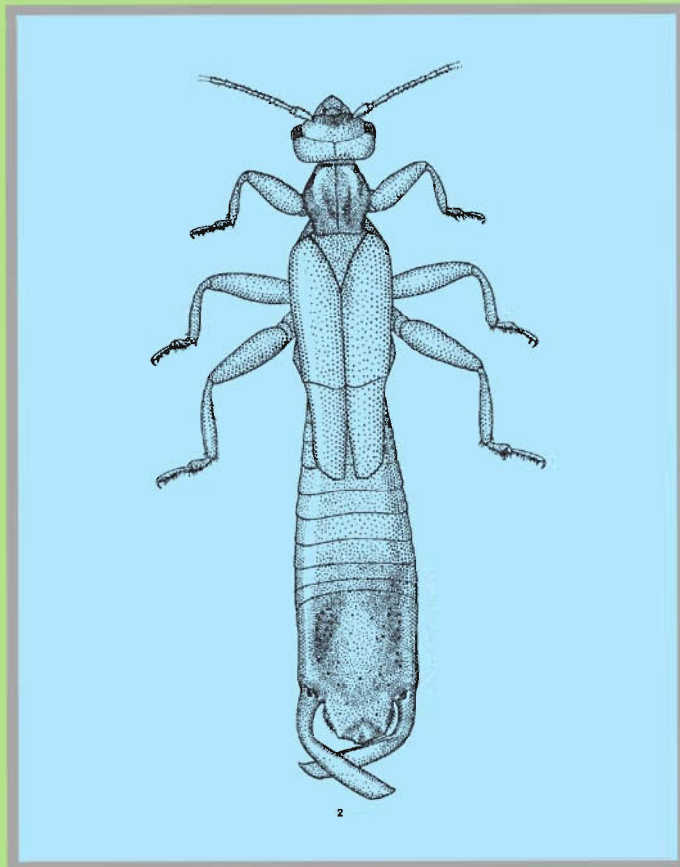


# *Fauna of India*



## **DERMAPTERA** **Part - III**

**G. K. SRIVASTAVA**



**FAUNA OF INDIA  
AND  
THE ADJACENT COUNTRIES**

**DERMAPTERA**

**PART - III**

Superfamilies APACHYOIDEA and FORFICULOIDEA

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## FOREWORD

It is one of the primary objectives of the Zoological Survey of India to bring out consolidated publications on various groups of animals through the *Fauna of India Series*. The present volume is third in the series of Fauna of India – Dermaptera by Dr. G. K. Srivastava Additional Director (Rtd) of ZSI. With this part, the study on Dermaptera fauna known and described so far from India and the adjacent countries is almost complete. Before the work of Dr. G. K. Srivastava, the information on Dermaptera from India and adjacent countries was only through scattered publications.

The present volume on Dermaptera, Part-III comprised of 152 species belonging to 46 genera under Apachyoidea and Forficuloidea from India and the adjacent countries. Dr. Srivastava also appended a list of taxa published in Part-I and II for easy and in hand information to the researchers.

Dr Srivastava, who is actively engaged in the study of Dermaptera for a period of more than 35 years and is an authority on Dermaptera fauna, I not only congratulate Dr. Srivastava on the publication of his third volume of Fauna of India but also thank him for his untiring effort in bringing out this volume even after 12 years of retirement. I hope this volume would be of a great use to the present and future workers nationally and internationally working in this group of insect for further research from India and the adjacent countries.

Dr K. Venkataraman  
Director  
Zoological Survey of India

(iv)

## PREFACE

With this part, the study on Dermaptera from India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka is complete. However, in future when further explorations are undertaken, especially in whole of Himalaya; North eastern Hills, Western Ghats and Andaman and Nicobar Islands within Indian limits, a few more undescribed species may be discovered besides recording several others for the first time from the area under study. A total of 152 species belonging to 46 genera under Apachyoidea and Forficuloidea are dealt with. General pattern is almost the same as that of the previous two parts of the series

Information on the zoogeography and species composition from Andaman and Nicobar Islands, not known earlier, is provided, based upon the recent studies by the author. However, zoogeography of the Order is discussed in detail in the Part I.

An interesting fact to be recorded here is that the author switched over to writing with left hand sometimes during 1984 onwards. The samples of his handwriting with right hand are on the Holotype label of *Forficula jayarami* Srivastava, 1972 and that of left hand of *Forficula kashmirensis* Srivastava, 1984.

A revised list of taxa included in Parts I and II is given under Appendix I. The changes were necessitated in the light of studies for the taxa of Pygidicranoidea by Srivastava (1993). The description and all other details remain valid.

I am thankful to the Director, Zoological Survey of India, Kolkata for appointing me as Emeritus Scientist of the Zoological Survey of India and the Professor and Head, Department of Zoology, Lucknow University, Lucknow for providing necessary facilities during the course of this work.

**G. K. Srivastava**



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## **INTRODUCTION**

This is the third and the concluding part on Dermaptera from India and the adjacent countries, namely Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka under the Fauna of India series. It deals with various taxa of super families Apachyoidea and Forficuloidea belonging to 152 species, including a species described as new to science under 46 genera. Besides two genera and 49 species are proposed as synonyms. General format is same as that of previous two parts.

Each species is described in detail incorporating the results of studies conducted on fresh and old determined or undetermined specimens; observations recorded in the field and critical review of published literature. The range of intra specific variations recorded within the same or different populations exhibit the dynamic nature of the species. Information about the "Types" and their repositories of various species and the subsequent synonyms is also given.

Outlines of general classification of the Order is discussed in the part II of this series. Among the notable additions to the fauna, the most important is the record of Nesogastrinae with a single species from Great Nicobar Islands within the Indian limits. This subfamily is well established in Sunda Islands. The proximity of Great Nicobar to these Islands especially Sumatra suggests its natural occurrence in the former.

Erroneous record of several species was corrected by examining the specimens determined by various experts. However, in certain cases where specimens were not available, the coloured photographs given by Sakai (1993-95) of determined specimens present in Museums world over were of great help in ascertaining their status. Details of such observations are discussed under the relevant species, in the text.

## **ZOOGEOGRAPHY**

In the first part of this series (Srivastava, 1988) the zoogeography of Indian Dermaptera including adjacent countries was discussed, in detail and the picture remains more or less the same. However, as a result of further studies in the intervening period, several new taxa were either described or reported and others were proposed as synonyms from the area under study.

A map of India and adjacent countries showing physiographic features and divisions of peninsular India, affecting the distribution of fauna is included.

At present altogether 315 species belonging to 74 genera are known. Important features or additions to fauna are given.

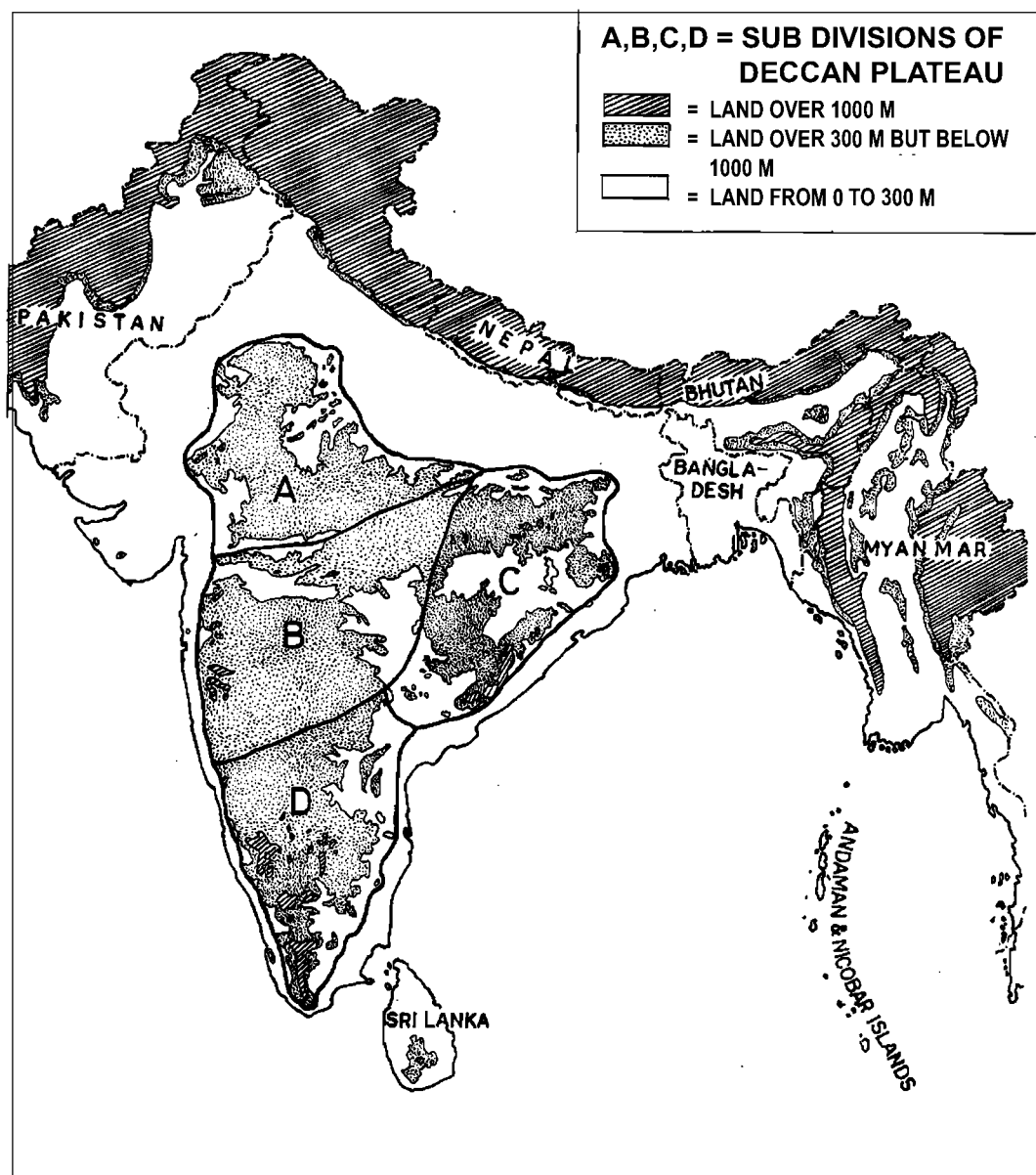


**Fig. 1.** Map of Indian subcontinent showing important physical features which influence distribution of earwigs and subdivisions of Peninsular or Deccan Plateau viz, A. The Aravallis and the North Western Plateau; B. Deccan Lavas; C. North Eastern Plateau; and D. Southern Uplands.

The north India zoogeographical zone has largest number of species, i.e., 57% whereas 37% occur in Peninsular India. And Sri Lanka has about 16% species of which 53% are endemic. According to recent studies a total of 24 species under seven genera are reported from Andaman and Nicobar group of islands. Of these 19 are reported from former and 11 from the latter, including six common to both are distributed world wide. The composition of Andaman fauna is essentially derived from Indian subcontinent mainland including Myanmar and that of Nicobar is influenced by the Indo-Malayan element. The latter is further confirmed by the occurrence of Nesogastrinae by one species which is mainly distributed in Sumatra, Java, Celebes and Philippine Isls. Besides the presence of *Circolabia dubronyi* (Hebard) in Nicobar exhibits affinities with Indo-Australian forms.

From Lakshdweep group of Islands six species (including one determined up to generic level and perhaps new to science) are known. Fauna is mainly Oriental having close relationship with that of Peninsular India and Sri Lanka. The closeness of *Chaetospania alfredi* Srivastava to Sri Lankan species reveals that it is a derivative of Deccan Indian and Sri Lankan faunal elements which has diversified in isolation. Other species are distributed in Oriental, Australian regions or world wide.

A table is given here providing faunal composition of the area under study including India (including Andaman and Nicobar and Lakshadweep group of Islands), Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka

| <b>Table showing faunal composition of Dermaptera from India subcontinent</b> |            |            |           |           |           |           |          |          |           |          |
|-------------------------------------------------------------------------------|------------|------------|-----------|-----------|-----------|-----------|----------|----------|-----------|----------|
| ORIENTAL                                                                      |            |            |           |           |           |           |          |          |           |          |
| <b>F and sm</b>                                                               | <b>Gen</b> | <b>Spp</b> | <b>IP</b> | <b>NI</b> | <b>SL</b> | <b>RA</b> | <b>P</b> | <b>E</b> | <b>AS</b> | <b>W</b> |
| PYGIDICRANIDAE                                                                |            |            |           |           |           |           |          |          |           |          |
| Pygidicraninae                                                                | 2          | 21         | 10        | 6         | 4         | 2         | -        | -        | -         | -        |
| Diplatyinae                                                                   | 4          | 49         | 23        | 23        | 6         | 5         | -        | -        | -         | -        |
| Echinosomatinae                                                               | 1          | 7          | 3         | 3         | 1         | 1         | -        | -        | -         | -        |
| Prolabiscinae                                                                 | 1          | 1          | -         | 1         | -         | -         | -        | -        | -         | -        |
| ANISOLABIDIDAE                                                                |            |            |           |           |           |           |          |          |           |          |
| Platylabiinae                                                                 | 1          | 2          | 1         | 1         | -         | -         | -        | -        | -         | -        |
| Titanolabidinae                                                               | 1          | -          | -         | -         | -         | -         | -        | -        | -         | -        |
| Anisolabidinae                                                                | 8          | 45         | 23        | 21        | 11        | 4         | 2        | 3        | 2         | 2        |
| Brachylabidinae                                                               | 3          | 7          | 3         | 1         | 4         | 1         | -        | -        | -         | -        |
| Antisolabidinae                                                               | 1          | 2          | -         | -         | 3         | 2         | 4        | -        | -         | -        |

| <b>F and sm</b>       | <b>Gen</b> | <b>Spe</b> | <b>IP</b>  | <b>NI</b>  | <b>SL</b> | <b>RA</b> | <b>P</b>  | <b>E</b>  | <b>AS</b> | <b>W</b> |
|-----------------------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|----------|
| Isolabidinae          | 1          | 5          | -          | 4          | -         | 2         | -         | -         | -         | -        |
| <b>LABIDURIDAE</b>    |            |            |            |            |           |           |           |           |           |          |
| Allostethinae         | 2          | 5          | 4          | 1          | -         | -         | -         | -         | -         | -        |
| Nalinae               | 1          | 3          | 1          | 3          | 1         | 2         | 1         | 1         | 1         | 1        |
| Labidurinae           | 2          | 14         | 4          | 12         | 3         | 4         | 1         | 1         | 1         | 1        |
| <b>APACHYDAE</b>      |            |            |            |            |           |           |           |           |           |          |
| Apacyinae             | 2          | 2          | -          | 1          | 1         | 1         | -         | -         | -         | -        |
| <b>SPONGIPHORIDAE</b> |            |            |            |            |           |           |           |           |           |          |
| Homotaginae           | 2          | 3          | 1          | 3          | 1         | 1         | -         | 1         | 1         | -        |
| Spongiphorinae        | 2          | 4          | 3          | 3          | 2         | 2         | 1         | 1         | 1         | 1        |
| Irdexinae             | 1          | 3          | 2          | 1          | 2         | 1         | -         | -         | -         | -        |
| Nesogastrinae         | 1          | 1          | -          | -          | -         | 1         | -         | -         | -         | -        |
| Sparattinae           | 1          | 2          | 2          | -          | -         | -         | -         | -         | -         | -        |
| Labiinae              | 5          | 29         | 12         | 16         | 6         | 7         | 3         | 3         | 3         | 3        |
| <b>CHELISOCHIDAE</b>  |            |            |            |            |           |           |           |           |           |          |
| Chelisochinae         | 9          | 24         | 7          | 16         | 2         | 9         | 1         | 1         | 1         | 1        |
| <b>FORFICULIDAE</b>   |            |            |            |            |           |           |           |           |           |          |
| Cosmiellinae          | 2          | 8          | -          | 7          | -         | 2         | -         | -         | -         | -        |
| Opisthocosmiinae      | 11         | 22         | 9          | 12         | 4         | 7         | -         | -         | -         | -        |
| Allodalinae           | 1          | 8          | -          | 8          | -         | 2         | -         | -         | -         | -        |
| Anechurinae           | 3          | 8          | 1          | 7          | -         | 4         | 7         | -         | -         | -        |
| Neolobophorinae       | 3          | 7          | 2          | 6          | -         | 3         | -         | -         | -         | -        |
| Forficulinae          | 3          | 31         | 4          | 24         | 4         | 15        | 10        | 1         | 1         | -        |
| <b>Total</b>          | <b>74</b>  | <b>315</b> | <b>116</b> | <b>180</b> | <b>50</b> | <b>77</b> | <b>32</b> | <b>12</b> | <b>11</b> | <b>9</b> |

F and sm - Families and Subfamilies; PI- Penninusular India; NI -North India including Himalaya and N.E. Mountains; SL- Sri Lanka; RA - Rest of area in Oriental Region; P- Palaearctic, E - Ethiopian; AS - Australian and WW - World wide.

# **SYSTEMATIC-LIST**

Superfamily APACHYOIDEA

Family APACHYIDAE

Genus *Apachyus* Serville,

*A. feae* Bormans, 1894

Genus *Dendroiketes* Burr, 1909

*D. corticinus* (Burr, 1908)

Superfamily FORFICULOIDEA

Family SPONGIPHORIDAE

Subfamily HOMOTAGINAE

Genus *Paratages* Srivastava, 1987

*P mucronatus* (Stål, 1860) - **Comb. n.**

(= *Spongovostox ocellai* Steinmann, 1984) - **Syn. n.**

Genus *Homotages* Burr, 1909

*H. feae* (Bormans, 1888)

(= *H. principalis* Steinmann, 1989) - **Syn. n.**

*H. tawangensis* Srivastava, 1977

Subfamily SPONGIPHORINAE

Genus *Marava* Burr, 1911

*M. arachidis* (Yersin, 1860)

*M. sakaii* Srivastava, 1995

Genus *Spongovostox* Burr, 1911

*S. anamaliensis* Srivastava, 1969

*S. semiflavus* (Bormans, 1894)

(= *Chaetospania lakhanmandiensis* Kapoor, Bharadwaj & Banerjee, 1971) - **Syn. n.**

(= *Spongovostox taurus* Steinmann, 1985) - **Syn. n.**

(= *Spongovostox mirabilis* Steinmann, 1985) - **Syn. n.**

Subfamily IRDEXINAE

Genus *Irdex* Burr, 1911

*I. nitidipennis* (Bormans, 1894)

(= *Labia formosana* Shiraki, 1928) - **Syn. n.**

*I. cingalensis* (Dohrn, 1865)

*I. escheri* (Borelli, 1931)

## Subfamily NESOGASTRINAE

Genus *Nesogaster* Verhoeff, 1902*N. minusculus* Rehn, 1946**Doubtful record***Nesogaster ruficeps* (Erichson, 1842)

## Subfamily SPARATTINAE

Genus *Auchenomus* Karsch, 1896*A. hincksi* Ramamurthi, 1960*A. nathani* Ramamurthi, 1968

## .Subfamily LABIINAE

Genus *Labia* Leach, 1815*L. minor* (L., 1758)(=*Labia bhaktapurensis* Kapoor, Malla & Shah, 1978) - **Syn n.**(=*Labia harypa* Steinmann) - **Syn n.**(=*Labia pluto* Stinmann) - **Syn n.**Genus *Apovostox* Hebard, 1927*A. pilosus* (Bey-Bienko, 1959)*A. pygidiatus* (Bormans, 1894)*A. agrawali* Srivastava, 1999*A. ceylonensis* (Srivastava, 1983)*A. stella samsingensis* Srivastava, 1975(=*Irdex wittmeri* Brindle, 1975) - **Syn n.***A. chauhani* (Srivastava, 1975)*A. serrata* (Kapoor, 1967)*A. fulleri* (Ramamurthi, 1963)(=*Irdex burri* Srivastava, 1975) - **Syn n.**(=*Irdex dakshinkaliensis* Kapoor, Malla & Shah, 1978) - **Syn n.**Genus *Circolabia* Steinmann, 1987(= *Spirolabia* Steinmann, 1987)(= *Metallabella* Sakai and Takahashi, 1998) - **Syn n.***C. curvicauda* (Motschulsky, 1863)(=*Platylabia legoci* Fernando, 1957) - **Syn n.**(=*Labia phanduwalensis* Kapoor, Bharadwaj and Banerjee, 1971) - **Syn n.**(=*Proreus chatterjeei* Kapoor, Bharadwaj and Banerjee, 1971) - **Syn n.**

- C. bhatiai* Srivastava, 2001  
*C. rotundifrons* (Hincks, 1954)  
*C. pilicornis* (Motschulsky, 1863)  
 (= *Labia boettcheri* Borelli, 1923) - **Syn. n.**  
*C. dubronyi* (Hebard, 1922)

#### Doubtful record

*Paralaballa fruhstorfari* (Burr, 1981)

Genus ***Chaetospania*** Karsch, 1886

- C. bormansi* Srivastava, 1981  
*C. anamaliensis* Srivastava, 1969  
*C. alfredi* Srivastava, 2002  
*C. anderssoni* Brindle, 1971  
*C. kurseongae* Hebard, 1923  
*C. stilletta* Burr, 1911  
*C. acuminata* Srivastava, 1990  
*C. foliata* (Burr, 1911)  
*C. thoracica* (Dohrn, 1867)  
*C. nigriceps* (Kirby, 1891)  
*C. kapoori* Srivastava, 1995  
*C. feae* Bormans, 1894  
 (= *C. celer* Steinmann, 1984) - **Syn. n.**  
 (= *C. arguata* Steinmann, 1988) - **Syn. n.**  
*C. shillongensis* Srivastava, 1982

#### Rejected record

*Chaetospania borneensis* (Dubrony, 1879)

Genus ***Chaetolabia*** Brindle, 1972

- C. bihastata* (Börg, 1904)  
 (= *Chaetaspania luxor* Steinmann, 1988) - **Syn. n.**  
*C. sahai* Srivastava, 2001

Family CHELISOCHIDAE

Subfamily CHELISOCHINAE

Genus ***Chelisochella*** Verhoeff, 1902

- C. superba* (Dohrn, 1863)

Genus ***Adiathetus*** Burr, 1907

*A. shelfordi* (Burr, 1900)

Genus ***Adiathella*** Brindle, 1970

*A. dravidius* Burr, 1910

*A. glaucopterus* (Bormans, 1888)

*A. metallicus* (Srivastava, 1985)

*A. nigrocastaneous* (Burr, 1910)

*A. tenebrator* (Kirby, 1891)

(=*Chelisoches phoenix* Steinmann, 1993) - **Syn n.**

Genus ***Exypnus*** Burr, 1907

*E. pulchripennis* (Bormans, 1883)

*E. koorgensis* Hebard, 1923

*E. nathani* Srivastava, 2002

Genus ***Solenosoma*** Burr, 1907

*S. birmanum* (Bormans, 1888)

Genus ***Laprophorella*** Mjoberg, 1924

*L. kervillei* (Burr, 1905)

Genus ***Hamaxas*** Burr, 1907

*H. kempfi* Burr, 1913

*H. tigris* (Burr, 1913)

*H. delicatulus* (Burr, 1911)

*P. weisi* (Burr, 1904)

*H. sakaii* Srivastava, 2000

*H. chandrai* Srivastava, 2001

*H. melanocephalus* (Dohrn, 1865)

(=*H. bidentatus* Ramamurthi, 1965) - **Syn n.**

(=*H. singhi* Kapoor, 1966) - **Syn n.**

*H. feae* (Bormans, 1894)

Genus ***Proreus*** Burr, 1907

*P. ritsemae* (Bormans, 1884)

*P. decipiens* (Kirby, 1891)

(=*P. logiforceps* Ramamurthi 1962) - **Syn n.**

(=*P. abdominalis* Ramamurthi, 1965) - **Syn n.**



(=*P. biratnagarensis* Kapoor, Malla and Saha, 1978) - **Syn n.**

*P. cunctator* Burr, 1911

(=*P. fletcheri* Hebard, 1923) - **Syn n.**

(=*P. ramamurthii* Kapoor, 1967) - **Syn n.**

(=*Hamaxas tezpurensis* Srivastava, 1969) - **Syn n.**

Genus ***Chelisothes*** Scudder, 1876

*C. brevipennis* Borelli, 1923

*C. morio* (Fabricius, 1775)

Family FORFICULIDAE

Subfamily COSMIELLINAE

Genus ***Liparura*** Burr, 1907

*Liparura cornuta* (Bey-Bienko, 1959) - **Comb. n.**

(=*L. montusa* Steinmann, 1983) - **Syn n.**

*L. punctata* Burr, 1907

*L. serrata* Srivastava, 1977

*L. kamengensis* Srivastava, 1977

*L. debrepaniensis* (Kapoor, Bharadwaj and Banerjee, 1971)

*L. simplex* Brindle, 1975

*L. dentata* Srivastava, 1977

Genus ***Lipodes*** Burr, 1907

*L. vivax* (Burr, 1905)

Subfamily OPISTHOCOSMIINAE

Genus ***Sondax*** Burr

*S. repens* Burr, 1910

Genus ***Parasondax*** Srivastava, 1978

*P. cantralli* Srivastava, 1978

Genus ***Obelura*** Burr, 1907

*O. asiatica* (Bormans, 1897)

*O. neolobphoroides* (Burr, 1901)

*O. tamul* (Burr, 1901)

Genus ***Hypergus*** Burr, 1907

*H. humeralis* (Kirby, 1891)

Genus ***Pareparchus*** Burr, 1911*P. pelvimeter* Hebard, 1923(=*Kosmetor cornutus* Ramamurthi, 1968) - **Syn. n.***P. pillai* Srivastava, 2002Genus ***Prosadiya*** Hebard, 1923(=*Chastocosmia* Nishikawa, 1973) - **Syn n.***P. tricota* Hebard, 1923Genus ***Timomenus*** Burr, 1907*T. lugens* (Bormans, 1894)*T. josephi* Srivastava, 1977*T. oannes* (Burr, 1900)*T. nevilli* (Burr, 1904)**Doubtful record***T. ares* (Burr, 1900)Genus ***Paratimomenus*** Steinmann, 1974*P. nathani* (Srivastava, 1970)*P. brahma* (Burr, 1904)Genus ***Eparchus*** Burr, 1907*E. insignis* (Haan, 1842)*E. simplex* (Bormans, 1894)Genus ***Cordax*** Burr, 1910*C. armatus* (Haan, 1842)Genus ***Paracordax*** Srivastava, 1998*P. politus* (Burr, 1911)*P. julkai* Srivastava, 1998*P. ceylonicus* (Motschulsky, 1863)*P. vandermeermohri* (Menozzi, 1933)

## Subfamily ALLODAHLINAE

Genus ***Allodahlia*** Verhoeff, 1902*A. martensi* Brindle, 1974*A. ahrimanes* (Burr, 1900)*A. scabriuscula* (Serville, 1839)(=*A. bispina* Bye-Bienko, 1959) - **Syn n.**

- A. julkai* Srivastava, 1978  
*A. macropyga* (Westwood, 1839)  
 (= *Liparura sinensis* Chen, 1935) - **Syn. n.**  
*A. dineshi* Gangola, 1965  
*A. coriacea* (Bormans, 1894)

#### Doubtful species

- A. guptae* Kapoor, 1968

#### Subfamily ANECHURINAE

Genus ***Oreasiobia*** Semenov, 1936

- O. fedtschennkoi* (Saussure, 1876)  
*O. calciatii* (Borelli, 1909)

Genus ***Anechura*** Scudder, 1876

- A. stoliczkae* Burr, 1911  
 (= *A. nanyari* Kapoor, 1966) - **Syn n.**  
 (= *Forficula puella* Steinmann, 1988) - **Syn n.**  
 (= *Forficula fontana* Steinmann, 1988) - **Syn n.**  
*A. biswasi* Srivastava, 1993  
*A. crinitata* (Shiraki, 1906)  
 (= *Taipinia pulla* Shiraki, 1907) - **Syn n.**  
*A. zubovskii* Semenov, 1901  
*A. filchneri* (Burr, 1907)

#### Doubtful record

- A. svenhedini* Bey-Bienko, 1934

Genus ***Neopterygida*** Srivastava, 1984

- N. circulata* (Dohrn, 1865)

#### Subfamily EUDOHRNIINAE

Genus ***Eudohrnia*** Burr, 1907

- E. metallica* (Dohrn, 1865)

Genus ***Paradohrnia*** Shiraki, 1928

- P. mundgodae* (Kapoor, Bharadwaj & Banerjee, 1971)  
*P. punctata* Srivastava, 1979  
 (= *Pterygida harpya* Steinmann, 1989) - **Syn. n.**  
 (= *Eudohrnia subuniformes* Kapoor and Malla, 1980) - **Syn. n.**

*P. uniformes* (Brindle, 1975)

Genus ***Pterygida*** Verhoeff, 1902

*P. vishnu* (Burr, 1904)

(=*Kosmetor gracilis* Brindle, 1975)- **Syn. n.**

*P. temora* (Burr, 1904)

#### **Doubtful species**

*P. pulchripes* (Bormans, 1894)

Subfamily FORFICULINAE

Genus ***Guanchia*** Burr, 1911

*G. bicarinata* Hincks, 1947

*G. chirurga* Burr, 1911

*G. medica* Burr, 1911

Genus ***Elaunon*** Burr, 1907

*E. bipartitus* (Kirby, 1891)

#### **Doubtful species**

*E. gangoli* Gangola, 1965

Genus: ***Forficula*** L., 1758

*F. nepalensis* Kapoor and Malla, 1980

*F. taoyuanensis* Ma & Chen, 1992

*F. ornata* Bormans, 1884

*F. beebei* Burr, 1911

*F. lucens* Brindle, 1975

*F. kashmirensis* Srivastava, 1984

*F. distendens* Brindle, 1975

*F. jayarami* Srivastava, 1972

*F. cristata* Srivastava, 1982

*F. greeni* Burr, 1907

(=*F. baijali* Kapoor, 1968) - **Syn n.**

(=*F. indie* Kapoor, 1968) - **Syn n.**

(=*F. vesca* Zhang and Yang, 1992) - **Syn. n.**

*F. wittmeri* Srivastava, 1982

*F. interrogans* Burr, 1905

- F. genitalia* Kapoor, 1968  
*F. abbottabadiensis* Bharadwaj and Kapoor, 1968  
*F. mogul* Burr, 1904  
*F. belzebub* (Burr, 1900)  
 (= *F. splendida* Bey-Bienko, 1934) - **Syn. n.**  
 (= *F. kumaoniensis* Kapoor, 1973) - **Syn n.**  
 (= *F. meenae* Kapoor, 1974) - **Syn n.**  
*F. davidi* Burr, 1905  
*F. tawangensis* Srivastava, 1984  
*F. gravelyi* Burr, 1914  
*F. flavalis* Brindle, 1983  
*Forficula biplaga* Bey-Bienko, 1959  
 (= *F. lii* Zhang & Yang, 1992) - **Syn. n.**  
 (= *Forficula brachyptera* Sakai & Zhang, 1994) - **Syn. n.**  
*F. planicollis* Kirby, 1891  
*Forficula choprai* - **Sp.n.**  
*F. schlagintweiti* (Burr, 1904)  
 (= *Oreasiobia piger* Steinmann, 1983) - **Syn n.**  
 (= *Oreasiobia similis* Steinmann, 1983) - **Syn n.**  
*F. bhutanensis* Brindle, 1975  
*F. asketi* Purohit, Julka and Lal, 1985

#### Doubtful or erroneous records

- Forficula lucasi* (Dohrn, 1865)  
*Forficula vicaria* Somenov, 1902

#### ABBREVIATIONS USED

- ANSP Academy of Natural Sciences of Philadelphia, U.S.A.  
 AZL Academy of Zoology, Leningrad, USSR.  
 BAU Beijing Agricultural University, Beijing, China.  
 BMNH British Museum (Natural History), London, U. K.  
 BMNS Bombay Natural History Society, Mumbai, India  
 BPM Bernice Pauahi Bishop Museum, Honolulu, Hawaii, U. S. A.  
 BRIO Bio-systematics Research Institute (Department of Agriculture Canada), Ottawa, Ontario, Canada.

|       |                                                                                                                                 |
|-------|---------------------------------------------------------------------------------------------------------------------------------|
| CAS   | California Academy of Sciences, San Francisco, U. S. A.                                                                         |
| CASP  | Institute of Entomology, Chinese Academy of Sciences, Peking, China                                                             |
| DTDSN | Department of Zoology, Th. D. S. B. College, Nainital, U.P., India.                                                             |
| FNH   | Field Museum of Natural History, Chicago, Illinois, U. S. A.                                                                    |
| FRI   | Forest Research Institute, Dehra Dun, India.                                                                                    |
| HNAB  | Department of Zoology, Hungarian Natural History Museum, Budapest Baross U, Hungary.                                            |
| HUSS  | Entomological Laboratory, Hokkaido University, Hokkaido, Sapporo, Japan.                                                        |
| IARI  | Indian Agricultural Research Institute, New Delhi, India.                                                                       |
| ILST  | Institute of Live Sciences (Daito Bunka University), Saitima, Tokiyo, Japan                                                     |
| IPEG  | Institute für Planzenschutzforschung, Abteilung Taxonomie der Insekten, Eberswalde-FINOW, DDR.                                  |
| IRSNB | Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium.                                                         |
| ITZA  | Institut voor Taxonomische Zoologie, Zoologisch Museum Universiteit van Amsterdam, Afdeling Entomologie, Amsterdam, Netherland. |
| IZAP  | Institute Zoologique, Académie Polonaise des Sciences, Warszawa, Poland.                                                        |
| MCNM  | Museo de Ciencias Naturales, Madrid, Spain.                                                                                     |
| MCZH  | Museum of Comparative Zoology, Harvard University, Cambridge, Mass., U. S. A.                                                   |
| MITZ  | Museo ed Istituto di Zoologia Systematica della Università di Torino, Torino, Italy.                                            |
| MHNG  | Muséum d'Histoire Naturelle, Geneva, Switzerland                                                                                |
| MM    | Manchester Museum, Manchester, U. K.                                                                                            |
| MNHP  | Museum National d'Histoire Naturelle, Paris, France                                                                             |
| MSNG  | Museo Civico di Storia Naturale "Giacomo Doria", Genova, Italy.                                                                 |
| MSNV  | Museo Civico di Storia Naturale, Verona, Italy.                                                                                 |
| MZL   | Musée Zoologique, Laussane, Switzerland.                                                                                        |
| MZM   | Museum of Zoology, University of Michigan, Ann Arbor, U. S. A.                                                                  |
| MZSC  | Museum of Zoology, National Central University, China.                                                                          |
| NMWA  | Naturhistorisches Museum, Wien, Austria.                                                                                        |

|      |                                                                      |
|------|----------------------------------------------------------------------|
| NRSS | Naturhistoriska Riksmuseet, Stockholm, Sweden.                       |
| PM   | Peking Museum, Beijing, China.                                       |
| RNHL | Rijksmuseum van Natuurlijke Histoire, Leiden, Netherland.            |
| SMF  | Senckenberg Museum, Frankfurt a M., Germany.                         |
| SMK  | Sarawak Museum, Kuching, Borneo, Malayasia.                          |
| SMTD | Staaliches Museum für Naturkunde, Dresden, Germany.                  |
| UMO  | Univesity Museum, Oxford University, Oxford, U. K.                   |
| USNM | The United States National Museum, Washington D. C., U. S. A.        |
| UZMC | Universitetes Zoologiske Museum, Copenhagen, Denmark.                |
| ZILS | Zoological Institute, Lund, Sweden.                                  |
| ZMHB | Zoologisches Museum für Naturkunde der Humboldt-Univ., Berlin, DDR.  |
| ZMS  | Zoology Department, Museum J & K University, Srinagar, J & K, India. |
| ZSI  | Zoological Survey of India, Kolkata, West Bengal, India              |
| ZSM  | Zoologische Staatsammlung, Munchen, Germany.                         |
| ZSZM | Zoologische Staatsinstut und Zoologisches Museum, Hamburg, Germany.  |
| ZUSL | Zoology Department, University of Sri Lanka, Colombo, Sri Lanka.     |

#### **KEY TO THE SUPER-GENERIC TAXA FROM THE INDIAN SUBCONTINENT**

(Modified after Steinmann, 1975 and Srivastava, 2003)

- 1(30). Male genitalia with basal portion (proparameres) divisible into two halves (may be separated apically or united throughout) with two functional lobes, sometimes one of them reduced ..... CATADERMAPTERA
- 2(9). Neck blattoid type i.e., anterior and posterior cervical tergites anterior to prosternum separated from each other but hind margin of posterior sclerite may be separate or fused with the apical magin of prosternum..... PYGIDICRANOIDEA (PYGIDICRANIDAE)
- 3(4). Antennal segments 4-5 transverse, 25-segmented or more..... PYGIDICRANIAE Verhoeff
- 4(3). Antennal segments 4-6 longer than broad, 20 segmented or less
- 5(6). Femora sharp with longitudinal ridges; male genitalia with parameres armed internally in various ways ..... DIPLATYINAE Verhoeff

- 6(5). Femora not compressed, smooth, occasionally with faint a ridge; male genitalia with parameres simple (unarmed)
- 7(8). Body convex, covered with thick characteristic setae and long pubescence; femora occasionally with faint ridge; pygidium with hind margin projecting; forceps cylindrical ..... ECHINOSOMATINAE Burr
- 8(7). Body depressed, glabrous, smooth; femora devoid of any ridge; pygidium vertical, hind margin not projecting; forceps trigonal in basal one third, afterwards depressed ..... PROLABISCINAE Bey-Bienko
- 9(2). Neck forficuloid type, i.e., anterior and posterior cervical sclerites fused and hind margin of latter joined with anterior margin of prosternum
- 10(29). Pygidium in both sexes vertical with hind margin not free; forceps partially trigonal near base and moderately depressed, afterwards, cylindrical ..... ANISOLABOIDEA
- 11(24). Male genitalia, if virga present, usually not wider at base and without a sinous inner tube; otherwise denticulated chitinous pads present ..... ANISOLABIDIDAE Verhoeff
- 12(13). Body strongly depressed; forceps, in males, strongly incurved, in females, elongated ..... PLATYLABIINAE Burr
- 13(12). Body not strongly depressed; weakly or strongly convex; forceps variously shaped
- 14(15). Meso-and metasternum oblong, both with posterior margin convex, latter tongue shaped ..... TITANOLABIDINAE Srivastava
- 15(14). Meso-and metasternum quadrate, former briefly convex or truncate, latter narrowed posteriorly with hind margin truncate
- 16(17). Mesosternum briefly convex posteriorly ..... ANISOLABIDINAE Verhoeff
- 17(16). Mesosternum truncate posteriorly
- 18(21). 1<sup>st</sup> antennal segment equal or longer than the distance between antennal bases
- 19(20). Mesonotum laterally with a well defined ridge or convexity along the whole length, often obsolete in posterior half ..... BRACHYLABIINAE Burr
- 20(19). Mesonotum without any ridge ..... ANTISOLABIDINAE Steinmann
- 21(18). 1<sup>st</sup> antennal segment shorter than the distance between antennal bases
- 22(23). Male genitalia with one of the genital lobes atrophied and virga much reduced, represented by a short chitinous tube or dot only ... ISOLABOIDINAE Brindle



- 23(22). Male genitalia with both distal lobes and virga well developed ..... PARISOLABIDINAE Verhoeff
- 24(11). Male genitalia with distinct virga, dilated at base with distinct inner sinuous tube ..... LABIDURIDAE Verhoeff
- 25(26). Mesosternum strongly narrowed posteriorly with tip extending upto the middle of metasternum ..... ALLOSTETHINAE Burr
- 26(25). Mesosternum wider posteriorly, not strongly narrowed posteriorly
- 27(28). Elytra with a sharp ridge along the costal margin; legs relatively short, posterior femora not longer than the pronotum ..... NALINAE Steinmann
- 28(27). Elytra without any sharp ridge along the costal margin; legs long, posterior femora longer than the pronotum ..... LABIDURINAE Burr
- 29(10). Pygidium in both sexes forming a flat process with hind margin free; forceps with branches broad and flat ..... APACHYOIDEA (APACHYIDAE) (APACHYINAE)
- 30(1). Male genitalia with a median basal portion (proparameres) and single distal lobe EUDERMAPTERA (FORFICULOIDEA)
- 31(42). Second tarsal segment simple, neither lobed nor produced below the third segment ..... SPONGIPHORIDAE Burr
- 32(33). Elytra carinate (sharp ridge) along the costal margin ..... NESOGASTRINAE Burr
- 33(33). Elytra not carinate (without ridge) along the costal margin
- 34(37). Second tarsal segment longer than broad
- 35(36). Hind 2<sup>nd</sup> tarsal segment, in profile, of uniform width, only scarcely narrowed basally and slightly shorter than the 3<sup>rd</sup>; 1<sup>st</sup> segment slightly longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup> ..... HOMOTAGINAE Srivastava
- 36(35). Hind 2<sup>nd</sup> tarsal segment, in profile, narrowed basally and slightly shorter than the 3<sup>rd</sup>; 1<sup>st</sup> tarsal segment slightly shorter than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup> ..... SPONGIPHORINAE Burr
- 37(34). Second tarsal segment broader than long or about as broad as long
- 38(39). Hind tarsi comparatively long & cylindrical, 1<sup>st</sup> over five times longer than broad; elytra smooth, occasionally costal margin with a row of small tubercles, each with a thick setae ..... IRDEXINAE Burr

- 39(38). Hind tarsi comparatively short & thick, 1<sup>st</sup> segment three to four times longer than broad
- 40(41). Body strongly depressed or flattened; head flat; pronotum anteriorly narrowed to form a sort of neck. .... SPARATTINAE Burr
- 41(40). Body weakly depressed or convex; head convex; pronotum anteriorly gently narrowed but not forming a neck ..... LABIINAE Burr
- 42(31). Second tarsal segment dilated or produced below the third as a narrow lobe
- 43(44). Antennal segments 17-22 segmented; 2<sup>nd</sup> tarsal segment spiniform, extending below the third upto the middle, visible from sides only ..... CHELISOCHIDAE Burr (CHELISOCHINAE Burr)
- 44(43). Antennae 12-16 segmented; second tarsal segment lobed, visible from above on either side of 3<sup>rd</sup> segment ..... FORFICULIDAE Stephens
- 45(48). Antennal segments long, slender; 4<sup>th</sup> longer than the 3<sup>rd</sup> or equal, both of similar build, i.e., slender
- 46(47). Elytra with a sharp ridge along the costal margin ..... COSMIELLINAE Steinmann
- 47(46). Elytra without a sharp ridge along the costal margin ..... OPISTHOCOSMIINAE Verhoeff
- 48(45). Antennal segments shorter and wider, occasionally apical ones long and slender; 4<sup>th</sup> shorter or equal to 3<sup>rd</sup> but former always stouter
- 49(52). Mesosternum broader than long
- 50(51). Elytra with a sharp ridge along the costal margin ..... ALLODAHLIINAE Verhoeff
- 51(50). Elytra without any ridge along the costal margin ..... ANECHURINAE Burr
- 52(49). Mesosternum about as long as broad
- 53(54). Forceps cylindrical, not deplanate at base, generally incurved or elongated .. EUDOHRIINAE Burr
- 54(53). Forceps in most of the species deplanate in basal half or less, afterwards cylindrical or depressed ..... FORFICULINAE Burr

**SYSTEMATIC ACCOUNT****Section: CATADERMAPTERA**

Catadermaptera Steinmann, 1986, *Das Tierreich*, **102**: 18 (as Suborder), Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 25; Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt **2**: 8 (as Section).

Paradermaptera Zacher, 1911, *Zool. Jb.*, **30**: 306 (As Superfamily); Steinmann, 1986, *Das Tierreich*, **102**: 19 (as Section); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 25 (as Section); Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt **2**: 8 (as synonym of Section Catadermaptera).

Mesodermaptera Steinmann, 1989, *Das Tierreich*, **105**: 1 (as Section); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 190 (as Section); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 6 (as Superfamily of Section Protodermaptera); Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt **2**: 8 (as synonym of Section Protodermaptera).

Paradermaptera Verhoeff, 1902, *Zool. Anz.*, **25**(665): 199; Zacher, 1911, *Zool. Jb.*, **30**: 309; Burr, 1911, *Genera Insect.*, **122**: 44 (as Superfamily); Steinmann, 1975, *Acta. zool. hung.*, **21**: 207 (as synonym of Apachyoidea); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 385 (as Section); Steinmann, 1989, *Das Tierreich*, **105**: 478 (as Section); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 6 & 33 (as Superfamily of Section Protodermaptera); Srivastava, 2003, *Fauna of India and the adjacent countries, Pt. 2*: 8 (as synonym of Section Catadermaptera).

Male genitalia with basal portion (proparameres) divisible into two halves medially (may be united throughout or separated apically) with two functional distal lobes (penis lobes), sometimes one of them reduced.

Three superfamilies are included under this Section, of which Pygidicranoidea and Anisolaboidea are dealt with in earlier parts, 1 and 2 of this volume, respectively. And Apachyoidea is included here.

**Superfamily APACHYOIDEA**

Apachyoidea Tillyard, 1926, *Dermaptera In: Insects of Australia and New Zealand*: 107; Bruce, Melander & Carpenter, 1954, *Bull. Mus. comp. Zool., Harvard*, **108**: 113; Steinmann, 1975, *Acta. zool. hung.*, **21**: 207; Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt **2**: 9.

Body strongly flattened (compressed); forceps with branches sickle shaped, broad, flat; pygidium in both sexes forming a flat process with hind margin free.

The members of this group are very distinctive in being strongly flattened and are not very common, in nature. They generally occur under the loose bark of trees and logs and capable of running fast.

A single family and subfamily are represented.

Distributed in tropical parts of Africa, Asia, New Guinea and eastern parts of Australia.

## Family APACHYIDAE

Apachyidae Verhoeff, 1902, *Zool. Anz.*, **25** (665) : 199 (Type genus: *Apachyus* Serville, 1831); Burr, 1909, *Dt. ent. Z.*, **1909** : 321; Burr, 1910, *Fauna British India, Dermaptera*: 21; Burr, 1911, *Genera Insect.*, **122**: 44; Zacher, 1911, *Zool. Jb.*, **30**: 395; Brindle, 1975, *Ann. Mus. Roy. Afr. Centr.*, Tervuren in 8° Zool., No **225**: 125; Steinmann, 1981, *Atti. Soc. ital. Sci. nat. Mus. civ. nat. Milano*, **122**(3-4): 162; Steinmann, 1981, *Reichenbachia*, **19**(24): 141; Steinmann, 1989, *Das Tierreich*, **105**: 478; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 386; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20** : 33; Sakai, 1990, *Dermapterorum Catalogus*, **22**: 56 (2829); Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt. **2**: 8.

Characters are same as that of superfamily.

## Family: APACHYINAE

Apachyinae Burr, 1915, *J. R. micr. Soc.*, **1915**: 447 (quoted as Subfamily Apachyidae - inadvertent printing mistake); Hincks, 1957, *South African Animal Life*, **4**: 75; Brindle, 1965, *Ann. Mag. nat. Hist.*, (13) **8**: 440; Brindle, 1971, *Ent. scand. Suppl.*, **1**: 222; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1)(1967): 22; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **1**: 27; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 33; Sakai, 1990, *Dermapterorum Catalogus*, **22**: 51 (2829); Steinmann, 1975, *Acta zool. hung.*, **21**: 207; Steinmann, 1981, *Reichenbachia*, **19**(24): 141; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 386; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 44; Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt **2**: 8.

The characters of the superfamily hold good for the family as well.

Type genus : *Apachyus* Serville, 1831.

Distribution: Oriental, Ethiopian and Australian Regions.

## Key to the genera

- 1(2). Body strongly depressed; size usually larger; pronotum elliptical .....  
..... *Apachyus* Serville
- 2(1). Body weakly depressed; size in most species large; pronotum transverse .....  
..... *Dendroiketes* Burr

Genus *Apachyus* Serville

*Apachyus* Serville, 1831, *Ann. Sci. nat.*, **22**: 35 (Type species: *Forficula depressus* Palisot Beauvois, 1805); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 12; Verhoeff, 1902, *Zool. Anz.*, **25**(665): 200; Burr, 1910, *Fauna British India, Dermaptera*: 32; Burr, 1911, *Genera Insect*, **122**: 44; Townes, 1945, *Ann. Soc. ent. Am.*, **38**: 344; Hincks, 1957, *South African Animal Life*, **4**: 75; Brindle, 1965, *Ann. Mag. nat. Hist.*, (13) **8**: 441; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1)(1967): 22; Popham and Brindle, 1968, *Entomologist*, **101**: 197; Srivastava, 1976, *Rec.*

*zool. Surv. India, Occ. pap.*, **2**: 44; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 33; Sakai, 1990, *Dermapterorum Catalogus*, **22**: 59 (2837); Steinmann, 1989, *Das Tierreich*, **105**: 483; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43) : 387.

*Apachya* Serville, 1839, *Histoire naturelle des Insects Orthopteres* (Suites Buffon): 54 (emendation of *Apachyus* Serville, 1831); Dohrn, 1863, *Sttetin ent. Ztg.*, **24**: 421; Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**4**: 372.

*Apachys* Agassiz, 1846, *Nomen. Zool. Index*: 27 (emendation of *Apachyus* Serville, 1831).

Body strongly depressed, flattened; antennae 30-50 segmented; head broader than long, sutures distinct; eyes prominent, but shorter than the post-ocular length. Pronotum longer than broad, apically narrowed, sides and hind margin convex. Elytra and wings well developed, former with inner humeral angles rounded off to show a small triangular scutellum; femora broad, compressed, crenulated; tibiae and tarsi slender and claw with an arolium. Abdomen with sides parallel, smooth, strongly depressed; ultimate tergite in both sexes broad, posteriorly produced as anal process or squamopygidium. Penultimate sternite, in females, produced into a long point. Forceps sickle shaped, in females, less stout.

*Type species: Forficula depressus* Palisot de Beauvois, 1805.

*Distribution*: Ethiopia (excluding Madagascar), Oriental and Australian Regions

*Remarks*: This genus contains altogether nine species, of which only a single species is recorded from the area under study.

### ***Apachyus feae* Bormans**

(Figs. 2-6)

*Apachyus feae* Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14** : (1 Male, 1 Female and 1 Nymph Male; Hab. Carin Cheba, 900-1100 m, Mai Decembre, Asciiui Chebà (Carin), 1200-1300 m, Janvier, 1888); Bormans and Kraus, 1900, *Das Tierreich*, **11**: 13, figs 9a-b; Burr, 1905, *J. Asiat. Soc. Beng.* (N.S.), **1**: 27; Burr, 1907, *Bull. Mus Hist. nat. Paris*, **13**: 508; Burr, 1908, *Ann. Mag. nat. Hist.*, (8) **1**: 54; Burr, 1910, *Fauna British India, Dermaptera*: 33, pl. 1, fig. 1, 2; pl. 10, fig. 93; Burr, 1911, *Genera Insect.*, **122**: 45, pl. 4, fig. 7; Burr, 1912, *Annln naturh. Mus. Wien*, **26**: 82; Burr, 1913, *Rec. Indian Mus.*, **8**(2):140 (Nymfs; India: Arunachal Pradesh, Rotung, 1400 ft., Yembung, 11000 ft., Above Panji, 4000 ft., and Assam, Dibrugarh); Burr, 1914, *Rec. Indian Mus.*, **10**: 290 (Nymphs; India: Eastern Himalaya, La - ai River, Kalem Valley, Mishmi Country); Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 610 (Male, Female & nymphs; South China ; Yunnan); Brindle, 1965, *Ann. Mag. nat. Hist.*, (13) **8**: 442; Popham & Brindle, 1969, *Entomologist*, **101**: 107; Kapoor, *Agra Univ. J. Res. (Sci.)*, **16**(1)(1967): 22; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **1**: 29; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 33; Sakai, 1990, *Dermapterorum Catalogus*, **22** :89 (2867); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 48 (Male, Female; India: Manipur, 1009 - 1386 m, Arunachal

Pradesh, 1345 - 2691 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 45; Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, **81**: 284 (1 Female; India: Meghalaya, Garo Hills, Songkhama); Srivastava, 1993, *Rec. zool. Surv. India*, **91** (1)(1992): 76, fig 36 (Nymph; India: Arunachal Pradesh, Tirap Dist., Gandhigram 135 km of Miao); Srivastava, 1993, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **89**: 226, figs 15 - 20 (Lactotype Male, Paralactotypes 2 Females and Nymphs; Myanmar); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 400, figs 95-97 (Male, India: West Bengal, Darjeeling Dist., Kalijhora and Thubro); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 359, figs 57-69 (1 Nymph; India: Meghalaya, Shillong); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 42 (Male, Female; Thailand and Vietnam); Steinmann, 1981, *Atti. Soc. ital. Sci. nat.*

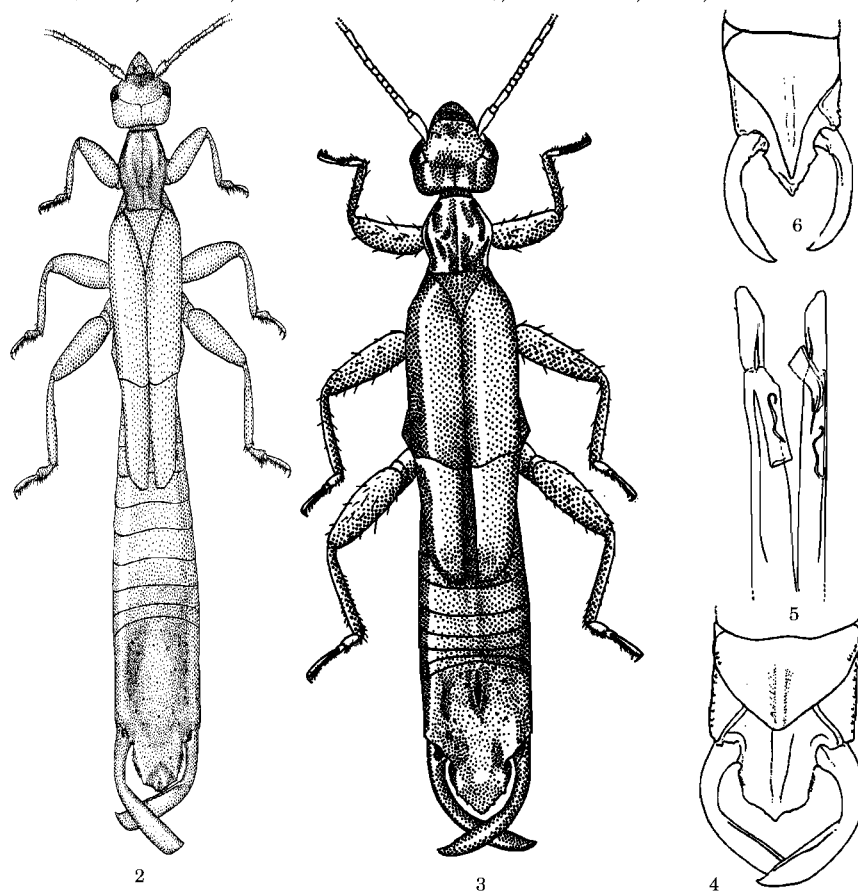


**Fig 2-6.** *Apachyus feae* Bormans, Male (from India: B.W., Darjeeling Dist., Kalijhora, Dorsal view); Male (from India, Darjeeling Dist, Thurbo), 3. Dorsal view, 4. Hind portion of body, in ventral view, showing penultimate sternite, squamopygidium and forceps, 5. Genitalia; Female, 6. Hind portion of body; ventral view, showing penultimate sternite, squamopygidium and forceps (fig. 4 from Lactotype Male and fig. 5 from Paralactotype Female after Srivastava, 1993h).

*Museo civ. nat. Milano*, **122**(3-4): 162 (Nymph; Birmania: Cariana, Ihao); Steinmann, 1989, *Das Tierreich*, **105**: 488; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43) : 390.

*Apachyus pascoei* Kirby, 1891, *J. Linn. Soc. (Zool.)*, **23**: 521, pl. 20, fig. 1 (1 Male; Sylhet (now in Bangladesh); Burr, 1904, *Trans ent. Soc. London*, **1904**: 3; Burr, 1910, *Fauna British India, Dermaptera* : 35; Burr, 1911, *Genera Insect.*, **122**: 45; Burr, 1911, *Genera Insect.*, **122** : 45; Brindle, 1965, *Ann. Mag. nat. Hist.*, (13)**8**: 442 (treated as synonym of *Apachyus feae* Bormans, 1894).

**Male:** General colour reddish to blackish brown; antennae with basal three segments yellowish; wings yellow with tip brownish; legs in basal half darker; abdomen reddish brown with shades of black but ultimate tergite, anal process and forceps lighter in colour.

Head about as long as broad, frons in middle above depressed, sutures fine but distinct, hind margin truncate. Eyes distinct, shorer than post-ocular length. Antennae 46 segmented or more (since apical segments generally broken off), 1<sup>st</sup> stout, about as long as the distance between antennal bases; 2<sup>nd</sup> short, transverse; 3<sup>rd</sup> long, cylindrical, slightly shorter than the 1<sup>st</sup>; 4<sup>th</sup> to 7<sup>th</sup> short but gradually increasing in length distally, a few apical ones thin. Pronotum about as long broad or longer, sides convex, hind margin truncate, median sulcus distinct. Elytra ample, smooth, basal axillary angle rounded off to show a broad triangular scutellum. Wing with exposed portion slightly shorter than the elytra, membranous or coreaceous. Legs stout, femora thickened; tarsi with 1<sup>st</sup> segment stout; 2<sup>nd</sup> short, transverse; 3<sup>rd</sup> long, slender, longer the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>. Abdomen strongly depressed, parallel sided, sometimes very slightly narrowed basally, tergites punctate. Penultimate sternite broadly triangular with posterior margin in middle obtuse. Ultimate tergite above rugose with several tubercles; anal process pentagonal or obtusely produced in middle posteriorly. Forceps with branches stout, strongly incurved, somewhat dilated in apical half, apices crossing. Genitalia with parameres broad, about one and a half times longer than broad, narrowed apically; virga tubular, undulated, basal portion lobed.

**Female:** Agrees with males in most characters except that the penultimate sternite acuminate produced in middle posteriorly; ultimate tergite triangular, gently prolonged in middle posteriorly and forceps less stout.

*Measurements:* (in mm)

|                                                | Male        | Female      |
|------------------------------------------------|-------------|-------------|
| Length of body (up to the tip of anal process) | 26.5 - 43.5 | 27.3 - 39.5 |
| Length of forceps                              | 5.0 - 7.0   | 6.5 - 7.0   |

*Types:*

1. Lactotype Male, Paralactotype 1 Female and 1 nymphs of *Apachyus feae* Bormans, 1894 at MSNG.
2. Type Male of *Apachyus pascoei* Kirby, 1891 at BMNH.

**Distribution :** India (West Bengal (Darjeeling dist.); Sikkim; Manipur; Arunachal Pradesh and Meghalaya); Bhutan; Myanmar; Vietnam and China (Yunnan).

In the ZSI collections following specimens, not reported earlier, are present: India: Arunachal Pradesh, Kameng Dist., Pobrang Chu River bank, 1829 m, 2 Females, 9 nymphs, 22.iv.1961; Sangti Chu, 1776 m,...12.iv.1961 (*K.C. Jayaramakrishnan* coll).

**Remarks:** Anal process, in males, shows slight variation in being pentagonal or obtusely produced in middle posteriorly. Body size varies greatly (30.5-50.5 mm, including length of forceps).

In nature, nymphs are more common on the basis of published reports.

#### Genus *Dendroiketes* Burr

*Dendroiketes* Burr, 1909, *Dt. ent. Z.*, **1909**: 321 (Type: *Apachyus corticinus* Burr, 1908); Burr, 1910, *Fauna British India, Dermaptera*: 36; Burr, 1911, *Genera Insect*, **122**: 45; Townes, 1945, *Ann. Soc. ent. Am.*, **38**: 347; Brindle, 1965, *Ann. Mag. nat. Hist.*, (**13**)8: 445; Popham and Brindle, 1968, *Entomologist*, **101**: 108; Sakai, 1970, *Dermapterorum Catalogous Praeliminaris*, **1**: 30; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 33; Sakai, 1990, *Dermapterorum Catalogous*, **22**: 102(2880); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 45; Steinmann, 1989, *Das Tierreich*, **105**: 479; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 393.

Very similar to *Apachyus* Burr but body less depressed; head weakly depressed, occiput raised; eyes prominent but shorter than the post ocular area Antennae 30 segmented, apical ones thin. Pronotum transverse. Elytra and wings ample. Abdomen parallel sided; ultimate tergite produced into squamopygidium. Forceps, in males, with branches stout, strongly incurved; in females elongated.

**Type species:** *Apachyus corticinus* Burr, 1908.

**Distribution:** Sri Lanka; Philippine Islands; New Guinea and New Britain Isls.

Although *Dendroiketes* agrees in most characters with *Apachyus*, the less depressed body and quadrate pronotum indicate that it may serve as possible link between other earwigs and the latter.

Only a single species is represented.

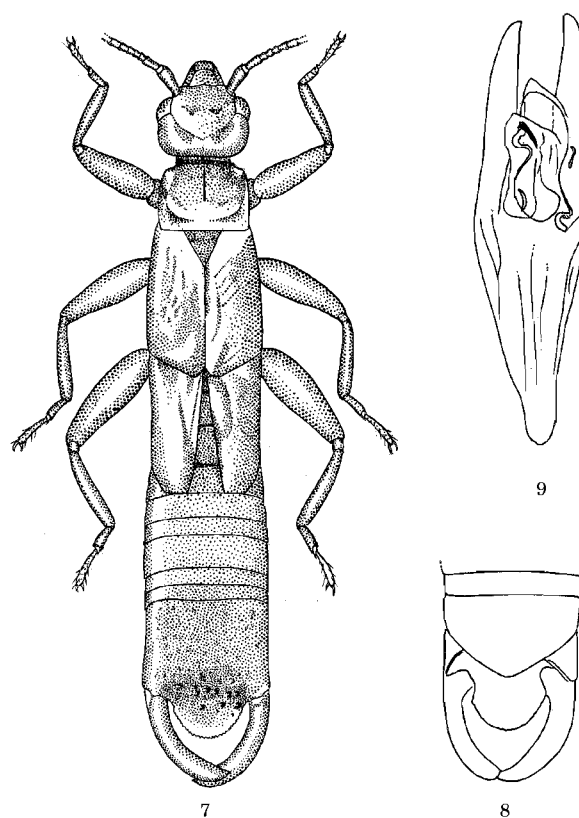
#### *Dendroikete corticinus* (Burr)

(Figs. 7-9)

*Apachyus corticinus* Burr, 1908, *Ann. Mag. nat. Hist.*, (8)**1**: 51 (Type Male (but it is actually a female on the basis of penultimate segment); Ceylon, in BMNH).

*Dendroikete corticinus*; Burr, 1909, *Dt. ent. Z.*, **1909**: 32; Burr, 1910, *Fauna British India, Dermaptera*: 36, figs 3, 3a, 3b (Male, Female; Ceylon); Burr, 1911, *Genera Insect.*, **122**: 45, Pl. 4, figs 8 (Male);





**Figs. 7-9.** *Dendroiketes corticinus* (Burr), Male, 7. Dorsal view, 8. Hind portion of body, ventral view, showing penultimate sternite, anal process and forceps, 9. Genitalia.

Brindle, 1965, *Ann. Mag. nat. Hist.*, (13)**8**: 445, fig. 22 (Male); Brindle, 1971, *Ent. scand. Suppl.*, **1**: 222 (Male; Sri Lanka); Popham and Brindle, 1968, *Entomologist*, **101**: 108; Sakai, 1970, *Dermapterorum Catalogous, Praeliminaris*, **1** : 30; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 33; Sakai, 1990, *Dermapterorum Catalogous*, **22**: 104(2882); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 45; Steinmann, 1989, *World Catalogue of Dermaptera* (Series Entomologica v. 43): 393; Steinmann, 1989, *Das Tierreich*, **105** : 481.

**Male:** General colour blackish brown; antennae with 1<sup>st</sup> and 2<sup>nd</sup> segments brownish yellow; hind femora darker in middle, posterior half of pronotum and along the inner margin of elytra and wings with a yellow stripe; abdomen yellowish on sides, darker in the middle.

Head longer than broad, smooth, pilose, occiput and frons raised, sutures fine but distinct, hind margin truncate. Eyes distinct, shorter than the post-ocular area. Antennae 30-segmented, 1<sup>st</sup> stout, expanded apically, shorter than the distance between antennal bases and equal to combined length of 2<sup>nd</sup> and 3<sup>rd</sup> segments; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> and 5<sup>th</sup> subconical; transverse; 6<sup>th</sup> onwards gradually

increasing in length distally, a few apical segments thin. Pronotum transverse, sides sub convex, hind margin truncate, median sulcus distinct, prozona raised; metazona depressed. Elytra and wings well developed, smooth, exposed portion of wings longer than the elytra, a broad, triangular scutellum visible. Legs long, stout, fore femora swollen, middle and hind ones compressed; tibiae long, slender; tarsi with 1st segment distinctly shorter than the third. Abdomen parallel sided, moderately convex, tergites punctate. Penultimate sternite punctate, hind margin rounded, obtuse in middle. Ultimate tergite weakly transverse, punctation deep and dense, declivent in posterior half; anal process smooth, depressed, hind margin rounded, finely serrated. Forceps stout, depressed, regularly incurved from base to apex, tip gently hooked and pointed. Genitalia with parameres long, narrowed apically, distal lobes with a distinct virga and a basal vesicle.

*Female:* Agrees with males in most characters except penultimate sternite produced in to a long point in middle posteriorly; anal process at base parallel sided, afterwards triangular; forceps with branches less stout and straight near base, afterwards slightly incurved with apices hooked.

*Measurements:* (in mm)

|                                               | Male       | Female |
|-----------------------------------------------|------------|--------|
| Length of body<br>(up to tip of anal process) | 8.5 - 10.3 | 10.0   |
| Length of forceps                             | 1.5        | 1.5    |

*Type:* Type Female in BMNH. Burr (1908a) mentions Type as Male but on the basis of description of penultimate sternite; ultimate tergite, anal process and the shape of forceps it is a Female. He (1910) has correctly described and figured male and female.

*Distribution:* Sri Lanka.

*Remarks:* This species appears to be rare. The above description is based upon a male from Sri Lanka, S. Prov., Haycock, 21 mls NNE Galle, at light, determined and reported by Brindle (1971).

Section : EUDERMAPTERA Verhoeff, 1902

*Eudermaptera* Verhoeff, 1902, *Zool. Anz.*, **25** (665): 182; Burr, 1911, *Genera Insect.*, **122**: 45; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 33; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v.43) : 395 Steinmann, 1990, *Das Tierreich*, **106**: 1; Srivastava, 2003, *Fauna of India and the adjacent countries*, Dermaptera, Pt. **2**: 9.

*Monoandria* Zacher, 1911, *Zool. Jb.*, **30**: 306.

*Diandria* Zacher, 1911, *Zool. Jb.*, **30** : 307

It is mainly characterized by the male genitalia with a median unpaired (proparamere) basal portion and a single distal lobe.

Only one super family is included under it

## Superfamily FORFICULOIDEA

*Forficuloidea* Tillyard, 1926, *Dermaptera* In: *The Insects of Australia and New Zealand*: 108; Popham, 1968, *Entomologist*, **98**: 134; Steinmann, 1975, *Act. zool. hung.*, **21**: 208; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43) : 349; Steinmann, 1990, *Das Tierreich*, **106**: 2; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 33; Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt. **2**: 9.

The characters of the Section Eudermaptera are applicable to this subfamily. Form weakly convex and 2<sup>nd</sup> tarsal segment may be simple, lobed or extended below the third as a narrow prolongation.

Taxonomy of this Section is based upon the males since females offer little variations in the shape of forceps and pygidium.

At present three families are included under it.

## Family SPONGIPHORIDAE

*Spogiphoridae* Zacher, 1915, *Zool. Anz.*, **45**: 526; Bruce, Melander and Carpenter, 1954, *Bull. Mus. comp. Zool. Harvard*, **108**: 116; Kevan, 1980, *Mem. Layman Ent. Mus.*, **8**: 117; Sakai, 1987, *Dermapterorum Catalogous*, **20**: 1414; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 71; Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt. **2**: 9.

*Spongiphoroidea* Kevan, 1980, *Mem. Leyman Ent. Mus.*, **8**: 117; Sakai, 1987, *Dermapterorum Catalogous*, **20**: 1413.

*Labiidae* Burr, 1909, *Dt. ent. Z.*, **1909**: 323; Burr, 1910, *Fauna British India Dermaptera*: 110; Burr, 1911, *Dt. ent. Natn.-Biblthk*, **2**: 58; Burr, 1911, *Genera Insect.*, **122**: 46; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 63; Hincks, 1957, *South African Animal Life*, **4**: 76; Popham, 1965, *Entomologist*, **98**: 133; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)* (1967), **16**(1): 13; Brindle, 1970, *Pacif. Insects*, **12**(3): 662; Brindle, 1972, *Insects of Micronesia*, **5**(2): 134; Brindle, 1973, *Ann. Mus. Roy. Afr. Centr.*, Tervuren, in *8° Zool.*, **205**: 132; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 28; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 396; Steinmann, 1990, *Das Tierreich*, **106**: 3.

*Labiioidea* Bruce, Melander and Carpenter, 1954, *Bull. Mus. comp. Zool. Harvard*, **108**: 116; Harz and Kaltenbach, 1976, *Die Orthopteren Europas*, **3**: 50.

Eyes normal or prominent, longer than post-ocular area. Second tarsal segment about as long as broad or longer than broad, simple. Male genitalia forficuloid type, without a basal vesicle, parameres variable in shape.

Body usually convex but in certain genera strongly depressed.

Altogether 15 subfamilies are represented throughout the world.

## Subfamily HOMOTAGINAE Srivastava

*Homotaginae* Srivastava, 1985, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **85**: 206 (Type genus: *Homotages* Burr, 1909); Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 20.

Body smooth, glabrous, head longer than broad, convex. Eyes shorter than post-ocular area. Antennae 15-segmented, 1st stout, narrowed basally; 2<sup>nd</sup> about as long as broad; 3<sup>rd</sup> long and slender; 4<sup>th</sup> conical, shorter than the preceding; 5<sup>th</sup> longer than 4<sup>th</sup> but shorter than 3<sup>rd</sup>, remaining cylindro-conical, gradually increasing in length distally. Elytra and wings well developed, smooth. Legs long, slender, 1<sup>st</sup> tarsal segment equal or longer than the combined length of 2<sup>nd</sup> & 3<sup>rd</sup>; 2<sup>nd</sup> longer than broad, of uniform width throughout, except at base slightly narrowed. Forceps, in males, undulated, toothed or simple and straight.

*Distribution*: India, Nepal, Myanmar and Vietnam; in mountain region only.

*Remarks*: This subfamily can be separated by the shape of hind tarsal segments, especially 2<sup>nd</sup> one which is longer than broad, of uniform width throughout, besides other minor characters.

At present only two genera are included.

## Key to the genera

- 1(2). Body Spongiphorid type; size including forceps small (4.1-6.9 mm); antennal segments 4<sup>th</sup> to 7<sup>th</sup> conical or sub-conical; forceps, in males, simple, straight, at base internally with small points, otherwise unarmed ..... *Paratages* Srivastava
- 2(1). Body Anechuroid type; size including forceps larger (14.5-22.5 mm); antennal segments 4<sup>th</sup> onwards long cylindrical; forceps, in males, stout, undulated (rarely horizontal), armed internally with strong teeth ..... *Homotages* Burr

Genus *Paratages* Srivastava

*Paratages* Srivasava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 120 (Type species: *Paratages sakaii* Srivastava, 1987).

Body almost bare, without pubescence. Size small (4.1-6.9 mm, including forceps). Antennae 15-segmented, 1<sup>st</sup> stout, shorter than the distance between antennal bases, 4<sup>th</sup> onwards segments conical or subconical, except a few apical ones thin and slender. Eyes about half as long as the post-ocular length. Legs long, slender, fore femora swollen, middle and hind ones slender; tibiae thin, cylindrical; 1<sup>st</sup> tarsal segment of fore and middle legs equal to the combined length of 2<sup>nd</sup> & 3<sup>rd</sup>; hind tarsi with 1<sup>st</sup> segment slightly longer the combined length of 2<sup>nd</sup> & 3<sup>rd</sup> segments; 2<sup>nd</sup> almost of uniform width or scarcely narrowed basally and slightly longer than half the length of 3<sup>rd</sup> one. Elytra and wings well

developed, often covering a few basal abdominal tergites. Pygidium short but distinct. Forceps simple, straight and internally unarmed.

Sternal plates with prosternum longer than broad, narrowed posteriorly, feebly constricted between fore-coxae, mesosternum quadrate, about as long as broad with all margins straight, and metasternum transverse, apically narrowed between hind-coxae with hind margin truncate.

*Type species: Paratages sakaii* Srivastava, 1987.

*Distribution:* Oriental Region, Mauritius and New Guinea.

*Remarks:* So far this genus was known by its Type species. Now *Spongovostox mucronatus* (Stål) is also included on account of its tarsal segments especially hind 2<sup>nd</sup> tarsal segment.

***Paratages mucronatus* (Stål)**

(Figs 10-17)

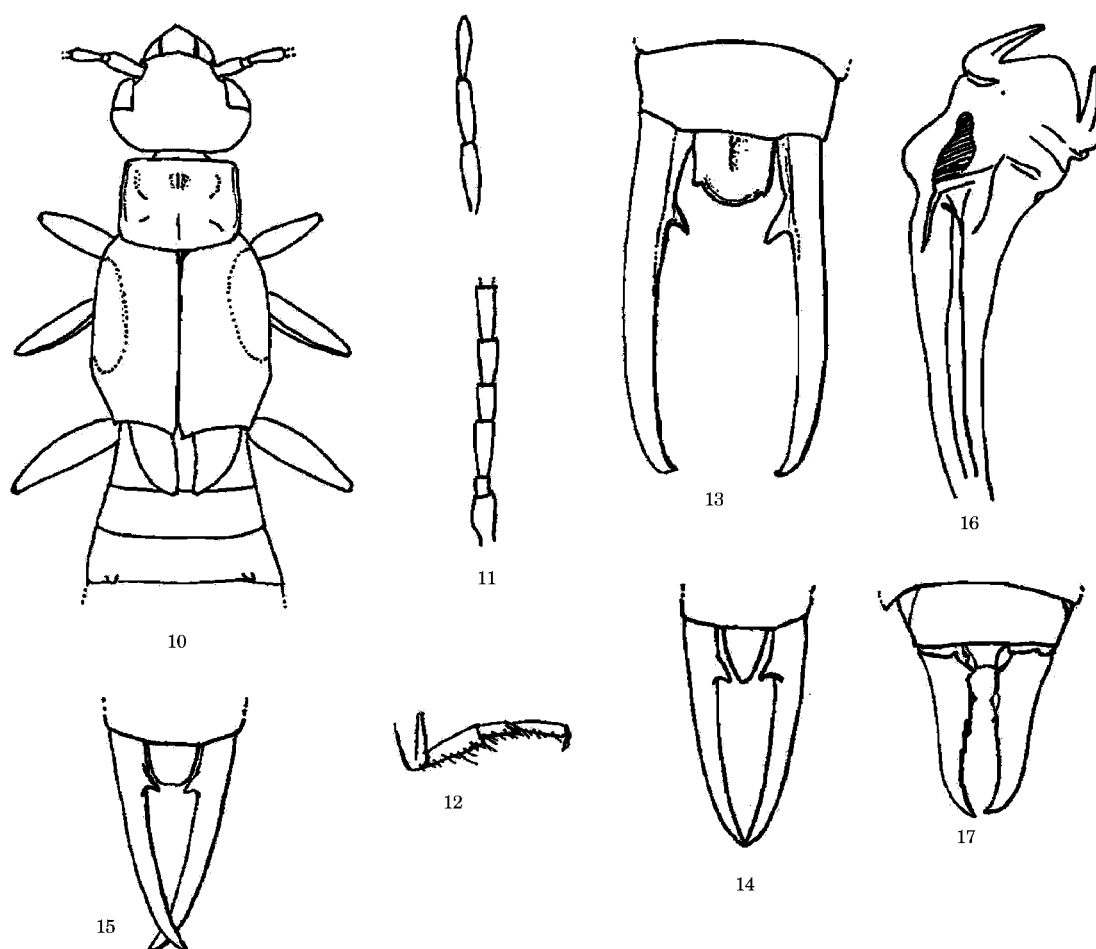
*Forficula mucronata* Stål, 1860, *Eug. Resa Ins.*: 303 (Male, not Female; Java).

*Labia mucronata*; Dohrn, 1865, *Stettin ent. Ztg.*, **25**: 423; Scudder, 1876, *Proc. Boston Soc. nat. Hist.*, **18**: 321; Dubrony, 1879, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **14**: 363; Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**6**: 439; Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 386; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 68; Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**: 324; Burr, 1902, *Termètzter füz*, **25**: 481; Burr, 1910, *Fauna British India, Dermaptera*: 15, pl 5, fig. 39; Burr, 1911, *Genera Insect.*, **122**: 56; Burr, 1911, *Notes Leyden Mus.*, **34**: 28; Burr, 1911, *Dt. ent. Natn.-Biblthk*, **2**: 62; Burr, 1912, *Annln naturh. Mus., Wien*, **26**: 88; Burr, 1913, *Rec. Indian Mus.*, **8**(2): 142; Borelli, 1915, *Boll. Musei Zool. Anat. comp. R. Univ., Torino*, **30**(698): 4; Borelli, 1916, *Boll. Musei Zool. Anat. comp. R. Univ., Torino*, **31**(715): 2; Borelli, 1926, *J. Malayan Br. Asiat. Soc.*, **4**: 264; Borelli, 1927, *Suppl. ent.*, **15**: 73; Borelli, 1932, *Bull. Raffles Mus.*, **7**: 86; Borelli, 1932, *J. fed. Malay. St. Mus.*, **17**: 189; Caudell, 1927, *Proc. U. S. nat. Mus.*, **71**(3): 3; Hincks, 1947, *Ann. Mag. nat. Hist.*, (11)**14**: 529, fig. 5; Hincks, 1954, *Ver. Naturf. Ges. Basel*, **65**(1): 22; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 78; Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 3; Popham and Brindle, 1967, *Entomologist*, **100**: 259; Brindle, 1967, *Mem. Est. Mus. Zool. Univ. Coimbra*, No.302: 18; Brindle, 1968, *Ark. Zool.*, **20**(25): 38; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)* (1967), **16**(1): 16; Sakai, 1970, *Dermapterorum Catalogous Praeliminaris*, **2**: 126.

*Spongovostox mucronatus*; Brindle, 1971, *Ent. scand. Suppl.*, **1**: 228, fig. 39 (Male Female; Sri Lanka); Brindle, 1971, *Ent. Tidskr.*, **92**(1-2): 18, figs. 19-21 (Type Male, not female); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 37; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4181; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 31; Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1-4): 38, figs 47-49 (Male; Philippine Isls); Srivastava, 1993, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **89**: 236, figs 33-35 (Male, Female; New Guinea); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, Pt. **4**: 404, figs 108-113 (Male, Female, India, West Bengal, Darjeeling Dist.); Srivastava and Kovack, 1993, *Rec. zool. Surv. India*, **93**(1-2): 254, fig 3

(Male, Female; Malaysia, Malayan Peninsula, Selangor, 250 m); Srivastava, 2000, *Fauna of Tripura, State Fauna Series 7*, Pt. 2 : 274, figs 14-16 (Male, Female; India: Tripura); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(2-4): 172 (Male, nymph; India; Andaman and Nicobar Isls, Andaman Isl, South Andaman, Port Blair); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 44 (Male, Female; Thailand and Vietnam); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 543; Steinmann, 1990, *Das Tierreich*, **106**: 399, figs 731-733.

*Sphingolabis indumathai* Fernando, 1961, *Ceylon J. Sci. (Bio. Sci.)*, **25**: 303, pl. XLII, figs 1-6 (2 Males, 3 Females; Sri Lanka: Mannampiriya, Tamankaduwa Dist.); Brindle, 1971, *Ent scand, Suppl.*, **1**: 229 (Treated as a synonym).



**Figs. 10-17.** *Paratages mucronatus* (Stal), Male, 10. Anterior portion of body, 11. A few basal and apical antennal segments, 12. Hind tarsi, 13-15. Ultimate tergite, forceps and pygidium, 16. Genitalia; Female, 17. Ultimate tergite and forceps.

*Spongovostox ocellai* Steinmann, 1984, *Acta zool. hung.*, **30**: 195, figs 13-14 (Type Male; Thailand: Pahani (Songkhia) - **Syn n.**

*Chaetolabia appendicina* (nèc Menozzi, 1941); Steinmann, 1983, *Rev. Suisse Zool.*, **90**(3): 522 (1 Male, 2 Females; India: Assam, Manas, 200 m); Sakai, 1993, *Dermapterorum Catalogus*, **25**: 5216, figs Male, Female, labelled as "Geneve Det. Steinmann- SS-740-28 and SS-740-27).

**Male:** General colour dark brownish black; antennae blackish brown; legs with femora black but apically yellowish brown, tibiae basally and whole of tarsi yellowish brown. Elytra brownish black, along the external margin with a broad yellow stripe, wings yellow, along the sutural margin with a fuscous band and forceps yellow.

Head convex, smooth, sutures obsolete, hind margin emarginated. Eyes shorter than the post-ocular area but shorter than the 1<sup>st</sup> antennal segment. Antennae 15-segmented, 1<sup>st</sup> stout, shorter than the distance between antennal bases; 2<sup>nd</sup> short; 3<sup>rd</sup> longer than the 1<sup>st</sup>, expanded apically; 4<sup>th</sup> and 5<sup>th</sup> shorter than the 3<sup>rd</sup> but strongly narrowed basally, 6<sup>th</sup> onwards segments gradually increasing in length, a few pre-apical ones thin. Pronotum weakly transverse, smooth, gently expanded posteriorly, hind margin rounded, sides straight, median sulcus distinct. Elytra and wings well developed, smooth. Legs moderately long, hind tarsi with 1<sup>st</sup> segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> segment about twice as long as broad, only slightly shorter than 3<sup>rd</sup>. Abdomen with tergites smooth, parallel-sided or gently dilated in middle. Penultimate sternite transverse, briefly rounded posteriorly. Ultimate tergite strongly transverse, smooth, sides straight, hind margin lightly emarginated. Pygidium distinct, lanceolate, apex pointed, sometimes broad, hind margin rounded, with or without tubercles at lateral angles. Forceps with branches remote, slender, elongated, tapering apically, apices gently incurved, internally at base with a strong, posteriorly directed, pointed tooth. Genitalia with parameres short, narrowed apically, tip obtuse, virga represented by short chitinous plates.

**Female:** Agrees with males in most characters except that penultimate sternite obtuse in middle posteriorly; ultimate tergite narrowed posteriorly; pygidium scarcely visible and forceps simple, contiguous and straight.

*Measurements:* (in mm)

|                   | Male     | Female  |
|-------------------|----------|---------|
| Length of body    | 3.6-4.2  | 3.1-3.9 |
| Length of forceps | 0.1-1.25 | 0.9-1.4 |

*Types:*

1. *Forficula mucronata* Stål, 1860 - Type Male (not Female) at NRSS.
2. *Sphingolabis indumathai* Fernando, 1957 - 2 Males, 2 Females (treated as Syntypes) at ZUSL.
3. *Spongovostox ocellai* Steinmann, 1984 - Type Male at MSNV.

*Distribution:* India (Assam: Sadiya, Manas; West Bengal, Darjeeling Dist.; Tripura and Andaman Islands).

Also recorded from Sri Lanka, Myanmar, Indonesia (Sumatra, Java, East Sumba, West Flores), Mauritius and New Guinea.

*Remarks:* This small specie is characterised by a broad yellow stripe along the external margin of elytra and wings with a broad inner fuscous band. In this respect it resembles *Spongovostox semiflavus* (Bormans) which occupies same geographical range. But the latter differs in having eyes prominent, about as long as the post-ocular area and distinctive tarsal segments and male parameres. Burr (1901) has recorded this species from decaying pods of *Poicinia* and *Coca* in Sri Lanka.

Steinmann (1983) recorded *Chaetospania appendicina* (Menozzi, 1941) from India: Assam, on one male and two females. On the basis of brief description given by him and photographs of one male, one female, out of above specimens, by Sakai (1993, p.5216, although both labelled as females) it is obvious that these specimens are referable to this species.

*Spongovostox gracilis* Borelli, 1916, synonymised by Steinmann (1990), is distinct by the shape of male pygidium in being strongly narrowed posteriorly with apex bifid and genitalia with parameres comparatively broader.

Record of *Spongovostox mucronatus* (Stål) by Srivastava (1990, p. 38, figs 47-49) based upon one male, three females from Philippine Islands is referable to *Spongovostox gracilis* Borelli, on account of male genitalia with parameres narrow but comparatively broader, of uniform width with tip obtuse, although pronotum is not strongly narrowed posteriorly

*Spongovostox ocellai* Steinmann (1984) from Thailand is treated as a synonym in having identical male genitalia. Besides the shape of male pygidium is also within the range of variation of the species.

### Genus *Homotags* Burr

*Homotages* Burr, 1909, *Dt. ent. Z.* 1909: 327 (Type species: *Anechura feae* Bormans, 1888, under the Subfamily Anechurinae); Burr, 1910, *Fauna of British India, Dermaptera*: 155; Burr, 1911, *Genera Insect.*, **122**: 77 (under Forficulidae); Burr, 1916, *J. R. micr. Soc.*, **1916**: 5 (under Labiinae); Townes, 1945, *Ann ent. Soc. Am.*, **38**: 349; Popham and Brindle, 1965, *Entomologist*, **98**: 135 (under Forficulinae); Brindle, 1971, *Ent. Tdskr.*, **92**: 13 (under Forficulidae: Spongiphorinae); Srivastava, 1977, *Ceylon J. Sci. (Bio. Sci.)*, **12**(2): 109 (Labiidae); Srivastava, 1985, *Annali Mus. civ. Stor. nat Giacomo Doria*, **85**: 206 (under Homotaginae Srivastava, 1985 with *Homotages* Burr, 1909 as the type genus); Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt. **II**: 9 (under Homotaginae); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 486 (under Labiidae: Spongiphorinae); Steinmann, 1990, *Das Tierreich*, **106**: 460 (under Labiidae: Spongiphorinae).



Build stout, smooth. Head convex, sutures faint; antennae 15-segmented, 1<sup>st</sup> stout, long, slender, longer than the 3<sup>rd</sup>, 4<sup>th</sup> sub-conical; 5<sup>th</sup> shorter than the 3<sup>rd</sup>. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> longer than broad, slightly more than half the length of 3<sup>rd</sup>. Forceps, in males, undulated, internally armed with tooth.

*Type species: Anechura feae* Bormans, 1888.

*Distribution:* India, Nepal, Myanmar and Vietnam- in the mountain regions.

