro long, bidentate, with broad lamellae; Abds. V-VI separated	<i>Ballistrura</i> Börner, 1906 (147)	

SUB-FAMILY ISOTOMINAE SCHAEFFER, 1896  
KEY TO THE GENERA OF THE ISOTOMINAE

1. Fine wavy sensory ciliated hairs (lasiotrichia) on abdominal segments	.....	2
Without lasiotrichia	.....	8
2. Dentes with either simple or serrated spines	.....	3
Dentes without spines	.....	5

\*Bagnall has proposed a genus *Litsteria* for those species previously included in *Folsomia* but in which the eyes are reduced to two, one, or none to each side. *Folsomia*, however, has for its genotype *F. fimetaria*, which has no ocelli. Bagnall's name *Litsteria* falls, therefore, as a synonym. He has also proposed the genus *Folsomidiella* for those *Folsomia* species with five ocelli to each side. This is in order, but I propose that the definition of *Folsomidiella* be enlarged to include those species with 1-5 ocelli to each side and that a new genus *Bagnallella* be erected to include those species with eight ocelli to each side previously included in the genus *Folsomia*. The genotype of *Bagnallella* will be *B. (F.) sedecimoculata* Salmon (944).

3. Dental spines serrated .....	.....	4
Dental spines simple, but each spine arising from a papilla .....	.....	<i>Proisotomurus</i> Womersley, 1934 (1169)
4. Ant. III and Ant. IV annulated; tibiotarsi broad and flattened .....	.....	<i>Tibiolatra</i> Salmon, 1941 (910)
Antennae not annulated; tibiotarsi normal .....	.....	<i>Acanthomurus</i> Womersley, 1934 (1169)
5. Body of peculiar form; Ant. III and Ant. IV annulated; ocelli reduced, six to each side; mucro with three teeth .....	.....	<i>Architomocerura</i> Denis, 1931 (369)
Body normal in form; ocelli, eight to each side; antennae not annulated .....	.....	6
6. Sense organ Ant. III normal, with not more than 2-3 sense rods .....	.....	7
Sense organ Ant. III with two blunt sense rods and 15-20 short, truncated sensory hairs .....	.....	<i>Axelsonia</i> Börner, 1906 (147) = <i>Moniezina</i> Denis, 1922 (343)
7. Mucro quadridentate .....	.....	<i>Isotomurus</i> Börner, 1903 (144)
Mucro falciform .....	.....	<i>Falcisotomina</i> Stach, 1947 (1027)
8. Claw with basal tunica .....	.....	9
Claw without basal tunica .....	.....	10
9. Dens with long terminal seta over-reaching mucro; mucro tridentate with lamellae; clavate tenent hairs absent .....	.....	<i>Agrenia</i> Börner, 1906 (147)
Dens without terminal seta; mucro quadridentate without lamellae; broadly spatulate tenent hairs present .....	.....	<i>Pteronychella</i> Börner, 1909 (150)
10. Flexed setae on thoracic and abdominal segments; postantennal organ present or absent .....	.....	11
Without flexed setae; postantennal organ present or absent .....	.....	12
11. Mucro bidentate; Abd. IV not much longer than Abd. III; foot without clavate tenent hairs .....	.....	<i>Corynothryx</i> Tullberg, 1876 (1075)
Mucro falciform; Abd. IV three times longer than Abd. III; clavate tenent hairs present on foot .....	.....	<i>Isotobrya</i> Womersley, 1934 (1169)
12. Setae of the body and appendages each arising from a distinct wart or papilla .....	.....	* <i>Papillomurus</i> Salmon, 1941 (910)
Setae not arising from warts or papillae .....	.....	13
13. Body of normal form without swellings or processes .....	.....	14
Body with abnormal spine-like or papillate processes or clusters of setae .....	.....	32
14. Manubrium with spines .....	.....	15
Manubrium without spines .....	.....	16
15. Manubrium and dens both with spines; mucro tridentate; setae simple, ciliated, and serrated; postantennal organ present, elongate, elliptical .....	.....	<i>Sorensia</i> Salmon, 1949 (925)
Manubrium only with a terminal group of seven spines on posterior aspect; mucro tridentate .....	.....	<i>Acanthisotoma</i> Bonet, 1942 (123)
16. Dens spined, the spines all simple .....	.....	17
Dens without spines .....	.....	21
17. Spines of dens each arising from a wart or papilla .....	.....	18
Spines of dens without warts or papillae .....	.....	19

\*Stach (1055) criticises this genus and suggests that the species *P. fuscus* and *P. parvus* belong to *Vertagopus* and *P. dissimilis* to *Tomocerura*, basing this opinion on the structures of the feet and furcula. He apparently ignores the extraordinary integumentary feature of the papillate setae. I cannot accept his view, as I consider the papillate setae a most striking character of generic importance. Recently (953) I have described three more species belonging to the genus from the Antarctic.