### Key to the species (based on males)

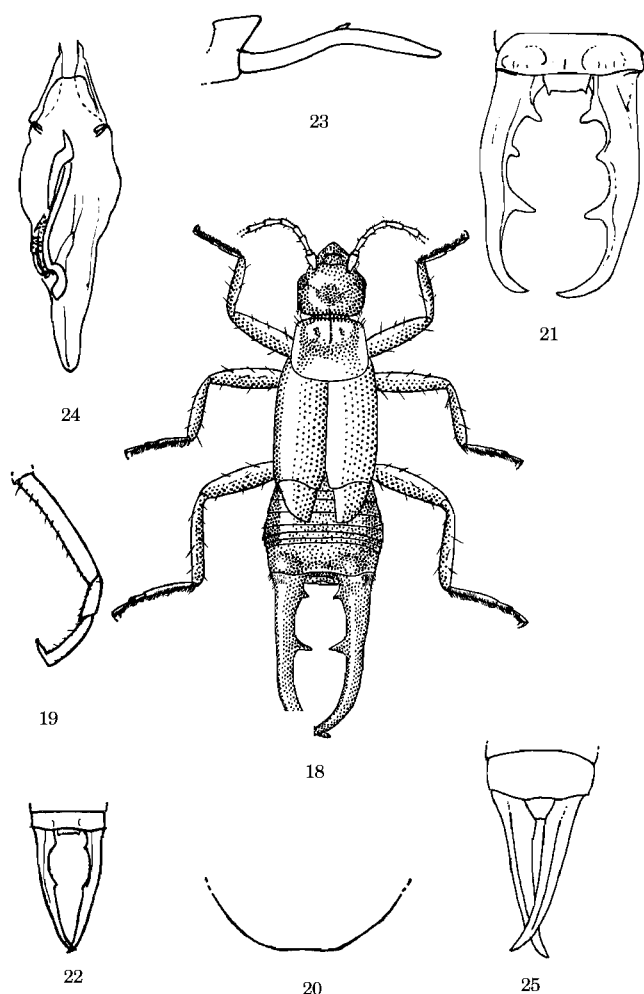
- 1(2). Head black; elytra generally variegated; inner teeth of forceps ventrally placed .  
.....*H. feae* (Bormans)
- 2(1). Head orange; elytra unicolorous; inner teeth of forceps dorsally placed .....  
.....*H. tawangensis* Srivastava

### *Homotages feae* (Bormans)

(Figs 18-25)

*Anechura feae* Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)6: 445, figs 4-7 (1 Male; Thagatà (Tenasserim); Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)14: 402; Bormans and Krauss, 1900, *Das Tierreich*, 11: 104; Kirby, 1904, *Syn. Cat. Orthoptera*, 1: 114; Burr, 1907, *Rec. India Mus.*, 1(3): 209 (Male, Female; Nepal); Burr, 1908, *Bull. Mus. Hist. nat., Paris*, No. 2: 118.

*Homotages feae*; Burr, 1909, *Dt. ent. Z.*, 1909: 327, Pl. 4, fig. 7 (Male, Female; India: West Bengal, Darjeeling); Burr, 1910, *Fauna of British India, Dermaptera* : 156, Pl. 10, fig. 101 (Male, Female; India: West Bengal, Darjeeling; Uttarakhand, Kumaon Hills, Nainital; Nepal and Thagatà (Tenasserim); Burr, 1911, *Genera Insect.*, 122: 77, Pl. 7, fig. 8, Pl. 8, figs 3a-b; Burr, 1912, *Annln naturh Mus. Wien*, 26: 98; Burr, 1916, *J. R. micr. Soc.*, 1916: 5, Pl. 1, fig. 9 (Male genitalia); Hincks, 1947, *Ark. Zool.*, 39A(1): 5; Baijal and Singh, 1954, *Agra Univ. Res. (Sci.)*, 3(1): 459, figs 14-15 (Several Males and Females; India: Uttarakhand, Garhwal Himalaya, Chakrata Range, ca 2438 m); Bharadwaj and Bhatnagar, 1961, *Zool. Anz.*, 167: 285, fig. 6 (1 Female; India: Uttarakhand, Kumaon Hills, Nainital, Khurpatal); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, 16(1) (1967): 29; Kapoor and Malla, 1978, *J. Inst. Sc.*, 1: 135 (1 Female; Nepal: Godavari); Kapoor, Malla and Shah, 1978, *J. nat. Hist., Mus.*, 2(2): 60 (Male; Nepal: Naubise, 25 km W of Kathmandu); Brindle, 1971, *Ent. Tidskr.*, 92(1-2): 13; Brindle, 1987, *Courier Forsch.-Inst. Scenckenberg*, 93: 338 (Male; Nepal: Dhankuta Dist., zw Basantpur und Hille, 2300-2600 m); Srivastava and Saha, 1975, *Ceylon J. Sci. (Bio. Sci.)*, 11(2): 64 (Male, Female; India: West Bengal, Darjeeling Dist.); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, 2: 32; Srivastava, 1977, *Ceylon. J. Sci. (Bio. Sci.)*, 12(2): 109, figs 1A-E (Male, Female; India: Arunachal Pradesh, Kameng Dist., Chug, 2133 m, Porbangchu, 1228m, Shergaon, 2011 m, ; West Bengal, Darjeeling Dist., Darjeeling, 2134 m, Kurseong, 1524 m and Uttarakhand, Nainital, Dist., Nainital, 1951 m and Mussorie); Srivastava, 1980, *XVI Int. Congr. Ent. In: Some Guide Signes on Integrated Taxonomy*: 95, figs 4A-B; Srivastava, 1982,



**Figs. 18-25.** *Homotages feae* (Burr), Male, 18. Dorsal view, 19. Hind tarsi, 20. Posterior margin of penultimate sternite, 21-22. Ultimate tergite and forceps, 23. Ultimate tergite and forceps, in lateral view, 24. Genitalia ; Female, 25. Ultimate tergite, pygidium and forceps.

*Ent. basiliensis*, **7**: 66 (India: Meghalaya, Upper Shillong); Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, **81**: 285 (India: Meghalaya); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 406, figs 119-121 (Male, Female; India, West Bengal, Darjeeling Dist.); Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 81; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. 3: 322 (Male, Female; India: Meghalaya, East Khasi Hills, Shillong, West Khasi Hills, Mawphlong); Srivastava, 1995, *Fauna of Western Himalaya, Himalayan Ecosystem Series 4*: 44 (Uttarakhand); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 215, fig. 46 (Male, Female; India: Sikkim); Sakai, 1982, *Bull. Daito Bunaka Univ.*, **20**: 36; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4150; Sakai, 1997, *Bull. Biogeogr. Soc. Japan*,

**52(1):** 48 (India: Arunachal Pradesh, 2383-2433 m; Manipur, 1333m; Sikkim, 1640 m) Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 486; Steinmann, 1990, *Das Tierreich*, **106** : 426.

*Homotages principalis* Steinmann, 1990, *Das Tierreich*, **106**: 463, figs 856-857 (Type Male; Vietnam: Cue-phutong Prov., Nih Binh) - **Syn. n.**

**Male:** Head and wings black; antennae, abdomen dark brownish black; legs yellowish brown or black; pronotum and elytra black, former yellowish along the lateral margin and latter with a broad oval yellow spot in anterior half only and forceps orange, often shaded with black.

Head convex, smooth, longer than broad, sutures faint, hind margin emarginated in middle. Eyes prominent but shorter than the post-ocular area. Antennae 15-segmented, 1<sup>st</sup> stout, expanded apically; 2<sup>nd</sup> about as long as broad; 3<sup>rd</sup> long, slender, longer than the 4<sup>th</sup> and 5<sup>th</sup>; 4<sup>th</sup> shorter than the 5<sup>th</sup>; 5<sup>th</sup> onwards segments gradually increasing in length, each cylindrico-conical, a few apical ones thin, rod shaped. Legs long, slender, hind tarsi with 1<sup>st</sup> segment distinctly longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> longer than broad, simple, never dilated, a little more than half the length of 3<sup>rd</sup> segment; tarsi on under side with yellow pubescence and a row of thick setae. Elytra and wings well developed, smooth. Abdomen long, slender, sometimes enlarged in middle, tergites convex, smooth, lateral folds well marked. Penultimate sternite with posterior margin rounded, slightly emarginated in middle. Ultimate tergite transverse, smooth, tumid over the bases of forceps. Pygidium sloping backwards, quadrate, hind margin truncate or subtruncate, angles produced into sharp point, often directed upwards. Forceps with branches stout, elongated, tapering apically, incurved, in lateral view branches undulated, internally armed with sharp, strong or small teeth. Genitalia with parameres narrowed apically, tip acute; virga stout, tubular with chitinous accessory plates.

**Female:** Agrees with males in most characters except that the penultimate sternite obtuse in middle posteriorly; ultimate tergite narrowed posteriorly, lacking tumid elevations above the roots of forceps; pygidium subvertical, narrowed posteriorly and forceps simple and straight, internally unarmed.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 10.6-15.5 | 10.4-14.6 |
| Length of forceps | 3.9-7.1   | 4.7-5.5   |

*Types:*

1. *Anechura feae* Bormans, 1888 - Type male in MSNG.

2. *Homotages principalis* Steinmann, 1990 - Type Male in HANB

*Distribution:* In the mountains of India, Nepal, Myanmar and Vietnam.

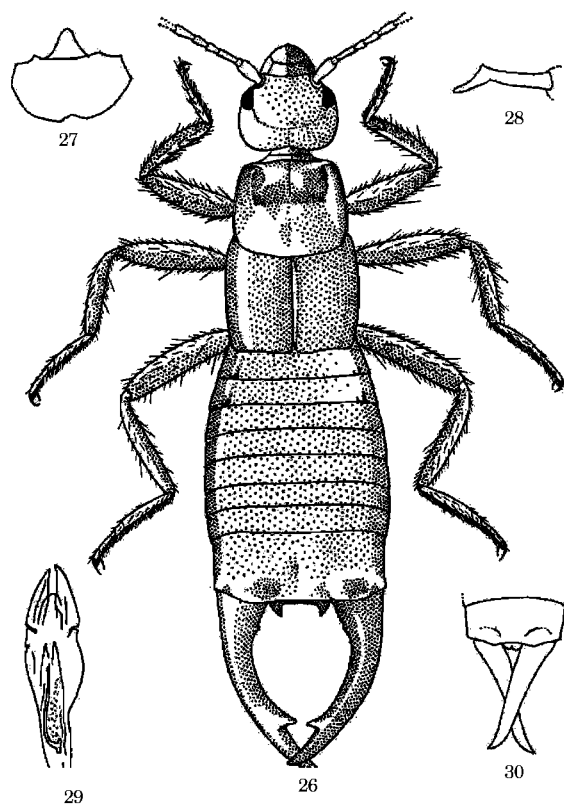
*Remarks:* The oval spot on elytra is sometimes absent or represented by a diffused patch only. In weaker males the branches of forceps, are straight, not undulated and pygidium is convex posteriorly with lateral spines directed upwards.

*Homotages principalis* Steinmann is treated as a synonym since it is based upon a weaker form of male with horizontal forceps and agrees well with this species.

***Homotages tawangensis* Srivastava**

(Figs 26-30)

*Homotages tawangensis* Srivastava, 1977, *Ceylon J. Sci. (Bio. Sci.)*, **12**(2): 19, fig 2A-E (Holotype Male, Allotype Female, Paratypes 2 Males, 3 Females, 1 example Nymph; India: Arunachal Pradesh, Kameng Dist., Tawang, 3200 m); Srivastava, 1984, *Proc. Wkshp. High Alt. Ent. & Wild. Ecol., zool. Surv. India (1983)* : 112, fig. 4; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 487; Steinmann, 1990, *Das Tierreich*, **106**: 461, figs 850-852.



**Figs. 26-30.** *Homotages tawangensis* Srivastava, Holotype Male, 26. Dorsal view; 27 Penultimate sternite; 28. Forceps, lateral view; 29. Genitalia, Female; 30. Ultimate tergite, forceps and pygidium.

*Male:* General colour reddish black; head orange but blackish on sides; tibiae and tarsi reddish yellowish brown.

Head longer than broad, convex, sutures faint, hind margin emarginated. Eyes small, about half as long as the post-ocular area. Antennae 15-segmented, segments long, stout, 1<sup>st</sup> longer than 4<sup>th</sup> and 5<sup>th</sup>; remaining cylindrico-conical, gradually increasing in length distally. Pronotum anteriorly straight, as wide as head, sides straight, gently reflexed, widened posteriorly, hind angles and margin rounded, median sulcus faint, prozona raised and metazona weakly depressed. Elytra abbreviated, smooth, about as long as the pronotum, humeral angle not prominent. Wing absent. Legs typical of the genus, 2<sup>nd</sup> tarsal segment, distinctly longer than broad. Abdomen gradually enlarging posteriorly, weakly depressed, sides of segments convex, striations on the sides of segments 7-9 more pronounced. Penultimate sternite strongly transverse, hind margin rounded with slight emargination in middle; manubrium shorter than the sternite, of uniform width. Ultimate tergite transverse, smooth, posteriorly in middle depressed and above the bases of forceps tumid, hind margin in middle straight, laterally oblique and emarginated. Pygidium strongly sloping backwards, posterior margin emarginated with angles produced into a sharp point. Forceps with branches stout, depressed, tapering, incurved apically, tip gently hooked, pointed, internally at base finely crenulated, in apical two thirds with a strong tooth, directed upwards, in lateral view branches undulated. Genitalia as seen in the fig. 29.

*Female:* Agrees with males in most characters except that penultimate sternite obtuse in middle posteriorly; pygidium not strongly sloping, truncated posteriorly; ultimate tergite narrowed posteriorly and forceps simple, straight, finely crenulated internally.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 11.6-14.1 | 12.1-12.6 |
| Length of forceps | 4.2-4.5   | 3.6-3.9   |

*Types:* Holotype Male, Allotype Female, Paratypes 2 Males, 3 Females and 1 Nymph in ZSI.

*Distribution:* So far known only from the Type locality.

*Remarks:* Orange colour of head represents high altitude melanism.

This species can be differentiated from *Homotages feae* (Bormans), the only other known species of the genus, by the orange head; unicolorous and abbreviated elytra and the internal tooth of forceps is dorsally placed and genitalia with parameres comparatively broader at base, acute apically and slightly different virga.

## Subfamily SPONGIPHORINAE Burr

*Spongiphorinae* Burr, 1911, *Dt. ent. Natn.-Biblthk*, **2**: 49 (Type genus: *Spongiphora* Serville, 1831); Burr, 1914, *Ann. Mag. nat. Hist.*, (8)**13**: 75; Hebard, 1917, *Trans. Am. ent. Soc.*, **43**: 305; Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, **79**: 29; Boeseman, 1954, *Zool. Verh. Leiden*, **21**: 64; Popham and Brindle, 1967, *Entomologist*, **100**: 225; Brindle, 1970, *Pacif. Insects*, **12**(3): 681; Brindle, 1971, *Ent. scand. Suppl.*, **1**: 228; Brindle, 1971, *Ent. Tdskr.*, **92**(1-2): 15; Brindle, 1971, *J. nat. hist.*, **5**: 526; Brindle, 1971, *Ann. Mus. Roy. Afr. Centr.*, Tervuren, in 8° Zool., **205**: 171; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 37; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 36; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 29; Srivastava, 1976, *Pacif. Insects*, **17**(1): 109; Srivastava, 1993, *Rec. zool. Surv. India*, **95**(1-2): 80; Srivastava, 2003, *Fauna of India and the adjacent Countries, Dermaptera*, Pt. **2**: 9; Steinmann 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 484; Steinmann, 1990, *Das Tierreich*, **106**: 257.

Size medium to large. Head with sutures distinct; eyes generally longer than post-ocular area. Antennae with 3<sup>rd</sup> segment longer than the 4<sup>th</sup> or equal and longer than 5<sup>th</sup>. Elytra and wings glabrous, smooth in most of the species. Legs with 2<sup>nd</sup> tarsal segment of hind tarsi slightly longer than broad, narrowed apically and half as long as 3<sup>rd</sup>; 1<sup>st</sup> shorter than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>.

Type genus: *Spongiphora* Serville, 1831.

Distribution: Worldwide.

## Key to the genera

- 1(2). Basal antennal segments strongly narrowed towards base or conical, apical ones moniliform ..... *Marava* Burr
- 2(1). Basal segments more or less cylindrical, narrowed at extreme bases, distal segments not strongly moniliform ..... *Spongovostox* Burr

Genus *Marava* Burr

*Marava* Burr, 1911, *Dt. ent. Natn.-Biblthk*, **2**(8): 60 (Type species: *Labia grandis* Dubrony, 1879 = *Forficula arachidis* Yersin, 1860); Burr, 1911, *Genera Insect.*, **122**: 53; Towens, 1945, *Ann. ent. Soc. Am.*, **38**: 35; Hincks, 1954, *South African Animal Life*, **4**: 77; Brindle, 1966, *Trans. R. ent. Soc. Lond.*, **118**: 245; Brindle, 1970, *Pacif. Insects*, **12**(3): 681; Brindle, 1971, *J. nat. Hist.*, **5**: 551; Brindle, 1972, *Insects of Micronesia*, **5**(2): 157; Brindle, 1973, *Ann. Mus. Roy. Afr. Centr.* Tervuren, in 8° Zool., **205**: 175; Popham and Brindle, 1967, *Entomologist*, **100**: 260; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 17; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 29; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 38; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entmologica v. 43): 496; Steinmann, 1990, *Das Tierreich*, **106**: 411.

*Prolabia* Burr, 1911, *Dt. ent. Natn.-Biblthk*, **2**(8): 60 (Type species: *Forficula arachidis* Yersin, 1860).

*Larex* Burr, 1911, *Dt. ent. Natn.-Biblthk*, **2**(8): 60 (Type species: *Spongiphora rogersi* Bormans, 1893).

*Laprobis* Hincks, 1960, *Proc. R. ent. Soc. Lond.*, (B)**29**: 155 (*Forficula unidentata* Beauvois, 1805).

General body shining, smooth, glabrous. Head, transverse, convex, smooth; antennae with 1<sup>st</sup> segment stout; 2<sup>nd</sup> small, about as long as broad; 3<sup>rd</sup> to 5<sup>th</sup> conical; 3<sup>rd</sup> slightly longer than the 5<sup>th</sup>. Pronotum broad; elytra and wings normally well developed. Legs short, hind tarsi with 1<sup>st</sup> segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> about half as long as the third.

*Type species: Labia grandis* Dubrony, 1879 = *Forficula arachidis* Yersin, 1860.

*Distribution*: Worldwide.

*Remarks*: Only two species are recorded from the Indian subcontinent.

#### Key to the species (based on males)

- 1(2). Body glabrous; pygidium, quadrate, narrowed apically, postero-lateral angles with or without minute point, hind margin straight or feebly concave; forceps with branches triangular at base, internally with two small teeth, teeth sometimes absent ..... *M. arachidis* (Yersin)
- 2(1). Body strongly pubescent with long and short hairs; pygidium projecting, enlarged in middle, hind margin distinctly emarginated, postero-lateral angles produced into large point; forceps with branches depressed, armed internally at middle with a sharp triangular, posteriorly directed tooth ..... *M. sakaii* Srivastava

#### ***Marava arachidis* (Yersin)**

(Figs. 31-37)

*Forficula arachidis* Yersin, 1860, *Annls. ent. Soc. Fr.*, (3)**8**: 309, Pl. 10, figs 33-35 (Type Male; Adventive at Marseilles, France); Scudder, 1876, *Proc. Boston Soc. nat. His.*, **18**: 311.

*Chelidura arachidis*; Brünner, 1900, *Prodoromus der europäischen Orthopteren*: 21.

*Aterygida arachidis*; Burr, 1900, *Ann. Soc. ent Belg.*, **44**: 52; Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**: 330; Burr, 1907, *Rec. Indian Mus.*, **1**: 209; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 117; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 44.

*Sphingolabis arachidis*: Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2) **14**: 406; Bolivar, 1897, *Annls ent Soc Fr.*, **66**: 286.

*Labia arachidis*; Burr, 1910, *Fauna British India, Dermaptera*: 123, Pl. 9, fig. 132; Burr, 1911, *Sttettin ent Ztg.*, **72**: 337; Burr, 1911, *Proc. U. S. Natn. Mus.*, (1760) **38**: 453.

*Prolabia arachidis*; Burr, 1911, *Genera Insect.*, **122**: 57; Burr, 1911, *Dt. ent. Natn.-Biblthk*, (2)**8**: 60; Hebard, 1923, *Mem. Dept. Agric. India, ent. Ser.*, **7**: 218; Hincks, 1947, *Ark. Zool.*, **39A**(1): 24; Hincks, 1947, *Ann. Mag. nat. Hist.*, (11)**14**: 534, fig. 9; Hincks, 1952, *Ann. Mag. nat. Hist.*, (12)**5**: 201; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 83.

*Marava arachidis*: Hincks, 1954, *Proc. R. ent. Soc. Lond.*, (B) **23**: 163; Hincks, 1960, *Proc. R. ent. Soc. Lond.*, (B) **29** (11 & 12): 155; Brindle, 1967, *Mem. Est. Mus. Zool. Univ. Coimbra*, No. 302: 20; Brindle, 1968, *Ark. Zool.*, **20**(25): 539; Brindle, 1971, *Ent. Tidskr.*, **92**(1-2): 16; Brindle, 1971, *Ent. scand. Suppl.*, **1**: 229; Brindle, 1971, *J. nat. Hist.*, **5**: 553, fig. 66; Brindle, 1973, *Ann. Mus. Roy. Afr. Centr.*, Tervuren, in 8° Zool., **205**: 175, figs 230-232; Brindle, 1976, *Rec. S. Afr. Mus.*, **17**(13): 234, figs 20-21; Bharadwaj and Kapoor, 1967, *Bull. Ent.*, **8**(2): 3; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1)(1967): 17; Sakai, 1970, *Dermapterorum Catalogous Praeliminaris*, **2**: 158; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 38; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 29; Srivastava, 1987, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **85**: 994 (Male; Birmania); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 403, figs 104-107 (Male, Female; India: West Bengal; Birbhum and Calcutta); Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 82; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 171 (1 Male, 1 Female and 1 Nymph; India: Andaman Is.); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.* **210**: 43 (Male; China); Steinmann, 1976, *Zool. Anz.*, **197**: 413; Steinmann, 1979, *Dt. ent. Z.*, **26**: 28; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 498; Steinmann, 1990, *Das Tierreich*, **106**: 453, figs 435-437.

*Forficula wallacei* Dohrn, 1865, *Stettin ent. Ztg.*, **26**: 88 (Type Female; New Guinea); Dubrony, 1879, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **14**: 337; Scudder, 1876, *Proc. Boston Soc. nat. Hist.*, **18**: 318; Burr, 1912, *Annln naturh. Mus., Wien*, **26**: 86.

*Sphinglabis wallacei*; Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**6**: 448.

*Marava wallacei*; Hebard, 1933, *Pan Pacific ent.*, **9**: 142; Hincks, 1952, *Ann. Mag. nat. Hist.*, (12)**5**: 202; Hincks, 1954, *Verh. naturf. Ges., Basel*, **65**(1): 22.

*Forficula nigripennis* Motschulsky, 1865, *Boll. Soc. nat. Moscou*, **36**: 1 (Sex?; Nuwara Eliya Mountains, Ceylon); Dohrn, 1865, *Stettin ent. Ztg.*, **26**: 89.

*Labia grandis* Dubrony, 1879, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **14**: 366 (Type Male; Somerset, Australia); Burr, 1911, *Proc. U. S. Natn. Mus.*, **38**: 337.

*Forficula (Apterygida) gravidula* Gerstaecker, 1873, Baron Carl von der Decken's Reisen in Ost-Afrika - Gliederthiere, Insekten (Taf. III): **3**(2): 30, Pl. 3, fig. 9 (Type Female; Ost Afrika).

*Labia gravidula*; Bormans, 1884, *Noted Leyden Mus.*, **6**: 197.

*Sphingolabis gravidula*; Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 407.

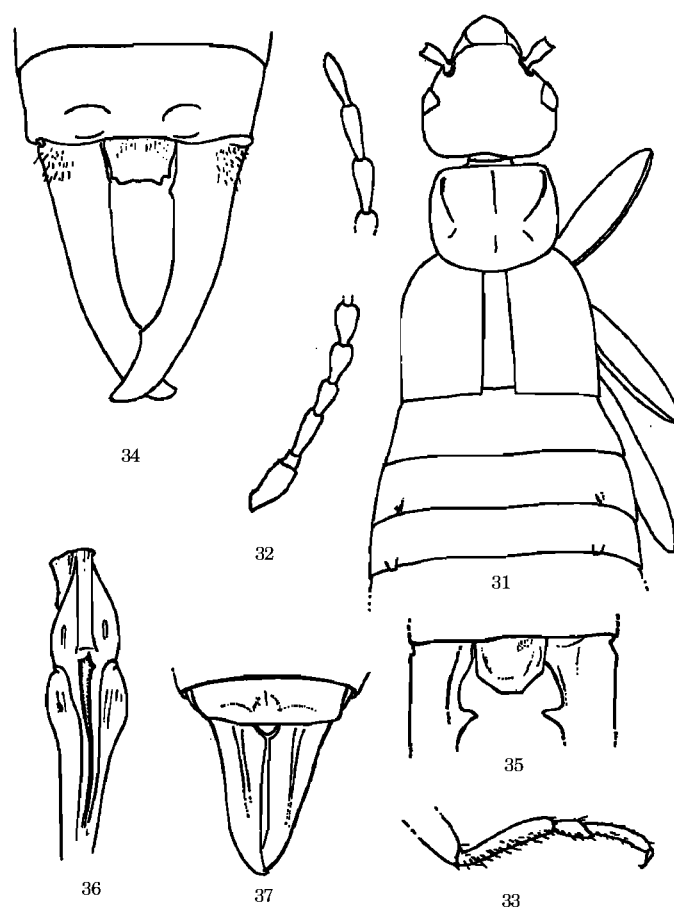
*Apterygida gravidula*; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 117.

*Prolabia ascensionis* Hebard, 1917, *Proc. Acad. nat. Sci. Philad.*, **69**: 243, Pl. 16, fig. 8 (Type Male; Ascension Island); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 497.

**Male**: Body glabrous, smooth. General colour yellowish to blackish brown; legs yellow; pronotum yellowish on sides and abdomen with traces of black.



Head longer than broad, convex, sutures faint, hind margin emarginated in middle. Eyes generally about as long as the post-ocular area, rarely longer. Antennae 14-segmented, moniliform, 1<sup>st</sup> stout, clavate; 2<sup>nd</sup> short, about as long as broad; segments 3<sup>rd</sup> to 5<sup>th</sup> conical; remaining gradually increasing in length distally, each strongly narrowed at base and gently expanded apically. Pronotum about as long as broad or weakly transverse, gently expanded posteriorly, hind margin briefly rounded. Elytra well developed. Wings generally absent, rarely present. Abdomen, long, cylindrical, smooth, gently dilated in middle. Penultimate sternite broadly rounded posteriorly with slight



**Figs. 31-37.** *Marawa arachidis* (Yersin), Male, 31. Anterior portion of body; 32. A few basal and apical antennal segments, 33. Hind tarsi, 34. Ultimate tergite, forceps and pygidium, 35. A portion of forceps and pygidium, 36. Genitalia ; Female, 37. Ultimate tergite, forceps and pygidium.

emargination in middle. Ultimate tergite transverse, smooth, gently depressed in middle posteriorly, hind margin in middle straight or lightly concave, above bases of forceps oblique, gently concave. Pygidium declivent, roughly pentagonal, narrowed posteriorly, pstero-laterally oblique, angles with or without small tooth, hind margin straight or concave. Forceps with brances trigonal at base, tapering apically, cylindrical, incurved, internal margin with two teeth, sometimes tooth near apex obsolete. Genitalia with parameres acuminate; virga long, tubular.

*Female:* Agrees with males in most characters except that penultimate sternite obtuse in middle posteriorly; ultimate tergite narrowed posteriorly; pygidium scarcely visible from above and forceps subcontiguous, straight, apices gently hooked and pointed.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 6.8 - 8.1 | 5.9 - 7.6 |
| Length of forceps | 1.9 - 2.5 | 1.5 - 2.2 |

*Types:*

1. *Forficula arachidis* Yersin, 1860 - Type male, repository not known (Steinmann, 1989a).
2. *Forficula nigripennis* Motschulsky, 1863 - Type repository unknown.
3. *Forficula wallacei* Dohrn, 1865 - Type Female ; Sumpers Coll. - perhaps at ZMHB.
4. *Forficula (Apterygida) gravidula* Gerstaecker, 1873 - Type Female in ZMHB.
5. *Forficula ascensionis* Hebard, 1917 - Type Male in MCZM.

*Distribution:* India: West Bengal; Birbhum and Calcutta; Andaman Isls.

It occurs almost in all regions.

In the collections of the Zoological Survey of India, Kolkata it is represented by following specimens:

India: West Bengal; Calcutta, 1 male, 12.v.1910, among the fruits of Lichi, *Nephlibium lichu* (S.W. Kemp), 1 male, 6.vi.1968 (G.K. Srivastava), 1 female, 26.vi.1908 (J.R.B.), 1 female, 15.ix.1909, found in a box on board ship from Andaman (C.Paiva), 1 female, 26.1x.1940 (P.Sen).

*Remarks:* It shows variations in body colour and represented by both brachypterous and macropterous forms. Latter form generally has prominent eyes, about as long as the post-ocular area. Some variations are also recorded in the shape of male pygidium and inner dentation of forceps, in males.

***Marava sakaii*** Srivastava

(Fig. 38)

*Marava sakaii* Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. 3: 321, figs 73-77 (Holotype Male; India: Meghalaya; East Khasi Hills, Cherrapunji, nr Mawsamai Cave, 1300 m, ex under bark).

*Male*: General colour dark blackish brown, antennae and mouth parts light brown; legs yellowish, middle and hind femora in basal half and tibiae at apex blackish brown; forceps light blackish brown. Body finely pubescent.

Head slightly longer than broad, convex, sutures obsolete, hind margin straight. Eyes prominent, longer than the post-ocular area and distance between antennal bases. Antennae 13-segmented or more (since apical ones generally broken off), 1<sup>st</sup> stout, about

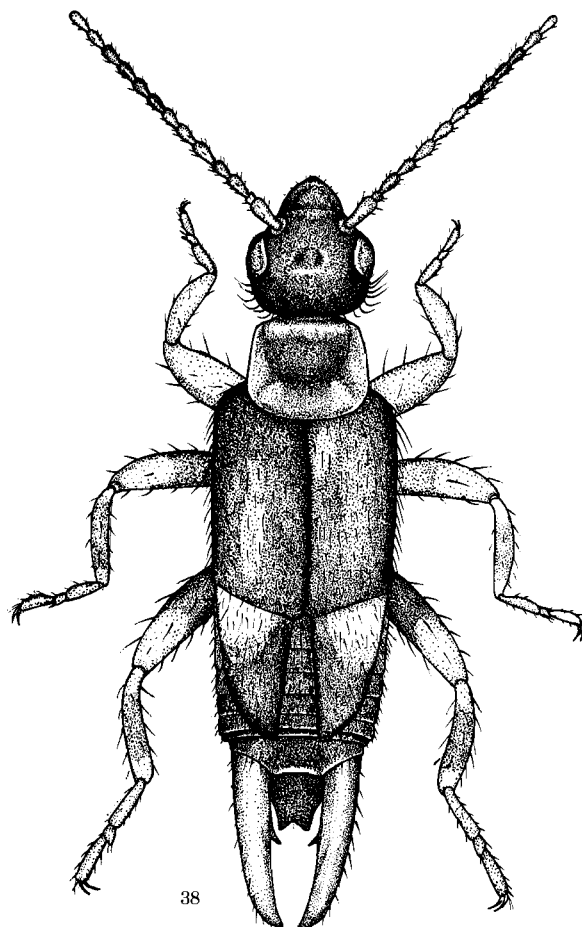


**Fig. 38.** *Marava sakaii* Srivastava, Holotype Male, 38. Dorsal view.

as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical, expanded apically; 4<sup>th</sup> shorter than 3<sup>rd</sup> clavate; 5<sup>th</sup> almost equal to 3<sup>rd</sup>, subclavate; remaining subclavate, gradually increasing in length distally except apical ones thin and rod shaped. Pronotum longer than broad, sides straight, gently widened posteriorly, hind angles and margin rounded; prozona raised and metazona depressed, median sulcus faint. Legs typical of the genus, hind tarsi with 1<sup>st</sup> segment longer than than combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> short, about as long as broad. Elytra and wings well developed, former obscurely punctate. Abdomen gradually enlarging upto 9<sup>th</sup> tergite, tergites convex, smooth. Penultimate sternite transverse, microreticulated, hind margin obtusely produced in middle. Ultimate tergite strongly transverse, impunctate, pubescent above, weakly convex, gently depressed in middle posteriorly and tumid above the bases of forceps, hind margin incrassate, straight between the branches of forceps. Pygidium projecting, sloping at base, afterwards horizontal, enlarged in middle, hind margin emarginated with angles produced. Forceps with branches depressed, almost straight, tapering apically with tips gently hooked, internal margin with dorsal and ventral borders, at about middle on ventral border with a sharp, small, posteriorly directed tooth.

*Female:* Unknown.

*Measurements:* (in mm)

|                    | Male |
|--------------------|------|
| Length of body     | 4.0  |
| Length of forceps  | 1.6  |
| Length of pygidium | 0.6  |

*Distribution:* India: Meghalaya.

*Type:* Holotype Male in ZSI.

*Remarks* This species differs from *Marava arachidis* (Yersin) in males, having the body strongly pubescent; pygidium longer than broad, broadest in middle with hind margin emarginated and postero-lateral angles produced into large point and forceps with branches depressed, internally differentiated into dorsal and ventral borders and with a sharp, ventral, triangular, posteriorly directed tooth.

#### Genus *Spongovostox* Burr

*Spogovostox* Burr, 1911, *Dt. ent. Natn.-Biblthk*, **2**(8): 59 (Type species: *Forficula quadrimaculata* Stål, 1855); Burr, 1911, *Genera Insect.*, **122**: 52; Hebard, 1917, *Trans. Amer. ent. Soc.*, **43**: 306; Towns, 1945, *Ann. ent. Soc. Am.*, **38**: 356; Popham and Brindle, 1967, *Entomologist*, **100**: 257; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 14; Reichardt, 1970, *Pap. Avulsos Zool. S. Paulo*, **23**(10): 19; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 57; Sakai,

1982, *Bull. Daito Bunka Univ.*, **20**: 37; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4160; Brindle, 1971, *J. nat. Hist.*, **5**: 546; Brindle, 1993, *Ann. Mus. Roy. Afr. Centr.* Tervuren, in 8° Zool., **205**: 178; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 30; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 85 (List of species); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 529; Steinmann 1990, *Das Tierreich*, **106**: 338 (Revision, key to species).

*Andex* Burr, 1911, *Dt. ent. Natn.-Biblthk*, **2**(8): 60 (Type species: *Labia nigroflavida* Rehn, 1905).

*Microvostox* Hebard, 1917, *Trans. Amer. ent. Soc.*, **43**: 314 (Type species: *Spongovostox alter* Burr, 1912); Brindle, 1971, *J. nat. Hist.*, **5**: 546 (proposed as synonym, in part).

*Afrolabia* Hincks, 1949, *Entomologist's mon. Mag.*, **85**: 76 (Type species: *Afrolabia masai* Hincks, 1949).

Body devoid of thick pubescence. Head convex or moderately depressed, sutures faint, occiput not raised; eyes prominent, about as long as the post-ocular area; antennae 15-20 segmented, long, slender, 3<sup>rd</sup> slightly longer than the 5th. Pronotum generally widened posteriorly; elytra and wings well developed; hind tarsi with 1<sup>st</sup> segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>. Forceps long, often depressed.

*Type species: Forficula qadrimaculata* Stål, 1855.

*Distribution:* Oriental, Australian, Ethiopian and Neotropical Regions.

*Remarks:* At present only two species of the genus are reported from the area under study.

#### Key to the species (based on males)

- 1(2). Forceps with branches trigonal in basal one third only, long, cylindrical, incurved, internally at base with a sharp tooth, directed downwards and another minute tooth ventrally at basal one third; pygidium flat, broad, gradually narrowing posteriorly, hind margin emarginated with a single or pair of tubercles in middle and genitalia with parameres about as long as broad, flat, broader at base, narrowed apically, tip pointed ..... *S. anamalaiensis* Srivastava
- 2(1). Forceps with branches depressed, almost straight, internally at base with a blunt tooth, afterwards finely crenulated or smooth; pygidium broad, flat, narrowed towards apex, hind margin deeply emarginated, hind angles produced into sharp or minute point, generally directed externally, sometimes posteriorly; genitalia with parameres sigmoid, apices pointed and recurved ..... *S. semiflavus* (Bormans)

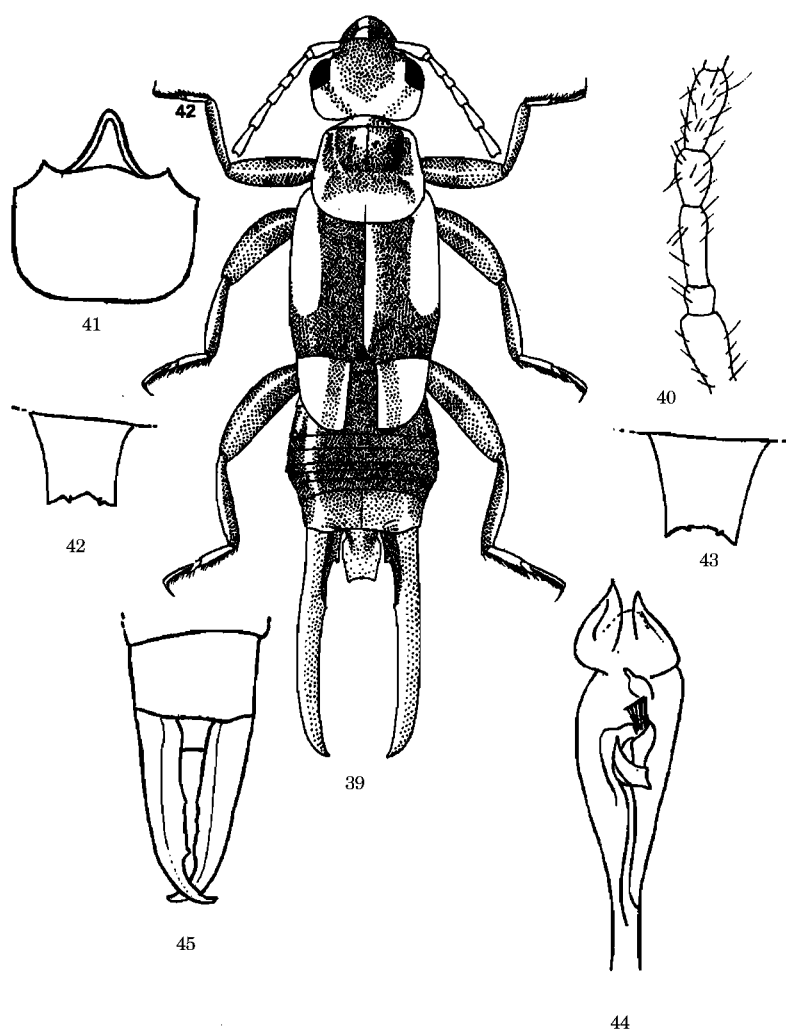
#### *Spongovostox anamaliensis* Srivastava

(Figs. 39-45)

*Spongovostox anamalaiensis* Srivastava, 1970, *Eos, Madr.*, **44**: 425, figs 1-4 (Holotype Male; India: Tamil Nadu, Anamalai Hills, Cinchona, 1067m); Srivastava, 1976, *Rec. zool. Surv. India, Occ.*

*pap.*, **2**: 30; Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1-4): 38, figs 42-46 (Male, Female; India : Karnataka, Mysore, 4 km W of Sidapur, 550 m); Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 38; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4304, 4618 (figs of Holotype Male and slide showing male genitalia); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 531; Steinmann, 1990, *Das Tierreich*, **106**: 398, figs 727-730.

*Male*: Head, pronotum and abdomen black; antennae yellow except four apical segments black; pronotum pale on sides; elytra black with a broad yellow band extending



**Figs. 39-45.** *Spongovostox anamalaiensis* Srivastava, Holotype Male, 39. Dorsal view, 40. A few basal antennal segments, 41. Penultimate sternite, 42-43. Pygidium showing variation in the concavity of hind margin, 44. Genitalia; Female, 45. Ultimate tergite and forceps.

from shoulder to apical two third, close to external margin; wings black with a yellow band along the internal margin; femora black but yellowish distally, tibiae blackish yellow and tarsi light yellow; pygidium black, lighter in colour towards apex and forceps brownish yellow.

Head triangular, hind margin feebly emarginated in middle, frons raised, sutures obscure. Eyes prominent, slightly longer than the post-ocular area and the 1<sup>st</sup> antennal segment. Antennae 14-segmented, hairy, 1<sup>st</sup> segment, stout; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> subconical, shorter than the 3<sup>rd</sup>; 5<sup>th</sup> subconical, equal to 3<sup>rd</sup>, remaining segments long and cylindrical. Pronotum about as long as broad, widened posteriorly, anterior and lateral margins straight, hind margin and angles lightly rounded, median sulcus indistinct, prozona convex and metazona depressed. Elytra well developed, slightly less than double the length of pronotum, smooth, hind margin gently concave in middle. Wings well developed, slightly shorter than the pronotum in length. Femora thick, tibiae long, cylindrical, slightly longer than the tarsi; tarsi with 1<sup>st</sup> segment slightly longer than the 3<sup>rd</sup> but shorter than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> simple, about as long as broad or a trifle longer. Abdomen slightly enlarged in middle, tergites convex, punctulated, lateral tubercles on 3<sup>rd</sup> tergite weakly and on 4<sup>th</sup> well marked. Penultimate sternite transverse, hind margin gently emarginated in middle. Pygidium flat, convex and broader at base, narrowed apically, hind margin emarginated with a minute tubercle ventrally in middle and angles also with minute point. Forceps with branches remote at base, long, cylindrical, tapering, almost straight, apices gently hooked and pointed, internally trigonal in basal one third, at base with a sharp ventral tooth, bent downwards and another minute tooth at basal one third. Genitalia as seen in fig. 44.

Female Agrees with males in most characters but ultimate tergite weakly transverse; pygidium narrowed towards apex with hind margin subtruncate and forceps with branches depressed, inner margin forming a flange and finely serrated, apices hooked and pointed.

*Measurements:* (in mm)

|                   | Male       | Female    |
|-------------------|------------|-----------|
| Length of body    | 5.0 - 5.1  | 5.1 - 5.3 |
| Length of forceps | 2.5 - 2.35 | 1.5 - 2.0 |

*Type:* Holotype Male in ZSI.

*Distribution:* India (Tamil Nadu and Karnataka in Western Ghats).

*Remarks:* Some variations are noted in the posterior margin of pygidium, in males, in being slightly more emarginated with one or two small tubercles and the internal tooth of forceps situated at basal one third or near middle, may be weakly developed or obsolete.

***Spongovostox semiflavus* (Bormans)**

(Figs. 46-50)

*Spongophora semiflava* Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)14: 385 (1 Male, 1 Female; Birmania: Carin-Chebá, 900 - 1100 m and Carin- Ghecú, 1300 - 1400m).

*Spongiphora semiflava*; Bormans and Krauss, 1900, *Das Tierreich*, 11: 59; Kirby, 1904, *Syn. Cat. Orthoptera*, 1: 30; Burr, 1910, *Fauna British India Dermaptera*: 113, Pl. 5, figs 77, 77a.

*Spongovostox semiflavus*; Burr, 1911, *Genera Insect.*, 122: 52; Burr, 1911, *J. Asiat. Soc. Beng.* (N. S.), 7: 783; Burr, 1911, *Dt. ent. Natn.-Biblthk*, (2)8: 60; Burr, 1912, *Sitz. Ges. naturf. Fr. Berlin*, 1912: 321; Burr, 1913, *Ent. Mitt.*, 2: 68; Burr, 1914, *Rec. Indian Mus.*, 10: 290; Burr, 1915, *Tidskr. Ent.*, 58 (Supplement): 116; Hebard, 1923, *Mem. Dept. Agric. India, ent. Ser.*, 7: 214; Borelli, 1926, *Res. Biol.*, 1(5): 65; Borelli, 1926, *J. Malayan Br. Asiat. Soc.*, 4: 390; Borelli, 1932, *Bull. Raffles Mus.*, 7: 83, fig. 3; Shiraki, 1928, *Insecta Matsum.*, 3(1): 13; Boeseman, 1954, *Zool. Verh., Leiden*, 21: 67; Hincks, 1954, *Verh. Naturf. Ges. Basel*, 65(1): 15; Brindle, 1967, *Mem. Est. Mus. Zool. Univ. Coimbra*, No. 302: 21; Brindle, 1968, *Ark. Zool.*, 20(25): 539; Brindle, 1971, *Ent. scand. Suppl.*, 1: 229, fig. 38; Ramamurthi, 1967, *Ent. Medd.*, 35: 241; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, 16(1) (1967): 14; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, 2: 31; Srivastava, 1976, *Pacif. Insects*, 17(1): 109 (Females; Philippine Isls); Srivastava, 1978, *Eos, Madr.*, 52: 273 (Females; Philippine Isls); Srivastava, 1982, *Ent. basiliensis*, 7: 66 (India: Assam, Kaziranga); Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, 81: 285 (Male, Female; India: Assam, Kamrup Dist., Kahitima beel, Hakawa river); Srivastava, 1984, *Bull. zool. Surv. India*, 5(2-3): 13 (Female; Java); Srivastava, 1987, *Bull. zool. Surv. India*, 8(1-3): 117 (Male, Female; Thailand); Srivastava, 1990, *Rec. zool. Surv. India*, 87(1): 39, figs 50-52 (India: Assam and Karnataka; Thailand and Philippine Isls); Srivastava, 1993, *Rec. zool. Surv. India*, 89(1-4): 60 (Female; Malaysia: Borneo, Sabah); Srivastava, 1993, *Annali Mus. civ. Stor. nat. Giacomo Doria*, 89: 233, figs 26-33 (Male, Female; Myanmar - species redescribed and figured on Type); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* 3, Pt. 4: 405, figs 114-118 (Male, Female; India: West Bengal, Darjeeling and New Jalpaiguri Dists); Srivastava, 1995, *Rec. zool. Surv. India*, 95(1-2): 85; Srivastava, 2000, *Fauna of Tripura, State Fauna Series* 7, Pt. 2: 275, figs 17-18 (Male, Female; India: Tripura); Srivastava, 2003, *Rec. zool. Surv. India*, 101(3-4): 172 (Male, Female; India: Andaman Isls, Middle Andaman and Great Nicobar); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, 210: 44 (Male, Female; Thailand, Laos and Vietnam); Sakai, 1982, *Bull. Daito Bunka Univ.*, 20: 37; Sakai, 1992, *Dermapterorum Catalogus*, 24: 4218, 4594-4595 (Black and white figures), 4510-4511 (Coloured photographs of Males and Females from various Museums showing variations in the shape of forceps and pygidium in Males); Steinmann, 1983, *Rev. Suisse. Zool.*, 90(3): 550 (Female; India: Assam, Manas, 200 m); Steinmann, 1983, *Reichenbachia*, 21(7): 49 (Philippine Isls); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 549; Steinmann, 1990, *Das Tierreich*, 106: 40, figs 736-738.

*Apovostox semiflavus* Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, 79: 32; Hebard, 1929, *Trans. Am. Ent. Soc.*, 55: 337; Hincks, 1947, *Ark. Zool.*, 39A(1): 18; Bey Bienko, 1959, *Ent. Obozr.*, 38: 611; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, 2: 54.



*Spongovostox semiflavus* var. *dentifera*; Borelli, 1926, *Res. Biol.*, **1**(5): 66 (Philippines).

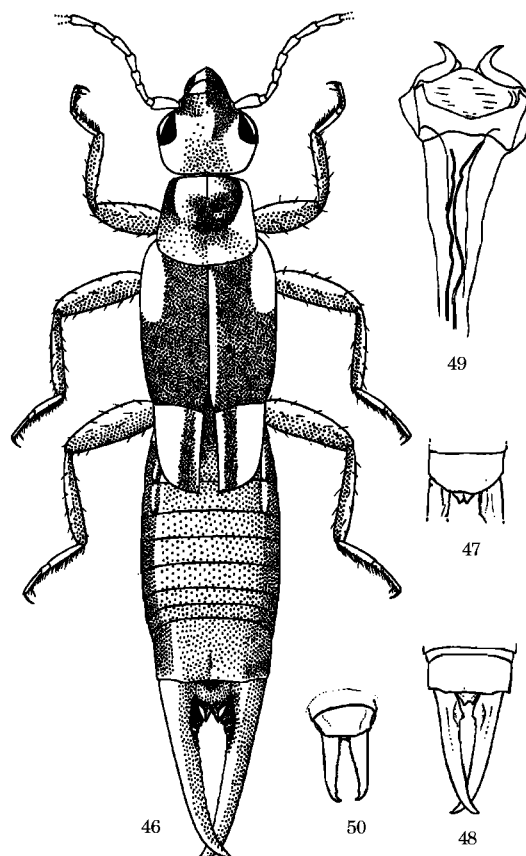
*Spongovostox semiflavus* var. *crenata*; Borelli, 1926, *Res. Biol.*, **1**(5): 66 (Philippines).

*Spongovostox hakeni* Ramamurthi, 1967, *Ent. Medd.*, **35**: 242 (Holotype Male; Philippine: Tawi Tawi); Srivastava, 1990, *Rec. zool. Surv. India.*, **87**(1): 39 (Treated as a synonym).

*Chaetospasia lakhanmandiensis* Kapoor, Bharadwaj and Banerjee, 1971, *Bull. Ent.*, **12**(1): 31, figs 5 - 6 (Holotype Male, Paratypes 3 Males; India: Chakrata Range, Haldwani Div., U.P. (now Uttarakhand) - **Syn. n.**

*Spongovostox taurus* Steinmann, 1985, *Acta. zool. hung.*, **31**: 388, figs 12-14 (Holotype Male, Paratypes 2 Females; Vietnam : Cuc phoung, Bougi Ósardó) - **Syn. n.**

*Spongovostox mirabilis* Steinmann, 1985, *Act. zool. hung.*, **31**: 389, figs 15-17 (Holotype Male, Paratype 1 Female; Thailand: Ra Ta Phum and Pattani Csoungkhla) - **Syn. n.**



**Figs. 46-50.** *Spongovostox semiflavus* (Bormans), Male, 46. Dorsal view; 47. Penultimate sternite, and a portion of forceps and pygidium, 48. Ultimate tergite and forelegs, 49. Genitalia; Female, 50. Ultimate tergite and forceps.

*Male:* Head, pronotum and abdomen black; antennae blackish brown; femora black, tibiae in apical half and tarsi yellow. Elytra with a yellow band extending from shoulder to middle; wings yellow with a fuscous band internally; pygidium and forceps blackish brown.

Head about as long as broad, glabrous, convex, sutures fine, hind margin in middle feebly emarginated. Antennae 17-segmented, 1<sup>st</sup> stout, expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> shorter than the preceeding but stouter; remaining gradually increasing in length, each gently expanded apically, a few apical ones thin. Pronotum transverse, gently widened posteriorly, sides straight, hind margin rounded, median sulcus faint, prozona raised; metazona depressed. Elytra and wings well developed. Legs stout, hind tarsi with 1<sup>st</sup> segment equal to combined length of 2<sup>nd</sup> and 3<sup>rd</sup>. Penultimate sternite transverse, hind margin rounded with slight emargination in middle. Ultimate tergite strongly transverse, smooth, median sulcus faint, gently depressed in middle posteriorly, hind margin in middle straight, above bases of forceps oblique and concave. Pygidium subvertical at base, broadened in middle, narrowed posteriorly, hind margin in middle emarginated with angles produced in to short or long tooth, sometimes directed externally. Forceps with branches depressed, remote at base, tapering apically, almost straight, apices gently incurved, internally at base dilated to form a sort of blunt tooth, afterwards crenulated or smooth. Genitalia with parameres sigmoid, apices pointed and recurved; virga distinct.

*Female:* Agrees with males in most characters except penultimate sternite obtuse in middle posteriorly; pygidium short; ultimate tergite narrowed posteriorly and forceps with branches contiguous, straight, crenulated throughout internally.

*Measurements:* (in mm)

|                   | Male       | Female    |
|-------------------|------------|-----------|
| Length of body    | 8.0 - 10.0 | 6.8 - 7.7 |
| Length of forceps | 1.8 - 3.5  | 1.7 - 2.6 |

*Types:*

1. *Spongovostox semiflava* Bormans, 1894 - Type Male at MSNG.
2. *Spongovostox hakeni* Ramamurthi, 1967 - Holotype Male at UZMC.
3. *Chaetospania lakhanmandiensis* Kapoor, Bharadwaj and Banerjee, 1971 - Holotype Male, Paratypes 2 Males at FRI and Paratype 1 Male at IARI.
4. *Spongovostox taurus* Steinmann, 1985 - Holotype Male, Paratypes 2 Females at HANB.

5. *Spongovostox mirabilis* Steinmann, 1985 - Holotype Male, Paratype 1 Female at HANB.

*Distribution:* India (Assam, West Bengal, Tamil Nadu, Karnataka and Arunachal Pradesh). The record of this species from India Arunachal Pradesh is based upon 1 Female, Subansiri Dist. and 1 Male, 1 Female from Siang Dist. in the collections of ZSI.

Also recorded from Sri Lanka, Bhutan, Myanmar, Laos, Thailand, Vietnam, Malaysia (Borneo), Indonesia (Sumatra and Sumba), Philippine Isls and Taiwan.

*Remarks:* Some variations occur in the length of male forceps. Besides pygidium is either gently or deeply emarginated apically with postero-lateral projections short or prolonged, normally directed posteriorly, occasionally externally.

The type series of *Spongovostox lakhanmandiensis* Kapoor, Bharadwaj and Banerjee was examined and was found to be conspecific. The other two species synonymised agree well in general features and the male genitalia.

#### Subfamily IRDEXINAE Srivastava

Irdexinae Srivastava, 1985, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **85**: 207 (Type genus: *Irdex* Burr, 1911); Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 87 (List of species).

Eyes small or prominent. Elytra smooth, along the costal margin with a row of small tubercles, from each arising a thick seta. Wings well developed or concealed. Legs long, slender, hind tarsi with 1<sup>st</sup> segment five times longer than broad. Forceps, in males, remote at base, undulated gently, internal margin with several minute teeth.

*Type genus:* *Irdex* Burr, 1911.

*Distribution:* Oriental Region.

*Remarks:* This genus was redefined by Srivastava (1985) after the reexamination of the Type material of *Irdex nitidipennis* (Bormans).

#### Genus: *Irdex* Burr

*Irdex* Burr, 1911, *Dt. ent. Natn.-Biblthk.*, (2)**8**: 59.

The characters of the subfamily hold good for the genus as well.

*Type species:* *Spongophora nitidipennis* Bormans, 1894.

*Distribution:* Oriental Region.

*Remarks:* Besides Type species *I. cingalensis* (Dohrn) and *I. escheri* (Borelli) are included under the genus.

Srivastava (1985) has transferred all other species included earlier under the genus to *Apovostox* Hebard.

**Key to the species (based upon females)**

- 1(2). Pygidium obtuse, small; forceps contiguous, depressed, a minute tubercle at middle internally, occasionally forming a faint ridge ..... *I. nitidipennis* (Burr)
- 2(1). Pygidium trapezoidal, narrowed posteriorly, subvertical; forceps remote, undulated
- 3(4). Pygidium with hind margin straight; forceps internally at base with a sharp ventral and dorsal borders, followed by a concavity at apical one third .....  
..... *I. cingalensis* (Dohrn)
- 4(3). Pygidium with hind margin convex; forceps at base with a sharp ventral and dorsal tooth, followed by another dorsal tooth at basal one fourth and a convexity at apical one fourth ..... *I. escheri* (Borelli)

***Irdex nitidipennis* (Bormans)**

(Figs. 51-60; 61-62)

*Spongophora nitidipennis* Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)14: 382 (1 Male; Burma: Carin Chebà).

*Spongiphora nitidipennis*; Bormans and Krauss, 1900, *Das Tierreich*, 11: 59; Bormans, 1900, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)20: 454; Kirby, 1904, *Syn. Cat. Orthoptera*, 1: 22.

*Irdex nitidipennis*; Srivastava, 1985, *Annali Mus. civ. Stor. nat. Giacomo Doria*, 85: 209, figs 4 - 15 (Type Male figured alongwith other specimens); Srivastava, 1987, *Annali Mus. civ. Stor. nat. Giacomo Doria*, 86: 494 (Female; Indonesia: Sumatra); Srivastava, 1987, *Bull. zool. Surv. India*, 8(1-3): 120 (Male, Female; Thailand); Srivastava, 1990, *Rec. zool. Surv. India*, 87(1-4): 36 (Male, Female; Thailand); Srivastava, 1991, *Rec. zool. Surv. India*, 91(1): 78, figs 37-38 (Male, Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area); Srivastava, 1993, *Annali Mus. civ. Stor. nat. Giacomo Doria*, 89: 233 (Male, Female; Myamar); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 442 (Male, Female; India: West Bengal, Darjeeling Dist.); Srivastava, 1995, *Rec. zool. Surv. India*, 95(1-2): 88; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. 3: 320, figs 70-72 (Male, Female; India: Meghalaya, E. Khasi Hills Dist., Cherrapunji and Shillong); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 214, figs 38-39 (Male, Female; India: Sikkim); Srivastava, 2003, *Rec. zool. Surv. India*, 101(3-4): 172 (Male, Female; India: Andaman Isls, North Andaman and Little Andaman).

*Spongophora lutea* Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)14: 383 (7 Males, 2 Females; Burma, Carin Ghecù, Carin Chebà, Carin Asciuii Chebà, Palon (Pegù).

*Spongiphora lutea*; Bormans and Krauss, 1900, *Das Tierreich*, 11: 60; Kirby, 1904, *Syn. Cat. Orthoptera*, 1: 30; Burr, 1910, *Fauna British India Dermaptera*: 112.

*Labia lutea*; Burr, 1911, *Genera Insect.*, 122: 56; Burr, 1912, *Annln naturh. Mus. Wien*, 26: 88; Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, 79: 42; Hincks, 1947, *Ark. Zool.*, 39A(1): 23; Bey Bienko,

1959, *Ent. Obozr.*, **38**(3): 611; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 17; Srivastava, 1975, *Newsl. zool. Surv. India*, **1**(4): 80 (Intraspecific variation in the size of eyes); Srivastava, 1979, *Proc. Sym. zool. Surv. India*: 53-57, figs 3 - 5.

*Spongovostox luteus* Burr, 1911, *Dt. ent. Natn.-Biblthk*, (2)**8**: 61; Burr, 1913, *Note Leyden Mus.*, **34**: 322; Burr, 1913, *Rec. Indian Mus.*, **8**(2): 140; Borelli, 1927, *Boll. Lab. Zool. gen. agr. Portici*, **20**: 27; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 31; Srivastava, 1985, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **87**: 209 (Treated as a synonym).

*Spogovostox aborum* Burr, 1913, *Rec. Indian Mus.* **8**(2): 140 (Nomotype Male and other several Males and Females; India: Abor (now Arunachal Pradesh), Rotung, 1400 ft, Kobo, 400 ft and Sadiya); Brindle, 1975, *Ent. basiliensia*, **1**: 33 (Treated as a synonym).

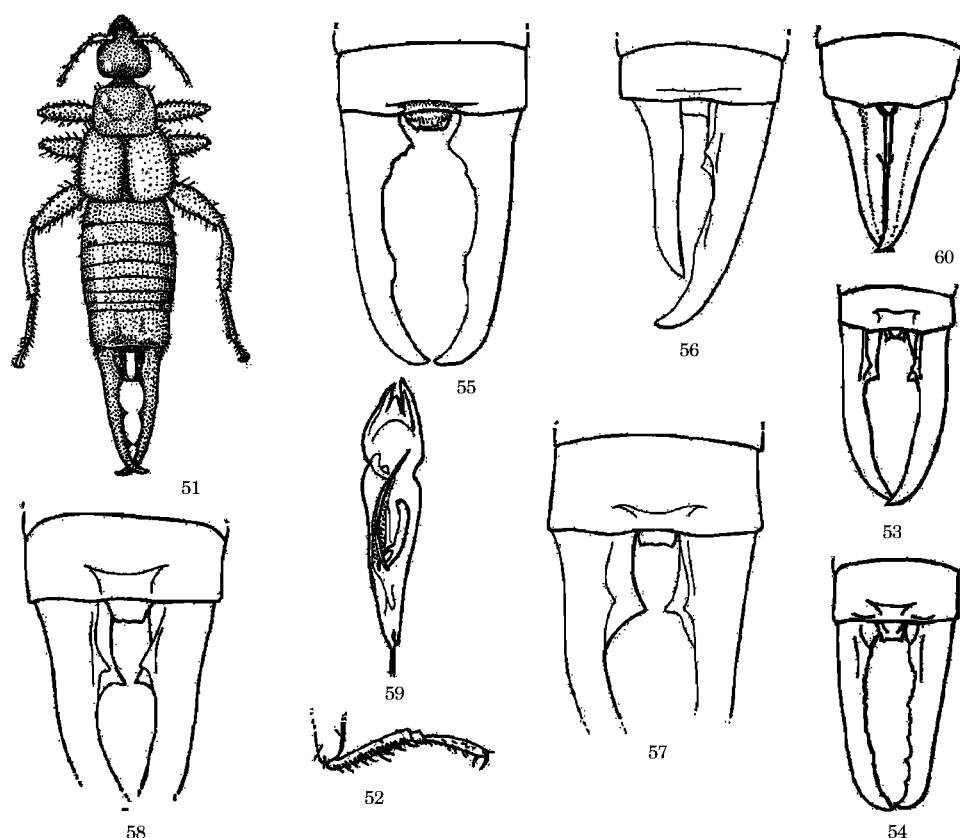
*Labia formosana* Shiraki, 1928, *Insects Matsum.*, **3**(1): 10, fig. 4 (Male, Female (specimens number not mentioned); Formosa: Horiasha Sinchiku); Sakai, 1993, *Dermapterorum Catalogus*, **25**: 4899 (Two specimens of this species at the Entomological Laboratory, Taiwan University and treated doubtfully as a synonym) - **Syn. n.**

*Spongovostox wuermalii* Brindle, 1975, *Ent. basiliensia*, **1**: 33 (Holotype Male, Paratype 1 Male, Bhutan: km 87 von Phuntsholing, 1580, 1680 m; Allotype Female, Samchi, 350/450 m.); Srivastava, 1985, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **85**: 209 (Treated as synonym).

*Chaetospania assamensis* Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 45, figs 1-4 (Holotype Male; India: Arunachal Pradesh, Amatulla, 416-667 m; Allotype Female; same data; Paratypes 32 Males, 22 Females and 4 Nymphs; India: Assam, Bhairabkunda, 233 - 333 m (10 Males); Arunachal Pradesh, Amatulla, 416-667 m (12 Males, 15 Females), Domkho, 2167-2317 m (2 Males, 2 Females), Chug, 2200-2433 m (1 Male), Shergaon, 2067 m (1 Male); Manipur State, Sinda, 1333 m (2 Males), Chattrik, 500 - 1350 m (2 Males, 4 Nymphs); Uttarakhand (not U.P. now), Pauri Garhwal, Gwaldam, 2000-2133 m (1 Male, 4 Females); Sikkim, Benlagla (S), 2066 m (1 Male), Bakkhim, 2297 m (1 Female); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series*, **9**: 214 (Treated as a synonym).

**Male:** General colour dark brownish black to yellowish brown with varying shades on various body parts.

Head smooth, transverse. Eyes shorter or longer than the post-ocular area. Antennae 15-segmented or more (since apical one generally broken off), 1<sup>st</sup> stout, gently expanded apically; 2<sup>nd</sup> short, broader than long; 3<sup>rd</sup> long, slender; 4<sup>th</sup> slightly longer than the preceeding; 5<sup>th</sup> almost equal to 3<sup>rd</sup>; remaining long, slender, a few pre-apical ones thin and rod shaped. Pronotum parallel sided or gently widened posteriorly, sides straight, gently reflexed, hind margin subtruncate, median sulcus distinct, prozona raised and metazona depressed. Elytra well developed, smooth, along the costal margin with a row of tubercles, from each arises a thick seta. Wings well developed or abbreviated. Legs long, slender, hind tarsi with 1<sup>st</sup> segment long, slender; 2<sup>nd</sup> about as long as broad, simple; 3<sup>rd</sup> shorter than the 1<sup>st</sup>, underside pubescent and with thick setae. Abdomen convex, dilated in middle, lateral tubercles well developed. Penultimate sternite rounded posteriorly with slight emargination in middle. Ultimate tergite transverse, posteriorly in middle above



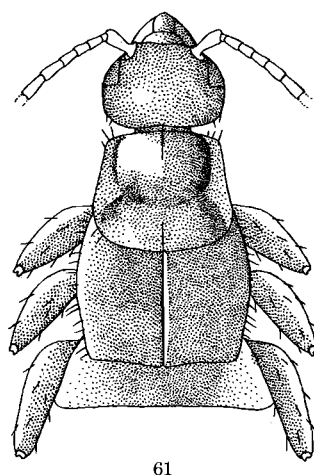
**Figs. 51-60.** *Irdex nitidipennis* (Bormans), Male, 51. Dorsal view, 52. Hind tarsi, 53-58. Ultimate tergite forceps and pygidium, 59. Genitalia; Female, 60. Ultimate tergite and forceps.

with an undulated ridge, followed by a transverse depression, hind margin emarginated. Pygidium various, horizontal or vertical, narrowed posteriorly, postero-lateral angles with one or two teeth, hind margin emarginated, occasionally with a tooth in middle, sometimes with a small tooth at base also. Forceps horizontal or undulated, nearly straight or gently incurved at apices, lamellate at base, afterwards finely crenulated or dentate. Genitalia with parameres broader at base, narrowed apically; virga short, tubular, with accessory chitinous plates.

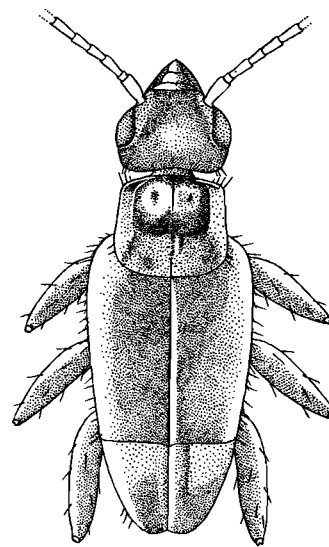
*Female:* Agrees with males in most characters but penultimate sternite obtuse posteriorly; ultimate tergite narrowed posteriorly, devoid of any ridge posteriorly in middle above; pygidium scarcely visible from above, in ventral aspect hind margin emarginated; forceps contiguous, straight, tapering apically, tips gently hooked, pointed, crossing, internal margin finely crenulated, sometimes with a faint convexity above at middle close to internal margin or represented by a ridge.

*Measurements:* (in mm)

|                   | Male       | Female    |
|-------------------|------------|-----------|
| Length of body    | 6.0 - 10.1 | 4.5 - 9.7 |
| Length of forceps | 2.5 - 4.0  | 1.0 - 4.2 |



61



62

**Figs. 61-62.** *Irdex nitidipennis* (Bormans), Male. 61, Anterior portion of body, brachypterous form, 62. Anterior portion of body, macropterous form.

*Types:*

1. *Spongophora nitidipennis* Bormans, 1894 - Type Male at MSNG.
2. *Spongophora lutea* Bormans, 1894 - Syntype Male, Female at MSNG and NMWA; Syntype 1 Female at ZSZM.
3. *Spongovostox aborum* Burr, 1913 - Nomotype Male and other Males and Females in ZSI and a part of the material in BMNS.
4. *Labia formosana* Shiraki, 1828 - two specimens of this species present at the Entomological Laboratory, Taiwan University according to Sakai (1993)..
5. *Spongovostox wuermali* Brindle, 1975; Holotype Male, Allotype Female at NMB and Paratypes 1 Male, 1 Female at MM.
6. *Chaetospania assamensis* Sakai, 1997; Holotype Male, Allotype Female at BRIO; Paratype 1 Male at ILST; Paratypes 32 Males, 22 Female and 4 nymphs, repository not mentioned (Sakai, 1997); perhaps may be present at either Institutes.

*Distribution:* India: West Bengal (Darjeeling Dist.); Meghalaya (E. Khasi Hills Dist., Cherrapungi and Shillong); Arunachal Pradesh (various localities between 200 - 2500 m); Manipur (Sinda, 333 m, Chattrik, 500-1350 m); Uttarakhand (Pauri Garhwal, Gwaldwam, 2000 - 2133 m) and Sikkim (Benlagla, 2066m, Bakkhim, 2297 m)..

A widely distributed species in the Oriental Region and also reported from Bhutan, Myanmar, China (South), Thailand, Indochina (Sumatra) and Hainan Isl.

*Remarks:* This is a variable species, occurring under the loose bark of trees and logs. Eyes are prominent, longer than the post-ocular area in the macropterous form whereas in the brachypterous form may be shorter. Pygidium and forceps, in males, exhibit great variation.

*Labia formosana* Shiraki, 1928 and *Chaetospania assamensis* Sakai, 1997 are simply individual variants of this species and are treated as synonyms.

***Irdex cingalensis* (Dohrn)**

(Figs. 63-67)

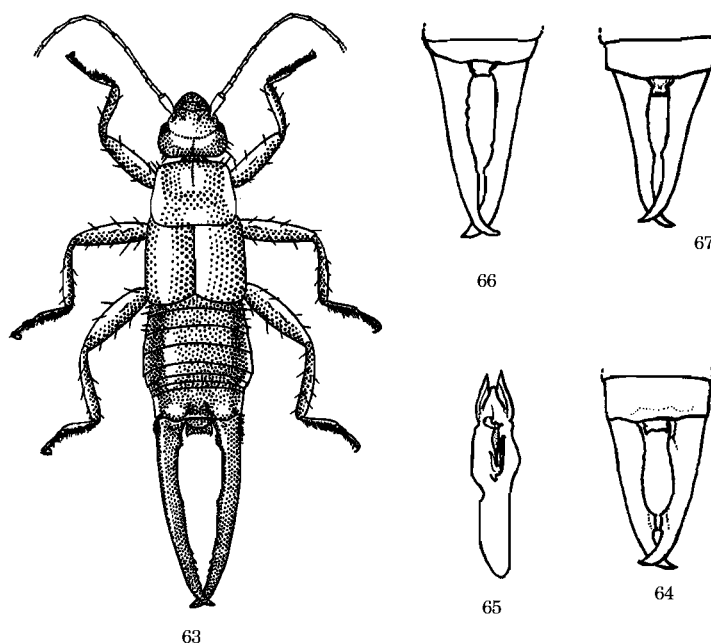
*Forficula cingalensis* Dohrn, 1865, *Stettin ent. Ztg.*, **26**: 89 (Female; Ceylon); Bromans and Krauss, 1900, *Das Tierreich*, **11**: 128.

*Apterygida cingalensis*; Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**: 332.

*Sphingolabis cingalensis* Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 46.

*Forficula?cingalensis*; Burr, 1910, *Fauna British India Dermaptera*: 205; Burr, 1911, *J. Asiat. Soc. Beng. (N.S.)*, **7**: 779.

*Chaetospania cingalensis*; Burr, 1911, *Genera Insect.*, **122**: 54; Popham and Brindle, 1967, *Entomologist*, **100**: 257; Sakai, 1970, *Dermapterorum Catalogus Prealiminaris*, **2**: 86; Sakai, 1982, *Bull.*



**Figs. 63-67.** *Irdex cingalensis* (Dohrn), Male, 63. Dorsal view, 64. Ultimate tergite, forceps and pygidium, 65. Genitalia; Female, 66-67. Ultimate tergite, forceps and pygidium (figs. 64 from Syntype Male and fig. 67 from Type Female, after Srivastava, 1985).



*Daito Bunka Univ.*, **20**: 39; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4106, 4502 (Coloured pictures); 4554 (Diagrams); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 36.

*Irdex cingalensis*; Srivastava, 1985, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **85**: 213, figs 23-27 (Type Female figured besides Male det. by Dohrn); Srivastava, 1995, *Rec. zool. Surv. India*, **95**: 86.

*Chaetolabia cingalensis*; Steinmann, 1985, *Annls hist.-nat. Mus. natn. hung.*, **77**: 122; Steinmann, 1989, *World Catalogue Dermaptera* (Series entomologica v. 43): 564; Steinmann, 1990, *Das Tierreich*, **106**: 532, fig. 993.

*Spongovostox carli* Borelli, 1931, *Rev. Suisse Zool.*, **38**: 303, figs 10 - 11 (Type Male; India: Tamil Nadu, Anamalaies, Attakatti, 1000 m); Popham and Brindle, 1967, *Entomologist*, **100**: 256; Sakai, 1970, *Dermapterorum Catalogus*, **2**: 71; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 38; Srivastava, 1970, *Eos, Madr.*, **45**: 326, figs 10-11 (Male, Female; India: Tamila Nadu, Coimbatore Dist., Anamalai Hills, Cinchona, 1067 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **122**: 30; Srivastava, 1985, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **85**: 213 (Treated as a synonym); Steinmann, 1976, *Zool. Anz.*, **97**: 414; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 543; Steinmann, 1990, *Das Tierreich*, **106**: 407, figs 449-451.

*Male*: General colour yellowish brown, shining; antennae and legs clear yellow; abdomen and forceps somewhat dark brown.

Head slightly longer than broad, convex, sutures faint, hind margin feebly emarginated in middle. Eyes distinct, about as long as the post-ocular length or slightly shorter. Antennae 15-segmented, 1<sup>st</sup> segment stout, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> and 5<sup>th</sup> slightly shorter than 3<sup>rd</sup>; 6<sup>th</sup> almost equal to 3<sup>rd</sup>; remaining gradually increasing in length, a few pre-apical ones thin and rod shaped. Pronotum smooth, slightly broader than long, sides straight, gently widened posteriorly, hind margin subtruncate, median suture faint, prozona convex, metazona weakly depressed, anterior angles with a few stiff hairs. Elytra well developed, smooth. Wings concealed. Legs long, slender, pubescent, hind tarsi with 1<sup>st</sup> segment long, five times longer than broad; 2<sup>nd</sup> short; 3<sup>rd</sup> slightly shorter than 1<sup>st</sup>, clad with short and long hairs on underside. Abdomen with tergites convex, obscurely punctate, enlarged in middle. Penultimate sternite transverse, briefly rounded posteriorly. Ultimate tergite transverse, smooth, depressed in middle posteriorly, hind margin trisinate. Pygidium at base declivent, broader than long, postero-lateral angles produced into a sharp point, hind margin crenulated or smooth. Forceps with branches remote at base, depressed, tapering and gradually incurved apically, apices gently hooked, pointed, internal margin dentate. Genitalia with parameres broad at base, gradually narrowed apically, tip pointed; virga chitinous, tubular, accessory chitinous plates present.

*Female*: Agrees with males in most characters except ultimate tergite narrowed posteriorly; pygidium declivent and narrowed at base, hind margin straight and forceps slightly less stout.

*Measurements: (in mm)*

|                   | Female    | Female    |
|-------------------|-----------|-----------|
| Length of body    | 6.5 - 8.7 | 6.4       |
| Length of forceps | 3.2 - 4.6 | 2.7 - 3.5 |

*Types:*

1. *Forficula cingalensis* Dohrn, 1865 - Type Female and another 1 Male, labelled as Syntype at ZMHB.
2. *Spongovostox carli* Borelli, 1931 - Type Male at MHNG.

*Distribution:* Sri Lanka and India: Tamila Nadu, Coimbatore Dist, Anamalai Hills, Attakatti, 1000 m and Cinchona, 1067 m.

*Remarks:* Srivastava (1985) has clarified the status of this species on the basis of Type Female and 1 Male det. by Dohrn, perhaps a Syntype and other specimens from India. It exhibits slight variation in the shape of male pygidium.

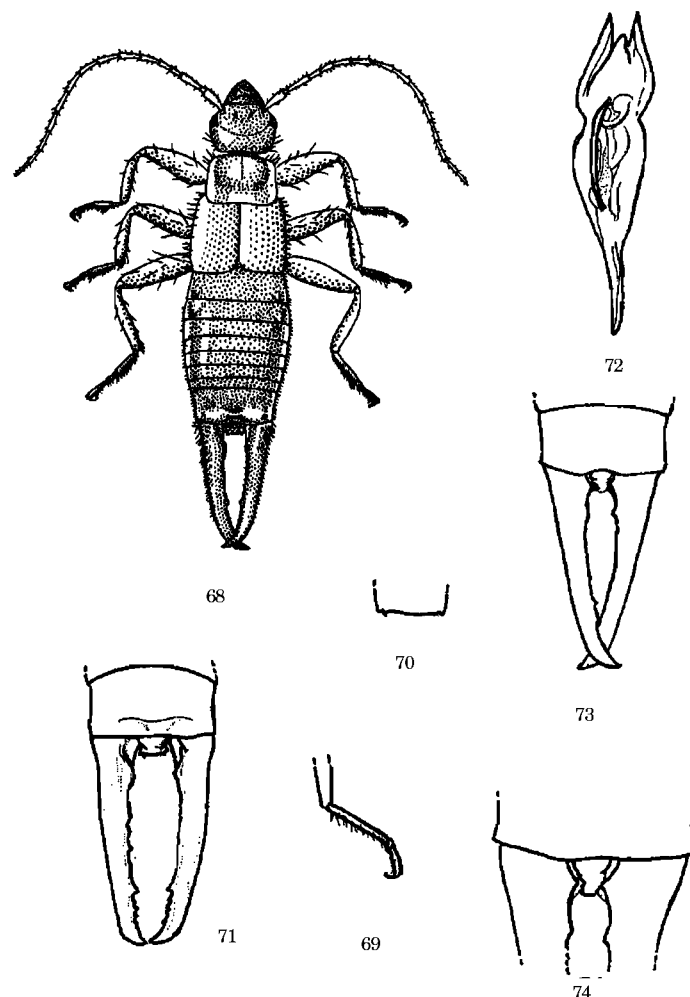
***Irdex escheri* (Borelli)**

(Figs. 68-74)

*Spogovostox escheri* Borelli, 1931, *Rev. Suisse Zool.*, **38**: 305, fig. 12 (2 Males, 1 Female; Valparai Nadur Estate, Anamalai hills, India); Popham and Brindle, 1967, *Entomologist*, **100**: 256; Kapoor, 1968, *Agra Univ. J. Res (Sci.)*, **16**(1) (1967): 14; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 71; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 38; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4102, 4505 (coloured photographs), 4564 (diagrams); Srivastava, 1970, *Eos, Madr.*, **45**: 328, figs 12-13 (Male, Female: India: Tamil Nadu, Coimbatore Dist., Anamalai Hills, Cinchona, 1067 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 30; Srivastava, 1985, *Annali Mus. civ. Stor. nat Giacomo Doria*, **85**: 213, figs 16-22; Steinmann, 1976, *Zool. Anz.*, **197**: 414; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 535, Steinmann, 1990, *Das Tierreich*, **106**: 406, figs 746-748.

Male: General colour yellowish brown or orange; mouth parts and legs yellow. Build stout.

Head longer than broad, sutures faint, hind margin slightly emarginate in middle. Eyes shorter than the post-ocular area. Antennae 18-segmented, 1<sup>st</sup> cylindrical, slightly expanded apically; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> cylindrical, shorter than the 1<sup>st</sup>; 4<sup>th</sup> slightly shorter than the preceding; 5<sup>th</sup> slightly longer than the 4<sup>th</sup>, remaining cylindrical, long and thin. Pronotum smooth, transverse, anterior angles with a few stiff hairs, sides straight, gently widened posteriorly, hind margin briefly rounded, median suture faint, prozona convex, metazona depressed. Legs long, slender, tibiae about as long as tarsi, hind tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; claw without an arolium. Elytra longer than the pronotum, smooth, meeting along the median line, humeral angles weak, along the costal margin with a row of small tubercles, each



**Figs. 68-74.** *Irdex escheri* (Borelli), Male, 68. Dorsal view, 69. Hind tarsi, 70. Pygidium, 71. Ultimate tergite, forceps and pygidium, 72. Genitalia; Female, 73. Ultimate tergite, forceps and pygidium, 74. A portion of ultimate tergite and forceps with pygidium, enlarged.

with a thick seta. Wings concealed. Abdomen enlarged in middle, tergites convex and obscurely punctate. Penultimate sternite sub-rectangular, hind margin rounded, with slight emargination in middle. Ultimate tergite transverse, convex, posteriorly in middle depressed, hind margin straight. Pygidium about as long as broad, declivent at base, posteriorly gently narrowed, lateral angles with a pair of tubercles. Forceps with branches stout, depressed, tapering apically, almost straight, gently incurved apically, tip pointed and hooked, internal margin at base differentiated into dorsal and ventral borders, afterwards dentate. Genitalia with parameres narrowed apically, tip pointed, virga chitinous, straight, tubular, accessory chitinous plates with minute denticles.

Females: Agrees with males in most characters except that ultimate tergite narrowed posteriorly; pygidium slightly longer than broad, narrowed posteriorly and branches of forceps less stout.

*Measurements:* (in mm)

|                                    | Male        | Female      |
|------------------------------------|-------------|-------------|
| Length of body (including forceps) | 10.5 - 12.1 | 10.4 - 13.5 |

*Types:* *Spongovostox escheri* Borelli, 1931 - Syntypes 1 Male (macropterous), 1 Male (brachypterous) and 1 Female (brachypterous) at MHNG.

*Distribution :* India : Tamil Nadu, Anamali Hills.

*Remarks:* Borelli (1931) and Srivastava (1970) have recorded both macropterous and brachypterous forms.

This species can be easily separated from *I. nitidipennis* (Bormans) by its slightly larger size, stouter build, shape of pygidium and details of genital armature, in males.

#### Subfamily NESOGASTRINAE

Nesogastrinae Verhoeff, 1902, *Zool. Anz.*, **26**(665): 191 (Type genus: *Nesogaster* Verhoeff, 1902); Burr, 1908, *Ann. Mag. nat. Hist.*, (8)**1**: 42; Burr, 1911, *Dt. ent. Natn.-Biblthk*, **2**(8): 59; Burr, 1911, *Genera Insect.*, **122**: 48; Bruce, Melander and Carpenter, 1954, *Bull. Mus. comp. Zool., Harvard*, **108**: 116; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 63; Popham and Brindle, 1967, *Entomologist*, **100**: 36; Sakai, 1970, *Dermapterorum Catalogous Praeliminaris*, **2**: 10; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 34; Sakai, 1991, *Dermapterorum Catalogous*, **23**: 95 (3312); Brindle, 1970, *Pacif. Insects*, **12**(3): 663; Brindle, 1972, *Insects of Micronesia*, **5**(2): 135; Brindle, 1976, *Pacif. Insects*, **17**(1): 78; Brindle, 1976, *Rec. S. Australian Mus.*, **17**(13): 227; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 28; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 88; Steinmann, 1976, *Dt. ent. Z.*, **26**: 276; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 401; Steinmann, 1990, *Das Tierreich*, **106**: 16.

Body glabrous, shining sometimes brightly shining. Antennae 12-segmented, 1<sup>st</sup> stout; 3<sup>rd</sup> long, gently expanded apically; 4<sup>th</sup> shorter than 3<sup>rd</sup>, spindle shaped; 5<sup>th</sup> longer than 4<sup>th</sup>, pear shaped, remaining gradually increasing in length, each pear shaped. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> short, about as long as broad. Elytra well developed, smooth, glabrous, costal margin with sharp, raised carina or ridge. Pygidium, in males, generally well developed, occasionally short. Forceps, in males, usually long, slender, intraspecifically exhibit great variation in length, internally armed; in females, short, thick, dentate.

*Type genus:* *Nesogaster* Verhoeff, 1902.

*Distribution:* India (Great Nicobar), Malaysia, Indonesia, Philippine Isls, New Guinea and Australia.

*Remarks:* Following is the only genus included under the subfamily and is distributed in Oriental and Australasian Region.

Genus ***Nesogaster*** Verhoeff,

*Nesogaster* Verhoeff, 1902, *Zool. Anz.*, **26**(665): 191 (Type species: *Nesogaster fruhstorferi* Verhoeff, 1902, Syntypes Male, Female, Celebes) = *Labia dolicha* Burr, 1897 (Type Male, Celebes); Burr, 1911, *Genera Insect.*, **122**: 48; Shiraki, 1928, *Insect Matsum.*, **3**(1): 13; Townes, 1945, *Ann. ent. Soc. Am.*, **38**: 352; Rehn, 1945, *Proc. Acad. nat. Sci. Philad.*, **98**: 219; Hincks, 1951, *Ann. Mag. nat. Hist.*, (12)**4**: 562; Popham and Brindle, 1967, *Entomologist*, **100**: 36; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 11; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 34; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 99(3316); Brindle, 1970, *Pacif. Insects*, **12**(3): 663; Brindle, 1971, *Entomologist's mon. Mag.*, **107**: 114; Brindle, 1972, *Insects of Micronesia*, **5**(2): 135; Brindle, 1976, *Pacif. Insects*, **17**(1): 78; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **122**: 28; Steinmann, 1979, *Dt. ent. Z.*, **26**: 276; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 401; Steinmann, 1990, *Das Tierreich*, **106**: 17.

The characters of the subfamily are applicable to the genus as well.

*Type species:* *Labia dolicha* Burr, 1897 (= *Nesogaster fruhstorferi* Verhoeff, 1902).

*Distribution:* Oriental and Australian Regions.

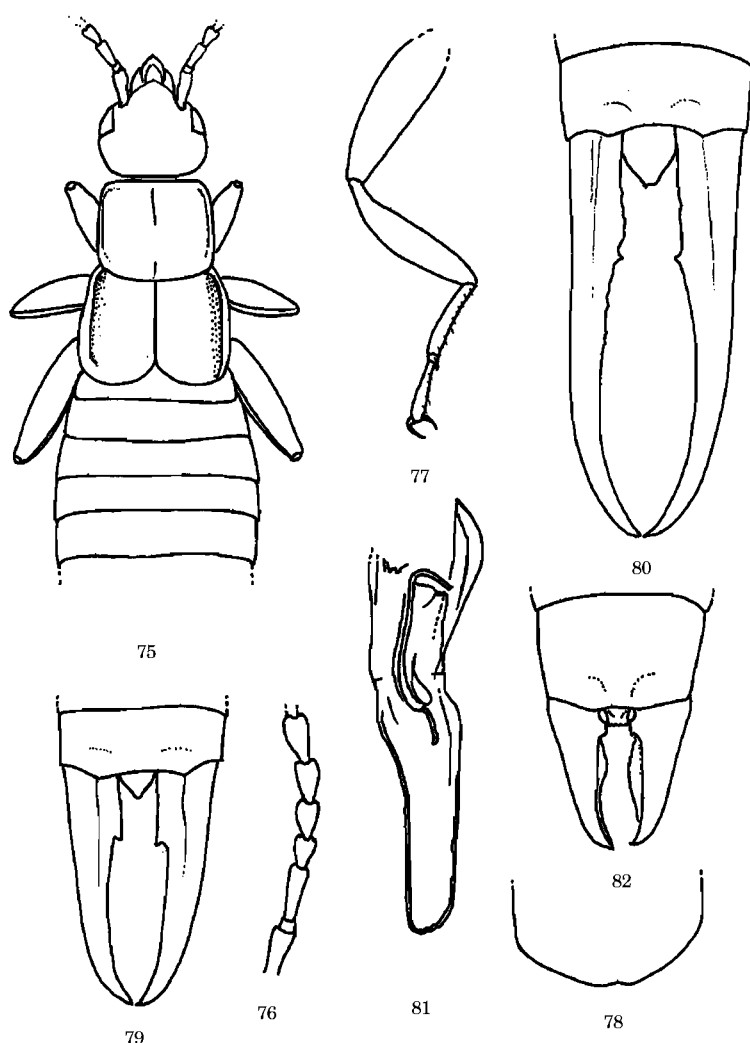
*Remarks:* Only a single species, *Nesogaster minusculus* Rehn, is reported from Great Nicobar within the Indian limits.

***Nesogaster minusculus*** Rehn

(Figs. 75-82)

*Nesogaster minusculus* Rehn, 1948, *Proc. Acad. nat. Sci. Philad.*, **98**: 212, figs 1 - 3 (Holotype Male, Allotype Female; Sumatra: Mentawai Isl); Hincks, 1951, *Ann. Mag. nat. Hist.*, (12)**4**: 575, figs 18 - 19 (One pair; Pulu, Simalur, Mentawai Isl); Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 63 (Male, Female; Simalur; Lasaikin; Laut Tawar; Sigabang, Pulu Babi (Islet near Simalur); Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 19; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 34; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3374; Brindle, 1971, *Entomologist's mon. Mag.*, **107**: 122, fig. 14 (Sumatra); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 29; Srivastava, 2001, *Rec. zool. Surv. India*, **99**(1-4): 49, figs 2-7 (Male, Female; India: Great Nicobar); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3 - 4): 172, figs 5-7 (Male, Female; India: Great Nicobar Isl); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 407; Steinmann, 1990, *Das Tierreich*, **106**: 19, figs 19-20.

Male; General colour blackish chocolate brown; basal two segments of antennae, legs, sides of pronotum and external half of elytra from shoulder to hind margin yellowish brown; sides of certain abdominal tergites with shades of yellowish brown and forceps lighter in colour. Sometimes blackish brown colour more prominent.