18. Spines of dens all slender and up to four rows; clavate tenent hairs present	<i>Procerura</i> Salmon, 1941 (910)	
Spines of dens of two kinds; two rows of slender spines and up to three rows of short stout spines; clavate tenent hairs absent	<i>Spinocerura</i> Salmon, 1941 (910)	
19. Mucro dentate with four teeth	.....	20
Mucro falciform; clothing of long pubescent setae	<i>Millsia</i> Womersley, 1942 (1184)	
20. Clothing of simple setae; postantennal organ present	<i>Setocerura</i> Salmon, 1949 (925)	
Clothing of ciliated setae; postantennal organ absent	<i>Tomocerura</i> Wahlgren, 1900 (1105)	
21. Abd. IV bearing excessively long setae	<i>Alloschaefferia</i> Börner, 1903 (144)	
Abd. IV with normal setae	.....	22
22. Abd. IV equal to or shorter than Abd. III	.....	23
Abd. IV longer than Abd. III	.....	27
23. Tenent hairs present on each foot	.....	24
Tenent hairs absent	.....	25
24. Abds. V and VI fused; furcula reaching ventral tube; mucro with three teeth	<i>Pseudisotoma</i> Handschin, 1924 (530)	
Abds. V and VI not fused; furcula reaching only posterior margin of Abd. II; mucro with four teeth	<i>Vertagopus</i> Börner, 1906 (147)	
25. Furcula reaching forward to ventral tube; Abds. V and VI not fused	.....	26
Furcula reaching only posterior margin of Abd. II; some setae strongly serrated; Abds. V-VI fused	<i>Isotomedia</i> Salmon, 1944 (917)	
26. Setae of the body simple	<i>Isotoma</i> Bourlet, 1839 (159) = <i>Podura</i> Müller, 1776 (789) <i>Desoria</i> Nicolet, Agassiz, 1841 (797) (24)	
Setae of the body serrated	<i>Apoeona</i> Gistel, 1848 (510) <i>Euisotoma</i> Börner, 1901 (140)	
27. Abd. V. and Abd. VI fused	.....	28
Abd. V and VI not fused	.....	29
28. Ocelli, eight to each side; postantennal organ elongate elliptical, with a constriction at its middle	<i>Isotomina</i> Börner, 1903 (144)	
Ocelli reduced, six or fewer to each side; postantennal organ present, elliptical and sometimes constricted at middle	<i>Proisotomina</i> Salmon, 1948 (921)	
29. Ocelli, eight to each side; postantennal organ with thickened, flap-like, divided margins; mucro tridentate; tenent hairs absent	<i>Heteroisotoma</i> Stach, 1947 (1027)	
Ocelli reduced; postantennal organ without thickened margins or absent	.....	30
30. Ocelli, six or fewer to each side; postantennal organ present	<i>Parisotoma</i> Bagnall, 1940 (84)	
Ocelli absent	.....	31
31. Postantennal organ present	<i>Isotominella</i> Delamare-Deboutteville, 1948 (332)	
Postantennal organ absent	<i>Isotomiella</i> Bagnall, 1940 (84)	
32. Body of male with terminal abdominal spines or horn-like structures on head	.....	33
Ant. II in male with cluster of short, thick, ciliated setae; Abd. III, at centre, with cluster of moderately long, curved, ciliated setae; tenent hairs absent; mucro bidentate; body with numerous stout, blunt, ciliated bristles	<i>Australotomurus</i> Stach, 1947 (1027)	

33. Abd. V, in the male, dorsally with 4-6 stout spines; clavate tenent hairs absent; Abds. V and VI not fused; mucro with two or four teeth ..... *Spinisotoma* Stach, 1926 (1009)
- Males with long curved horns on top of head; antennae thickened; clavate tenent hairs present; Abds. V-VI fused; mucro with three teeth ..... *Rhodanella* Salmon, 1945 (918)  
= *Rhodesia* Womersley, 1934 (1169)

FAMILY TOMOCERIDAE SCHAEFFER, 1896

SUB-FAMILY LEPIDOPHORELLINAE BÖRNER, 1906

This sub-family contains two tribes, the *Lepidophorellini* Womersley and the *Neophorellini* Womersley, of which the latter contains one genus only, *Neophorella* Womersley, 1934 (1168). The *Lepidophorellini* and *Neophorellini* are separated as in the key to the families, sub-families, and tribes of the Collembola given in the early part of this work.

TRIBE LEPIDOPHORELLINI WOMERSLEY, 1934

KEY TO THE GENERA OF THE LEPIDOPHORELLINI

1. Tergum of the mesothorax at least three times as long as the metathorax and projecting forward over the head for a considerable distance ..... *Pseudolepidophorella* Salmon, 1941 (910)
- Tergum of the mesothorax shorter, not or only slightly overlying rear of head ..... 2
2. Antennae normal, four segmented; unguiculus generally lanceolate, normal; scales normal ..... *Lepidophorella* Schaeffer, 1897 (934)  
= *Drepanura* Moniez, 1894 (782)
- Antennae abnormal, apparently three segmented; empodial appendage peculiar, four-winged, with prominent teeth; scales hyaline ..... *Antennacyrtus* Salmon, 1941 (910)

Sub-family TOMOCERINAE Börner, 1906

This sub-family contains three tribes—*Tomocerini* Salmon, *Novacerini* Salmon, and *Paratomocerini* Salmon—separated as in the key to the families of Collembola in the early part of this work. The tribe *Paratomocerini*, originally erected as a sub-family, contains only one genus *Paratomocerus* Tarsia in Curia, 1938 (1051). Likewise the *Novacerini* contains only the one genus, *Novacerus* Salmon, 1942 (911) = *Neocerus* Salmon, 1941 (910).