**Figs. 75-82.** *Nesogaster minusculus*, Rehn, Male. 75. Anterior portion of body, 76. A few basal antennal segments, 77. Hind leg, 78. Penultimate sternite, 79-80. Ultimate tergite and forceps, 81. Genitalia ; Female, 82. Ultimate tergite, pygidium and forceps.

Head cardiform, convex, smooth, sutures faint, hind margin slightly emarginated in middle. Eyes distinct, only slightly shorter than the post ocular area. Antennae 12-segmented, 1<sup>st</sup> segment stout, expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, gently expanded apically; 4<sup>th</sup> clavate; 5<sup>th</sup> longer than preceding, subclavate; remaining gradually increasing in length, thinning, each gently expanded apically, one or two apical segments thin and shorter. Pronotum weakly transverse, smooth, anteriorly about as

broad as head, sides straight, gently reflexed, slightly widened posteriorly, hind angles and margin rounded, median suture faint, prozona convex and well differentiated from flat metazona. Elytra about one and half times longer than the pronotum, smooth, humeral angles weak, costal margin with a raised sharp ridge, hind margin convex. Legs typical of the genus, hind tarsi with short fine pubescence on underside, 1<sup>st</sup> segment about five times longer than broad, slightly longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> simple, about as long as broad. Abdomen elongated, slightly enlarged in middle, tergites smooth, convex, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former weakly developed, sides of segments convex, smooth. Penultimate sternite transverse, smooth, hind margin rounded with slight emargination in middle. Ultimate tergite transverse, smooth, disc moderately convex, slightly sloping backwards with slight depression in middle, hind margin incrassate, faintly trisinate. Pygidium short, about as long as broad, narrowed posteriorly to a point. Forceps with branches remote at base, almost straight, depressed, arcuate near apex with tip pointed, internally deplanate in basal one fourth with margin serrated ending into a sharp tooth, afterwards slender, in nomal form (brachylabic) branches shorter than body length and in macrolabic form comparatively longer and slender. Genitalia with parameres four times longer than broad, tip gently incurved; virga short, tubular.

*Female:* Agrees with males in most characters except that body size slightly shorter; ultimate tergite narrowed posteriorly; pygidium less prominent, vertical, hind margin convex, postero-lateral angles produced into a minute point and forceps simple and straight..

*Measurements:* (in mm)

|                   | Male      | Female     |
|-------------------|-----------|------------|
| Length of body    | 3.3 - 5.5 | 4.5 - 5.5  |
| Length of forceps | 1.1 - 3.5 | 1.2 - 1.25 |

*Types:* Holotype Male and Allotype Female in ANSP.

*Distribution:* Indonesia: Sumatra: Mentawai Isl and India: Great Nicobar Islands.

*Remarks:* Some variations in body colour and length of forceps, in males, were noted in the specimens present in the Zoological Survey of India, Kolkata.

### **Doubtful record**

***Nesogaster ruficeps* (Erichson, 1842)**

Sakai (1997) records this species on 4 Males from India: "India: Sirichi, Manipur, 1419 m, 26.vi.1960 (*F. Schmid legit.*)"

From the photographs of one female (not male, det. as above), sent to the author by Prof. Sakai, it belongs to *Irdex nitidipennis* (Bormans, 1894). It is certainly not a member of the genus *Nesogaster* Verhoeff, 1902.

#### Subfamily SPARATTINAE

*Sparattinae* Verhoeff, 1902, *Zool. Anz.*, **25**(226): 198 (Type genus: *Sparatta* Serville, 1839); Burr, 1911, *Genera Insect.*, **122**: 47; Burr, 1911, *Dt. ent. Natn.-Biblthk.*, **2**(8): 60; Bruce, Melander and Carpenter, 1954, *Bull. Mus. comp. Zool., Harvard*, **108**: 116; Popham, 1965, *Entomologist*, **98**: 134; Brindle, 1968, *Stud. Fauna Suriname*, **10**(36): 31; Brindle, 1970, *Pacif. Insects*, **12**(3): 644; Brindle, 1971, *Ent. Tidskr.*, **92**(1-2): 21; Brindle, 1978, *Rec. South Austr. Mus.*, **17**(13): 228; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 21; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 34; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3398; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 39; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-4): 91; Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt. **2**: 12; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 430; Steinmann, 1990, *Das Tierreich*, **106**: 105.

*Auchinominae* Burr, 1907, *Trans. ent. Soc. Lond.*, **107**: 25 (for the genus *Auchenomus* Karsch, 1868 under family Chelisochidae).

*Auchinomini* Steinmann, 1990, *Das Tierreich*, **106**: 106 (As Tribe for the *Auchenomus* Karsch, 1868).

*Sparattinae* Steinmann, 1990, *Das Tierreich*, **106**: 139 (As Tribe for *Sparatta* Serville, 1839).

Body and head strongly depressed; eyes shorter than the post-ocular area. Pronotum narrowed apically, forming a sort of neck; elytra and wings well developed; Ultimate tergite with W-shaped furrow; forceps and pygidium diamorphic. .

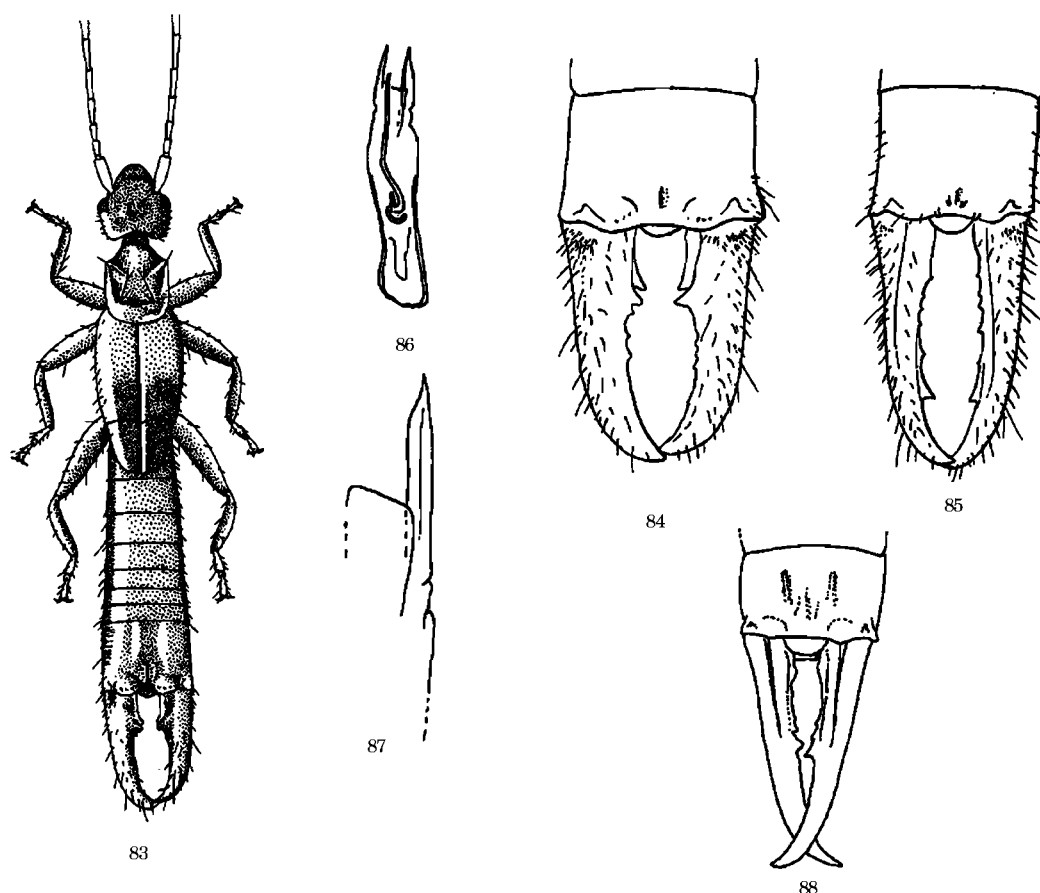
*Type genus*: *Sparatta* Serville, 1839.

*Distribution*: Mainly Neotropical but represented by a single genus in the Oriental Region, Madagascar and New Guinea.

#### Genus *Auchenomus* Karsch

*Auchenomus* Karsch, 1886, *Berl. ent. Z.*, **30**: 89 (Type species: *Auchenomus longiforceps* Karsch, 1886); Bormans, 1899, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **6**: 436; Bormans and Karaus, 1900, *Das Tierreich*, **11**: 82; Verhoeff, 1902, *Zool. Anz.*, **25**(665): 197; Burr, 1911, *Genera Insect.*, **122**: 59; Towens, 1945, *Ann. ent. Soc. Am.*, **38**: 345; Popham and Brindle, 1967, *Entomologist*, **100**: 36; Brindle, 1968, *Ark. Zool.*, **20**(25): 542; Brindle, 1970, *Pacif. Insects*, **12**(3): 664; Brindle, 1972, *Insects of Micronesia*, **5**(2): 145; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 18; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 23; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 34; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3409; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 39; Srivastava, 1976, *Pacif. Insects*, **17**(1): 113; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 91; Steinmann, 1985, *Acta zool. hung.*, **30**: 511; Steinmann, 1988, *Acta zool. hung.*, **34**: 297; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 430; Steinmann, 1990, *Das Tierreich*, **106**: 106.





**Figs. 83-88.** *Auchenomus hincksi* Ramamurthi, Male, 83. Dorsal view, 84. Ultimate tergite and forceps, cyclolabial form, 85. Ultimate tergite and forceps, macrolabial form, 86. Genitalia, 87. Paramere, enlarged; Female, 88. Ultimate tergite and forceps.

Body long, slender, covered with fine pubescence all over the body and forceps with long pubescence. Head and body strongly depressed. Pronotum narrowed anteriorly, forming a sort of neck, antero-lateral angles pointed with bristle. Elytra and wings well developed, latter generally darker in colour. Legs short, tarsi stout and broad, 1<sup>st</sup> segment almost equal to 3<sup>rd</sup>; 2<sup>nd</sup> about as long as broad. Adbomen parallel sided. Forceps, dimorphic, variable. Pygidium concealed or prominent.

*Type species:* *Auchenomus longiforceps* Karsch, 1886.

*Distribution:* Oriental and Australian Regions and Madagascar.

*Remarks:* Only two species are reported from the Indian subcontinent, of which one is known by a female.

**Key to species (based on females)**

- 1(2). Antennae 12-segmented, 1<sup>st</sup> slender, very long, only slightly shorter or equal to the combined length of 2<sup>nd</sup> to 4<sup>th</sup> segments; pronotum with hind margin rounded; ultimate tergite slightly broadened posteriorly, postero-lateral angles projecting; pygidium about as long as broad, basally convex and forceps internally serrated ..... *A. hincksi* Ramamurthi
- 2(1). Antennae 20-segmented, 1<sup>st</sup> short, thick, almost equal to 3<sup>rd</sup> in length; pronotum with hind margin straight; ultimate tergite narrowed posteriorly, postero-lateral angles not projecting; pygidium from above transverse and forceps internally serrated in basal half with a prominent tooth at middle ..... *A. nathani* Srivastava

***Auchenomus hincksi* Ramamurthi**

(Figs. 83-88)

*Auchenomus hincksi* Ramamurthi, 1960, *Bull. Ent.*, **1**: 35, figs 2 A-B and 3 (Holotype Male, Allotype Female; India: Tamil Nadu, Nilgiri, Kallar Fruit Research Station, 610 m, under banana leaf sheath); Ramamurthi, 1961, *Bull. Ent.*, **2**: 25, fig. B; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 28; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 35; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3438 (Fig. of Male, Leiden Mus.), 3835 (other figures) and 3770 (a coloured photograph of a Male, Leiden Mus., Paratype Male in Manchester Mus. and British Mus.); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 40; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 91; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 433; Steinmann, 1990, *Das Tierreich*, **106**: 139.

**Male:** Build slender, strongly depressed; pubescent with long hairs on certain body parts especially forceps. General colour yellowish orange; 1<sup>st</sup> antennal segment darker; basal half of elytra and wings blackish brown.

Head strongly depressed, longer than broad, hind margin sinuate, sutures obsolete; eyes short, about half as long as the post-ocular area. Antennae 12-segmented, 1<sup>st</sup> longer than the distance between antennal bases; 2<sup>nd</sup> short; 3<sup>rd</sup> long, slender; 4<sup>th</sup> about as long as 3<sup>rd</sup>; 5<sup>th</sup> longer than 3<sup>rd</sup> and 4<sup>th</sup>; remaining long, slender, gradually increasing in length distally. Pronotum longer than broad, narrowed apically, antero-lateral angles pointed with a stiff hair, lateral margin straight, hind margin rounded, median sulcus indistinct; prozona weakly raised and metazona depressed. Legs short, femora compressed, tarsi short and broad with 1<sup>st</sup> and 3<sup>rd</sup> segments almost equal; 2<sup>nd</sup> short, about as broad as long. Elytra and wings well developed, smooth, former with inner basal angles rounded. Abdomen long, slender, narrowed basally, tergites depressed, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites weakly marked. Penultimate sternite transverse, hind margin rounded with slight emargination in middle. Ultimate tergite quadrate, slightly longer than broad, lateral margins straight, hind margin trisinate, angles projecting, disc above deplanate with verticillate rows of fine punctures and smooth areas alternating, posteriorly above the roots of forceps tumid and depressed in the middle with an obscure short median suture,

a row of small tubercles present close to median line. Forceps with branches remote at base, depressed, tapering apically, apices gently incurved, internal margin with fine teeth, often at middle with a bifid tooth in dorsal and ventral position. Pygidium round, convex, filling the space between the bases of forceps. Genitalia with parameres long, narrow, about five times longer than broad, narrowed apically, tip acute.

*Female*: Agrees with males in most characters except that penultimate sternite obtuse in middle posteriorly; ultimate tergite transverse, narrowed slightly posteriorly; forceps strongly tapering apically and pygidium convex at base, declivent and narrowed apically, hind margin truncated.

*Measurements*: (in mm)

|                   | Male       | Female    |
|-------------------|------------|-----------|
| Length of body    | 7.0 - 10.0 | 7.0 - 9.0 |
| Length of forceps | 1.5 - 3.0  | 2.0 - 2.5 |

*Types*: Holotype Male, Allotype Female at ZSI and Paratypes 1 Male, 1 Female stated to be present in the collection of Dr. W. D. Hincks at MM.

*Distribution*: India: Tamil Nadu, Coimbatore Dist., Nilgiri Hills, Kallar, 610 m.

Following specimens handed over to the author by Shri B.N. Ramamurthi are deposited in the collections of the Zoological Survey of India, Kolkata:

India: Tamil Nadu, Nilgiri Hills, Kallar, 6 Males (1 Male with genitalia mounted between two coverslips and pinned with the specimen), 3 Females, 610 m, 6.ix. 1967, Collected and determined by B. N. Ramamurthi.

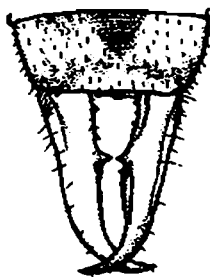
*Remarks*: Forceps, in males, exhibit polymorphism in being shorter and stouter (cyclolabic form) and longer and slener (macrolabic form) in relation to body length.

***Auchenomus nathani* Ramamurthi**  
(Fig 89)

*Auchenomus nathani* Ramamurthi, 1968, *Zool. Anz.*, **181**: 132, fig. 4 (Holotype Female: India: Tamil Nadu, Anamalai Hills, 1067 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 40; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 35; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3445; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 436; Steinmann, 1990, *Das Tierreich*, **106**: 134, fig. 223.

*Female*: Thickly pubescent. Head, antennae, pronotum, elytra and wings brownish; abdomen and forceps orange. Head broad, hind margin deeply sinuated. Antennae 20-segmented, 1st stout, expanded apically; 2<sup>nd</sup> short; 3<sup>rd</sup> about as long as 1<sup>st</sup>, narrowed apically; 4<sup>th</sup> and 5<sup>th</sup> short; rest gradually elongated but not longer than 3<sup>rd</sup>, slender and subconical. Pronotum brownish with a large yellow area in middle, sides slightly convex, hind margin straight. Elytra a little less than twice the length of pronotum, inner basal

angle rounded off, hind margin convex. Wings projecting well beyond elytra, dark. Abdomen dilated in middle, tergites depressed above, hind margin of tergites, a little sinuated in middle, lateral tubercles distinct. Penultimate sternite transverse, sides oblique, posterior margin obtuse. Ultimate tergite narrowed at base, hind margin straight, region above rugose. Pygidium broad, declivent, appears like a transverse plate when seen from above. Forceps trigonal, dorsal surface sulcate above at base, inner margin serrated in one third from base, ending there with a distinct tooth; the region upto next one third with inner margin compressed and lower border serrated; tapering and smooth beyond, apex pointed and incurved.



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**Figs. 83-89.** *Auchenomus nathani* Ramamurthi, Holotype Female; 89. Ultimate tergite and forceps (fig. 89 after Ramamurthi, 1968).

*Measurements:* (in mm)

|                   | Female<br>(Holotype) |
|-------------------|----------------------|
| Length of body    | 9.0                  |
| Length of forceps | 3.0                  |

*Type:* Holotype Female; repository not known.

*Distribution:* India: Tamil Nadu, Coimbatore Dist., Anamalai Hills, 1067 m.

*Remarks:* On the basis of strongly depressed body and the shape of 1<sup>st</sup> antennal segment this species comes very close to *Platylabia nathani* Srivastava; both described from the same locality, *i. e.*, India: Tamil Nadu, Anamalai Hills. But the shape of pygidium, in Females, of both the species is quite different. In this species it is transverse with a small tubercle in middle posteriorly whereas in *Platylabia nathani* it is broad and convex at base, narrowed posteriorly with hind margin truncated.

In the absence of a male, it is not possible to say with certainty about the taxonomic position of this species.

## Subfamily LABIINAE

*Labiinae* Burr, 1911, *Dt. ent. Natn.-Biblthk*, **2**(8): 59 (Type genus: *Labia* Leach, 1815); Burr, 1911, *Genera Insect.*, **122**: 53; Hebard, 1917, *Trans. Am. ent. Soc.*, **43**: 312; Chopard, 1924, *Fauna de France, Dermaptera*, **3**: 81; Bruce, Melander and Carpenter, 1954, *Bull. Mus. comp. Zool., Harvard*, **108**: 116; Popham, 1965, *J. Zool.*, **146**: 19; Popham and Brindle, 1967, *Entomologist*, **100**: 225; Brindle, 1971, *J. nat. Hist.*, **5**: 162; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 32; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 407; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 97 (List of species); Sakai, 1982, *Bull. Daito Bunak Univ.*, **20**: 39; Sakai, 1993, *Dermapterorum Catalogus*, **25**: 2(4692); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 562; Steinmann, 1990, *Das Tierreich*, **106**: 464.

*Chaetospaninae* Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 456; Steinmann, 1990, *Das Tierreich*, **106**: 173 (As Tribe for *Chaetospania* Karsch, 1886).

Size small to medium; form weakly convex or depressed. Eyes generally shorter than post-ocular area (except in *Apovostox* Hebard, longer). Antennae with 3<sup>rd</sup> segment shorter than 5<sup>th</sup> or slightly so. Elytra and wings well developed, usually pubescent and punctured. Legs short, stout; 2<sup>nd</sup> tarsal segment simple, about as long as broad. Male genitalia with parameres entire or with a deep cleft medially, dividing into two lobes.

*Type genus: Labia* Leach, 1815.

*Distribution*: World wide but dominant in tropical parts.

*Remarks*: Spongiphorinae and Labiinae can be easily differentiated by the shape of 2<sup>nd</sup> tarsal segment. In the former it is longer than broad whereas in the latter about as long as broad.

## Key to genera (based on males)

- 1(2). Male genitalia deeply excised, with an external and internal lobe ..... *Labia* Leach
- 2(1). Male genitalia with parameres entire (not excised)
- 3(4). Eyes large to very large, about equal or longer than the post-ocular area ..... *Apovostox* Hebard
- 5(6). Branches of forceps, in both sexes, not strongly setulose; those of males without inner ventral flange and those of female narrowed from base to apex with inner margin never strongly dentate or crenulate ..... *Circolabia* Steinmann
- 6(5). Branches of forceps, in both sexes, strongly setulose, bearing long stiff hairs; those of male with or without ventral flange, and those of female not narrowed from base to apex but almost parallel sided for the most of the length, and inner margin with at least a inner ventral flange, the margins of which strongly dentate or crenulate

- 7(8). Head transverse, depressed, both usually punctured and pubescent atleast partially, branches of forceps, in both sexes, usually with a inner ventral flange, or this weakly indicated; abdomen strongly depressed; usually larger species.....  
..... *Chaetospania* Karsch
- 8(7). Head quadrate or weakly transverse, tumid, not depressed, both impunctate and glabrous or punctate and pubescent; branches of male forceps simple, with a inner ventral flange, those of females with inner dorsal and ventral flange or with dorsal flange represented by a dorsal tooth; abdomen less depressed; smaller species ...  
..... *Chaetolabia* Brindle

### Genus *Labia* Leach

*Labia* Leach, 1815, *Edinburgh Encyclopedia*, **9**: 118 (Type species: *Forficula minor* L., 1758); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 570; Steinmann, 1990, *Das Tierreich*, **106**: 465.

*Copiscelis* Fieber, 1853, *Lotos*, **3**: 257 (Type species: *Forficula minor* L., 1758).

Size small to medium (3.5 - 9.0 mm, including the length of forceps). Pubescent; head convex; eyes shorter than the post-ocular area; antennae 10 - 12 segmented, elongated, 4<sup>th</sup> and 5<sup>th</sup> almost equal. Elytra and wings well developed. Penultimate sternite with a median posterior spine, rarely absent. Forceps, in males, polymorphic (macrolabial form- remote at base, gradually arcuate and cyclolabial form- short, simple and straight). Genitalia with parameres deeply or shallowly incised vertically with external lobe narrower or broader, inner lobe with tip pointed.

*Type species: Forficula minor* L., 1758.

*Distribution:* *Labia minor* L. is distributed world over and other species are distributed in the Oriental Region.

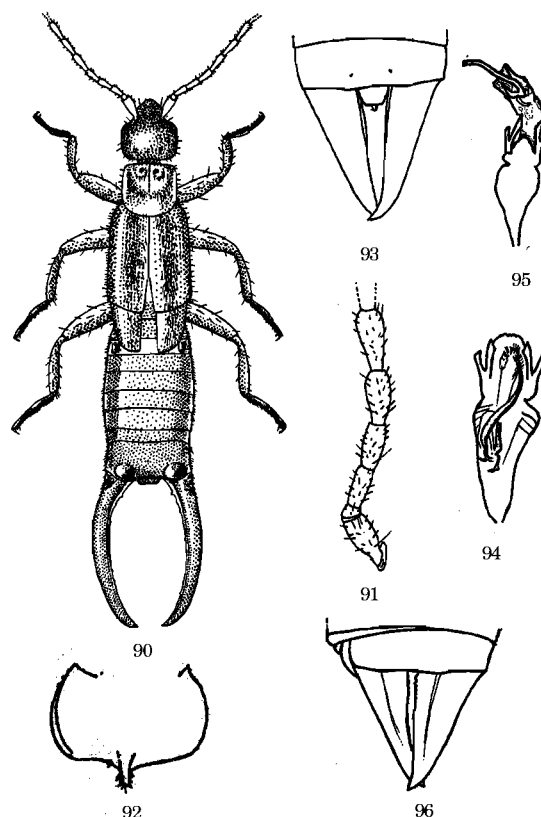
*Remarks:* Steinmann (1990) has restricted this genus for those Spongiphorid species which have parameres medially incised.

At present five species are included of which only two, *Labia minor* L. is known to occur all over the world and *Labia fanta* Steinmann, 1990 from Vietnam seem to be valid species. The remaining three species with medially incised parameres and penultimate sternite with a posterior median spine should be treated as synonym of the former.

### *Labia minor* (L) (Figs. 90-96)

*Forficula minor* Linnaeus, 1758, *Syst. nat.*, 10<sup>th</sup> Ed. **1**: 423 (Holotype Female; Europe).

*Labia minor*; Leach, 1815, *Edinburgh Encyclopedia*, **9**: 18; Dohrn, 1864, *Stettin ent. Ztg.*, **25**: 426; Dubrony, 1879, *Annali Mus. civ. Stor. nat Giacomo Doria*, **14**: 363; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 86; Burr, 1911, *Genera Insect.*, **122**: 55; Burr, 1911, *Dt. ent. Natn. Biblthk*, **2**(8): 62; Burr, 1911, *Proc. U. S. Natn Mus.*, **38**: 337; Burr, 1911, *Annln naturh. Mus., Wien*, **26**: 88; Burr, 1912, *Sitz. ges. naturh. Fr. Berlin*, **1912**: 323; Hebard, 1923, *Ent. News*, **28**(7): 316;



**Figs. 90-96.** *Labia minor* (L), Male, 90. Dorsal view, macrolabial form, 91. A few basal antennal segments, 92. Penultimate sternite, 93. Ultimate tergite and forceps, microlabial form, 94-95. Genitalia; Female, 96. Ultimate tergite and forceps (fig. 95 after Kapoor, Malla & Saha, 1978 from Holotype Male of *Labia bhaktapurensis*).

Bey-Bienko, 1936, *Faune de L'URSS, Dermapterès*: 110, fig. 31; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 76; Brindle, 1968, *Ark. Zool.*, **20**(25): 538; Brindle, 1971, *Ent. scand., Suppl.*, **1**: 255; Reichardt, 1970, *Pap. Avulsos zool. Sau Palo*, **23**(10): 98; Srivastava, 1970, *Eos, Madr.*, **45**: 328 (Male; India: Tamil Nadu, Coimbatore Dist., Anamalai Hills); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 33; Srivastava, 1979, *Doriana*, **5**(233): 3, figs 1-2; Srivastava, 1982, *Ent. basiliensis*, **7**: 65 (Male, macro- and microlabial forms; India: W. B., Darjeeling Dist., Kalimpong); Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1-4): 42 (Male; Java and Sri Lanka: Colombo Dist., Ratmalana); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 407, figs 123 - 125 (Male, Female; India: W. B., Darjeeling Dist. and Kolkata area); Biswas and Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(4): 132 (India: U.P. (now Uttarakhand), Dehra Dun Dist., Ramnagar); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 41; Sakai, 1993, *Dermapterorum Catalogus*, **25**: 46(4736); Sakai, 1997, *Bull. Biogeogr. Soc., Japan*, **52**(2): 49 (India: Manipur (now not Assam as stated), Chingsao, 1254m - 1782m); Steinmann, 1976, *Zool. Anz.*, **197**: 416; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 596; Steinmann, 1990, *Das Tierreich*, **106**: 468, figs 862-864.

*Copiscelis minor*; Fieber, 1853, *Lotos*, **3**: 257.

*Forficesila minor*; Frivaldszky, 1867, *Mono Orth. Hungarica*: 48.

*Forficula? livida* Zschach, 1788, *Mus. Lesk.*: 46 (Sex?; Eur.).

*Labia pillicornis* (niet Motschulsky); Burr, 1914, *Rec. Indian Mus.*, **10**: 290 (Female; India: W. B., Calcutta).

*Labia bhaktapurensis* Kapoor, Malla and Shah, 1978, *J. nat. Hist. Mus.*, **2**: 60, figs 5 - 9 (Holotype Male, Paratypes 16 Males, 6 Females; Nepal: Bhaktapur, 13 km east of Kathmandu) - **Syn. n.**

*Labia harypa* Steinmann, 1990, *Das Tierreich*, **106**: 467, figs 860 - 861 (Holotype Male; Vietnam: CucPhuong) - **Syn. n.**

*Labia pluto* Steinmann, 1990, *Das Tierreich*, **106**: 469, figs 865 - 867 (Holotype Male; Philippine Isl, Manila; Female- described but number of specimens and repository not mentioned) - **Syn. n.**

**Male:** Body finely pubescent. Head, pronotum, elytra and wings black, yellowish on sides; legs yellow; abdomen blackish brown; ultimate tergite and forceps yellowish brown. Cuticle finely punctate but more pronounced on elytra and wings.

Head convex, about as long as broad, sutures faint, hind margin scarcely emarginated in middle. Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> almost equal to 3<sup>rd</sup>, remaining gradually increasing in length distally, each slightly expanded apically. Eyes slightly less than half the length of post-ocular area. Pronotum about as long as broad, sides straight, hind angles and margin rounded, median sulcus short, marked on prozona only, prozona raised slightly and metazona depressed. Elytra and wings well developed, punctate. Legs stout, hind tibiae with 1<sup>st</sup> segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>, covered with thick pubescence on underside; claw without an arolium. Abdomen elongated, parallel sided or gently dilated in middle, tergites convex, smooth. Penultimate sternite transverse, hind margin produced into a median spine with its tip obtuse or truncated, in dorsal view projecting below the pygidium. Ultimate tergite transverse, depressed, often with tumid elevations above the roots of forceps. Pygidium, in forma macrolabia, transverse, declivent, in forma brachylabia about as long as broad with hind margin straight. Forceps (macrolabia) remote at base, long, cylindrical, gently incurved in middle, inner margin ventrally denticulated; or (brachylabia) simple, straight, subcontiguous, tapering apically, apices gently hooked, pointed, crossing. Genitalia with parameres incised in middle vertically, dividing into two unequal narrow lobes; virga thick, tubular; chitinous accessory plates present.

**Female:** Agrees with males in most characters except that penultimate sternite lacks posterior spine and forceps similar to brachylabic form, in males.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 4.1 - 6.5 | 3.9 - 4.1 |
| Length of forceps | 0.8 - 2.5 | 0.6 - 1.1 |



*Types:*

1. *Forficula minor* Linneaus, 1758 - Holotype Female, in Linnean Collection in BMNH.
2. *Labia bhaktapurensis* Kapoor, Malla and Shah, 1978 - Holotype Male, Patatypes 16 Males, 6 Females; repository not mentioned.
3. *Labia harypa* Steinmann, 1990 - Holotype Male in HANB.
4. *Labia pluto* Steinmann, 1990 - Holotype Male in HANB.

*Distribution:* Widely distributed in the Oriental, Ethiopian, Palaearctic and Neotropical Regions.

In the collection of the Zoological Survey of India, Kolkata it is represented by following specimens:

India: West Bengal, Darjeeling Dist., Kurseong, 1524 m, 1 Female, 3.vii.1908; Calcutta, Zoological Garden, 1 Male, 19.v.1907 (*N. Annandale*); Sibpur Royal Botanical Garden, 1 Female, 23.i.1909, attacking fruits of *Nepa fruticans* Wmbr. (Ind. Mus.) (det. by Burr as *Labia pillicornis* Motschulsky); Tamil Nadu, Anamalai Hills, Cinchona, 1067 m, v.1968 (*P. S. Nathan*) - det. by G. K. Srivastava.

Burma (now Myanmar): Dawna Hills, Thingsnnyianung to Sulki, 1 Female, 23 - 27.xi.1911, under the bark of fallen tree trunk (*F. H. Gravely*) (det. by Burr as *Labia pillicornis* Motschulsky).

*Remarks:* Slight variations are noted in the posterior median spine of penultimate sternite and relative length of both external and internal lobes of parameres, in males. In view of the world wide distribution of the species such variations are considered as intraspecific. Accordingly *Labia bhaktapurensis* Kapoor, Malla and Shah, 1978; *Labia harypa* Steinmann, 1990 and *Labia pluto* Steinmann, 1990 are proposed as synonyms.

*Labia fanta* Steinmann, 1990 differs from *Labia minor* L. in having the hind margin of male penultimate sternite rounded, without posterior median spine and parameres broad in most part, narrowed apically with shallow incision and external lobe represented by a small projection only.

### Genus *Apovostox* Hebard

*Apovostox* Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, **79**: 29 (Type species: *Labia pygidiata* Dubrony, 1879); Towens, 1945, *Ann. ent. Soc. Amer.*, **38**: 345; Popham, 1965, *Entomologist*, **98**: 134; Popham and Brindle, 1967, *Entomologist*, **100**: 356; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 54; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4135; Srivastava, 1975, *Dr. B. S. Chauhan Comm. Vol.*: 267 (treated as synonym of *Irdex* Burr, 1911); Srivastava, 1985, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **85**: 218 (resurrected as a valid genus).

*Argusina* Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, **79**: 38 (Type species: *Argusina lita* Hebard, 1927).

*Male:* Size medium to large; strongly pubescent all over the body; eyes distinct, usually longer than the post-ocular area; antennal segments long, slender; 3<sup>rd</sup> about as long as 5<sup>th</sup>; elytra and wings well developed. Pygidium prominent, produced into a horizontal plate, variously shaped. Forceps, remote at base, internal margin differentiated into dorsal and ventral borders, armed with teeth of different sizes.

*Female:* Agrees with males in most characters except that eyes less prominent; pygidium short but distinct, convex at base above, subvertical and forceps short, armed internally.

*Type species:* *Labia pygidiata* Dubrony, 1879.

*Remarks:* Srivastava (1985) has clarified, in detail, the prevailing confusion between this genus and *Irdex* Burr, 1911.

Amongst the members of the genus the pygidium, in males, is distinct, in basal half or a little less, cylindrical, slanting ventrally and apically lamellate or deplanate. The shape of apical part provides useful characters for the discrimination of species.

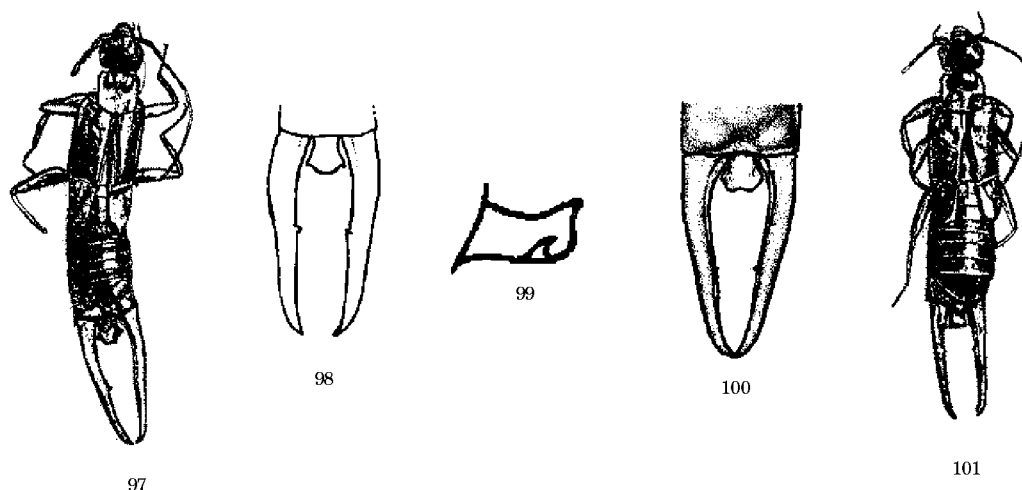
#### Key to species (based on males)

- 1 (2). Pygidium (in f. macrolabia) gradually widening upto middle, afterwards constricted with hind margin shallowly concave in middle and lateral angles produced into broad lobes; (in f. brachylabia) widening apically with hind margin convex and lateral angles with a strong tooth ..... *A. pilosus* (Bey- Bienko)
- 2 (1). Pygidium not as above, variously shaped with hind margin truncate, emarginated or trisinate
- 3 (12). Parameres broad in most part, only narrowed near apex with tip obtuse or acute
- 4 (5). Pygidium trisinate posteriorly with angles produced into a spine .....  
..... *A. pygidiatus* (Dubrony)
- 5 (4). Pygidium with hind margin truncate or deeply emarginated
- 6 (11). Pygidium laterally with a single tooth; parameres with tip obtuse
- 7 (8). Pronotum slightly longer than broad, not widened posteriorly, hind margin broadly rounded, forming a sort of semicircle along with angles; pygidium gradually widening posteriorly with margin truncate ..... *A. agrawali* Srivastava
- 8 (7). Pronotum about as long as broad, gently widened posteriorly, briefly rounded or convex; pygidium widened in middle, hind margin emarginated
- 9 (10). Pronotum distinctly widened posteriorly; pygidium with lateral margin beyond lateral tubercle gently convex; forceps with branches stout, armed internally along the ventral border in apical one third with one or two teeth; genitalia with parameres enlarged in middle, external margin convex .....  
..... *A. ceylonensis* Srivastava

- 10(9). Pronotum with sides parallel or a trifle wider posteriorly; pygidium with lateral margin in apical one third straight; forceps with branches slender, armed internally on ventral border in apical one third with sharp serrations and dorsally with two minute teeth in basal two thirds and larger one at apical one third; genitalia with parameres almost of uniform width throughout ..... *A. stella samsingensis* (Srivastava)
- 11(6). Pygidium laterally with a pair of teeth at about middle; parameres with tip acute ..... *A. chauhani* (Srivastava)
- 12(3). Parameres narrow, comparatively broader at base, sharply narrowed apically with tip acuminate
- 13(14). Forceps internally with basal lamellation above; pygidium declivent, narrowed at base, afterwards broad, flat, hind margin faintly emarginated and dentate, angles produced into sharp point ..... *A. serrata* (Kapoor)
- 14(13). Forceps internally without basal lamellation above; pygidium distinctly prolonged, flat, gently dilated a little before middle, lateral margins irregular, narrowed apically with tip deeply incised ..... *A. fulleri* (Ramamurthi) (= *Irdex burri* Srivastava) - **Syn n.**

***Apovostox pilosus* Bey-Bienko**  
(Figs. 97-101)

*Apovostox pilosus* Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 611, fig. 30 (3 Males, 1 Female; China: Yunnan, Chinping Hills, 1800 m); Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 98.



**Figs. 97-101.** *Apovostox pilosus* Bey-Bienko, Male. 97. Dorsal view; 98-100. Ultimate tergite and forceps; 99. Pygidium; Female, 101. Dorsal view (figs. 97 & 101 after Sakai, 1993; figs. 98-99 after Brindle, 1975a and fig. 100 after Bey-Bienko, 1959).

*Irdexpilosus*; Brindle, 1975, *Ent. basiliensia*, **1**: 28, figs. 28, 29 (2 Males, 3 Females; Bhutan: Tongsa, 2150 m); Steinmann, 1975, *Folia ent. hung.*, **28**(1): 157, fig. 22 (Paratypes 1 Male (lacking genitalia), 1 Female); Steinmann, 1985, *Acta. zool. hung.*, **31**(1-3): 249, fig 7; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 92; Steinmann, 1990, *Das Tierreich*, **106**: 228, fig. 512; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 35; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 37; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4111; 4567 (figs of Male & Female).

**Male:** General colour reddish brown, head darker, legs yellow, antennae yellowish brown, cuticle strongly punctate and pubescent, elytra and wings with long, dense hairs.

Head transverse, sutures distinct. Eyes prominent, almost equal to post-ocular area. Antennae 15-segmented, 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> subconical, shorter than 3<sup>rd</sup>; 5<sup>th</sup> subconical, almost equal to 3<sup>rd</sup>, subsequent ones cylindrical and spindle shaped. Pronotum about as long as broad, parallel sided, hind margin briefly convex. Elytra and wings either well developed or reduced. Legs with femora partly brownish black, hind tarsi with 1<sup>st</sup> segment a little longer than the 1<sup>st</sup>, underside covered with dense pubescence and thick hairs. Abdomen depressed, enlarged in middle. Penultimate sternite transverse, hind margin rounded, scarcely emarginated in middle. Ultimate tergite strongly transverse, posteriorly above the roots of forceps with tumid elevations and a concavity in middle, hind margin sinuate. Pygidium distinct (f. *macrolabia*), deplanate part widening posteriorly upto middle where a tooth present, afterwards narrowed, hind margin briefly concave, lateral lobes rounded, (in f. *brachylabia*) deplanate part gradually widening posteriorly, hind margin convex, lateral angles with a strong, sharp tooth, directed ventrally. Forceps (in f. *macrolabia*) long, almost straight, trigonal in basal half with a dorsal tooth at middle, ventral border serrated in basal one half; (in f. *brachylabia*) branches diverging in basal half, afterwards arcuate, armed with a tooth in basal half and another at middle. Genitalia not described.

**Female:** Agrees with males in most characters except that penultimate sternite obtusely rounded posteriorly; pygidium rectangular, slanting, serrated laterally in basal half and hind margin truncate and forceps with branches subcontiguous, straight, inner ventral border strongly dentate.

*Measurements:* (in mm)

|                   | Male      | Female |
|-------------------|-----------|--------|
| Length of body    | 8.5 - 9.0 | 7.0    |
| Length of forceps | 2.7 - 4.6 | 3.4    |

**Types:** Paratypes 1 Male, 1 Female in AZL.

Bey-Bienko (1959) mentions 3 Males, including Type and 1 Female from Yunnan but according to Steinmann (1975) only Paratypes 1 Male, 1 Female are present in the collections of the Academy of Zoology, Leningrad and remaining are not known.

**Distribution:** China (Yunnan, 1800 m) and Bhutan (2150 m).

**Remarks:** This species differs from all the known species of the genus by its distinctive pygidium of males.

***Apovostox pygidiatus* (Dubrony)**

(Figs. 102-109)

*Labia? pygidiata* Dubrony, 1879, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **14**: 364, 3 figs. in text (1 Male, 1 Female; Teibodas (Java)).

*Labia pygidiata*; Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2) **14** (34): 387 (Male, Female; Myanmar); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 65 (Burma and Java); Kirby, 1904, *Syn. Cat. Orth.*, **1**: 26; Burr, 1910, *Fauna British India, Dermaptera*: 22, pl. 5, fig. 42.

*Spongovostox pygidiatus*; Burr, 1911, *Genera Insect.*, **122**: 52; Burr, 1911, *Dt. ent. Natn.-Biblthk*, **1911**: 60; Burr, 1912, *Annln naturf. Mus. Wien*, **26**: 87 (Burma and Celebes - excluding Hawaii specimen); Burr, 1912, *Sber. Ges. naturf. Frunde Berlin*, **1912**: 322; Borelli, 1926, *Treubia*, **8**: 260; Borelli, 1927, *Suppl. ent.*, **15**: 70; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 67 (Male, Female; Sumatra).

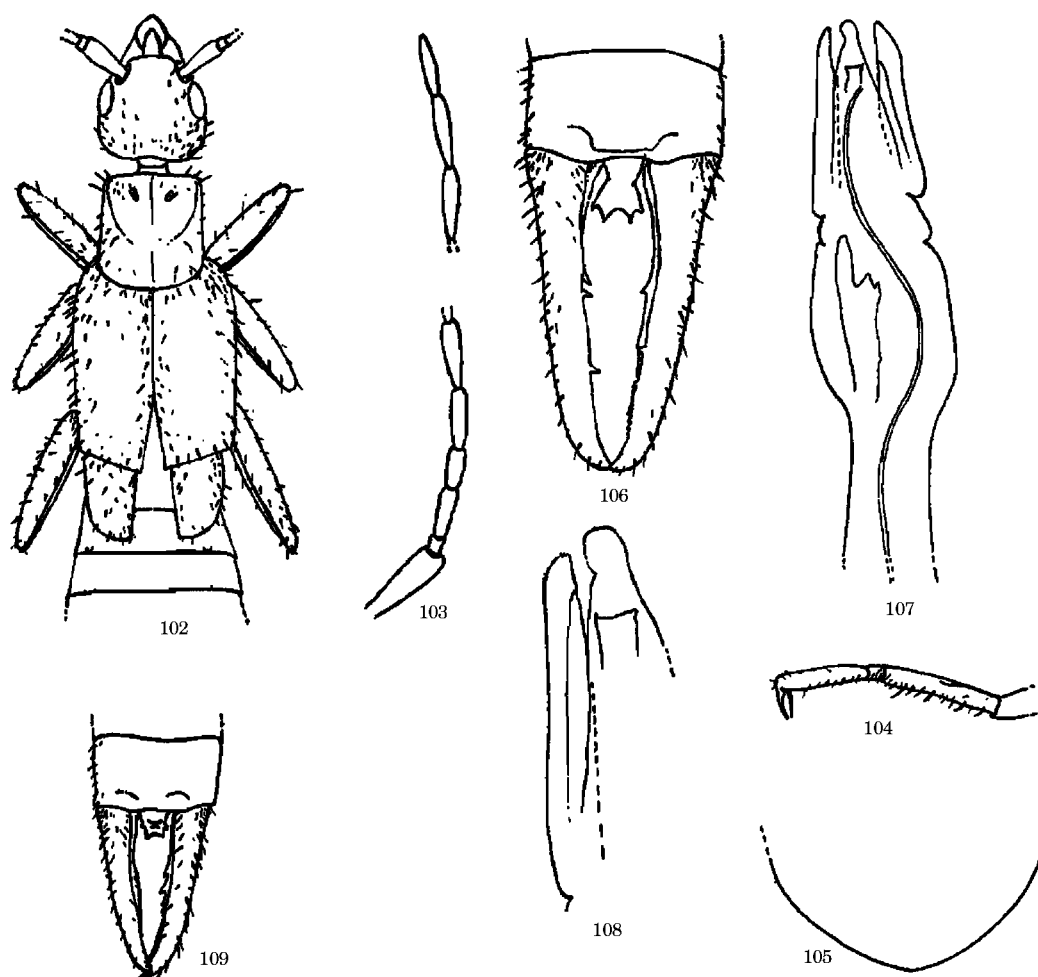
*Apovostox pygidiatus*; Hebard, 1927, *Proc. Acad. nat. Sci., Philad.*, **79**: 29; Hebard, 1929, *Trans. Amer. ent. Soc.*, **54**(4): 337 (Java); Borelli, 1932, *J. fed. Malay. Mus.*, **17**(1): 183, fig. 5 (1 Male; Borneo: Kinabalu); Borelli, 1932, *Bull. Raffles Mus.*, **7**: 83; Günther, 1934, *Revue suisse Zool.*, **41**(34): 538 (1 Male, 2 Females; Java); Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 610 (1 Male; China: Yunnan); Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 56; Sakai, 1982, *Bull. Daito Bunak Univ.*, **20**: 37; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4137, 4504 (coloured photographs of Male and Female from Bhutan, det. by Brindle), 4567 and 4568 (with diagrams); Srivastava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 119 (Male, Female; Thailand); Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 98.

*Irdex pygidiatus*; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 35; Srivastava, 1978, *Pacif. Insects*, **17**(1): 110 (Male; Philippine Isls, Mindanao); Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 13, figs 15-16 (Male; Java); Steinmann, 1985, *Acta zool hung.*, **31**: 253, figs 18-19; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 493; Steinmann, 1990, *Das Tierreich*, **106**: 294, figs. 527 - 529.

General colour blackish brown, mouth parts, sides of pronotum, legs and branches of forceps lighter in colour. Build stout, strongly pubescent with a few long hairs.

Head slightly longer than broad, smooth, convex, sutures faint, hind margin emarginated in middle. Antennae 15-segmented, 1<sup>st</sup> stout, expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> slightly shorter than the preceeding; 5<sup>th</sup> slightly longer than the 3<sup>rd</sup>; remaining gradually increasing in length and thinning distally, a few preapical ones thin and rod shaped. Eyes prominent, about as long as the post-ocular area. Pronotum slightly longer than broad, slightly widened posteriorly, sides straight, gently reflexed, hind margin rounded, median sulcus distinct, prozona raised, metazona depressed. Elytra and wings well developed. Legs typical of the genus, hind tarsi with 1<sup>st</sup> segment five times or more in length than the width, almost equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>, claw without an arolium. Abdomen long, narrowed at base, afterwards parallel sided, tergites convex, smooth, micro-reticulated, sides of segments rounded. Penultimate sternite transverse, smooth, posterior margin rounded with a slight emargination in middle. Ultimate tergite

transverse, smooth, sides parallel, hind angles a little projecting and margin trisinate, incrassate, oblique above the bases of forceps, disc above convex, sloping backwards with slight depression in middle and tumid above the roots of forceps. Pygidium at base narrow, declivient, afterwards gradually enlarging posteriorly, hind margin trisinate, lateral sinuations short and oblique, angles produced into minute points. Forceps long, deplanate, at base separated by pygidium, almost straight, attenuated posteriorly, apices gently hooked, internal margin differentiated into dorsal and ventral borders, unarmed in basal one third, afterwards both the borders with distantly placed teeth, in apical one third serrated. Genitalia as seen in the fig. 107.



**Figs. 102-109.** *Apovostox pygidiatus* (Dubrony), Male, 102. Anterior portion of body, 103. A few basal and apical antennal segments, 104. Hind tarsi, 105. Posterior half of penultimate sternite, 106. Ultimate tergite and forceps, 107. Genitalia, 108. Paramere, enlarged; Female, 109. Ultimate tergite and forceps.

Female: Agrees with males in most characters except that ultimate tergite narrowed posteriorly; pygidium longer than broad, narrowed apically, laterally with a tooth a little before apex, hind margin emarginate with posterolateral angles projecting and forceps simple, straight, dorsal and vental borders distinct, in posterior half ventral border serrated.

*Measurements:* ( in mm)

|                    | Male      | Female |
|--------------------|-----------|--------|
| Length of forceps  | 7.0 - 7.5 | 7.0    |
| Length of forceps  | 3.5 - 4.0 | 2.0    |
| Length of pygidium | 0.61      | —      |

*Types:* 1 Male and 1 Female in MSNG.

*Distribution:* Widely distributed in the Oriental Region.

This species is reported for the first time from India on following specimens present in the Zoologica Survey of India, Kolkata:

India: Kerala, Idukki Dist., Thakkady, ca 800 m, 3 Males, 1 Female and 3 nymphs, 12.ii.1983, ex under bark of rotten tree trunk, coll. and det. by G. K. Srivastava.

*Remarks:* Various records of this species from Hawaii are referable to *Circolabia dubronyi* (Hebard, 1922).

Steinmann (1983) reported this species on 2 Males from India: Meghalaya which are referable to *Apovostox stella samsingensis* Srivastava (Srivastava, 1995b, figs 84 - 85).

Male pygidium shows slight variation in length but the hind margin is trisinate with angles produced into spines. Sometimes the median emargination is strongly concave and lateral ones are shallow with angles not pointed.

### ***Apovostox agrawali* Srivastava**

(Figs. 110-116)

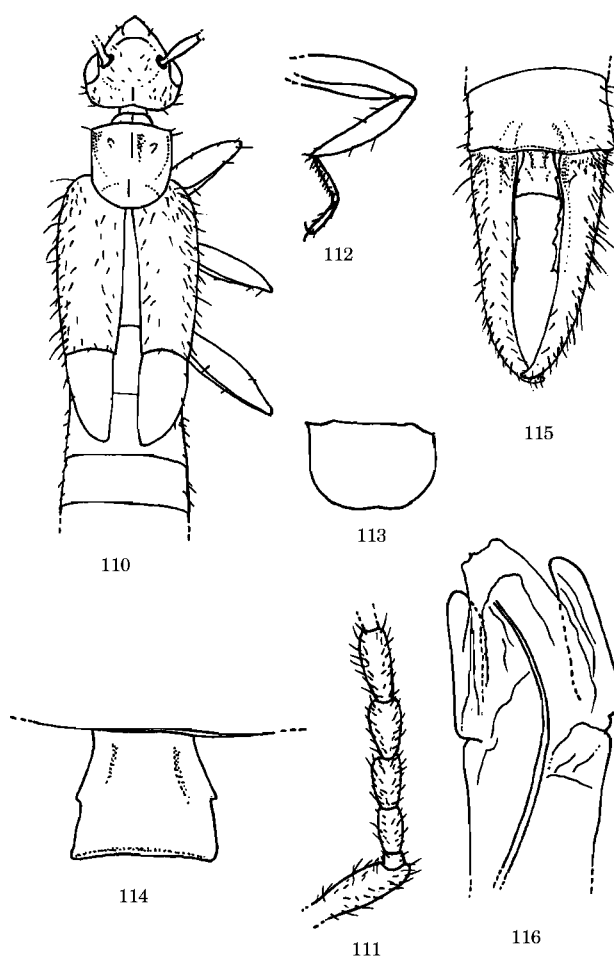
*Apovostox agrawali* Srivastava, 1999, *Rec. zool. Surv. India*, **97**(2): figs. 1 - 7 (Holotype Male; India: Sikkim, Tumin, 1800 m).

*Chaetospania foliata* (nèc Burr, 1911); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 49 (Male; India: Manipur (not Assam at present), Chingsao, 1254 - 1782 m).

Male: General colour blackish brown; head slightly darker; mouth parts and legs yellowish brown and forceps reddish brown. Pubescent.

Head slightly longer than broad, frons and occiput slightly depressed, epicranial suture obsolete and median suture distinct, hind margin emarginated. Eyes prominent, black, slightly longer than the post-ocular area. Antennae 13-segmented or more (since apical ones tend to break off easily), 1<sup>st</sup> stout, narrowed apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4th about

as long as the preceeding, but stouter; 5<sup>th</sup> onwards gradually increasing in length and each narrowed basally, a few preapical ones thin. Pronotum slightly longer than broad, sides straight, parallel, hind margin together with angles rounded, appears somewhat semicircular, median sulcus distinct, prozona convex and well differentiated from flat metazona. Elytra and wings well developed, pubescent. Legs typical of the genus, hind tarsi with 1<sup>st</sup> segment six times longer than broad; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> only slightly shorter than 1<sup>st</sup>. Abdomen gently dilated in middle, tergites convex, impunctate. Penultimate sternite transverse, hind margin rounded, scarcely emarginated in middle. Ultimate tergite transverse, impunctate, disc weakly depressed, with alternating vertical rows of smooth and pubescent areas, sides parallel, posteriorly in middle with a



**Figs. 110-116.** *Apovostox agrawali* Srivastava, Male, 110. Anterior half of body, 111. A few basal antennal segments, 112. Hind tarsi, 113. Penultimate sternite, 114. Pygidium, enlarged, 115. Ultimate tergite and forceps, 116. Genitalia (all figs. after Srivastava, 1999a).



feeble depression and above the bases of forceps weakly tumid, hind margin incrassate, trisinate, laterally oblique. Pygidium at base declivitous, afterwards forming a rectilinear plate, widened posteriorly with margin subtruncate, sides with a small posteriorly directed tooth at about middle. Forceps with branches depressed, remote at base, almost straight in basal two thirds, afterwards gently incurved, tapering posteriorly, apices gently hooked, internal margin differentiated into dorsal and ventral borders, latter with teeth in basal half only. Genitalia with parameres three times longer than broad, almost of uniform width except near apex gently narrowed, apex obtuse; virga distinct.

Female: Unknown.

*Measurements:* (in mm)

|                    | Male |
|--------------------|------|
| Length of body     | 8.1  |
| Length of forceps  | 2.8  |
| Length of pygidium | 0.4  |

*Type:* Holotype Male at ZSI.

*Distribution:* India: Sikkim (Tumin, 1800 m) and Manipur (Chingsao, 1254 - 1782 m).

*Remarks:* This species differs from the known species of the genus by the shape of the pygidium, in males, in being narrowed at base and gradually widening apically with margin incrassate and subtruncate, postero-lateral angles a little projecting, lateral margin with a minute posteriorly directed tooth at about middle.

The male specimen from India: Assam, Chingsao, 1254-1782 m, determined and referred by Sakai (1997) as *Chaetspania cf. foliate* Burr was examined through the courtesy of Dr. Bob Skidmore, Eastern Cereal and Oilseed Centre, Central Experimental Farm, Ottawa, Ontario, Canada. It is referable to this species

***Apovostox ceylonensis* (Srivastava)**

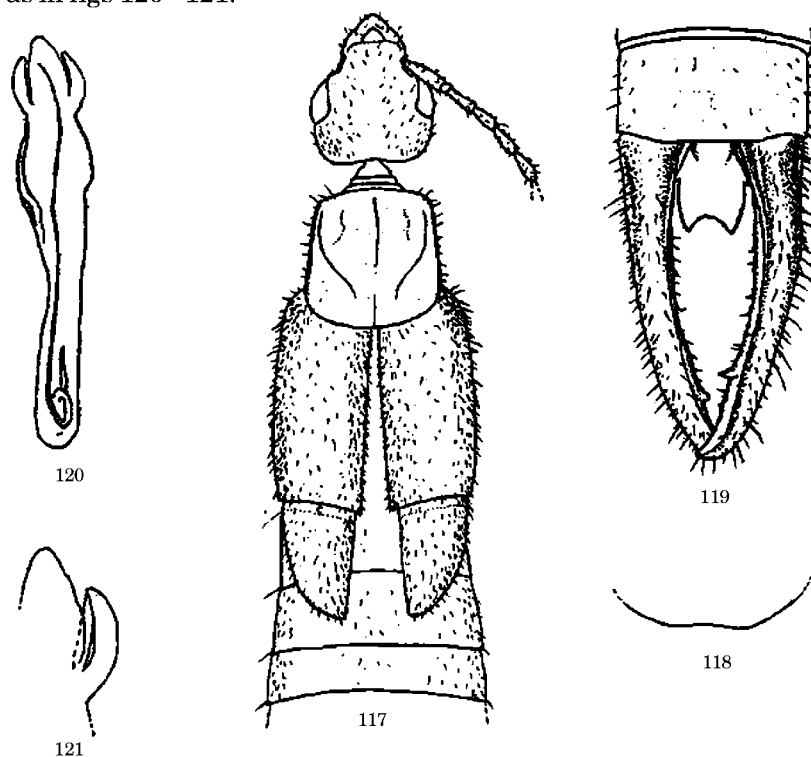
(Figs. 117-121)

*Irdex ceylonensis* Srivastava, 1983, *J. Bombay nat. Hist. Soc.*, **79**(3): 638, figs 1-6 (Holotype Male; Sri Lanka, Rat. Dist., Galimale, Induruwa jungle, collected near Kalugauga); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 488; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4132, 4575.

Male: General colour yellowish brown; antennae lighter; mouth parts, sides of pronotum and legs yellow; elytra in middle somewhat lighter; wings at base with a transverse yellow stripe and forceps with tip black. Body covered with long and short pubescence.

Head longer than broad, frons moderately convex, hind margin emarginate in middle. Eyes prominent, about as long as post-ocular area. Antennae 9-segmented or more

(since the apical segments tend to break off easily) 1<sup>st</sup> segment stout, narrowed basally, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> gently expanded apically, shorter than the preceeding; 5<sup>th</sup> equal to 3<sup>rd</sup>, stouter, remaining thinner, slightly increasing in length gradually. Pronotum slightly longer than broad, anterior and lateral margins straight, latter reflexed, widened posteriorly, hind angles and margin rounded, median sulcus finely marked, prozona convex and well differentiated from flat metazona. Abdomen with tergites convex, slightly enlarged posteriorly. Penultimate sternite transverse, hind margin rounded with slight emargination in middle. Ultimate tergite transverse, depressed, sides straight, hind margin faintly trisinate, feebly oblique laterally. Pygidium strongly declivitous and covex at base, afterwards forming a horizontal plate, oval in shape, laterally in middle with a sharp posteriorly directed minute tooth, hind magin deeply emarginated with angles projecting into minute points. Forceps remote at base, depressed, tapering apically, gently incurved in middle, apices gently hooked and pointed, internal margin ventrally in middle with sharp teeth, armed with one or two larger and triangular teeth in apical one third. Genitalia as in figs 120 - 121.



**Figs. 117-121.** *Apovostox ceylonensis* (Srivastava), Male, 117. Anterior portion of body, 118. Hind margin of penultimate sternite, 119. Ultimate tergite and forceps, 120. Genitalia, 121. Paramere, enlarged (all figs. after Srivastava, 1983a).

Female: Unknown.

*Measurements:* (in mm)

|                    | Holotype |
|--------------------|----------|
|                    | Male     |
| Length of body     | 7.6      |
| Length of forceps  | 3.0      |
| Length of pygidium | 0.5      |

*Types:* Holotype Male at USNM.

*Distribution:* Sri Lanka.

***Apovostox stella samsingensis* (Srivastava)**

(Figs. 122-126)

*Irdex stella samsingensis* Srivastava, 1975 (May, 1975), *Dr. B. S. Chauhan Comm. Vol.*, **1975**: 270, figs. 3A-D ( Holotype Male, Paratypes , 5 Males, 2 Females: India: West Bengal, Darjeeling dist., Samsing, 1450 ft); Steinmann, 1985, *Acta. zool. hung.*, **31**(1-3): 258, figs 36 - 37; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 494; Steinmann, 1990, *Das Tierreich*, **106**: 320, figs 546 - 548; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4096, 4562-4563 (black and white diagrams), 4505 (coloured photograph).

*Apovostox stella samsingensis*: Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 410, figs 134-135; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 98; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 325, figs 84 - 85 ( 1 Male; India: East Khasi Hills Dist., Cherrapunji, near Mawsamai cave, 130 m); Srivastava, 1990, *Rec. zool. Surv. India*, **87**(2): 39, figs 8-9.

*Apovostox pygidiatus* (nec Dubrony, 1879); Steinmann, 1983, *Rev. suisse zool.*, **90**(3): 550 (2 Males: India: Meghalaya Khasi Hills, Mawphlang); Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4506 (one coloured photograph labelled as: *Apovostox pygidiatus* (Dubrony, 1879) Geneve Mus., India det. by Steinmann (1893) SS- 746 - 24).

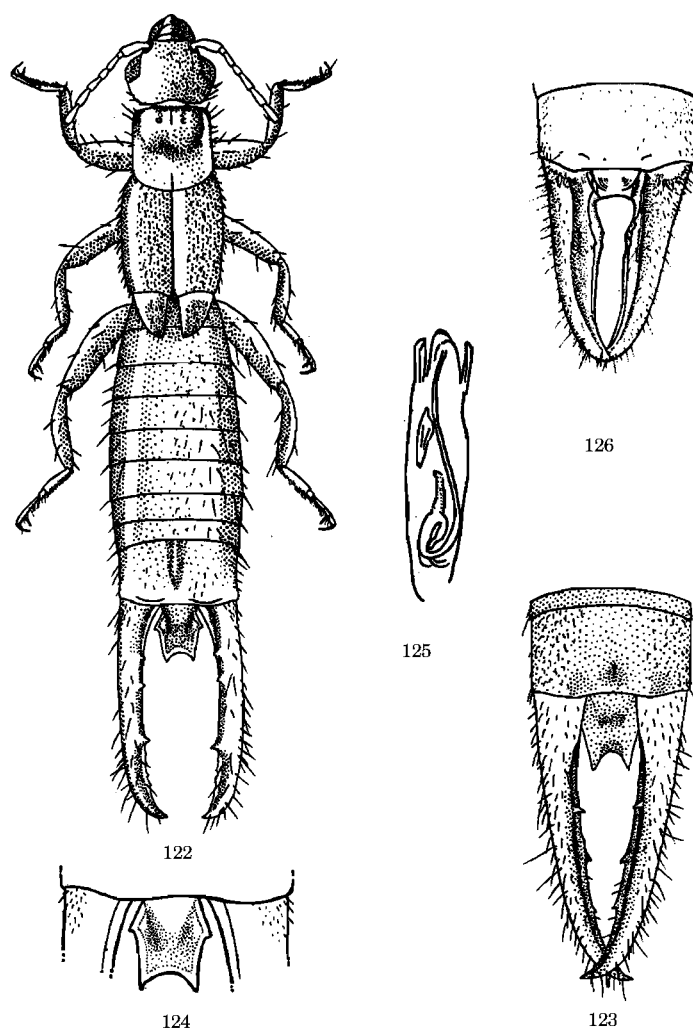
*Irdex wittmeri* Brindle, 1975(October, 1975), *Ent. basiliensia*, **1**: 28, figs 24 - 25 (Holotype Male, Allotype Female, Paratypes: 7 Males, 10 Females and 10 larvae; Bhutan: 87 km von Puntsholing, 1860 m; 2 Males, Wangdiphodrang, 1300 m; 2 Females, 21 km Wangdiphodrang, 1700-2000 m); Steinmann, 1985, *Acta zool hung.*, **31**(1-3): 252, figs 16 - 17; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43) : 495; Steinmann, 1990, *Das Tierreich*, **106**: 292, figs 521 - 523; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4123, 4504 (coloured photographs of Holotype Male, Allotype Female), 4572 (black and white photographs and line diagrams of Holotype Male and Allotype Female) - **Syn n.**

*Apovostox wittmeri*; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1 - 2): 98.

Male: Head, pronotum and elytra dark brownish black; antennae and wings brownish black, former with a few distal segments yellowish and latter with a transverse yellow stripe at base; legs yellow and femora blackish brown in basal half only. Abdomen reddish

brown, sides and hind margin of tergites blackish; ultimate tergite, pygidium and forceps reddish brown. Sparsely pubescent.

Head about as long as broad, triangular, convex above, sutures obsolete, hind margin emarginated in middle. Eyes prominent, about as long as the post-ocular area. Antennae 15-segmented, 1<sup>st</sup> stout, narrowed apically; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> shorter than 3<sup>rd</sup> and 5<sup>th</sup>, gently expanded apically, remaining gradually increasing in length distally, each gently narrowed basally. Pronotum as long as broad, anteriorly as wide as head, sides straight, widened posteriorly, hind angles and margin



**Figs. 122-126.** *Apovostox stella samsingensis* (Srivastava), Holotype Male, 122. Dorsal view, 123. Ultimate tergite and forceps—from Paratype Male, 124. Pygidium, enlarged, 125. Genitalia; Paratype Female, 126. Ultimate tergite and forceps.

rounded, median sulcus faint, prozona convex and metazona depressed. Elytra and wings well developed, former obliquely truncated posteriorly. Legs long, slender, hind tarsi with 1<sup>st</sup> segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; covered with thick setae on underside. Abdomen elongated, tergites convex, punctate, gently narrowed at base, afterwards almost parallel sided, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites obsolete. Penultimate sternite transverse, punctate, hind margin broadly rounded with slight emargination in middle. Ultimate tergite transverse, pilose, smooth, sides straight, disc above weakly convex, posteriorly in middle with slight depression and above the roots of forceps weakly tumid, hind margin trisinate, oblique laterally. Pygidium strongly declivitous at base, afterwards deplanate, diverging upto a little before middle where laterally a sharp, posteriorly directed point present, thence converging posteriorly, hind margin broadly emarginate, angles produced into sharp points. Forceps remote at base, tapering posteriorly, almost straight, apices gently incurved and pointed, internal margin ventrally flattened at base, afterwards unarmed except for a few serrations a little before apex, dorsally with a few small teeth and a large one at about apical one third only. Genitalia as in fig. 125.

Female: Agrees with males in most characters except that the ultimate tergite weakly transverse; pygidium less prominent, convex above and sloping, hind margin faintly emarginated, angles with minute points; forceps stouter, internal margin at base concave, ventrally with two triangular teeth at base, afterwards margin sharp and wavy.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 7.1 - 7.8 | 7.1 - 7.5 |
| Length of forceps | 2.3 - 2.7 | 1.8 - 2.1 |

*Types:*

1. *Irdex stella samsingensis* Srivastava - Holotype Male, Paratypes 5 Males and 2 Females at ZSI.
2. *Irdex wittmeri* Brindle - Holotype Male, Allotype Female and Paratypes 6 Males, 9 Females and 10 larvae at NMB and Paratype 3 Males and 3 Females at MM and BMNH.

*Remarks:* It represents the Indian race of *Irdex stella* (Bormans) distributed in Malaya, Borneo and Philippine Islands.

This and *Irdex wittmeri* Brindle, were published simultaneously in the year 1975 and are identical. Since the former has priority, latter is treated as a synonym.

***Apovostox chauhani* (Srivastava)**

(Figs. 127-131)

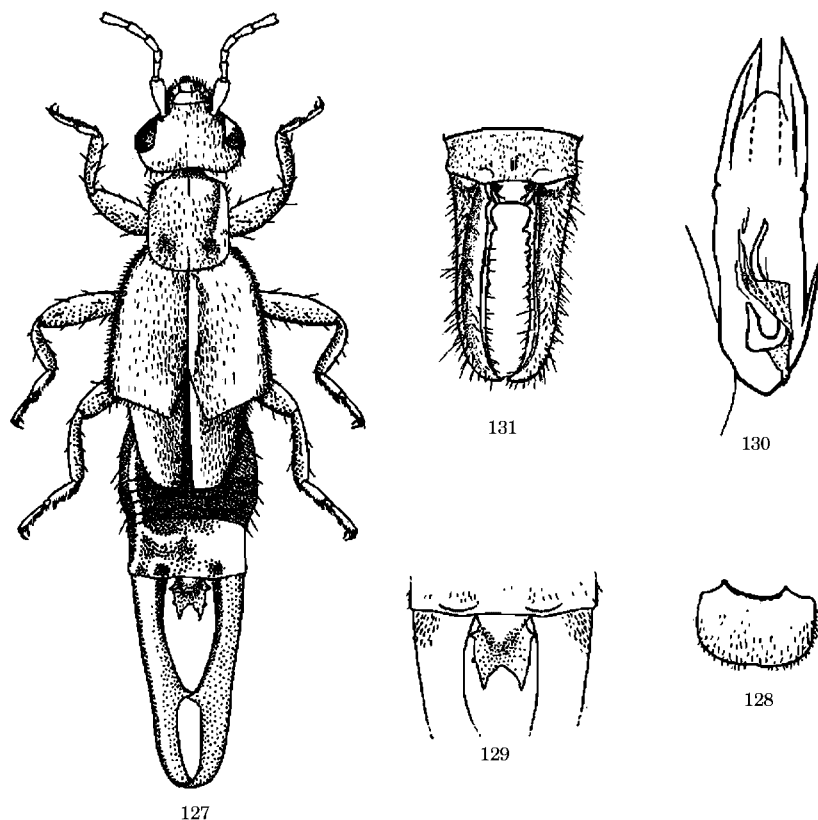
*Irdex nitidipennis* (nec Bormans, 1894); Burr, 1913, *Rec. Indian Mus.*, 8(2): 141 (2 Females; India: Arunachal Pradesh, Rotung).

*Irdex chauhani* Srivastava, 1975, *Dr. B. S. Chauhan Comm. Vol.*, **1975**: 275, figs 5A-D (Holotype, Male, Paratype 1 Female: India: Arunachal Pradesh, Siang dist., Rotung, 427 m); Steinmann, 1985, *Acta zool. hung.*, **31**(1-3): 231, figs 13 - 15; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 489; Steinmann, 1990, *Das Tierreich*, **106**: 29, figs 518 - 520.

*Apovostox chauhani*; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 97; Srivastava, 1999, *Rec. zool. Surv. India*, **97**(2): 40, figs. 10-11.

Male: General colour yellowish brown, abdomen somewhat darker. Thickly pubescent.

Head weakly transverse, frons moderately convex, sutures obsolete, hind margin emarginated in middle. Eyes prominent, about twice as long as the post-ocular area. Antennae (in Holotype with 6 segments only), segments stout, 1<sup>st</sup> stout, expanded apically; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> shorter than 5<sup>th</sup> but both shorter than 3<sup>rd</sup>. Pronotum slightly longer than broad, slightly widened posteriorly, anterior margin convex, sides straight, gently reflexed, hind angles and margin broadly



**Figs. 127-131.** *Apovostox chauhani* (Srivastava), Holotype Male, 127. Dorsal view, 128. Penultimate sternite, 129. Pygidium, enlarged, 130. Genitali; Paratype Female, 131. Ultimate tergite and forceps.

rounded, median sulcus distinct; prozona weakly raised, metazona flat. Elytra and wings ample, former with hind margin obliquely truncate. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>, underside provided with a row thick setae. Abdomen long, tergites convex, gently enlarging posteriorly, lateral folds obsolete. Penultimate sternite transverse, posterior margin broadly rounded with slight emargination in middle. Ultimate tergite transverse, sides straight, slightly tumid above the roots of forceps and depressed in middle, hind margin trisinate, oblique laterally, hind angles projecting. Pygidium narrowed and strongly declivitous at base, ventrally enlarged into a horizontal plate, sides convex with two teeth in middle, narrowed apically with deep sinuation and angles produced into sharp points. Forceps with branches remote, stout, depressed, gradually tapering and incurving from base to apex, tips gently hooked, pointed, crossing, internally trigonal in basal one third only, provided with a sharp ventral tooth in a little beyond middle. Genitalia as in fig. 130.

Female: Agrees with males in most characters except ultimate tergite narrowed posteriorly; pygidium less distinct, convex above, sides irregular, declivitous, hind margin ventrally in middle faintly emarginated, internal margin dorsally and ventrally with a few large teeth at base and smaller ones upto middle only.

*Measurements:* (in mm)

|                   | Male | Female |
|-------------------|------|--------|
| Length of body    | 6.4  | 7.2    |
| Length of forceps | 2.6  | 2.45   |

*Types:* Holotype Male, Paratype Female in ZSI.

*Distribution:* Known from the type locality only.

*Remarks:* In having prominent eyes, about twice as long as the post-ocular length it comes close to *A. lita* (Hebard) but differs, in males, by the shape of pygidium with a pair of sharp points on lateral margin; forceps long and stout, internally armed at middle with a large tooth and genitalia with parameres broad, flat, strongly narrowed a little before apex with tip pointed.

***Apovostox serrata* (Kapoor)**

(Figs. 132-136)

*Irdex nitidipennis* (néc Bormans); Burr, 1911, *J. Asiat. Soc. Beng. (N.S.)*, 7B: 782 (India: Tamil Nadu, Madura Dist, Shembaganur - no. of specimens not mentioned; excluding E. Himalayas: Kurseong); 1914, *Rec. Indian Mus.*, 10: 290 (India: Anamalais, 1524 m; Mysore, Babudin Hills, 1372-1524 m, *T. B. F.*).

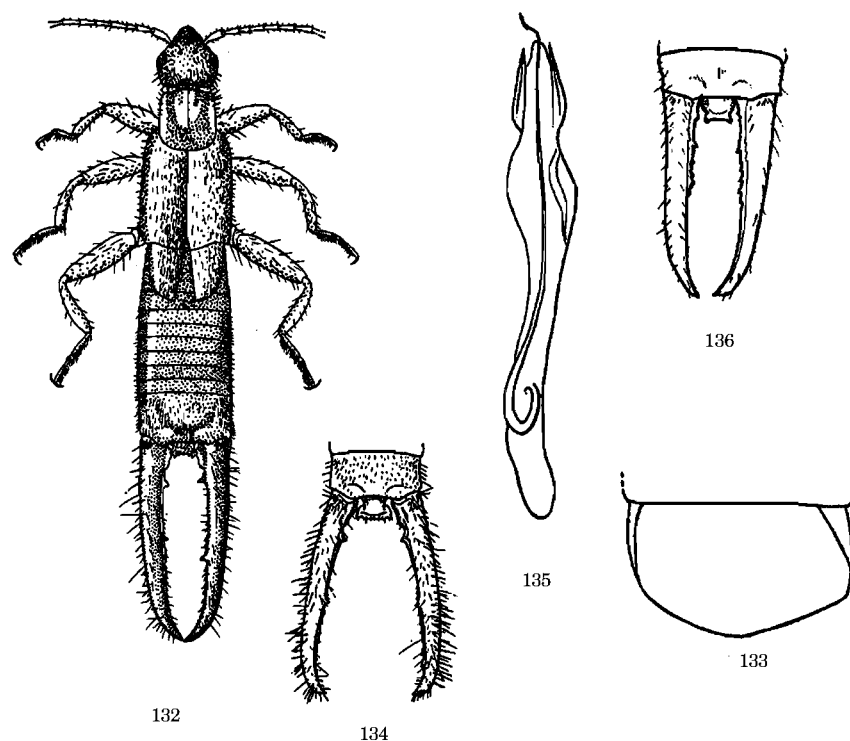
*Labia serrata* Kapoor, 1967, *Bull. Ent., New Delhi*, 8(2): figs 1 - 6 (Holotype Male, Allotype Female and Paratypes 2 Males; India: Tamil Nadu, Madurai Dist., Kodaikanal, Perumalmalai, 1675 m).

*Irdex serrata* (us); Srivastava, 1975, *Dr. B.S. chauhan Comm. Vol.*, 1975: 269, figs 2A-C (Paratypes 2 Males; 2 Males, 2 Females; India: Tamil Nadu, Coimbatore dist., Cinchona, 1067 m.);

Steinmann, 1985, *Acta zool. hung.*, **31**(1-3): 263, figs 15 - 16; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 494; Steinmann, 1990, *Das Tierreich*, **106**: 309, figs.565 - 566; Sakai, 1992, *Dermapterorum Catalogus*, **24**: 4112; 4504 (Female-coloured photograph) and 4568 (figures).

*Apovostox serratus*; Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1): 39 (1 Male; India: Karnataka, 8 mi N. E. Mercara, 305 m); 1995, *Rec. zool. Surv. India*, **95** (1-2): 98, Srivastava, 1999, *Rec. zool. Surv. India*, **97**(1): 40, figs.12-13.

Male: General colour blackish brown. Body strongly pubescent. Head triangular sutures obsolete, frons raised, occiput depressed, hind margin emarginated. Eyes about as long as the post-ocular length. Antennae 15-segmented, 1<sup>st</sup> stout; 2<sup>nd</sup> about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> almost equal to 3<sup>rd</sup>; 5<sup>th</sup> onwards gradually increasing in length and cylindrical. Pronotum slightly longer than broad, laterally straight, hind angles and margin rounded, median sulcus distinct; prozona raised and metazona depressed. Elytra and wings well developed. Legs long, slender, tarsi clad with hairs on underside, hind tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> about as long as broad. Abdomen long, slender, tergites convex above. Penultimate sternite transverse,



**Figs. 132-136.** *Apovostox serrata* (Kapoor), Male, 132. Dorsal view; 133. Penultimate sternite; 134. Ultimate tergite and forceps; 135. Genitalia; Female; 136. Ultimate tergite and forceps.



broadly rounded posteriorly, obtuse in middle posteriorly. Ultimate tergite transverse, disc smooth, posteriorly in middle with a slight depression and above bases of forceps tumid, hind margin trisinate, laterally oblique. Pygidium at base narrowed, slanting, afterwards deplane and transverse, hind margin dentated and scarcely concave, postero-lateral angles produced into sharp points. Forceps with branches remote at base, tapering apically, tip gently hooked, internally above at base with a short lamellation, at basal one third and middle with a sharp spine; ventral border with a sharp tooth at basal one third and finely serrated in apical half. Genitalia with parameres broader at base, narrowed apically, tip acuminate; virga long, tubular forming a loop at base.

Female: Agrees with males in most characters except that penultimate sternite obtusely triangular posteriorly; ultimate tergite narrowed posteriorly; pygidium convex above, hind margin faintly emarginated in middle and angles with short points; forceps simple and straight, internally serrated in basal one third ventrally and dorsally.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 7.5 - 13.0 | 6.6 - 11.5 |
| Length of forceps | 3.5 - 5.0  | 2.5 - 3.5  |

*Types:* Holotype Male, Allotype Female at IARI (Enomology Division); Paratypes 2 Males handed over to the author are deposited in the ZSI.

*Distribution:* India: Tamil Nadu (Anamalai, Kodaikanal and Nilgiri Hills).

*Remarks:* In addition to above Types, this species is represented by another Male in the collection of IARI from India: Tamil Nadu, Anamalai Hills, 1280 m, *T. B. Fletcher coll.* and determined as 1 Female, *Irdex nitidipennis* by M. Burr.

In the collections of Museum of Zoology, The University of Michigan, Ann Arbor, U. S. A. 2 females, 1 nymph from India: Tamil Nadu, Naduvattam, 1829 m. determined by G. K. Srivastava as *Irdex serratus* (Kapoor) are present.

***Apovostox fulleri* (Ramamurthi)**

Figs. (137-144)

*Labia fulleri* Ramamurthi, 1963, *Ann. Mag. nat. Hist.*, (13)6: 674, figs 4 - 6 (Holotype Male; Allotype Female; India: West Bengal, Darjeeling Dist., Kurseong).

*Paralabella fulleri*; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entmologica v. 43): 582.

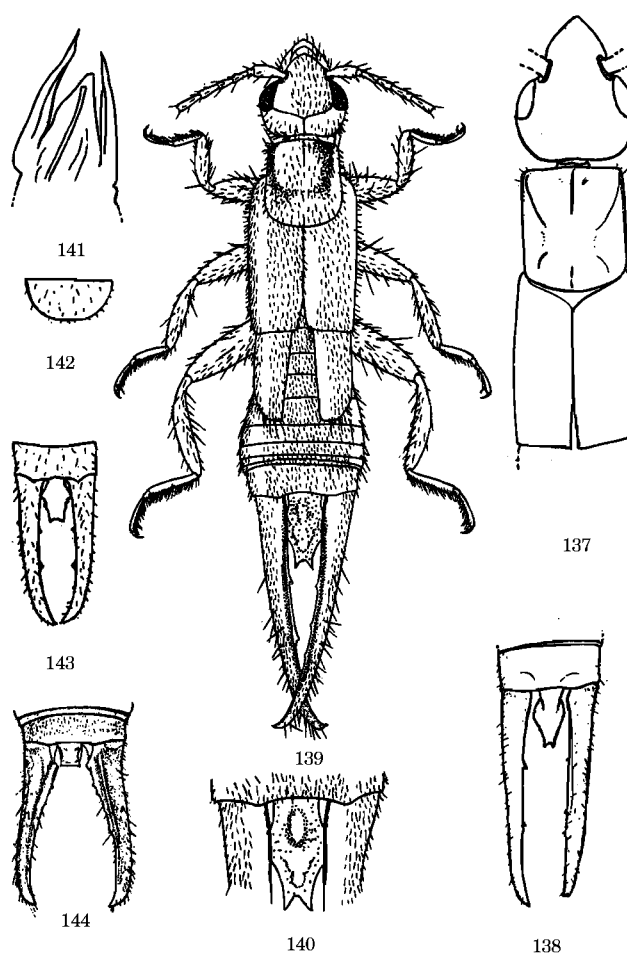
*Circolabia fulleri*; Srivastava, 1995, *Rec. zool. Surv. India*, 95(1-2): 102.

*Irdex burri* Srivastava, 1975, *Dr. B. S. Chauhan Comm. Vol.*, 1975: 273, figs 4A - D (Holotype Male, Paratypes 2 Females; India: West Bengal, Darjeeling Dist., Kurseong, 1524 m - all determined by M. Burr (1911b; p. 783) as *Irdex nitidipennis*) - **Syn. n.**

*Irdex dakshinkaliensis* Kapoor, Malla and Shah, 1978, *J. nat. Hist. Mus.*, 2: 57, figs 8-11 (Holotype Male, Paratypes 19 Males, 12 Females; Nepal: Dakshinkali, 18 kms of Kathmandu) - **Syn. n.**

Male: General colour yellowish brown; head, pronotum and abdomen, a little darker. Thickly pubescent.

Head about as long as broad, weakly convex, sutures obsolete, hind margin emarginated in middle. Antennae 17-segmented, 1<sup>st</sup> stout, expanded apically, slightly longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical, slightly longer than 4<sup>th</sup> and almost equal to 5<sup>th</sup>; remaining gradually increasing in length distally, each narrowed at base. Eyes prominent, longer than the post-ocular area.



**Figs. 137-144.** *Apovostox fulleri* (Ramamurthi), Holotype Male, 137. Anterior portion of body, without antennae and legs; 138. Ultimate tergite and forceps Male; 139. Dorsal view, 140. Pygidium, enlarged, 141. Anterior portion of genitalia, 142. Penultimate sternite, 143. Ultimate tergite and forceps; Female; 144. Ultimate tergite and forceps (figs. 139-141 from Holotype Male and fig. 144 from Paratype Female of *Irdex burri* Srivastava, 1975 and figs. 142-143 from *Irdex dakshinkaliensis* after Kapoor, Malla and Saha, 1978).

Pronotum slightly longer than broad, anterior and lateral margins straight, latter gently reflexed, widened posteriorly, hind margin and angles rounded, median sulcus distinct on prozona; prozona raised and well differentiated from flat metazona. Elytra and wings well developed, former with hind margin truncate. Legs typical for the genus. Abdomen with tergites convex above, dilated in middle, lateral folds on 3<sup>rd</sup> tergite weakly and on 4<sup>th</sup> well developed. Penultimate sternite transverse, hind margin rounded with slight emargination in middle. Ultimate tergite transverse, slightly narrowed posteriorly, weakly tumid above the roots of forceps and depressed in middle, hind margin trisinate, laterally oblique. Pygidium distinct, strongly declivitous and narrowed at base, afterwards lamellate, lamellated portion enlarged in middle with lateral margin irregular, narrowed apically, hind margin deeply notched in middle, angles produced into minute points. Forceps remote at base, long, depressed, tapering apically, almost straight, apices gently hooked and pointed, internal margin with dorsal border unarmed and ventral border with a few large and small teeth. Genitalia as in fig. 141.

Femlae: Ultimate tergite narrowed posteriorly; pygidium distinct, declivitous, convex, hind margin below straight, angles with minute sharp points; forceps simple, straight, internally at base with a deep sinuation, afterwards ventrally with serrations.

*Measurements:* (in mm)

|                   | Male       | Female    |
|-------------------|------------|-----------|
| Length of body    | 7.0 - 10.0 | 7.0 - 9.0 |
| Length of forceps | 2.3 - 4.0  | 1.8 - 3.0 |

*Types:*

1. *Labia fulleri* Ramamurthi, 1963 - Holotype Male, Allotype Female, handed over to the author, now deposited in the ZSI.
2. *Irdex burri* Srivastava, 1975 - Holotype Male, Paratypes 2 Females in ZSI.
3. *Irdex dakshinkaliensis* Kapoor, Malla and Shah, 1978 - repository not mentioned in the original publication; perhaps may be present at the Natural History Museum, Tribhuan University, Kathmandu, Nepal where the authors were working.

*Remarks:* As a result of re-examination of the Types of *Labia fulleri* Ramamurthi, it is evident that it belongs to *Apovostox* Hebard, in having the eyes about as long as the post-ocular area. *Irdex burri* Srivastava and *Irdex dakshinkaliensis* Kapoor, Malla and Shah are treated as synonyms. The description of all the three species is identical except for a few intraspecific variations.

Genus ***Circolabia*** Steinmann

*Circolabia* Steinmann, 1987, *Actazool. hung.*, **33**(1-2): 178 (Type species: *Labia arcuata* Scudder, 1876); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 568; Steinmann,

1990, *Das Tierreich*, **106**: 504; Sakai, 1993, *Dermapterorum Catalogus*, **25**: 4912; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 101.

*Spirolabia* Steinmann, 1987, *Acta zool. hung.*, **33**(1-2): 179 (Type species: *Labia pillicornis* Motschulsky, 1863); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 594; Steinmann, 1990, *Das Tierreich*, **106**: 506; Sakai, 1993, *Dermapterorum Catalogus*, **25**: 4921; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 101 (treated as a synonym).

*Metalabella* Sakai and Takahashi, 1998, *Bull. Biogeogr. Soc. Japan*, **53**(1): 54 (Type species: *Forficesila curvicauda* Motschulsky, 1863) - **Syn. n.**

Build slender or medium. Form depressed or weakly convex; body covered with fine, short pubescence and a few long hairs. Head convex, about as long as broad. Antennal segments long and cylindrical, 3<sup>rd</sup> long, cylindrical, 4<sup>th</sup> and 5<sup>th</sup> almost equal to 3<sup>rd</sup>. Eyes shorter than the post-ocular length. Legs short, stout. Elytra and wings well developed. Forceps, in males, generally arcuate, internal margin with well defined dorsal and ventral borders and in females, simple and straight. Male genitalia with parameres about equal to its width or longer than broad, broad apically or narrower; virga long, tubular, sometimes not easily discernible; accessory chitinous plates present.

*Type species: Labia arcuata* Scudder, 1876.

*Distribution:* Worldwide but more common in the tropical parts of the world.

#### Key to species (based on males)

- 1 (8). Size, including forceps, smaller (4.7-8.0 mm); pronotum longer than broad or weakly transverse, widened posteriorly, hind margin rounded
- 2 (7). Pronotum longer than broad
- 3 (4). Forceps dilated internally in basal half, afterwards strongly in curved ..... *C. curvicauda* (Motschulsky)
- 4 (3). Forceps long, almost straight or gently incurved, slender, internally armed with small teeth
- 5 (6). Pygidium distinct, about twice as long as broad, parallel sided; virga with concentric coils ..... *C. bhatiai* Srivastava
- 6 (5). Pygidium declivitous, about as long as broad, near base laterally with weak point; virga not distinct, penis lobe with chitinous pad ..... *C. rotundifrons* (Hincks)
- 7 (2). Pronotum weakly transverse (pygidium about as long as broad, narrowed apically into a single or bifid point, sometimes broader in basal half, triangular in apical half; forceps long, slender, gently incurved apically) ..... *C. pillicornis* (Motschulsky)

- 8(1). Size, including forceps larger (9.0-11.0 mm); pronotum longer than broad, of uniform width, hind margin truncate (pygidium distinct, declivitous in basal one third, afterwards enlarged with lateral tubercles near base, apically concave, lateral angles produced into a point) ..... *C. dubronyi* (Hebard)

***Circolabia curvicauda* (Motschulsky)**

(Figs. 145-152)

*Forficesila curvicauda* Motschulsky, 1863, *Bull. Soc. nat. Moscou*, **36**: 2, pl. 2, fig. 1 (Male, Female; Nura Ellia Mountains, Ceylon).