Tribe TOMOCERINI Salmon, 1941

KEY TO THE GENERA OF THE TOMOCERINI

1. Ocelli present, six to each side; clavate tenent hairs present ..... 2
- Ocelli absent; tenent hairs absent ..... *Tritomurus* Frauenfeld, 1854 (476)
2. Head of maxilla without a beard ..... *Tomocerus* Nicolet, 1841 (798)  
= *Macrotoma* Bourlet, 1839 (159)
- Head of maxilla with a beard ..... Sub-genus *Pogonognathellus* Paclt, 1947 (828)  
= *Pogonognathus* Börner, 1908 (159)

FAMILY PROTENTOMOBRYIDAE FOLSOM, 1937 (FOSSIL COLLEMBOLA)

This family contains two genera, separated as follows:—

1. Body with large dorsal horn-like structure arising dorsally on the mesothorax and projecting posteriorly over the metathorax ..... *Stylonotus* Olfers, 1907 (805)
- Body without such structure; Abd. VI with suranal and subanal valves ..... *Protentomobrya* Folsom, 1937 (468)

## FAMILY MYDONIIDAE SALMON, 1945

## SUB-FAMILY MYDONIINAE SALMON, 1945

## TRIBE MYDONIINI nov.nom.

## KEY TO THE GENERA OF THE MYDONIINI

1. Scales entirely absent from the body .....	2
Scales present on the body .....	10
2. Body normal; furcula reaching forward to thorax; mucro distinct from dens .....	3
Body abnormal, strongly convex; antennae longer than body; furcula reaching forward to head; mucro not distinctly separated from dens, simple, with horn-like apex .....	<i>*Metacoelura</i> nov. nom. = <i>Coelura</i> Schött, 1917 (962)
3. Ocelli, eight to each side .....	5
Ocelli reduced or absent; claw with basal wing- like teeth .....	4
4. Tibiotarsi on their inner surfaces with two rows of plain setae; clavate tenent hairs, if pre- sent, then only weakly developed .....	<i>Sinella</i> Brook, 1882 (170)
Tibiotarsi of first and second legs without plain setae; tibiotarsus of third leg with one plain setae opposite the tenent hair; clavate tenent hairs present .....	<i>Parasinella</i> Bonet, 1934 (121)
5. Claw with wing-like basal teeth; tibiotarsus on inner surface, with at least one row of plain setae; tenent hairs present, but weak .....	<i>Deuterosinella</i> Salmon, 1943 (914)
Claw with wing-like basal teeth; tenent hairs well developed .....	6
6. Mucro dentate .....	7
Mucro falciform .....	<i>Drepanura</i> Schött, 1891 (950)
7. Dens with spines .....	8
Dens without spines .....	9
8. Spines of dens simple .....	<i>Homidia</i> Börner, 1906 (147)
Spines of dens serrated or ciliated, or both, and each arising from a distinct wart or papilla; setae of body of peculiar form and each arising from a wart or papilla .....	<i>Mesentotoma</i> Salmon, 1942 (913)
9. Claw always with two large, generally elongate, external lateral basal teeth in addition to normal external teeth .....	<i>Mydonius</i> Gistel, 1838 (510) = <i>Entomobrya</i> Rondani, 1861 (904) <i>Chorutes</i> Burmeister, 1838 (198)
Claw always without large external lateral basal teeth, but usually with normal external lateral teeth .....	<i>Isotoma</i> Bourlet, 1839 (159) [in part] <i>Degeeria</i> Nicolet, 1841 (798) [in part]
10. Dens with spines .....	<i>Pseudentomobrya</i> Salmon, 1941 (910)
Dens without spines, but with or without scales .....	11
11. Claw with basal wing-like tooth; mucro sub- apical to dens and falciform .....	13
Claw without basal wing-like tooth; mucro at apex of dens .....	<i>Metasinella</i> Denis, 1929 (363) = <i>Sulcuncus</i> Mills, 1938 (767)
12. With a single row of dental spines .....	12
With multiple rows of dental spines .....	<i>Acanthurella</i> Börner, 1906 (147) <i>Acanthocyrtus</i> Handschin, 1925 (533)

\*As the name *Coelura* was used by Warren in the Lepidoptera prior to its usage by Schott in the Collembola, I propose the new name *Metacoelura* in its place.