*Labia curvicauda*; Dohrn, 1864, *Stettin ent. Ztg.*, **25**: 428; Dubrony, 1879, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **14**: 364; Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**6**: 440; Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 387; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 70; Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**: 325; Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 33; Burr, 1910, *Fauna British India, Dermaptera*: 118, fig. 38; Burr, 1911, *Gerneria Insect.*, **122**: 56; Burr, 1911, *J. Asiat. Soc. Beng. (N. S.)*, **7**: 789; Burr, 1911, *Dt. ent. Natn.-Bibilthk*, **2**: 62; Burr, 1912, *Annln naturh. Mus. Wien*, **26**: 89; Burr, 1912, *Notes Leyden Mus.*, **34**: 228; Burr, 1913, *Ent. Mitt.*, **268**; Burr, 1915, *Tijdschr. Ent.*, **58**(Suppl.) 116; Burr, 1915, *J. R. micr. Soc.*, **1915**: 6, pl. 2, fig. 1; Kirby, 1904, *Syn. Cat. Orth.*, **1**: 26; Hincks, 1947, *Ann. Mag. nat. Hist.*, (11)**14**: 511; Hincka, 1950, *Ann. Mag. nat. Hist.*, (12)**8**: 531; Hincks, 1952, *Ann. Mag. nat. Hist.*, (12)**5**: 201; Hincks, 1954, *Verh. naturh. Ges. Basel*, **65**(1): 22; Boesman, 1954, *Zool. Verh., Leiden*, **21**: 77; Bey Bienko, 1959, *Ent. Obozr.*, **38** 612; Ramamurthi, 1967, *Ent. Medd.*, **35**: 244; Popham and Brindle, 1967, *Entomologist*, **100**: 258; Brindle, 1968, *Ark. Zool.*, **20**: 538; Brindle, 1971, *Ent. Tidskr.*, **92**(1-2): 19; Brindle, 1971, *Ent. scand, Suppl.*, **1**: 225; Brindle, 1971, *J. nat. Hist.*, **5**: 174; Brindle, 1971, *Smithsonian Contr. Zool.*, **63**: 18; Brindle, 1973, *Ann. Mus. Roy. Afr. Centr.*, Tervuren, in 8° Zool., **205**: 691; Brindle, 1987, *Courier Forsch. Senckenberg*, **93**: 33; Sakai, 1970, *Dermapterorum Catalogus Prealiminaris*, **2**: 27; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 41; Sakai, 1993, *Dermapterorum Catalogus*, **25**: 129(4819); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap*, **2**: 32; Srivastava, 1976, *Pacif. Insects*, **17**(1): 109 (Male, Female: Philippine Isls); Srivastava, 1979, *Doriana*, **5**(233): 3, figs 3-4; Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, **81**: 284 (India: Assam and Meghalaya); Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 13 (Male; N. Thailand); Srivastava, 1982, *Rec. zool. Surv. India*, **82**(1-2): 45 (India: Arunachal Pradesh); Srivastava, 1987, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **87**: 494, figs 25-27 (Male; New Guinea); Srivastava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 117 (Male, Female; Thailand); Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1-4): 41 (Male, Female: India: Karnataka, 4 mi SW of Sidapur and Yercaud, 1219 m; Sri Lanka, Bangladesh, Thailand and Philippine Isls); Srivastava, 1993, *Rac. zool. Surv. India*, **91**(1) (1992): 78, fig. 39 (Male, Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area); Steinmann, 1979, *Folia ent. hung.*, **32**(1): 162 (Principe" Paratypus 2 exs; Ceylon, Burma, Vietnam and Celebe); Steinmann, 1981, *Folia ent. hung.*, **40**(34): 188 (Male, Female; L'ille Nicobar, Galathea and other places); Steinmann, 1983, *Reichenbachia*, **21**(7): 49 (Philippine Isls); Steinmann, 1983, *Rev. suisse. Zool.*, **90**(3): 552 (India: Assam, Meghalaya, West Bengal (Darjeeling Dist.) and Uttar Pradesh);

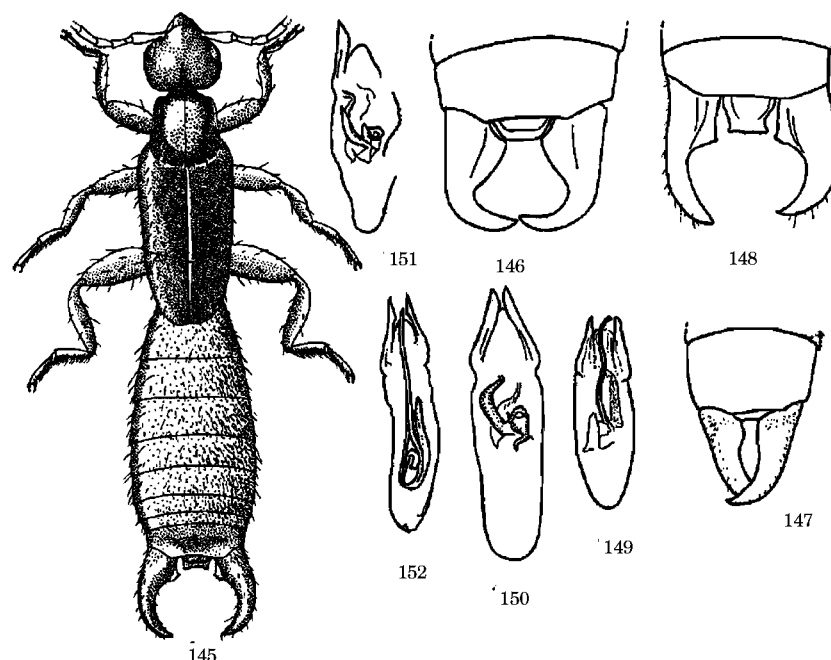
- Steinmann, 1984, *Acta. zool. hung.*, **30**(1-2): 200 (Thailand, Flores, Kalimantan, Sulawesi and Philippine Isls (Palawan);
- Paralabella curvicauda*; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 578; Steinmann, 1990, *Das Tierreich*, **106**: 497, figs 920-922; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 120, figs 126-130 (Male, Female; India: West Bengal; Darjeeling, Malda and 24-Pargana Dists); Srivastava and Kovack, 1993, *Rec. zool. Surv. India*, **93**(1-2): 256, fig. 4 (Male, Female; Malaysia: Malaya, Selangor, 250 m); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 324 (India: Meghalaya, East Khasi Hills and West Garo Hills Dists.); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 49 (Male, Female; India: Assam, 233 m; Meghalaya, 900 m; Arunachal Pradesh, 417-667 m and Manipur, Imphal, 825 m).
- Circolabia curvicauda*; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 102; Srivastava, 2002, *Rec. zool. Surv. India*, **100**(3-4): 134, fig. 1 (Male, Female; India: Lakshadweep, Minicoy); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 215, fig. 43 (Male, Female; India: Sikkim); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(1-2): 131, figs. 16-17 (Male, Female; India: Assam, North Cachar Dist., Umrangso); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 173, fig. 9 (Male, Female; India: Andaman and Nicobar Isls); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 48 (Male, Female; Thailand, Hong Kong and China (South); Chaturvedi and Srivastava, 2002, *J. Bombay nat. Hist. Soc.*, **99**(2): 214.
- Platylabia dilatocauda* Motschlsky, 1863, *Bull. Soc. nat. Moscou*, **36**: 3 (Sex?; Ceylon (Berge von Newara Eliya); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 75; Burr, 1911, *Genera Insect.*, **122**: 65 (treated as a synonym).
- Platylabia guineensis* Dohrn, 1867, *Sttetin ent. Ztg.*, **28**: 349 (Male, Female; In Insula Principis in lingo Putrido); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 74; Kirby, 1904, *Syn. Cat. Orth.*, **1**: 22; Burr, 1911, *Genera Insect.*, **122**: 56 (treated as a synonym).
- Platylabia dimidiata* Dohrn, 1867, *Sttetin ent. Ztg.*, **28**: 348 (Male; Luzon (Philippine Isl); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 74; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 22; Burr, 1911, *Genera Insect.*, **122**: 56 (treated as a synonym).
- Labia flavicollis* Bormans in Burr, 1903, *Ann. Mag. nat. Hist.*, (7)**11**: 235 (1 Male; Iles Samoa, coll. Dohrn).
- Labia curvicauda* var. *flavicollis* Borelli, 1926, *Treubia*, **8**: 236 (Female; Sipora); Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 77.
- Labia rechingeri* Holdous, 1903, *Denkschr. math. Kl. K. Acad., wiss. Wien*, **84**: 15 (Type unknown; Samoa); Burr, 1911, *Genera Insect.*, **122**: 56 (treated as a synonym).
- Platylabia camerunensis* Börg, 1904, *Ark. Zool.*, **1**: 570, pl. 26, fig. 4 (Male, Female Syntypes; Cameroon); Burr, 1911, *Genera Insect.*, **122**: 56 (treated as a synonym).
- Platylabia dimidiata* var. *guineensis*; var. *camerunensis*; Borelli, 1907, *Annali Mus. civ. Stor. nat. Giacomo Doria*, Ser. 3a, **3**(4): 382.
- Platylabia legoci* Fernando, 1957, *Celon J. Sci. (Bio. Sci.)*, **25**: 221, pl. 46, figs 1-5 (4 Males, 3 Females; Sri Lanka, Colombo) - **Syn. n.**

*Labia phanduwalensis* Kapoor, Bharadwaj and Banerjee, 1971, *Bull. Ent.*, **12**: 30, figs 3-4 (Male, Female; India: U.P. (now Uttarakhand), Dehra Dun, Phanduwala) - **Syn. n.**

*Proreus chatterjeei* Kapoor, Bharadwaj and Banerjee, 1971, *Bull. Ent.*, **12**: 33, figs 7 - 8 (Males, Females; India: U. P. (now Uttarakhand), Dehra Dun, Kaunli garden) - **Syn. n.**

Male: Head, elytra and wings blackish brown; antennae and mouth parts yellow; legs brownish yellow; abdomen brownish with traces of black and forceps brownish. Form somewhat depressed, finely pubescent all over the body.

Head about as long as broad, sutures indistinct, slightly emarginated in middle posteriorly. Eyes short, about half as long as the post-ocular area. Antennae 12 segmented, 1<sup>st</sup> stout, slightly expanded apically; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, 4<sup>th</sup> almost equal to preceding, a little thicker; 5<sup>th</sup> slightly longer than the third, a little thinner; 6<sup>th</sup> onwards segments gradually increasing in length and thinning. Pronotum about as long as broad or a little longer than broad, of uniform width or gently widened posteriorly, hind angles and margin rounded, median sulcus distinct; prozona convex and well differentiated from depressed metazona. Legs short, stout, tibiae clad with thick hairs on underside. Elytra and wings well developed. Abdomen elongated, broadened in



**Figs. 145-152.** *Circolabia curvicauda* (Motschulsky), Male, 145. Dorsal view, 146-148. Ultimate tergite and forceps, 149-152. Genitalia (figs. 146 and 151 from Holotype Male, *Labia phanduwalensis* Kapoor, Bharadwaj and Banerjee, 1971 and figs. 148 and 152 from Holotype Male of *Proreus chatterjeei* Kapoor, Bharadwaj and Banerjee, 1971).

middle, tergites convex. Penultimate sternite transverse, rounded posteriorly with slight emargination in middle. Ultimate tergite transverse, disc depressed with a short median sulcus, above the bases of forceps with weak elevations, hind margin trisinuate, laterally above the roots of forceps oblique. Pygidium declivitous, posterior ventral margin straight. Forceps with branches straight, internally deplanate in basal half with inner angle produced into a sharp point, afterwards abruptly or gradually incurved, tapering apically, tip gently hooked and pointed. Genitalia with parameres three to four times longer than broad, narrowed apically, tip acute; virga may be long, tubular or short and broad; chitinous accessory plates present.

Females: Agrees with males, in most characters except that pygidium more prominent, strongly declivitous, narrowed posteriorly and forceps with branches simple, straight, trigonal, inner basal dilation short.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 5.6 - 6.8 | 5.7 - 7.9 |
| Length of forceps | 0.5 - 1.1 | 0.9 - 1.5 |

1. *Forficesila curvicauda* Motschulsky, 1863 - Syntype; repository not known.
2. *Forficula dilaticauda* Motschulsky, 1863 - Type (Sex?); repository not known.
3. *Platylabia guineensis* Dohrn, 1867 - Syntypes Male, Female in IZAP according to Brindle (1973).
4. *Forficula dimidiata* Dohrn, 1867 - Semprs coll.; Type Male; repository not known.
5. *Labia flavicollis* Bormans in Burr, 1903 - Type Male; repository not mentioned.
6. *Labia rechingeri* Holdaus, 1903 - Type (Sex?); repository not known.
7. *Platylabia camerunensis* Börg, 1904 - Syntypes Male, Female; in NRSS, according to Brindle (1973).
8. *Platylabia legoci* Fernando, 1957 - Syntypes 4 Males, 3 Females; repository not mentioned
9. *Labia phanduwalensis* Kapoor, Bharadwaj and Banerjee, 1971 - Holotype Male, Paratype 1 Female in FRI and Paratypes 1 Male, 1 Female in IARI.
10. *Proreus chaterjeei* Kapoor, Bharadwaj and Banerjee, 1971 - Holotype Male, Paratypes 2 Femles in FRI and Paratype 1 Female in IARI.

*Distribution:* Widely distributed throughout the tropics of the Old and New World and partly in Palaearctic areas.

*Remarks:* This species occurs in a variety of habitats, especially under the bark of logs and tree trunks; sheath of rotten banana stems and leaf crown of certain plants.



Normal colour of the pronotum is blackish brown but sometimes it is yellow with varying shades. Forceps, in males, are generally dilated in basal half internally with inner angle produced into a sharp point and afterwards abruptly attenuated and incurved. In a large population in a few specimens inner basal dilation gradually merges with the attenuate posterior portion which is weakly incurved. Male genitalia has a thick, tubular virga which may be reduced and broad. The specimens exhibiting dimorphic form of virga are so similar there is no possibility of two different species being represented. It may be only a case of individual variation.

*Platylabia legoci* Fernando, 1957 agrees well with this species in almost all the characters except that it is slightly larger in size, is also proposed as a synonym. In a widely distributed species such variation in the body size is common.

Types of *Labia phanduwalensis* Kapoor, Bharadwaj and Banerjee, 1971 and *Proreus chatterjeei* Kapoor, Bharadwaj and Banerjee, 1971 were examined and are treated as synonyms. In the latter species the 2<sup>nd</sup> tarsal segment is not of chelisochid type.

Burr (1911a) doubtfully included *Forficula pygmea* Fabricius, 1793 under *Forficesila curvicauda* Motschulsky, 1863 as synonym. According to Brindle (1981), type of this species is in UZMC and is in two parts which are not conspecific and do not belong to *Forficesila curvicauda* Motschulsky, 1863.

### ***Circolabia bhatiai* Srivastava**

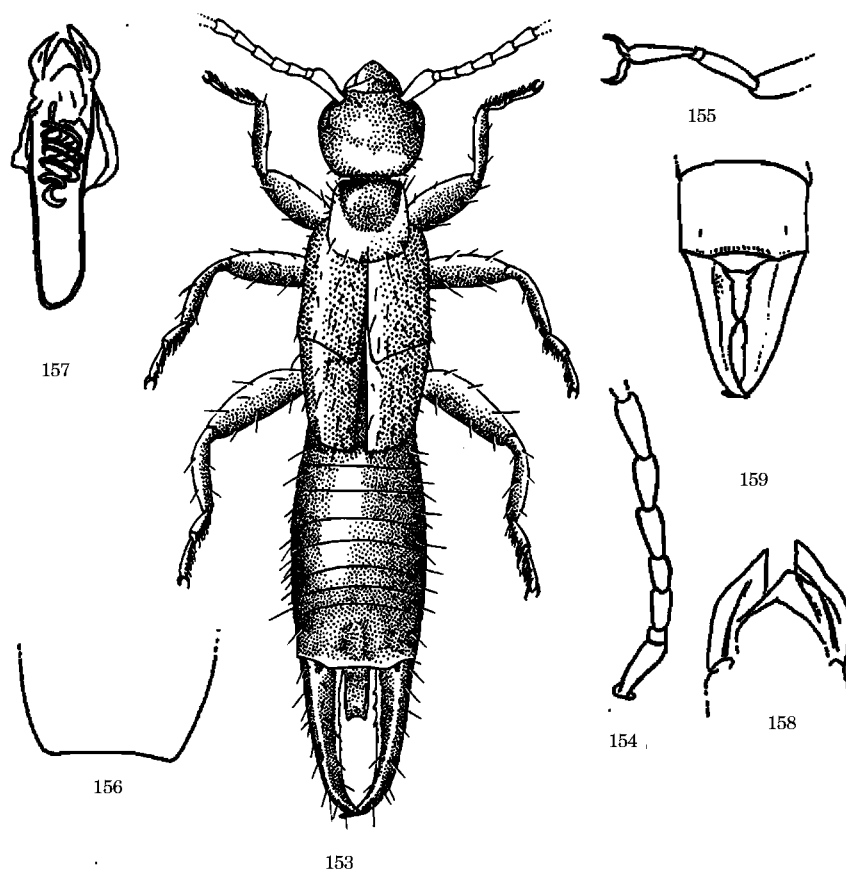
(Figs. 153-159)

*Circolabia bhatiai* Srivastava, 2001, *Rec. zool. Surv. India*, **99** (1-4): 50, figs 11-17 (Holotype Male, Paratype 2 Males and 7 Females; India: Andaman Isl, North and South Andaman Isls); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 75, fig. 13.

Male: General colour blackish brown; antennae light brown; tibiae, pronotum and mouth parts yellow; some of the abdominal tergites, pygidium and forceps light brown; ultimate tergite dark. Body with an oily lusture; sparsely pubescent.

Head smooth, slightly longer than broad, convex, sutures obsolete, hind margin hardly emarginated in middle. Antennae 12- segmented or more (since apical ones generally tend to break off easily), 1<sup>st</sup> segment stout, slightly expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> a little shorter than the preceding, stouter, slightly expanded apically; 5<sup>th</sup> about as long as 3<sup>rd</sup> but narrowed basally, remaining gradually increasing in length distally and each narrowed at base. Pronotum a trifle longer than broad, anteriorly about as wide as head, sides straight, depressed, gently widened posteriorly, hind angles and margin rounded, median sulcus fine but distinct, prozona tumid, differentiated from flat metazona. Elytra and wings of equal length, former with hind margin obliquely truncated, sparsely pubescent. Legs short, femora swollen, hind tarsi with 1<sup>st</sup> segment slightly

shorter than the 3<sup>rd</sup>; 2<sup>nd</sup> short, about as long as broad; claw without an arolium. Abdomen fusiform, tergites convex, smooth, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites almost obsolete. Penultimate sternite transverse, hind margin lightly concave, postero-lateral angles distinct. Ultimate tergite transverse, narrowed posteriorly, disc weakly convex, posteriorly in middle with a slight depression, hind margin truncated in middle, laterally above bases of forceps oblique and concave. Pygidium long, a little more than double its width, subvertical at base, afterwards horizontal, sides lightly convex, hind margin emarginated, angles acute. Forceps remote and stout at base, afterwards tapering apically, cylindrical, almost straight, in apical one third gently incurved, internally differentiated into dorsal and ventral borders, ventral border with a few fine teeth in basal half. Genitalia with parameres narrowed apically; virga with concentric coils.



**Figs. 153-159.** *Circolaba bhatiai* Srivastava, Holotype Male, 153. Dorsal view, 154. A few basal antennal segments, 155. Hind tarsi, 156. Posterior half of penultimate sternite, 157. Genitalia, 158. Paramere, enlarged; Female, 159. Ultimate tergite and forceps (all figs. after Srivastava, 2001b).

Female: Agrees with males in most of the characters except that the penultimate sternite obtuse in middle posteriorly; ultimate tergite weakly transverse; pygidium vertical, transverse, narrowed apically with slight emargination in middle and forceps simple, straight, inner margin with fine teeth and a larger tooth at middle.

*Measurements:* (in mm)

|                   | Male      | Female     |
|-------------------|-----------|------------|
| Length of body    | 4.2 - 4.4 | 4.0 - 5.2  |
| Length of forceps | 0.9 - 1.0 | 1.1 - 1.15 |

*Types:* Holotype Male, Paratypes 3 Males and 7 Females in ZSI.

*Distribution:* Known from the type locality only.

*Remarks:* This species comes very close to *Circolabia emarginata* (Srivastava) recorded from Philippines, in general body colouration and shape of male genitalia, especially virga with concentric coils but differs by its shorter (maximum length 6.2 mm, including forceps) body size (*vs* 7.8 mm, including forceps in *C. emarginata*), male pygidium narrow, a little over twice as long as broad with hind margin faintly concave (*vs* broad, flattened, only slightly longer than broad with hind margin deeply emarginated in middle).

***Circolabia rotundifrons* (Hincks)**

(Figs. 160-162)

*Labia rotundifrons* Hincks, 1954, *Verh. naturf. Ges. Basel*, **65**(1): 20-21, figs 14-15 (Type Male; Ceylon (now Sri Lanka): Nuwara Eliya, 6300 ft; in garden); Popham and Brindle, 1967, *Entomologist*, **100**: 59; Sakai, 1970, *Dermapterorum Catalogus, Praeliminaris*, **2**: 155; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 40; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 34.

*Paralabella rotundifrons*; Sakai, 1993, *Dermapterorum Catalogus*, **25**: 4900, 5147 (coloured photograph of Holotype Male), 5193 figs after Hincks, 1954 and black and white photograph of Holotype Male); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 586; Steinmann, 1990, *Das Tierreich*, **106**: 486, figs 918 - 919.

*Circolabia rotundifrons*; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 102.

Male: General colour blackish brown; antennae, mouth parts, sides of pronotum and legs except basal part of femora yellowish brown.

Head about as long as broad, frons tumid, sutures faint, postero-lateral angles rounded, hind margin feebly emarginated in middle. Eyes shorter than the post-ocular area. Antennae 11-segmented or more (apical ones generally broken off), 1<sup>st</sup> stout, about as long as the distance between antennal bases; 2<sup>nd</sup> short; 3<sup>rd</sup> onwards gradually increasing in length, each gently expanded apically except a few apical ones thin. Pronotum longer than broad, lateral margins straight, hind margin briefly rounded,

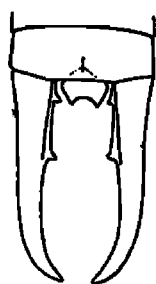
median sulcus distinct. Elytra well developed, finely pubescent, longer than the pronotum, meeting along the median line, humeral angles weak, hind margin concave. Wings of the same texture as elytra, exposed part about one fourth of elytra in length. Legs long, slender hind tarsi with 1<sup>st</sup> segment shorter than the 3<sup>rd</sup>; clad with thick pubescence on underside. Abdomen long, slender, narrowed basally, convex, punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites weakly developed. Penultimate sternite rounded posteriorly, median sulcus distinct. Ultimate tergite strongly transverse, lateral margin straight, hind margin in middle straight, above bases of forceps oblique, disc weakly depressed, posteriorly in middle with a triangular depression and a short median suture. Pygidium declivitous with weak basal tubercles, narrowed posteriorly, hind margin concave and angles with minute points. Forceps long, slender, depressed, tapering apically, tips gently hooked and pointed, inner margin in basal half differentiated into dorsal and ventral borders, armed at base with a small tooth and another, a little before middle but slightly bigger on ventral border. Genitalia with parameres acuminate apically, penis lobe with chitinous pad.

Female: Not known.

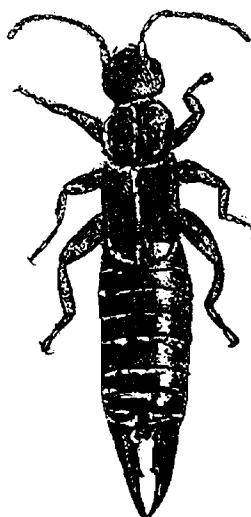
*Measurements:* (in mm)

Length of body  
(including forceps)

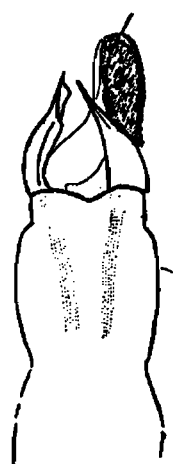
Male  
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**Figs. 160-162.** *Circolabia rotundifrons* (Hincks), Male, 160. Dorsal view, 161. Ultimate tergite and forceps, 162. Genitalia (fig. 160 after Sakai, 1993 and figs 161-162 after Hincks, 1954).

*Types*: Holotype Male (Hincks coll.) at MM.

*Distribution*: Sri Lanka, Nuwara Eliya, 6300 ft.

*Remarks*: This species is known by its Holotype Male. The above description is based upon the original description and the figures of Holotype (coloured and black and white) by Sakai (1993) along with the measurements.

Hincks (1954) has compared this species with *Labia triangulata* Burr, 1904 from Madagascar and *Labia dubronyi* Hebard, 1922 from Hawaii Isl but differs from both in the shape of pygidium and forceps.

At present *triangulata* is included under *Chaetospania* and *dubronyi* under *Circolabia*. When further studies on this species are undertaken the true taxonomic status could be ascertained.

***Circolabiapillicornis* (Motschulsky)**  
(Figs. 163-167)

*Forfiscelia pillicornis* Motschulsky, 1863, *Bull. Soc. nat. Moscou*, **36**: 2 (Type Female; Sri Lanka, das Montagnes de Nura Ellia).

*Labia pillicornis*; Dohrn, 1864, *Sttetin ent. Ztg.*, **25**: 427; Dubrony, 1879, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **14**: 363 (Female; Sarawak); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 72; Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**(2): 326; Burr, 1910, *Fauna British India, Dermaptera*: 120, fig. 40; Burr, 1911, *Genera Insect.*, **122**: 56; Burr, 1911, *Notes Leyden Mus.*, **34**: 28; Burr, 1911, *Dt. ent. Natn.-Bibilthk*, **2**(8): 62; Burr, 1912, *Annln naturh. Mus., Wien*, **26**: 88; Burr, 1912, *Notes Leyden Mus.*, **34**: 228 (Female; Java); Burr, 1912, *Sitz. ges. naturf. Fr. Berlin*, **1912**: 290; Burr, 1914, *Rec. Indian Mus.*, **10**: 290; Burr, 1915, *Tijdschr. Ent.*, **58**(Suppl.): 116; Kirby, 1904, *Syn. Cat. Orthoptera.*, **1**: 26; Borelli, 1915, *Boll. Musei zool. Anat. comp. R. Univ. Torino*, **30**(705): 4; Borelli, 1926, *Treubia*, **8**(3): 263; Borelli, 1926, *J. Malayan Br. R. Asiat. Soc.*, **4**: 390; Borelli, 1927, *Suppl. ent.*, **15**: 73; Borelli, 1932, *Bull. Raffles Mus.*, **7**: 86; Borelli, 1932, *J. fed. Malay. St. Mus.*, **17**(1): 189; Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**: 217 (Female; Pusa, Bihar); Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, **79**: 40; Günther, 1929, *Mitt. zool. Mus. Berlin*, **15**(1): 63; Hincks, 1950, *Ann. Mag. nat. Hist.*, (12)**8**: 354; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 77; Ramamurthi, 1967, *Ent. Medd.*, **35**: 347; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 16; Brindle, 1971, *Pacif. Insects*, **12**(3): 675; Brindle, 1971, *Ent. scand., Suppl.*, **1**: 226; Brindle, 1973, *Ann. Mus. Roy. Afr. Centr. Tervuren*, in *8° Zool.*, **205**: 171, figs 224 - 225 and 229; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 33; Srivastava, 1976, *Pacif. Insects*, **17**(1): 110; Srivastava, 1978, *Eos, Madr.*, **51**: 277; Srivastava, 1979, *Doriana*, **5**(233): 3, figs 6 - 9 (Showing variation in the Male pygidium); Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 60 (Female; Christmas Isl); Sakai, 1980, *Bull. Daito Bunka Univ.*, **20**: 41.

*Spirolabia pillicornis*; Steinmann, 1987, *Acta zool. hung.*, **33**(1-2): 184, figs 13 - 15; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 596; Steinmann, 1990, *Das Tierreich*, **106**: 509, figs 994 - 996; Sakai, 1993, *Dermapterorum Catalogus*, **25**: 4922 (coloured photographs), 5148; Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 49 (Male, Females; India: Arunachal Pradesh (Chug, 22444-2409 m), Assam (Gauhati, 330 m) and Manipur (Imphal, 825 m)).

*Circolabia pillicornis*: Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 101 (List of world species); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 193, figs 10 - 12 (Males, Females; India: Andaman Isls).

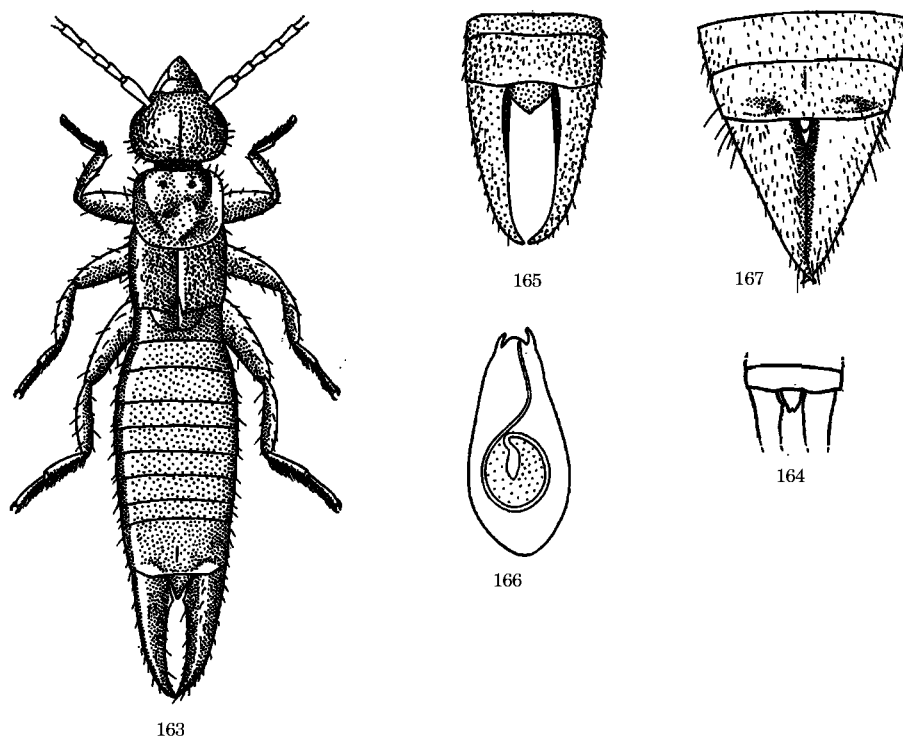
*Labia boettcheri*; Borelli, 1923, *Boll. Musei zool. Anat. comp. R. Univ. Torino*, **38**: 7 (Male, Female; Philippine Isls, North Palawan); Srivastava, 1984, *Rec. zool. Surv. India*, **5**(2-3): 106, figs 8 - 11 (from Type Male and Female) - **Syn n.**

*Paralabella boettcheri*; Sakai, 1993, *Dermapterorum Catalogus*, **25**: 5190 (excluding two figures of Females - Univ. Philippines, Los Banos - SS947-30).

*Labia browni* Hincks, 1954, *Proc. R. ent. Soc. Lond.*, (B) **23** (9-10): 159 (Male, Female and nymphs; Seychelles); Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 106 (treated as a synonym of *Labia boettcheri* Borelli, 1923).

Male: General colour yellowish brown with darker shade in some specimens; legs and mouth parts lighter. Cuticle striato-reticulated; pubescent.

Head transverse, sutures faint, frons convex, hind margin in middle scarcely emarginated, postero-lateral angles rounded. Antennae 15-segmented, 1<sup>st</sup> stout, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> about as long as broad; 3<sup>rd</sup> long,



**Figs. 163-167.** *Circolabia pillicornis* (Motschulsky), Male, 163. Dorsal view, 164-165. Ultimate tergite and forceps, 166. Genitalia; Female; 167. Ultimate tergite and forceps.

slender, expanded apically; 4<sup>th</sup> shorter than the preceding; 5<sup>th</sup> onwards gradually increasing in length, subpyriform. Pronotum transverse, lateral margins straight, reflexed, hind margin rounded, median suture faintly marked; prozona convex, well differentiated from flat metazona. Legs slender, claw without an arolium, tarsi clad with thick pubescence on underside. Elytra well developed, pubescent, meet along the median line, humeral angles weak. Wings long or short, of the same texture as the elytra. Abdomen elongated, widened in middle, tergites convex, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites weakly marked. Penultimate sternite transverse, broadly rounded posteriorly. Ultimate tergite transverse, narrowed posteriorly, disc depressed, hind margin in middle straight, laterally above bases of forceps oblique and concave. Pygidium longer than broad, narrowed apically with tip pointed or bifid; triangular, sometimes about as long as broad, in apical half triangular. Forceps remote or subremote, slender, straight, tapering apically with tip weakly hooked and pointed, internal margin crenulated, occasionally with a triangular point at base. Genitalia with parameres narrow, short; virga at base with a broadly circular loop.

Female: Agrees with males in most characters except that ultimate tergite strongly narrowed posteriorly; pygidium short, obtuse and forceps with branches contiguous, strongly tapering apically, tip gently hooked.

*Measurements:* (in mm)

|                   | Male     | Female   |
|-------------------|----------|----------|
| Length of body    | 4.0-5.5  | 4.0-5.2  |
| Length of forceps | 0.75-2.5 | 0.75-2.0 |

*Types:*

1. *Labia pillicornis* Motschulsky, 1863 - Type Male, repository not known.
2. *Labia boettcheri* Borelli, 1923 - Type Male and Paratype 1 Female at IPEG.
3. *Labia browni* Hincks, 1954 - Holotype Male, Allotype Female and Paratypes 1 Female and Nymph at BMNH.

*Distribution:* India: Arunachal Pradesh, 2244-2409 m; Assam, Gauhati, 330 m and Manipur, Imphal, 825 m.; Bihar (Pusa) and Andaman Isls.

World wide; in many parts possibly adventive.

*Remarks:* This species externally somewhat similar to *Labia minor* but the latter is quite distinct in having a long median spine projecting beyond the posterior margin of penultimate sternite, in males and genitalia with parameres deeply incised medially.

It is observed that male pygidium is variable in being either longer than broad or broad in basal half and triangular in apical half. In the light of this *Labia boettcheri* Borelli, 1923 and its synonym *Labia browni* Hincks, 1954, both are treated as synonyms.

Sakai (1993: 5190) has given two photographs of Females labelled as *Paralabella boettcheri* (Borelli); are not referable to this species. They both belong to two different other species.

***Circolabia dubronyi* (Hebard)**

(Figs. 168-172)

*Labia pygidiata*; Bormans (nèc Dubrony), 1882, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **18**: 340 (Oahu: Hawaii); Burr, 1910, *Fauna British India Dermaptera*: **122**, pl. 5, fig. 41 (Female; Hawaii); Burr, 1912, *Annln. naturh. Mus. Wien*, **26**: 87 (pars; Hawaii).

*Spongovostox pygidiatus* (pars); Burr, 1911, *Genera Insect*, **122**: 52 (Hawaii).

*Labia dubronyi* Hebard, 1922, *Occ. Pap. Bernice. P. Bishop Mus.*, **7**(14): 318, pl. 26, figs 6 - 7 (Type Male, Allotype Female; Hauula, Hawaii); Hincks, 1938, *J. fed. Malay St. Mus.*, **18**(2): 310; Hincks, 1954, *Verh. Naturh. Ges. Basel*, **65**: 20, figs 16 - 17; Zimmerman, 1948, *Insects of Hawaii*, **2**: 205; Rehn, 1949, *Trans. Amer. Ent. Soc.*, **75**: 104 (Male, Female; Tuamotu and Astral Is); Sakai, 1970, *Detmapterorum Catalogus, Praeliminaris*, **2**: 151; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 41.

*Spirolabia dubronyi*; Steinmann, 1987, *Acta. zool. hung.*, **33**(1-2): 183; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 595; Steinmann, 1990, *Das Tierreich*, **106**: 511, figs 947 - 949.

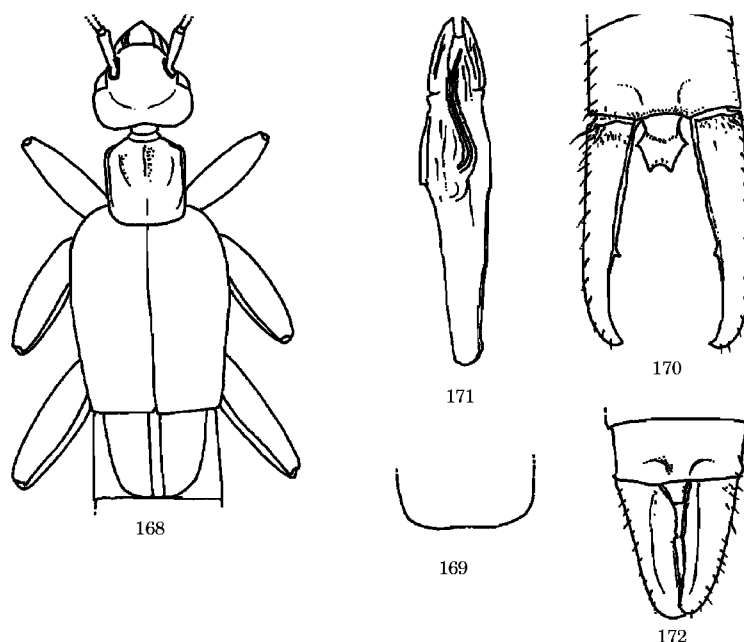
*Circolabia dubronyi*; Srivastava, 2001, *Rec. zool. Surv. India*, **95**(1-2): 102; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 175, figs 8 - 10 (Male, Female and 1 nymph; India: Great Nicobar IIs.).

*Labia swezeyi* Hebard, 1932, *Ent. News*, **43**: 31, fig. (Type Male and Female; Mount Kaala Oahu, Hawaiian Islands, 2000 ft.); Zimmerman, 1948, *Insects of Hawaii*, **2**: 205 (Proposed synonymy with *Labia dubronyi* Hebard, 1922); Rehn, 1949, *Trans. Am. Ent. Soc.*, **75**: 104 (Male, Female; Astral Island).

Male: General colour black with varying shades, antennae light brown with one or two apical segments and legs yellow; pronotum, elytra and wings dark; abdominal tergites and forceps lighter in colour.

Head smooth, longer than broad, frons convex, sutures faint but median one prominent, hind margin emarginated in middle. Eyes short, about half as long as the post-ocular length. Antennae 12-segmented, basal segment shorter than the distance between antennal bases, narrowed basally; 2<sup>nd</sup> short, about as long as broad; 5<sup>th</sup> long cylindrical, about as long as the preceding, a little stouter; 6<sup>th</sup> onwards gradually increasing in length, each gently narrowed basally; a few apical ones short and thin. Pronotum slightly longer than broad, slightly narrowed posteriorly, sides straight, gently reflexed, hind margin rounded, median suture distinct, prozona convex and metazona depressed. Elytra and wings well developed, thickly pubescent, with short hairs all over. Legs typical of the genus, hind tarsi compressed, 1<sup>st</sup> segment slightly longer than the 3r; 2<sup>nd</sup> short, about





**Figs. 168-172.** *Circolabia dubronyi* (Hebard), Male, 168. Anterior portion of body, 169. Posterior half of penultimate sternite, 170. Ultimate tergite and forceps, 171. Genitalia; Female, 172. Ultimate tergite and forceps.

as long as broad. Abdomen elongated, narrowed basally, tergites convex, punctulated, lateral folds on the 3<sup>rd</sup> and 4<sup>th</sup> tergites weakly marked. Penultimate sternite transverse, hind margin broadly rounded with slight emargination in middle. Ultimate tergite transverse, smooth, disc weakly convex, hind margin in middle feebly sinuate, laterally oblique and sinuate above the bases of forceps. Pygidium distinct, broadest in middle with a short tubercle laterally, hind margin emarginated in middle with postero-lateral angles produced into a sharp spine. Forceps with branches remote at base, stout, depressed, almost straight, gently incurved in apical one fourth, apices gently hooked, inner margin with distinct dorsal and ventral borders, ventral border with a sharp, short tooth at apical one third. Genitalia with parameres narrowed apically; virga thick, tubular with a broad bend at middle.

Female: Agrees with males in most characters except that body size slightly smaller; ultimate tergite narrowed posteriorly; pygidium declivitous, narrowed posteriorly and forceps almost straight, inner margin ventrally with a small tooth at middle.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 6.5 - 8.5 | 6.2 - 6.5 |
| Length of forceps | 2.5 - 2.9 | 1.5 - 1.7 |

*Types:*

1. *Labia dubronyi* Hebard, 1922 - Type Male, Allotype Female at BPM.
2. *Labia swezeyi* Hebard, 1932 - Type Male, Allotype Female and Paratypes 1 Male, 1 Female at BPM.

*Distribution:* Hawaiian; Polynesian and Great Nicobar Islands.

*Remarks:* Menozzi's (1941) record of the species from Caroline Islands (Ponape) based upon a female is referred to *Chaetolabia esakii* Menozzi (1941) by Brindle (1972a).

**Doubtful record**

***Paralabella fruhstorferi*** (Burr, 1891) - Record of this species by Sakai (1997) from India: Assam, Warangpong, 1403 - 1650 m, based on 10 Males, 7 Females is erroneous. On the basis of coloured photograph of a Male out of the above lot (l. c.) belong to *Cheatolabia bihastata* (Börg, 1904).

**Genus *Chaetospania* Karsch**

*Chaetospania* Karsch, 1886, *Berl. ent. Z.*, **30**: 87 (Type species: *Chaetospania inornata* Karsch, 1886, by monotypy); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 75; Burr, 1910, *Fauna British India, Dermaptera*: 127; Burr, 1911, *Dt. ent. Natn. - Bibilthk*, **1911**: 60; Burr, 1911, *J. Asiat. Soc. Beng. (N. S.)*, **7**: 785; Burr, 1911, *Genera Insect.*, **122**: 53; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 14; Srivastava, 1976, *Rec. zool. Surv. India, Occ. Pap.*, **2**: 35; Srivastava, 1982, *Rec. zool. Surv. India*, **79**: 477; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2):99; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 39; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3564; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 456; Steinmann, 1990, *Das Tierreich*, **106**: 174.

*Sparattina* Verhoeff, 1902, *Zool. Anz.*, **25**: 198 (Type species: *Sparattina flavicollis* Verhoeff, 1902); Burr, 1911, *Genera Insect.*, **122**: 35 (treated as synonym of *Chaetospania* Karsch, 1886).

*Paraspania* Steinmann, 1985, *Int. Quart. ent. (Izmir)*, **1**(1): (Type species: *Sparatta brunneri* Bormans, 1888); Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 99 (treated as synonym).

Body strongly depressed and pubescent. Head about as long as broad or longer; sutures weak or obsolete, posterior margin emarginated; eyes shorter than the post-ocular area; antennae with segments long, cylindrical; 4<sup>th</sup> and 5<sup>th</sup> equal to 3<sup>rd</sup> in length or slightly longer. Pronotum with anterior margin rounded. Legs, short, hind tarsi with 1<sup>st</sup> segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>. Elytra and wings well developed, pubescent. Abdomen somewhat depressed with long pubescence laterally; pygidium diamorphic, distinct, in males, variously shaped; forceps long, depressed, with long and short pubescence.

*Type species:* *Chaetospania inornata* Karsch, 1886.

*Distribution:* Oriental, Ethiopian and Australian Regions.

**Key to the species (based on males)**

- 1(2). Forceps with branches lamellate internally in basal one third or a little more, afterwards slender, strongly incurved; pygidium broad, about as long as broad, hind margin subtruncate ..... *C. bormansi* Srivastava
- 2 (1). Forceps with branches not lamellate internally in basal one third, sometimes only with a narrow flange; pygidium narrow, length variable (except in *C. anamalaiensis* Srivastava, it is about as long as broad)
- 3 (4). Pygidium broad, about as long as broad, in apical half divided into two triangular lobes by a median narrow cleft; virga spirally coiled ..... *C. anamalaiensis* Srivastava
- 4 (3). Pygidium narrower or broader than long, hind margin entire or emarginated but with a narrow cleft medially; virga with one or two coils near base, otherwise straight or broadly coiled
- 5 (10). Pygidium short, broader than long
- 6 (9). Size smaller (up to 6.5 mm); forceps remote, slender, lacking any sharp tooth internally
- 7 (8). Head, pronotum, elytra and wings smooth; pronotum slightly longer than broad, parallel sided; parameres narrow, tip acuminate ..... *C. alfredi* Srivastava
- 8 (7). Head and pronotum punctured, elytra strongly, almost rugose and wings less closely punctured; pronotum as broad as long, slightly narrowed posteriorly; parameres in most part broader, tip acute ..... *C. anderssoni* Brindle
- 9 (6). Size larger (9.9 - 10.2 mm); forceps depressed, internally with one or two teeth ..... *C. kurseongae* Hebard
- 10(5). Pygidium projecting, about as long as broad
- 11(14). Ultimate tergite with a pair of compressed tubercles in middle near hind margin; pygidium triangular
- 12(13). Pronotum gently widened posteriorly; pygidium narrowed apically with tip obtuse ..... *C. stiletta* Burr
- 13(12). Pronotum gently narrowed posteriorly; pygidium acuminate apically ..... *C. acuminata* Srivastava
- 14(11). Ultimate tergite without compressed tubercle near hind margin; pygidium variously shaped but not as above
- 15(16). Pygidium about as long as broad ..... *C. foliata* (Burr)
- 16(15). Pygidium longer than broad
- 17(20). Pygidium narrow, almost of uniform width throughout
- 18(19). Pygidium apically triangular with a tubercle ..... *C. thoracica* (Dohrn)
- 19(18). Pygidium with apical margin straight and three tubercles, one in middle and at lateral angles ..... *C. nigriceps* (Kirby)

- 20(17). Pygidium at base declivitous, narrowed, afterwards lamellate, broadened in middle
- 21(22). Pygidium on lateral margin of lamellate portion without teeth, hind margin with a deep inverted V-shaped emargination; virga at base with two broad loops ..... *C. Kapoori* Srivastava
- 22(21). Pygidium on the lateral margin of lamellate portion with teeth and hind margin broadly emarginated; virga at base incurved, simple and straight
- 23(24). Pygidium on sides straight and converging apically, often provided with a minute tooth in middle ..... *C. feae* Bormans
- 24(23). Pygidium with sides broadly convex and provided with a pair of minute, distantly placed teeth ..... *C. shillongensis* Srivastava

***Chaetospania bormansi* Srivastava**

(Figs. 173-178)

*Labia ridens* (pars) Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)14: 338 (Male, Female - var. *cyclolabia* and 1 example var. *Rangoon*); Burr, 1910, *Fauna British India, Dermaptera*: 121, pl. 5, fig. 42 (var. *cyclolabia*); Vanschuytbroeck, 1969, *Bull. Inst. R. Sci. nat. Belg.*, 45(41): 11 (var. *cyclolabia*).

*Labia ridens* (néc Bormans, 1894); Srivastava, 1979, *J. zool. Soc. India*, 27(1-2) (1975): 107, figs 3A - H (Male, Female: India: Manipur).

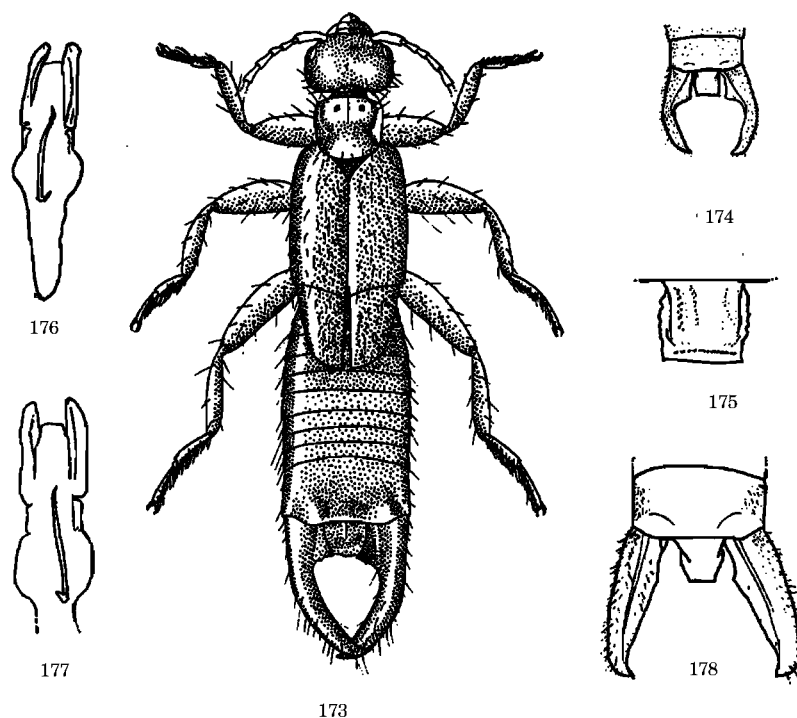
*Chaetospania bormansi* Srivastava, 1981, *Annali Mus. civ. Stor. nat. Giacomo Doria*, 83: 29, figs. 9 - 11 (Holotype Male, Paratypes 1 Male, 1 Female, Myanmar: Carin Chebá and Rangoon; 2 Females, Myamar; 1 Male, 1 Female, India: Manipur and 1 Male; Assam, Jatinga); Srivastava, 1995, *Rec. zool. Surv. India*, 95(1-2): 95; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 459; Steinmann, 1990, *Das Tierreich*, 106: 292, Figs 395 - 397; Sakai, 1991, *Dermapterorum Catalogus*, 23: 3730, 3790 (coloured photographs), 3719 - 3720 (black and white diagrams).

Head, elytra and wings black; other parts testaceous yellow or brown. Form moderately depressed; finely pubescent, sides of abdomen and forceps with long pubescence.

Male: Head about as long as broad, triangular, smooth, depressed, occiput feebly raised, sutures obsolete but marked by faint depression, hind margin slightly emarginated in middle. Eyes much shorter than the post-ocular area. Antennae 12-segmented or more since apical ones tend to break off, 1<sup>st</sup> stout, narrowed basally, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> about as long as the 3<sup>rd</sup>; 5<sup>th</sup> onwards stouter, gradually increasing in length except a few apical ones a little thinner. Pronotum about as long as broad, anterior and lateral margins straight, latter depressed, posterior angles and margin rounded, median sulcus distinct, prozona weakly raised and poorly differentiated from flat metazona. Legs short, hind tarsi with 1<sup>st</sup> segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>. Elytra and wings well developed, lightly punctate, former with hind margin oblique. Abdomen long, slender, slightly enlarged in middle, tergites moderately depressed, obscurely punctate, sides of

segments convex, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites obsolete. Penultimate sternite transverse, broadly rounded posteriorly. Ultimate tergite transverse, smooth, slightly depressed in middle close to hind margin and above the bases of forceps with slight elevations, hind margin in middle almost straight, laterally above bases of forceps oblique. Pygidium slightly longer than broad, at base narrowed, slanting in basal half, afterwards lamellate and flat, sides convex, serrated, postero-lateral angles with minute points, directed ventro-posteriorly and margin convex and area above, close to hind margin either raised or with a faint tubercle in middle. Forceps with branches at base separated by the pygidium, depressed, strongly bowed or slightly elongated, internally at base with a triangular lamellate area ventrally, extending up to the level of hind margin of pygidium, inner margin serrated, and posterior margin with a small tubercle in the middle, afterwards margin wavy, tips gently hooked and pointed. Genitalia as in the figs. 176-177.

Female: Agrees with males in most characters except that ultimate tergite comparatively narrowed posteriorly; pygidium about as long as broad, slanting, broader at base, apically narrowed and flat, sides convex, serrated, hind margin straight and forceps simple, straight, inner margin ventrally forming a flange, emarginated near base, afterwards strongly projecting with its margin smooth, dying out a little before apex.



**Figs. 173-178.** *Chaetospania bormansi* Srivastava, Male, 173. Dorsal view, 174. Ultimate tergite and forceps, 175. Pygidium, enlarged, 176-177. Genitalia; Female, 178. Ultimate tergite and forceps (figs. 174-176 from Holotype Male).

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 5.5 - 6.1 | 6.2 - 6.9 |
| Length of forceps | 1.5 - 1.7 | 1.5 - 1.7 |

*Types:* Holotype Male, Paratypes 1 Male, 1 Female in MSNG

*Distribution:* India (Assam, Jatinga; Manipur, Gulabthal) and Myanmar.

*Remarks:* This species was confused with *Labia ridens* (Bormans) as its cyclolabial form but differs by the shape of pygidium, forceps and genitalia, especially parameres and basal part of virga, in males and the shape of pygidium and forceps, in females. *Chaetospania mandex* Borelli, 1932 from Myanmar, comes close to this species but can be separated, in males, having the forceps somewhat straight with inner basal tooth weakly developed and followed by another smaller one, near apex and genitalia with comparatively longer and undulate virga.

***Chaetospania anamalaiensis* Srivastava**  
(Figs. 179-181)

*Chaetospania anamalaiensis* Srivastava, 1969, *Entomologist's Rec. J. Var.*, **81**: 206, figs. A - B (Holotype Male; India Tamil Nadu, Anamalai Hills, Cinchona, 1067 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. Pap.*, **2**: 35; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 95.

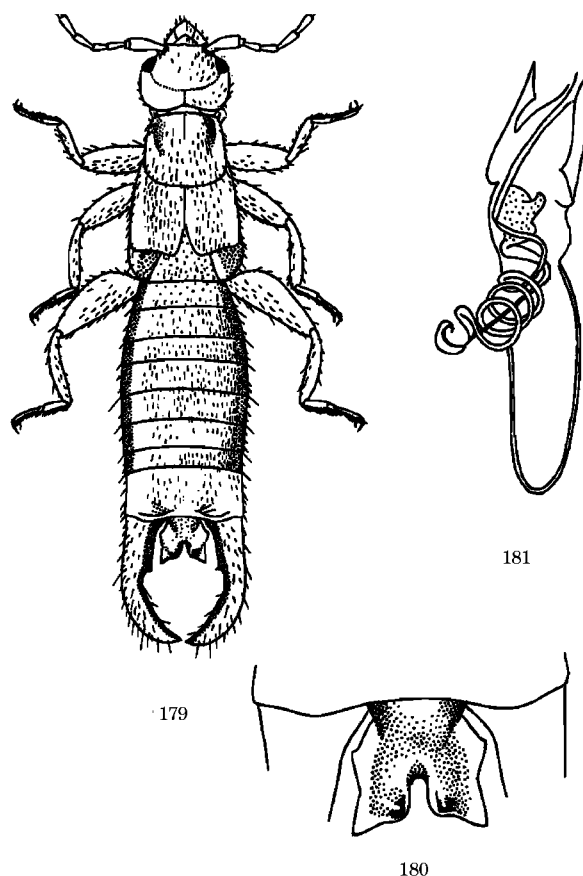
*Paraspania anamalaiensis*; Steinmann, 1985, *International Quart. ent.*, **1**(1): 14, figs. 1 - 2; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 588; Steinmann, 1990, *Das. Tierreich*, **106**: 518, figs. 963 - 964; Sakai, 1993, *Dermapterorum Catalogus*, **25**: 4993, 5225 (black and white diagrams).

Male: Head, pronotum, elytra and wings brownish black. Antennae brownish black with a few apical segments yellow. Legs brownish yellow, femora shaded with black; abdomen dark brown with shades of black basally. Form depressed and surface pilose.

Head triangular, frons convex, sutures faint, hind margin emarginated in middle. Eyes much shorter than post-ocular area. Antennae 12 segmented or more (since apical segments tend to break off easily), 1<sup>st</sup> segment stout, narrowed basally; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> almost equal to preceding; 5<sup>th</sup> a little longer than 3<sup>rd</sup>, remaining long and cylindrical. Pronotum as long as broad, anterior margin convex, sides straight, gently widened posteriorly, hind margin and angles rounded, median suture faint, prozona raised, well differentiated from flat metazona. Elytra longer than the pronotum, pubescent with long golden yellow hairs, hind margin obliquely truncate. Wings one third of elytra in length, of the same texture. Legs with femora thick, tibiae long and cylindrical, hind tarsi with 1<sup>st</sup> segment slightly longer than the 3<sup>rd</sup>. Abdomen depressed, narrowed basally, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> tergites poorly marked, sides

of abdominal segments broadly convex. Penultimate sternite transverse, hind margin rounded with slight emargination in middle. Ultimate tergite transverse, smooth, weakly depressed, above the bases of forceps with weak elevations, hind margin in middle emarginated, postero-lateral angles prominent. Pygidium distinct, sides diverging in basal one third with a small obtuse tubercle laterally, remaining portion emarginated in middle, posteriorly lateral angles acute and in middle with a deep cleft, extending about one third of the length of pygidium, thus dividing into two halves, bent downwards, with a small tubercle on either side of the mouth of the cleft. Forceps with branches remote, depressed in basal half, afterwards incurved, cylindrical, tapering apically with tips pointed, internally with a sharp, short tooth bend downwards at a little before middle. Genitalia as in fig. 181.

Female: Not known.



**Figs. 179-181.** *Chaetospania anamalaiensis* Srivastava, Holotype Male, 179. Dorsal view, 180. Pygidium, enlarged, 181. Genitalia.

*Measurements:* (in mm)

|                   |      |
|-------------------|------|
|                   | Male |
| Length of body    | 5.31 |
| Length of forceps | 1.48 |

*Types:* Holotype Male in ZSI.

*Distribution:* India: Tamil Nadu, Anamalai Hills, Cinchona, 1067 m.

*Ramarks:* This species comes close to *Chaetospania foliata* (Burr) from Sri Lanka but differs in males, having ultimate tergite transverse, pygidium with deep notch extending in apical one third and forceps with branches depressed in basal half, with a small, sharp tooth internally at a little before middle.

***Chaetospania alfredi* Srivastava**

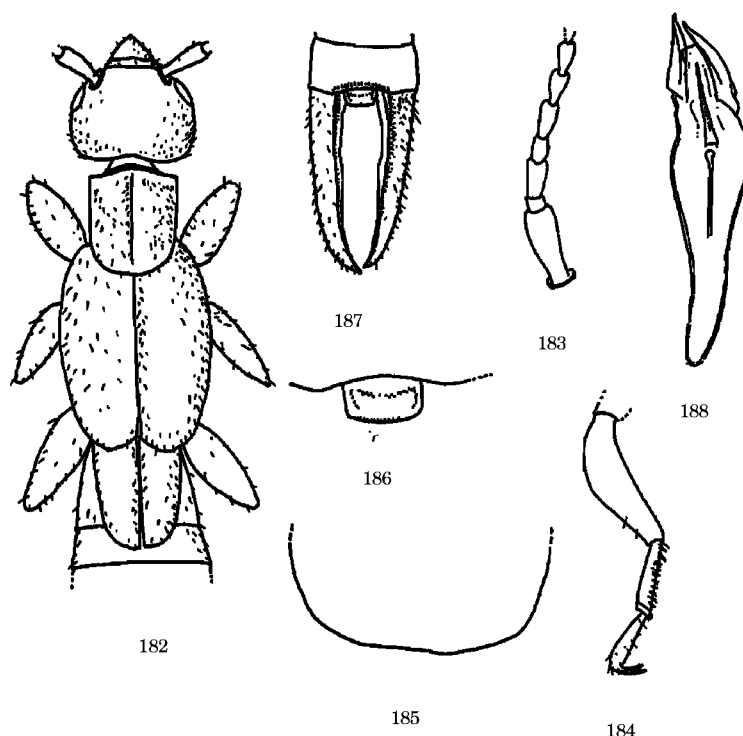
(Figs. 182-188)

*Chaetospania alfredi* Srivastava, 2002, *Rec. zool. Surv. India*, **100**(3-4): 134, figs 4-10 (Holotype Male; India: Lakshadweep, Minicoy Isl.).

Male: General colour blackish brown; antennae, pronotum, ultimate tergite a little lighter in colour; mouth parts, tibiae apically and basally and whole of tarsi yellow. Finely pubescent, sides of abdomen and forceps with long hairs.

Head slightly longer than broad, depressed, smooth, sutures obsolete, postero-lateral angles rounded, hind margin in middle emarginated. Eyes shorter than the post-ocular area. Antennae 12-segmented, 1<sup>st</sup> stout, narrower basally, slightly longer than the distance between antennal bases; 2<sup>nd</sup> about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> slightly shorter than the preceding; 5<sup>th</sup> almost equal to 3<sup>rd</sup> in length but slightly stouter; 5<sup>th</sup> onwards segments gradually increasing in length, stouter and each narrowed at base, segments 11<sup>th</sup> and 12 thin, rod shaped. Pronotum slightly longer than broad, smooth, sides parallel, depressed, hind margin rounded, median sulcus faint, prozona weakly raised and poorly differentiated from depressed metazona. Elytra and wings well developed, smooth, former with humeral angles prominent, meeting along the median line, apical margin convex, latter half as long as the elytra, meeting along the median line. Legs short, stout, femora swollen, especially fore and hind pair, hind tibiae about as long as the tarsi; hind tarsi with 1<sup>st</sup> segment slightly longer than the 3<sup>rd</sup>; 2<sup>nd</sup> short, about as long as broad, claws without an arolium. Abdomen convex, smooth, narrowed at base, gradually enlarging apically. Penultimate sternite transverse, hind margin briefly rounded, scarcely emarginated in middle. Ultimate tergite quadrate, depressed, smooth, gently widened posteriorly, hind margin incrassate, gently emarginated in middle, above the bases of forceps oblique. Pygidium vertical, transverse, subtruncate posteriorly. Forceps separated at base by pygidium, tapering apically, almost straight in basal two





**Figs. 182-188.** *Chaetospania alfredi* Srivastava, Holotype Male, 182. Anterior portion of body; 183. A few basal antennal segments, 184. Hind leg; 185. Hind portion of penultimate sternite, 186. Pygidium, enlarged, 187. Ultimate tergite and forceps; 188. Genitalia (all figs. after Srivastava, 2002b).

thirds, afterwards gently incurved, tip gently hooked and pointed, inner margin with dorsal border sharp, straight, ventral border in middle a little projecting. Genitalia with parameres narrowed apically, tip acuminate; virga stout.

Female: Not known.

*Measurements:* (in mm)

|                   | Male |
|-------------------|------|
| Length of body    | 4.6  |
| Length of forceps | 1.5  |

*Type:* Holotype Male in ZSI.

*Distribution:* India: Lakshadweep, Minicoy Isl.

*Remarks:* Amongst the Oriental species it comes close to *Chaetospania anderssoni* Brindle, 1971, from Sri Lanka but differs in having head, pronotum, elytra and wings smooth (*vs* head and pronotum punctured, elytra strongly punctured, almost rugose and

wings less closely punctured in *C. anderssoni*); pronotum slightly longer than broad, parallel sided (*vs* about as long as broad, slightly narrowed posteriorly) and parameres narrowed apically, tip acuminate (*vs* broader in most part, tip acute).

***Chaetospania anderssoni* Brindle**

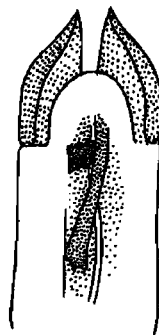
(Figs. 189-192)

*Chaetospania anderssoni* Brindle, 1971, *Ent. scand. Suppl.*, **1**: 227, Figs. 35-37 (Holotype Male, Allotype Female; Ceylon: Western Prov., Yakkala, 18 mi NE of Colombo); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 35; Srivastava, 1982, *Rec. zool. Surv. India*, **79**: 478, fig. 1B; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 99 Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 40; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3716, 3789 (coloured photograph of Male - Sri Lanka, USNM); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 456-457; Steinmann, 1990, *Das Tierreich*, **106**: 220, figs, 383-385.

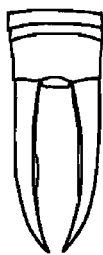
Male; Blackish, shining; antennae dark brown; femora dark brownish with apices yellow, tibiae and tarsi yellow; abdomen and forceps reddish. Strongly pubescent.



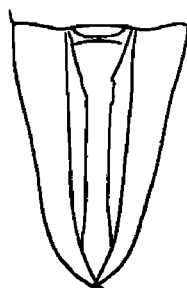
189



191



190



192

**Figs. 189-192.** *Chaetospania anderssoni* Brindle, Holotype Male, 189. Anterior portion of body, 190. Hind portion of body, 191. Genitalia; Female, 192. Ultimate tergite and forceps (all figs. after Brindle, 1971).

Head transverse, punctate, hind margin emarginated in middle. Eyes shorter than the post-ocular area. Antennae 9-segmented or more (since apical segments tend to break off easily), 1<sup>st</sup> stout, shorter than the distance between antennal bases; 2<sup>nd</sup> about as long as broad; 3<sup>rd</sup> slender, about one and half times longer than broad; 4<sup>th</sup> narrowed at base, about as long as broad; 5<sup>th</sup> slightly longer than 4<sup>th</sup> but shorter than 6<sup>th</sup>; 5<sup>th</sup> to 9<sup>th</sup> equal in length, each narrowed at base. Pronotum about as long as broad, punctate, sides parallel, hind margin rounded. Elytra and wings well developed, former strongly punctate, rugose; latter less so. Abdomen elongated, slightly enlarged in middle, tergites punctured. Ultimate tergite transverse, median part of hind margin rugose. Pygidium transverse. Forceps with branches remote at base, almost straight in basal half, afterwards gently incurved, tapering to pointed apices, inner margin differentiated in to dorsal and ventral borders, former in middle a little projecting. Genitalia as in fig. 191.

Female: Agrees with males in most characters except that the branches of forceps almost straight with apices gently incurved.

*Measurements:* (in mm)

|                   | Male | Female |
|-------------------|------|--------|
| Length of body    | 5.0  | 4.0    |
| Length of forceps | 2.5  | 1.0    |

*Types:* Holotype Male, Allotype Female at ZILA.

*Distribution:* Sri Lanka, from the type locality only.

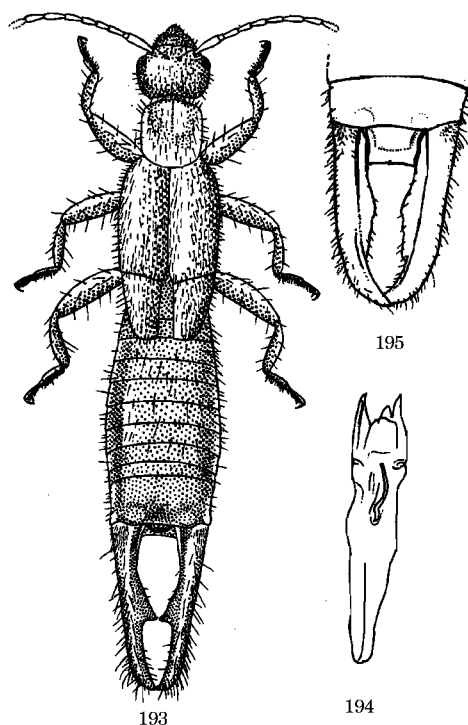
*Remarks:* The above account of the species is based upon the original description after Brindle (1971) and the black and white photograph of 1 Male from Sri Lanka: Kan Dist. Kandy, Die Undawatakele, det. Brindle, 1975 (Sakai, 1991: 3910). In this specimen antennae have 12 segments.

***Chaetospania kurseongae* Hebard**  
(Figs. 193-195)

*Chaetospania kurseongae* Hebard, 1923, *Mem. Dep. Agr. India, ent. Ser.*, **7**: 215, pl. 19, figs 10-11 (Holotype Male, Allotype Female; Kurseong, North Bengal, alt. 4500 ft.); Kapoor, 1969, *Agra Univ. J. Res. (Sci)*, **16**(1)(1967): 15; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 37; Srivastava, 1982, *Rec. zool. Surv. India*, **79**: 476, fig. C (Ultimate tergite and forceps from Holotype Male); Srivastava, 1993, *Rec. zool. Surv. India*, **91**(1): 78, fig. 40-41 (Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, Pt. **4**: 413, figs. 142-144 (all from Holotype Male); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 39; Sakai, 1991, *Dremapterorum Catalogus*, **23**: 3751, 3788 (colour photographs of Holotype Male, Allotype Female), 3895 (black and white diagrams); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 464; Steinmann, 1990, *Das Tierreich*, **106**: 221, figs 386-387.

Male: Head, elytra, wings and most of the segments of antennae chocolate brown, except a few apical ones yellowish. Legs yellow; abdomen brown, ultimate tergite and forceps darker with shades of black. Body pubescent, moderately depressed.

Head depressed, sutures fine, hind margin emarginated in middle. Eyes short, about half as long as the post-ocular area. Antennae 11 segmented, 1<sup>st</sup> stout, twice as long as the 3<sup>rd</sup>; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical and equal to 4<sup>th</sup> in length, remaining gradually increasing in length, each gently narrowed basally. Pronotum slightly longer than broad, sides depressed and straight, hind angles and margin briefly rounded, median sulcus; prozona weakly raised, not well differentiated from depressed metazona. Legs short, femora stout, hind tarsi with 1<sup>st</sup> segment about as long as the 3<sup>rd</sup>, clad with short and long pubescence on underside. Elytra and wings well developed. Abdomen moderately depressed, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites obsolete, gently dilated in middle, sides of segments convex. Penultimate sternite briefly rounded posteriorly with slight emargination in middle. Ultimate tergite transverse, smooth, posteriorly above the bases of forceps feebly tumid and depressed in middle. Pygidium filling the space between the branches of forceps, at base declivitous and convex, afterwards produced as a horizontal plate, diverging laterally, hind margin truncated. Forceps with branches straight, tapering, apically, apices gently hooked and meeting,



**Figs. 193-195.** *Chaetospania kurseongae* Hebard, Holotype Male, 193. Dorsal view, 194. Genitalia; Female, 195. Ultimate tergite and forceps.

internal margin with a sharp, triangular and posteriorly directed tooth at a little beyond middle. Genitalia as in fig. 194.

Female: Agrees with males in most characters except that ultimate tergite posteriorly above the bases of forceps with slight elevations; pygidium with hind margin slightly emarginated and forceps internally with a broader and undulated flange.

*Measurements:* (in mm)

|                   | Male       | Female      |
|-------------------|------------|-------------|
| Length of body    | 7.5 - 8.0  | 7.5 - 7.7   |
| Length of forceps | 2.5 - 2.58 | 2.25 - 2.45 |

*Types:* Holotype Male, Allotype Female at ANSP.

*Distribution:* India: West Bengal (Darjeeling Dist., Kurseong, 1372 m.) and Arunachal Pradesh (Tirap Dist., Namdapha Area).

In the collection of ZSI following specimen, not so far reported, are present:

India: Arunachal Pradesh, Siang Dist., Sideng Basti, 1 Male, (genitalia mounted between two coverslips and attached to the pin of the specimen), 4.ii.1985, coll. and determined by G. K. Srivastava.

*Remarks:* Holotype Male (Type No. H 770) and Allotype Female were examined through the courtesy of Dr. Daniell Otte, Chairman, Department of Entomology, Philadelphia Academy of Sciences, Philadelphia (U.S.A.).

Record of this species based upon a Female from Philippine Isls: Luzon by Srivastava (1976b) is referable to *Chaetospania borelli* Srivastava, 1987. Besides, Borelli's (1926) record of this species from Phillipines as *var. a* belongs to the *Chaetospania borelli* Srivastava and *var. b* to *Chaetospania makilingae* Srivastava, 1987.

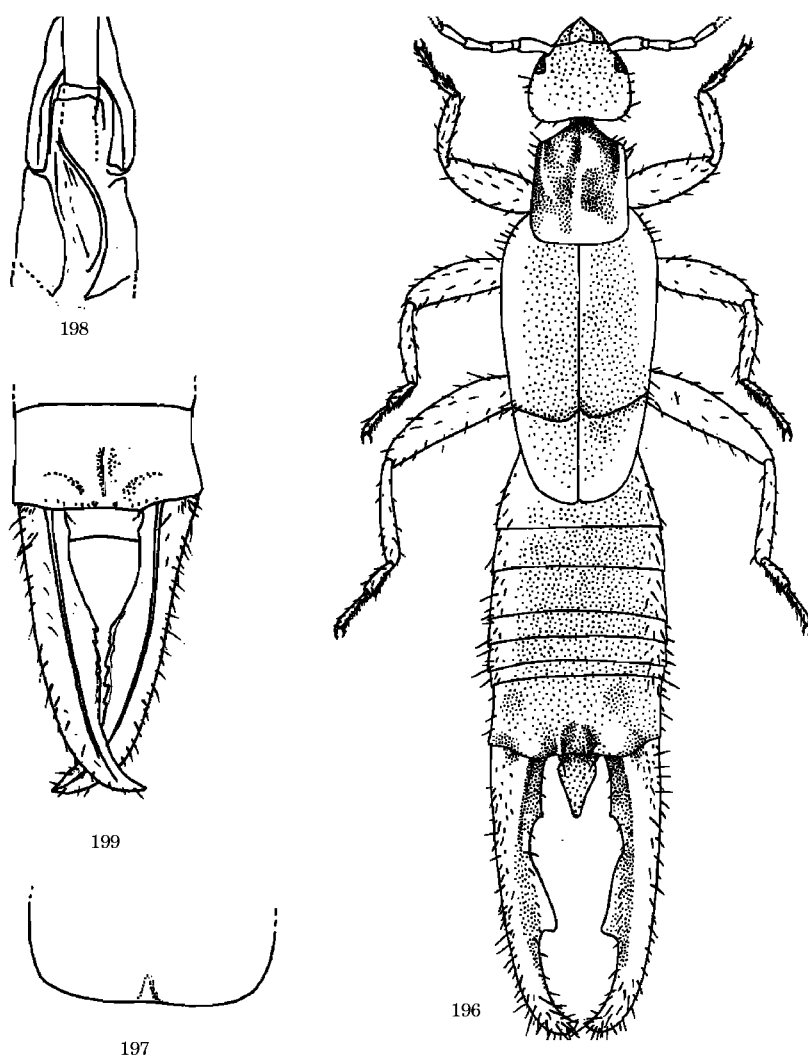
### ***Chaetospania stiletta* Burr**

(Figs. 196-199)

*Chaetospania stiletta* Burr, 1911, *Asiat. Soc. Beng.* (N. S.), **7**: 786 (11 Males, 7 Females; India: Madura Dist., Shembaganur); Burr, 1916, *J. R. micr. Soc.*, **1916**: 5, pl. 1, fig. 6 (male genitalia); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 15; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 101; Sakai, 1980, *Bull. Daito Bunka Univ.*, **20**: 39; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3661, 3786 (coloured photographs of Syntype Male - ANSP and Geneve), 3891 (black and white diagrams); Srivastava, 1976, *Rec. zool. Surv. India, Occ. Pap.*, **2**: 38; Srivastava, 1982, *Rec. zool. Surv. India*, **79**: 477, fig. E (Ultimate tergite and forceps of a Syntype Male); Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1): 45 (Syntypes 1 Male, 1 Female ex B. N. Ramamurthi coll.); Steinmann, 1979, *Dt. ent. Z.*, **26**: 297; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 477; Steinmann, 1990, *Das Tierreich*, **106**: 237, figs. 421-423.

Male: General colour black; legs yellowish, anterior femora black; abdomen reddish brown with shades of black. Body pubescent, on the sides of abdomen and on forceps pubescence dense.

Head depressed, smooth, hind margin in middle emarginated. Eyes short, about one third as long as the post-ocular area. Antennae 11-segmented or more (since apical ones tend to break off easily), basal segment stout, narrowed basally, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> equal in length, slightly narrowed basally; 5<sup>th</sup> onwards gradually increasing in length and thinning. Pronotum longer than broad, anterior margin convex, sides straight, gently widened posteriorly, hind margin briefly rounded, pro- and metazona little differentiated. Legs typical of the genus, hind tarsi covered with thick pubescence on underside, 1<sup>st</sup> and



**Figs. 196-199.** *Chaetospania stilletta* Burr, Cotype Male, 196. Dorsal view, 197. Posterior portion of penultimate sternite, 198. Genitalia; Female, 199. Ultimate tergite and forceps.

3<sup>rd</sup> segments equal in length; 2<sup>nd</sup> short, about as long as broad. Elytra and wings well developed, finely punctate. Abdomen slender, gradually enlarging posteriorly, tergites punctulated. Penultimate sternite transverse, punctulate, pilose, hind margin rounded with slight concavity in middle. Ultimate tergite transverse, disc depressed, in the middle close to hind margin with a depression and on either side with a compressed tubercle, sides straight, hind margin trisinate, oblique above the roots of forceps, postero-lateral angles sharp. Pygidium at base declivitous, afterwards horizontal, triangular with tip obtuse. Forceps with branches remote, depressed, tapering apically, gently incurved in apical one third, tip acute, trigonal in basal one third, inner margin with a sharp flange armed with a minute tooth at basal one third and another stronger, larger and triangular tooth in apical one third. Genitalia as in fig. 198.

Female: Agrees with male in most characters except that penultimate sternite obtuse in middle posteriorly; pygidium at base declivitous, convex, apical portion horizontal, transverse, hind margin subtruncate.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 7.5 - 8.0 | 7.5- 8.25 |
| Length of forceps | 2.0 - 3.0 | 2.0 - 2.5 |

*Types:* Syntypes 11 Males, 8 Females distributed in BMNH. ANSP. MHNG and ZSI ex B. N. Ramamurthi coll.

*Distribution:* Known only by Syntypes from India: Tamil Nadu, Madura Dist., Shembaganur (near Kodaikanal).

*Remarks:* Hebard (1923) records this species on 3 Males, 2 Females and 3 Juv. from Kodaikanal, Madras Presidency (India: Tamil Nadu, Madura Dist.). These specimens, on the basis of acuminate pygidium, in males, are referred to *Chaetospania acuminata* Srivastava, 1990.

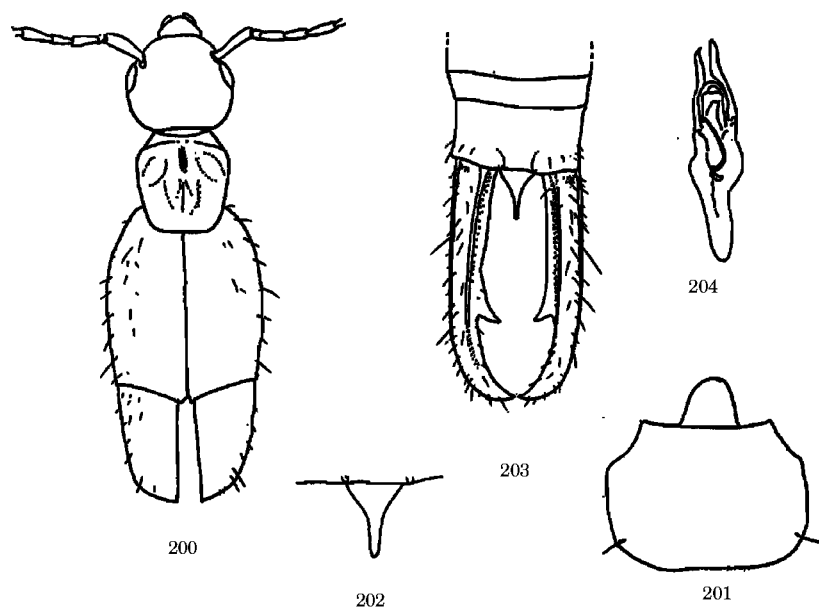
***Chaetospania acuminata* Srivastava**  
(Figs. 200-204)

*Chaetospania stiletta* (nèc Burr, 1911); Hebard, 1923, *Mem. Dep. Agr. India, ent. Ser.*, **7**: 217, pl. 19, figs. 12 - 13 (3 Males, 2 Females and 3 Juv.; India: Kodaikanal, Madras Presidency).

*Chaetospania acuminata* Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1): 44, 66 - 70 (Holotype Male, Paratype 1 Female; India: Mysore (now Karnataka), 4 mi NW of Sidapur, 900 m).

Male: General colour brownish black; antennae with a few apical segments yellow; legs brown with fore femora black; abdominal tergites somewhat brownish with shades of black; ultimate tergite brownish posteriorly and forceps blackish brown. Form weakly depressed. Short and long pubescence present all over the body.

Head triangular, about as long as broad, depressed, sutures obsolete, obscurely punctured, hind margin emarginated in middle. Eyes not prominent, shorter than the post-ocular area. Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, almost equal to the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> almost equal to preceding, a shade stouter; 5<sup>th</sup> slightly longer than 3<sup>rd</sup>, slightly narrowed at base, remaining gradually increasing in length except a few apical ones shorter. Pronotum slightly longer than broad, smooth, anterior margin convex, sides straight, depressed, slightly narrowed posteriorly, hind margin sub-truncate, median sulcus obsolete, except for a faint depression in anterior half only, prozona weakly raised and metazona depressed. Legs typical of the genus, hind tarsi with 1<sup>st</sup> segment equal in length to 3<sup>rd</sup>; 2<sup>nd</sup> short, broader than long. Elytra and wings well developed, punctures sparse and shallow. Penultimate sternite with posterior margin rounded with slight emargination in middle. Ultimate tergite transverse, depressed above, sides straight, hind margin slightly emarginated in middle, laterally oblique, emarginated, above the bases of forcps feebly raised and in middle depressed with a pair of distantly placed compressed tubercles. Pygidium roughly triangular, at base declivitous, apically produced into a sharp point. Forceps with branches long, slender, gently incurved apically, trigonal in basal one third, close to external margin with a faint convexity, internally forming a sharp flange with a triangular tooth at apical one third, clad with long pubescence. Genitalia with parameres elongated, tapering apically; virga tubular, broadly incurved at base with a reniform vesicle.



**Figs. 200-204.** *Chaetospania acuminata* Srivastava, Holotype Male, 200. Anterior portion of body, 201. Penultimate sternite, 202. Pygidium, enlarged, 203. Ultimate tergite and forceps, 204. Genitalia (all figs. after Srivastava, 1990).



Female: Agrees with males in most characters except that ultimate tergite lacks tubercles on the posterior median depression; pygidium longer than broad, at base broader, declivitous, apically narrower, lateral margins parallel, hind margin faintly concave in middle and forceps comparatively more compressed, internal margin more prominent, wavy, gradually merging with inner margin a little before apex.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 7.5 - 9.7 | 6.5 - 9.1 |
| Length of forceps | 2.0 - 3.3 | 1.7 - 3.2 |

*Types:* Holotype Male, Paratype 1 Female in CAS.

*Distribution:* India: Mysore (now Karnataka), 4 mi SW of Sidapur, 900 m; Tamil Nadu, Madura Dist., Kodaikanal.

*Remarks:* This species comes close to *Chaetospania stiletta* Burr, from South India but differs in males, by the pronotum slightly longer than broad, gently narrowed posteriorly (*vs* distinctly longer than broad, lateral margins parallel in *C. stiletta*); pygidium drawn out into an acuminate point (*vs* pygidium laceolate) and inner flange of forceps with its free margin entire, terminating into a short, sharp tooth at apical one third (*vs* internal flange wavy with a small tooth near base and another larger, sharp and triangular at apical one third) and in female ultimate tergite lacking compressed tubercles in the median depression of ultimate tergite (*vs* present); pygidium longer than broad (*vs* broader than long) and inner flange of forceps with a shallow emargination at base, gradually dying out at apical one third (*vs* broader and with prominent emargination at basal one third).

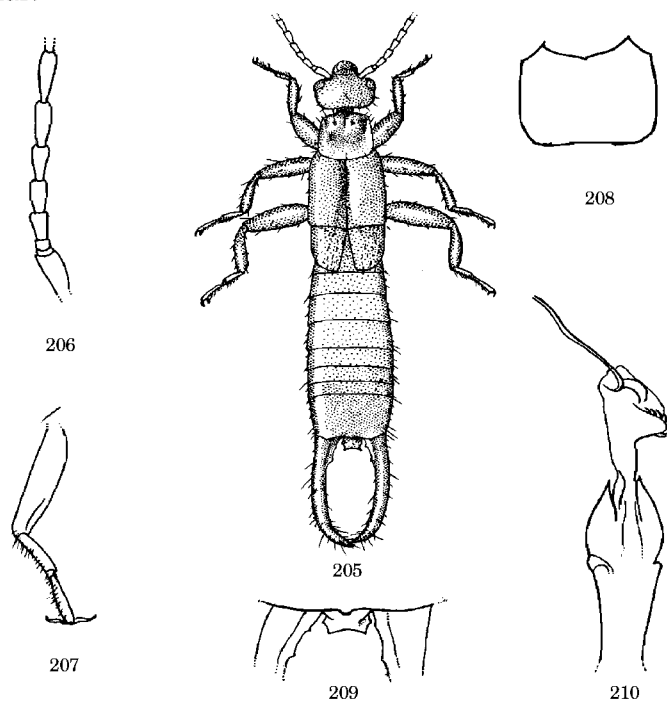
### ***Chaetospania foliata* (Burr)**

(Figs. 205-210)

*Chaetospania foliata* Burr, 1911, *Stettin ent. Ztg.*, **72**: 338 (1 Male; Ceylon); Burr, 1911, *J. Asiat. Soc. Beng. (N. S.)*, **7**(11): 785 - 786; Burr, 1911, *Genera Insect.*, **122**: 54, pl. 4, fig. 19; Burr, 1912, *Annln naturf. Mus. Wien*, **26**: 87 (Male; Isel Buru - doubtful identification); Sakai, 1970, *Dermapterorum Catalogus Praeliminaris*, **2**: 101; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 39; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3661, 3786 (coloured photograph of a Male - Sri Lanka, excluding figure labelled as Female, .... Mus. Geneve - SS -739 - 28....), 3890 - 3891 (black and white diagrams); Brindle, 1971, *Ent. scand., Suppl.* 1:227, fig. 31 (1 Male; Sri Lanka); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 37; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 99; Steinmann, 1979, *Folia ent. hung.*, **32**(1): 162 (Ceylon 3 exs at IZAP); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 477; Steinmann, 1990, *Das Tierreich*, **106**: 237, figs. 421 - 423.

Male: General colour shining blackish brown; antennae, legs, ultimate tergite and forceps lighter in colour and mouth parts yellow. Moderately pubescent.

Head slightly longer than broad, smooth, weakly depressed, slightly emarginate in middle posteriorly. Eyes prominent but slightly shorter than the post-ocular area. Antennae 11-segmented or more (since apical ones tend to break off easily on slight jerk), 1<sup>st</sup> stout, gently expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> about as long as broad; 3<sup>rd</sup> long, slender, gently expanded apically, slightly longer than 4<sup>th</sup> but shorter than 5<sup>th</sup> remaining gradually increasing in length and thinning. Pronotum slightly longer than broad, anterior margin convex, sides straight, gently widened posteriorly, hind margin briefly rounded, prozona not well differentiated from metazona. Legs with femora stout, hind tarsi with 1<sup>st</sup> segment slightly shorter than 3<sup>rd</sup>, covered with pubescence on underside. Abdomen elongated, parallel sided, weakly depressed, obscurely punctulate, feebly pubescent, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites poorly marked. Penultimate sternite with hind margin broadly rounded with slight emargination in middle. Ultimate tergite transverse, smooth, impunctate, narrowed posteriorly, hind margin in middle with a small tubercle. Pygidium about as long as broad, slanting at base, narrowed apically, afterwards horizontal portion laterally with a tubercle, hind margin concave, angles acute. Genitalia with parameres acute apically; virga long, tubular.



**Figs. 205-210.** *Chaetospania foliate* (Burr), Male, 205. Dorsal view, 206. A few basal antennal segments, 207. Hind leg, 208. Penultimate sternite, 209. Basal portion of forceps with pygidium, 210. Genitalia.

Female: Not known.

*Measurements:* (in mm)

|                   | Male      |
|-------------------|-----------|
| Length of body    | 5.5 - 7.0 |
| Length of forceps | 1.7 - 2.0 |

*Type:* Holotype Male in Dohrn's Coll.

Steinmann (1979a) has reported 3 exs of the species from Ceylon in the collection of IZAP. Perhaps one of these may be the Type of the species.

*Distribution:* Sri Lanka

*Remarks:* Record of the species from Buru Island (Burr, 1912) is doubtful. Besides, Steinmann (1983) records this species on 3 Males from Nepal. From the coloured photograph of a Male out of the above lot by Sakai (1991) it is evident it belongs to *Chaetospania feae* (Bormans).

The above description is based upon a Male from Sri Lanka det. by Brindle (1971).

***Chaetospania thoracica* (Dohrn)**

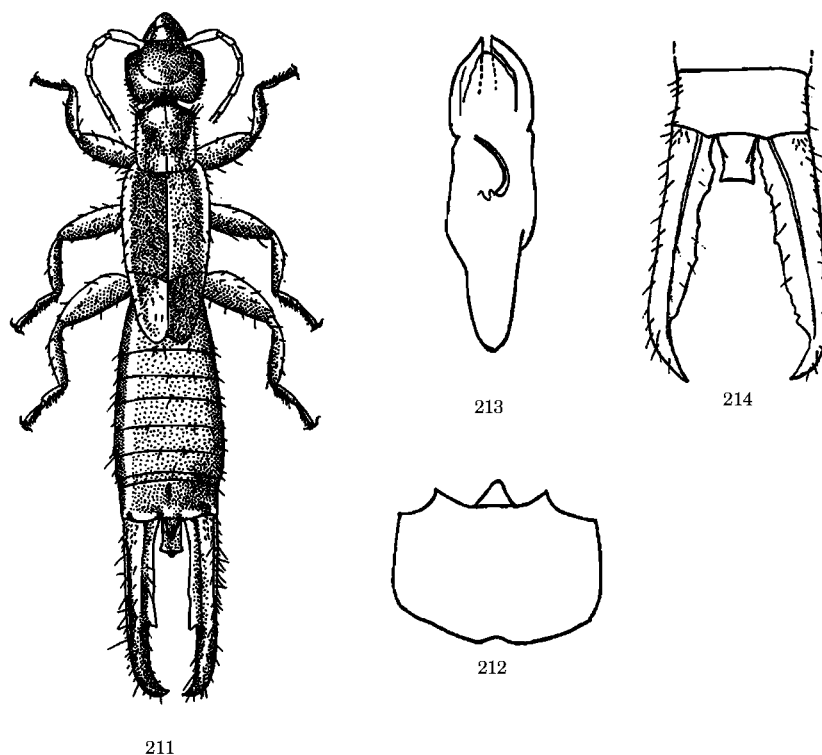
(Figs. 211-214)

*Platylabia thoracica* Dohrn, 1867, *Stettin ent. Ztg.*, **28**: 348 (1 Male, 1 Female; Penang (Malaysia); Ceylon); Dubrony, 1879, *Annali Mus. civ. Stor. Nat. Giacomo Doria*, **14**: 372; Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**6**: 436; Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**(34): 380; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 73, figs. 30a, b; Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**: 76; Burr, 1902, *Termètszer Füz.*, **24**: 482; Burr, 1910, *Fauna British India, Dermaptera*: 126, pl. 9, fig. 83; Burr, 1911, *Stettin ent. Ztg.*, **72**: 338; Burr, 1914, *Rec. Indian Mus.*, **10**: 291; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 22.

*Lobophora thoracica*; Scudder, 1876, *Proc. Boston nat. Hist. Soc.*, **18**: 322.

*Chaetospania thoracica*; Burr, 1911, *Genera Insect.*, **122**: 54; Burr, 1911, *Dt. ent Natn.-Biblthk*, **2**: 612; Burr, 1911, *Annln naturf. Mus. Wien*, **26**: 87 (1 Male; Ceylon); Burr, 1912, *Notes Leyden Mus.*, **34**: 228 (3 Males, 4 Females; Java); Burr, 1912, *Sitz. Ges. Naturf. Fr. Berlin*, **1912**: 223 (Female; Braslien); Burr, 1915, *Tidschr. Ent.*, **58** (Suppl.): 116 (1 Male; Simalur Isl, Sinabang); Burr, 1916, *J. R. micr. Soc.*, **1916**: 7, pl. 2, fig. 3 (male genitalia); Borelli, 1925, *Boll. Musei. Zool. Anat. Comp. R. Univ., Torino*, **30**(705): 4 (2 Males, 1 Female; Philippine Islands); Borelli, 1926, *Treubia*, **8**: 261 (1 Male; Soekaboemi); Borelli, 1927, *Suppl. ent.*, **15**: 71; Borelli, 1931, *Rev. suisse Zool.*, **38**: 307 (1 Male, 2 Females; India: Nilgiri, Hill Grove and 1 Male; Coonoor, 1600 m); Borelli, 1932, *Bull. Raffles Mus.*, **7**: 851 (Female; Malaysia, Perak, Batang Padang Jor camp, 549 m); Borelli, 1932, *J. fed. Malay. St. Mus.*, **7**: (1 Male, 1 Female; Borneo: Mt. Murud, 586 m.); Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, **79**: 37 (9 Males, 15 Females; Sumatra: Fort de Cock); Shiraki, 1928, *Insect Matsum.*, **3**(1): 12 (Formosa); Günther, 1934, *Arch. Hydrobiol.*, **12**(4)(Suppl.): 507, figs. 5 - 7 (3 Males, 3 Females; West Java); Hincks, 1947, *Ark. Zool.*, **39A**(1): 21 (Myanmar); Boeseman, 1954,

*Zool. Verh., Leiden*, **21**: 71, fig. 17d; Ramamurthi, 1967, *Ent. Medd.*, **35**: 243 (1 Male; Bismarck Islands, New Britain, Yalom, 1000 m); Popham and Brindle, 1967, *Entomologist*, **100**: 258; Brindle, 1967, *Ark. Zool.*, (2)**20**, No. 7: 160; Brindle, 1968, *Ark. Zool.*, **20**(25): 541; Brindle, 1971, *Ent. scand., Suppl.*, **1**: 227, figs 32 - 33 (Male, Female; Sri Lanka); Brindle, 1976, *Rev. zool. Afr.*, **90**: 443; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1)(1967): 15; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 39; Srivastava, 1987, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **86**: 491, figs 17 - 19 (1 Male, 1 Female; Sumatra); Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1-4) 42 (Male; India: Kerala, Thakkady dist., Perryar lake, 900 m); Srivastava and Kovak, 1993, *Rec. zool. Surv. India*, **93**(1-2): 256 (Male; Malaya); Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 101; Steinmann, 1979, *Folia ent. hung.*, **32**: 161 (Typus Ceylon; Cotypus Java); Steinmann, 1981, *Acta zool. hung.*, **27**: 204, figs. 49 - 50; Steinmann, 1983, *Reichenbachia Mus. Tierk. Dresden*, **21**(7): 50 (Philippine Islands); Steinmann, 1984, *Acta zool. hung.*, **30**: 196 (1 Male, 1 Female; Bali); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 479; Steinmann, 1990 *Das Tierreich*, **106**: 241, figs 430 - 432; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 39; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3581, 3781, 3784 (coloured photographs), 3870 - 3871 (black and white diagrams, 1 Male, 1 Female - ex BMNH from India: Pondicherry, Karaikal); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 49 (Male, Females; India: Arunachal Pradesh, Phutang, 2376-2409 m).



**Figs. 211-214.** *Chaetospania thoracica* (Dohrn), Male, 211. Dorsal view, 212. Penultimate sternite, 213. Genitalia; Female, 214. Ultimate tergite and forceps.

Male: General colour blackish brown, sometimes yellowish brown; head dark brown or blackish brown; elytra and wings black; legs and pronotum yellowish; abdomen and forceps dark blackish brown to yellowish brown. Body pubescent, on sides of abdomen pubescence long and dense.

Head longer than broad, weakly depressed, occiput raised, sutures faint, hind margin distinctly emarginated in middle. Eyes prominent, but about half as long as the post-ocular area. Antennae 10-segmented or more (since the apical segments tend to break off easily on slightest jerk), 1<sup>st</sup> stout, expanded apically, slightly longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> two times longer than broad, gently expanded apically; 4<sup>th</sup> equal to preceding but stouter; 5<sup>th</sup> a trifle longer than 4<sup>th</sup>, remaining gradually thinning. Pronotum slightly longer than broad, lateral margins parallel, hind margin briefly rounded, median sulcus faint; prozona raised and metazona depressed. Elytra and wings well developed, Legs short, femora stout, hind tarsi with 1<sup>st</sup> and 3<sup>rd</sup> segments equal in length; 2<sup>nd</sup> short, broader than long, covered with thick setae and pubescence on underside. Abdomen weakly depressed, elongated, gradually enlarging posteriorly. Penultimate sternite rounded posteriorly with slight emargination in middle. Ultimate tergite transverse, sides parallel, hind margin trisinate, laterally above the bases of forceps oblique, disc weakly depressed, median sulcus faintly marked by a linear depression in basal half only, posteriorly in middle with a slight depression with folds on either side. Pygidium at base slanting and convex, horizontal portion longer than broad, apex triangular with a median tubercle. Forceps long, depressed, almost straight in basal two thirds, afterwards tapering, gradually incurved to gently hooked apices, trigonal above in basal half, internal margin lamellate, border undulated terminating in a sharp, triangular, posteriorly directed tooth. Genitalia with parameres broad in basal half, gradually narrowing to acute apex; virga distinct, short, broadly incurved, at base thickened.

Female: Agrees with males in most characters except penultimate sternite obtusely rounded in middle; pygidium comparatively broader, lateral margin parallel, finely crenulated, hind margin subtruncate; branches of forceps internally with a flange extending up to apical three fourths, abruptly terminating in a minute tooth, apices pointed and hooked.

*Measurements:* (in mm)

|                   | Male       | Female    |
|-------------------|------------|-----------|
| Length of body    | 5.0 - 7.0  | 6.5 - 7.0 |
| Length of forceps | 1.25 - 1.5 | 1.5 - 1.8 |

*Type:* Type Male, Penang in IZAP.

*Distribution:* A widely distributed species in the Oriental Region.

It is represented by following specimens, determined by G. K. Srivastava in the collection of MZM, not so far reported:

India: Tamil Nadu, Coimbatore, 1 Female; Pondicherry, Karaikkal Territory, Kurumbagaram; 7 Males, 6 Females, Karaikal, 1 Male, 2 Females, in rotten tree trunk (P. S. Nathan Coll.).

Within India, besides above, it is recorded from Tamil Nadu and Kerala, Thakkady Dist., Perriyar Lake area, 900 m and Arunachal Pradesh, Phutang, 2376-2409 m.

*Remarks:* Steinmann (1989a) has treated *Chaetospania tricuspidata* Burr, 1906 as a synonym. In view of its larger size (total length, including forceps 10.4 mm), robust build and distinct male pygidium it is not a synonym of this species.

***Chaetospania nigriceps* (Kirby)**

(Figs. 215-219)

*Platylabia nigriceps* Kirby, 1891, *J. Linn. Soc. (Zool.)*, **23**: 518 (Male; New Guinea (Dorey); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 27; Bormans and Krauss, 1900, *Das. Tierreich*, **11**: 74; Burr, 1910, *Fauna British India, Dermaptera*: 127, fig. 43; Burr, 1911, *Dt. ent. Natn.-Biblthk*, **1911**: 61 (treated as syn. n of *Platylabia thoracica* Dohrn, 1867).

*Chaetospania nigriceps*; Brindle, 1970, *Pacif. Insects.*, **12**: 672, figs. 30- 32 (treated as a valid species); Srivastava, 1982, *Rec. zool. Surv. India*, **79**: 477-478, fig. H (Male ultimate tergite and forceps); Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1-4): 42, figs. 60-65 (Male; India: Karnataka, Mysore, 3mi N. Yellapur, 550 m; 12 mi NW of Munnar, 840 m; Coimbatore and Philippine Isls: Mindoro); Srivastava, 2002, *Rec. zool. Surv. India*, **100**(3-4): 134, figs 2-3 (Male, Female; India: Lakshadweep Isl: Minicoy); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 175, figs 14-16 (Male, Female; India: Andaman and Nicobar Isls, South Andaman: Bamboo Flat; Great Nicobar: Pygmalion Point); Sakai, 1982, *Bull. Daito Bunka Univ.*, **82**: 39; Sakai, 1891, *Dermapterorum Catalogus*, **23**: 3878 (black and white diagrams); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 471; Steinmann, 1990, *Das. Tierreich*, **106**: 202, figs 344-345.

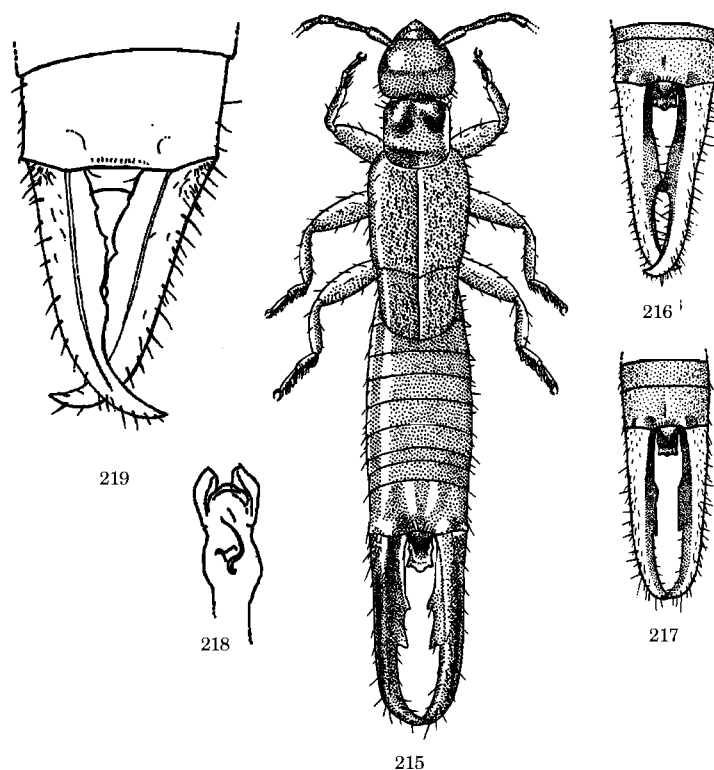
*Platylabia fallax* Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 380 (Syntypes: 1 Male, 2 Females: Habit., Carin Chebà, 900-1100 m); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 22.

*Chaetospania fallax*; Burr, 1911, *Genera Insect.*, **122**: 54 (partly); Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, **79**: 37; Hincks, 1947, *Ark. Zool.*, **39A**(1): 5; Bey-Bienko, 1959, *Ent. Obozr.*, **38**(9): 612 (South China); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 36; Srivastava, 1976, *Pacif. Insects.*, **17**(1): 112 (Female; Philippine Islands, Luzon); Srivastava, 1978, *Eos., Madr.*, **52**: 274 (Female; Philippine Islands, Mindanao); Srivastava, 1987, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **86**: 486, figs 9-13 (Syntypes: 1 Male, 1 Female; Carin Chebà, 900-1100 m - treated as a synonym of *Platylabia nigriceps* Kirby, 1891); Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 99; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3629, 3881 (black and white diagrams), 3784 (coloured photographs - Male; India: Malabar, 3500 ft., and Female; Philippine Islands, Mindanao); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 462; Steinmann, 1990, *Das. Tierreich*, **106**: 329, figs 427-429.

*Chaetospania tricuspidata* Burr, 1906, *Nova Guinea*, Leiden, **5**(1): 9 (Type Male; New Guinea, Timmeua River); Steinmann, 1981, *Act. zool. hung*, **27**(1-2): 204, figs 49-50 (Ultimate tergite and forceps and genitalia of Type Male) - **Syn n.**

Male: General colour blackish brown to yellowish brown; head blackish; mouth parts brown; elytra and wings brown but former sometimes yellowish near base; abdomen darker posteriorly; pygidium and forceps dark brown with shades of black. Body pubescent.

Head triangular, depressed, faintly punctulated, hind margin slightly emarginated in middle. Eyes distinct, but shorter than the post-ocular length. Antennae 12-segmented or more (since apical segments tend to break off on slightest jerk), 1<sup>st</sup> stout, expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal in length, former slightly slender; 5<sup>th</sup> slightly longer than the preceding, remaining gradually increasing in length. Pronotum about as long as broad or a trifle longer, punctulate, lateral margins parallel, hind margin briefly rounded, median sulcus faint, prozona convex and metazona depressed. Elytra and wings well



**Figs. 215-219.** *Chaetospania nigriceps* (Kirby), Male, 215. Dorsal view, 216-217. Ultimate tergite, pygidium and forceps, showing variations in pygidium, 218. Genitalia; Female, 219. Ultimate tergite and forceps.

developed, coriaceous and punctate. Legs with femora stout, hind tarsi with 1<sup>st</sup> and 3<sup>rd</sup> segments almost equal, clad on underside with thin and thick hairs. Abdomen elongated, widened in middle, tergites depressed, punctulated. Penultimate sternite rounded posteriorly with a slight emargination in middle. Ultimate tergite transverse, disc depressed, punctulated, hind margin trisinate, posteriorly in middle with a depression and above the roots of forceps with a weak convexity. Pygidium at base convex, declivitous, afterwards horizontal, longer than broad, parallel sided, near base laterally with a convexity, apical margin straight with three small tubercles or with a median tubercle only, sometimes margin subtruncate. Forceps with branches straight, tapering backwards, incurved apically to hooked apices, trigonal in basal half, afterwards depressed, internal margin lamellated with a sharp, pointed tooth beyond middle, often tooth weak or with a pair of triangular teeth directed backwards. Genitalia with parameres broad, gently narrowed near apex with tip pointed; virga tubular chitinised, thickened at base.

Female: agrees with males in most characters except that penultimate sternite obtuse in middle posteriorly; ultimate tergite narrowed posteriorly; pygidium at base convex, sloping, afterwards broad, depressed, hind margin emarginated and forceps with branches remote at base, trigonal in basal two thirds, afterwards tapering, tips hooked and pointed.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 8.0 - 9.5  | 7.0 - 9.5  |
| Length of forceps | 2.25 - 2.5 | 2.25 - 2.5 |

*Types:*

1. *Platylabia nigriceps* Kirby, 1891 - Type Male at BMNH.
2. *Platylabia fallax* Bormans, 1894 - Syntypes 1 Male, 2 Females at MSNG.
3. *Chaetospania tricuspidata* Burr, 1906 - Type Male at ITZA.

*Distribution* : India (Karnataka: Mysore, 3 mi N Yellapur, 550 m, 12 mi NW Munnar, 840 m; Tamil Nadu: Coimbatore Dist.; Andaman and Nicobar Isls: Andaman Islands: Bambooflat, Great Nicobar Island, Pygmalion Point; Lakshadweep : Minicoy), China (Yunnan), Philippine Islands, New Guinea and Solomon Isls.

*Remarks:* This species is closely related to *Chaetospania thoracica* (Dohrn) but differs by its larger size; shape of male pygidium in being truncate posteriorly with three tubercles, sometimes median one more prominent and lateral ones almost obsolete; rarerly, in a large population subtruncate or convex; forceps with inner flange broader, armed with a pair of teeth or single triangular tooth and genitalia with parameres broader, apex pointed and female pygidium broader and emarginated posteriorly.



From the available distributional records it appears to be an insular species distributed in New Guinea *via* Solomon, Philippines, Anadaman and Nicobar and Lakshdweep Isls and Indian mainland in Western Ghats.

***Chaetospania kapoori* Srivastava**  
(Figs. 220-224)

*Chaetospania kapoori* Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series* 4, Pt. 3: 328, figs 88-94 (4 Males, 1 Female and 2 nymphs; India: Meghalaya, East Khasi Hills Dist., Shillong, Botanical Garden-ex under bark of a dead tree).

Male: General colour blackish brown to brown; antennae with a few basal and apical segments yellowish brown and legs brown.

Head slightly longer than broad, frons convex, sutures obsolete, hind margin in middle emarginated. Eyes small, shorter than the post-ocular length. Antennae 13-segmented, 1<sup>st</sup> stout, expanded apically; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> slightly shorter than preceding; 5<sup>th</sup> slightly longer than 3<sup>rd</sup>, narrowed basally, remaining segments gradually increasing in length except apical one. Pronotum slightly longer than broad, lateral margins parallel, hind margin sub-truncate, median sulcus faint, prozona convex and metazona depressed. Legs short, stout, hind tarsi with 1<sup>st</sup> segment equal to 3<sup>rd</sup>. Elytra and wings well developed, smooth and shining. Abdomen elongated, narrowed basally, afterwards parallel laterally, tergites convex, long and short pubescence present on sides. Penultimate sternite transverse, hind margin rounded. Ultimate tergite transverse, smooth, sparse pubescence on sides, disc moderately convex, sloping backwards and with a depression in middle posteriorly, hind margin in middle straight, on sides oblique and emarginated above the bases of forceps. Pygidium longer than broad, at base wider, sloping, in posterior half divided by a roughly triangular emargination. Forceps remote at base, tapering backwards, almost straight in basal half, afterwards gently incurved with apices broadly hooked, trigonal in basal one thirds above, thence depressed, internal margin differentiated into dorsal and ventral borders in basal one thirds and armed at middle with a sharp, posteriorly directed tooth. Genitalia as in fig. 222.

Female: Agrees with males in most characters except that pygidium strongly sloping, posterior emargination not so deep and postero-lateral angles broader and forceps depressed, internal margin differentiated into dorsal and ventral borders, at base armed with one or two larger teeth and afterwards finely serrated with one slightly larger tooth at middle.

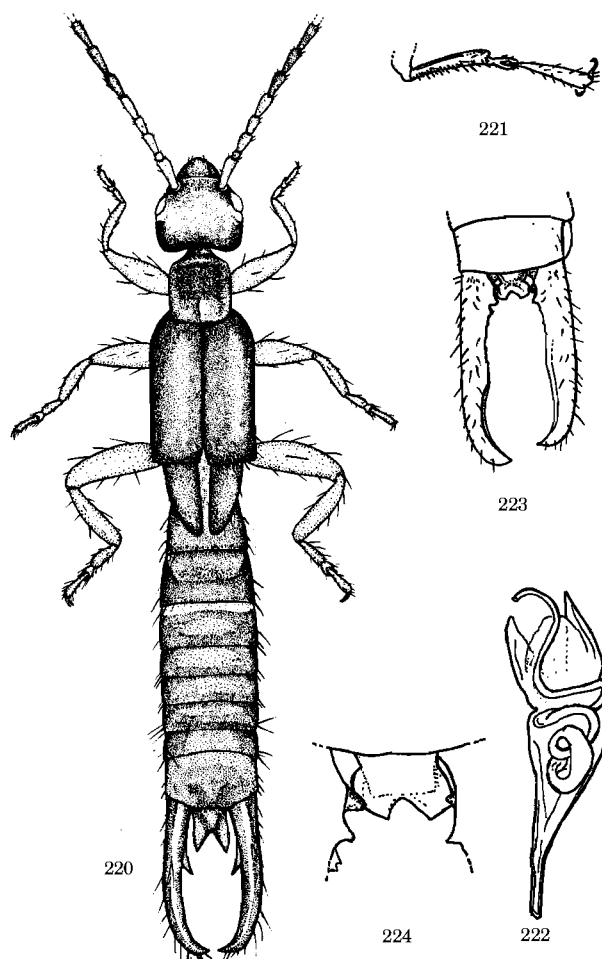
*Measurements:* (in mm)

|                   | Male    | Female |
|-------------------|---------|--------|
| Length of body    | 5.5-7.1 | 8.5    |
| Length of forceps | 2.3-2.4 | 2.3    |

*Types:* Holotype Male, Paratypes 3 Males, 1 Female and 2 nymphs at ZSI.

*Distribution:* India: Meghalaya.

*Remarks:* Amongst the Oriental species it comes close to *Chaetospania silvestrii* Borelli, 1927 in having somewhat similar pygidium, in males, in being deeply notched posteriorly but differs in having the antennal segments longer, especially 3<sup>rd</sup> longer than 4<sup>th</sup> (*vs* 3<sup>rd</sup> and 4<sup>th</sup> almost equal in length in *C. silvestrii*); elytra and wings shining and smooth (*vs* faintly punctulate); pygidium with postero-lateral angles acute (*vs* acuminate); forceps with internal tooth larger (*vs* smaller) and genitalia with parameres acute angled apically and virga convoluted (*vs* parameres obtuse angled apically and virga almost straight).



**Figs. 220-224.** *Chaetospania kapoori* Srivastava, Male, 220. Dorsal view, 221. Hind tarsi, 222. Genitalia; Female, 223. Ultimate tergite and forceps, 224. Basal portion of forceps and pygidium, enlarged.

***Chaetospania feae* Bormans**

(Figs. 225-231)

*Chaetospania feae* Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)14: 390 (9 Males, 14 Females; Hab., Carin Asciiuii Chebà, 1200-1300 m; Carin Ghecù, 1300-1400 m; Carin Chebà, 900-1000 m); Bormans and Krauss, 1900, *Das Tierreich*, 11: 76; Kirby, 1904, *Syn. Cat. Orthoptera*, 1: 22; Burr, 1911, *Genera Insect.*, 122: 54; Burr, 1911, *J. Asiat. Soc. Beng. (N. S.)*, 7: 785; Burr, 1911, *Dt. ent. Nat.-Biblthk*, 1911: 61; Burr, 1912, *Annln naturh. Mus. Wien*, 26: 87 (Birma: Carin Chebà, 1300-100 m, II-iii-'88, Male, Female (Fea coll. Br., Nr. 19.450 - Syntypeu von de Bormans and Lombok, 3 Males; Java, 2 Males, 2 Females); Burr, 1912, *Notes Leyden Mus.*, 34: 228 (Male; Java); Burr, 1912, *Sitz. ges. naturf. Fr. Berlin*, 1912: 323 (Male; Java); Burr, 1913, *Rec. Indian Mus.*, 8: 142 (Male, Female; India: Rotung, Renging to Rotung); Borelli, 1923, *Boll. Musei. Zool. Anat. comp. R. Univ., Torino*, 38: 10 (Male, Female; Philippine Islands); Borelli, 1926, *Treubia*, 8: 261 (Female; Malaysia); Borelli, 1927, *Suppl. ent.*, 36: 70 (Several Males and Females; Sumatra, Fort de Cock); Borelli, 1932, *Bull. Raffles Mus.*, 7: 86 (1 Male, 2 Females; Malaya: Selangor); Borelli, 1932, *J. fed. Malay st. Mus.*, 17(1): 187 (1 Male, 1 juv.; Borneo, Mt. Dulit); Hebard, 1927, *Proc. Acad. Sci. nat. Philad.*, 79: 33 (Male, Female; and Juv.; Sumatra: Mt. Sago and Fort de Cock); Hincks, 1947, *Ark. zool.*, 39A(1): 21 (1. Female; Burma); Boeseman, 1954, *Zool. Verh., Leiden*, 21: 70 (Male, Female; Java and Sumatra); Bey-Bienko, 1959, *Ent. Obozr.*, 38: 612 (Male, Female; China (South); Vanschuytbroeck, 1967, *Bull. Inst. r. Sci. nat. Belg.*, 43(27): 3 (3-Extypis; Carin Ghecù and Carin Chebà); Weidner, 1964, *Mitt. Hamburg Zool. Mus. Inst.*, 61: 140 (Male, Female; Paratype (4) - actually Syntypes; Birma: Carin Chebà, 900-1199 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, 2: 37; Srivastava, 1976, *Pacif. Insects*, 17(1): 111 (Male; Philippine Isls: Luzon); Srivastava and Lahiri, 1981, *Rec. zool. Surv. India*, 81: 284 (1 Male, 1 Female; India: Assam, North Cachar Hills); Srivastava, 1993, *Rec. zool. Surv. India*, 93(1): 79, figs 42-43 (Male; India: Arunachal Pradesh, Nandapha area); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* 3, Pt. 4: 412, figs 138-141 (Male, Female; India: West Bengal, Derjeeling Dist.); Srivastava and Kovak, 1993, *Rec. zool. Surv. India*, 93(1-2): 256, figs 5-6 (Male, Female; Malaya: Selangor, 250 m); Srivastava, 1995, *Rec. zool. Surv. India*, 95(1-2): 99; Srivastava, 2003, *Fauna of Sikkim, State Fauna Series*, 9: 215, figs 44-45 (17 Males, 23 Females; India: Sikkim, Gangtok); Steinmann, 1979, *Folia ent. hung.*, 32: 162 (Paratypes (Syntypes) - 2 exs); Steinmann, 1983, *Rèichenbechia, Mus. Terk, Dresden*, 81(7): 50 (Palawan); Steinmann, 1984, *Acta zool. hung.*, 30(1-2): 199 (6 Males, 12 Females; Bali); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 462; Steinmann, 1990, *Das Tierreich*, 106: 247, figs 247-249; Sakai, 1982, *Bull. Daito Bunka Univ.*, 20: 39; Sakai, 1991, *Dermapterorum Catalogus*, 23: 3615, 3782 (coloured photographs) and 3879-3880 (black and white diagrams); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, 52(2): 49 (Males, Females; India: Manipur).

*Sphingolabis feae*; Burr, 1910, *Fauna British India, Dermaptera*: 128, pl. 5, fig. 44.

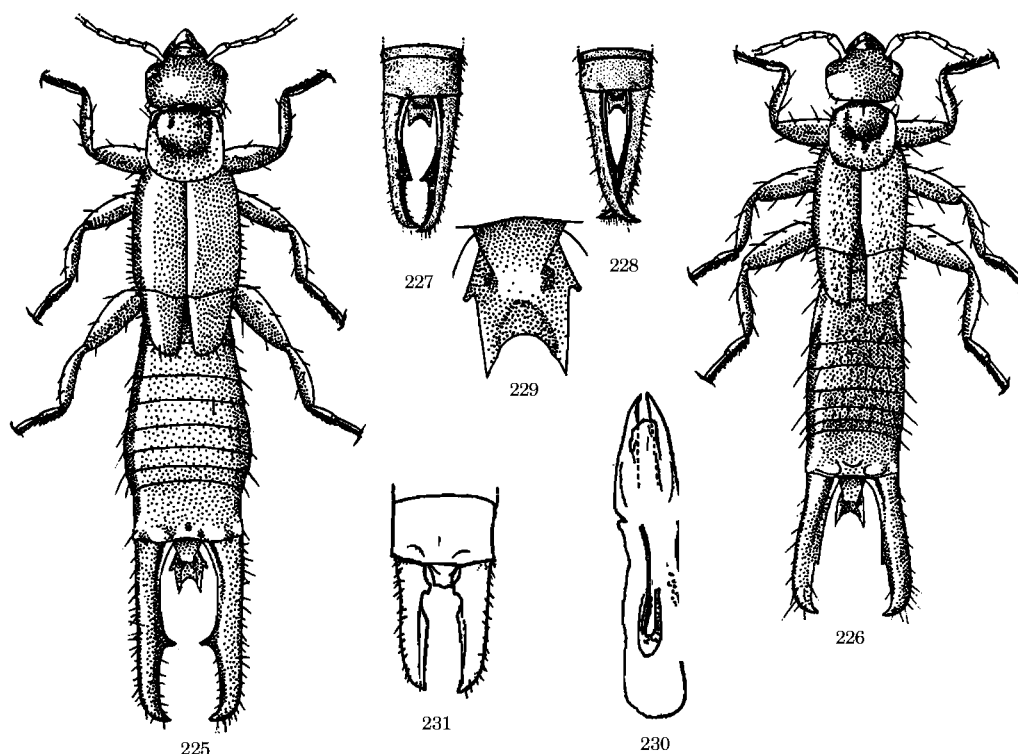
*Chaetospania bakeri* Borelli, 1916, *Boll. Musei Zool. Anat. comp. R. Univ., Torino*, 31(715): 3 (1 Male; Philippine Islands, Banguio Benguit); Srivastava, 1983, *Boll. Mus. Reg. Sci. nat. Torino*, 1(2): 233, figs 21-23 (Type Male of *Chaetospania bakeri* and Syntypes 1 Male, 1 Female of *Chaetospania feae* - examined; former treated as a synonym).

*Chaetospania foliata* (nèc Burr, 1911); Steinmann, 1983, *Rev. suisse Zool.*, **90**(3): 552 (3 Males; Nepal, nr Kathmandu); Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3785 (coloured photographs of above males det. by Steinmann, 1983), although mentioned as females); 3786 (coloured photograph of one male det. by Steinmann, 1983, enlarged but labelled as female).

*Chaetospania silvestrii* (nèc Borelli, 1927); Brindle, 1975, *Ent. basiliensia*, **1**: 26, figs 31-32 (1 Male, 1 Female; Bhutan: 87 km from Phuntsholing, 1680 m); Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3788 (coloured photograph of 1 male, 1 female bearing Nos Basel Mus. SS-729-34,35 and SS-729-36 from Bhutan det. by Brindle).

*Chaetospania celer* Steinman, 1984, *Acta zool. hung.*, **30**: 197, figs 17-18 (Holotype Male, Paratypes 3 Males, 4 Females; Thailand, Chiang Das) - **Syn. n.**

*Chaetospaana arguata* Steinmann, 1988, *Acta zool. hung.*, **34**: 41, figs 13 - 14 (Holotype Male, Paratypes 3 exs (one Male with genitalia and other two may be females, although not mentioned); India: Karnataka, Belgaum Dist., Talewadi, 750 m) - **Syn. n.**



**Figs. 225-231.** *Chaetospania feae* Bormans, Male, 225-226. Dorsal view, 227-228. Ultimate tergite and forceps, 229. Pygidium, enlarged, 230. Genitalia; Female; 231. Ultimate tergite and forceps.

Male: General colour reddish brown, sometimes with shades of black; head, pronotum, elytra and wings black; antennae brown with one or two preapical segments yellow; legs yellowish brown and apical half of abdomen blackish. Pubescent.

Head longer than broad, frons depressed, sutures fine, hind margin emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennae 12-segmented or more (since the apical one generally tend to break off easily), 1<sup>st</sup> stout, expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long slender, feebly expanded apically; 4<sup>th</sup> almost equal in length to preceding but stouter, 5<sup>th</sup> onwards gradually increasing in length distally but each narrowed basally. Pronotum about as long as broad, anterior margin convex, sides parallel, hind angles and margin rounded, median sulcus distinct, prozona convex and metazona depressed. Elytra and wings coriaceous, finely punctulate. Legs stout, femora thick, hind tarsi with 1<sup>st</sup> and 3<sup>rd</sup> segments equal in length, covered with thick setae and pubescence on underside. Abdomen elongated, parallel sided or gently enlarged in middle. Penultimate sternite broadly rounded posteriorly with slight emargination in middle. Ultimate tergite transverse, posteriorly in middle with a depression and slight convexity on either side of it, hind margin trisinate, postero-lateral angles a little prominent. Pygidium narrowed and slanting at base, afterwards horizontal plate longer than broad, sides straight or angular, in middle with a sharp or weak posteriorly directed tooth, hind margin distinctly emarginated and angles pointed. Forceps with branches remote at base, trigonal above in basal half, tapering backwards, apices gently incurved and pointed. Genitalia with parameres narrowed apically, virga chitinous, tubular, at base with accessory plates.

Female: Similar to male but shorter in size; pygidium short, obtuse in middle posteriorly; ultimate tergite weakly transverse and forceps with branches simple and straight, internal margin with a dorsal lamellation and ventrally serrated.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 7.0 - 8.9 | 6.8 - 8.3 |
| Length of forceps | 2.0 - 3.1 | 1.9 - 2.6 |

*Types:*

1. *Chaetospania feae* Bormans, 1894 - As per available information Syntypes 9 Males and 14 Females distributed as under:

1 Male, 1 Female at NMWA

4 exs (males and females) at ZSMZ

3 exs at IRSNB

1 Male, 1 Female at BMNH

Remaining 12 exs containing males and females should be at MSNG.

2. *Chaetospania bakeri* Borelli, 1916 - Type Male at MITZ.
3. *Chaetospania celer* Steinmann, 1984 - Holotype Male, Paratypes 2 Males, 3 Females at MSNV and Paratypes 1 Male, 1 Female at HNAB.
4. *Chaetospania arguata* Steinmann, 1988 - Holotype Male, Paratypes 3 exs at HNAB.

*Distribution:* India (Karnataka: Belgaum, Talewadi, 750 m; Arunachal Pradesh: Siang Dist., Rotung, Ranging to Rotung; Tirap Dist., Namdapha area; Assam: North Cachar Hills, Jatinga; West Bengal: Darjeeling Dist., Samsing, 1450 ft. and Sikkim: Gangtok).

Also reported from Bhutan, Nepal, Thailand, Myanmar, China (South), Sri Lanka, Malayasia (Malaya; Borneo), Philippine Islands and Indonesia (Sumatra, Java, Bali and Lombok).

*Remarks:* This species exhibits great variations in the shape of male pygidium and forceps as discussed above.

Brindle's (1975a) record of *Chaetospania silvestrii* Borelli, 1927 based upon 1 Male, 1 Female from Bhutan is referable to this species.

The description of *Chaetospania celer* Steinmann, 1984 from Thailand and *Chaetospania arguata* Steinmann, 1988 from India (Karnataka) fits well within the variational range of the species and are treated as synonyms.

### ***Chaetospania shillongensis* Srivastava**

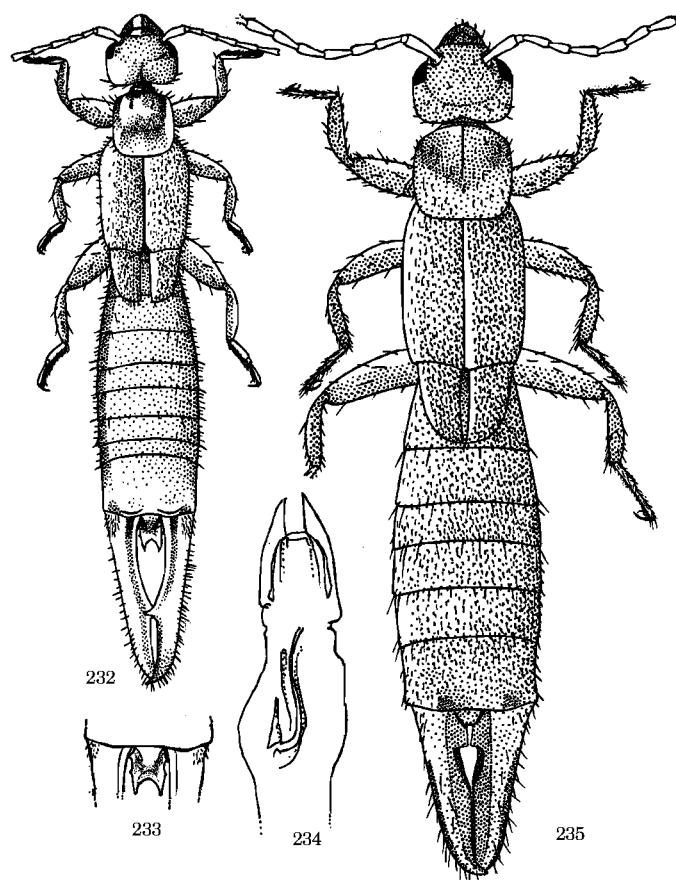
(Figs. 232 - 235)

*Chaetospania shillongensis* Srivastava, 1982, *Rec. zool. Surv. India*, **79**: 479, figs 2A-B (1 Male, 1 Female; India: Meghalaya, Shillong, near Police Bazar); Steinmann, 1984, *Act. zool. hung.*, **30**: 198; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 476; Steinmann, 1990, *Das Tierreich*, **106**: 251, figs 455-456; Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3732, 3790 (coloured photographs of Holotype Male, Paratype 1 Female), 3918 (black and white diagrams).

Male: Head, pronotum and wings black; antennae dark brownish black with a few pre-apical segments somewhat lighter or whitish; legs clear yellow. Abdomen reddish brown with a few basal segments blackish on sides; pygidium and forceps dark reddish brown. Form depressed, pubescent.

Head triangular, about as long as broad, smooth, depressed, median suture distinct but transverse suture obsolete, hind margin emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennae 13-segmented or more (apical ones generally broken off), 1<sup>st</sup> stout, expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> about as long as broad; 3<sup>rd</sup> long, slender, equal to 4<sup>th</sup> in length, latter stouter;

5<sup>th</sup> onwards segments gradually increasing in length and more slender apically. Pronotum about as long as broad, lateral margins parallel, hind margin subtruncate, median sulcus distinct in anterior half only, prozona moderately convex, metazona flat. Elytra and wings punctulate. Legs typical of the genus. Abdomen elongated, dilated in middle, tergites depressed, punctulate. Penultimate sternite broadly rounded posteriorly with slight emargination in middle. Ultimate tergite transverse, disc depressed with smooth and punctulate vertical stripes alternating, faintly tumid above the bases of forceps with intervening space depressed, hind margin in middle faintly emarginated. Pygidium narrowed and subvertical at base, afterwards flat, lateral margin convex with a pair of minute spine, of which posterior one larger, hind margin deeply emarginated, postero-lateral angles projecting into sharp points. Forceps with branches depressed, stout, separated at base by pygidium, almost straight, apices incurved with tip pointed, internal



**Figs. 232-235.** *Chaetospania shillongensis* Srivastava, Holotype Male, 232. Dorsal view, 233. Basal portion of ultimate tergite, forceps with pygidium enlarged, 234. Genitalia; Female, 235. Ultimate tergite and forceps.

margin in basal one third differentiated into sharp dorsal and ventral borders, afterwards forming a flange with a sharp pointed tooth in middle. Genitalia as in fig. 234.

Female: Agrees with males in most characters except that pygidium short, subvertical, gently narrowed apically; forceps with branches contiguous at base, almost straight with apices gently hooked and pointed, internally with a rectangular lamellate area near base, afterwards margin ventrally forming a flange and serrated.

*Measurements:* (in mm)

|                   | Male | Female |
|-------------------|------|--------|
| Length of body    | 7.0  | 6.4    |
| Length of forceps | 2.45 | 1.5    |

*Type:* Holotype Male, Paratype 1 Female at ZSI.

*Distribution:* India: Meghalaya, East Khasi Hills, Shillong.

*Remarks:* This species comes close to *Chaetospania feae* Bormans, but differs, in mals, in having a pair of minute spines, placed a little apart on lateral margin of pygidium.

### Rejected record

*Chaetospania borneensis* (nèc Dubrony, 1879) - Sakai (1997) records several specimens from India: Assam. It is evident from the photographs of 1 male, 1 female from the above lot, sent by Prof. S. Sakai, that it belongs to *Paraspania infernalis* Burr, 1913.

### Genus *Chaetolabia* Brindle

*Chaetolabia* Brindle, 1972, *Insects of Micronesia*, **5**(2): 150 (Type species: *Labia esakii* Meozzi, 1941); Brindle, 1973, *Ann. Mus. Roy. Centr. Tervuren*, in 8°, **205**: 159; Brindle, 1976, *Pacif. Insects*, **17**(1): 81; Steinmann, 1976, *Zool. Anz.*, **197**: 417; Steinmann, 1985, *Ann. hist.-nat. Mus. natn. hung.*, **77**: 121; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 562; Steinmann, 1990, *Das Tierreich*, **106**: 524; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 40; Sakai, 1993, *Dermapterorum Catalogous*, **25**: 4950; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, Pt. 4: 414; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series* **4**, Pt. **3**: 329; Srivastava, 1995, *Rec. zool. Surv. India*, **95**(1-2): 98.

Intermediate in characters between *Chaetospania*, 1886 and *Circolabia* Steinmann, 1987.

Head about as long as broad or transverse, convex, smooth, glabrous or punctured and pubescent. Pronotum longer than broad, lateral margins parallel or gently widened posteriorly. Elytra and wings punctured, pubescent, generally former well developed and latter reduced, hardly projecting beyond elytra. Abdomen on sides with a few isolated hairs and along the hind margin of each tergite. Forceps, in males, remote at base, simple, armed with one or two teeth, setulose and pygidium distinct. Female forceps setulose, broad, almost straight except apices gently hooked, internal margin with dorsal and ventral borders crenated; pygidium simple, sloping.



*Type species: Labia esakii* Menozzi, 1941.

*Remarks:* Forceps, in males, resemble with those of *Circolabia* and female forceps are similar to *Chaetospania*.

This genus is represented by two species within Indian Subcontinent.

*Distribution:* Ethiopian (with Seychelles), Oriental and Indo-Australian Regions.

#### Key to the species (based on males)

- 1(2). Pygidium about as long as broad, sides convex, hind margin deeply emarginate, postro-lateral angles pointed and posteriorly directed; genitalia with apices of parameres acuminate ..... *C. bihastata* (Börg)
- 2(1). Pygidium broader than long, sides straight, hind margin faintly concave, postero-lateral angles distinct and directed externally; genitalia with apices of parameres acute ..... *C. sahai* Srivastava

#### *Chaetolabia bihastata* (Börg)

(Figs. 236-239)

*Platylabia bihastata* Börg, 1904, *Ark. Zool.*, **1**: 527, Pl. 26, figs 5, 5a (Type Male; Cameroon); Burr, 1907, *Berl. ent. Ztg.*, **52**: 205 (treated as synonym of *Forficesila curvicauda* Motschulsky, 1863).

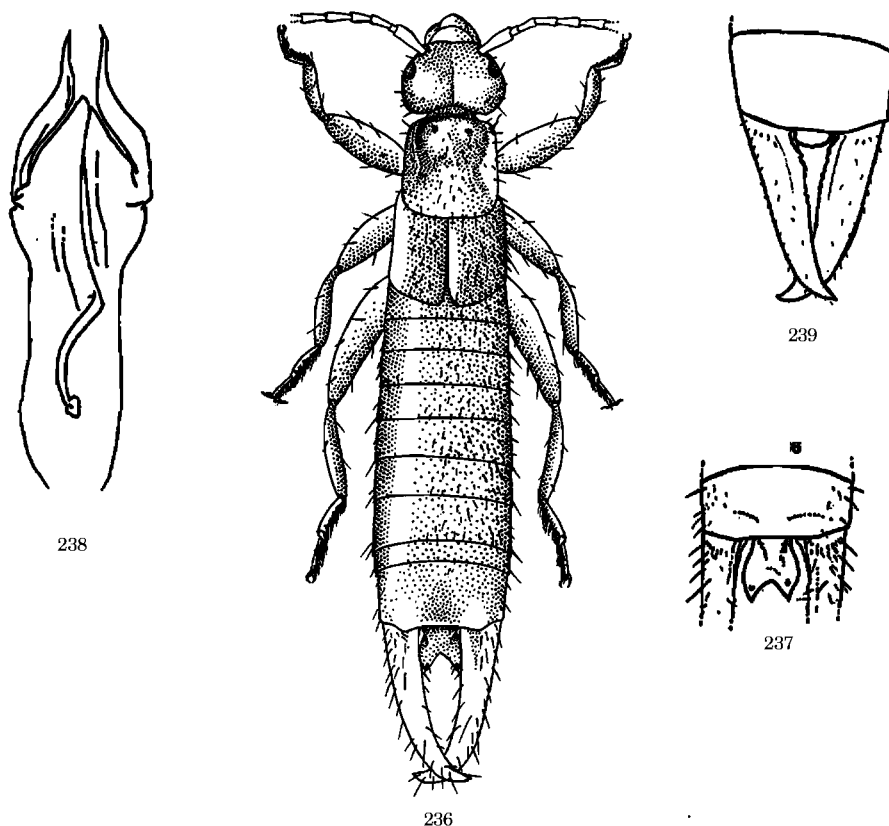
*Labia bihastata*; Hincks, 1948, *Entomologist's mon. Mag.*, **84**: 94 (species reinstated and redescribed on Type Male); Hincks, 1954, *Mém. Inst. fr. Afr. noire*, **40**: 111 (Guinea); Ramamurthi, 1967, *Ent. Meddr.*, **35**: 244 (Bismark Island: New Britain); Popham and Brindle, 1967, *Entomologist*, **100**: 258.

*Chaetolabia bihastata*; Brindle, 1973, *Ann. Mus. Roy. Afr. Centr. Tervuren*, in *8°Zool*, **205**: 160, figs 201-208 (Africa: West and Central); Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1-4): 45, figs 72-73 (Male, Female; India: West Bengal, Darjeling Dist, Teesta River Valley, 350 m); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, pt. **4**: 414, figs 145-147 (Male, Female; India: West Bengal, Darjeeling Dist., 305 - 427 m); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 330, figs 98-99 (Female; India: Meghalaya, Chreerapunji Dist., on road from Mawsamia to Sella); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 176 (Male, Female; India: Andaman and Nicobar Islands, South Andaman Isls); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 40; Sakai, 1993, *Dermapterorum Catalogus*, **25**: 4960, 5211 (black and white diagrams), 5150 (coloured photograph); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 42): 563; Steinmann, 1990, *Das Tierreich*, **106**: 528, figs 984-986.

*Chaetospania luxor* Steinmann, 1988, *Acta. zool. hung.*, **34**: 416, figs 23-24 (Type Male, Paratypes 6 Males, 1 Female; India: Meghalaya, Garo Hills, Diana Dubi, 250 m). - **Syn n.**

Male: General colour yellowish brown to dark brown with shades of blackish brown on certain body parts. Pubescent, with short and long hairs.

Head about as long as broad, sutures obsolete except median one, hind margin emarginated in middle. Eyes short, about one third of post-ocular length. Antennae 12-segmented or more (since the apical ones tend to break on slightest jerk), 1<sup>st</sup> stout, expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical, expanded apically; 4<sup>th</sup> almost equal to preceding; 5<sup>th</sup> onwards gradually increasing in length. Pronotum slightly longer than broad, lateral margins straight, scarcely widened posteriorly, margin briefly rounded, median sulcus obsolete, prozona convex and metazona depressed. Elytra longer than the pronotum, granulose, punctulate, meeting along the median line, hind margin oblique. Wings concealed or slightly projecting beyond the elytra as narrow lateral lobes. Legs short, hind tarsi with 1<sup>st</sup> segment slightly longer than the 3<sup>rd</sup>; 2<sup>nd</sup> short, broader than long. Abdomen elongated, moderately depressed, dilated, tergites punctate. Penultimate sternite rounded posteriorly with slight concavity in the middle. Ultimate tergite transverse, lateral



**Figs. 236-239.** *Chaetosplabia bihastata* (Borg), Male, 236. Dorsal view, 237. Ultimate tergite, forcep and pygidium, enlarged, 238. Genitalia; Female, 239. Ultimate tergite and forceps.

margins parallel, disc above depressed, with one or two rows of punctate stripes, posteriorly in middle with a faint depression, feebly raised above the bases of forceps, hind margin in middle straight, laterally oblique and emarginated. Pygidium at base narrowed, almost filling the space between the branches of forceps, slanting, afterwards dilated, sides convex, hind margin deeply emarginated like inverted V, angles acute, a small tubercle above in middle. Forceps with branches almost straight or gently incurved, apices gently hooked, inner margin faintly dentate. Genitalia with parameres long acuminate; virga distinct, somewhat thickened at base but without vesicle.

Female: Agrees with males in most characters except that penultimate sternite obtuse in middle posteriorly; forceps with branches broad, almost straight, inner margin differentiated into dorsal and ventral borders, dentate and pygidium transverse, convex, hind margin more or less straight.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 4.0 - 5.1 | 3.5 - 5.0 |
| Length of forceps | 1.3 - 1.5 | 1.0 - 1.5 |

*Types:*

1. *Labia bihastata* (Börg, 1904) - Type Male at NRSS.
2. *Chaetospania luxor* Steinmann, 1988 - Type Male, Paratypes 4 Males, 1 Female at MHNG and Paratypes 2 Males at HANB.

*Distribution:* India (West Bengal: Darjeeling Dist. and Meghalaya: alt. 305-427 m and South Andaman); Africa (Ivory Coast to Cameroon) and Bismark Island (New Britain).

*Remarks:* This species is quite common under the bark of dead and decaying logs and tree trunks in the foot hills of Dajeeling Dist., West Bengal, India.

From the description and diagrams of *Chaetospania luxor* Steinmann, 1988 it is evident that this species is a synonym of *Platylabia bihastata* Börg, 1904.

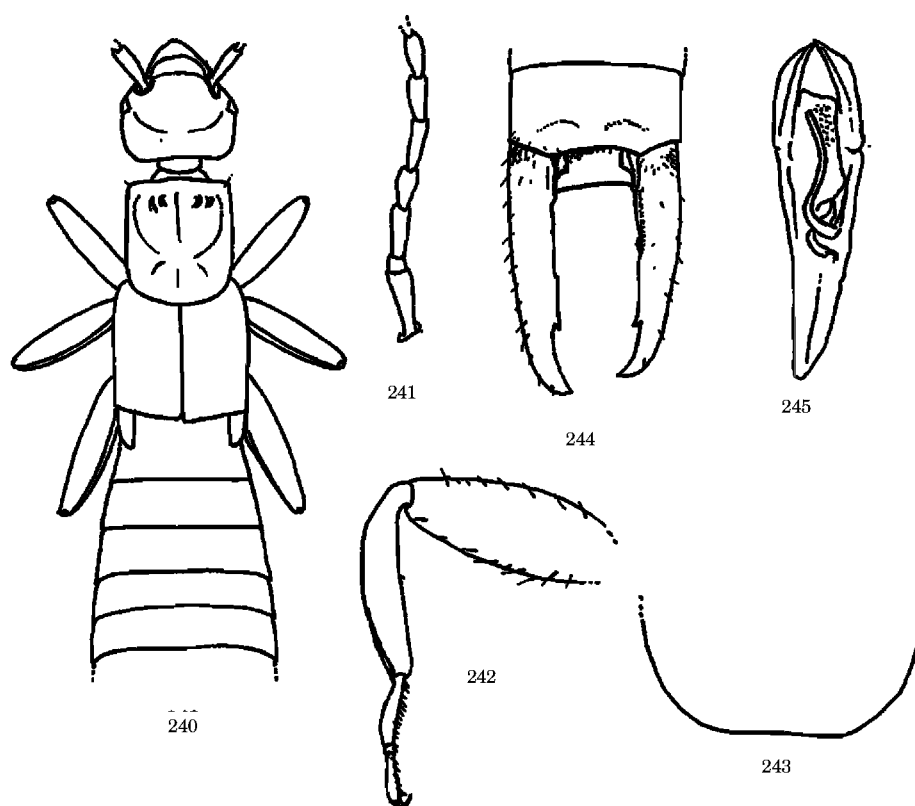
Some variations are noted in development of elytra which may be either long or shortened and wings concealed or projecting as narrow lateral lobes.

***Chaetolabia sahai* Srivastava**

(Figs. 240 - 245)

*Chaetolabia sahai* Srivastava, 2001, *Rec. zool. Surv. India*, **99**(1-4): 53, figs 18-23 (Holotype Male; India: Great Nicobar Island, Paulo Baha, West Coast); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 176, fig. 17.

Male: General colour dark brown with shades of black on certain body parts; mouth parts, sides of pronotum and legs lighter in colour.



**Figs. 240-245.** *Chaetospania sahai* Srivastava, Male, 240. Dorsal view, 241. A few basal antennal segments, 242. Hind leg, 243. Posterior portion of penultimate sternite, 244. Ultimate tergite and forceps, 245. Genitalia (all figs. after Srivastava, 2001b).

Head about as long as broad, convex, sutures obsolete, hind margin emarginated in middle. Eyes much shorter than the post-ocular length. Antennae 12-segmented or more (since apical ones tend to break off easily), 1<sup>st</sup> stout, expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> slightly shorter than the preceding, stouter, distinctly narrowed basally; 5<sup>th</sup> about as long as the 3<sup>rd</sup> but a little stouter; 6<sup>th</sup> onwards gradually increasing in length except one or two apical ones shorter and globular. Pronotum longer than broad, anteriorly about as broad as head, lateral margins straight, gently reflexed, scarcely widened posteriorly, hind margin rounded, median sulcus distinct, prozona convex and metazona depressed. Elytra well developed, smooth, finely pubescent, shoulder weak, hind margin straight, oblique. Wings projecting beyond elytra as narrow, ovate, lateral flaps, of same texture as the elytra. Abdomen pubescent, long, cylindrical, gradually enlarging posteriorly, tergites convex, smooth, sides of segments convex. Penultimate sternite transverse, hind margin rounded with slight emargination in middle. Ultimate

tergite with an oily lusture, disc convex, transverse, sloping backwards, hind margin in middle straight, laterally oblique and faintly emarginated. Pygidium distinct, at base narrow, sloping, broader apically, almost filling the space between the branches of forceps, hind margin faintly and broadly emarginated, postero-lateral angles markedly projecting. Forceps with short and long pubescence, branches almost straight, depressed, narrowed apically with tip incurved, internal margin forming a faint flange, terminating into a small, sharp posteriorly directed tooth at apical one third. Genitalia with parameres narrowed apically, tip acute, gently incurved; virga thick, tubular.

*Measurements:* (in mm)

|                   | Male |
|-------------------|------|
| Length of body    | 6.5  |
| Length of forceps | 2.0  |

*Type:* Holotype Male in ZSI.

*Distribution:* Known only from the Type locality

#### Family CHELISOCHIDAE

*Chelisochidae* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 124 (Type *Chelisoches* Scudder, 1876); Burr, 1911, *Genera Insect.*, **122**: 62; Zacher, 1912, *Zeitscher Wiss. Insektenbiol.*, **8**: 278; Shiraki, 1928, *Insects Matsum.*, **3**(1): 14; Bey-Bienko, 1936, *Fauna de l'URSS, Dermaptères*: 115; Hincks, 1947, *Ark. Zool.*, **39A**(1): 5; Hincks, 1954, *South African Animal Life*, **4**: 81; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 23; Popham and Brindle, 1968, *Entomologist*, **101**: 133 (key to genera); Brindle, 1970, *Pacif. Insects*, **12**(3): 684; Brindle, 1971, *Ent. Tidskr.*, **92**(1-2): 21; Brindle, 1972, *Insects of Micronesia*, **5**(2): 162; Brindle, 1973, *Ann. Mus. Roy. Afr. Centr.*, Tervuren, in *8° Zool.*, **205**: 225; Steinmann, 1975, *Acta. zool. hung.*, **27**: 205; Steinmann, 1983, *Ann. hist.-nat. Mus. natn. hung.*, **79**: 113; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 597; Steinmann, 1993, *Das Tierreich*, **108**: 2; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 47; Srivastava, 1988, *Fauna of India and the adjacent countries, Dermaptera*, Pt. 1: 16; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 415 (key to genera); Srivastava, 2003, *Rc. zool. Surv. India*, **101**(3-4): 159 (key to genera with a list of species); Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt. 2: 10.

Build stout or robust to moderate; weakly convex or depressed. Antennae multi-segmented with 17 to 22 segments, cylindrical or cylindrico-conical; 4<sup>th</sup> generally shorter than 3<sup>rd</sup>; elytra and wings well developed or abbreviated, former in certain cases with a carina on costal margin. Legs long or short, compressed, 2<sup>nd</sup> tarsal segment produced below the 3<sup>rd</sup> as a narrow conical lobe; hind tibiae sulcate or deplanate in apical half to extreme apex or neither flattened nor sulcate in apical half. Pygidium and forceps sexually diamorphic. Male genitalia with parameres narrow or broad; virga with accessory chitinous plates near base.

*Type genus: Chelisoches* Scudder, 1876.

*Distribution:* Asia, Africa, Europe and Australian Regions. However, *Chelisoches morio* (Fabricius) is recorded as adventive in North America.

This subfamily is mainly characterized by the spiniform 2<sup>nd</sup> tarsal segment extending below the 3rd segment up to half of its length and can be viewed from sides.

#### Subfamily CHELISOCHINAE

*Chelisochinae* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 125 (Type genus: *Chelisoches* Scudder, 1876); Burr, 1909, *Dt. ent. Z.*, **1909**: 326; Burr, 1910, *Proc. U. S. Nat. Mus.*, **38**: 457; Burr, 1910, *Fauna British India, Dermatera*: 129; Burr, 1911, *Genera Insect.*, **122**: 62; Burr, 1916, *J. R. micr. Soc.*, **1916**: 28; Hebard, 1929, *Am. ent. Soc.*, **55**: 338; Borelli, 1931, *Revue suisse ent.*, **38**(10): 37; Bey-Bienko, 1936, *Faune de l'URSS, Dermaptères*: 115; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 88; Brindle, 1968, *Entomologist*, **101**: 33; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 434; Steinmann, 1983, *Annls hist.-nat. Mus. natn. hung.*, **79**: 114; Steinmann, 1989, *World Catalogue of Demaptera* (Series entomologica v. 43): 602; Steinmann, 1993, *Das Tierreich*, **108**: 15; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 415; Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt. **2**: 10; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 159.

*Chelisochellinae* Steinmann, 1975, *Acta zool. hung.*, **21**: 214 (Type genus: *Chelisochella* Verhoeff, 1902); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 159 (treated as synonym of *Chelisochidae*).

Characters for the family hold good for the subfamily as well.

Srivastava (2003d) synonymised *Chellisochellinae* Steinmann since the members of *Chelisochella* Verhoeff, 1902, the type genus, lack ridge along the costal margin of elytra.

#### Key to the genera

- 1(4). Hind tibiae neither sulcate nor flattened apically
- 2(3). Size larger (including forceps more than 30 mm), build robust; glabrous; elytra and wings smooth, former with humeral angles very prominent (without a carina).  
*Chelisochella* Verhoeff
- 3(2). Size smaller (including forceps less than 30 mm), less robust or delicate, hairy; elytra and wings punctulated, former with humeral angles not so prominent ...  
..... *Adiathetus* Burr
- 4(1). Hind tibiae sulcate or flattened at extreme apex or in apical half
- 5(6). Hind tibiae sulcate or flattened at extreme apex ..... *Adiathella* Brindle
- 6(5). Hind tibiae sulcate or flattened in apical one fourth to one half

- 7(8). Hind tibiae sulcate in apical one fourth; 1<sup>st</sup> tarsal segment longer than the third ..... *Exypnus* Burr
- 8(7). Hind tibiae sulcate in apical one third or one half
- 9(10). Build slender, elongated; elytra abbreviated and wings wanting ..... *Solenosoma* Burr
- 10(9). Build stout; elytra and wings well developed (rarely wings abbreviated or wanting)
- 11(12). Body strongly depressed; hind tarsi broad, depressed ..... *Laprophorella* Mjöberg
- 12(11). Body not so strongly depressed; hind tarsi compressed
- 13(14). Elytra and wings pubescent, punctulate; male genitalia with parameres deplante or external angle projecting ..... *Hamaxas* Burr
- 14(13). Elytra and wings smooth, glabrous; male genitalia with parameres slightly dilated in middle or narrower
- 15(16). Distal antennal segments long, slender; elytra with yellow markings and wings generally yellow ..... *Proreus* Burr
- 16(15). Distal antennal segments broad, short; elytra and wings dark unicolourous ..... *Chelisoches* Scudder

#### Genus *Chelisochella* Verhoeff

*Chelisochella* Verhoeff, 1902, *Zool. Anz.*, **25**(665): 196 (Type species: *Lobophora superba* Dohrn, 1865 - designated by Kirby, 1904); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 35; Burr, 1910, *Fauna British India, Dermaptera*: 131; Burr, 1911, *Genera Insect.*, **122**: 68; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 599; Steinmann, 1993, *Das Tierreich*, **108**: 5; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 161.

Build robust; size larger (including length of forceps between 30 to 40 mm); antennae with 3<sup>rd</sup> and 4<sup>th</sup> segments subequal. Pronotum about as long as broad; elytra and wings well developed, former with very prominent costal fold at shoulder, coriaceous. Legs long, slender, tibiae compressed, smooth, neither sulcate nor flattened above. Abdomen elongated; forceps stout, in males, depressed elongated or gently incurved; in females elongated or almost straight.

*Type species: Lobophora superba* Dohrn, 1865.

*Distribution:* Oriental Region.

This genus contains only the Type species which is quite distinct from other species of the family by its robust build and large size. Elytra have a very prominent humeral fold which gives a false impression of a carina. In this respect it comes close to *Exypnus*, *Adiathella* and *Chelisoches* but differs by the smooth tibia apically.

***Chelisochella superba* (Dohrn)**

(Figs. 246-249)

*Lobophora superba* Dohrn, 1865, *Stettin. ent. Ztg.*, **26**: 271 ("Male, Female in meiner einzelne Stücke Westerman's und der Berliner Sammlunge"); Dubrony, 1879, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **14**: 384.

*Chelisoche superba*: Scudder, 1876, *Proc. Boston Soc. nat. Hist.*, **18**: 309; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 83, fig. 32 (Malkka; Borneo); Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 115;

*Chelisochella superba*: Verhoeff, 1902, *Zool. Anz.*, **25**(665): 196; Burr, 1905, *J. Asiat Soc. Beng. (N. S.)*, **1**: 28; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 128; Burr, 1910, *Fauna British India, Dermaptera*: 131, pl. 9, fig. 89a-b (Male, Female; India: Sikkim; Malaysia: Johore, Borneo; Indonesia: Mentwei Island, Sumatra); Burr, 1911, *Genera Insect.*, **122**: 63, pl. 6, figs 5-5a; Burr, 1911, *Stettin ent. Ztg.*, **72**: 339 (1 Female; Indonesia: Sumatra, Seokaranda); Burr, 1912, *Annln naturf. Mus., Wien*, **26**: 92 (1 Male; Malaysia: Borneo; 3 Females; Malacca and 1 Female; near Kaledonien); Burr, 1932, *Bull. Raffles Mus.*, **7**: 89 (Male, Female; Malaysia); Hebard, 1929, *Trans. Am. ent. Soc.*, **55**: 340 (2 Males (brachylabic and macrolabic forms); Malaysia); Hebard, 1933, *Pan Pacific ent.*, **9**: 143; Hincks, 1947, *Ark. Zool.*, **39A**(1): 5; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 88 (1 Male; Indonesia: Sumatra; 1 Female; Malaysia: Malay Penninsula); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 22; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 48; Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 215, figs 47-48 (1 Male; Johor - ZSI coll.); Sakai, 1987, *Dermapterorum Catalogus*, **19**: 6(1086), 62(1142) - black and white diagrams and photographs ex BMNH coll., 1240 (coloured photographs of 2 Males, 1 Female ex BMNH coll.); Steinmann, 1979, *Folia ent. hung.*, **32**: 163, figs 25-27 (Holotype Male, Malacca; Paralectotypus 1 ex Sumatra and 6 exs at IZAP); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 599; Steinmann, 1993, *Das Tierreich*, **108**: 6, fig. 6 (Type Male; Burma - this specimen can be treated as Syntype only since Steinmann, 1979 above has proposed Lectotype (Holotype Male) and Paralactotype).

*Chelisoche doriae* Bormans, 1900, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**20**: 463 (Sarawak (Borneo) Male, Female Doria et Beccari - Iles Mentawai: Sipora).

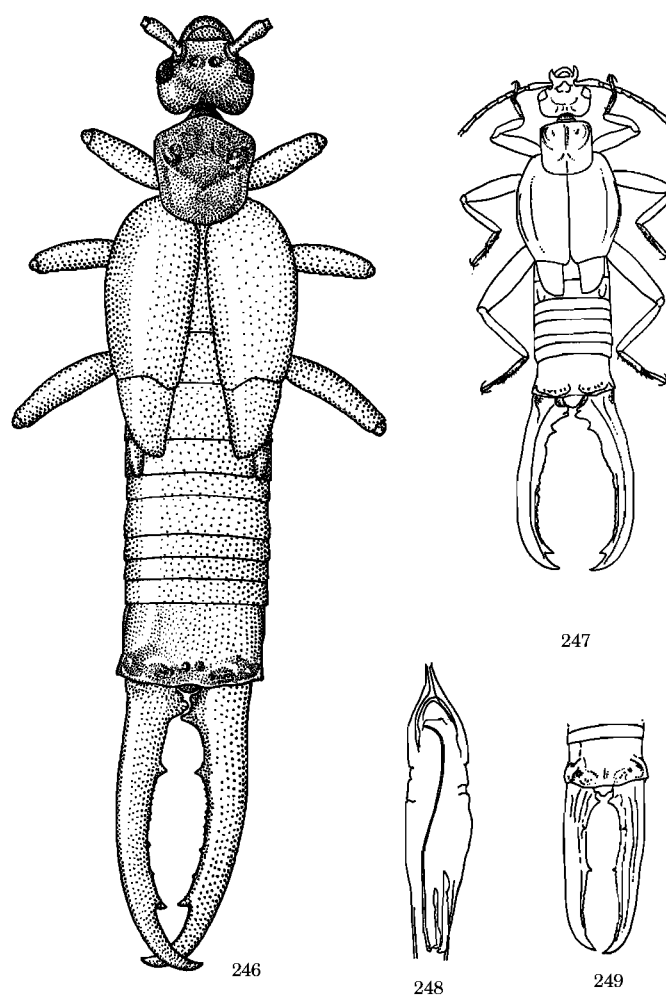
*Chelisochella doriae*; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 35; Burr, 1910, *Fauna British India, Dermaptera*: 131 (treated as synonym of *Lobophora superba* Dohrn, 1865); Srivastava, 1987, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **86**: 496, figs 28-30 (Syntypes: 1 Male, 1 Female, coll. Doria; Borneo: Sarawak - treated as synonym of *Lobophora superba* Dohrn, 1865); Steinmann, 1993, *Das Tierreich*, **108**: 7 (Terra typica: Sikkim (Type Male; Mus. Naturkunde, Berlin - this specimen can not be treated as the Type since Bormans, 1900 described this species on Male, Female from Sarawak and Iles Mentawai).

Male: General colour black, sometimes on certain body parts shade of reddish black or brown with purple metallic sheen; antennae blackish brown with one or two segments in middle yellow; pronotum purple black; elytra and wings black with purple sheen; abdomen reddish black on sides and forceps somewhat reddish brown. Build stout.

Head longer than broad, frons smooth, convex but depressed in middle, occiput raised, sutures fine, distinct, hind margin strongly emarginated. Eyes distinct but shorter than



the post-ocular length. Antennae 25-segmented or more (since apical ones tend to break off on slightest jerk), 1<sup>st</sup> segment stout, expanded apically, longer than the distance between antennal base; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> and 5<sup>th</sup> subequal, expanded apically, both shorter than the 3<sup>rd</sup>; 6<sup>th</sup> onwards gradually increasing in length except a few apical ones thin and rod shaped. Pronotum longer than broad, anterior margin convex, sides straight, gently reflexed, hind margin briefly rounded, median suture distinct, prozona convex with a small depression on either side of median line; metazona depressed. Elytra and wings well developed, coriaceous, former with



**Figs. 246-249.** *Chelisochella superba* (Dohrn), Male, 246-247. Dorsal view, 248. Genitalia; Female, 249. Ultimate tergite and forceps (fig. 246 ex Male from Johore, Z.S.I.; figs. 247-249 after Srivastava, 1987, ex Syntype Male, labelled as Female of *Chelisoches doriae* Bormans, 1900).

humeral angles very prominent and costal margin convex but without any carina or ridge. Legs long, slender, compressed, tibiae neither flattened nor sulcate from middle to extreme apex; hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>; 2<sup>nd</sup> extending below the 3<sup>rd</sup> as a narrow lobe in a little less than one half; underside clad with golden yellow hairs. Abdomen elongate, tergites convex, obscurely punctate, lateral margins parallel, lateral folds on 3<sup>rd</sup> tergite weakly and on 4<sup>th</sup> prominently marked. Penultimate sternite transverse, hind margin rounded. Ultimate tergite transverse, disc weakly convex, with vertical stripes of black and brown alternating, posteriorly in middle sloping, depressed with a pair of small compressed tubercles, above the bases of forceps tumid with a row of small tubercles along its posterior margin of tumidity, posterior angles prominent, hind margin trisinate. Pygidium subvertical at base, convex, rounded. Forceps with branches stout, depressed, tapering, either gradually incurving enclosing an elongated space or strongly incurved in apical half, enclosing rounded space, internal margin with a distinct bifid tooth at base, another smaller one at middle, margin otherwise unarmed. Genitalia with parameres broader in middle, narrowed apically, tip pointed.

Female: Agrees with males in most characters except that ultimate tergite weakly transverse, folds above the bases of forceps more prominent but crenulations very small; Pygidium subvertical, lateral margin straight, hind margin in middle with a tubercle; forceps with branches almost straight, internal margin at base with a triangular tooth followed by another smaller one at middle.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 21.0 - 25.0 | 25.0 - 27.0 |
| Length of forceps | 10.5 - 11.0 | 9.0 - 16.0  |

*Types:*

1. *Chelisoches superba* Dohrn, 1865 - Original specimens as mentioned by Dohrn (1865) present in Dohrn's, Westermann's colls and in Berlin Museum.

Steinmann (1979a) designated Holotype (Lectotype) Male; Malacca; Paralactotypus 1 ex, Sumatra at IZAP and he (1993) again mentions Type Male; Burma - if at all it may be nearly a Syntype.

2. *Chelisoches doriae* Bormans, 1900 - Bormans (1900) mentions "Sarawak Borneo), Male, Female Doria et Beccari - Iles Mentawai: Sipora at MSNG.

Srivastava (1987) mentions Syntype 1 Male, 1 Female, coll. Doria, Borneo: Sarawak at MSNG.

Steinmann (1993) records "Terra Typica Sikkim (Type Male, Mus. Naturkunde). It is not the type since it was not referred to by Bormans (l.c.) in the original description..

*Distribution:* Malaysia (Malay Peninsula, Sarawak (Borneo); Indonesia (Sumatra, Johore, Mentawai IIs and Malacca).

Record from India: Sikkim needs checking.

*Remarks:* This species can be easily distinguished from other members of Cheisochidae by its robust build and large size. Elytra is not having any carina or ridge along the costal margin. The prominent humeral angle and convex costal fold give a false impression of a carina.

Male forceps exhibit variations in being elongated and weakly incurved in apical half or strongly incurved. In view of this and the shape of identical parameres *Chelisoches doriae* Bormans is considered again as a synonym.

The specimen from Johore is present in the National collection at the ZSI.

#### Genus *Adiathetus* Burr

*Adiathetus* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 132 Type species: *Chelisoches shelfordi* Burr, 1900; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 159 (genus redefined).

This genus contains the type species only which possesses strongly pubescent body (long and short hairs); elytra and wings punctulate, former ecarinate along the costal margin; hind tibiae hardly sulcate above apically; and forceps, in both sexes, armed internally variously. Male genitalia with parameres parallel on lateral margin, about one thirteenth as broad as long, tip pointed, virga tubular.

All other species included under the genus are transferred to *Adiathella* Brindle (Srivastava, 2003d).

#### *Adiathetus shelfordi* (Burr)

(Figs. 250-253)

*Chelisoches shelfordi* Burr, 1900, *Ann. Mag. nat. Hist.*, (7)**6**: 96, pl. 4, fig. 4 (Type Female, not Male as mentioned) Borneo: Sarawak.

*Chelisochella shelfordi*; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 35.

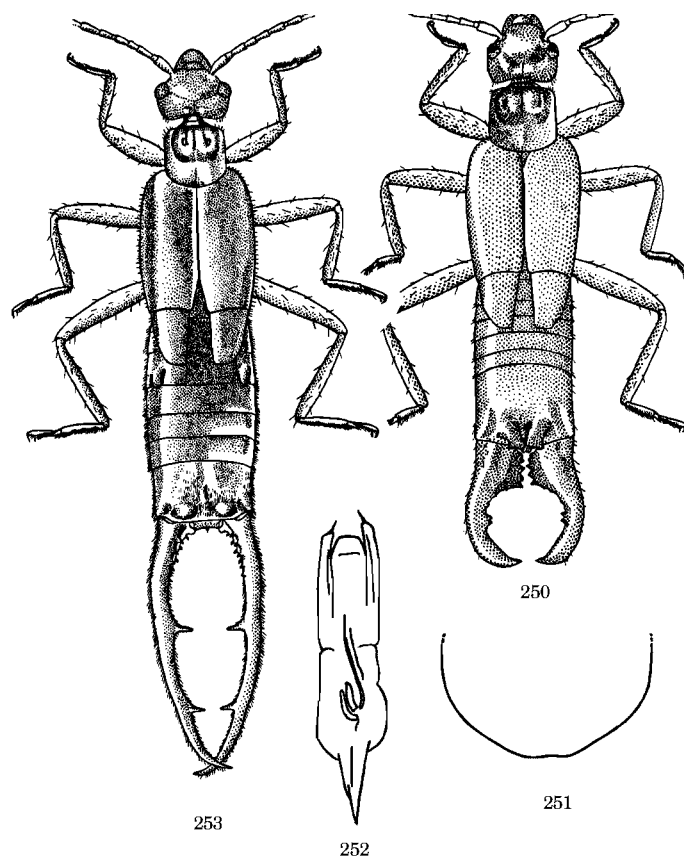
*Adiathetus shelfordi*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 133; Burr, 1910, *Fauna British India, Dermaptera*: 145 (Sikkim and Borneo); Burr, 1911, *Genera Insect.*, **122**: 66; Burr, 1912, *Annln naturh. Mus. Wien*, **26**: 49; Zacher, 1912, *Z. Wiss. Insekt. Biol.*, **8**: 278, fig. 3 (Male genitalia); Hebard, 1929, *Trans. Am. ent. Soc.*, **55**: 340 (1 Male; Borneo and 2 Males Malay Peninsula); Hebard, 1933, *Pan. Pacif. Ent.*, **9**: 143; Brindle, 1966, *Ark. Zool.*, **18**(18): 444 (2 Females; Borneo: Long Novang and 1 Male; Sumatra); Sakai, 1971, *Dermapterorum Catalogus Praeliminaris*, **6**: 198; Sakai, 1987, *Demapterorum Catalogus*, **19**: 1221 (black and white photographs and diagrams), 1244 (coloured photographs of 4 specimens labelled as males, all Paris Mus., Borneo, out of this 2 specimens are females); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 52; Srivastava, 1993, *Rec. zool. Surv. India*, **89**(1-4) (1991): 63 (Male, Female; Borneo: Sabah, 1 km S Kundasang, 1530 m); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series* **9**: 216, fig. 51 (quoting Burr's (1910) record from Sikkim); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 159, 161; Steinmann, 1979, *Folia ent.*

hung., **32**: 164; Steinmann, 1983, *Annls hist.-nat. Mus. natn. hung.*, **75**: 140; Steinmann, 1989, *Word Catalogue of Dermaptera* (Series entomologica v. 43): 606; Steinmann, 1993, *Das Tierreich*, **108**: 16.

*Chelisoches hurcules* Burr, 1900, *Ann. Mag. nat. Hist.*, (7)**6**: 96, pl. 4, fig. 2 (Male forceps in dorsal view (Type Male; Borneo: Sarawak); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 35 (treated as synonym of *Chelisoches shelfordi* Burr, 1900); Hebard, 1929, *Trans. Am. ent. Soc.*, **55**: 350 (confirmed the synonymy under *Chelisoches shelfordi* Burr, 1900).

Male: Size large, build stout. General colour reddish black; antennae black with one or two preapical segments yellow; elytra and wings with purple sheen; legs with femora and tibiae dark brown, tarsi pale; abdomen reddish, sides blackish and forceps dark brown with shades of black. Body strongly pubescent.

Head triangular, longer than broad, frons convex with a faint depression in middle; sutures faint, hind margin emarginate. Eyes slightly shorter than the post-ocular length.



**Figs. 250-253.** *Adiatethus shelfordi* (Burr), Male, 250. Dorsal view, 251. Posterior portion of penultimate sternite, 252. Genitalia; Female, 253 Dorsal view.

Antennae 20-segmented or more (apical ones generally broken off), 1<sup>st</sup> stout, expanded apically, about as long as the distance between antennal base; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical, about as long as 4<sup>th</sup> or slightly longer; 5<sup>th</sup> longer than 3<sup>rd</sup>, remaining gradually increasing in length. Pronotum as long as broad, lateral margins straight, parallel, gently reflexed, hind margin rounded, median sulcus distinct, prozona raised with a small depression on either side of middle line, metazona flat. Legs long, slender, fore-femora swollen, tibiae smooth above apically, *i. e.*, without any flattening or groove; hind tarsi with 1<sup>st</sup> segment longer than the combined length of remaining two segments, clad on underside with thick hairs. Elytra and wings punctulate, former without any carina on costal margin. Abdomen long, cylindrical, tergites convex, faintly punctate, lateral folds on 3<sup>rd</sup> weakly and on 4<sup>th</sup> strongly marked, sides of segments obtuse angled posteriorly. Penultimate sternite punctate, narrowed and rounded posteriorly with slight emargination in middle. Ultimate tergite about as long as broad, punctulate, lateral margins parallel, sloping backwards, a slight depression in middle posteriorly with a pair of subvertical stout folds directed backwards, hind margin in middle faintly emarginate, sides oblique. Pygidium short, narrowed posteriorly with slight emargination in middle. Forceps with branches stout, deplanate in a little less than basal half with internal margin dentate, afterwards strongly incurved, tapering apically to gently hooked apices, inner margin of this incurved portion with serrulations and a bifid tooth in middle. Genitalia as in fig. 252.

Female: Agrees with males in most characters except that ultimate tergite weakly transverse, posteriorly in middle with a depression bounded on either side by tumid elevations; pygidium broader than long, subvertical, hind margin shallowly emarginate and lateral angles obtuse, in the middle with a spine; forceps with branches remote at base, long depressed, tapering apically, enclosing an elongated oval space, internally differentiated into dorsal and ventral borders in basal one fourth with pointed teeth and at base with a blunt tooth covering postero-lateral angles of pygidium, armed a little before middle with a large tooth and similar but smaller tooth at apical one third.

*Measurements:* (in mm)

|                | Male        | Female      |
|----------------|-------------|-------------|
| Length of body | 15.4 - 16.4 | 17.8 - 21.0 |
| Length of body | 4.3 - 4.5   | 10.5 - 12.0 |

*Types:*

1. *Chelisoches shelfordi* Burr, 1900 at SMK.
2. *Chlisochess hurcules* Burr, 1900 at SMK.

*Distribution:* India (Sikkim); Malaysia (Sarawak; Malay Peninsula) and Indonesia (Sumatra).

*Remarks:* *Chelisoches hurcules* Burr, 1900 represents the male of *Chelisoches shelfordi* Burr, 1900 but according to Hebard (1929) both are based on males and the former

represents the brachylabic and latter the macrolabic forms. The above description is based upon a Male (Sumatra: Medan) and a Female (Borneo: Lovang) both determined and referred by Brindle (1966) and represent different sexes.

This species is peculiar by its shape of male forceps and pubescent body and is the only species representing the genus. All other species are transferred to the genus *Adiathella* Brindle, 1970.

#### Genus *Adiathella* Brindle

*Adiathella* Brindle, 1970, *Pacific Insects*, **12**(3): 698 (Type species: *Adiathella lingua* Brindle, 1970); Steinmann, 1983, *Annls hist.-nat. Mus. natn. hung.*, **75**: 14: 141; Steinmann, 1989, *World Catalogue of Dermaptrea* (Series entomologica v. 43): 602; Steinmann, 1993, *Das Tierreich*, **108**: 58; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 159 and 162 (list of species).

Build stout; general colour dark, with or with or without a metallic sheen. Head weakly raised, sutures generally distinct, hind margin emarginated in middle; eyes shorter than post-ocular length; antennae 20-segmented, 3<sup>rd</sup> usually longer than 4<sup>th</sup> and 5<sup>th</sup>. Pronotum quadrate, gently widened posteriorly. Elytra and wings well developed, glabrous, smooth. Legs long, slender, tibiae smooth above, slightly sulcate near apex. Abdomen with tergites convex; ultimate tergite, in males, transverse, in females narrowed posteriorly. Pygidium distinct in both sexes but more prominent in females. Forceps stout, depressed, internally variously armed, sometimes dissimilar in both sexes.

*Type species: Adiathella lingua* Brindle, 1970.

*Distribution:* Oriental and Solomon Islands.

*Remarks:* Srivastava (2003d) has restricted genus *Adiathetus* Burr, 1907 for type species, *Chelisoches shelfordi* Burr, 1900 and remaining species transferred to *Adiathella* Brindle, 1970.

#### Key to the species

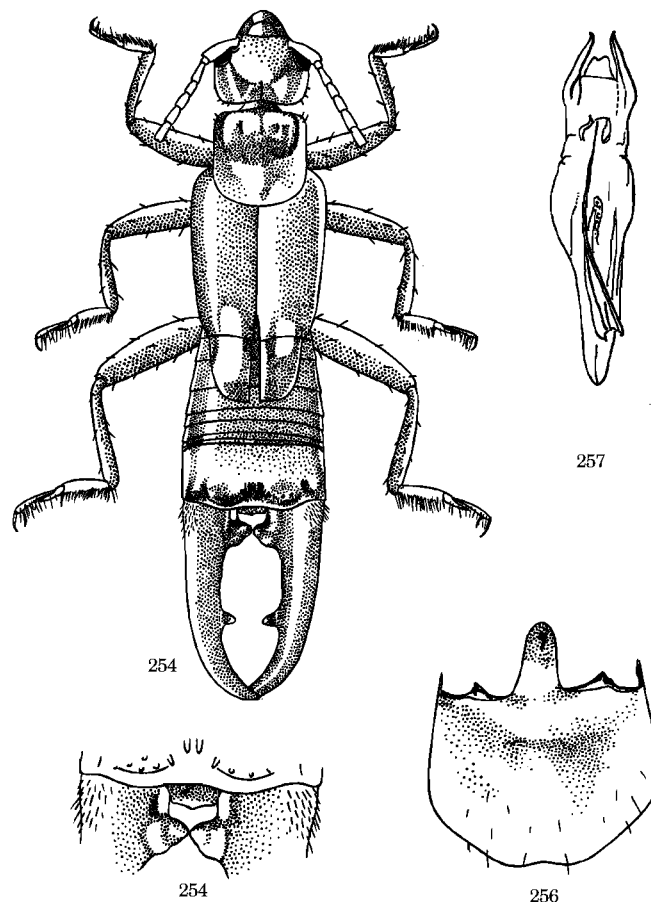
- 1(2). Head strongly sinuate in middle posteriorly; pronotum, slightly longer than broad, parallel-sided ..... *A. dravidius* (Burr)
- 2(1). Head not so strongly sinuate in middle posteriorly; pronotum about as long as broad or broader, not parallel-sided, gently widened posteriorly
- 3(6). Elytra and wings with bluish green metallic sheen
- 4(5). Pygidium, in females, three times longer than broad with apex pointed or truncate ..... *A. glaucopterus* (Bormans)
- 5(4). Pygidium, in females, about twice as long as broad with apex shallowly concave ..... *A. metallicus* (Srivastava)

- 6(3). Elytra and wings dull black or brownish black
- 7(8). Pygidium, in females, bifid at apex ..... *A. nigrocastaneus* (Burr)
- 8(7). Pygidium, in females, truncate or subtruncate at apex ..... *A. tenebrator* (Kirley)

***Adiathella dravidus* (Burr)**

(Figs. 254-257; 258)

*Adiathetus dravidus* Burr, 1910, *Fauna of British India, Dermaptera*: 143, pl. 4, fig. 46 (Syntypes Male, Female; India: Madras, Travancore, Tenmalai on western side of the Western Ghats); Burr, 1911, *Genera Insect.*, **122**: 66; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 25; Srivastava, 1976, *Rec. zool. Surv. India*, **2**: 52; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 1222 (black and white photographs, 1 Male, 1 Female though labelled as Holotype and

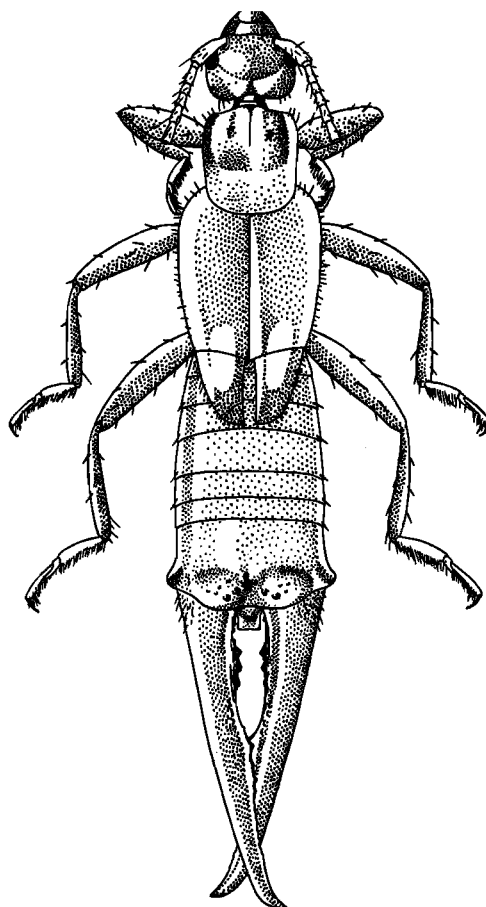


**Figs. 254-257.** *Adiathella dravidus* (Burr), Syntype Male, 254. Dorsal view, 255. Apical portion of ultimate tergite and basal portion of forceps, enlarged, 256. Penultimate sternite with manubrium, 257. Genitalia.