13. Body scales apically either rounded or obtusely pointed; dens with scales .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16
Body scales apically acutely pointed and with few striations; dens without scales .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14
14. Mesonotum projecting forward and overlapping rear of head; Abd. VI with finger-like process										
Mesonotum not overlapping head; Abd. VI without finger-like process .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
15. Mucro bidentate with basal spine .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Mucro falciform .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
										<i>Willowsia</i> Shoebottom, 1917 (986)
										<i>Drepanosira</i> Bonet, 1942 (123)
										= <i>Parasira</i> Bonet, 1930 (116)
16. Ant. III and Ant. IV or only Ant. IV annulated										17
Antennae not annulated .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23
17. Mucro dentate .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18
Mucro falciform .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22
18. Mesonotum projecting forward and considerably overlapping head, about four times as long as metanotum .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19
Mesonotum projecting forward, but not or only slightly overlapping head .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20
19. Ocelli, eight to each side .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Ocelli reduced, six to each side .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	<i>Lepidocyrtoides</i> Schött, 1917 (962)
20. Abdominal lasiotrichia present .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21
Without abdominal lasiotrichia .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	<i>Calistella</i> Reuter, 1893 (Schött) (953)
										<i>Mesira</i> Scherbakov, 1898 (938)
21. Ocelli, eight to each side; mesonotum slightly overlapping head; dens without spines .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Ocelli absent; mesonotum not overlapping head; dens with spines .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	<i>Tromesira</i> Womersley, 1942 (1184)
										<i>Troglosinella</i> Delamare-Deboutteville, 1949 (335)
22. Ant. II normal, without specialized sense organ of large setae .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Ant. II with specialized sense organ consisting of a circle of long stout ciliated setae .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	<i>Lepidocyrtinus</i> Börner, 1903 (144)
										<i>Lepidoregia</i> Delamare-Deboutteville, 1948 (332)
23. Claw with basal wing-like teeth .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24
Claw without basal wing-like teeth .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28
24. Unguiculus as well as claw with wing-like teeth										25
Claw only with wing-like teeth .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26
25. Mucro dentate .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Mucro falciform with basal spine; Ant. II with spine-like process .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	<i>Protosirodes</i> Börner, 1901 (136)
26. With a single wing-like tooth to claw .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
With two wing-like basal teeth to claw; mucro dentate with basal spine .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27
										<i>Lepidosinella</i> Handschin, 1920 (528)
										<i>Pseudosinella</i> Schaeffer, 1897 (934)
										= <i>Tullbergia</i> Lie Pettersen, 1896 (683)
										<i>Pettersenia</i> Scherbakov, 1898 (938)
										<i>Mesosirodes</i> Börner, 1901 (136)
										<i>Sirodes</i> Schaeffer, 1900 (937)
										<i>Sinelloides</i> Bonet, 1942 (123)
										= <i>Propesinella</i> Salmon, 1945 (918)
										<i>Parasinella</i> Carpenter, 1935 (241)
										<i>Pseudosinella</i> Schaeffer, 1897 (934)
										[in part]
28. Scales chitinized, coloured, striations clearly visible; Ant. IV with apical exsertile knob										29
Scales hyaline; striations, if present, scarcely visible; Ant. IV without apical exsertile knob										32
29. Mucro dentate .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30
Mucro falciform .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
										* <i>Seira</i> Lubbock, 1870 (708)
										= <i>Sira</i> Tullberg, 1872 (1074)
										<i>Pseudosira</i> Schött, 1893 (954)
										<i>Calistocyrtus</i> Ritter, 1911 (903)

\*When erecting this genus in 1871, Lubbock definitely stated that the name was derived from the Greek  $\text{C}\epsilon\text{i}\rho\alpha$  (*Seira*), meaning a chain. The spelling *Sira* adopted by many authors is, therefore, not only grammatically incorrect, but also contrary to the rules of nomenclature and should be dropped. The name *Sira* is also preoccupied, having been used in 1838 for a genus of birds and again in 1855 for a genus in the Mollusca.

30. Scales very long and pointed, with short striations	<i>Lepidobrya</i> Womersley, 1937 (1176)	31
Scales shorter	.....	
31. Claw with a pair of external, lateral <i>basal</i> teeth, generally elongate, in addition to normal external teeth; mucro-dens joint usually with bow-like lamella	<i>Urewera</i> Salmon, 1941 (910)	
Claw without external lateral <i>basal</i> teeth, but with normal external teeth; mucro without bow-like lamella	<i>Lepidosira</i> Schött, 1925 (965)	
32. Clavate tenent hairs present; ocelli, eight to each side	.....	33
Clavate tenent hairs absent; ocelli reduced	.....	34
33. Mucro bidentate	<i>Lepidocyrtus</i> Bourlet, 1839 (159) = <i>Paidium</i> Koch, 1840 (662)	
Mucro falciform	<i>Drepanocyrtus</i> Handschin, 1925 (533)	
34. Mucro bidentate, with one basal spine; ocelli, two to each side	<i>Lepidiaphanus</i> Salmon, 1949 (925)	
Mucro bidentate, with two basal spines; ocelli, six to each side	* <i>Setogaster</i> nov. nom. = <i>Trichogaster</i> Handschin, 1932 (560)	