Allotype, are actually Syntypes - BMNH), 1243 (coloured photographs 1 Male, - Ind. Mus.; 1 Male, 1 Female); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 604; Steinmann, 1993, *Das Tierreich*, **108**: 18.

Male: General colour dark shining brownish black; antennae black with basal segment lighter in colour; mouth parts lighter in colour; elytra with a pale elongated spot in middle apically and wings also with similar spot basally and forceps reddish brown.

Head slightly longer than broad, frons convex, smooth, occiput prominent but depressed in middle, sutures distinct and deep, hind margin deeply emarginated. Antennae 22-segmented, basal segment stout, expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, slightly widened apically; 4<sup>th</sup> slightly shorter than the third; 5<sup>th</sup> also stouter but longer than 3<sup>rd</sup>, remaining gradually increasing in length and thinning, apical ones rod shaped.



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**Fig. 258.** *Adiathealla dravidius* (Burr), Syntype Female, 258. Dorsal view.



Eyes prominent, only slightly shorter than the post-ocular length. Pronotum only slightly longer than broad, lateral margins parallel, hind margin rounded, median sulcus faint, prozona raised with small depression on either side of middle line and metazona depressed. Elytra and wings well developed, coriaceous, smooth, former with humeral angles prominent. Legs long, slender, femora compressed, tibiae sulcate at extreme apex, hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>, thickly pubescent on underside. Abdomen elongated, tergites convex, with posterior margin milled, gently dilated in middle, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites well marked. Penultimate sternite with manubrium short, about twice as long as broad, apex rounded, hind margin rounded with slight emargination in middle, punctate laterally, striated posteriorly. Ultimate tergite transverse, disc convex, smooth, posteriorly in middle slightly depressed with a pair of compressed tubercles, above the bases of forceps with broad, tumid elevations, lateral margins parallel, hind margin with a row of compressed tubercles, trisinate, oblique above bases of forceps, posterior external angle a little projecting. Pygidium broader than long, posterior margin truncate with a tubercle in middle. Forceps with branches remote at base, depressed, tapering apically, almost straight in basal two thirds, afterwards gently incurved, apices gently hooked and pointed, internal margin armed at base with a large tooth, tip obtuse, at apical two thirds another triangular tooth present. Genitalia with paramarks broader at middle, narrowed at apex, tip pointed, virga long tubular, at base with accessory chitinous plates.

Female: Agrees with males in most characters except that pronotum slightly longer than broad; penultimate sternite very slightly narrowed apically; ultimate tergite with postero-external angles more prominent; pygidium at base slanting, apical portion about as long as broad, hind margin truncate and forceps with branches almost straight, internal margin with thick serrulations, at middle with a tooth.

*Measurements:* (in mm)

|                   | Male       | Female      |
|-------------------|------------|-------------|
| Length of body    | 9.0 - 18.5 | 13.0 - 22.5 |
| Length of forceps | 5.0 - 5.5  | 7.0 - 8.5   |

*Types:* Burr (1910) in the original description of the species has not mentioned the number of specimens. Following available specimens may be treated as syntypes:

Syntype 1 Male, 1 Female in ZSI.

Syntype 1 Male, 1 Female in BMNH.

Perhaps the Male in ZSI may be considered as the Holotype since it has been figured and labelled as the Type by Burr (l.c.).

*Distribution:* India: Kerala Western Ghats.

*Remarks:* This species comes close to *Adiathella glaucopterus* (Bormans) and *Adiathella metallicus* (Srivastava) by its large size and robust build but differs in lacking bluish green

metallic sheen on elytra and possessing pronotum about as long as broad, sides parallel and pygidium, in males, about as long as broad with a small median spine posteriorly and forceps with a large blunt tooth at base and smaller one at apical one third and in females, pygidium about as long as broad with hind margin truncate.

This species is known by its type series. Besides it is represented in the collections of ZSI by following specimens, not so far reported:

India: Kerala, Pathanamthitta Dist., Pampa, Aruvithasdu, 2 Males, 6 Females, 20.ii.1997 (*P. M. Sureshan* coll.), det. by *G. K. Srivastava*.

It is perhaps endemic to Western Ghats, India.

***Adiathella glaucopterus* (Bormans)**  
(Figs. 259-261)

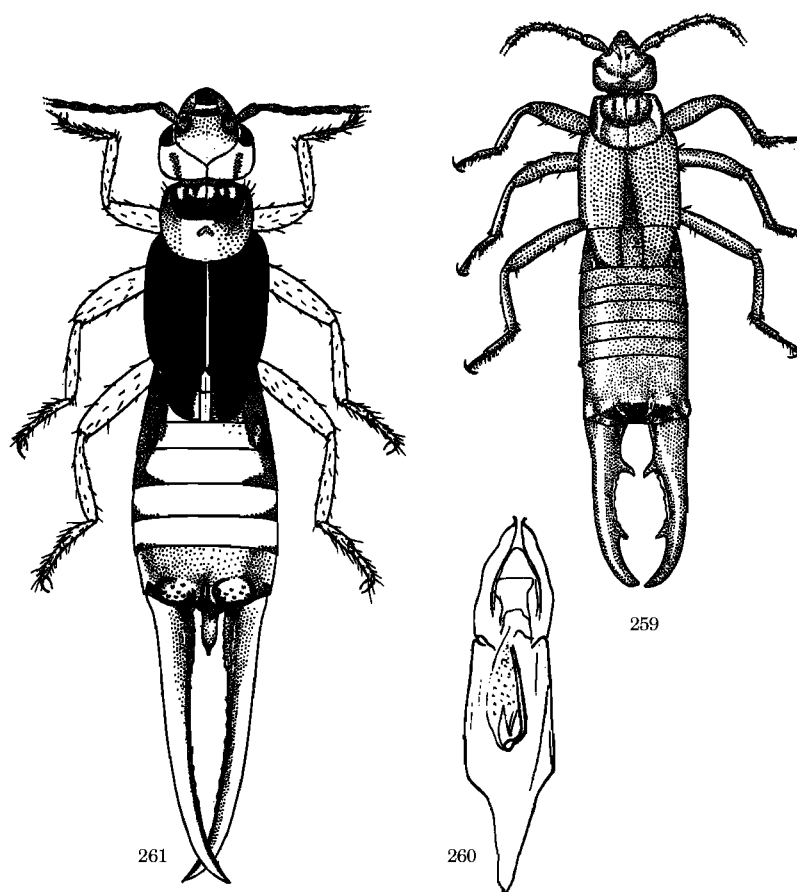
*Chelisoches glaucopterus* Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)6: 441 (Type Female; Burma: reucontrée dans le montagnes de Catein; 1 Male nymph; Meetan (Tenasserim); Bormans and Krauss, 1900, *Das Tierreich*, 11: 84; Kirby, 1904, *Syn. Cat. Orthoptera*, 1: 33; Burr, 1905, *J. Asiat. Soc. Beng. (N. S.)*, 1: 28; Burr, 1907, *Trans. ent. Soc. Lond.*, 1907: 129; Burr, 1908, *Bull. Mus. Hist. nat. Paris*, 14: 115.

*Adiathetus glaucopterus*; Burr, 1910, *Fauna British India, Dermaptera*: 114, pl 5, fig. 47; Burr, 1911, *Genera Insect.*, 122: 66; Burr, 1913, *Rec. Indian Mus.*, 8(2): 144 (Male, Female (part of the material); India: Abor region (now under Arunachal Pradesh); Bey-Bienko, 1959, *Ent. Obozr.*, 38(3): 615, figs 32-33 (Male, Female; China: Yunnan); Sakai, 1982, *Bull. Daito Bunka Univ.*, 20: 45; Sakai, 1971, *Dermapterorum Catalogus Praeliminaris*, 6: 195; Sakai, 1987, *Dermapterorum Catalogus*, 19: 1220 (black and white diagrams and photographs), 1242 (coloured photographs of males and females part only); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, 2: 52; Srivastava, 1979, *Proc. Sym. zool. Surv. India*, 1: 63, figs 7A-B (Male, dorsal view); Srivastava, 1985, *Annali Mus. civ. Stor. nat. Giacomo Doria*, 85: 226, figs 56-59 (from Type Female); Srivastava, 1993, *Rec. zool. Surv. India*, 91(1): 79, figs 48-49 (Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 417, figs 152-154 (Male, Female; India: West Bengal, Darjeeling Dist., Sombarihat, 4 km N of Gorubathan on road to Lava); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 604; Steinmann, 1993, *Das Tierreich*, 108: 21.

*Adiathella glaucopterus*; Srivastava, 2003, *Rec. zool. Surv. India*, 101(3-4): 162.

Male: General colour blackish brown; antennae brown to blackish, often segments preapical with yellow ring; elytra and wings black with metallic greenish blue sheen, sometimes wings with a yellow stripe internally; legs blackish, tarsi pale; abdomen and forceps reddish brown, shaded with black in apical portion.

Head longer than broad, frons convex, sutures fine but distinct, hind margin sinuate. Antennae 20-segmented, 1<sup>st</sup> stout, expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical, gently expanded apically; 4<sup>th</sup> shorter than the preceding, a little shorter than 3<sup>rd</sup>; remaining



**Figs. 259-261.** *Adiatheilla glaucopterus* (Bormans), Male, 259. Dorsal view, 260. Genitalia; Female, 261. Dorsal view.

thining, each cylindrical. Pronotum longer than broad, lateral margins straight, gently reflexed, slightly widened posteriorly, hind margin well rounded, prozona convex with a longitudinal depression, metazona depressed. Elytra and wings well developed, smooth, coriaceous. Legs long, slender, tibiae flattened or sulcate at extreme apex, hind tarsi with 1<sup>st</sup> segment almost equal to 3<sup>rd</sup>, covered with thick pubescence on underside. Abdomen parallel sided or gently dilated in middle, tergites convex punctulate. Penultimate sternite rounded posteriorly with slight emargination in middle. Ultimate tergite weakly transverse, disc convex, smooth, declivitous, in middle posteriorly with a pair of compressed tubercles, tumid above the bases of forceps with compressed tubercles, lateral margins straight, postero-lateral angles distinct, hind margin trisinate, above the bases of forceps oblique. Pygidium short, transverse, posteriorly concave with angles produced into small points. Forceps with branches remote at base, stout, long, depressed, tapering apically, almost straight in basal two thirds, afterwards gently arcuate with tip hooked and

pointed, internal margin trigonal at base, armed with a triangular tooth at basal one third and another similar one at apical one third, margin between the two teeth crenulated. Genitalia with parameres at base broad, gradually narrowing towards apex with tip pointed; virga chitinous, tubular, chitinous denticulated pads present.

Female: Agrees with males in most characters except that ultimate tergite narrowed posteriorly; strongly tumid above the roots of forceps; pygidium long, about three to four times longer than broad, posteriorly narrowed to small point or truncate and forceps simple, straight, internally in basal half differentiated into dorsal and ventral borders.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 13.2 - 16.7 | 14.5 - 15.8 |
| Length of forceps | 5.2 - 6.4   | 2.7 - 4.7   |

*Type:* Type Female at MSNG.

*Distribution:* Myanmar, India (Arunachal Pradesh: Abor region and Namdapha area; West Bengal: Darjeeling Dist.), China (Yunnan) and Vietnam.

*Remarks:* Male forceps exhibit polymorphism. In f. *cyclolabia* branches of forceps have a tooth at base whereas in f. *macrolabia* it is situated in middle. Female pygidium is longer than broad, narrowed apically, tip concave with angles pointed or tip in middle pointed.

### ***Adiathella metallicus* (Srivastava)**

(Figs. 262-267)

*Adiathetus glaucopterus* (nèc Bormans, 1888); Burr, 1913, *Rec. Indian Mus.*, **8**(2): 144 (excluding 1 Male, 1 Female from Sadiya, Reg No. 2300/19 and 1 Female from Rotung, Reg. No. 2161/19 - ZSI); Srivastava, 1979, *Proc. Sym. zool. Surv. India*, **1**: 63, fig 7B (excluding fig 7A).

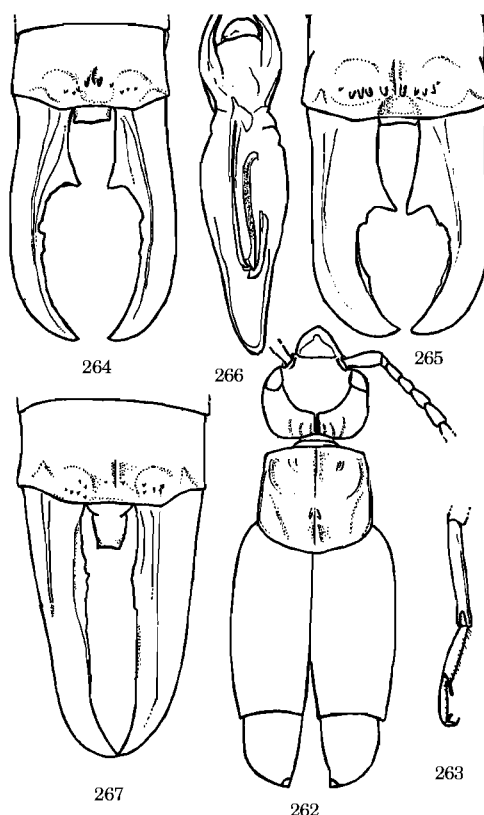
*Adiathetus metallicus* Srivastava 1985, *Rec. zool. Surv. India*, **82**(1-2): 48, figs 44-49 (Holotype Male, Paratypes 2 Males, 1 Female; India: Arunachal Pradesh, Tirap Dist., Hornbill (Namdapha); Srivastava, 1993, *Rec. zool. Surv. India*, **91**(1) (1992): 79, figs 50-52 (Males, Females; India: Arunachal Pradesh, Tirap Dist., Gandhigram, ca 135 km from Miao); Steinmann, 1987, *Annls hist.-nat. natn hung.*, **79**: 115; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 605.

*Adiathella metallicus*; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 162.

Male: Head, antennae, fore-legs, tibiae, tarsi of middle and hind legs and ultimate tergite black. Antennae with one or two preapical segments complete or half brown. Pronotum, elytra and wings with bluish-green metallic sheen. Femora of hind and middle legs and forceps brown. Abdominal tergites brown but shaded with black in parts. Often tarsi of middle and hind legs shaded with brown.

Head slightly longer than broad, sutures fine but distinct, frons and occiput convex, hind margin in middle emarginate. Eyes not prominent, about half as long as the post-

ocular length. Antennae with 18 segments or more (since apical ones tend to break off easily), 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> only slightly longer than broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> slightly stouter, shorter than the 3<sup>rd</sup> and 5<sup>th</sup>, remaining gradually increasing in length, a few apical ones thin. Pronotum about as long as broad, smooth, gently widened posteriorly, sides straight, hind angles and margin rounded, prozona convex with a faint depression on either side of middle line, metazona depressed. Elytra and wings well developed, former with humeral angles prominent, hind margin obliquely concave. Legs typical of the genus, tibiae sulcate at extreme apex, hind tarsi with 1st segment equal to 3<sup>rd</sup>. Abdomen elongated, parallel sided, tergites convex, punctulate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites well marked. Penultimate sternite transverse, rounded posteriorly with a faint emargination in middle. Ultimate tergite transverse, vertical, punctate and smooth stripes alternating, disc a little before hind margin raised and the area in middle depressed, tumid above the bases of forceps with compressed tubercles along its posterior margin and the depressed



**Figs. 262-267.** *Adiathella metallicus* (Srivastava), Male, 262. Anterior portion of body, 263. Hind tibiae; 264-265. Ultimate tergite and forceps; 266. Genitalia; Female, 267. Ultimate tergite and forceps (all figs after Srivastava, 1985a).

area in middle posteriorly with a pair of compressed tubercles on either side of middle line, hind margin trisinate, laterally oblique. Pygidium broader than long, slanting at base, hind margin shallowly concave or straight with lateral angles prominent, may be pointed or obsolete. Forceps with branches remote, depressed, in f. *macrolabia*, elongated, regularly incurved, internal margin with a sharp, triangular, posteriorly directed tooth at a little before middle, afterwards crenulated; in f. *cyclolabia* internal tooth at a little beyond middle and the portion after it strongly incurved and short. Genitalia as in fig. 266.

Female: Agrees with males in most characters except that the base of knee joints of middle and hind legs black; lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites weaker; ultimate tergite with minute compressed tubercles on the prominences above the bases of forceps and the posterior median depression; pygidium vertical at base, afterwards lamellate, slightly longer than broad, narrowed posteriorly, sides convex, hind margin concave and angles prominent and forceps simple and straight, internal margin crenulate.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 15.0 - 18.0 | 17.5 - 18.0 |
| Length of forceps | 5.0 - 5.5   | 6.0 - 6.5   |

*Types:* Holotype Male (f. *macrolabia*), Paratypes 2 Males (f. *cyclolabia*), 1 Female in ZSI.

*Distribution:* India: Arunachal Pradesh, Siang Dist., Namdapha area.

*Remarks:* This species comes close to *A. glaucopterus* (Bormans) known from India, Myanmar, and South China in general external appearance but differs by the general body colour in having head, fore-legs, basal and apical portion of femora and whole of tibiae and tarsi of middle and hind legs black (*vs* uniform dark brown in *A. glaucopterus*); forceps stouter (*vs* slender); female pygidium with lamellate portion only slightly longer than broad and scarcely narrowed posteriorly with lateral margins convex in middle and hind margin concave (*vs* about twice as long as broad, lanceolate with hind margin truncate or pointed).

### ***Adiathella nigrocastaneus* (Burr)**

(Figs. 268-275)

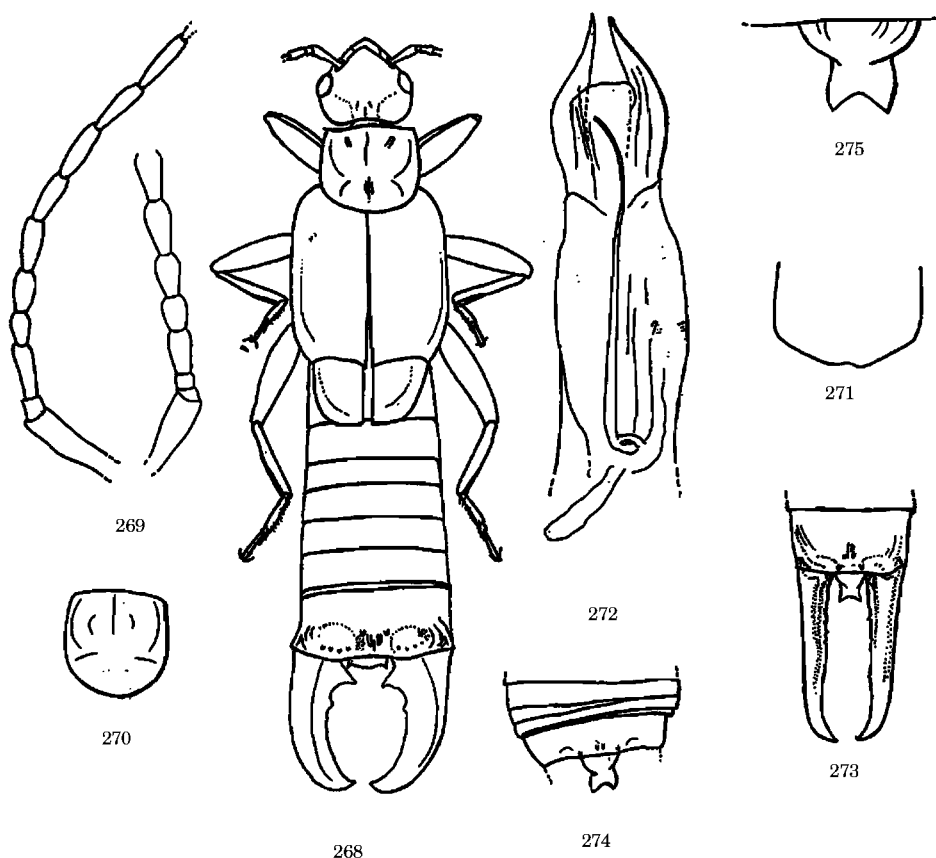
*Adiathetus nigrocastaneus* Burr, 1910, *Fauna British India, Dermaptera*: 145, pl. 6, fig. 48 (Type Male, Female (number of specimens not mentioned); India: Kanara (Karnataka); Burr, 1911, *Genera Insect.*, **122**: 66; Borelli, 1932, *Bull. Raffles Mus.*, **7**: 92 (2 Females; Malaysia: Malaya, Perak, Bantang Batang Jor Camp, 1800 m); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 25; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 52; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 45; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 1222 (black and white photographs and Type 1 Male (not Holotype) - BMNH), 1243 (coloured photograph, Type Male (not Holotype); Steinmann, 1983, *Annls hist.-nat. Mus. natn. hung.*, **75**: 10; Steinmann, 1987,

*Annls hist.-nat. Mus. natn. hung.*, **79**: 115; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43) 605; Steinmann, 1993, *Das Tierreich*, **108**: 22.

*Adiathella nigrocastaneus*; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 162.

Male: General colour black; antennae with one or two segments in the middle yellow; legs with femora orange at base and apically black, tibiae blackish brown apically, tarsi yellowish black; wings yellowish brown with a black stripe externally; abdomen mostly black, posterior portion of tergites and forceps orange.

Head slightly longer than broad, frons and occiput convex, sutures faint, hind margin emarginate. Eyes slightly shorter than post-ocular length. Antennae 20-segmented or more (since apical ones generally broken off), 1<sup>st</sup> stout, expanded apically, slightly



**Figs. 268-275.** *Adiathella nigrocastaneus* (Burr), Male, 268. Dorsal view, 269. A few basal antennal segments of both sides, 270. Pronotum, 271. Hind portion of penultimate sternite, 272. Genitalia; Female, 273. Ultimate tergite and forceps, 274. Hind portion of abdomen with pygidium, 275. Pygidium, enlarged (figs. 274-275 are from Syntype Female).

shorter than post-ocular length; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, gently expanded apically; 4<sup>th</sup> stout, ovate, shorter than preceding; 5<sup>th</sup> stout, fusiform, shorter than 3<sup>rd</sup> but longer than 4<sup>th</sup>; 6<sup>th</sup> equal to 4<sup>th</sup>, remaining gradually increasing in length. Pronotum as broad as long, a trifle broader posteriorly, anterior margin convex, angles a little projecting, lateral margins straight, gently reflexed, hind margin and angles rounded, median sulcus distinct, prozona convex and metazona depressed. Elytra and wings well developed, smooth, former ecarinate along the costal margin. Legs long and slender, hind tibiae sulcate at extreme apex and tarsi with 1<sup>st</sup> segment almost equal to 3<sup>rd</sup>, thickly pubescent on underside. Penultimate sternite transverse, hind margin rounded with slight emargination in middle. Ultimate tergite transverse, disc moderately convex, smooth, posteriorly above the bases of forceps tumid with a row of compressed tubercles along its posterior margin, the area in middle depressed with a pair of compressed tubercles, lateral margins straight, hind margin trisinate, oblique laterally, hind angles a little projecting. Pygidium vertical, broader than long, hind margin convex, angles projecting. Forceps with branches stout, depressed, strongly incurved, internal margin armed with a stout, triangular tooth at base, followed by another minute one, apices gently hooked and pointed. Genitalia with parameres broader in middle, narrowed apically to acute tip, virga thick, tubular, accessory chitinous plates at base present.

Female: Agrees with males in most characters except that wings sometimes black with a faint yellowish brown tinge; pronotum not widened posteriorly; penultimate sternite in middle posteriorly obtuse; ultimate tergite narrowed posteriorly; pygidium at base convex, slanting, posterior lamellate portion about as long as broad, hind margin emarginate with angles pointed and forceps long slender, almost straight, serrated internally in basal two thirds.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of foreps  | 9.5 - 14.3 | 8.5 - 14.5 |
| Length of forceps | 2.0 - 3.2  | 2.75 - 5.0 |

*Types:* Type Male in BMNH and Type Female in IARI.

*Distribution:* India: Karnataka, Kanara and Chikmagalur Dist.

Also recorded from Malaysia.

This species was known by the Type Male and Female as per the original description and following specimens, not so far reported, are present in ZSI and Department of Entomology, G.K.V.K. University, Bengaluru, Karnataka, India.

India: Karnataka, Dist. Chikmagalur, Mudgere, 648 m, 1 Male, 5 Females, 20. ii. 1987 (*M. Krishnappa* coll.), determined by G. K. Srivastava. Out of this collection 2 Females are at ZSI and 1 Male, 3 Females at the Department of Entomology, G.K.V.K. University, Bengaluru, Karnataka, India.



***Adiathella tenebrator* (Kirby)**

(Figs. 276-281)

*Chelisoches tenebrator* Kirby, 1891, *J. Linn. Soc. Zool.*, **23**: 521, pl. 12, fig. 5 - female, dorsal view (Female; India); Burr, 1911, *Genera Insect.*, **122**: 66, pl. 6, fig. 23 - male, dorsal view (South India); Burr, 1916, *J. R. micr. Soc.*, **1916**: 9, pl. 2, fig. 7 (male genitalia); Borelli, 1931, *Rev. suisse. zool.*, **38**: 307 (2 Males, 3 Females; India: Nilgiris Hill Groove); Ramamurthi, 1968, *Zool. Anz.*, **181**: 135 (2 Males, 3 Females; India: Anamalai Hills, 1067 m); Srivastava, 1970, *Eos, Madr.*, **45**: 331 (2 Males; India: Tamil Nadu, Cimbatores Dist., Anamalai Hills, Cinchona, 1067 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 52; Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1-4): 50 (Male, Female; India: Karnataka, 12 mi W of Munnar, 640 m and 4 mi, SW of Sidapur, 900 m); Sakai, 1971, *Dermapterorum Catalogus Praelimnaris*, **6**: 192; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 45; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 1218-1219 (black and white diagrams-Type (Holotype Female) and other Males and Females in BMNH), 1242 (coloured photographs Male, Females and Type (Female) in BMNH); Steinmann, 1983, *Annls hist.-nat. Mus. natn. hung.*, **79**: 115; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 607; Steinmann, 1993, *Das Tierreich*, **108**: 24, figs 31-33.

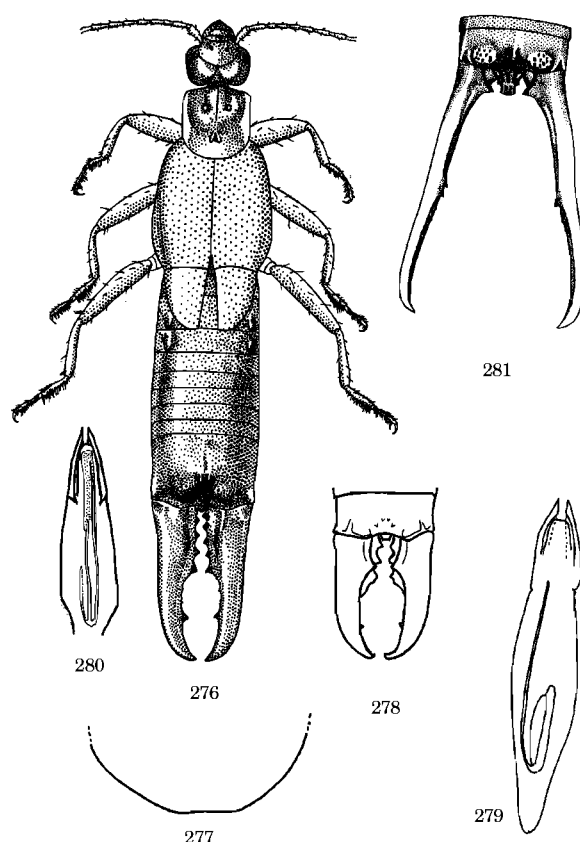
*Adiathella tenebrator*; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 162.

*Chelisoches morio* var. *stratioticus* (nec Rehn); Burr, 1911, *J. Asiat. Soc. Beng.* (N. S.), **7**(3): 702 (Male: Malabar - referable to this species).

*Chelisoches phoenix* Steinmann, 1993, *Das Tierreich*, **108**: 23, figs 29 - 30 (Type Male; South India, Madura Dist., Shembaganur (Tamil Nadu) - **Syn. n.**

Male: General colour dull blackish brown; antennae and legs blackish brown, former with a few segments in middle yellowish brown; elytra dull, wing tip yellow and forceps brown.

Head about as long as broad, smooth, frons convex with small depression on either side of middle line, occiput tumid, sutures distinct, hind margin in middle emarginate. Eyes distinct but shorter than the post-ocular length. Antennae 19-segmented or more (since apical ones tend to break off easily), 1<sup>st</sup> stout, expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> a little shorter than preceding but stouter; 5<sup>th</sup> about as long as 3<sup>rd</sup> but thinner, remaining gradually increasing in length and thinning, a few apical ones shorter. Pronotum longer than broad, lateral margins straight, hind angles and margin rounded, prozona convex with a small depression on either side of middle line, metazona depressed. Elytra and wings well developed, smooth, former with humeral angles prominent, ecarinate along the costal margin. Legs long, slender, tibiae sulcate at extreme apex; tarsi with 1<sup>st</sup> segment longer than 3<sup>rd</sup>, covered on underside with dense pubescence. Abdomen long, slender, parallel sided, tergites with punctures shallow, sides of segments smooth, obtuse angled posteriorly. Penultimate sternite transverse, punctation deep laterally, faint in



**Figs. 276-281.** *Adiathella tenebrator* (Kirby), Male, 276. Dorsal view, 277. Hind portion of penultimate sternite, 278. Ultimate tergite and forceps, 279-280. Genitalia; Female, 281. Ultimate tergite and forceps (figs. 278, 280 after Steinmann, 1993 ex *Adiathetus phoenix*).

middle, hind margin rounded with slight emargination in middle. Ultimate tergite weakly transverse, disc convex, posteriorly in middle depressed with a pair of compressed tubercles, above the bases of forceps tumid, hind margin sinuate, laterally above the bases of forces oblique. Pygidium short, obtuse. Forceps stout, branches depressed in basal half with internal margin ventrally dentate, dorsally with a tooth in the middle of deplanate portion, afterwards abruptly attenuated, tip gently hooked, internal margin in apical one third with a triangular tooth. Genitalia with parameres long, narrowed to acute tip, virga thick, chitinous, tubular, at base with a pair of chitinous accessory plates.

Female: Agrees with males in most characters except that ultimate tergite strongly transverse; pygidium declivitous and convex at base, narrowed apically with hind margin truncate, laterally with a small tooth, a little before apex and forceps simple, straight, at base internally with a triangular tooth and another smaller one at about middle.

*Measurement:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 18.0 - 19.5 | 17.0 - 18.0 |
| Length of forceps | 7.5 - 8.5   | 8.0 - 11.0  |

*Type:*

1. *Chelisoches tenebrator* Kirby, 1891 - Holotype Female in BMNH.
2. *Chelisoches phoenix* Steinmann, 1993 - Holotype Male at HANB.

*Distribution:* India: Tamil Nadu (Coimbatore Dist., Anamalai Hills, Cinchona, 1067 m, Nilgiri Hills, Shembaganur, nr Kodaikanal) and Karnataka 12 mi W of Munnar, 640 m and 4 mi SW of Sidapur) and Kerala (Malabar) and Andhra Pradesh.

In the ZSI collections it represented by following specimens not hitherto reported:

India: Tamil Nadu, Coimbatore Dist., Vargalier, Topslip, 1 Female, 23.xii.1975 (S.K.Gupta coll.), Wayanad, Parya, Madras (now area under Karnataka), 1 Female, 4.xi.1945 and Andhra Pradesh, Gytomamidi, Eastern Ghats, 1 Male, 1 Female, 23.ii.1985 (S.S.Saha coll), all determined by G. K. Srivastava

*Remarks:* This species is confined to Penninsular India, Eastern and Western Ghats. It can be easily recognized by its robust build, body colouration, pygidium and forceps in both sexes. Forceps, in males, are deplanate in basal half and afterwards abruptly attenuate but sometimes deplanate portion merges gradually apically.

*Adiathetus phoenix* Steinmann, 1993 agrees in most details with this species and is treated as a synonym.

Genus *Exypnus* Burr

*Exypnus* Burr, 1907, *Trans. Ent Soc. Lond.*, **1907**: 128 (Type species: *Chelisoches pulchripennis* Bormans, 1883); Burr, 1910, *Fauna British India, Dermaptera*: 132; Burr, 1911, *Genera Insect.*, **122**: 63; Townes, 1945 *Ann. ent. Soc. Am.*, **38**: 348; Kapoor, 1967, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 23; Popham and Brindle, 1968, *Entomologist*, **101**: 133; Sakai, 1971, *Dermapterorum Catalogus Praeiminaris*, **6**: 31; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 43; Steinmann, 1975, *Acta zool. hung.*, **21**: 214; Steinmann, 1983, *Annls. hist.-nat. Mus. natn. hung.*, **75**: 141; Steinmann, 1987, *Annls. hist.-nat. Mus. natn. hung.*, **79**: 116; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 619; Steinmann, 1993, *Das Tierreich*, **108**: 60; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 48; Srivastava, 2002, *Rec. zool. Surv. India*, **100**(1-2): 11; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 162.

Antennae 15-segmented or more (generally a few apical ones broken off). Eyes shorter than the post-ocular length. Elytra and wings smooth, glabrous and former without any costal carina. Legs long, slender; hind femora furrowed in apical one third; tarsi (when viewed from above) compressed, long and slender, 1<sup>st</sup> segment 5 times longer than broad, slightly longer than 3<sup>rd</sup> segment. Pygidium in both sexes distinct.

*Type species: Chelisoches pulchripennis* Bormans, 1883.

*Distribution:* Oriental Region.

At present only four species, viz. *E. pulchripennis* (Bormans, 1883); *E. koorgensis* (Hebard, 1923) and *E. chinensis* Steinmann, 1974 and *E. nathani* Srivastava, 2002 are known. All are distributed in the Oriental Region except *E. pulchripennis*, which is also recorded from New Guinea. But in the absence of precise locality record from the area through literature, it needs verification.

This genus comes close to members of *Adiathella* Brindle, in general build and other morphological details but differs in having the hind femora grooved in apical one third or one half only.

#### Key to the species (based on males)

- 1(4). Male forceps at base with a bifid tooth; genitalia with parameres long, narrow, in middle external margin obtusely projecting
- 2(3). Pronotum with lateral margin straight, gently widened posteriorly, hind margin briefly rounded ..... *E. pulchripennis* (Bormans)
- 3(2). Pronotum with lateral margin convex and hind margin well rounded .....  
..... *E. koorgensis* Hebard
- 4(1). Male forceps at base with serrated flange; genitalia with paramere straight, in most part parallel sided, at apex narrowed ..... *E. nathani* Srivastava

#### *Exypnus pulchripennis* (Bormans)

(Figs. 282-285)

*Chelisoches pulchripennis* Borman, 1883, *Annls Soc. ent. Belg.*, **27**: 78, fig. 15 (Male in dorsal view), 15a (Female ultimate tergite and forceps) (2 Males, Nos. 9314, 9318 and 1 Female, No. 9313; Indes Orientalis, Coll. Brünner-in Genova Mus.); Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2) **14**: 392; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 84; Burr, 1900, *Annls Soc. ent. Belg.*, **44**: 96; Burr, 1902, *Természter Fuz.*, **25**: 484; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 33.

*Chelisochella pulchripennis*; Verhoeff, 1902, *Zool. Anz.*, **25** (665): 196.

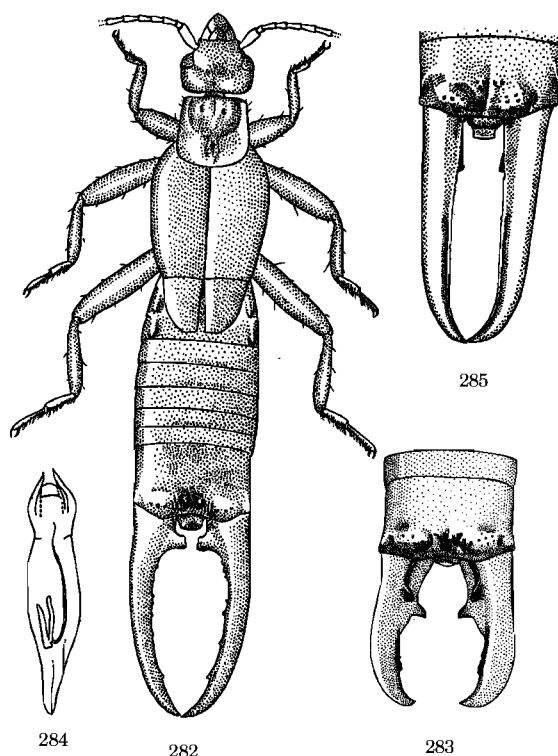
*Exypnus pulchripennis*; Burr, 1907. *Trans. ent. Soc. Lond.*, **1907**: 128; Burr, 1910. *Fauna British India, Dermaptera*: 133, figs. 84, 84a (Burma); Burr, 1911, *Genera Insect.*, **122**: 63, pl. 5, figs. 17, 17a-b; Burr, 1912, *Annln naturh. Mus. Wien*, **26**: 92; Burr, 1917. *Ann. Soc. ent. Fr.*, **86**: 59; Borelli, 1926, *Treubia*, **8**: 267; Brindle, 1966, *Ark. Zool.*, **18**(18): 443 (Male; Sumatra); Popham and Brindle, 1968, *Entomologist*, **101**: 133; Vanschuythroeck, 1969. *Bull. Inst. r. Sci. nat. Belg.*, **45**(41): 22 (6 exs; Burma); Sakai, 1971, *Dermapterorum Catalogus Praeliminaris*, **6**: 36; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 43; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 13(1093) and 66(1146) (showing photographs, figs of Male, Female and other body parts; specimen labelled as 'Holotype Male BMNH' is not correct.), 1240 (coloured photograp of 2 males and 1 female, specimen labelled as Holotype not correct); Steinmann, 1974, *Folia*

*ent hung.*, **32**: 163 (Sumatra and Burma); Steinmann, 1983, *Annls. hist.-nat. Mus. natn. hung.*, **75**: 141; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 620; Steinmann, 1993, *Das Tierreich*, **108**: 65; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 48; Srivastava, 2002, *Rec. zool. Surv. India*, **100**(1-2): 14, figs 5-8; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 163.

*Chelisoches glaucopterus* (nèc Bormans); Srivastava, 1983, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **85**: 220, figs. 52-53 (1 Male; Burma: Carin Gheùc, 1300-1400 m, det. as *Chelisoches glaucopterus* Bormans and referred in this paper).

General colour brownish black, shining, smooth. Build stout. A few antennal segments in middle brownish white; hind femora light brown and tarsi light blackish brown; forceps light blackish brown.

Head about as long as broad, femora and occiput raised, in place of sutures a linear depression visible, hind margin emarginate in middle. Eyes shorter than post-ocular length. Antennae 16-segmented; 1<sup>st</sup> stout, slightly shorter than the distance between antennal bases, narrowed at base; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender,



**Figs. 282-285.** *Exypnus pulchripennis* (Bormans), Male, 282. Dorsal view, 283. Ultimate tergite and forceps, cyclolabic form, 284. Genitalia; Female, 285. Ultimate tergite and forceps.

slightly longer than 4<sup>th</sup> and 5<sup>th</sup> which are stouter, gently expanded apically; remaining gradually thinning and increasing in length apically. Pronotum slightly longer than broad, smooth, gently widened posteriorly with margin rounded, prozona raised and metazona less so, median sulcus distinct in anterior half. Elytra and wings well developed, smooth, former with humeral angles prominent but without any carina, latter with tip yellowish. Legs long, slender, tibiae in apical one third furrowed. Prosternum with anterior margin convex and hind margin straight. Mesosternum with hind margin straight. Metasternum large, transverse, lobed between hind coxae with its hind margin emarginate. Abdomen parallel laterally, weakly convex, punctate above and below, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct. Penultimate sternite narrowed posteriorly with hind margin in middle obtuse but with slight emargination in centre. Ultimate tergite transverse, gently expanded posteriorly, almost smooth (impunctate), posteriorly in middle depressed with two pairs of large compressed tubercles and several smaller ones on the low folds above the bases of forceps. Pygidium short, rounded, hind margin thickened and raised above. Forceps (in f. macrolabia) long, cylindrical, attenuate, gradually curving from base to apex, inner margin near base with a depressed tooth, faintly bifid apically, afterwards provided with several small teeth ventrally of which largest one a little before apex, (in f. cyclolabia) branches remote at base, stout, shorter, depressed, gently incurved in apical third, apices hooked; internally a little before middle armed with a sharp pointed teeth and provided with another smaller tooth dorsally, inner margin a little before apex sharp and toothed otherwise smooth. Genitalia as in fig. 284.

Female: Agrees with males in most characters except that head brownish; ultimate tergite in middle posteriorly as well on the elevations above the roots of forceps with very small tubercles; penultimate sternite broadly rounded posteriorly; pygidium at base broad, convex and subvertical, afterwards horizontal and narrowed with sides straight or diverging and hind margin subtruncate and forceps simple and straight, inner ventral margin sharp for a short distance from base, then provided a tooth followed by smaller ones up to a little before apex, above also margin with one or two teeth.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 11.6 - 15.2 | 11.4 - 13.4 |
| Length of forceps | 4.2 - 6.5   | 4.4 - 4.8   |

*Types:* Syntypes, 2 Males, Nos. 9314 and 9318 and 1 Female No. 9313 in NMWA (Burr, 1912).

*Distribution:* India, Myanmar, Vietnam, Indonesia (Sumatra) and Malaysia (Borneo).

Record from New Guinea should be treated with reserve since no precise locality record through literature is known.

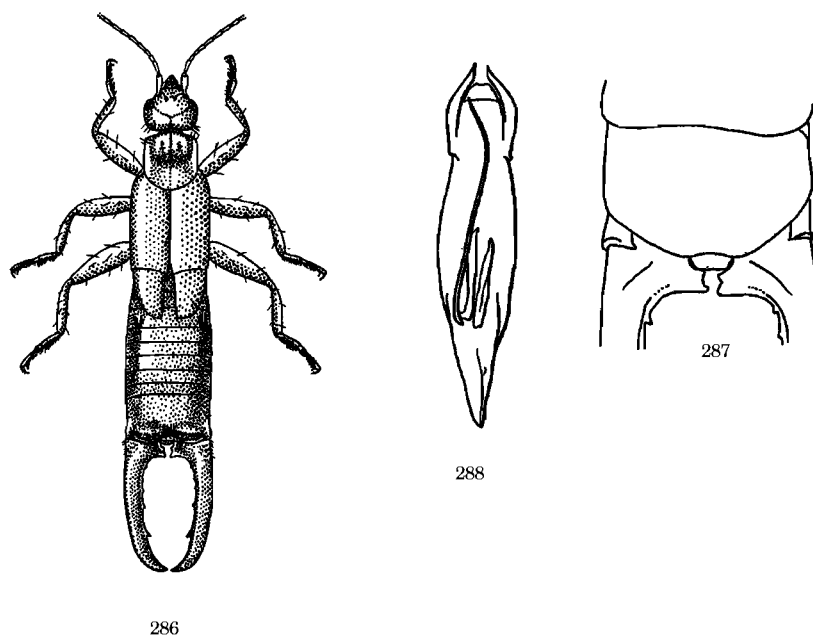
***Exypnus koorgensis* Hebard**

(Figs. 286-288)

*Exypnus koorgensis* Hebard, 1923, *Mem. Dept. Agric. ent. Ser.*, **7**: 218, pl. 20, figs. 14-15 (Holotype Male (macrolabic), Paratype Male (brachylabic); India: Coorg, Sidapur, 914 m); Borelli, 1932, *Bull. Raffles Mus.*, **7**: 89 (Male; Malaya, Parek); Sakai, 1971, *Dermapterorum Catalogus Praeliminaris*, **6**: 37; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 43; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 67(1147) (black and white diagrams and photographs), 1240 (coloured photographs of Holotype male and 1 male and 1 female); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 48; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 163; Steinmann, 1983, *Annls hist. - nat. Mus. natn. hung.*, **75**: 141; Steinmann, 1987, *Annls hist. - nat. Mus. natn. hung.*, **79**: 116; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 620; Steinmann, 1993, *Das Tierreich*, **108**: 66.

General colour shining blackish brown, forceps somewhat reddish brown, wings yellowish brown in internal half only.

Head about as long as broad, frons weakly convex and occiput decidedly more raised or tumid, sutures distinct, hind margin faintly emarginate in middle. Eyes much shorter than post-ocular length. Antennae 18-segmented, 1<sup>st</sup> equal to 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> together; 2<sup>nd</sup> short; 3<sup>rd</sup> long and slender; 4<sup>th</sup> slightly shorter than preceding and sub-clavate, only slightly longer than 2<sup>nd</sup>; remaining gradually increasing in length distally. Pronotum



**Figs. 286-288.** *Exypnus koorgensis* Hebard, Holotype Male, 286. Dorsal view, 287. Penultimate sternite and basal portion of forceps, 288. Genitalia.

slightly longer than broad, anterior margin convex, laterally straight and depressed, hind angles and margin well rounded, prozona raised and metazona depressed, median sulcus well marked in anterior half only with a faint depression on either side of it, close to anterior margin. Elytra glabrous, smooth, humeral angle weak, meeting along the median axis, hind margin obliquely concave. Wings well developed. Legs typical of the genus; tibiae flattened (grooved) above in apical third only; hind tarsi with 1<sup>st</sup> segment slightly longer than 3<sup>rd</sup>; 2<sup>nd</sup> segment produced below the third but in less than half of its length, undersurface strongly pubescent and with thick setae; claw without an arolium. Abdomen moderately convex, parallel sided, punctate, lateral fold on 3<sup>rd</sup> weakly and on 4<sup>th</sup> strongly developed. Penultimate sternite with hind margin narrowly rounded with slight emargination in middle. Ultimate tergite transverse, sides straight but posterolateral angles slightly projecting, weakly tumid above the roots of forceps and depressed in middle with pair of compressed tubercles and several tubercles above tumid elevations as well, hind margin feebly trisinate, laterally oblique. Pygidium small, vertical, convex above. Forceps (in forma macrolabia) at base internally with a bifid, depressed tooth, afterwards branches slender, somewhat depressed, tapering apically and regularly incurved, apices pointed and gently hooked, internal margin below with a few sharp, posteriorly directed teeth; (in f. cyclolabia) forceps a little shorter in length, internally armed with a sharp posteriorly directed triangular tooth followed by another smaller one. Genitalia as in fig. 288.

*Measurements:* (in mm)

|                | Holotype Male<br>(macrolabic) | Paratype Male<br>(cyclolabic) |
|----------------|-------------------------------|-------------------------------|
| Length of body | 13.5                          | 12.0                          |
| Length forceps | 4.5                           | 2.9                           |

Female: Not known.

*Type:* Holotype Male and Paratype 1 Male in ANSP.

*Distribution:* India and Malaysia (Sumatra).

*Remarks:* Besides type specimens, Sakai (1987) has given the diagrams of a male and female present at the Manchester Museum, Manchester, U. K. without any other information.

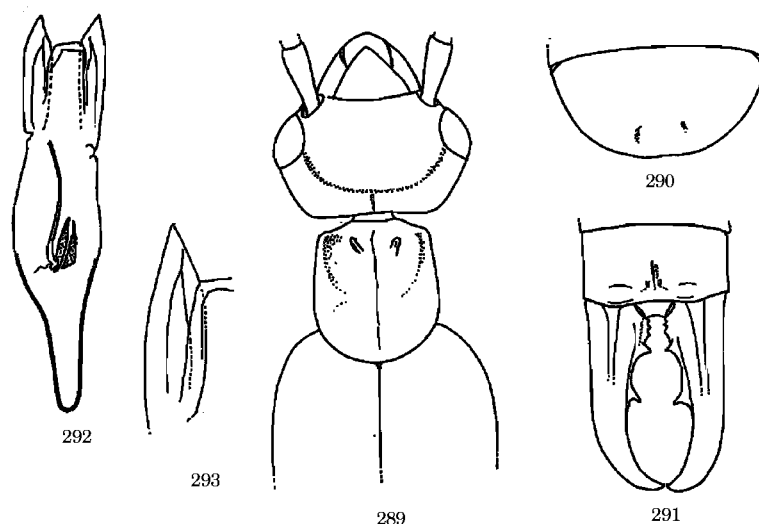
***Exypnus nathani* Srivastava**

(Figs. 289-293)

*Exypnus nathani* Srivastava, 2002, *Rec. zool. Surv. India*, **100**(1-2): 18, figs 13-16 (Holotype Male; India: Tamil Nadu (not Karnataka), Coimbatore Dist., 427 m); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 163.

Male: General colour brownish black; pronotum in middle yellowish brown, blackish laterally; elytra and wings yellowish brown, laterally darker; abdominal tergites up to 5<sup>th</sup> black on sides. Build stout, glabrous.





**Figs. 289-293.** *Exypnus nathani* Srivastava, Holotype Male, 289. Anterior portion of body, 290. Penultimate sternite, 291. Ultimate tergite and forceps, 292. Genitalia, 293. Paramere, enlarged (all figs. after Srivastava, 2002a).

Head about as long as broad, smooth, frons and occiput raised, sutures marked by a distinct depression, hind margin faintly emarginate in middle. Antennae with basal segments of the right side present, stout, narrowed basally, shorter than the distance between antennal bases. Eyes prominent about as long as the post-ocular length. Pronotum slightly longer than broad, impunctate, gently widened posteriorly, hind angles and margin broadly rounded, median sulcus distinct, prozona weakly raised and differentiated from weakly depressed metazona. Elytra and wings well developed, smooth, former with humeral angles distinct, hind margin concave. Legs typical of the genus, hind tibiae with a faint groove in a little less than apical half, hind tarsi with 1<sup>st</sup> segment equal to 3<sup>rd</sup>, clad on underside with thick pubescence. Abdomen elongated, enlarged in middle, tergites weakly depressed, micro-reticulated, lateral folds on 3<sup>rd</sup> faintly and on 4<sup>th</sup> strongly marked. Penultimate sternite transverse, punctate, hind margin broadly rounded. Ultimate tergite transverse, weakly depressed, impunctate in middle, laterally with broad stripe of obscure punctation, gently sloping backwards, depressed in middle posteriorly with a pair of small compressed tubercles in middle, above the bases of forceps with weak elevations, hind margin faintly trisinate, laterally above the bases of forceps oblique. Pygidium vertical, trapezoidal, narrowed posteriorly with hind margin faintly concave, postero-lateral angles with a minute point. Forceps stout, depressed, almost straight, gently arcuate in a little less than apical half, at base separated by the pygidium, internally at base with a serrated area terminating in to a large tooth, followed by another slightly larger, triangular tooth at a little beyond middle. Genitalia with parameres lanceolate, parallel sided in most part, gradually narrowing from apical one fourth to pointed tip; virga fine, tubular.

Female: Unknown.

*Measurements:* (in mm)

|                   | Holotype |
|-------------------|----------|
|                   | Male     |
| Length of body    | 8.8      |
| Length of forceps | 2.35     |

*Type:* Holotype Male in the ZSI.

*Distribution:* India: Tamil Nadu, Coimbatore Dist., 427 m.

*Remarks:* This species differs from all the known species of the genus in having serrated flange at the base of male forceps and genitalia with parameres straight, apex acute.

#### Genus *Solenosoma* Burr

*Solenosoma* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 131 (Type species: *Auchenomus birmanus* Bormans, 1888); Burr, 1911, *Genera Insect.*, **122**: 46; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**, 48; Sakai, 1971, *Dermapterorum Catalogus Praeliminaris*, **6**: 40; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 43; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 68(1187); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 163; Steinmann, 1983, *Annls hist.-nat. Mus. natn. hung.*, **75**: 141; Steinmann, 1987, *Annls hist.-nat. Mus. natn. hung.*, **79**: 117; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 647; Steinmann, 1993, *Das Tierreich*, **108**: 91.

Build long, very slender. Head slightly longer than wide, depressed; antennae long, slender; eyes shorter than post-ocular length. Pronotum slightly longer than wide, gently broadened posteriorly. Elytra abbreviated, inner basal angles rounded off to show a small triangular scutellum. Wings concealed. Legs short, tibiae not strongly furrowed in apical half. Abdomen slightly dilated in middle, lateral tubercles distinct; ultimate tergite transverse; forceps, in males, long, slender, remote at base; in females, subcontiguous and straight. Pygidium short, in both sexes.

*Distribution:* India, Myanmar and China (South).

*Type species:* *Auchenomus birmanus* Bormans, 1888.

*Remarks:* Burr (1907b) differentiated this genus by its very long and slender body, abbreviated elytra and concealed wings. In view of the unique slender build it is retained for the present. In future when more material is available for study the validity of this genus needs to be investigated.

It may be mentioned here that *Proreus cunctator* Burr, 1911, in a large series exhibits similar condition of elytra and concealed wings, besides well developed elytra and wings.

Body build is stouter like other members of *Proreus* Burr.

Bey-Bienko (1959) has reported *Solenosoma birmanum* (Bormans) from China (Yunnan) and remarked "...Externally and morphologically they differ from the males and more like species of the genus *Proreus* Burr..." Perhaps as stated above the specimens referred to this species may belong to *Proreus cunctator* Burr, as understood in this work and details given under the species.

***Solenosoma birmanum* (Burr)**

(Figs. 294-301)

*Auchenomus birmanus* Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)6: 436, fig ( 1 Male; Bhamo (Birmaine); Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)14: 391 (1 Male; Burma: Bhamo).

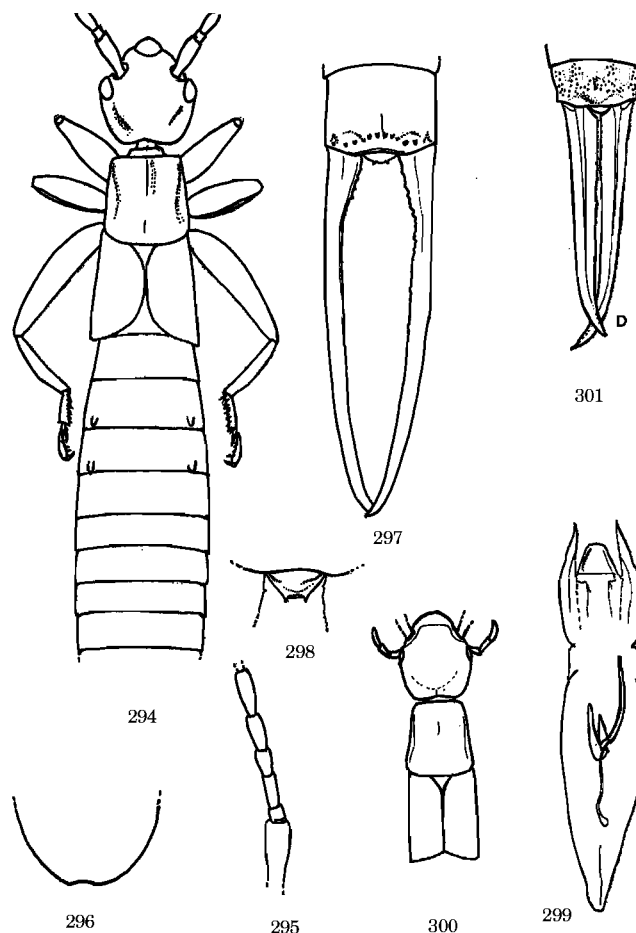
*Chelisoches birmanus*; Bormans and Krauss, 1900, *Das Tierreich*, 11: 85; Kirby, 1904, *Syn. Cat. Orthoptera*, 1: 33.

*Solenosoma birmanum*; Burr, 1907, *Trans. R. ent. Soc. Lond.*, 1907: 131; Burr, 1910, *Fauna British India, Dermaptera*: 140 (1 Male; Assam, Silicuri, in Cachar; 1 Male; Burma, Bhamo); Sakai, 1971, *Dermapterorum Catalogus Praeliminaris*, 6: 43; Sakai, 1982, *Bull. Daito Bunka Univ.*, 20: 43; Sakai, 1987, *Dermapterorum Catalogus*, 19: 68(1148) (diagrams and black and white photograph showing 1 Male in BMNH and 1 Female in IM (now ZSI); Burr, 1911, *Genera Insect.*, 122: 64, pl. 5, figs 20, 20a; Burr, 1913, *Rec. Indian Mus.*, 8(2): 145 (1 Female; India: Assam, Janakmukh); Bey-Bienko, 1959, *Ent. Obozr.*, 38(3): 615 (2 Males, 2 Females; China: Yunnan- perhaps wrong identification, referable to *Proreus cunctator* Burr, 1911); Kapoor, 1968, *Agra Univ. Res. (Sci.)*, 16(1) (1967): 23; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, 2: 48; Srivastava, 2003, *Rec. zool. Surv. India*, 101(3-4): 163; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 647; Steinmann, 1993, *Das Tierreich*, 108: 91

Male: General colour dark brownish black; elytra somewhat lighter; legs yellowish brown; pronotum yellowish on sides and forceps reddish black.

Head about as long as wide, smooth, pilose, frons and occiput raised, sutures obsolete, hind margin feebly emarginate in middle. Eyes about one third as long as the post ocular-length. Antennae (in Type Male, on right with basal segment and on the left with 10 basal segments remaining) multi-segmented, basal segment stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, very slightly expanded apically; 4<sup>th</sup> slightly shorter and stouter than preceding, subclavate; 5<sup>th</sup> about as long as 3<sup>rd</sup>, stouter, slightly expanded apically, remaining gradually increasing in length and thinning, each gently expanded apically. Pronotum a trifle longer than broad, smooth, gently widened posteriorly, lateral margin straight, gently reflexed, hind angles and margin briefly rounded, median sulcus distinct along the whole length, prozona raised and well differentiated from flat metazona. Elytra abbreviated as ovate flaps, axillary angles rounded off to a small scutellum, costal margin

straight, inner margin convex, meeting in middle. Wings wanting. Legs long, slender, fore-femora swollen, middle and hind ones compressed; tibiae sulcate in apical half only; hind tarsi with 1<sup>st</sup> segment longer than 3<sup>rd</sup>; 2<sup>nd</sup> produced as a narrow lobe below the 3<sup>rd</sup>, covered with thick pubescence on underside. Abdomen, long, slender, gently dilated in middle, tergites convex, punctate, punctures separated from each other by a distance greater than their circumference, lateral folds 3<sup>rd</sup> weakly and on 4<sup>th</sup> distinctly marked, sides of segments obtuse angled posteriorly. Penultimate sternite faintly punctulate, hind margin rounded with slight emargination in middle. Ultimate tergite transverse, disc with smooth and punctate vertical stripes alternating, gently tumid above the bases of



**Figs. 294-301.** *Solenosoma birmanum* (Bormans), Type Male, 294. Dorsal view, without ultimate tergite and forceps, 295. A few basal antennal segments, 296. Posterior half of penultimate sternite, 297. Ultimate tergite and forceps, 298. Pygidium, enlarged; 299. Genitalia; Female, 300. Anterior portion of body, 301. Ultimate tergite and forceps.

forceps and depressed in middle, a row of small compressed tubercles present close to hind margin bordering apical portion of median posterior depression and extending over the tumid elevations at bases of forceps, hind margin trisinate, oblique laterally above the bases of forceps. Pygidium vertical, filling the space between the the branches of forceps at base, broader and convex at base, narrowed apically with a pair of horizontal and distantly placed tubercles. Forceps with branches, long, stout at base, attenuate apically, compressed, incurved broadly, enclosing elongated oval space, internal margin ventrally with small pointed and blunt teeth in basal two thirds, placed irregularly. Genitalia with parameres broader at base, narrowed apically, tip pointed; virga short, tubular, at base with accessory chitinous plates.

Female:Agrees with males in most characters except that pronotum slightly longer than broad; elytra only slightly abbreviated, meeting along the median line, anal angles briefly rounded off to show a small triangular scutellum, hind margin obliquely truncate; ultimate tergite narrowed posteriorly; pygidium declivitous, obtusely rounded and forceps with branches simple and straight.

*Measurements:* (in mm)

|                   | Male       | Female |
|-------------------|------------|--------|
| Length of forceps | 8.5 - 10.0 | 9.2    |
| Length of forceps | 4.0 - 6.0  | 3.5    |

*Type:* Type Male at MSNG

*Distribution:* Myanmar (Bhamo); India.(Assam: Silicuri, in Cachar and Janakmukh, 183 m).

*Remarks:* This species, besides Type Male, is known by 1 Male and 1 Female

Bey-Bienko (1959) records this species on 2 males and 2 females from China (Yunnan) but specimens are not as slender and more like members of *Proreus* Burr, especially *P. cunctator* Burr, with abbreviated elytra and concealed wings. This record, therefore, may be treated with reserve.

### Genus *Laprophorella* Mjöberg

*Lamprophorus* Burr, 1911, *Genera Insect.*, **122**: 66 (Type species: *Mecomera kervillei* Burr, 1905).

*Laprophorella* Mjöberg, 1924, *Ark. Zool.*, **6**(21): 10 (new name for *Lamprophorus* Burr, 1911 since preoccupied by *Lamprophorus* Geminnger and Harold, 1896 in Coleoptera); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 53; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, pt. 4: 418; Srivastava, 2003, *Rec. zool Surv. India*, **101**(3-4): 163.

*Laprophorella* (instead of *Laprophorella* Mjöberg, 1924); Townes, 1945, *Ann. ent. Soc. Am.*, **38**: 350; Brindle, 1966, *Entomologist's mon. Mag.*, **102**: 231; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1)(1967): 25; Sakai, 1971, *Dermapterorum Catalogus Praeliminaris*, **6**: 45; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 43; Seimann, 1987, *Annls hist.-nat. Mus natn. hung*,

**79:** 115; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 631; Steinmann, 1993, *Das Tierreich*, **108:** 25.

Head strongly and body weakly depressed. Eyes slightly shorter than post-ocular length. Antennae 16-segmented or more, 1<sup>st</sup> long, slender, equal to 4<sup>th</sup> which is sub-conical. Pronotum slightly longer than broad, rounded posteriorly. Elytra and wings normal. Legs with tarsi broad, depressed. Abdomen parallel laterally, strongly punctate. Penultimate sternite rounded posteriorly with slight emargination in middle; ultimate tergite, in males, transverse, in females, narrowed posteriorly. Pygidium short, prominent, in males. Forceps in males, depressed in basal half; in females, simple and straight. Male genitalia flat, four times longer than wide, a little before apex externally with a slight emargination, tip pointed.

*Type species: Mecomera kervillei* Burr, 1905.

*Distribution:* Oriental Region.

*Remarks:* Burr (1911a) placed this genus under the group having tibiae smooth above whereas the specimens determined by him, present in the ZSI, possess tibiae sulcate in apical half.

It shares the characters of *Proreus* Burr and *Chelisoches* Scudder but differs by the strongly depressed head and broad and depressed tarsi, especially the hind pair.

### ***Laprophorella kervillei* (Burr)**

(Figs. 302-307)

*Mecomera kervillei* Burr, 1905, *Ann. mag. nat. Hist.*, (7) **6:** 489 (1 Male, 1 Female; Java).

*Lamprophorus kervillei*; Burr, 1911, *Genera Insect.*, **122:** 66, pl. 6, fig. 7a-b; Burr, 1913, *Rec. Indian Mus.*, **8**(2): 143 (Males, females; India: Abor Hills, below Dosing (now Arunachal Pradesh) and Dibrugarh (Assam); Burr, 1914, *Rec. Indian Mus.*, **10:** 291 (2 Female; India: W. B., Darjeeling Dist., Singla, 457 m).

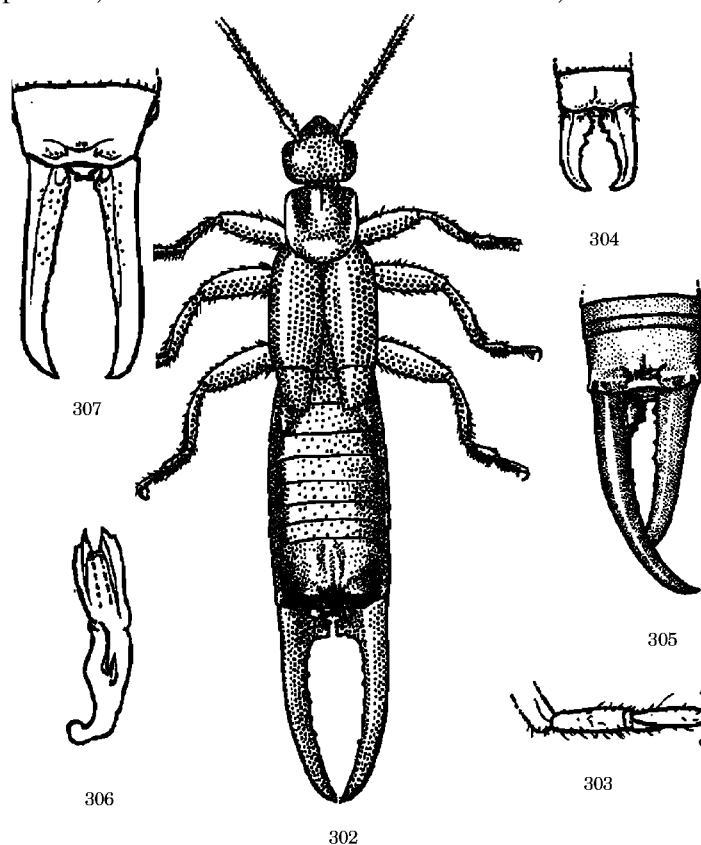
*Lamprophorella kervillei*; Popham and Brinadle, 1968, *Entomologist*, **101:** 133; Sakai, 1971, *Dermapterorum Catalogus Praeliminaris*, **6:** 46; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20:** 44; Sakai, 1987, *Dermapterorum Catalogus*, **19:** 16(1096), 68 (1148) (black and white diagrams and photographs of Holotype Male and 1 female), 1240 (coloured photographs labelled as Holotype (actually Syntypes) Male, Allotype Female (actually not Syntype), the label shows locality as Rotung (India), determined and referred by Burr (1913) and 1 male, 1 Female (Ind. mus.); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 623; Steinmann, 1993, *Das Tierreich*, **108:** 26.

*Laprophorella kervillei*; Mjöberg, 1924, *Ark. Zool.*, **6**(21): 10, pl. 1, fig. 2d- ultimate tergite and forceps; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2:** 53; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, pt. **4:** 418, figs 155-157 (Male, Female; India: W.B., Darjeeling and Hooghly Dist. and Kolkata (Dum Dum); Srivastava and Kovack, 1993, *Rec. zool. Surv. India*, **93**(1-2): 263, figs 33-39 (Male; Malaysia: Malaya, Selangor, Genting

highlands, 1000 m); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series* **9**: 216, figs 49-50 (Male, Female; India: Sikkim, Singtom and Rangli, 650 m)

Male: General colour blackish brown to brownish yellow. Head blackish brown or yellowish; occiput and mouth parts brown; elytra dark brown or yellowish; wings yellowish brown; abdomen blackish on sides; legs clear yellow and forceps reddish but blackish in apical half.

Head about as long as broad, depressed, sutures indistinct, hind margin emarginated in middle. Antennae 16- segmented or more, pubescent, 3<sup>rd</sup> almost equal to 4<sup>th</sup> and 5<sup>th</sup>, remaining long and slender. Pronotum slightly longer than broad, lateral margin straight, gently reflexed, hind margin rounded, median sulcus distinct in apical half only, prozona weakly raised and metazona depressed. Legs with tibiae sulcate in apical half, tarsi broad, depressed, clad with with stiff hairs on underside, hind tarsi with 1<sup>st</sup> segment



**Figs. 302-307.** *Laprophorella kervillei* (Burr), Male, 302. Dorsal view, 303. Hind tarsi, 304. Ultimate tergite and forceps, cyclolabial form, 305. Ultimate tergite and forceps, macrolabial form with right branch malformed, 306. Genitalia; Female, 307. Ultimate tergite and forceps.

slightly shorter or almost equal to 3<sup>rd</sup> segment. Abdomen almost parallel sided, weakly depressed, densely punctate, lateral folds on 3<sup>rd</sup> tergite weakly and on 4<sup>th</sup> well developed, hind margin of 6<sup>th</sup> to 9<sup>th</sup> tergites with a row of compressed tubercles. Penultimate sternite broadly rounded posteriorly with slight emargination in middle. Pygidium subvertical, narrowing posteriorly with hind margin concave and angles acute. Ultimate tergite transverse, lateral margins parallel, disc convex, posteriorly in middle with a depression and a pair of compressed tubercles, tumid above the bases of forceps with compressed tubercles along its hind margin, hind margin trisinate, oblique laterally above the bases of forceps. Forceps stout, depressed, (in forma macroabia) almost straight in basal two thirds, tapering apically, gently incurved in apical one third, internal margin at base with a short deplanate area with its internal margin serrated, afterwards also minute tubercles present, (in forma cyclolabia) branches of forceps strongly incurved beyond middle, internally at base with a bifid tooth, followed by smaller teeth upto middle. Genitalia with parameres almost parallel sided, broad, a little before apex externally with a slight depression, afterwards strongly narrowed to pointed apex; virga short, tubular, at base with chitinous accessory plates.

Female: Agrees with males in most characters except that general body colour dark blackish brown; elytra brownish yellow with a broad black band at posterior margin; penultimate sternite obtusely rounded posteriorly; ultimate tergite narrowed posteriorly and forces simple and straight.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 11.5 - 14.1 | 10.3 - 13.3 |
| Length of forceps | 2.7 - 3.0   | 2.9 - 4.7   |

*Type:* Type (Holotype) at BMNH and Syntype Female unknown.

*Distribution:* India (Arunachal Pradesh, West Bengal and Sikkim), Malaysia (Malay Peninsula) and Indonesia (Sumatra and Java).

This species has been recorded, in India, from plains and Himalaya, in a little beyond 1500 m, occurring commonly inside the dry bamboo stem scales.

*Remarks:* It is quite characteristic by the depressed body, especially forceps. Male forceps exhibit slight variation in the internal armature in having either bifid tooth at base or several minute teeth.

Genus *Hamaxas* Burr

*Hamaxas* Burr, 1907, *Transent. Soc. Lond.*, **1907**: 133 (Type species: *Chelisoches feae* Bormans, 1894); Burr, 1910, *Fauna British India, sDermaptera*: 147; Burr, 1911, *Genera Insect.*, **122**: 67; Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, **79**: 43; Bey-Bienko, 1936, *Fauna de l'URSS, Dermaptères*: 119; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 28; Towens, 1945, *Ann.*



*ent. Soc. Am.*, **38**: 349; Brindle, 1968, *Ark. Zool.*, (2)**20**(25): 545 (genus redefined on the shape of prameres); Sakai, 1971, *Dermapterorum Catalogus Praeliminaris*, **6**: 209; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 45; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 53; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, pt. **4**: 419; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(1-4): 163; Steinmann, 1983, *Annls hist.-nat. Mus. natn. hung.*, **75**: 140; Steinmann, 1987, *Annls hist.-nat. Mus. natn. hung.*, **79**: 115; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 622; Steinmann, 1993, *Das Tierreich*, **108**: 27.

Size generally small (7.0-8.0 mm), rarely larger (15.0-21.0 mm); strongly pubescent. Head somewhat depressed, sutures obsolete; antennae 19-segmented, 1<sup>st</sup> long, stout, 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> longer than 4<sup>th</sup> but equal to 5<sup>th</sup>, remaining long and slender; eyes shorter than post-ocular length. Pronotum longer than broad, hind margin generally rounded and elytra and wings normal, covered with thick pubescence. Legs with tibiae flattened above, generally smooth, rarely sulcate. Abdomen gently dilated in middle, on lateral margin long hairs present, lateral tubercles distinct. Penultimate sternite, in males, rounded posteriorly, often slightly emarginated in middle, in females obtusely rounded posteriorly. Ultimate tergite, in males, transverse and in females narrowed posteriorly. Pygidium, in both sexes, short. Male genitalia with parameres short, broad, produced as triangular or rounded lobe, sometimes with a concavity, a little before apex.

*Type species: Chelisoches feae* Bormans, 1894.

*Distribution:* Oriental and Australasian Regions; Pacific Islands, New Zealand and Mongolia.

*Remarks:* Members of this genus are thickly pubescent. Male genitalia is quite characteristic in having parameres flattened as triangular or obtuse lobe and external margin a little before apex is oblique either with a concavity or tubercle.

#### Key to the species (based on males)

- 1(4). Size, including forceps larger (16.0 - 21.0 mm)
- 2(3). Build slender; pygidium at base convex, declivitous, with two distantly placed tubercles, hind margin convex ..... *H. kempi* Burr
- 3(2). Build stout; pygidium convex at base, declivitous, with two large, hooked points, hind margin truncate and angles produced into two sharp points .....  
..... *H. tigris* (Burr)
- 4(1). Size, including forceps shorter (8.0- 15.0 mm)
- 5(8). Parameres of uniform width upto apical two thirds, at that point gently expanded with apical external margin straight or emarginated, external lobe narrow or briefly triangular

- 6(7). Size, including forceps, smaller (6.0 - 7.5 mm); build slender; eyes prominent, about half as long as the post-ocular length; pronotum about as long as broad; forceps internally with a single triangular tooth at basal one third; parameres with apical concavity at a little before apex, external lobe narrow, pointed ..... *H. delicatulus* (Burr)
- 7(6). Size, including forceps, larger (10.5 - 15.0 mm); build stout; pronotum longer than broad; forceps internally with two teeth and serrations; parameres with apical external margin straight, external lobe broadly triangular ..... *H. weisi* (Burr)
- 8(5). Parameres gradually widening from base to apical one third, external apical angle lobed or pointed
- 9(10). Pygidium with two distantly placed tubercles; parameres with external apical margin concave, angle broad and pointed ..... *H. sakaii* Srivastava
- 10(9). Pygidium without tubercles; parameres with external apical margin straight, oblique, angle convex
- 11(12). ... Ultimate tergite posteriorly, in middle, depressed; above the bases of forceps tumid with compressed tubercle externally and posteriorly; forceps with branches long, slender, internally serrated and with a tooth ..... *H. chandrai* Srivastava
- 12(11). Ultimate tergite posteriorly, in middle, with a rectangular depression and with a pair of compressed tubercle in middle, tumid folds above the bases of forceps weak and without tubercles; forceps with branches comparatively stouter, internal margin with a tooth or two
- 13(14). General colour orange; forceps (in f. macrolabia) armed at base with a dorsal and ventral tooth and another at apical one third and (in f. cyclolabia) with a distinct tooth at middle; parameres with external angle obtuse ..... *H. melanocephalous* (Dohrn)
- 14(13). General colour brownish black; forceps armed at base and middle with a sharp tooth; parameres with external angle rounded ..... *H. feae* (Bormans)

***Hamaxas kempi* Burr**

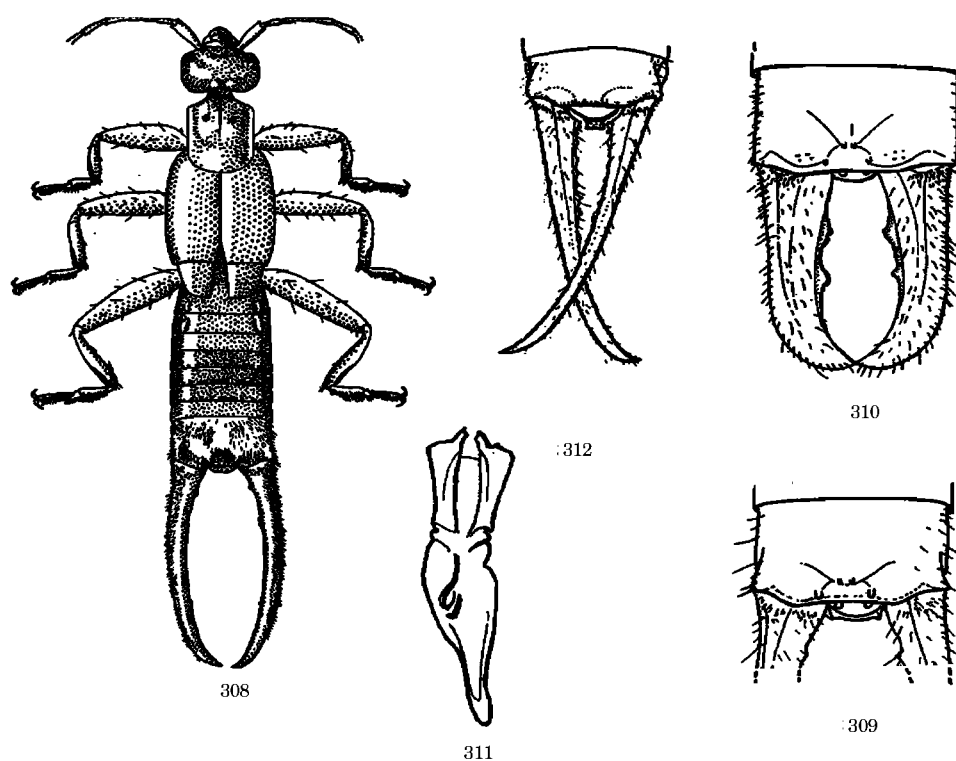
(Figs. 308-312)

*Hamaxas kempi* Burr, 1913, *Rec. India Mus.*, **8**(2): 144 (10 Males, 5 Females, out of this 1 Male with Reg. No. 2470 designated as the Nomotype; India: Rotung (now Arunachal Pradesh) and remaining specimens are Paratypes from Rotung, 427 m, below Damda, bank of Siyom River, 396 m and (now Assam) Janakmukh); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 54; Srivastava, 1979, *Proc. Sym. zool. Surv. India*, **1**: 62, figs A-B (male in dorsal view); Srivastava and Chaturvedi, 2002, *J. Bombay nat. Hist. Soc.*, **99**(2): 215 (Paratypes, 1 Male, 2 Females ex ZSI (Ind. Mus. coll); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 163; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 45; Sakai, 1987, *Dermapterorum*

*Catalogus*, **19**: 1230 (black and white photograph 1 Male Syntype (actually Paratype), 1243 (coloured photograph Holotype Male (actually Nomotype Male), Paratypes (not Syntypes) 1 Male, 1 Female); Steinmann, 1983, *Annls hist.-nat. Mus. natn. hung.*, **75**: 140; Steinmann, 1987, *Annls hist.-nat. Mus. natn. hung.*, **79**: 115; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 625; Steinmann, 1993, *Das Tierreich*, **108**: 31.

Male: General colour reddish black; antennae somewhat darker, a few preapical ones yellowish; abdomen blackish on sides. Body covered with fine and dense pubescence.

Head about as long as broad, frons depressed, occiput weakly raised, sutures obsolete, hind margin in middle emarginate. Antennae 16-segmented or more (since apical ones generally tend to break off easily on slightest jerk), 1<sup>st</sup> stout, gently expanded apically, slightly longer than the distance between antennal bases; 2<sup>nd</sup> short; 3<sup>rd</sup> long, slender; 4<sup>th</sup> slightly shorter than preceding; 5<sup>th</sup> almost equal to 3<sup>rd</sup>, gently expanded apically, remaining gradually increasing in length and thinning. Pronotum slightly longer than



**Figs. 308-312.** *Hamaxas kempi* Burr, Paratype Male, 308. Dorsal view, 309. Ultimate tergite and basal portion of forceps, 310. Ultimate tergite and forceps, cylolabic form, 311. Genitalia; Female, 312. Ultimate tergite and forceps.

broad, of uniform width, lateral sides parallel, hind margin rounded, median sulcus distinct in anterior half, prozona weakly tumid, metazona depressed. Elytra and wings well developed, punctate, former with hind margin concave in middle, latter about one fourth in length of elytra. Legs with hind tarsus clad with thick pubescence on underside, 1<sup>st</sup> segment slightly shorter than 3<sup>rd</sup>. Abdomen elongated, parallel sided, punctate, tergites weakly convex, each tergite with a row of compressed tubercles on posterior margin, of which on sides slightly larger, sometimes thick hairs arising from each, lateral folds on 3<sup>rd</sup> tergite weakly and on 4th strongly marked. Penultimate sternite laterally and posteriorly well rounded with slight emargination in middle. Ultimate tergite transverse, vertical stripes of smooth and punctate areas alternating, disc weakly depressed, tumid above the bases of forceps and depressed in between, with two pairs of compressed tubercles, inner pair closely placed on either side of middle line at the base of depressed area and outer pair distantly placed, corresponding to inner margin of forceps, close to hind margin, hind margin trisinate, laterally above the bases of forceps oblique. Pygidium broader than long, subvertical and convex at base with a pair of distantly placed tubercles, hind margin convex, postero-lateral angles with minute point. Forceps, in f. *macrolabia*, long slender, broadly arcuate, internal margin crenulated, in f. *cyclolabia*, stout, depressed, almost straight, incurved in apical one fourth, tips gently hooked, pointed, internal margin with a pair of teeth in middle. Genitalia with parameres about four times longer than broad, external apical angle triangularly lobed, apical margin with a small tubercle, inner apical angle narrowed to pointed tip; virga short, stout, tubular, at base with chitinous accessory plates.

Female: Agrees with males in most characters except that ultimate tergite narrowed posteriorly; pygidium narrowed posteriorly with hind margin truncate and forceps with branches long, slender, attenuated posteriorly, internal margin crenulated in basal two thirds

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 11.5 - 13.0 | 11.0 - 12.5 |
| Length of forceps | 5.0 - 6.5   | 4.0 - 4.5   |

*Types:* 1 Male, designated as Nomotype (is actually Holotype) with Reg. No. 2470 in ZSI and Paratypes (though not labelled as such are actually Paratypes), 3 Males (India: Siang dist., Rotung, 24.27.xii.1911, 427 m), 1 Male, 1 Female (India: Siang dist., Upper Rotung, 4-5.i.1912), 1 Male (India: Siang dist., below Damda, bank of Siyom River, 30.i.1912, 396 m) and 1 Male (India: Assam, Janakmukh, 18.xii.1912, 183m), all determined by Burr.

Paratypes: 1 Male, 2 Females ex ZSI (Ind. Mus. coll.) in BMNS.

Paratype: 1 Male in BMNH

*Distribution:* India: Arunachal Pradesh and Assam.

*Remarks:* This species, besides above specimens, is represented by 1 Female from India: Arunachal Pradesh, Kameng Dist., Bhaluk Pong, 13.xii.1965 (S. K. Bhattacharya coll.) and determined by G. K. Srivastava.

***Hamaxas tigris* (Burr)**

(Figs. 313-315)

*Chelisoches tigris* Burr, 1913, *Rec. Indian Mus.*, **8**(2): 143 (Type Male; India: Rotung, 427 m (now under Arunachal Pradesh); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 24 (treated as synonym of *Forficula morio* Fabricius, 1775).

*Hamaxas tigris*; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 55 (Status and comb. nov.); Brindle, 1987, *Courier. Forsch.-Ins. Senckeberg*, **93**: 144; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 163; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 45; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 1231 (photograph of Type Male and genitalia - in black and white), 1243 (coloured photograph of Type Male).

**Male:** General colour brownish black; head, abdomen on sides, prozona, femora and tibiae black; metazona brown; tarsi yellowish brown; finely pubescent.

Head triangular, about as long as broad, depressed, sutures obsolete, frons and occiput weakly raised, hind margin emarginated in middle. Antennae (in type Male) damaged, only basal segment remaining, slightly longer than the distance between antennal bases, stout, expanded apically. Eyes shorter than the post-ocular length. Pronotum slightly longer than broad, gently widened posteriorly, lateral margins almost straight, gently reflexed, hind margin rounded, median sulcus distinct, prozona raised, metazona depressed. Legs typical of the genus, tarsi with 1<sup>st</sup> segment slightly shorter than the 3<sup>rd</sup>, covered with long and dense pubescence on underside. Elytra and wings well developed, meeting along the median line, smooth, former with hind margin obliquely truncate. Abdomen long, gradually expanding posteriorly, weakly convex, tergites finely punctulate, sides of segments posteriorly rounded. Penultimate sternite rounded posteriorly with slight emargination in middle. Ultimate tergite a trifle broader than long, disc weakly depressed, smooth, tumid folds above the bases of forceps with small tubercles and a compressed tubercle close to inner posterior margin, in the middle posteriorly with a slight depression, hind margin trisinate, laterally oblique above the bases of forceps. Pygidium declivitous, trapezoidal, above with two horizontally placed hooked spines, narrowed apically, hind margin straight with angles produced into sharp points. Forceps with branches stout, depressed, tapering apically, almost straight, gently incurved in apical one fourth, apices gently hooked, pointed, internal margin at middle with a blunt, stout tooth. Genitalia with parameres broad, about four times longer than broad, apical external angles obtusely lobed, apices pointed, directed externally; virga short, chitinous, tubular, at base with accessory plates.

**Female:** Not known.

*Measurements:* (in mm) (It is not possible to give accurate measurements since the specimen is badly damaged)

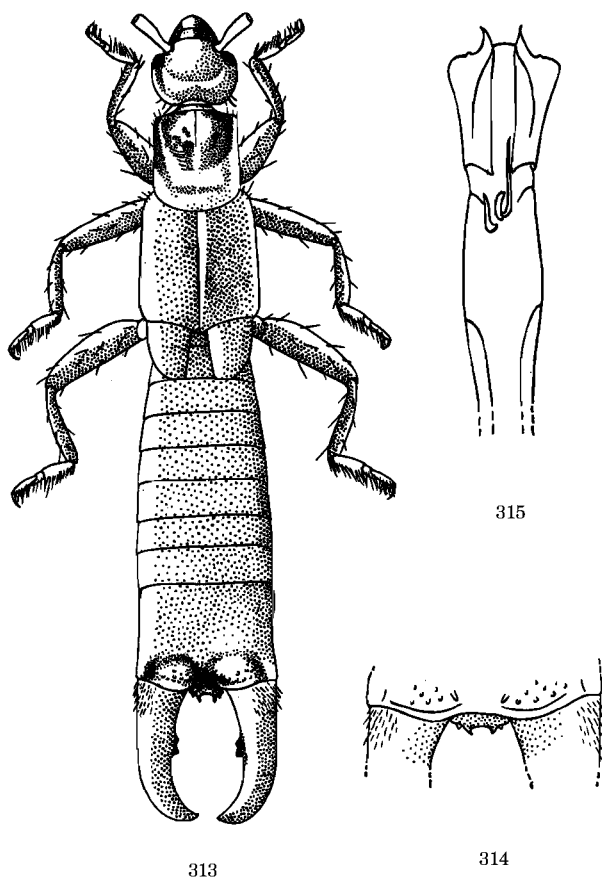
|                   |           |
|-------------------|-----------|
|                   | Type Male |
| Length of body    | 18.1      |
| Length of forceps | 2.9       |

*Type:* Type Male in ZSI.

*Distribution:* India: Arunachal Pradesh, Siang Dist., Rotung, 427 m.

*Remarks:* This species comes close to *Hamaxas kemp*i (Burr) by the shape of similar forceps (in f. cyclolabia) and identical genitalia especially parameres and cohabits the same area.

However, it can be differentiated, in males, by the stouter build (*vs* slender build in *H. kemp*i)); pronotum slightly widened posteriorly (*vs* of uniform width); pygidium



**Figs. 313-315.** *Hamaxas tigris* (Burr), Type Male, 313. Dorsal view, 314. Apical portion of ultimate tergite and basal portion of forceps, enlarged, 315. Genitalia.

declivitous, basally above with a pair of hooked spines, narrowed apically, hind margin straight, postero-lateral angles with small points (*vs* pygidium declivitous, at base above with a pair of tubercles, placed a little apart and hind margin convex) and forceps internally in middle with a bifid, blunt tooth (in *f. cyclobia* internally at middle with a pair of blunt teeth).

With the available specimens, at present, it is not possible to ascertain whether this species is a valid one or a variant of *Hamaxas kempi*. It is definitely not a synonym of *Chelisoches morio* (F) on account of its characteristic genitalia.

***Hamaxas delicatulus* (Burr)**

(Figs. 316-321)

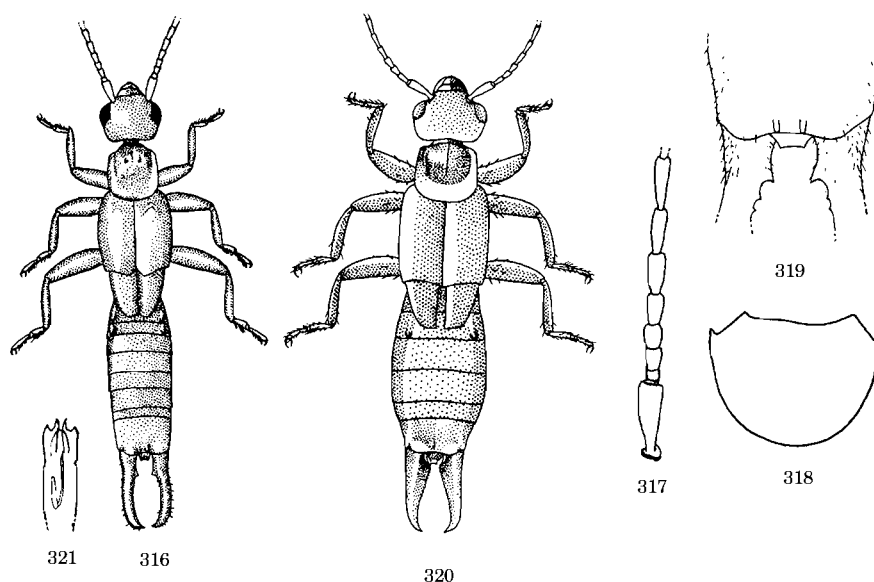
*Proreus delicatulus* Burr, 1911, *J. Asiat. Soc. Beng.* (N. S.), **7**: 789 (Male; Ceylon: Peradeniya, at light); Burr, 1916, *J. R. micr. Soc.*, **1916**: 10, pl. 2, fig. 11 (Male genitalia "North India" should be read as Ceylon); Borelli, 1926, *Treubia*, **8**: 266 (Female; Sumatra - doubtful record since based upon a Female); Borelli, 1932, *Bull. Raffles Mus.*, **7**: 90 (1 Male (cyclobic form), 3 Females; Malaysia); Borelli, 1932, *J. Fed. Malay St. Mus.*, **17**(1): 190 (1 Female; Borneo - perhaps a doubtful record); Brindle, 1971, *Ent. scand., Suppl.*, **1**: 230, figs 41 - 43 (Male, Female; Ceylon, Western and North Western Prov.); Sakai, 1971, *Dermapterorum Catalogus*, **6**: 83; Sakai, 1982, *Bull. Daito Bunka Univ.* **20**: 44; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 80 (1160) (black and white photographs- Holotype Male and 1 Male, 1 Female; Ceylon); 1240 (coloured photographs- Holotype Male, 1 Male, 1 Female; Ceylon).

*Hamaxas delicatulus*; Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, **79**: 444; Srivastava, 1976, *Rec. zool. Surv. India., Occ. pap.*, **2**: 53; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 163.

*Schizoproreus delicatulus*; Steinmann, 1987, *Annls hist.-nat. Mus. natn. hung.*, **79**: 118; Steinmann, 1987, *World Catalogue of Dermaptera* (Series entomologica v. 43): 644; Steinmann, 1993, *Das Tierreich*, **108**: 97.

General colour shining, yellowish brown; head black; pronotum, elytra and sides of abdominal tergites darker. Species pilose, except for a few short hairs on body and forceps.

Head about as long as broad, depressed, smooth, sutures obsolete, hind margin lightly emarginated in middle. Eyes prominent, black, about as long as the post-ocular length. Antennae 15-segmented, 1<sup>st</sup> stout, expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, gently expanded apically; 4<sup>th</sup> subclavate, slightly shorter than preceding; 5<sup>th</sup> equal to 3<sup>rd</sup> in length, remaining gradually increasing in length and each narrowed at base. Pronotum about as long as broad, sides straight, gently reflexed, hind margin rounded, median sulcus distinct, prozona weakly raised and metazona depressed. Elytra and wings normal, pilose, smooth. Legs typical of the genus, hind tarsi with 1<sup>st</sup> segment shorter than the 3<sup>rd</sup>, pubescent on underside. Abdomen elongated, tergites weakly depressed, punctulate, gently dilated in middle, sides of segments rounded posteriorly. Penultimate



**Figs. 316-321.** *Hamaxas delicatulus* (Burr), Male, 316. Dorsal view; 317. A few basal antennal segments, 318. Penultimate sternite, 319. Hind portion of ultimate tergite and basal portion of forceps, enlarged, 321. Genitalia; Female, 320. Dorsal view (fig. 321 after Burr, 1916).

sternite punctate, broadly rounded posteriorly. Ultimate tergite transverse, disc convex, posteriorly in middle depressed with a pair of distantly placed compressed tubercles and above the bases of forceps with a weak fold, hind margin trisinate, laterally above the roots of forceps oblique. Pygidium declivitous, broader at base, narrowed apically with hind margin lightly emarginated and angles produced into minute points. Forceps with branches remote, weakly raised above at base, tapering, long, slender apically, apices gently hooked and pointed, internal margin at basal one third with a sharp, triangular, posteriorly directed tooth, followed by a pair of small teeth, afterwards branches unarmed. Genitalia with parameres broad, about two and half times longer than broad, almost of uniform width throughout, apical margin with a concavity, external angle with a hooked point and tip narrow, pointed, directed externally; virga thick, tubular, at base with chitinous accessory plate.

Female: Agrees with males in most characters except that penultimate sternite with hind margin obtusely rounded in middle; ultimate tergite strongly narrowed posteriorly and forceps with branches simple and straight, internally serrated in basal half only.

*Measurements:*

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 6.0 - 6.1 | 5.0 - 6.2 |
| Length of forceps | 1.1 - 1.5 | 1.0 - 1.3 |



*Type:* Type Male in BMNH.

*Distribution:* Sri Lanka.

*Remarks:* Burr (1916) figured the male genitalia of the Type but mentioned as North India in the text, is an error since this species, at that time, was known only by the Type only from Sri Lanka. In view of the broad parameres and external apical angles produced into a triangular lobe, it is placed under *Hamaxas* Burr. Male forceps exhibit slight variation in the internal armature.

***Hamaxas weisi* (Burr)**

(Figs. 322-328)

*Mecomera weisi* Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 302 (Male; Tonkin, Central "environs" de Tuyen-Quan).

*Proreus weisi*; Burr, 1911, *Genera Insect.*, **122**: 64; Burr, 1912, *Annl'n naturh. Mus. Wien*, **26**: 94 (2 Males, 1 Females; Tonkin: Mount Mauson); Borelli, 1916, *Boll. Musei. zool. Anat. comp. R. Univ., Torino*, **31**(715): 5 (1 Female, doubtful; Philippine Isls: Mindanao); Srivastava, 1985, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **85**: 22, figs 60-62 (Male, Female; Myanmar-determined and recorded by Bormans (1894) as *Chelisoches ritsemae*); Srivastava, 1985, *Rec. zool. Surv. India*, **82**(1-4): 46, figs 7-13 (3 Males; India: Arunachal Pradesh, Tirap Dist., Namdapha area - additional characters provided and genitalia figured); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 164; Srivastava, 2007, *Fauna of Mizoram, State Fauna Series 14*: 237, fig. 30 (2 Females; India: Mizoram); Steinmann, 1983, *Annl's hist.-nat. Mus. natn. hung.*, **75**: 142; Steinmann, 1987, *Annl's hist.-nat. Mus. natn. hung.*, **79**: 117; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 642; Steinmann, 1993, *Das Tierreich.*, **108**: 122; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 79(1159) (black and white photographs 1 Male, 1 Female - BMNH), 1241 (coloured photographs 1 Male, 1 Female).

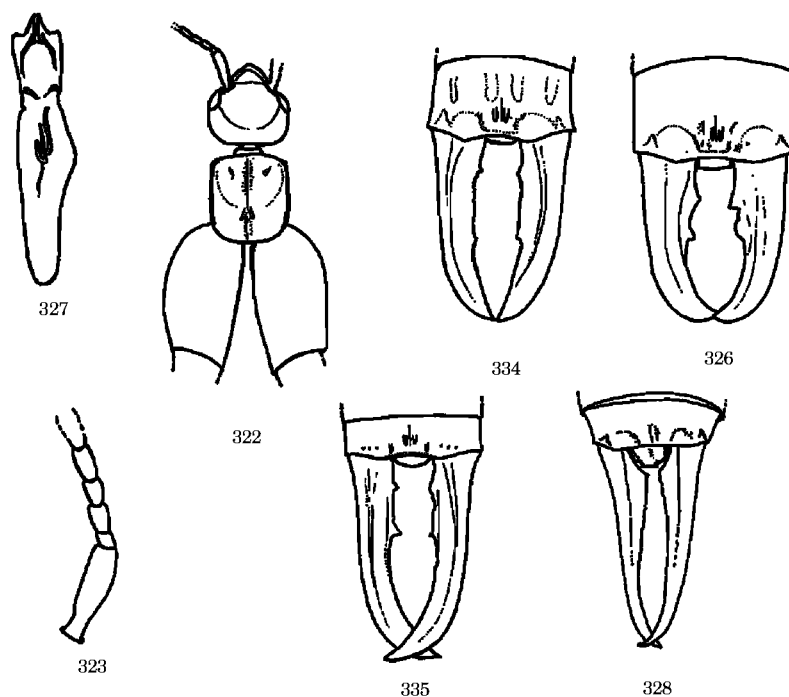
*Proreus weisi* Sub. sp? ; Bey- Bienko, 1959, *Ent. Obozr.*, **38** (3) : 613 (China: Yunnan).

Male: General colour black; legs with tarsi brownish black; certain abdominal tergites posteriorly, ultimate tergite and forceps reddish but shaded with black in parts. Form depressed.

Head micro-reticulated, slightly longer than broad, occiput and frons raised, sutures faint, hind margin emarginated in middle. Antennae 18-segmented, 1st stout, expanded apically, slightly longer than the antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> slender; 4<sup>th</sup> slightly shorter than the preceding, stouter; 5<sup>th</sup> onwards segments gradually increasing in length and thinning. Pronotum slightly longer than broad, finely punctulate in posterior half, lateral margins straight, hind margin rounded. Elytra and wings well developed, finely punctulate, pubescent, former with external margin convex in middle and hind margin concave, latter one third as long as former. Legs typical of the genus, tibiae sulcate in apical half, hind tarsi with 1<sup>st</sup> segment slightly longer than the third,

latter compressed. Abdomen elongated, tergites weakly convex, strongly punctate, punctures coalescing. Penultimate sternite broadly rounded posteriorly with slight emargination in middle. Ultimate tergite transverse, posteriorly in middle with a rectangular depression in middle, having a pair of compressed tubercles, inner pair larger, closely placed on either side of median line and outer pair shorter, distantly placed corresponding inner margin of forceps, tumid above the bases of forceps, hind margin trisinate, laterally above the bases of forceps oblique. Pygidium vertical, broader than long, at base convex above, hind margin almost straight, postero-lateral angles with minute points. Forceps with branches stout, striated, (in f. *cyclolabia*) short, stout, internal margin with two blunt tooth, roughly in middle; (in f. *macrolabia*) elongated, internal margin in basal half crenulated. Genitalia with parameres broad, of uniform width, in apical one fourth external angle slightly produced into a triangular lobe, narrowed apically, tip acute, virga short, tubular, accessory plates short.

Femle: Agrees with males in most characters except that penultimate sternite obtusely rounded posteriorly; pygidium at base declivitous, convex, narrowed apically with margin subtruncate; ultimate tergite narrowed posteriorly and forceps with branches



**Figs. 322-328.** *Hamaxas weisi* (Burr), Male, 322. Anterior portion of body, 323. A few basal antennal segments, 324-326. Ultimate tergite and forceps exhibiting cyclo-, meso- and macrolabic forms, 327. Genitalia; Female, 328. Ultimate tergite and forceps (figs. 322-327 after Srivastava, 1985b and fig. 328 after Srivastava, 2007a).

simple, straight, internally near base concave to accomodate pygidium, afterwards margin finely serrated.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 8.0 - 11.0 | 9.0 - 10.0 |
| Length of forceps | 2.5 - 4.0  | 3.0 - 3.5  |

*Type:* Type Male MNHP.

Sakai (1987: 1241) has given a coloured photograph of a Male, along with its label which can be read partly as "Tonkin...R. Env. de Tuyen - Quan, A. Weisi, 1901" is that of the Type. The other photograph is labelled as Female, Montes Mouson.

*Distribution:* India (Arunachal Pradesh, Tirap Dist., Hornbill, Namdapha area; and Mizoram); Vietnam and China (South).

*Remarks:* On account of broad parameres, produced externally into a short triangular lobe in apical one fourth it is included under the genus *Hamaxas* Burr, 1907.

***Hamaxas sakaii* Srivastava**

(Figs. 329-334)

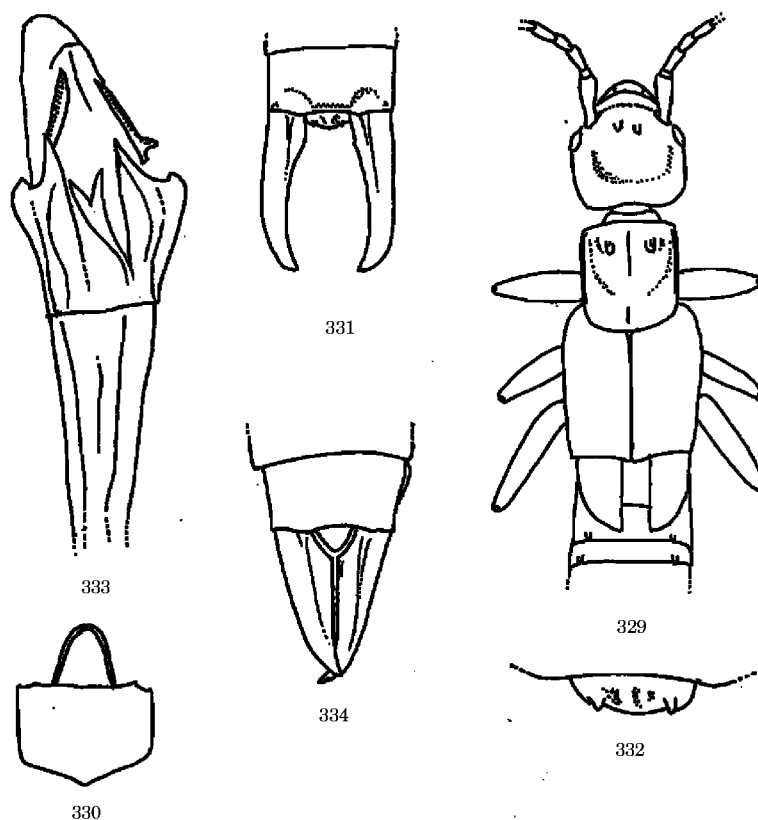
*Hamaxas sakaii* Srivastava, 2000, *Fauna of Tripura, State Fauna Series* **7**, Pt. **2**: 278, figs. 33-38 (Male, Female; India: Tripura, North Tripura, Jaduram Bari Beat (Abhanga).

Male: General colour shining yellowish brown; head black; antennae with segments 3<sup>rd</sup> to 5<sup>th</sup> yellowish brown. Form depressed and pilose.

Head slightly longer than broad, triangular, frons weakly depressed, occiput raised, sutures obsolete, hind margin emarginated in middle. Antennae multi-segmented (so far maximum 11 segments present in the Type), 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> slightly shorter than preceding and stouter; 5<sup>th</sup> about as long as the 3<sup>rd</sup> and remaining gradually increasing in length distally and thinning. Eyes short, about half as long as the post-ocular area. Pronotum longer than broad, lateral margins straight, parallel, hind margin rounded, median sulcus faintly marked in anterior half, prozona tumid, well differentiated from flat metazona. Legs typical of the genus, hind femora sulcate in apical half only. Elytra and wings well developed, coriaceous, smooth. Abdomen elongated, hardly enlarged in middle, tergites convex, almost impunctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites weakly marked. Penultimate sternite transverse, almost impunctate, hind margin briefly rounded with a slight convexity in middle; manubrium twice as long as broad, slightly narrowed apically, shorter than the sternite itself. Ultimate tergite transverse, smooth, disc convex, slightly depressed in middle posteriorly and above the bases of forceps weakly tumid, hind margin trisinate, oblique

above the bases of forceps. Pygidium rounded, convex above with lateral tubercles. Forceps with branches somewhat depressed, stouter at base, tapering apically, almost straight in basal half, afterwards slightly incurved, tips pointed, internal margin with two teeth in basal half. Genitalia with parameres flat, lateral apical angle obtusely triangular, apical margin with a concavity and internal angle produced into an acute point; preputial sac with accessory chitinous plates.

Female: Agrees with males in most characters except that antennal segment (Paratype Female with 15 segments remaining) 3<sup>rd</sup>, 5<sup>th</sup>, 13<sup>th</sup> and 14<sup>th</sup> yellowish brown; pronotum gently widened posteriorly; penultimate sternite obtuse posteriorly; ultimate tergite narrowed posteriorly; pygidium declivitous, narrowed posteriorly and forceps simple and straight.



**Figs. 329-334.** *Hamaxas sakaii* Srivastava Holotype Male, 329. Anterior portion of body, 330. Penultimate sternite, 331. Ultimate tergite and forceps, 332. Pygidium, enlarged, 333. Genitalia; Female, 334. Ultimate tergite and forceps (all figs. after Srivastava, 2000b).

*Measurements:* (in mm)

|                   | Male | Female |
|-------------------|------|--------|
| Length of body    | 7.0  | 7.5    |
| Length of forceps | 1.5  | 1.7    |

*Types:* Holotype Male, Paratype Female in ZSI.

*Distribution:* India: Trupura, North Tripura, Jaduram Bari Beat (Abhanga).

*Remarks:* This species is so far known by its Types only.

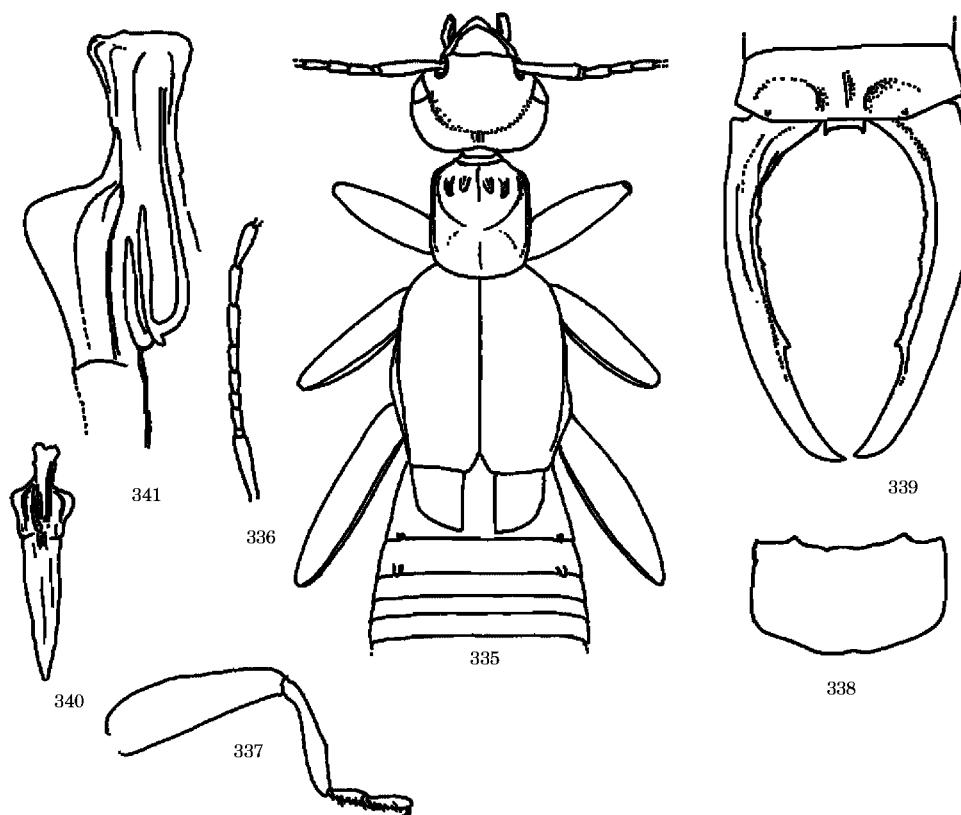
It comes close to *Hamaxas melanocephalus* (Dohrn) from the Oriental Region but differs, in males, by the shape of the pygidium rounded, basally above with a pair of lateral triangular projections (*vs* declivitous, transverse, hind margin straight or concave in middle with two triangular lobes in *H. melanocephalus*); forceps internally with two small points or teeth in basal half (*vs* dorsal and ventral tooth at base, afterwards margin serrated, terminating into a triangular or blunt large tooth at middle, followed by a blunt projection) and genitalia with parameres produced into a rounded lobe at apical external angle, with a concavity on apical margin (*vs* apical external angle produced into a triangular lobe, apical margin straight).

***Hamaxas chandrai* Srivastava**  
(Figs. 335-341)

*Hamaxas chandrai* Srivastava, 2001, *Rec. zool. Surv. India*, **99**(1): 55, figs. 24-30 (Holotype Male: India: Andaman and Nicobar Islands, Great Nicobar, Great Nicobar Biosphere Reserve, 41 km Galathea National Park); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 163; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 175, figs. 24-25.

Male: Head, antennae, pronotum, elytra and wings brownish black but one or two antennal segments and sides of pronotum brownish yellow; abdominal tergites and forceps reddish brown with shades of black on certain parts. Body pubescent, especially wings and elytra.

Head about as long as broad, frons depressed, occiput moderately raised, median suture distinct, transverse suture marked by a depressed line on the border of raised occiput, postero-lateral angles rounded, hind margin emarginated in middle. Antennae 14-segmented, 1<sup>st</sup> stout, expanded apically, slightly longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> a trifle shorter, stouter; 5<sup>th</sup> slightly longer than the 3<sup>rd</sup>, stouter, narrowed basally, remaining gradually increasing in length and thinning. Pronotum longer than broad, obscurely punctulate, anterior margin convex in middle, lateral margins straight, parallel, gently reflexed, hind margin rounded, prozona tumid, well differentiated from flat metazona. Elytra and wings well developed, shallowly punctulaed. Legs typical of the genus, hind tibiae feebly sulcate near apex and tarsi with 1<sup>st</sup> segment equal to 3<sup>rd</sup>; 2<sup>nd</sup> produced below the 3<sup>rd</sup> as narrow spiniform lobe. Abdomen narrowed at base, tergites convex, densely punctate,



**Figs. 335-341.** *Hamaxas chandrai* Srivastava, Holotype Male, 335. Anterior portion of body, 336. A few basal antennal segments, 337. Hind leg, 338. Penultimate sternite, 339. Ultimate tergite and forceps, 340. Genitalia; 341. Paramere, enlarged (all figs. after Srivastava, 2001b).

lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former weakly developed, sides of segments convex. Penultimate sternite transverse, obscurely punctate, hind margin rounded with slight emargination in middle. Ultimate tergite transverse, smooth, disc moderately convex, in the middle posteriorly with a slight triangular depression, median sulcus faintly marked, above the bases of forceps with tumid elevations and a small tubercle above it in middle close to posterior margin, posterior margin straight in middle, laterally above the bases of forceps oblique. Pygidium declivitous, narrowed posteriorly, postero-lateral angles produced into minute points, hind margin faintly concave. Forceps with branches remote, stout at base, cylindrical in basal half and depressed afterwards, tapering apically, bent inwards at base, thence straight, in apical one third gently incurved with apices hooked, internal margin sharp, serrated, at apical one third with a

large triangular, posteriorly directed tooth, afterwards smooth. Genitalia with parameres flat, external apical angle convex, narrowed apically with tip pointed; virga short, tubular, chitinous, at base with a pair of chitinous accessory plates.

Female: Unknown.

*Measurements:* (in mm)

|                   | Male |
|-------------------|------|
| Length of body    | 7.8  |
| Length of forceps | 3.4  |

*Type:* Holotype Male in ZSI.

*Distribution:* India: Andaman and Nicobar Islands, Great Nicobar Island, Great Nicobar Biosphere Reserve, 41 km Galathea National Park.

*Remarks:* This species is so far known by its Holotype male.

It comes close to *Hamaxas nigrorufus* (Burr) from New Guinea in general appearance and shape of parameres, in males, but differs by the pronotum parallel sided (*vs* sides gently diverging posteriorly in *H. nigrorufus*); forceps internally differentiated into dorsal and ventral borders with fine serrations and a large posteriorly directed triangular tooth at apical one third (*vs* with a short tooth at base above and another slightly larger at apical one third, internal margin serrated or smooth) and external apical angle of parameres convex (*vs* angle sharply triangular with its tip acute).

### ***Hamaxas melanocephalus* (Dohrn)**

(Figs. 342-347)

*Lobophora melanocephalus* Dohrn, 1865, *Stettin ent. Ztg.*, **26**: 75 (Male, Female; India: Tranquebar (Westemann)).

*Chelisoches melanocephalus*; Scudder, 1876, *Proc. Boston. Soc. nat. Hist.*, **18**: 308; Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**6**: 440 (1 Female; Burma); Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 392 (1 Female; Burma); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 89; Burr, 1899, *Ann. Mag. nat. Hist.*, **7**(4): 258 (nèc 1897, p. 315); Burr, 1905, *J. Asiat. Soc. Beng. (N.S.)*, **1**: 28 (India); Burr, 1907, *Rec. Indian Mus.*, **1**: 209 (India); Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 116; Kirby, 1904, *Syst. Cat. Orthoptera*, **1**: 33.

*Proreus melanocephalus*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 130; Burr, 1910, *Fauna of British India, Dermaptera*: 138, pl. 9, fig. 86 (Male, Female; India, Burma); Burr, 1911, *Genera Insect.*, **122**: 64; Burr, 1912, *Annln naturh. Mus. Wien.*, **26**: 94 (1 Male; India Orient); Burr, 1914, *Rec. Indian Mus.*, **10**: 291 (2 Males; India: W. B., Calcutta); Hebard, 1923, *Mem. Dept. Agric. India, ent. Ser.*, **7**: 220 (12 Males, 13 Females and 4 Juveniles; India: Bihar, Pusa; 1 Male; Uttar Pradesh, Gorakhpur); Boeseman, 1954, *Verh. Zool., Leiden*, **21**: 89; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 23.

*Hamaxas melanocephalus*; Hebard, 1927, *Proc. Acad. nat. Sci. Phila.*, **79**: 44; Srivastava and

Roychowdhury, 1975, *Newsl zool. Surv. India*, **1**(2): 23 (India: Tripura); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 54; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, Pt. **4**: 420, figs 181 - 183 (Male; India: West Bengal, Calcutta); Srivastava, 2000, *Fauna of Tripura, State Fauna Series* **7**, Pt. **2**: 278, figs. 30-32 (Female: India: Tripura, West. Dist, Teliamura, Brama Chara); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 163; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 45; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 1198, 1223 (black and white diagrams and photographs), 1243 (coloured photographs except 1 Female from HM which appears to a member of *Chaetospania* Karsch); Steinmann, 1983, *Annls hist.-nat. Mus. natn. hung.*, **75**: 140; Steinmann, 1987, *Annls hist.-nat. Mus. natn. hung.*, **79**: 115; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 626; Steinmann, 1993, *Das Tierreich*, **108**: 45.

*Hamaxas bidentatus* Ramamurthi, 1965, *Ann. Mag. nat. Hist.*, **13**(8): 62, figs 11-12 (Holotype Male; India: Hospet, Karnataka); Ramamurthi, 1968, *Zool. Anz.*, **181**: 135; Bharadwaj and Kapoor, 1970, *Entomologist*, **103**: 6 - **Syn. n.**

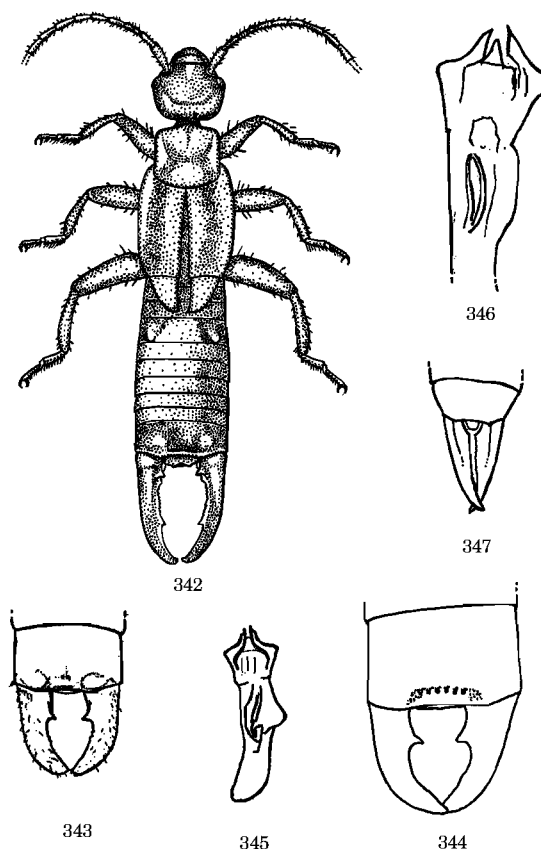
*Hamaxas singhi* Kapoor, 1966, *Ann. Mag. nat. Hist.*, (13)**9**: 235, figs 14-19 (Holotype Male; Kulu Valley, North Western Himalaya); Bharadwaj and Kapoor, 1967, *Bull. Ent.*, **8**(2): 4 - **Syn n.**

*Chaetospania srivastavai* Sakai, 1991, *Dermapterorum Catalogus*, **23**: 3924 (description and diagrams), 3791 (coloured photographs) (Holotype Male, Allotype Female; India: Pondicherry, Netapakkain; Paratypes 1 Male, 2 Females; India: Madras State (now Tamil Nadu), Coimbatore, 427 m)- a sheet attached mentioning this species as a synonym).

Male: general colour reddish brown, head black; antennae brown, sometimes one or two segments yellowish, apical ones darker; pronotum and legs pale; elytra and wings yellow or shaded with black; ultimate tergite yellowish brown, shaded with black in basal half and forceps brownish yellow. Body finely pubescent.

Head longer than broad, weakly depressed, sutures faint, posterior margin emarginated in middle. Eyes shorter than the post-ocular length. Antennae 17-segmented or more since apical ones tend to break off on slight jerck), 1<sup>st</sup> stout, expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> shorter and stouter than preceding; 5<sup>th</sup> about as long as the 3<sup>rd</sup> but stouter, remaining gradually increasing in length and thinning except a few apical ones thin and rod shaped. Pronotum about as long as broad or a trifle longer, smooth, anterior margin convex, sides straight, gently reflexed, hind margin rounded, median sulcus distinct, prozona tumid, metazona depressed. Legs typical of the genus, hind tarsi with 1<sup>st</sup> segment equal to the 3<sup>rd</sup>, covered with thick pubescence on underside. Elytra and wings well developed, smooth, former with humeral angles weak. Abdomen elongated, tergites weakly depressed, punctulate, lateral tubercles on 3<sup>rd</sup> tergite weakly and on 4<sup>th</sup> strongly developed. Penultimate sternite rounded posteriorly with slight emargination in middle. Ultimate tergite transverse, (in f. cyclolabia) tumid above the bases of forceps and area in middle sloping, depressed with a pair of compressed tubercles of which inner pair close to each other on either side of middle line and outer pair close to inner margin of tumid





**Figs. 342-347.** *Hamaxas melanocephalus* (Dohrn), Male, 342. Dorsal view, macrolabial form, 343-344. Ultimate tergite and forceps, cyclolabial form, 345-346. Genitalia; Female, 347. Ultimate tergite and forceps (figs. 344 and 346 are from the Holotype Male, *Hamaxas singhi* Kapoor).

elevations or with a row of small compressed tubercles, hind margin in middle straight or lightly concave; (in f. macrolabia) above the bases of forceps hardly raised and area in middle depressed and hind margin thickened. Pygidium (in f. cyclolabia) scarcely visible from above, subvertical, trapezoidal, narrowed apically, hind margin convex, sometimes with a small tubercle in middle; (in f. macrolabia) transverse, almost filling the space between the branches of forceps, divisible above into two triangular lobes by a median groove, hind margin incrassate. Forceps (in f. cyclolabia) short, stout, incurved in middle, armed internally at middle with a sharp tooth, followed by another smaller one, (in f. macrolabia) branches long, somewhat depressed, curving and tapering from base to apex, internally at base with a short dorsal and ventral triangular tooth, afterwards margin sharp, crenulated, at apical one third armed with a tooth, remaining part smooth. Genitalia with parameres deplanate, triangular in apical one third, tip acute; virga short,

thick, tubular, basal accessory plates thick, elongated.

Female: Agrees with males in most characters except that penultimate sternite obtuse in middle posteriorly; ultimate tergite narrowed and slightly depressed in middle posteriorly; pygidium short, obtuse and forceps simple, straight, internally at base with a small concavity, afterwards margin serrated.

*Measurements:* (in mm)

|                   | Male       | Female    |
|-------------------|------------|-----------|
| Length of body    | 7.7 - 10.0 | 6.7 - 9.7 |
| Length of forceps | 1.4 - 2.7  | 1.5 - 1.8 |

*Types:*

1. *Lobophora melanocephala* Dohrn, 1865 - Number of specimens not mentioned in the original description, only Male and Female in in Westermann's collection; repository not known.
2. *Hamaxas bidentatus* Ramamurthi, 1965 - Holotype Male (without genitalia) in ZSI.
3. *Hamaxas singhi* Kapoor, 1966 - Holotype Male in IARI.
4. *Chaetospania srivastavai* Sakai, 1991 - Holotype Male, Allotype Female and Paratype 1 Male (though not mentioned but appears to be), 2 Females at ITZA.

*Distribution:* India: Assam (Silicuri, Cachar), West Bengal (Darjeeling dist. and Calcutta), Uttar Pradesh (Gorakhpur), Uttarakhand (Hridwar), Himachal Pradesh (Kullu), Pondicherry State, Tamil Nadu, Karnataka and Kerala; Myanmar and Indonesia (Java).

Following specimens not reported earlier are present in the collection of the ZSI.

India: Himachal Pradesh, Dist. Sirmour, Paonta Sahib, at light, 1 Male, 7.iii.1982 (*R. N. C. and G. L. Purohit* coll.); Uttar Pradesh, Dist Ballia, Maniar, 19 Males (cyclo- and macrolabic forms), 20 Females, 1 nymph, 3. x. 1980; Sukhpura, 1 Male, 2. xi. 1980; Maldah, 1 Female, 1. xi. 1980 (*D. N. Tiwari* coll.); all determined by G. K. Srivastava as *Hamaxas melanocephalus* (Dohrn).

*Remarks:* This species exhibits variations in general body colour; pronotum being either longer than broad or only a trifle longer than broad; ultimate tergite, in males, with a depression in middle posteriorly with a pair of compressed tubercles in middle and low tumid elevations on either side of depression or with a broad depression with its base sloping and having a row of compressed tubercles and forceps are polymorphic. Perhaps in the absence of above information earlier, it was difficult to understand the species properly, resulting in said synonymies.

Types of *Hamaxas bidentatus* Ramamurthi, 1965 and *Hamaxas singhi* Kapoor, 1966 deposited in the collections of ZSI and IARI, respectively were examined and found to represent only individual variants and are treated as synonyms.

The genitalic preparation of *Hamaxas singhi* was examined. It is not properly cleared and the associated musculator with virga provides false impression of a peculiar shape of virga. Virga is thick, chitinous and tubular with chitinous accessory plates as in related species.

*Chaetospania srivastavai* Sakai, 1991 was synonymised by Prof. S. Sakai (1991, p. 3791) on the suggestion of Dr. G. K. Srivastava, by attaching a slip mentioning this fact.

### ***Hamaxas feae* (Bormans)**

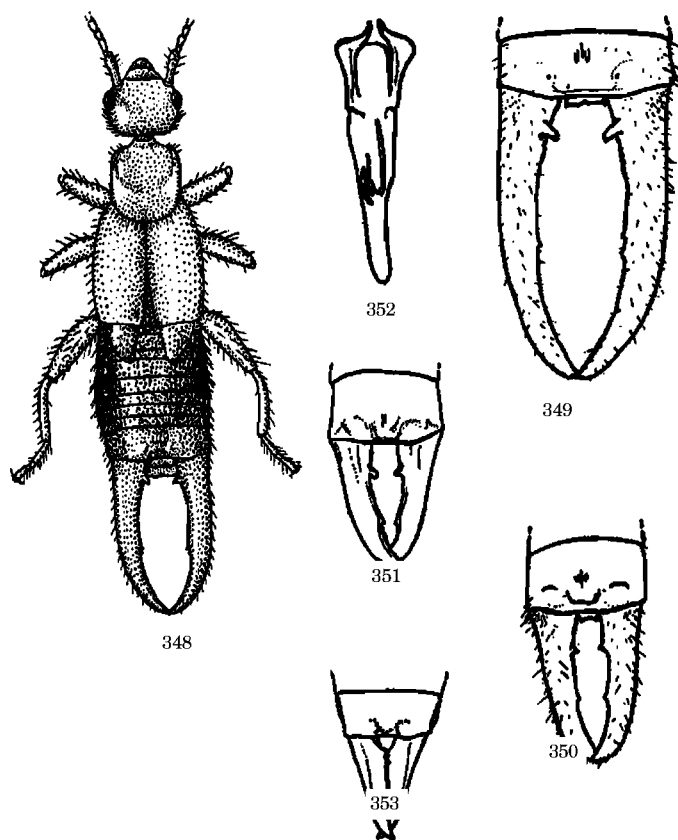
(Figs. 348-353)

*Chelisoches feae* Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 393 (2 Males, 3 Females; Burma: Carin Chèba, 900 - 1100 m); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 86; Burr, 1899, *Ann. Mag. nat. Hist.*, (7)**4**: 260; Burr, 1902, *Termètzter Fuz*, **2**: 484; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 33.

*Hamaxas feae*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 134; Burr, 1910, *Fauna British India, Dermaptera*: 148, pl. 9, fig. 88; Burr, 1911, *Genera Insect.*, **122**: 67; Burr, 1912, *Sitz. Ges. naturf. Fr. Berlin*, **1912**: 326 (Males, Female; Java Occ. and Ost. - Java); Borelli, 1923, *Boll. Musei zool. Anat. comp. R. Univ., Torino*, **38** (N. S. 13): 17 (Philippine Islands); Borelli, 1932, *Bull. Raffles Mus.*, **7**: 92 (1 Male; Malaysia: Perak); Borelli, 1927, *Boll. Lab. Zool. gen. agr. Portici*, **20**: 75 (1 Female; Tonkin); Borelli, 1932, *J. fed. Malay Mus.*, **17**(1): 190 (6 Males, Macro- and cyclolabic forms; Borneo, Bettotan, near Sandakan); Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, **79**: 45; Hebard, 1933, *Pan Pacific. ent.*, **9**: 142; Hincks, 1947, *Ark. Zool.*, **39A**(1): 25 (Males, Females; Burma: Tenasserim); Boeseman, 1954, *Verh. Zool., Leiden*, **21**: 98; Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 614 (Male, Female; China: Yunnan); Brindle, 1968, *Ark. Zool.*, **20**: 549 (key to species based on males); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 54; Srivastava, 1983, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **83**: 297, figs 24 - 29 (Lactotype male, Paralactotypes 1 Female in MSNG and Paralactotype 1 Female in IRSNB from Burma: Carin Chèba, 900 - 1100 m - designated); Srivastava, 1982, *Bull. Inst. r. Sci. nat. Belg. Bruxelles*, **54**(11): 7 (Male; Java); Srivastava, 1983, *Bull. zool. Surv. India*, **8**(1-3): 123 (Male, Female; Thailand); Srivastava, 1987, *Rec. zool. Surv. India*, **91**(1): 80, figs 53 - 55 (Male, Female; India: Arunachal Pradesh, Tirap Dist., Deban and Gandhigram, Namdapha area); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 419, figs 158 - 160 (Male, Female; India: West Bengal, Darjeeling Dist, Singla Bazar, 400 m); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 216, figs 52 - 53 (Male; India: Sikkim, Nayabazar, Likship Road, 400 m); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 183; Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 53 (Male, Female; Thailand: Chiang Mai Prov.); Sakai, 1987, *Dermapterorum Catalogus*, **19**: 1224-1225 (black and white photographs - 3 photographs, of which 1 Male labelled as Holotype, is not correct), 1243 (coloured photographs - 3 Males (of which one labelled as Holotype is not correct), 1 Female); Steinmann, 1983, *Annls hist.-nat. Mus. natn. hung.*, **75**: 140; Steinmann, 1987, *Annls hist.-nat. Mus. natn. hung.*, **79**: 115; Steinmann, 1987, *World Catalogue of Dermaptera* (Series entomologica v. 43): 613; Steinmann, 1993, *Das Tierreich*, **108**: 33.

Male: General colour brownish black; pronotum on lateral margins and legs yellow; elytra and wings black, abdomen darker laterally. Body covered with fine and dense pubescence

Head longer than broad, weakly depressed, sutures obsolete, occiput slightly raised, hind margin emarginated in middle. Antennae 19-segmented or more since apical ones tend to break off easily with slightest jerck, 1<sup>st</sup> equal to the distance between antennal bases in length, stout, slightly expanded apically; 2<sup>nd</sup> short about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> shorter than the preceding, subclavate; 5<sup>th</sup> about as long as the 3<sup>rd</sup>, remaining gradually increasing in length and thinning. Pronotum slightly longer than broad, lateral margin straight, hind angles and margin rounded, prozona convex and metazona depressed. Elytra and wings well developed, former finely and densely punctulate. Legs typical of the genus, femora, especially the hind pair deplanate in apical half; hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>, underside covered with thick pubescence. Abdomen



**Figs. 348-353.** *Hamaxas feae* (Bormans), Male, 348. dorsal view, 349-351. Ultimate tergite and forceps, showing variations, 352. Genitalia; Female, 353. Ultimate tergite and forceps.

long slender, parallel sided or slightly enlarged in middle, tergites moderately convex, obscurely punctate, sides of segments convex, lateral folds on 3<sup>rd</sup> tergite weak and on 4<sup>th</sup> strongly developed. Penultimate sternite rounded posteriorly with slight emargination in middle. Ultimate tergite transverse, obscurely punctate, disc weakly convex, a rectangular depression in middle posteriorly, this area from base to apex sloping with a pair of compressed tubercles at base on either side of median line and lateral margin of the depression raised and hind margin with a pair of distantly placed tubercles in middle. Pygidium transverse, convex at base, hind margin faintly emarginated and postero-lateral angles produced into minute points. Forceps with branches remote at base, long, cylindrical, gradually incurving and tapering to hooked apices, internal margin at basal one fourth with a tooth and another similar tooth at apical one third, sometimes the margin between two teeth forming slight serrated flange. Genitalia with parameres flat, forming a rounded lobe, apices pointed; virga tubular with chitinous accessory plates at base.

Female: Agrees with, males, in most characters except that the penultimate sternite arrowed and obtusely produced in middle posteriorly; ultimate tergite narrowed and with a depression in middle posteriorly; pygidium at base declivitous and convex, narrowed apically with margin truncate and forceps simple, straight, inner margin at base with a slight concavity, finely serrated.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 6.5 - 9.5 | 8.0 - 8.5 |
| Length of forceps | 4.0 - 4.5 | 1.5 - 1.6 |

*Types:* Lactotype Male and Paralactotype 1 Female at MSNG and Paralactotype 1 Female at IRSNB.

*Distribution:* India (Arunachal Pradesh: Tirap Dist., Namdapha area; West Bengal: Darjeeling Dist. Singla and Sikkim), Myanmar, China (Yunnan), Malaysia (Borneo), Indonesia (Sumatra and Java), New Guinea and New Zealand.

*Remarks:* Hebard (1927) has discussed variations in body colour and in male forceps exhibiting cyclolabic and macrolabic forms.

Genus ***Proreus*** Burr

*Proreus* Burr, 1907, *Trans ent. Soc. Lond.*, **1907**: 129 (Type species: *Forficula simulans* Stål 1860); Burr, 1910, *Fauna British India, Dermaptera*: 136; Burr, 1911, *Genera Insect.*, **122**: 64; Burr, 1911, *J. Asiat. Soc. Beng. (N. S.)*, **7**(11): 788; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 23; Popham and Brindle, 1968, *Entomologist*, **101**: 133; Brindle, 1971, *Pacif. Insects*, **12**(3): 692; Brindle, 1973, *Insects of Micronesia*, **5**(2): 163; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 49; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series* **4**, Pt. **3**: 331;

Srivastava, 2003, *Rec zool Surv. India*, **101**(3-4): 164; Steinmann, 1983, *Annls hist.-nat. Mus. natn. hung.*, **75**: 142; Steinmann, 1987, *Annls hist.-nat. Mus. natn. hung.*, **79**: 117; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 632; Steinmann, 1993, *Das Tierreich*, **108**: 99.

*Erotesis* Burr, 1910, *Fauna British India, Dermaptera*: 144 (Type species: *Spongiphora sphinx* Burr, 1900—a synonym of *Forficula simulans* Stål, 1860).

*Schizoproneus* Steinmann, 1987, *Annls hist.-nat. Mus. natn. hung.*, **79**: 117 (Type species: *Chelisoches ritsemae* Bormans, 1884).; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 164 (treated as synonym of *Proreus* Burr, 1907).

Build slender. Head weakly convex; eyes slightly shorter than post-ocular length; antennae multi-segmented, slender, 3<sup>rd</sup> slightly longer than 4<sup>th</sup> but shorter than 5<sup>th</sup>. Elytra and wings generally well developed. Abdomen long, weakly depressed, ultimate tergite, in males, transverse, in females, narrowed posteriorly. Forceps, in males, remote at base, long and slender, armed internally. Pygidium short in both sexes. Male genitalia with parameres longer than broad, gently widened in middle; virga long, tubular with chitinous accessory plates at base.

*Type species: Forficula simulans* Stål, 1860.

*Distribution*: Oriental Region; New Guinea, Bismark and Solomon Islands.

*Remarks*: The members of the genus could be easily differentiated from *Chelisoches* Scudder by their slender built and long and slender antennal segments especially from 3<sup>rd</sup> to 7<sup>th</sup> or a few more.

#### Key to the species (on males)

- 1(2). Male genitalia with parameres, a little before apex divided by a vertical cleft into a shorter external and inner longer lobe ..... *P. ritsemae* (Bormans)
- 2(1). Male genitalia entire, devoid of any vertical cleft, slightly convex in middle
- 3(4). Elytra and wings generally well developed, yellow with a brownish band laterally; ultimate tergite, in males, with a pair of compressed tubercles in middle posteriorly, of which inner pair larger and closely placed, outer pair distantly placed and shorter, pygidium declivitous, broader than long, hind margin subtruncate, forceps medium to long (8.9 - 7.5 mm or slightly more) ..... *Proreus decipiens* (Kirby)
- 4(3). Elytra well developed, uniformly coloured; wings generally concealed, rarely well developed, uniformly coloured; ultimate tergite, along the posterior margin in middle with a pair of stout, incurved tubercles, sometimes with a similar but shorter tubercle at the bend of lateral and middle portion of hind margin and forceps short, stout (1.5 - 2.5 mm) ..... *Proreus cunctator* Burr

***Proreus ritsemae* (Bormans)**

(Figs. 354-362)

*Chelisoches ritsemae* Bormans, 1884, *Notes Leyden Mus.*, **6**: 185 (Male; Sumatra: Moera Laboe (Exped. Scientif. Néerland); Bormans, 1899, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 393 (1 Male, 1 female; Burma, Carin Chebà, 900-1100 m); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 86; Burr, 1899, *Ann. Mag. nat. Hist.*, (7)**4**: 259 (1 Female; Macassar); Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 116; Burr, 1911, *Genera Insect.*, **122**: 65; Burr, 1912, *Notes Leyden Mus.*, **34**: 229 (1 Male; Java: Gunung Gedeh); Burr, 1916, *J. R. micr. Soc.*, **1916**: 10, pl. 2, fig. 13 (male genitalia); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 34; Borelli, 1915, *Boll. Musei zool. Anat. comp. R. Univ., Torino*, **30**(697): 6; Borelli, 1917, *Boll. Musei zool. Anat. comp. R. Univ., Torino*, **32**(721): 2; Borelli, 1932, *Treubia*, **8**: 269 (several exs; Sumatra).

*Proreus ritsemae*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 130; Burr, 1910, *Fauna British India, Dermaptera*: 193, pl. 9, fig. 87; Burr, 1911, *Sttetin ent. Ztg.*, **72**: 340 (2 Females; Sumatra); Burr, 1912, *Annls naturf. Mus. Wien*, **26**: 93 (1 Male, 1 Female; Sumatra); Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, **79**: 42; Hebard, 1929, *Trans. Am. ent. Soc.*, **55**: 338; Borelli, 1932, *Bull. Raffles Mus.*, **7**: 90 (1 Male, 3 Females; Malaysia); Boeseman, 1954, *Verh. Zool., Leiden*, **21**: 91, figs 23a - b; Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 519 (1 Male; China: Yunnan); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 50; Srivastava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 49, figs 5-7 (Type Male and genitalia figured; 1 Female also examined); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 176, figs 18-23; Steinmann, 1983, *Annln hist.-nat. Mus. natn. hung.*, **75**: 142; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 77(1157) (black and white photographs, 1 Female, labelled as BMNH Holotype - not correct), 1241 (coloured photograph 1 Female labelled as Holotype - not correct).

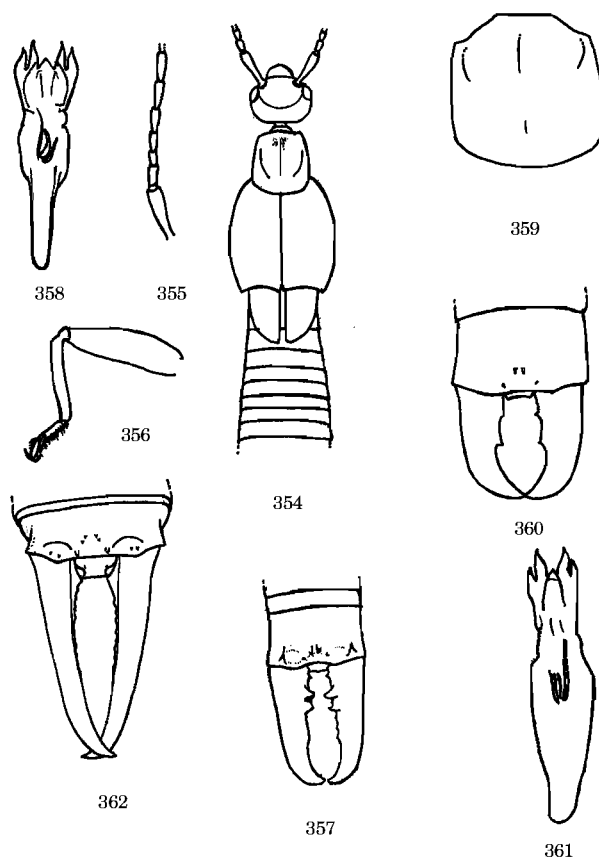
*Schizoproneus ritsemae*; Steinmann, 1987, *Annls hist.-nat. Mus. natn. hung.*, **79**: 117; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v.43): 639; Steinmann, 1993, *Das. Tierreich*, **108**: 93.

*Proreus shaffii* Bharadwaj and Kapoor, 1967, *Bull. Ent.*, **8**(2): 4, figs 7-9 (Holotype Male; India: Anadaman and Nicobar Islands, South Andaman, Port Blair); Srivastava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 49 (treated as a synonym of *Chelisoches ritsemae* Bormans, 1988).

Male: General colour blackish red to yellowish brown; elytra yellowish brown in middle; wings yellow or yellowish brown; abdomen and forceps dark brownish black or latter lighter internally.

Head glabrous, impunctate, depressed, sutures marked by fine depressed lines, occiput tumid, hind margin slightly emarginate. Eyes black, shorter than the post-ocular length. Antennae 19-segmented, 1<sup>st</sup> stout, expanded apically, slightly longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> a trifle shorter than the 3<sup>rd</sup> but expanded apically; 5<sup>th</sup> long, cylindrical, about as long as the 3<sup>rd</sup>; 6<sup>th</sup> onwards segments gradually increasing in length and each gently expanded apically. Pronotum impunctate, slightly longer than broad, convex anteriorly, lateral margins straight, depressed, gently widened posteriorly, hind angles and margin well rounded, median sulcus distinct, prozona slightly raised, not well differentiated from depressed metazona. Elytra and wings well developed, smooth, former with

humeral fold prominent (without carina). Legs typical of the genus, tibiae sulcate above in apical half; hind tarsi somewhat depressed, 1<sup>st</sup> segment almost equal to the 3<sup>rd</sup>, clad with thick pubescence on underside. Abdomen gently widened posteriorly, tergites convex, punctate, lateral folds on 3<sup>rd</sup> weakly and on 4<sup>th</sup> strongly developed. Penultimate sternite transverse, hind margin broadly rounded with slight emargination in middle. Ultimate tergite transverse, vertical stripes of punctate and smooth areas alternating, sides straight, hind margin trisinuate, laterally above the bases of forceps oblique and angles projecting, posteriorly above the bases of forceps tumid and depressed in middle with two pairs of compressed tubercles, of which inner one larger and closely placed and outer one smaller and distantly placed. Pygidium slanting, hind margin faintly emarginated with a faint tubercle at angles and in middle, often middle one obsolete. Forceps polymorphic, stout, depressed, almost straight, (in f. *macrolabia*) tapering



**Figs. 354-362.** *Proreus ritsemae* (Bormans), Type Male, 354. Anterior portion of body, 355. A few basal antennal segments, 356. Hind leg, 357. Ultimate tergite and forceps, 358. Genitalia, 359. Pronotum, 360. Ultimate tergite and forceps, 361. Genitalia; Female, 362. Ultimate tergite and forceps (figs. 354, 357-358 after Srivastava, 1987b and figs. 359-361 ex Holotype Male *Proreus shaffii* Kapoor).



apically, gently incurved near apices which meet, internal margin with several small teeth and a large bifid tooth, a little before middle, in apical one third margin smooth, (in f. cyclolabia) branches short, incurved in apical half, internal margin with a pair of teeth, otherwise unarmed. Genitalia with parameres with a deep vertical cleft, dividing into two lobes; virga short, tubular, at base with chitinous accessory plates.

Female: Agrees with males in most characters except that penultimate sternite narrowed posteriorly; ninth tergite with a row of minute tubercles along the posterior margin; ultimate tergite strongly transverse, narrowed posteriorly; pygidium at base convex, slanting, lateral margin emarginate, narrowed apically, hind margin straight and angles projecting and forceps with branches simple, straight, internally at base with a triangular tooth, afterwards finely serrated.

*Measurements:* (in mm)

|                   | Male       | Female |
|-------------------|------------|--------|
| Length of body    | 9.0 - 13.6 | 12.6   |
| Length of forceps | 2.0 - 3.9  | 3.9    |

*Types:*

1. *Chelisoches ritsemae* Bormans, 1884 - Type Male at RNHL.

2. *Proreus shaffii* Bharadwaj and Kapoor, 1967 - Holotype Male at IARI.

*Distribution:* India (Andaman Isls: South Andaman, Port Blair), Myanmar, China (Yunnan), Philippine Islands, Malaysia (Borneo) and Indonesia (Sumatra and Java).

*Remarks:* The above description is based upon the Type Male and 1 Female from Sumatra: Pasumah Estate, Palembang determined by Boeseman (1954) as *Chelisoches ritsemae* Bormans, 1884 and Holotype Male of *Proreus shaffii* Bharadwaj and Kapoor, 1967.

Pygidium and forceps, in males, exhibit slight variations. Shape of parameres is characteristic and antennal segments justify its inclusion in *Proreus* Burr.

***Proreus decipiens* (Kirby)**

((Figs. 363-370))

*Forficula simulans* (nèc Stål, 1860); Burr, 1910, *Fauna British India, Dermaptera*: 137 (India: Pusa, Calcutta; excluding Burma fig. 85); Srivastava and Roychowdhury, 1975, *Newsl. zool. Surv. India*, **1**(2): 28 (India: Tripura); Steinmann, 1981, *Acta. zool. hung.*, **27**(1-2): 207 (specimens from India: Tamil Nadu, Coimbatore and Pondicherry State: Nettapakain)

*Labidura? decipiens* Kirby, 1891, *J. Linn. Soc. (Zool.)*, **23**: 511 (Male: Assam)

*Labidurodes decipiens*; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 39; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 15.

*Erotesis decipiens*; Burr, 1910, *Fauna British India, Dermaptera*: 114.

*Chaetospania decipiens*; Burr, 1911, *Genera Insect.*, **122**: 54; Sakai, 1970, *Dermapterorum Catalogus Praeliminaris.*, **2**: 93; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 39; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 36; Steinmann, 1985, *Annln hist.-nat. Mus. natn. hung.*, **77**: 122 (treated as a synonym of *Forficula cingalensis* Dohrn, 1865).

*Chaetolabia decipiens*; Sakai, 1993, *Dermapterorum Catalogus*, **25**: 4953, 5204 (black and white photographs of Type Male), 5151 (coloured photograph of Type Male).

*Proreus decipiens*; Brindle, 1987, *Courier Forsch.-Inst. Senckenberg*, **93**: 344, 346 (notes on the Type Male of the species).

*Proreus longiforceps* Ramamurthi, 1962, *Bull. Ent.*, **5**: 40, figs A-C (Holotype male, Allotype Female and Paratypes 1 Male, 7 Females; India: Tamil Nadu, Coimbatore); Sakai, 1987, *Dermapterorum Catalogus*, **19**: 84 (1164) (black and white photographs of Paratypes 1 Male, 1 Female in MM and BMNH, respectively), 1241 (coloured photographs of 1 Male and 1 Female) - **Syn. n.**

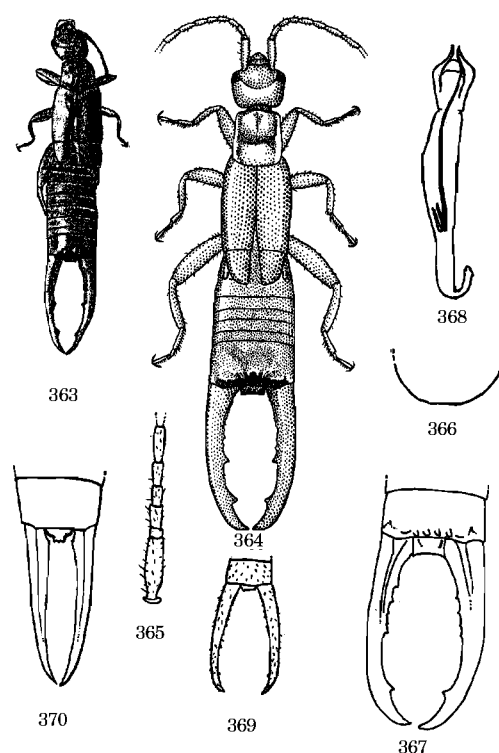
*Proreus abdominalis* Ramamurthi, 1965, *Ann. Mag. nat. Hist.*, (13) **8**: 61, figs 8-10 (Holotype Male, Allotype Female and Paratypes 2 Males; India: Karnataka, Bangalore); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 154, figs 150-151 (treated as a valid species); Srivastava, 2000, *Fauna of Renuka Wetland, Wetland Ecosystem Series 2*: 70, fig. 6 (Male; India: Himachal Pradesh, Renuka Wetland area); Srivastava, 2000, *Fauna of Tripura, State Fauna Series 7*, Pt. 2: 277, figs. 25-27 (Male, Female; India: Tripura, North Tripura Dist., Salema; West Tripura Dist., Teliamura); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 53 (Male, Female; India and Vietnam) - **Syn. n.**

*Proreus s. abdominalis*; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 50; Srivastava, 1989, *Fauna of Orissa, State Fauna Series 1*, Pt. 2: 164, figs 32-34 (Male; India: Orissa, Puri Dist.).

*Proreus biratnagarensis* Kapoor, Malla and Shah, 1978, *J. nat. Hist. Mus.*, **2**: 58, figs 1-4 (Holotype Male, Paratypes 1 Male, 1 Female; Nepal: Biratnagar, at light) - **Syn. n.**

Male: General colour yellowish brown; head orange red; pronotum yellowish on sides; legs yellowish; elytra and wings yellow with a brownish black vertical band along the external and internal margins.

Head about as long as broad, smooth, depressed, sutures distinct, occiput convex, hind margin emarginate. Eyes shorter than the post-ocular length. Antennae 25-segmented, 1<sup>st</sup> stout, slightly expanded apically, longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> slightly shorter than the preceding, gently expanded apically; 5<sup>th</sup> almost equal to 3<sup>rd</sup>, 6<sup>th</sup> onwards segments gradually increasing in length and thinning, a few apical ones thin, rod shaped. Pronotum slightly longer than broad and widened posteriorly, anterior margin convex, lateral margins straight, hind margin briefly rounded, median suture distinct, prozona convex and metazona depressed. Elytra and wings well developed, smooth. Legs typical of the genus, tibiae sulcate above in apical half; hind tarsi clad with thick pubescence on



**Figs. 363-370.** *Proreus decipiens* (Kirby), Male, 363-364. Dorsal view; 365 A few basal antennal segments, 366. Posterior margin of penultimate sternite, 367. Ultimate tergite and forceps; 368. Genitalia, 369. Ultimate tergite and forceps: Female, 370. Ultimate tergite and forceps (fig. 363 after Sakai, 1993 of "Type"; fig. 367 from Holotype Male of *Proreus longiforceps* Ramamurthi, 1962; fig. 369 after Kapoor, Malla and Shah, 1978).

underside, 1<sup>st</sup> segment longer than the 3<sup>rd</sup>; 2<sup>nd</sup> produced as a narrow lobe under the 3<sup>rd</sup>. Abdomen elongated, gently widened in middle, tergites convex, lateral folds on 3<sup>rd</sup> tergite weakly and on 4<sup>th</sup> strongly marked. Penultimate sternite broadly rounded posteriorly with a slight emargination in middle. Ultimate tergite transverse, disc weakly depressed, sloping backwards, tumid above the bases of forceps, depressed in middle with two pairs of compressed tubercles of which inner pair slightly shorter, hind margin emarginated in middle, laterally above the bases of forceps oblique. Pygidium subvertical, broader than long, lateral margin straight, hind margin straight or lightly concave. Forceps with branches broadly arcuate, in basal one third trigonal, tapering apically, internal margin with small teeth, at about middle and apical one third with a larger tooth, apices gently hooked. Genitalia with paramerea long, narrow, slightly widened in middle; virga thin tubular, at base with a pair of chitinous accessory plates.

**Female:** Agrees with males in most characters except that the penultimate sternite obtuse in middle posteriorly; ultimate tergite narrowed apically, above bases of forceps

folds weak; pygidium convex and slanting at base, narrowed apically, hind margin with three small teeth and forceps with branches almost straight, sometimes very slightly arcuate in middle, internally serrated.

*Measurements:* (in mm)

|                   | Male       | Female      |
|-------------------|------------|-------------|
| Length of body    | 9.0 - 15.0 | 10.0 - 15.0 |
| Length of forceps | 4.0 - 7.2  | 3.9 - 4.0   |

*Types:*

1. *Labidura? decipiens* Kirby, 1891 - Type Male in BMNH.
2. *Proreus longiforceps* Ramamurthi, 1962 - Holotype Male in ZSI; Paratypes 1 Male in MM and 1 Male in BMNH.
3. *Proreus abdominalis* Ramamurthi, 1965 - Holotype Male, Allotype Female in ZSI; Paratype 1 Male in BMNH.
4. *Proreus biratnagarensis* Kapoor, Malla and Shah, 1978 - Holotype Male; Paratypes 1 Male, 1 Female, repository not known.

*Distribution:* India (Himachal Pradesh, Assam, West Bengal, Karnataka and Tamil Nadu), Myanmar and Vietnam.

Following specimens not reported earlier are present in MZA:

India: Tamil Nadu, Coimbatore, 1 male, 26.viii.1938, 4 males, 6 females, 27.viii.1938, 1 male, 2 females, 1.vii.1939, 2 males, 2 females, - xi.1955, 3 females, -i.1956, 1 male, — ii.1956, 1 female, -vii.1956, 30 males, 50 females, -x.1958, 47 males, 41 females, 1 ex (abdomen missing), -xi.1958, 6 males, 4 females, -xii.1958 (*P. S. Nathan* coll.), determined by G. K. Srivastava.

*Remarks:* In view of the Burrr's (1910: 115) remark that 2<sup>nd</sup> tarsal segment "as simple cylindrical" the taxonomic position of this species remained doubtful until Brindle (1987) examined the "Type male" and confirmed it a *Proreus* species having the 2<sup>nd</sup> tarsal segment produced as a narrow lobe under the third.

Holotype Male of *Proreus longiforceps* Ramamurthi, 1962 and Holotype Male, Allotype Female of *Proreus abdominalis* Ramamurthi, 1965, present in ZSI were found to be conspecific and treated as synonyms. Besides, on the basis of identical description and diagrams of *Proreus biratnagarensis* Kapoor, Malla and Shah, 1978, it is also proposed as a synonym.

In a large series great variations in body and forceps size are common. Sometimes the fuscous band along the external and internal margin of elytra and wings is poorly marked.

This species is very close to *Proreus simulans* (Stål, 1860) but can be easily separated by the shape of forceps, in males, in being broadly incurved and internal margin serrated with one or two larger teeth.

***Proreus cunctator* Burr**

(Figs. 371-378, 379-381)

*Proreus cunctator* Burr, 1911, *J. Asiat. Soc. Beng.* (N.S.), **7**: 790 (Syntypes 2 Males; India: Assam Bhutan Frontier, Darrang Dist., N. E.); Burr, 1914, *Rec. Indian Mus.*, **10**: 291; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 81(1161) (black and white photograph of Syntype 1 Male, BMNH).

*Proreus fletcheri* Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**: 221, pl. 20, figs 16, 17 (Male; Goalundo to Gauhati, Brhamputra river, Eastern Bengal, India) - **Syn. n.**

*Hamaxas fletcheri*; Hebard, 1927, *Proc. Acad. nat. Sci., Philad.*, **79**: 44 (included under the genus on the basis of external characters only).

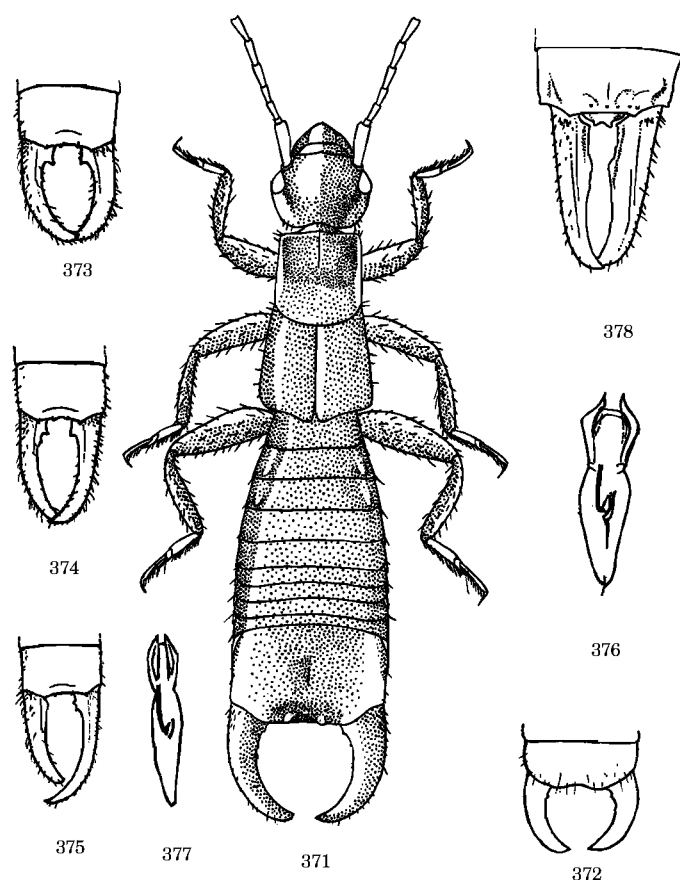
*Proreus ramamurthii* Kapoor, 1967, *Oriental Insects*, **1**(1-2): 55, figs 1-5 (Holotype Male, Allotype Female, Paratypes 4 Males, 2 Females; India: Kerala, Medilikara) - **Syn. n.**

*Hamaxas tezpurenensis* Srivastava, 1969, *Zool. Anz.*, **182**(1-2): 136, figs 1a-c (Holotype Male, Allotype Female; India: Assam, Tezpur); Srivastava and Roychowdhury, 1975, *Newsl. zool. Surv. India*, **1**(2): 23 (8 Males, 11 Females and 3 nymphs; India: Tripura, Bramachara, Teliamura) - **Syn. n.**

*Proreus tezpurenensis*; Sakai, 1987, *Dermapterorum Catalogus*, **19**: 86(1168) (black and white figures of Holotype Male, Allotype Female), 1241 (coloured photograph of Holotype Male and Allotype female); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 416, figs 148-149 (Male and nymph; India: West Bengal, Nadia Dist.); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. 3: 331 (Female; India: Meghalaya, East Khasi hills, Williamnagar); Srivastava, 2000, *Fauna of Tripura, State Fauna Series 7*, Pt. 2: 277, figs 28-29 (Male, Female; India: Tripura, N. Dist., Belonia and W. Dist., Teliamura, Bramachara).

Male: General colour reddish brown with shades of black on certain body parts; apical segments of antennae, sides of pronotum, legs, elytra and wings yellowish brown; abdomen and forceps dark blackish brown. Moderately pubescent; build stout.

Head about as long as broad, broadest in the region of eyes, frons depressed, occiput raised, sutures obsolete, hind margin emarginate. Eyes distinctly shorter than the post-ocular length. Antennae 19-segmented or more (since the apical ones tend to break off easily on slightest jerck), 1<sup>st</sup> long, stout, longer than the distance between antennal bases; 2<sup>nd</sup> short, ; 3<sup>rd</sup> slightly longer than 4<sup>th</sup>; 5<sup>th</sup> equal to 3<sup>rd</sup>, remaining long, slender, each slightly expanded apically, gradually increasing in length distally. Pronotum about as long as broad, anterior margin convex, lateral margins almost parallel, hind margin briefly rounded, median sulcus faint, prozona weakly raised and metazona flat. Elytra ample, meeting along the median line, hind margin faintly oblique. Wings generally concealed,

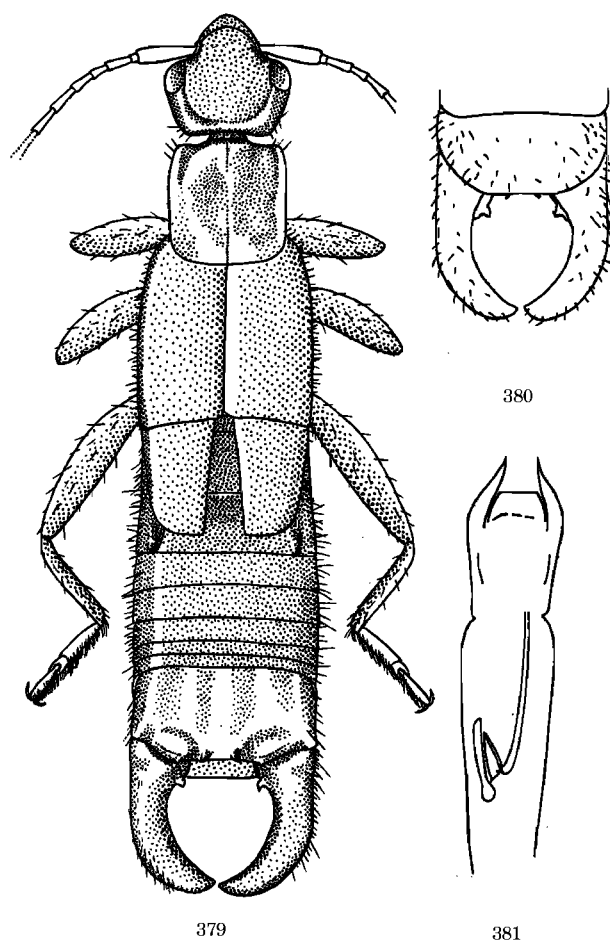


**Figs. 371-378.** *Proroeus cunctator* Burr, Male, 371. Dorsal view, 372. Penultimate sternite and forceps, 373-375. Ultimate tergite and forceps showing variations, 376-377. Genitalia; Female, 378. Ultimate tergite and forceps (figs. 371, 372 and 376 from Syntype Male).

sometimes normal, Legs typical of the genus, tibiae flat above in apical half with lateral margins sharp; hind tarsi with 1st segment slightly longer than the third; 2<sup>nd</sup> produced as a narrow lobe under the 3<sup>rd</sup>. Abdomen depressed, parallel sided, tergites punctate, lateral folds on 3<sup>rd</sup> tergite almost obsolete and on 4<sup>th</sup> moderately developed. Penultimate sternite transverse, hind margin broadly rounded with slight emargination in middle. Ultimate tergite transverse, disc depressed, vertical smooth and punctate alternate stripes present, low elevations above the roots of forceps and a small depression in middle, hind margin trisinate, laterally above the bases of forceps oblique, hind margin with two pairs of compressed tubercles, inner pair, a little separated, larger, hook shaped, outer pair shorter, situated at the junction of middle portion and oblique lateral portion of hind margin. Pygidium vertical, almost filling the space between the branches of forceps,

gently narrowed posteriorly, hind margin straight, postero-lateral angles with minute point. Forceps polymorphic, (in f. *cyclolabia*) branches at base remote, short, stout, strongly incurved, tapering apically, tips gently hooked, inner margin at base with a small blunt tooth; (in f. *macrolabia*) branches, long, tapering apically, broadly incurved, tips hooked, internal margin at base with a distinct tooth. Genitalia with parameres long, narrow, slightly convex in middle externally; virga chitinous, tubular, at base with accessory plates.

Female: Agrees with males in most characters except that the penultimate sternite obtuse in middle posteriorly; ultimate tergite narrowed posteriorly, hind margin lacking



**Figs. 379-381.** *Proroeus cunctator* Burr, Male, 379. Dorsal view, 380. Penultimate sternite and forceps, 381. Genitalia (all figs. from the Type Male *Proroeus fletcheri* Hebard, 1923).

compressed tubercles; Pygidium prominent, declivitous, convex above at base, narrowed apically, posterioapically produced into lateral points and forceps with branches simple, straight, internally with a small tooth at basal one third.

*Measurements:* (in mm)

|                   | Male       | Female      |
|-------------------|------------|-------------|
| Length of body    | 5.0 - 10.0 | 10.0 - 12.0 |
| Length of forceps | 1.5 - 2.5  | 2.5 - 3.0   |

*Types:*

1. *Proreus cunctator* Burr, 1911 - Syntypes 1 Male each in ZSI and BMNH.  
Sakai (1987: 80(1160) gives a black and white diagram of 1 Syntype Male in BMNH with wings projecting beyond elytra. This diagram is not correct since Burr (1911b) mentions in the original description that wings are hidden
2. *Proreus fletcheri* Hebard, 1923 - Type Male in ANSP.
3. *Proreus ramamurthii* Kapoor, 1967 - Holotype Male, Allotype Female, at IARI and Paratypes 1 Male, 1 Female at BMNH.
4. *Hamaxas tezpurensis* Srivastava, 1969 - Holotype Male, Allotype Female at ZSI.

*Distribution:* India: Assam, West Bengal, Tripura and Kerala.

In the National collections at the Zoological Survey of India, Kolkata this species is represented by a large series from Kerala and Tripura.

*Remarks:* Syntype 1 Male of *Proreus cunctator* Burr, 1911; Type Male of *Proreus fletcheri* Hebard, 1923; Holotype Male, Allotype Female of *Proreus ramamurthii* Kapoor, 1967 and *Hamaxas tezpurensis* Srivastava, 1969 were examined and found to be conspecific. However, *P. cunctator* lacks the compressed tubercle at the junction of oblique and middle portion of hind margin of ultimate tergite in males. It may be a case of individual variation.

*Proreus fletcheri* is based upon a macropterus male whereas all others are represented by brachypterus forms. Since it is common to find both the forms intraspecifically, it is proposed to synonymise *P. fletcheri*, *P. ramamurthii* and *H. tezpurensis* under *P. cunctator*.

In a large series, from Kerala, present in ZSI, determined by G. K. Srivastava, cyclolabid and macrolabid forms with intermediate stages are represented. Besides in some specimens the axillary angle of elytra is rounded off to show a small triangular scutellum.



Genus *Chelisoches* Scudder

*Lobophora* Serville, 1839, *Hist. nat. Ins. Orth.*, Paris: 32 (Type species: *Lobophora rufitarsis* Serville, 1839 - a synonym of *Forficula morio* Fabricius, 1775 - name preoccupied by *Lobophora* Curtis, 1828 under Lepidoptera).

*Chelisoches* Scudder, 1876, *Proc. Boston Soc. nat. Hist.*, **18**: 252 (new name for *Lobophora* Serville, 1839); Kirby, 1891, *J. Linn. Soc. (Zool.)*, **23**: 521; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 82; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 128; Burr, 1910, *Fauna of British India, Dermaptera*: 134; Burr, 1911, *Genera Insect.*, **122**: 65; Bey-Bienko, 1936, *Fauna de l'URSS, Dermaptères*: 116; Townes, 1945, *Ann. ent. Soc. Am.*, **38**: 347; Brindle, 1973, *Insects of Micronesia*, **5**(2): 163; Brindle, 1973, *Ann. Mus. Roy. Afr. Tervuren* in 8° Zool., **205**: 255; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 51; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 332; Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 159, 161 (key to genera and list of species); Steinmann, 1983, *Annln hist.-nat. Mus. natn. hung.*, **75**: 141; Steinmann, 1987, *Annln hist.-nat. Mus. natn. hung.*, **79**: 117; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 608; Steinmann, 1993, *Das Tierreich*, **108**: 72.

*Enkrates* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 131 (Type species: *Forficula flavipennis* Fabricius, 1793).

*Kleiduches* Burr, 1911, *Genera Insect.*, **122**: 64 (type species: *Forficula australica* Guillon, 1841).

*Schizochelisoches* Steinmann, 1987, *Annln hist.-nat. Mus. natn. hung.*, **79**: 117 (Type species: *Chelisoches ritsemae* Bormans, 1884); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 159; 161 and 165 (treated as a synonym of *Chelisoches* Scudder, 1876).

Build stout; generally dark coloured. Head weakly convex; antennal segments stout, 3<sup>rd</sup> longer than 4<sup>th</sup> and 5<sup>th</sup>, often 4<sup>th</sup> subclavate. Pronotum about as long as wide or sometimes slightly longer than wide, gently widened posteriorly. Legs short, stout, tibiae distinctly sulcate above in apical half. Elytra and wings well developed. Abdomen elongated, parallel sided or gently widened in middle, punctate; penultimate sternite rounded posteriorly; ultimate tergite, in males, strongly transverse, in females slightly narrowed posteriorly. Pygidium distinct and variously shaped, in males and in females, smaller, generally narrowed posteriorly. Forceps, in males generally stout, depressed in basal half or a little less, in females simple and straight.

*Type species*: *Forficula rufitarsis* Serville, 1839 - a synonym of *Forficula morio* Fabricius, 1775.

*Distribution*: Tropical Asia and Australia. (*Chelisoches morio* (Fabricius) is almost world wide in distribution.

## Key to the species (based on males)

- 1 (2). Pygidium with a distinct notch posteriorly; forceps with a pair of blunt teeth at about middle; genitalia with parameres very slightly emarginate near apex.....  
 ..... *C. brevipennis* Borelli

- 2(1). Pygidium truncate posteriorly; forceps internally armed variously, generally flattened internally in basal half or a little less with its internal margin crenulate; genitalia with parameres not emarginated near apex ..... *C. morio* (Fabricius)

***Chelisothes brevipennis* Borelli**

(Figs. 382-387)

*Chelisothes brevipennis* Borelli, 1923, *Boll. Musei zool. Anat. comp. R. Univ., Torino*, **38**(N. S.) **13**: 12 (1 Male; Philippine Isl: Los Banos; 2 Males, 2 Females, N. Palawan, Binaluan); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 51; Srivastava, 1977, *Newsl. zool. Surv. India*, **3**(3): 134 (Male, Female; India: Arunachal Pradesh, Siang Dist.; Meghalaya, Siju Cave and Malaysia); Srivastava, 1978, *Eos., Madr.*, **52**: 290 (Male, Female; Philippine Isl, Mindanao); Srivastava, 1985, *Rec. zool. Surv. India*, **84**(1-4): 45 (Male, Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area); Srivastava, 1987, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **86**: 501, figs 51 -52 (1 Male; Burma: Carin Chebá, 900-1100 m - determined by Bormans, 1894 as *Chelisothes morio* (F); Srivastava, 1993, *Rec. zool. Surv. India*, **91**(1) (1992): 79, figs 46-47 (Male, Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series* **4**, Pt. **3**: 332, fig. 105 (Male, Female and nymphs; India: Meghalaya, South Garo Hills Dist., Siju Cave, 152 m.); Sakai, 1987, *Dermapterorum Catalogus*, **19**: 1243 (coloured photographs labelled as Holotype and Allotype are in fact only Syntypes); Chaturvedi and Srivastava, 2003, *J. Bombay nat. Hist. Soc.*, **99**(2): 215.

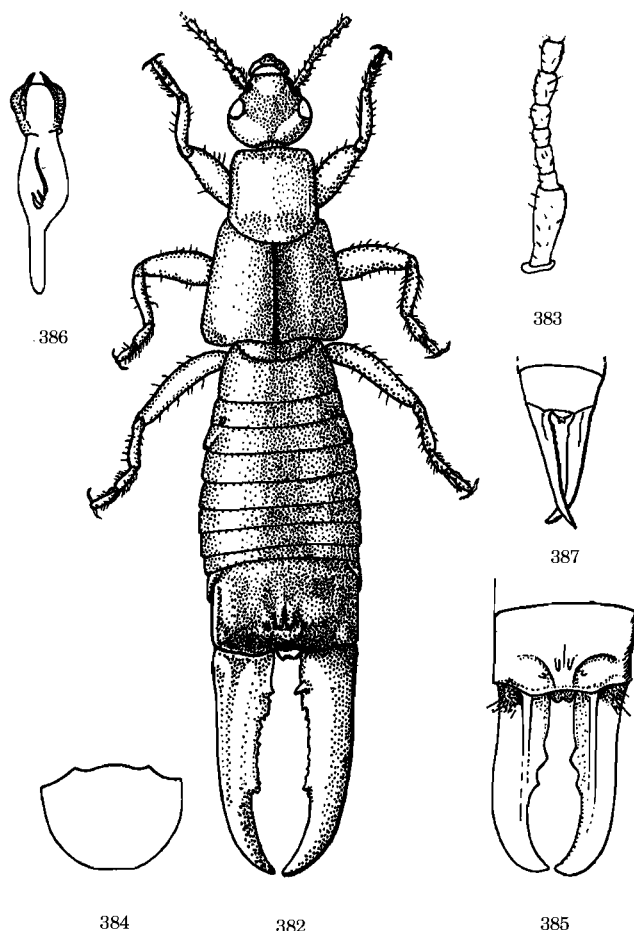
*Chelisothes bimammatus* Hebard, 1929, *Trans. Am. ent. Soc.*, **55**: 338, pl 12, figs 1-2 (Type Male, Allotype Female; Malaysia: Malaya, Batu Caves, Selangor); Borelli, 1932, *Bull. Raffles Mus.*, **7**: 91 (Male; Malayasia, Selangor and Perak); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 51 (treated as a synonym).

Male: Build stout; general color black; occiput and tarsi reddish black.

Head triangular, frons moderately and occiput distinctly raised, median suture deep, dividing occiput into two halves. Eyes distinct, shorter than the post-ocular length. Antennae 19-segmented or more (since apical ones tend to break off easily on slightest jerk), 1<sup>st</sup> segment stout, gently expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> about twice as long as broad; 4<sup>th</sup> subclavate, slightly shorter than 3<sup>rd</sup>; 5<sup>th</sup> and 6<sup>th</sup> subclavate, remaining gradually increasing in length but stout. Pronotum longer than broad, anterior margin slightly convex, lateral margin straight, gently widened posteriorly, hind margin and angles rounded; prozona and metazona little differentiated. Elytra well developed, sparsely punctate. Wings slightly projecting beyond elytra. Legs typical of the genus, hind tarsi with 1<sup>st</sup> segment about as long as the 3<sup>rd</sup>, covered with thick pubescence on underside. Abdomen parallel sided or gently widened apically, tergites moderately convex, punctate, lateral folds on 3<sup>rd</sup> weakly and on 4<sup>th</sup> distinctly marked. Penultimate sternite rounded posteriorly with slight emargination in middle. Ultimate tergite transverse, disc faintly punctate, moderately convex, tumid above the bases of forceps, in between slightly depressed with two pairs of compressed tubercles, of which inner pair larger and contiguous, hind margin trisinate, laterally above the bases of forceps oblique. Pygidium

slanting, narrowed apically and bilobed. Forceps with branches (in f. *cyclolabia*) stout, depressed, almost straight, gently incurved near apices, inner margin armed with a pair of blunt tooth, of which posterior one smaller, (in f. *macolabia*) branches comparatively longer, a little less stout, internal armature variable in having minute teeth in basal two thirds followed by another larger one in apical one third. Genitalia with parameres slightly enlarged externally in middle and with a slight emargination before apex; virga short, tubular, without accessory plates basally.

Female: Agrees with males in most characters but penultimate sternite with posterior margin in middle obtuse; ultimate tergite narrowed posteriorly; pygidium convex at base, strongly slanting and narrowed apically and forceps with branches simple, straight, apices gently incurved and crossing, inner margin unarmed but with a sharp ridge.



**Figs. 382-387.** *Chelisoches brevipennis* Borelli, Male, 382. Dorsal view, 383. A few basal antennal segments, 384. Penultimate sternite, 385. Ultimate tergite and forceps, 386. Genitalia; Female, 387. Ultimate tergite and forceps.

*Measurement: (in mm)*

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 12.6 - 16.8 | 12.1 - 18.1 |
| Length of forceps | 3.2 - 6.9   | 3.8 - 4.9   |

*Types:*

1. *Chelisoches brevipennis* Borelli, 1923 - Syntypes: 1 Male; Philippine Isl, Los Banos; 1 Male, 1 Female; N. Palawan - repository not mentioned, perhaps at MITZ and ZMHB.
2. *Chelisoches bimammatus* Hebard, 1929 - Type Male, Allotype Female at BMNH.

*Distribution:* India (Assam, Meghalaya, Mizoram and Arunachal Pradesh), Indonesia (Sumatra), Malaysia (Malayan Peninsula) and Philippine Islands.

*Remarks:* Specimens determined by Burr (1913b) and Chopard (1924a) as *Chelisoches morio* from Rotung (India: Arunachal Pradesh) and Siju Cave (India: Assam- now under Meghalaya), present in the collections of the Zoological Survey of India, Kolkata are referable to this species.

***Chelisoches morio* (Fabricius)**

(Figs. 388-395)

*Forficula morio* Fabricius, 1775, *Syst. ent.*, **2**: 70 (Types Male and Female; Otaheiti (Tahiti); Bormans, 1883, *Ann. Soc. ent. Belg.*, **27**: 70.

*Lobophora morio*; Dohrn, 1865, *Sttetin ent. Ztg.*, **26**: 70; Dubrony, 1879, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **14**: 374.