TRIBE ORCHESELLINI BÖRNER, 1906

KEY TO THE GENERA OF THE ORCHESELLINI

1. Scales present	.....	2
Scales absent	.....	10
2. Antennae with four segments, of which none is secondarily divided	.....	3
Antennae with I or both I and II secondarily divided, giving the appearance of 5-6 segments	.....	4
3. Ant. IV longer than body and annulated; Abd. IV only slightly longer than Abd. III	<i>Typhlopodura</i> Absolon, 1900 (5)	
Ant. III and Ant. IV both annulated and much longer than body	<i>Mastigoceras</i> Handschin, 1924 (531)	
4. Apex of abdomen with a long finger-like process	<i>Heteromuricus</i> Imms, 1912 (603)	
Apex of abdomen without process	.....	5
5. Antennae with five segments, Ant. I being secondarily divided; Ants. IV and V or only V generally annulated	.....	6
Antennae with six segments, Ants. I and II being secondarily divided, the fifth and sixth annulated; dens with spines	<i>Dicranocentrus</i> Schött, 1893 (952)	
6. Dens with spines; Ants. IV and V annulated	<i>Alloscopus</i> Börner, 1906 (147)	
Dens without spines	.....	7
7. Abd. IV 8-10 times as long as Abd. III; mesonotum overlapping head; Ant. IV not annulated	<i>Strongylonotus</i> MacGillivray, 1894 (725)	
Abd. IV not more than five times as long as Abd. III	.....	8
8. Antennae annulated; ocelli reduced to two or absent; Abd. IV three times as long as Abd. III	.....	9
Antennae not annulated; ocelli, two to each side	<i>Heteromurodes</i> Absolon, 1901 (8)	

\*As the name *Trichogaster* is preoccupied, having already been used in the Diptera, Protozoa and Pisces before Handschin used it, I propose the new name *Setogaster* in its place.

9. Ants. IV and V both annulated; ocelli absent ..... *Verhoeffiella* Absolon, 1900 (5)  
 Ant. V only annulated; ocelli, two to each side ..... *Ptenura* Templeton, 1842 (1056)  
 = *Heteromurus* Wankel, 1860 (1122)  
*Templetonia* Lubbock, 1862 (706)  
*Propemesira* Salmon, 1942 (913) (918)
10. Antennae with six segments; Abd. IV twice as long as Abd. III ..... *Orchesella* Templeton, 1835 (1055)  
 = *Heteretoma* Bourlet, 1839 (159)  
*Aetheocerus* Bourlet, 1842 (161)
- Antennae with five segments; Abd. IV 3-4 times as long as Abd. III ..... *Orchesellides* Bonet, 1930 (116)  
 = *Orcheselandia* Salmon, 1937 (908) (123)

SUB-FAMILY PARONELLINAE BÖRNER, 1906  
 KEY TO THE GENERA OF THE PARONELLINAE

- |  |  |
|--|--|
| 1. Scales present ..... 2  |  |
| Scales absent ..... 11   |  |
| 2. With thorax strongly humped dorsally ..... 3  |  |
| Thorax not humped; body normal ..... 4   |  |
| 3. With the hump strongest on the mesothorax ..... <i>Idiomerus</i> Imms, 1912 (603)   |  |
| With the hump strongest on the metathorax ..... <i>Campylothorax</i> Schött, 1893 (952)  |  |
| 4. Antennae half as long as body, with segments I and II densely clothed with long black setae; mucro with five teeth ..... <i>Dicranocentroides</i> Imms, 1912 (603)  |  |
| Antennae without long black setae; normal ..... 5  |  |
| 5. Dens spined; mucro small, with 2-4 teeth ..... 6  |  |
| Dens without spines; mucro with 5-7 teeth ..... 10   |  |
| 6. Dens with simple spines ..... 7   |  |
| Dens with serrated spines; mucro not distinctly separated from dens and with three teeth ..... <i>Bromacanthus</i> Schött, 1925 (965)  |  |
| 7. Mucro sometimes reduced to a stump, but if dentate then with two teeth ..... 9  |  |
| Mucro well developed, with 3-4 teeth ..... 8   |  |
| 8. Dens with apical scale-like lobe ..... <i>Paronella</i> Schött, 1893 (952)  |  |
| Dens without apical scale-like lobe ..... = <i>Tricorypha</i> Schött, 1893 (952)   |  |
|  | <i>Callyntrura</i> Börner, 1906 (147)    |
| 9. Dens at apex with two scale-like lobes ..... <i>Paronana</i> Womersley, 1939 (1181)   |  |
| Dens without scale-like lobes at apex ..... <i>Pseudoparonella</i> Handschin, 1925 (533)   |  |
| 10. Dens at apex with two small scale-like appendages ..... <i>Handschinphysa</i> Paclt, 1947 (828)  |  |
|  | = <i>Phorophysa</i> Salmon, 1945 (918)   |
|  | <i>Microphysa</i> Handschin, 1925 (533)  |
|  | <i>Aphysa</i> Handschin, 1925 (533)      |
| Dens without scale-like appendages at apex ..... 12  |  |
| 11. Antennae at least twice as long as body ..... 15   |  |
| Antennae at most only slightly longer than body, sometimes shorter than body ..... 13  |  |
| 12. Dentes with spines ..... 14  |  |
| Dentes without spines ..... 14   |  |
| 13. Antennae more than twice as long as body, and on lower surface with long stiff setae, which are almost as long as the segment on which they are situated; Ant. IV annulated; dens at apex with two pubescent spine-like appendages ..... <i>Parachaetoceras</i> Salmon, 1941 (910) |  |
| Antennae without long setae; Ant. IV not annulated; dens at apex with scale-like plates ventrally and pubescent spine-like appendages dorsally ..... <i>Parasalina</i> Salmon, 1944 (917)  |  |
|  | = <i>Paronana</i> Womersley, 1939 (1181) |
|  | [in part]                                |

14. Dens, near base of mucro, with a scale-like lobe; mucro with two teeth; antennae twice as long as body, without long setae ..... *Salina* MacGillivray, 1894 (725)  
 = *Cremastocephalus* Schött, 1896 (957)
- Dens without scale-like lobe; antennae more than twice as long as body and, on the lower surface, with long stiff setae—as long, or nearly as long, as the segment of the antennae on which they are situated ..... \**Plumachaetas* nov. nom.  
 = *Chaetoceras* Handschin, 1926 (539)
15. Dentes with serrated spines; mucro with three teeth; antennae longer than body ..... *Glacialoca* Salmon, 1941 (910)  
 Dentes without spines; mucro with 2-3 teeth ..... 16
16. Antennae shorter than body; mucro with two teeth ..... 17  
 Antennae longer than body ..... 18
17. Small species, with a row of large, curved, ciliated, scale-like setae on each dens; dentes not annulated and without apical scale-like plates ..... *Micronellides* Salmon, 1944 (917)
- Large species, without scale-like setae on dentes, but with each dens annulated and provided with an apical scale-like plate ..... *Akabosia* Kinoshita, 1919 (631)
18. Mucro with two teeth ..... *Paronellides* Schött, 1925 (965)  
 = *Pterikrypta* Ritter, 1911 (903)  
*Pericrypta* Schött, 1925 (965)
- Mucro with three teeth ..... *Pseudoparonellides* Salmon, 1941 (910)

SUB-FAMILY CYPHODERINAE BÖRNER, 1906

TRIBE TROGLOPEDETINI BÖRNER, 1906

This sub-family contains two genera only, separated as follows:—

- With a single ocellus to each side of the head ..... *Troglopedetina* Delamare-Deboutteville, 1945 (315)
- Ocelli absent ..... *Troglopedetes* Absolon, 1907 (19)  
 = *Cyphoderopsis* Carpenter, 1917 (233)  
*Trogolaphysa* Mills, 1938 (767)

TRIBE CYPHODERINI BÖRNER, 1906

KEY TO THE GENERA OF THE CYPHODERINI

1. Mandibles normal, with molar plate; mouth terminal; dens with two rows of scales ..... 2  
 Mandibles projecting, styliform, without molar plate or sometimes mouth shifted to sub-terminal ventral portion of head ..... 7
2. Claws normal ..... 3  
 Claws lobate or globular with basal spine; unguiculus sometimes reduced ..... *Cyphoderodes* Silvestri, 1911 (989)
3. Dens 8-17 times longer than the mucro; mucro reduced, sometimes absent ..... *Cyphoda* Delamare-Deboutteville, 1948 (332)
- Dens 2-5 times longer than the mucro; mucro well developed, with teeth ..... 4
4. Scales of dens on internal row progressively larger from base to apex and never more than three ..... *Serroderus* Delamare-Deboutteville, 1948 (332)
- Both rows of scales on dens more or less equal and not differing greatly from base to apex ..... 5
5. Male with protuberance on Ant. II ..... *Paracyphoderus* Delamare-Deboutteville, 1948 (332)
- Ant. II without protuberance ..... 6

\*The name *Chaetoceras* is preoccupied in the Lepidoptera, where it was used by Warren in 1896, and I propose the name *Plumachaetas* in its place.

6. Lateral and internal teeth of claw normal, not elongated .....	<i>Cyphoderus</i> Nicolet, 1847 (801) = <i>Cyphodeirus</i> Nicolet, 1842 (798) <i>Cyphodurus</i> Nicolet, 1841 (797) <i>Beckia</i> Lubbock, 1870 (708)
Lateral and internal teeth of claw greatly elongated, almost reaching to claw-tip .....	<i>Megacyphoderus</i> Delamare-Deboutteville, 1948 (332)
7. Mouth parts styliform; mucro claw-like .....	<i>Calobatinus</i> Silvestri, 1917 (991) = <i>Calobatella</i> Börner, 1913 (254) <i>Calobatana</i> Strand, 1928 (1034)
Mouth parts normal, but sub-terminal and ventral .....	..... 8
8. Mucro normal, toothed .....	<i>Cephalophilus</i> Delamare-Deboutteville, 1948 (332)
Mucro reduced or absent .....	..... 9
9. Mandible normal; mucro reduced, short, without teeth .....	<i>Pseudocyphoderus</i> Imms, 1912 (603)
Mandibles reduced or absent; mucro absent .....	<i>Cyphoderinus</i> Denis, 1942 (394)

## SUB-ORDER SYMPHYPLEONA BÖRNER, 1901

## FAMILY ACTALETIDAE WAHLGREN, 1909

This sub-family contains only the one genus, *Actaletes* Giard, 1889 (486).

## FAMILY NEELIDAE FOLSOM, 1896

*Megalothoracidae* Börner, 1900

## KEY TO THE GENERA OF THE NEELIDAE

1. Ant. IV with four short olfactory setae; thoracic sensorial areas rudimentary, without setiferous tubercles or marginal setae; abdominal sensorial areas absent; anterior surface of dens II with one basal decurrent seta and three sub-apical setae; posterior face with three external spines, one central seta, and three sub-apical setae .....	<i>Neelides</i> Caroli, 1912 (208)
Ant. IV with single large sensilla; well-developed sensorial areas, with setiferous tubercles and marginal setae present on thorax and abdomen; anterior face of Dens II with three plate-like spines (fanerae) in a transverse sub-apical row .....	..... 2
2. Ventral tube with posterior lobe; posterior face of Dens II with three external denticles, one central seta, and two internal denticles; anterior face with one median seta and a strong terminal spiniform process to each side .....	<i>Neelus</i> Folsom, 1896 (436)
Ventral tube without posterior lobe; posterior face of Dens II with two external spines, one central seta, and two internal spines; anterior face with three denticles in a transverse sub-apical row .....	<i>Megalothorax</i> Willem, 1900 (1133) = <i>Amerus</i> Collinge and Shoebottom, 1909 (262)

## FAMILY SMINTHURIDAE LUBBOCK, 1870

## SUB-FAMILY SMINTHURIDINAE BÖRNER, 1906

## TRIBE SMINTHURIDINI BÖRNER, 1913

This tribe contains only one genus, *Sminthurides* Börner, which is divided into four subgenera as follows:—

\**Calobatella* was preoccupied when used by Börner and must, therefore, be replaced by *Calobatinus* Silvestri.

GENUS *SMINTHURIDES* BÖRNER, 1900 (135)

*Prosminthurus* Willem, 1900 (1159)

KEY TO THE SUB-GENERA OF THE GENUS *SMINTHURIDES*

- |   |       |       |       |       |       |       |       |       |       |  |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| 1. Tibiotarsal organ, consisting of two sacs and a large spine, present on hind pair of legs .....                              | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2  |
| Tibiotarsal organ absent .....  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3  |
| 2. Mucronal edges lamellate, the inner lamella toothed and ribbed; mucro usually broad .....                                    | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Sminthurides</i> Börner, 1900 (135)       |
| Mucronal edges without true lamellae, the dorsal inner edge toothed only; mucro slender and narrowing in the apical third ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Stenacidia</i> Börner, 1906 (147)         |
| 3. Lateral basal mucronal bristle present .....   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Denisiella</i> Folsom & Mills, 1938 (470) |
| Lateral basal mucronal bristle absent .....   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Sphaeridia</i> Linnaniemi, 1912 (690)     |

TRIBE *KATIANNINI* BÖRNER, 1913

KEY TO THE GENERA OF THE *KATIANNINI*

- |  |       |       |       |       |       |       |       |       |       |  |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| 1. Clavate tenent hairs generally present .....  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2  |
| Clavate tenent hairs absent; Ant. IV subdivided; ocelli, eight to each side or reduced in number; dens posteriorly and laterally with short spines or spine-like setae ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Arrhopalites</i> Börner, 1906 (147)     |
| 2. Ant. IV subdivided; Ant. III with sensory organ which may be peg-like or wart-like in form .....  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3  |
| Ant. IV not subdivided; sense organ, Ant. III, wart-like .....   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 9  |
| 3. With spine-like setae on top of head; Ant. III with long, strong setae .....  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 4  |
| Without spine-like setae on top of head; setae of Ant. III normal .....  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 5  |
| 4. Spine-like setae on head serrated; setae of body and appendages long and serrated; Ant. III without peg-like organ; Abd. V with a long sensory hair to each side .....    | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Novokatianna</i> Salmon, 1944 (917)     |
| Spine-like setae on head simple; setae of body and appendages long but simple; Ant. III with peg-like organ; Abd. V with a short sensory seta to each side .....             | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Katianna</i> Börner, 1906 (147)         |
| 5. With short dagger-like spines on dorsum .....   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 6  |
| Without such spines; normal setae on dorsum .....  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 7  |
| 6. With large protuberances on flanks of larger part of body .....   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Longkingia</i> Salmon, 1946 (920)       |
| Without such protuberances .....   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Parakatianna</i> Womersley, 1932 (1163) |
| 7. With bothriotrichia on larger part of body .....  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 8  |
| Without bothriotrichia on larger part of body .....  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Metakatianna</i> Denis, 1933 (374)      |
| 8. With the trichobothria of genital segment greatly enlarged and protruding; sparsely clothed on body, with short, usually curved, simple setae .....                       | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Pseudokatianna</i> Salmon, 1944 (917)   |
| Trichobothria of genital segment normal; clothing uniform of moderately long, simple setae .....   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | <i>Polykatianna</i> Salmon, 1946 (920)     |
| 9. Filaments of ventral tube smooth; claw without tunica .....   | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | * <i>Sminthurinus</i> Börner, 1901 (140)   |
| Filaments of ventral tube with warted walls; claw with tunica .....  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | = <i>Smynthurella</i> Houlbert, 1924 (597) |
|  |       |       |       |       |       |       |       |       |       | <i>Neosminthurus</i> Mills, 1934 (764)     |

\*On page 157 of his "Thysanoures, Dermapteres, et Orthopteres de France et de la Faune Européenne," Houlbert states that he considers it unreasonable to continue to classify the genus *Sminthurinus* Börner in a sub-family other than that to which it has given its name, and proposes, accordingly, that the genus *Sminthurinus* Börner be known henceforth as *Smynthurella* Houlbert. Such an arbitrary change of name, however, cannot be allowed under the Rules of Zoological Nomenclature, and the name *Smynthurella* becomes a synonym of *Sminthurinus*.

SUB-FAMILY *DICYRTOMINAE* BÖRNER, 1906  
KEY TO THE GENERA OF THE *DICYRTOMINAE*

- 1. With a distinct tunica to the claw; Ant. III and Ant. IV not subdivided or annulated but generally with warts or tuberculate outgrowths; with or without serrated setae on the dens ..... *Dicyrtomina* Börner, 1903 (144) 2
- Without a tunica to the claw ..... 2
- 2. Ant. III and Ant. IV not subdivided but with indistinct annulations; antennae generally with warts or tuberculate outgrowths; with or without serrated setae on the dens ..... *Dicyrtoma* Bourlet, 1842 (161)  
=*Papirius* Lubbock, 1862 (705)
- Ant. III or Ant. III and Ant. IV distinctly subdivided; with serrated setae on the dens ..... 3
- 3. With a club-like prominence on the dorsal surface; serrated setae of the dens only obscurely serrated near base of each seta ..... *Papiriodes* Folsom, 1924 (463)
- Without dorsal prominence; setae of dens distinctly serrated ..... *Ptenothrix* Börner, 1906 (147)

SUB-FAMILY *SMINTHURINAE* BÖRNER, 1906  
TRIBE *BOURLETIELLINI* BÖRNER, 1913  
KEY TO THE GENERA OF THE *BOURLETIELLINI*

- 1. With a clasping organ consisting of hooks or curved bristles on the genital segment of the male; body globular, rounded dorso-longitudinally ..... *Bourletiella* Banks, 1899 (90)
- Without clasping organ; body more elongate, flattened dorso-longitudinally ..... 2
- 2. With swellings or protuberances on dorsal surface of body ..... 3
- Without swellings or protuberances on dorsal surface of body ..... 4
- 3. Unguiculus filiform; male with large dome-like swellings on top of head ..... *Bovicornia* Delamare-Deboutteville, 1947 (319)
- Unguiculus replaced by accessory clavate hair; dorsal surface of body with swellings or protuberances ..... *Corynephoria* Absolon, 1907 (19)
- 4. With group of strong spines (rastral organ) on hind tibiotarsus ..... 5
- Without rastral organ ..... 6
- 5. Spines of rastral organ simple or serrate and arranged in rows ..... *Rastriopes* Börner, 1906 (147)
- Spines of rastral organ simple and not arranged in rows ..... *Prorastriopes* Delamare-Deboutteville, 1947 (319)
- 6. Claw with tunica ..... *Eusminthurus* Börner, 1900 (135)
- Claw without tunica ..... *Deuterosminthurus* Börner, 1901 (140)  
=*Deuterosminturus* Börner, 1901 (140)

TRIBE *SMINTHURINI* BÖRNER, 1913  
KEY TO THE GENERA OF THE *SMINTHURINI*

- 1 With 4-5 long, strong setae, much longer and stronger than the rest, on the basal half of Ant. III ..... 2
- Without long, strong setae; the setae of Ant. III approximately equal; claw without tenent hairs ..... 3

- |  |                           |  |
|--|---------------------------|--|
| <p>2. Dorsal edges of mucro equal; mucro with or without bristle; dorsal glands absent from furcal segment</p> <p>Dorsal edges of mucro unequal; mucro with bristle; furcal segment with two round fine-pored glandular openings on dorsal surface</p> | <p>.....</p> <p>.....</p> | <p>*<i>Sminthurus</i> Latreille, 1804 (661)</p> <p><i>Allacma</i> Börner, 1906 (147)</p> |
| <p>3. Claw with tunica</p> <p>Claw without tunica</p>  | <p>.....</p> <p>.....</p> | <p>.....<sup>4</sup></p> <p><i>Parrhopalites</i> Bonet and Tellez, 1947 (134)</p>        |
| <p>4. Genital segment with two bothriotrichia</p> <p>Genital segment without bothriotrichia</p>  | <p>.....</p> <p>.....</p> | <p><i>Sphyrotheca</i> Börner, 1906 (147)</p> <p><i>Lipothrix</i> Börner, 1906 (147)</p>  |

\*The original spelling of this generic name as given by Latreille in 1804, when he founded the genus, was *Smynthurus*. It would appear to have been derived from the Greek words *Sminthos* (meaning a mouse) and *oura* (a tail), in which case the amendment which has been made by most authors to the spelling *Sminthurus* is grammatically correct and allowable under the International Rules of Zoological Nomenclature.



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