*Chelisoches morio*; Scudder, 1876, *Proc. Boston Soc. nat. Hist.*, **18**: 308; Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**6**: 440; Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 39 (2 Males, 1 Female; Burma: Bhamo, Carin Chebá, 900 - 1100 m); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 85; Burr, 1900, *Ann. Soc. ent. Belg.*, **44**: 55; Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**: 327 (Sri Lanka); Burr, 1902, *Termeszter Fuz.*, **2**: 484; Burr, 1910, *Fauna of British India, Dermaptera*: 135, pl. 5, fig. 45 (Male, Female; India, Burma and Ceylon); Burr, 1911, *Genera Insect.*, **122**: 65, pl. 6, fig. 2; Burr, 1911, *Proc. U. S. Nat. Mus.*, **38**: 457; Burr, 1912, *Annln naturh. Mus. Wien*, **26**: 93 (Male, Female; Ceylon, Sumatra and Celebes); Burr, 1912, *Notes Leyden Mus.*, **34**: 229; Burr, 1912, *Sitz. Ges. naturf. Fr. Berlin*, **1912**: 326; Burr, 1914, *Rec. Indian Mus.*, **10**: 291 (India: Tamarasseri, Travancore); Burr, 1916, *J. R. micr. Soc.*, **1916**: 9, pl. 2, fig. 6 (Male genitalia); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 33; Borelli, 1926, *Treubia*, **8**(1-2): 268 (Indonesia: Sumatra and Java); Borelli, 1932, *Bull. Raffles Mus.*, **7**: 91; Borelli, 1932, *J. fed. Malay St. Mus.*, **17**(1): 190; Shiraki, 1928, *Insecta Matsum.*, **3**(1): 15; Hebard, 1929, *Trans. Am. ent. Soc.*, **55**: 338; Günther, 1932, *Mitt. Deutsches ent. Ges.*, **3**(5): 72; Günther, 1932, *Verh. naturf. Ges.*, **44**(2): 162; Günther, 1934, *Rev. suisse Zool.*, **41**(3): 539; Hincks, 1938, *J. fed. Malayn St. Mus.*, **18**: 313; Hincks, 1947, *Ann. Mag. nat. Hist.*, (11)**14**: 537, fig 10; Hincks, 1947, *Entomologist's mon. Mag.*, **38**: 67; Hincks, 1954, *Verh. natrurf.*

*Ges. Basil*, **65**(1): 22; Rehn, 1954, *Trans. Am. ent. Soc.*, **74**: 161; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 94; Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 613 (Male, Female and 4 late instar larvae; China: Yunnan, mouth of river Nachi-Ho); Brindle, 1967, *Mem. Est. Mus. Zool. Univ. Coimbra*, No. 303: 22; Brindle, 1972, *Ent. Tidskr.*, **92**(1-2): 320; Brindle, 1973, *Insects of Micronesia*, **5**(2): 163, figs 19a-d; Brindle, 1973, *Ann. Mus. Roy. Afr. Centr.*, Tervuren, in 8° Zool., **205**: 226; Brindle, 1976, *Rec. S. Austr. Mus.*, **17**(3): 236; Ramamurthi, 1967, *Ent. Medd.*, **35**: 250; Ramamurthi, 1968, *Nat. Hist., Rennel Isl., Brit. Solomon Isls*, **5**: 81; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1)(1967): 24; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 51; Srivastava, 1976, *Pacif. Insects*, **17**(1): 124 (Philippine Isls); Srivastava, 1978, *Eos, Madr.*, **52**: 290 (Male, Female; Philippine Isls); Srivastava, 1982, *Bull. Inst. r. Sci. nat. Belg., Bruxelles*, **54**(11): 7 (Male, Female; Solomon Isls); Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 14 (1 Male; Ceylon: Kalutari; 3 Males, 2 Females and 1 nymph; Indonesia: Java); Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 108 (Male; Celebes: Bulhain); Srivastava, 1987, *Ananali Mus. civ. Stor. nat. Giacomo Doria*, **86**: 500, figs 41-50 (Males; Indonesia; Sumatra, Java; New Guinea and Australia); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 178 (Male; India: Andaman and Nicobar Isls, South Andaman); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 165; Steinmann, 1979, *Folia ent. hung.*, **32**: 163 (Tamahn (4 exs), Halmahira (3 exs), Ceylon (1 Male), Java, Celebes, Philippine Islands and Burma); Steinmann, 1978, *Redia*, **62**: 198 (1 Female, India; 1 Male, Polynesia); Steinmann, 1983, *Reichenbechia, Mus. Tierk. Dresden*, **21**(7): 50; Steinmann, 1987, *Annln hist.-nat. Mus. natn. hung.*, **79**: 116; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 613; Steinmann, 1993, *Das Tierreich*, **108**: 74; Sakai, 1987, *Dermapterorum Catalogous*, **19**: 41 (1121), 89-95 (1169-1175) (black and white diagrams and photographs), 1241 (coloured photographs).

*Lobophora rufitarsis* Serville, 1839, *Hist. nat. Ins., Orth.*, Paris: 3 (Type Female; Java); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 85 (treated as a synonym of *Forficula morio* F, 1775).

*Lobophora albomarginata* Haan, 1842, *Verh. nat. Gesch. Nederl. Bezitt. Orth.*: 241 (Type Nymph; Sumatra).

?*Forficula tasmanica* Blanchard, 1853, *Voy. Pole Sud.*, **3**: 350, pl. 1, fig. 2 (Type Male; Tasmania); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 85 (treated as a synonym of *Forficula morio* F, 1775).

*Forficula nigronitens* Stål, 1860 (Male; Java); *Lobophora cincticornis* Stål, 1860 (Male; Ins. Mauritius) and *Lobophora tartera* Stål, 1860 (Male; Tahiti), *Eugenies Resa Ins.*: 305 (Types of all the three species unknown according to Steinmann, 1989: 613); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 85 (all the three species treated a synonym of *Forficula morio* F, 1775).

*Labidura comprimens* Scudder, 1876, *Proc. Boston Soc. nat. Hist.*, **18**: 252 (Type Female; "Africa"); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 85 (treated as a synonym of *Forficula morio* F, 1775).

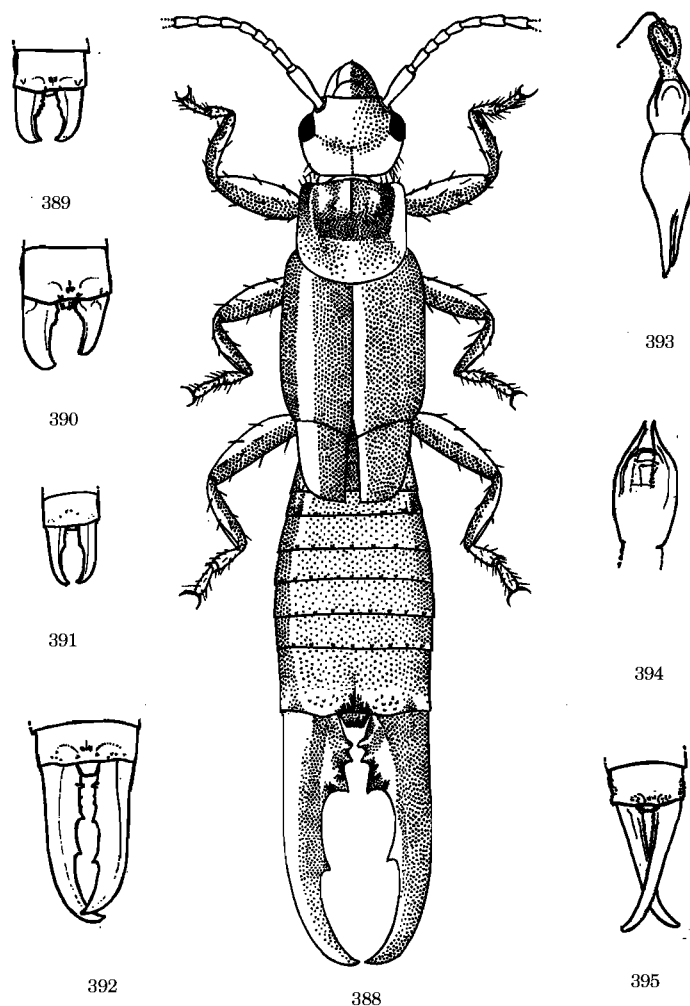
*Labidura nigricornis* Kirby, 1888, *Proc. zool. Soc. Lond.*, **1888**: 546 (Type Male; Locality not mentioned).

*Lobophora insularis* Kirby, 1900, *Dist. Ins. Transvaal.*: 13, pl. 1, fig. 3 - Male in dorsal view (Type Male; Transvaal).

*Chelisothes stratioticus* Rehn, 1906, *Proc. U. S. natn. Mus.*, **29**: 509, fig. 6 (Type Male; Burma); Burr, 1911, *Genera Insect.*, **122**: 65 (treated as a synonym of *Forficula morio* F, 1775); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 52 (treated as a synonym of *Chelisothes tenebrator* Kirby, 1891- not correct).

*Chelisothes lilyanus* Holdhaus, 1908, *Dnskschr math. Naturw. Akad. Wiss., Wien*, **84**: 16 (Type Female; Samoa); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 614 (treated as a synonym of *Chelisothes morio* F, 1775).

*Chelisothes imitator* Ramamurthi, 1967, *Ent. Medd.*, **35**: 250 (Holotype Male, Allotype Female; Bismarck Isl: Lovangai, Banatam); Steinmann, 1989, *World Catalogue of Dermaptera*



**Figs. 388-395.** *Chelisothes morio* (Fabricius), Male, 388. Dorsal view, 389-393. Ultimate tergite and forceps, showing variations, 393. Genitalia, 394. Parameres enlarged; Female, 395. Ultimate tergite and forceps (figs. 389-391 after Srivastava, 1987).

(Series entomologica v. 43): 614 (treated as a synonym of *Chelisoches morio* F, 1775).

Male: Build stout. Colour ranges from black to reddish brown with intermediate shades; one or two preapical antennal segments yellow and tarsi brownish.

Head triangular, moderately convex, sutures obsolete, hind margin emarginate. Eyes shorter than post-ocular length. Antennae 21-segmented, 1<sup>st</sup> stout, about as long as the distance between antennal bases, slightly expanded apically; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, gently expanded apically; 4<sup>th</sup> shorter than the preceding, subclavate; 5<sup>th</sup> slightly longer than the 4<sup>th</sup>, subclavate, remaining gradually increasing in length, each gently expanded apically. Pronotum about as long as broad, slightly widened posteriorly, hind margin rounded, median sulcus distinct, prozona convex and metazona depressed. Elytra and wings well developed, smooth. Legs typical of the genus; tarsi covered with golden pubescence on underside. Abdomen elongated, lateral margin parallel or gently widened in middle, tergites moderately convex, finely punctate, hind margin of each tergite milled (with a row of compressed tubercles), lateral folds on 3<sup>rd</sup> tergite weakly and on 4<sup>th</sup> distinctly marked. Penultimate sternite with posterior margin rounded with slight emargination in middle. Ultimate tergite transverse, disc moderately convex, slightly sloping backwards, low folds above the bases of forceps, in between depressed with a pair of compressed tubercles, inner pair smaller, contiguous, outer pair larger situated on the inner margin of folds above the bases of forceps, hind margin trisinate, lateral portion of hind margin oblique. Pygidium declivitous, narrowed apically, hind margin truncate or slightly emarginate. Forceps with branches stout, depressed, (in f. *macrolabia*) elongated, gradually tapering and incurving apically, internally deplanate in basal half, followed by one or two teeth; (in f. *cyclolabia*) short, internal margin with one or two teeth at base, followed by minute teeth in middle, position of internal teeth variable. Genitalia with parameres narrow, external dilation in middle slight; virga short, thick, tubular.

Female: As male but penultimate sternite obtuse in middle posteriorly; ultimate tergite strongly narrowed posteriorly; pygidium subvertical, slightly narrowed posteriorly with postero-lateral angles produced into minute points and forceps simple and straight, internally unarmed.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 9.6 - 13.0 | 9.6 - 12.6 |
| Length of forceps | 3.4 - 6.8  | 3.8 - 4.5  |

*Types:*

1. *Chelisoches morio* Fabricius, 1775 - Type Male and Female at BMNH.
2. *Lobophora rufitarsis* Serville, 1839 - Type Male; repository not known.
3. *Lobophora albomarginata* Haan, 1842 - Type Nymph; repository not known.

4. *Forficula tasmanica* Blanchard, 1853 - Type Male; repository not known.
5. *Lobophora nigronitens* Stål, 1860 - Type Male; repository not known.
6. *Lobophora cinticornis* Stål, 1860 - Type Male repository not known.
7. *Lobophora tartera* Stål, 1860 - Type Male; repository not known.
8. *Labidura comprimens* Scudder, 1876 - Type Male at USNM.
9. *Labidura nigricornis* Kirby, 1888 - Type Male at BMNH.
10. *Sphingolabis insularis* Krby, 1900 - Type Male; repository not known.
11. *Chelisoches stratioticus* Rehn, 1906 - Type Male at USNM.
12. *Chelisoches lilyanus* Holdhaus, 1908 - Type Female at NMWA.
13. *Chelisoches imitator* Ramamurthi, 1967 - Holotype Male and Allotype Female at UZMC.

*Distribution:* India (Karnataka & Kerala), Sri Lanka, Myanmar and other countries in the Oriental region.

This species is almost world wide in distribution but more prominent in the warmer parts.

The record of this species by Burr (1913b) and Chopard (1924a) are referable to *Chelisoches brevipennis* Borelli. In the collections of the Zoological Survey of India, Kolkata it is represented by a few specimens from India: Karnataka.

*Remarks:* It exhibits great variations in colour and size. Forceps, in males, are highly polymorphic, represented by macrolabic and cyclolabic forms with intermediate stages.

#### Family FORFICULIDAE

*Forficulidae* Stephens, 1829, *Catalogue British Insects*, 1: 299 (Type genus: *Forficula* Linneaus, 1758); Bormans and Krauss, 1900, *Das Tierreich*, 11: 1; Burr, 1907, *Trans. ent. Soc. Lond.*, 1907: 91; Burr, 1910, *Fauna British India, Dermaptera*: 129; Burr, 1911, *Genera Insect.*, 122: 68; Zacher, 1911, *Zool. Anz.*, 45: 228; Bey-Bienko, 1936, *Faune de l'URSS, Dermaptères*: 120; Hincks, 1957, *South African Animal Life*, 4: 82; Reichardt, 1971, *Pap. Avulsos zool., Sau Palo*, 24(12): 164; Brindle, 1973, *Roy. Afr. centr.*, Tervuren, in 8° Zool., 205: 234; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, 2: 55; Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, Pt. II: 10; Sakai, 1982, *Bull. Daito Bunka Univ.*, 20: 48; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 649; Steinmann, 1993, *Das Tierreich*, 108: 122.

Body size including forceps varies between 2.5 mm and 37.0 mm in length. Body weakly, sometimes strongly depressed. Antennae multi-segmented, 1<sup>st</sup> generally stout; 3<sup>rd</sup> and 4<sup>th</sup> almost equal in length or latter sometimes shorter. Elytra and wings well developed or abbreviated, sometimes apterous. Legs long or short; tarsi with 2<sup>nd</sup> segment lobed Forceps, in males, generally depressed, flattened internally in basal half or slender.

*Type genus:* *Forficula* L., 1758.

*Distribution:* World wide.



## Subfamily COSMIELLINAE

*Cosmiellinae* Steinmann, 1975, *Act. zool. hung.*, **21**: 216 (Type genus: *Cosmiella* Verhoeff, 1902); Steinmann, 1983, *Rev. suisse Zool.*, **90**(3): 553; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 666; Steinmann, 1993, *Das Tierreich*, **108**: 163; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5738.

Antennal segments long, slender, 3<sup>rd</sup> equal to 4<sup>th</sup> in length or longer. Elytra well developed or reduced, along the costal margin with a distinct ridge. Wings present or wanting. Meso-sternum about as long as broad. Legs long, slender, hind tibiae reaching upto the base of forceps or extending beyond; tarsi with 2<sup>nd</sup> briefly lobed. Forceps, in males, generally long, slender. Male genitalia with virga tubular, at base with chitinous accessory plates.

*Type genus: Cosmiella* Verhoeff, 1902.

*Distribution:* World wide.

*Remarks:* The members of this subfamily possess a sharp ridge along the costal margin of elytra extending along the full length or part of it.

Under the area of study only two genera, namely *Liparura* Burr and *Lipodes* Burr are known to occur. The latter is included here on account of thin antennal segments and quadrate meso-sternum.

## Key to the genera (based on males)

- 1(2). Build slender; elytra abbreviated, smooth; forceps slender or stout, sometimes depressed, internally armed generally ..... *Liparura* Burr
- 2(1). Build stout; elytra ample, coreaceous; forceps long, thin, internally unarmed ..... *Lipodes* Burr

Genus *Liparura* Burr

*Liparura* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 119 (Type species: *Lobophora asciatica* Bormans, in Bolivar, 1897); Burr, 1910, *Fauna British India, Dermaptera*: 181 (Type species: *Liparura punctata* Burr, 1910 - designated as Type species); Burr, 1911, *Genera Insect.*, **122**: 90; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 34 (for *Sondax* read *Liparura*); Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 15; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5857; Steinmann, 1976, *Acta zool. hung.*, **21**: 16; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 682; Steinmann, 1993, *Das Tierreich*, **108**: 172; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 67; Srivastava, 1977, *Orient. Insects*, **11**(2): Srivastava, 1993, *Fauna of West Bengal, State Fauna Series*, **3**, Pt. 4: 420.

Size medium to small (15.0-12.0 mm). Head weakly convex, sutures faint or distinct. Antennae 11-segmented, long, slender, 3<sup>rd</sup> and 4<sup>th</sup> subequal but shorter than 5<sup>th</sup>, a few preapical ones thin and rod shaped. Elytra abbreviated, costal margin with a complete

ridge. Wings absent. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed. Abdomen greatly enlarged in middle, tergites punctate; ultimate tergite transverse, strongly sloping and gently narrowed backwards. Forceps, in males, contiguous or remote, elongated, internally armed; in females simple and straight.

*Type species: Lobophora asiatica* Bormans in Bolivar, 1897.

*Distribution:* India (Darjeeling Dist., W.B. and Arunachal Pradesh), Bhutan and China (Yunnan).

*Remarks:* Burr (1907) erected *Liparura* for the reception of *Neolobophora asiatica* Bormans, in Bolivar, 1897 from South India. But his study was actually based upon a male from Darjeeling Dist. and a female from Pedong (both the localities in India: W. B. Darjeeling Dist., not in Sikkim and Bhutan as mentioned by Burr) and considered conspecific with *N. asiatica*. He subsequently (1910) recognised this pair as distinct and described them as a new species *Liparura punctata* and designated as the type species of *Liparura* and transferred *N. asiatica* to *Obelura* Burr.

#### Key to the species (based on males)

- 1(8). Pronotum weakly transverse
- 2(3). Ultimate tergite on the lateral margins with a sharp spine ..... *L. cornuta* (Bey-Bienko)
- 3(2). Ultimate tergite on lateral margin without any spine
- 4(5). Forceps with branches straight, contiguous, with a ridge above, close to inner margin in basal one third, afterwards broadly incurved ..... *L. punctata* Burr
- 5(4). Forceps with branches remote at base, elongatedly incurved in apical half, internally armed with a tooth
- 6(7). Abdomen deeply punctate, sides of segments 4<sup>th</sup> to 7<sup>th</sup> acute angled posteriorly, recurved, with a serrated oblique ridge; forceps with branches stout and depressed ..... *L. serrata* Srivastava
- 7(6). Abdomen faintly punctate, sides of abdominal segments 4<sup>th</sup> to 7<sup>th</sup> acute angled posteriorly but not recurved with an oblique ridge (not serrated) on 5<sup>th</sup> and 6<sup>th</sup> segments only; forceps with branches long and slender ..... *L. kamengensis* Srivastava
- 8(1). Pronotum about as long as broad or longer than broad
- 9(12). Pronotum about as long as broad
- 10(11). Abdomen with punctulations shallow; forceps with branches depressed, almost straight up to a little beyond middle, afterwards strongly incurved, internally with a sharp tooth at a little beyond middle, followed by another weaker one, often obsolete ..... *L. deprapaniensis* (Kapoor, Bharadwaj and Banerjee)

- 11(10). Abdomen with punctation deep; forceps with branches cylindrical, gently incurved in apical half, internally unarmed ..... *L. simplex* Brindle
- 12(9). Pronotum longer than broad (abdomen deeply punctate; forceps internally armed with two teeth) ..... *L. dentata* Srivastava

***Liparura cornuta* (Bey-Bienko)**

(Figs. 396-400)

*Cosmicula cornuta* Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 625, fig. 40 (6 Males including Type, 7 Females; China: Yunnan, 1800 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 72.

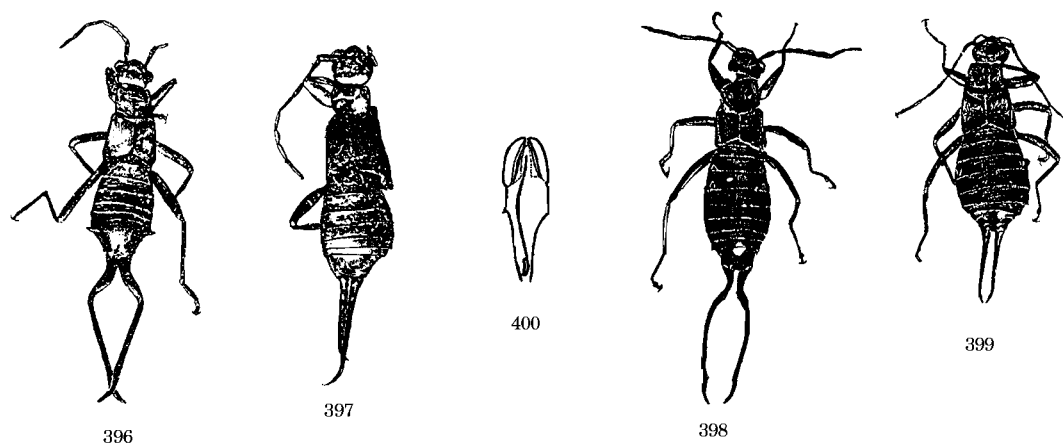
*Cosmiella cornuta*; Steinmann, 1975, *Folia ent. hung.*, **28**(1): 166, fig. 45 (6 Paratypes at Zool. Inst. and Mus., Leningrad); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 670; Steinmann, 1993, *Das tierreich*, **108**: 196, fig. 308.

*Cosmiella (Cosmicula) cornuta*; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5806, 5012 (coloured photographs of Holotype Male, Paratypes 1 Male, 1 Female at Acad. Sinica, Beijing), 6136 (black and white photographs of Holotype Male, Paratype(not Allotype) 1 Female at Acad. Sinica, Beijing).

*Liparura mountusa* Steinmann, 1983, *Revue suisse Zool.*, **90**(3): 553, figs 9-10 (Holotype Male, Paratypes 2 Males, 1 Female; Nepal: Prov. Bagmati, Dobate ridge, NE Barabise, 2500-2800 m); Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5867, 6154 (black and white photographs of Holotype Male, Paratype (not Allotype) 1 female), 6018 (coloured photographs of Holotype Male, Paratype (not Allotype) 1 Female) and 6016 (photographs of Holotype Male and Paratypes 2 Females) - **Syn. n.**

Male: General colour brown to blackish brown; head brownish red; antennae with one or two pre-apical segments complete or partly yellowish white and hind end of abdomen and forceps black.

Head triangular, frons convex, sutures distinct. Eyes distinct, about as long as the post-ocular length. Antennae 11-segmented, 1<sup>st</sup> long, stout, expanded apically, equal to the distance between antennal bases; 2<sup>nd</sup> transverse; 3<sup>rd</sup> long, slender, about as long as the 4<sup>th</sup>, remaining gradually increasing in length distally. Pronotum weakly transverse, lateral margin straight, posterior margin rounded, median sulcus distinct. Elytra abbreviated, distinctly keeled along the costal margin, axillary angles rounded off to expose a small triangular scutellum, meeting along the inner margin, hind margin obliquely truncate. Legs typical of the genus, hind tarsi with 1<sup>st</sup> segment longer than 3<sup>rd</sup>, 2<sup>nd</sup> briefly lobed. Abdomen enlarged in middle, tergites convex, densely and rugosely punctulate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct. Penultimate sternite rounded posteriorly. Ultimate tergite strongly sloping and narrowed posteriorly, above the bases of forceps with low folds and area in between depressed, lateral margins at base with a process or spine, hind margin trisinate, lateral portion of the margin oblique. Forceps with branches contiguous, straight at base for some distance, internal margin serrated, raised or with a dorsal tubercle, afterwards elongatedly incurved, internally a little before apex a tubercle present, apices gently hooked and pointed. Genitalia with



**Figs. 396-400.** *Liparura cornuta* (Bye-Bienko), Male, 396, 398. Dorsal view, 400. Genitalia; Female, 397, 399. Dorsal view (figs. 396, 397 ex Holotype Male, Paratype Female of *Cosmicula cornuta* Bye-Bienko, 1959 and figs. 398-399 ex Holotype Male and Paratype Female and fig. 400. Male genitalia of *Liparura montusa* Steinmann, 1983—all figs. after Sakai, 1994 except fig. 400 after Steinmann, 1983).

parameres broad, about three times longer than broad, narrowed apically, tip pointed, virga thin, tubular, at base with a small vesicle.

Female: Agrees with males in most characters except that the penultimate sternite obtuse in middle posteriorly; ultimate tergite without lateral basal spine and forceps simple and straight.

*Measurements* : (in mm)

|                   | Male        | Female     |
|-------------------|-------------|------------|
| Length of body    | 10.0 - 12.0 | 9.5 - 12.0 |
| Length of forceps | 5.5 - 9.0   | 5.0 - 5.8  |

*Types*:

1. *Cosmicula cornuta* Bey-Bienko, 1959 - Holotype Male, Paratypes: 1 Male at CASP and 6 Paratypes at AZL.
2. *Liparura montusa* Steinmann - Holotype Male, Paratypes: 1 Male, 1 Female at MHNG and 1 Male at HNAB.

*Distribution*: Nepal and China (Yunnan).

*Remarks*: *Liparura montusa* Steinmann is treated as a synonym since it agrees well with description of *Cosmicula cornuta* Bey-Bienko except that in the former pronotum is weakly transverse whereas in the latter it is about as long as broad. However, as per the photograph of Holotype Male of *Cosmicula cornuta* by Sakai (1994) it appears to be transverse.

***Liparura punctata* Burr**

(Figs. 401-404)

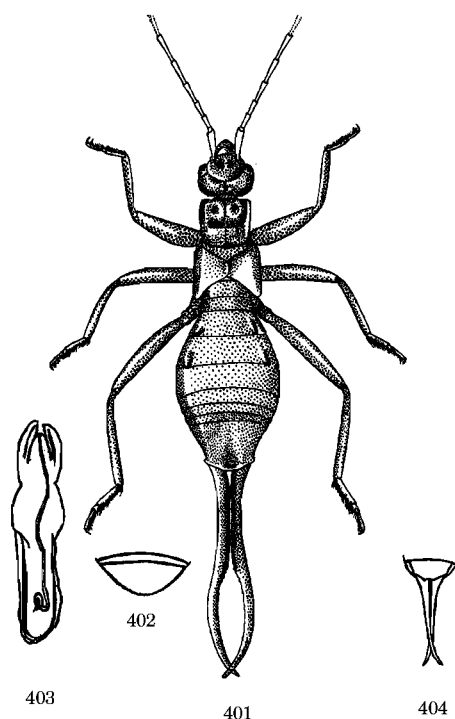
*Liparura asiatica* (nèc Bormans in Bolivar 1897); Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 119(1 Male; Darjeeling and 1 Female; Pedong, India not Bhutan or Sikkim).

*Neolobophora asiatica* (nèc Bormans in Bolivar, 1897); Burr, 1908, *Bull. Mus. Hist. nat., Paris*, **14**: 117.

*Liparura punctata* Burr, 1910, *Fauna British India, Dermaptera*: 182, pl. 7, fig. 54 (Type Male figured); Burr, 1911, *Genera Insect*, **122**: 90; Borelli, 1927, *Boll. Lab. zool. gen. agr., Portici*, **20**: 77 (Male; China: Yunnan); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 34; Srivastava, 1977, *Orient. Insects*, **11**(2): 189, figs 3a-d (Male, Female; India, W.B., Darjeeling Dist., Balasone Basti, 1800 m, Barabatia Basti, 2100 m, Hima Falls, 2150 m); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 124, figs 164-167 (Male, Female; India, W.B., Darjeeling Dist, Rangirun, 1829 m, near Sukiapokri, 1800 m and Hill forest above Hima falls, 2150 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5859, 6017 (coloured photograph of Syntype Male), 6151 (black and white photograph of Syntype Male), Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 682; Steinmann, 1993, *Das Tierreich*, **108**: 174, figs 276-278.

Male: General colour dark brownish black, except antennae, tibiae and tarsi yellowish brown.

Head about as long as broad, frons convex with two faint depressions in the middle, hind margin emarginate in middle. Eyes prominent but shorter than the post-ocular length. Antennae 11-segmented or more (since the apical ones tend to break off easily), 1<sup>st</sup> segment stout, slightly expanded apically, longer than the distance between antennal bases; 2<sup>nd</sup> short; 3<sup>rd</sup> and 4<sup>th</sup> almost equal but shorter than the 5<sup>th</sup>, remaining segments thin and rod shaped, gradually increasing in length distally. Pronotum smooth, weakly transverse, narrowed posteriorly with margin rounded, lateral margins straight, reflexed, prozona tumid with faint depression on either side of median line, metazona weakly depressed. Elytra abbreviated, smooth, axillary angles rounded off, showing scutellum and a portion of mesonotum, costal margin with a sharp ridge, hind margin obliquely truncate. Wings wanting. Legs long, slender, anterior femora thickened, hind tarsi with 1<sup>st</sup> segment compressed, longer than the combined length of remaining two; 2<sup>nd</sup> lobed, covered with thick pubescence on underside. Abdomen deeply punctate, greatly enlarged in middle, tergites convex, sides of segments rounded, lateral folds on 3<sup>rd</sup> weakly and on 4<sup>th</sup> well developed. Penultimate sternite punctate, triangular; manubrium shorter than the sternite in length. Ultimate tergite with punctate and smooth stripes alternating, transverse, strongly narrowed and sloping backwards, slightly tumid above the bases of forceps and depressed in middle, hind margin thickened and convex in middle, lateral portion of hind margin oblique. Forceps long, cylindrical, contiguous and straight in basal one third with a faint ridge above, close to inner margin, afterwards strongly incurved



**Figs. 401-404.** *Liparura punctata* Burr, Male, 401. Dorsal view; 402. Penultimate sternite, 403. Genitalia; Female, 404. Ultimate tergite and forceps.

enclosing an oval space, apices gently hooked, pointed and crossing, internal margin with numerous minute tubercles. Genitalia with parameres about three times longer than broad, narrowed apically, tip pointed; virga thin tubular, basal vesicle short.

Female: Agrees with males but penultimate sternite broadly rounded posteriorly; ultimate tergite more strongly narrowed posteriorly and weakly sloping backwards and forceps with branches simple and straight, inner margin crenulated.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of forceps | 10.6 - 11.0 | 10.3 - 10.7 |
| Length of forceps | 7.0 - 7.2   | 3.2 - 4.3   |

*Types:* Type Male and 1 Female at BMNH.

Sakai (1994) has given the black and white and coloured photographs of Syntype Male which does not seem to be correct since it is not similar to the figure of 'Type Male' by Burr (1910). In Burr's diagram the forceps are contiguous in basal one third whereas in Sakai's diagram branches of forceps are remote at base, internally armed with a tooth.

*Distribution:* India (W. B., Dist. Darjeeling, 1800-2150 m) and China (Yunnan).

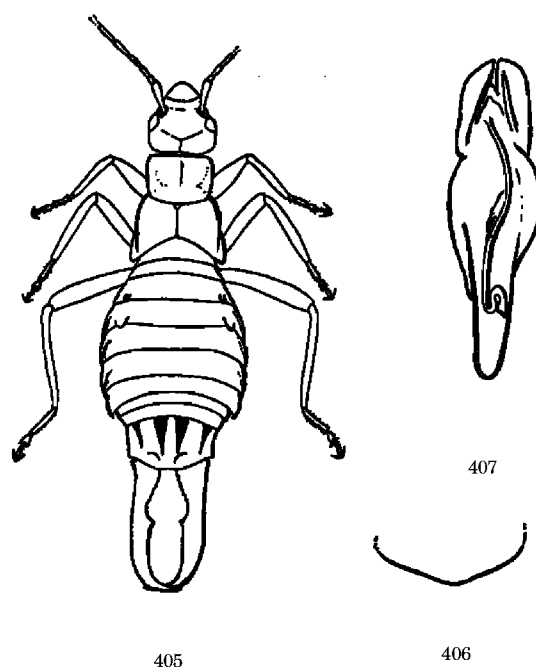
*Remarks:* It can be easily separated from other species of the genus by the contiguous branches of forceps, in males, in basal one third with a dorsal ridge running close to inner margin.

***Liparura serrata* Srivastava**  
(Figs. 405-407)

*Liparura serrata* Srivastava, 1977, *Orient. Insects*, **11**(2): 193, figs 4e-g (Holotype Male; India: Arunachal Pradesh, Kameng dist., Sangloom, 701 m); Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, **81**: 486 (Male, Female; India: Manipur, Shiroi); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series* **9**: 216, fig. 56 (Sikkim); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5866, 6153 (black and white photograph of Holotype Male and genitalia), 6018 (coloured photograph of Holotype Male); Sakai and Zhang, 1995, In: *Dermapterorum Catalogus*, **30**: 9289, pl. 1, fig. 9 (India: Arunachal Pradesh (localities recorded are at present not under Assam ), 2145 - 2574 m; Sikkim, Dolma Sampa, 4851 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 51 (localities same as recorded by Sakai and Zhang, 1995); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 683; Steinmann, 1993, *Das. Tierreich*, **108**: 179, figs 287 - 288.

Male: General colour blackish brown; head, pronotum, legs and posterior margin of tergites yellowish brown and ultimate tergite with four black longitudinal stripes.

Head smooth, longer than broad, frons and occiput moderately convex, sutures distinct, hind margin almost straight. Eyes prominent, slightly shorter than the post-ocular length. Antennae 10-segmented or more (since the apical ones tend to break off easily), long, slender, 1<sup>st</sup> stout, expanded apically, slightly longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> almost equal to preceding, 5<sup>th</sup> onwards segments gradually increasing in length and thinning distally. Pronotum transverse, smooth, shining, narrowed posteriorly, anterior margin convex, lateral margin straight, gently reflexed, hind margin briefly rounded, prozona tumid with a pair of depressions, metazona weakly tumid, median sulcus faint. Elytra abbreviated, axillary angles reduced to expose a triangular scutellum, meeting in the middle, hind margin oblique and concave, costal margin with a sharp keel but obsolete at extreme apex. Legs typical of the genus. Abdomen greatly enlarged in middle, tergite depressed, deeply and densely punctate, lateral fold distinct, on 3<sup>rd</sup> comparatively smaller, on 4<sup>th</sup> bigger and lobe shaped, sides of segments acute angled, recurved and with an oblique serrated ridge. Penultimate sternite transverse, punctate, rounded posteriorly, obtuse in middle. Ultimate tergite transverse, sloping, narrowed posteriorly, punctuation weaker than on the abdominal tergites, weakly tumid above the bases of forceps and depressed in between with a short, distinct median sulcus. Pygidium concealed, short, pointed posteriorly. Forceps stout, depressed, remote, externally straight, tapering apically, tip gently hooked and pointed, internal margin gradually diverging from base upto the middle, enclosing pear shaped space, afterwards straight, margin crenulate



**Figs. 405-407.** *Liparura serrata* Srivastava, Holotype Male, 405. Dorsal view, 406. Posterior margin of penultimate sternite, 407. Genitalia.

with a sharp, distinct tooth at middle. Genitalia with parameres three times longer than broad, narrowed apically; virga tubular.

Female: Agrees with males in most characters but penultimate sternite obtuse in middle posteriorly; sides of abdominal segments broadly convex, lacking ridge; ultimate tergite more strongly narrowed posteriorly and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 10.0 - 11.0 | 10.0 - 10.5 |
| Length of forceps | 3.7 - 4.0   | 3.0 - 3.5   |

*Type:* Holotype Male in ZSI.

*Distributon:* India: Arunachal Pradesh, 704 - 2574 m; Sikkim and Manipur.

***Liparura kamengensis* Srivastava**

(Figs. 408-411)

*Liparura kamengensis* Srivastava, 1977, *Orient. Insects*, **11**(2): 192, figs 4a-d (Holotype Male, Paratype 1 Female; India: Arunachal Pradesh, Subansiri Dist., Dunn Bridge, 124 m);

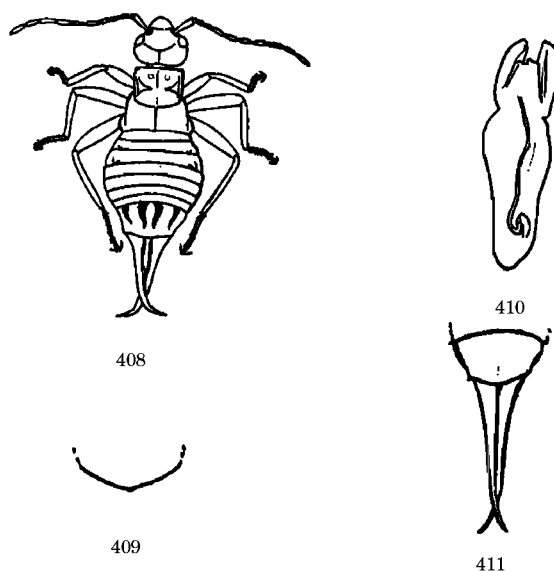


Srivastava, 2003, *Fauna of Sikkim, State Fauna Series* **9**: 216, figs 154-155 (India: Sikkim and Assam); Sakai, 1982, *Bull Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5865, 6153 (black and white photographs of Holotype Male, Paratype 1 Female (not Allotype), 6017 (coloured photographs of Holotype Male, Paratype 1 Female (not Allotype).; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 682; Steinmann, 1993, *Das Tierreich*, **108**: 178, figs 284 - 286.

*Cosmiella*(*Skendyle*) *aptera* (nèc Verhoeff, 1902); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 51 (Male, Female; India: Arunachal Pradesh (localities mentioned now not under Assam ), Taluong Dzong, 2310-2574 m; Nyukmadong, 2178-2640 m; Moshing, 2244 m; Domkho, 2294 m; Sikkim, Dolma Sampa, 4851 m).

Male: General colour blackish brown; pronotum on lateral margin and legs brownish yellow and ultimate tergite with four black longitudinal stripes, broader at base.

Head slightly longer than broad, smooth, convex, sutures fine, faint, hind margin slightly emarginate in middle. Eyes prominent, about as long as the post-ocular length. Antennae 11-segmented, 1<sup>st</sup> stout, expanded apically, slightly longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> slightly longer than the 5<sup>th</sup>, remaining gradually increasing in length distally. Pronotum transverse, smooth, anterior and lateral margins straight, latter gently reflexed, median sulcus distinct, posterior margin briefly rounded, prozona tumid and metazona less so. Elytra abbreviated, smooth, costal margin with a sharp ridge, hind margin oblique. Wings absent. Legs typical of the genus. Abdomen greatly enlarged in middle, tergites faintly punctate, a few



**Figs. 408-411.** *Liparura kamengensis* Srivastava, Holotype Male, 408. Dorsal view; 409. Posterior margin of penultimate sternite; 410. Genitalia; Female, 411. Ultimate tergite and forceps (after Srivastava, 1977).

apical ones smooth, lateral tubercles on 3<sup>rd</sup> tergite weak and on 4<sup>th</sup> well marked. Penultimate sternite with posterior margin broadly rounded. Ultimate tergite transverse, depressed, almost smooth, contracted posteriorly, weakly tumid above the bases of forceps and with a weak depression in between, hind margin thickened, convex in middle, lateral portion of hind margin oblique and concave. Pygidium not visible from above, vertical, obtuse. Forceps subremote at base, branches long, slender, tapering apically, almost straight, incurved a little before apex, apices pointed and hooked. Genitalia as in fig. 410.

Female: Agrees with males in most characters except ultimate tergite more strongly narrowed posteriorly and forceps with branches simple and straight.

*Measurements:* (in mm)

|                   | Male | Female |
|-------------------|------|--------|
| Length of body    | 7.8  | 7.4    |
| Length of forceps | 2.6  | 3.0    |

*Types:* Holotype Male and Paratype 1 Female in ZSI.

*Distribution:* India: Arunachal Pradesh (124 m - 2574 m) and Sikkim (4851 m)..

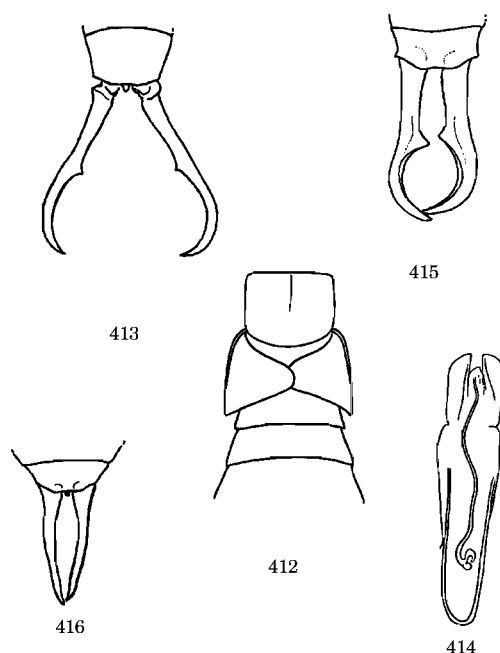
***Liparura debrepaniensis*** (Kapoor, Bharadwaj and Banerjee)  
(Figs. 412-416)

*Eparchus debrepaniensis* Kapoor, Bharadwaj and Banerjee, 1971, *Bull. Ent.*, **12**(1): 38, figs 13-15 (Holotype Male, Paratype 1 Female; India, W.B., Darjeeling Dist., Debrepani, 1829 m.; Paratype 1 Female; Rangirun, 1829 m.); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 73; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 47; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5666, 6096 (figs); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 699.

*Liparura debrepaniensis*; Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1-4): 52, figs 85-89 (Male, Female; India: Darjeeling Dist., Debrepani, 10 mi W of Ghoom, 2010 m); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 176, 178 (Male, Female; India: W.B., Darjeeling Dist., Takdah, Debrepani, 1829 m).

Male: General colour dark brownish black.

Head slightly longer than broad, frons convex, occiput tumid on sides, sutures distinct, hind margin emarginated in middle. Eyes shorter than the post-ocular length. Antennae 11-segmented or more (since apical ones tend to break easily), 1<sup>st</sup> stout, slightly expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal in length, 5<sup>th</sup> onwards gradually thinning and increasing in length. Pronotum about as long as broad, lateral margins parallel, hind margin rounded, median sulcus distinct, prozona raised, metazona weakly depressed. Elytra abbreviated, axillary angles concave to expose a broad scutellum, inner margin convex,



**Figs. 412-416.** *Liparura debrepaniensisi* (Kapoor, Bharadwaj and Banerjee), Male, 412. Pronotum, elytra and a portion of abdomen; 413, 415. Ultimate tergite and forceps; 414. Genitalia; Paratype Female, 416. Ultimate tergite and forceps (figs. 412-414 ex Holotype Male, fig. 415 ex another Male).

meeting, hind margin obliquely concave, costal margin with a sharp ridge. Abdomen spindle shaped, tergites convex, deeply punctate, sides of segments convex, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but latter more pronounced. Penultimate sternite rounded posteriorly. Ultimate tergite about as long as broad, narrowed posteriorly, disc convex but sloping backwards, in middle posteriorly with a slight depression and above the bases of forceps weakly tumid, smooth and punctuate longitudinal stripes alternating, hind margin faintly trisinate, lateral portion of hind margin oblique. Pygidium short, rounded posteriorly. Forceps with branches remote at base, weakly depressed, almost straight in basal half, afterwards strongly incurved, inner margin with a sharp or weak triangular tooth at a little beyond. Genitalia as in fig. 414.

Female: Agrees with males in most characters except that penultimate sternite obtusely rounded posteriorly; ultimate tergite quadrate and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male       | Female      |
|-------------------|------------|-------------|
| Length of body    | 11.0 -12.0 | 10.0 - 11.0 |
| Length of forceps | 4.0 -5.5   | 4.0 - 5.5   |

*Types:* Holotype Male, Paratypes 2 Females at FRI.

*Distribution:* India: W.B., Darjeeling Dist., Debrepani, 1829 m - 2010 m, Rangirun, 1829 m.

*Remarks:* Some variations are noted in the male forceps in being somewhat depressed or weakly depressed with internal tooth weakly or strongly marked.

This species comes close to *Liparura simplex* Brindle, in having the pronotum about as long as broad but differs by the comparatively shallow punctation on abdominal tergites and forceps with branches armed internally with a triangular tooth.

***Liparura simplex* Brindle**

(Figs 417 - 419)

*Liparura simplex* Brindle, 1975, *Ent. basiliensia*, **1**: 25 (Holotype Male; Bhutan, Wangdiphorang, 1300 m); Brindle, 1987, *Courier Forsch.-Inst. Senckenberg*, **93**: 339 (Male, Female and nymph; Nepal: alt. range 2150 - 2850 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Cataogus*, **26**: 5836, 6017 (coloured photograph of Holotype Male, Allotype Female (not correct since this species was described on a Male only); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 683; Steinmann, 1993, *Das Tierreich*, **108**: 173, fig. 174.

Male: General colour very dark reddish or yellowish brown; antennae yellow, basal segment reddish; legs reddish brown.

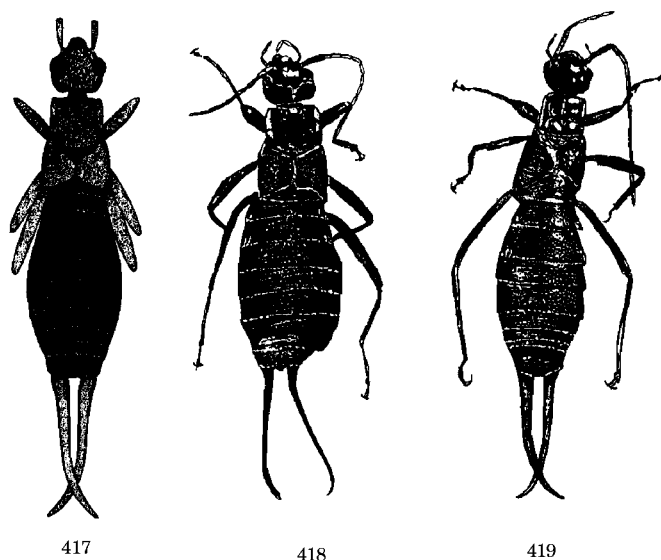
Head transverse, sutures distinct, frons convex. Eyes prominent but shorter than the post-ocular length. Antennae 12-segmented or more (since apical ones tend to break off easily), segments long, slender, 1<sup>st</sup> stout, longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal but shorter than 5<sup>th</sup>, remaining gradually increasing in length distally, a few apical ones thin and rod shaped. Pronotum about as long as broad, lateral margins parallel, gently reflexed, hind margin briefly rounded, median suture distinct, prozona tumid and metazona weakly depressed. Elytra abbreviated, axillary angles rounded off to show a portion of mesonotum and scutellum, costal margin with a sharp ridge. Wings absent. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>. Abdomen enlarged in middle, tergites punctate, punctures deep, remotely placed from each other, lateral fold on 3<sup>rd</sup> and 4<sup>th</sup> tergites prominent, former slightly weaker. Ultimate tergite strongly narrowed and sloping backwards, irregularly punctate, above the bases of forceps with weak folds and in between with a slight depression. Forceps with branches cylindrical, tapering apically, gently incurved beyond middle, internally unarmed.

Female: As male but forceps simple and straight.

*Measurements:* (in mm)

Male

Female



**Figs. 417-419.** *Liparura simplex* Brindle, Holotype Male. 417, 419. Dorsal view; Female, 418. Dorsal view (fig. 417 after Brindle, 1975a and figs. 418 and 419 after Sakai, 1994).

|                   |      |             |
|-------------------|------|-------------|
| Length of body    | 10.0 | 10.0 - 11.0 |
| Length of forceps | 3.75 | 3.0 - 4.0   |

*Types:* Holotype Male at BMNH.

*Distribution:* Bhutan and Nepal, alt. range 1300-2050 m.

***Liparura dentata* Srivastava**

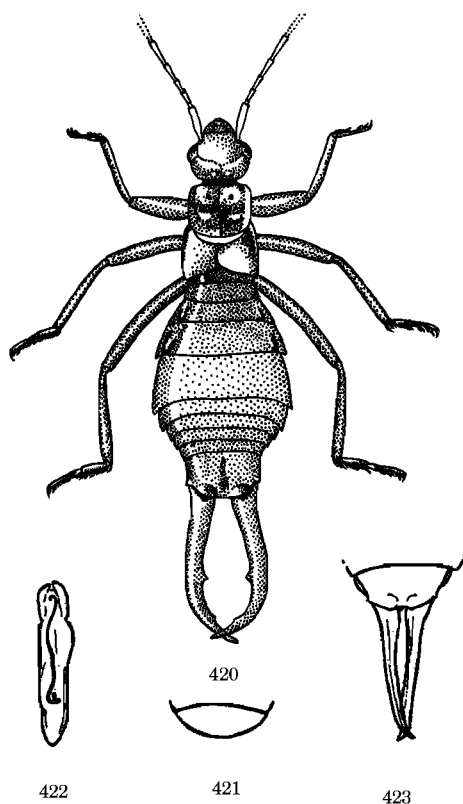
(Figs. 420-423)

*Liparura dentata* Srivastava, 1977, *Orient. Insects*, **11**(2): 190, figs 3e-h (Male, Female: India: W.B., Darjeeling Dist., Reseium forest, 4 km W of Algaraha Lava Road, 1890 m.); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 423, figs 168-175; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5864, 6152 (black and white photographs of Holotype Male, Paratype 1 Female), 6013 (coloured photographs of Holotype Male, Paratypes: 5 Males, 4 Females), 6017 (coloured photograph of Holotype Male, Paratype 1 Female); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 682; Steinmann, 1993, *Das Tierreich*, **108**: 177, figs 281-283.

*Brachylabis tegminata* Steinmann, 1983, *Revue suisse Zool.*, **90**(3): 547, fig. 5 (Holotype Female, Paratype 1 Female; India: W.B., Darjeeling Dist., Algarah, 1800-1900 m); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 421 (treated as a synonym of the *Liparura dentata* Srivastava, 1977).

Male: Head, antennae, pronotum, legs and forceps testaceous brown; abdomen blackish brown with varying intensity.

Head about as long as broad, frons and occiput slightly convex, sutures distinct. Eyes prominent, slightly shorter than the post-ocular length. Antennae 11-jointed, long, slender, 1<sup>st</sup> longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal, remaining gradually increasing in length distally. Pronotum slightly longer than broad, lateral sides straight, gently reflexed, hind angles and margin briefly rounded, prozona slightly tumid, a small depression present on either side of median line close to anterior margin; metazona flat. Elytra abbreviated, smooth, axillary angles rounded off to expose a scutellum and a portion of mesonotum, costal margin with a sharp ridge running its entire length, posterior margin oblique. Wings wanting. Abdomen enlarged in middle, tergites deeply punctate, weak on anterior and posterior tergites, sides of segments convex, punctate, lateral folds on 3<sup>rd</sup> tergite weak and on 4<sup>th</sup> well marked. Penultimate sternite punctate, transverse, hind margin



**Figs. 420-423.** *Liparura dentata* Srivastava Holotype Male, 420. Dorsal view, 421. Penultimate sternite, 422. Genitalia; Paratype; Female, 423. Ultimate tergite and forceps.

rounded. Ultimate tergite strongly narrowed and sloping backwards, punctate sparsely, sides concave in middle, weakly tumid above the bases of forceps with slight depression in between, hind margin thickened, trisinate, lateral portion of hind margin oblique. Pygidium short, rounded, scarcely visible from above. Forceps with branches stout, remote at base, depressed, tapering apically, straight, gradually diverging in basal two thirds, afterwards strongly incurved with apices gently hooked, pointed and crossing, internal margin armed with a strong tooth at a little beyond middle, followed by another weaker one a little before apex. In certain Paratype males only a single weak tooth present. Genitalia as in fig 422.

Female: Agrees with males except that ultimate tergite more strongly narrowed and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 9.2 - 10.0 | 9.0 - 13.1 |
| Length of forceps | 3.4 - 4.5  | 2.9 - 3.4  |

*Types:*

1. *Liparura dentata* Srivastava, 1977 - Holotype Male Paratypes: 6 Males, 8 Females in ZSI.
2. *Brachylabis tegminata* Steinmann, 1983 - Holotype Female in MHNG and Paratype 1 Female in HNAB.

*Distribution:* India: W.B., Darjeeling Dist., alt. range 1800 - 1900 m.

*Remarks:* This species comes close to *Liparura simplex* Brindle, from Bhutan in the having pronotum only a trifle longer than broad and abdominal tergites deeply punctate but differs by shape of ultimate tergite in being laterally concave with postero-lateral angles projecting and forceps stout, depressed, internally armed with one or two teeth

Genus *Lipodes* Burr

*Lipodes* Burr, 1907, *Trans ent. Soc. Lond.*, **1907**: 100 (Type species: *Opisthocosmia vivax* Burr, 1905). Burr, 1910, *Fauna British India, Dermaptera*: 203; Burr, 1911, *Genera Insect.*, **122**: 74; Burr, 1911, *J. Asiat. Soc. Beng. (N. S.)*, **7**: 771, 799; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1)(1967): 29; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 60; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 54; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5868; Steinmann, 1989, *World Catalogue of Dermaptera* (Series Entomologica v. 43): 683; Steinmann, 1993, *Das Tierreich*, **108**: 236.

Build stout. Head about as long as broad. Pronotum about as long as broad or transverse. Pro-sternum longer than broad; meso-sternum about as long as broad and meta-sternum transverse, entire length less than the width, lobe between coxae

transverse, hind margin truncate. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed. Elytra well developed, granulate or rough, micro-reticulated. Pygidium, in males, prominent and forceps elongated, cylindrical.

*Type: Opisthocosmis vivax* Burr, 1905.

*Distribution:* India: Arunachal Pradesh.

*Remarks:* In view of the long antennal segments; meso-sternum about as long as broad and elytra with a sharp, raised ridge along the costal margin, the placement of this genus under Cosmiellinae seems to correct. Besides, type species, the only other known species under the genus is, *L. filiformes* Borelli, 1932 from Borneo.

***Lipodes vivax* (Burr)**

(Figs. 424-427)

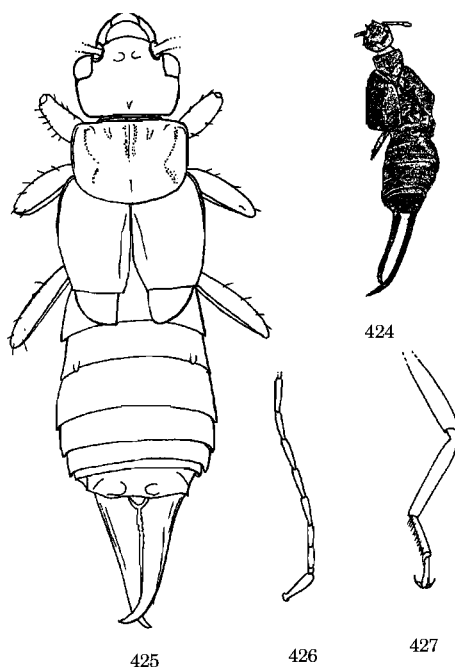
*Opisthocosmia vivax* Burr, 1905, *J. Asiat. Soc. Beng.* (N.S.), **1**(2): 30 (Type Female (actually a Male); India: Dikrang Valley, Nangangs, under Arunachal Pradesh now).

*Lipodes vivax*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 101; Burr, 1910, *Fauna British India, Dermaptera*: 204; Burr, 1911, *Genera Insect.*, **122**: 74; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 29; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 60; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 54; Sakai, 1994, *Drmapterorum Catalogus*, **26**: 5870, 6155 (black and white photographs of Type Male, BMNH); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 684; Steinmann, 1993, *Das Tierreich*, **108**: 238.

Male Size large (21.5 mm, including forceps); build robust. General colour yellowish brown. Head convex, sutures deep. Pronotum about as long as broad, rugose, slightly narrowed posteriorly, hind margin rounded, prozona raised, metazona depressed. Legs missing in the Type. Elytra well developed, costal keel along the costal margin, granulate, humeral angles prominent, hind margin truncate. Abdomen enlarged in middle, smooth, lateral tubercles on 3<sup>rd</sup> weakly and on 4<sup>th</sup> distinctly marked. Ultimate tergite broader than long, slightly narrowed and declivitous posteriorly, hind margin in middle truncate. Pygidium prominent, parallel sided, hind margin with deep incision and angles produced into minute points. Forceps with branches remote at base, cylindrical, tapering apically, tips gently hooked and pointed, internal margin denticulated.

Female: General colour blackish brown; elytra dull bronze. Build stout. Head longer than broad, smooth, frons convex, sutures obsolete, hind margin slightly emarginate in middle. Eyes shorter than the post-ocular length. Antennae 12-segmented (or more since the apical ones tend to break off easily), segments long, slender, basal segment stout, gently expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> almost equal to preceding, slightly stouter; 5<sup>th</sup> onwards segments gradually increasing in length, a few preapical ones thin and rod shaped. Pronotum transverse, micro-reticulated, lateral margins straight, gently reflexed, hind angles and margin rounded, median sulcus faint, pro- and metazona depressed.





**Figs. 424-427.** *Lipodes vivax* (Burr), Male. 424. Dorsal view; Female, 425. Dorsal view; 426. Antennae, 427. Hind leg (fig. 424 after Sakai, 1994).

Elytra and wings ample, rough, micro-reticulated, former with costal keel extending up to half of its length. Legs long, slender, hind tarsi with 1<sup>st</sup> segment equal to 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed; covered with dense golden pubescence on underside. Abdomen, fusiform, convex above, densely punctate, lateral folds on 3<sup>rd</sup> weakly and on 4<sup>th</sup> distinctly marked. Penultimate sternite weakly punctate, hind margin obtuse with golden hairs. Ultimate tergite transverse, weakly tumid above the bases of forceps and depressed in between, hind margin incrassate. Pygidium short, narrowed posteriorly. Forceps with branches simple, straight, contiguous, inner margin smooth, apices gently hooked and crossing.

*Measurements:* (in mm)

|                   | Male | Female |
|-------------------|------|--------|
| Length of body    | 18.0 | 12.5   |
| Length of forceps | 9.5  | 3.5    |

*Type:* Type Male (not Female as mentioned in the original description) at BMNH.

*Distribution:* India: Arunachal Pradesh.

*Remarks:* This species was so far known by its Type. Sakai (1994: 6155) has given a photograph of the same. It appears to be a subadult male on the basis of pygidium, ultimate tergite and shape of forceps.

A female specimen from India: Arunachal Pradesh, Subansiri Dist., Terrapin, 2100 m, 13.xii. 1974 (Coll. *J. M. Julka*), determined by G. K. Srivastava, is described here and is close to this species. In future specimens, of both sexes, if collected together, it would be possible to understand the species better.

#### Subfamily OPISTHOCOSMIINAE

*Opisthocosmiinae* Verhoeff, 1902, *Zool. Anz.*, **25**(665): 195 (Type genus: *Opisthocosmia* Dohrn, 1865); Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 98; Burr, 1910, *Fauna British India, Dermaptera*: 175; Burr, 1911, *Genera Insect.*, **122**: 88; Zacher, 1911, *Zool. Jb.*, **30**: 331; Bey-Bienko, 1936, *Faune de l'URSS, Dermapterès*: 196; Popham, 1966, *Entomologist*, **98**: 135; Reichardt, 1971, *Pap. Avulsos zool., S. Paulo*, **24**(12): 178; Srivastava, 1976, *Rec. zool Surv. India, Occ. pap.*, **2**: 66; Srivastava, 2003, *Fauna of India, and the adjacent countries, Dermaptera*, Pt. **II**: 10; Sakai, 1982, *Bull Daito Bunka Univ.*, **20**: 46; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 50(5335); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 690; Steinmann, 1993, *Das Tierreich*, **108**: 240.

*Opisthocosmiidae*; Zacher, 1912, *Zeitschr. Wiss. Insektenbiol.*, **1912**: 243; Zacher, 1915, *Zool. Anz.*, **24**: 528; Bruce, Melander and Carpenter, 1954, *Bull. Mus. comp. Zool., Harvard*, **108**: 116.

Antennal segments long, slender, basal segment not expanded apically, about equal in length or longer than the distance between antennal bases. Elytra and wings well developed or sometimes wanting. Abdomen with tergites convex, generally expanded in middle. Forceps, in males, usually elongated, internally armed variously.

*Type genus: Opisthocosmia* Dohrn, 1865.

*Distribution*: Oriental, Ethiopian and Neotropical Regions.

*Remarks*: This subfamily is represented by eleven genera in India and adjacent countries. Of them, only two genera namely, *Parasondax* Srivastava and *Prosadiya* Hebard are endemic to India.

#### Key to the genera (based on males)

- 1(2). Totally apterous ..... *Sondax* Burr
- 2(1). Elytra abbreviated; wings absent or both well developed
- 3(6). Elytra abbreviated; wings absent; ultimate tergite strongly narrowed posteriorly
- 4(5). Elytra abbreviated, as narrow, ovate lateral flaps ..... *Parasondax* Srivastava
- 5(4). Elytra abbreviated meeting along the median line, axillary angles rounded off to expose a small scutellum ..... *Obelura* Burr
- 6(3). Elytra and wings well developed; ultimate tergite only slightly narrowed posteriorly
- 7(8). Sides of abdominal segments obtusely convex or acute, recurved when seen from above; forceps depressed, horizontal and stout ..... *Hypurgus* Burr

- 8(7). Sides of abdominal segments broadly convex, not recurved; forceps long, cylindrical, not depressed
- 9(12). Pronotum with lateral margins not parallel anteriorly
- 10(11). Pronotum broader than long, narrowed posteriorly ..... *Pareparchus* Hebard
- 11(10). Pronotum about as long as broad, widened posteriorly (thickly pubescent) .....  
..... *Prosadiya* Hebard
- 12(9). Pronotum more or less with lateral margin parallel, especially anteriorly
- 13(16). Second tarsal segment with lobes very broad
- 14(15). Basal antennal segments swollen; parameres narrow, aciculate .....  
..... *Timomenus* Burr
- 15(14). Basal antennal segment stout, but not swollen; parameres broad .....  
..... *Paratimomenus* Steinmann
- 16(13). Second tarsal segment briefly lobed
- 17(18). First tarsal segment distinctly longer than the combined length of 2nd and 3rd;  
pronotum subquadrate; sides of abdominal segments broadly convex posteriorly  
with tubercles ..... *Eparchus* Burr
- 18(17). First tarsal segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; pronotum  
narrower, longer than broad; sides of abdominal segments generally extended  
posteriorly with tubercles
- 19(20). First antennal segment in cross section with sides raised above, flat dorsally  
above and convex below; parameres aciculate ..... *Cordax* Burr
- 20(19). First antennal segment in cross section rounded; parameres broad .....  
..... *Paracordax* Srivastava

#### Genus *Sondax* Burr

*Sondax* Burr, 1910, *Fauna British India, Dermaptera*: 117 (Type species: *Sondax repens* Burr, 1910); Burr, 1911, *Genera Insect.*, **122**: 89; Bey-Bienko, 1936, *Faune de l'URSS, Dermapterès*: 206; Kapoor, 1968, *Agra Univ. Res. (Sci.)*, **16**(1) (1967): 34; Popham and Brindle, 1968, *Entomologist*, **101**: 276; Sakai, 1973, *Dermapterorum Catalogus, Praeliminaris*, **7**: 15; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 46; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 89 (5369); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 66; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologic v. 43): 721; Steinmann, 1993, *Das Tierreich*, **108**: 244.

Build slender; apterous. Antennal segments cylindrical; head convex, about as long as broad. Legs long, slender; 1<sup>st</sup> and 3<sup>rd</sup> tarsal segments almost equal in length. Abdominal

tergites convex above; lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> segments distinct; ultimate tergite narrowed and sloping backwards. Forceps at base contiguous, afterwards strongly incurved.

*Type species: Sondax repens* Burr, 1910.

*Remarks:* Only two species under the genus are known, distributed in the Oriental Region.

***Sondax repens* Burr**

(Figs. 428-429)

*Sondax repens* Burr, 1910, *Fauna British India, Dermaptera*: 177, pl. 7, fig. 63 (Male; Madras); Burr, 1911, *Genera Insect.*, **122**: 89; Popham and Brindle, 1968, *Entomologist*, **101**: 276; Sakai, 1973, *Dermapterorum Catalogus Prealiminaris*, **7**: 15; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 46; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 85 (5370), 6021; Sakai and Zhang, 1995, In: *Dermapterorum Catalogus*, **30**: 9841, pl. 1, fig. 1 (1 Male; South India: Conoor, 610-1219 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 67; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 781; Steinmann, 1993, *Das Tierreich*, **108**: 246.

Male: General body colour reddish brown, with shades of yellowish on certain parts.

Head slightly longer than broad, smooth, frons convex, sutures faint, hind margin sinuate in middle. Antennae 10-segmented or more (apical one generally broken off) long, cylindrical. Eyes prominent but slightly shorter than the post-ocular length. Pronotum transverse, smooth, all margins straight, slightly widened posteriorly; mesonotum strongly transverse, smooth, hind margin straight; metanotum smooth, hind margin lightly emarginated. Legs long, slender; hind tarsi with 1<sup>st</sup> and 3<sup>rd</sup> segments almost equal in length. Abdomen enlarged in middle, tergites convex, smooth, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> distinct. Penultimate sternite with hind margin rounded. Ultimate tergite sloping and narrowed posteriorly. Forceps with branches slender, long, contiguous at base, afterwards strongly incurved, at base above with a vertical tooth with its tip curved backwards and bifurcated apically.

Female: Not known.

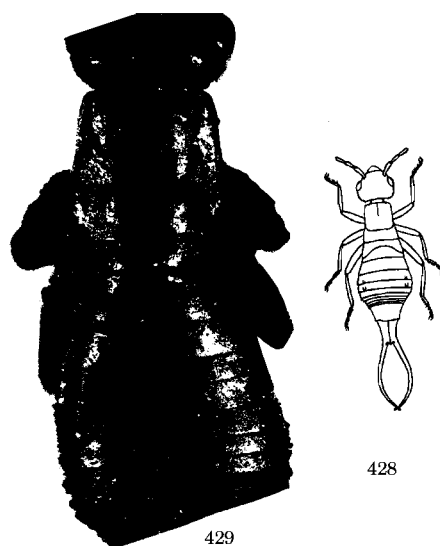
*Measurements:* (in mm)

|                   | Male |
|-------------------|------|
| Length of body    | 7.0  |
| Length of forceps | 4.0  |

*Type:* Type Male at UMO.

*Distribution:* India: Tamil Nadu, Coimbatore Dist., Conoor, 610-1219 m.

*Remarks:* This species was described on a male from Madras and another male from India: Tamil Nadu, Coimbatore Dist., Conoor, 610-1219 m. is also recorded.



**Figs. 428-429.** *Sondax repens* Burr, Male, 428. Dorsal view, 429. A photograph showing portion of head, pro-, meso- and metanotum and abdomen (fig. 428 redrawn after Burr, 1910 and fig. 429 from a photograph received from University Museum, Oxford, U.K.).

The above description is partly based after Burr (1910) and a photograph of Type Male received from the University Museum, Oxford, U.K.

Bey-Bienko (1934) has described *S. potanini* from China (Szechuan Prov.) which is peculiar in having the combination of characters of Anechurinae and Opisthocosmiinae. For this reason, it would be desirable to examine the sternal plates of this species which have not been described.

#### Genus *Parasondax* Srivastava

*Parasondax* Srivastava, 1978, *Bull. zool. Surv. India*, **1**(1): 74 (Type species: *Parasondax cantralli* Srivastava, 1978); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5736; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v.43): 716; Steinmann, 1993, *Das Tierreich*, **108**: 248.

Build slender. Antennae 11-segmented, slender; eyes shorter than the post-ocular length. Elytra present as narrow, lateral, ovate flaps on mesonotum. Legs long, slender; hind tarsi with 1<sup>st</sup> segment slightly longer than the 3<sup>rd</sup>. Abdomen with tergites convex, enlarged in middle, lateral folds on 3<sup>rd</sup> and 4th tergites distinct, but comparatively weaker on 3<sup>rd</sup>. Forceps, in males, long, slender, contiguous and straight at base for a short distance, with a vertical tooth, turned backwards, sometimes this tooth absent or weak, afterwards branches strongly bowed.

*Type species: Parasondax cantralli* Srivastava, 1978.

*Remarks:* This genus comes very close to *Sondax* Burr, 1910 but differs in having elytra as narrow lateral ovate flaps on mesonotum and hind metatarsus with 1<sup>st</sup> segment slightly longer than the 3<sup>rd</sup>. It can, however, be compared with *Synotus* Burr, but differs by the shape of elytra.

***Parasondax cantralli* Srivastava**

(Figs. 430-434)

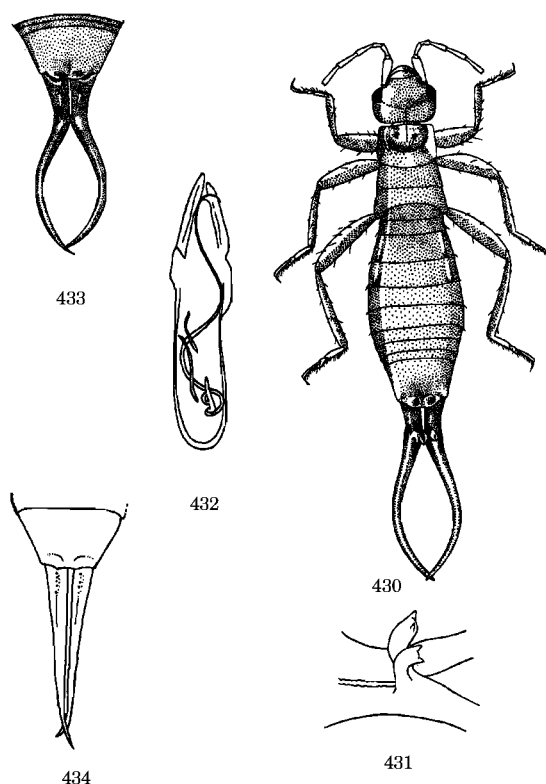
*Parasondax cantralli* Srivastava, 1978, *Bull. zool. Surv. India*, **1**(1): 76, figs 2G-J (Holotype Male, Paratypes 4 Males, 9 Females and 2 nymphs; India: Tamil Nadu, Cimbatore dist., Nilgiri Hills, Naduvatam, 1829 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5736, 6117 (black and white photographs of Paratype Male), 6007 (coloured photograph of Paratype Male); Steinmann, *World Catalogue of Dermaptera* (Series entomologica v. 43): 716; Steinmann, 1993, *Das Tierreich*, **108**: 247, figs 384 - 386.

**Male:** General colour yellowish brown with traces of black on certain body parts. Head about as long as broad, smooth, frons convex, hind margin scarcely emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennae 13-segmented, segments long, slender, 1<sup>st</sup> stout, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> subequal but both shorter than 5<sup>th</sup>, remaining gradually increasing in length distally and thinning. Pronotum weakly transverse, quadrate, all margins straight, lateral margin gently reflexed, median sulcus obsolete; prozona convex and metazona a little depressed. Mesonotum transverse, hind margin straight, elytra present as narrow lateral, ovate flaps. Metanotum transverse, hind margin emarginate. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed, covered with long and short pubescence on underside. Abdomen greatly enlarged in middle, tergites smooth, sides of segments convex, finely striated. Penultimate sternite broadly rounded in middle posteriorly. Ultimate tergite strongly sloping and narrowed posteriorly, above the roots of forceps with low elevations, hind margin trisinate, lateral portion of hind margin oblique. Forceps with branches depressed, contiguous, straight, internally dentate in basal one fourth, with a vertical tooth, apex of which bifid and turned backwards, afterwards branches strongly incurved, compressed, tapering, apices pointed and crossing. Genitalia as in fig. 432.

**Female:** Agrees with males in most characters except that forceps simple, straight, contiguous and internally dentate.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 5.8 - 9.0 | 7.1 - 9.1 |
| Length of forceps | 3.7 - 5.6 | 2.6 - 3.0 |



**Figs. 430-434.** *Parasondax cantralli* Srivastava, Holotype Male, 430. Dorsal view, 431. Basal vertical tooth of forceps, enlarged, 432. Genitalia; Paratype Male, 433. Ultimate tergite and forceps; Female, 434. Ultimate tergite and forceps (fig. 432 after Srivastava, 1978).

*Types:* Holotype Male, Paratypes: 4 Males, 7 Females and 2 nymphs at MZM and Paratypes: 2 Males, 2 Females at ZSI.

*Distribution:* India: Tamil Nadu, Ciombatore Dist., Naduvatam, 1829 m.

*Remarks:* The vertical tooth of forceps, in males, is sometimes almost obsolete, represented by a vestige of a tubercle and pronotum is slightly widened posteriorly.

#### Genus *Obelura* Burr

*Obelura* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 118 (Type species: *Neolobophora tamul* Burr, 1901); Burr, 1909, *Dt. ent. Z.*, **1909**: 37; Burr, 1911, *Genera Insect.*, **122**: 90; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 34; Popham and Brindle, 1968, *Entomologist*, **101**: 276; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 67; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5873; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 687; Steinmann, 1993, *Das Tierreich*, **108**: 182.

*Synotus* Burr, 1910, *Fauna British India, Dermaptera*: 199 (Type species: *Nelobophora neolobophoroides* Burr, 1901); Brindle, 1978, *Entomologist's Rec. J. Var.*, **90**: 314 (treated as a synonym of *Obelura* Burr, 1907); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 722; Steinmann, 1993, *Das Tierreich*, **108**: 249.

Build slender. Antennae with segments long, slender, 3<sup>rd</sup> and 4<sup>th</sup> almost equal in length. Head smooth, tumid, sutures fine or indistinct. Pronotum about as long as broad or slightly wider posteriorly. Elytra abbreviated, meeting along the median line, axillary angles rounded off to show a small scutellum. Wings wanting. Legs long, slender, hind tarsi with 1<sup>st</sup> and 3<sup>rd</sup> segments almost equal. Abdomen with tergites convex, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> distinct but on 3<sup>rd</sup> slightly weaker. Ultimate tergite, in males, sloping and narrowed posteriorly. Forceps, in males, long, slender, arcuate; in females, simple and straight.

*Type species: Nelobophora tamul* Burr, 1901.

*Distribution*: Oriental, Ethiopian and Australian Regions.

*Remarks*: This genus is at present known by nine species of which seven are from the Oriental Region and one each from Australia and Africa.

#### Key to the species (based on males)

- 1(4). Forceps at base depressed and contiguous, afterwards strongly incurved, internally at base above with a ridge or vertical tooth
- 2(3). Forceps with branches undulated, at base with a vertical tooth, followed by another similar internal tooth in apical two thirds ..... *O. asiaticus* (Bormans)
- 3(2). Forceps with branches not undulated, at base above with an obsolete crest, afterwards internally unarmed ..... *O. neolobophoroides* (Burr)
- 4(1). Forceps with branches long, slender, at base subcontiguous, afterwards diverging, inner margin with two or three teeth ..... *O. tamul* (Burr)

#### *Obelura asiatica* (Bormans)

(Figs. 435-437)

*Neolobophora asiatica* Bormans in Bolivar, 1897, *Ann. Soc. ent. Fr.*, **66**: 265, pl. 10, fig. 2 (Male, Female; South Madras, Kodaikanal); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 100; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 29.

*Liparura asiatica* (nèc Bormans in Bolivar, 1897); Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 19 (specimens (Male, Female) only from South India, Kodaikanal).

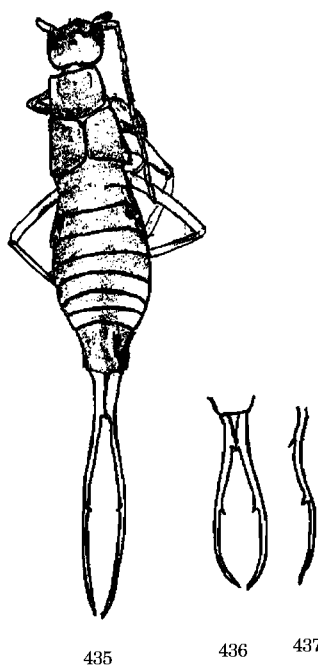
*Obelura asiatica*; Burr, 1910, *Fauna British India, Dermaptera*: 183 (only specimens from South India, Kodaikanal); Burr, 1911, *Genera Insect.*, **122**: 90; Kapoor, 1965, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 34; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 67; Brindle,



1978, *Entomologist's Rec. J. Var.*, **90**: 315, fig. 4; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5885, 6010 (coloured photograph of 1 Male, South India, ex Madrid Mus.), 6157 (photograph of 1 Male, South India, ex Madrid Mus.); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 688; Steinmann, 1993, *Das Tierreich*, **108**: 182, figs. 292 - 293.

Male: General colour shining yellow; legs and basal portion of forceps yellowish.

Head about as long as broad, frons depressed, occiput convex, hind margin emarginated in middle. Eyes shorter than the post-ocular length. Antennae 13 to 14 segmented, basal segment only slightly narrowed at base; 2<sup>nd</sup> short; 3<sup>rd</sup> and 4<sup>th</sup> long, slender, remaining gradually increasing in length distally. Elytra only slightly shortened in length, axillary angles rounded off to show a small scutellum. Wings wanting. Legs long, slender. Abdomen enlarged a little beyond middle, tergites convex, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> distinct but on 3<sup>rd</sup> slightly weaker. Penultimate sternite with a sharp spine on sides. Ultimate tergite strongly narrowed posteriorly. Forceps with branches contiguous, depressed at base, a vertical posteriorly directed spine present at the posterior point of depressed portion, afterwards branches compressed, elongatedly incurved, undulated, armed with a vertical and posteriorly directed tooth at the middle of arcuate portion. Genitalia not described.



**Figs. 435-437.** *Obelura asiatica*(Bormans), Male, 435. Dorsal view, 436. Ultimate tergite and forceps, 437. Forceps, lateral view, (fig. 435 after Sakai, 1994; figs. 436-437 from Bormans in Bolivar, 1897 after Brindle, 1978a).

Famale: Agrees with males in most characters except that ultimate tergite more strongly narrowed posteriorly and forceps simple, straight, internally unarmed, apices pointed and hooked.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 7.0 - 9.25 | 8.5 - 10.5 |
| Length of forceps | 3.5 - 7.5  | 3.5        |

*Type:* Type repository not known. In the original description of the species by Bormans in Bolivar (1897) the number of specimens is not mentioned.

Sakai (1994) gives a coloured and black and white photographs of a male from South India, Madrid Mus. without any remarks. Since this species is known only by its original description, perhaps it may be one of the Syntypes. But it needs further investigation.

*Distribution:* India: Tamil Nadu, Madura Dist., Nilgiri Hills, Kodaikanal.

*Remarks:* Brindle (1978a) remarks that Type need to be examined to ascertain the absence of costal carina for settling its generic position.

***Obelura neolobophoroides* (Burr)**

(Fig. 438)

*Opisthocosmia neolobophoroides* Burr, 1901, *J. Bombay. nat. Hist. Soc.*, **14**: 335 (Type Male, Female; Ceylon: Hattan); Burr, 1911, *Genera Insect.*, **122**: 96, pl. 8, figs 14a - b.

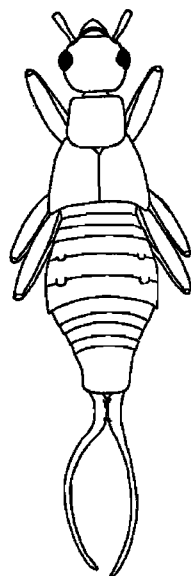
*Cosmiella neolobophoroides*; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 38.

*Synotus neolobophoroides*; Burr, 1910, *Fauna British India, Dermaptera*: 200, pl. 7, fig. 62 (Male, Female; Ceylon: Kudaga, Hattan, Hakagla); Brindle, 1971, *Ent. scand. Suppl.*, **1**: 232; Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 85; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5882, 6159 (black and white photographs and diagrams); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 74; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 723; Steinmann, 1993, *Das Tierreich*, **108**: 253, figs 393 - 394.

*Obelura neolobophoroides*; Brindle, 1978, *Entomologist's Rec. J. Var.*, **90**: 314 (Type Male, in dorsal view from Ceylon: Hakagla and Female Type from Kudaga, Hatton).

Male: General colour yellowish red with shades of black.

Head shining brown, about as long as broad, sutures obsolete. Antennae with segments slender, 1<sup>st</sup> longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> slender, slightly shorter than 3<sup>rd</sup>, remaining gradually increasing in length and thinning distally. Pronotum reddish brown, sides pale, slightly longer than broad, gently widened posteriorly, hind margin subtruncate, median sulcus faint. Elytra short, about as long as broad, humeral angles weak, meeting along the median line, axillary angles rounded off to show a small, triangular scutellum,



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**Figs. 438.** *Obelura neolobophoroides* (Burr), Holotype Male, 438. Dorsal view (fig. 438 after Brindle, 1978a).

costal margin without carina. Legs long, slender, hind tarsi with 1<sup>st</sup> segment equal in length to 3<sup>rd</sup>; 2<sup>nd</sup> distinctly lobed. Abdomen enlarged in middle, strongly narrowed posteriorly, tergites convex, smooth, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> distinct, 3<sup>rd</sup> slightly less distinct. Ultimate tergite about as long as broad, smooth, narrowed apically, a small depression in middle posteriorly, hind margin almost straight. Forceps with branches slender, contiguous at base, afterwards somewhat depressed in basal one fourth with a dorsal ridge, thence elongatedly incurved, inner margin with obsolete dentation. Genitalia not described.

Female: Agrees with males in most characters except that ultimate tergite more strongly narrowed posteriorly and forceps with branches simple, straight, contiguous throughout, tapering apically, tip pointed and crossing.

*Measurements:* (in mm)

|                   | Male | Female |
|-------------------|------|--------|
| Length of body    | 7.25 | 8.0    |
| Length of forceps | 4.35 | 3.0    |

*Types:* Type Male (Hakagla) and Female (Kudaga, Hatton) at BMNH.

*Remarks:* Brindle (1978a) and Srivastava (1978a) have mentioned that Type male lacks wings.

***Obelura tamul* (Burr)**

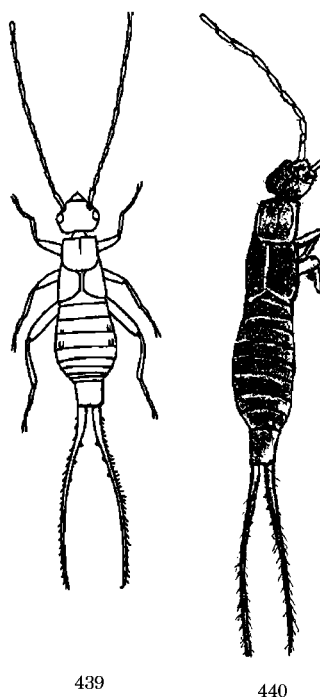
(Figs. 439-440)

*Neolobophora tamul* Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**: 67, pl. B, fig. 1 (Male: Ceylon); Kirby, 1904, *Syn., Cat. Orthoptera*, **1**: 29.

*Obelura tamul*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 120; Burr, 1910, *Fauna British India, Dermaptera*: 184, pl. 7, fig. 65 (Male; Ceylon: Nuwara Eliya); Burr, 1911, *Genera Insect.*, **122**: 90; Brindle, 1971, *Ent. scand., Suppl.*, **1**: 232; Brindle, 1978, *Entomologist's Rec. J. Var.*, **90**: 314 (Type Male labelled as: Ceylon, Thawaites, ex. coll. Westwood); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 67; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5888, 6158 (black and white photograph of Type Male); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 723; Steinmann, 1993, *Das Tierreich*, **108**: 253, figs 393 - 394.

Male: General colour yellowish brown; head reddish brown; antennal segments yellow, darker towards apex and eyes black

Head about as long as broad, smooth, frons convex, sutures obsolete, hind margin emarginate in middle. Eyes slightly shorter than the post-ocular length. Antennae with segments long, slender, 1<sup>st</sup> gently narrowed at base, slightly longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> onwards segments long,



**Figs. 439-440.** *Obelura tamul* (Burr), Holotype Male, 439-440. Dorsal view (fig. 439. Redrawn after Burr, 1910 and fig. 440 after Sakai, 1994).

gradually increasing in length distally. Pronotum slightly longer than broad, all margins straight, median sulcus distinct. Elytra short, anal angles rounded off to expose a small triangular scutellum, hind margin truncate, oblique, costal margin ecarinate. Wings absent. Legs slender, hind tarsi with 1<sup>st</sup> segment equal to 3<sup>rd</sup>. Abdomen fusiform, smooth, tergites convex, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites well developed. Ultimate tergite strongly narrowed posteriorly. Forceps with branches very long, slender, subcontiguous basally, thence diverging, in the distal one third each branch parallel, internally armed with three minute teeth beyond basal subcontiguous part.

Female: Unknown.

*Measurements:* (in mm)

|                   | Type<br>(Holotype) |
|-------------------|--------------------|
| Length of body    | 8.0                |
| Length of forceps | 5.0                |

*Type:* Type Male at BMNH.

*Distribution:* Sri Lanka: Thawaites and Nuwara Eliya.

*Remarks:* According to Brindle (1978a) the 'Type' represents a teneral form having elytra adherent to cuticle with its surface depressed, making its costal margin more conspicuous. But there is no carina on the costal margin of elytra

#### Genus *Hypergus* Burr

*Hypergus* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 101 (Type species: *Opisthocosmia humeralis* Kirby, 1891); Burr, 1910, *Fauna British India, Dermaptera*: 187; Burr, 1911, *Genera Insect.*, **122**: 78 (under Subfamily Forficulinae); Hincks, 1947, *Ark. Zool.*, **39A**(1): 27; Brindle, 1967, *Ark. Zool.*, **20**(7): 161 (under Subfamily Opisthocosmiinae); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 29 (under Subfamily Forficulinae); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 89 (under Subfamily Opisthocosmiina); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 427; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. 3: 336; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 706; Steinmann, 1993, *Das Tierreich.*, **108**: 271.

*Thalperus* Burr, 1911, *Genera Insect.*, **122**: 92 (Type species: *Hypergus kuhlgatzi* Burr, 1909); Brindle, 1967, *Ark. Zool.*, **20**(7): 161 (treated as a synonym of *Hypergus* Burr, 1907).

*Sadiya* Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**(11): 230 (Type species: *Sadiya garata* Hebard, 1923); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 69 (treated as a synonym of *Hypergus* Burr, 1907).

Size generally medium to large (9.0-12.0 mm, including forceps). Head convex, sutures faint; antennae 12-segmented, 3<sup>rd</sup> and 4<sup>th</sup> equal or subequal in length but shorter than 5<sup>th</sup>; eyes prominent, equal to post-ocular length. Pronotum anteriorly equal to the width of head. Elytra and wings well developed, former with humeral angles

prominent. Legs long, slender; hind tarsi with 1<sup>st</sup> segment longer than the combined length of remaining two. Abdomen gently enlarged in middle, tergites convex, sides of segments convex, certain segments recurved; ultimate tergite transverse, sloping and narrowed backwards. Pygidium short, scarcely visible from above. Forceps in males, depressed, subcontiguous in basal one third, afterwards strongly incurved, enclosing an oval or pear shaped space; in females, simple, straight, contiguous, internally unarmed.

*Type species: Opisthocosmia humeralis* Kirby, 1891.

*Distribution:* Oriental and Ethiopian Regions.

*Remarks:* Taxonomic status of this genus was fluctuating between subfamilies Opisthocosmiinae and Forficulinae according to various authors. In view of the long, slender antennal segments and narrow sternal plates, its inclusion under Opisthocosmiinae seems justified.

Only four species are reported from the Oriental Region. Of which, only *Hypergus humeralis* (Kirby) is recorded from India and adjacent countries. The record of *Hypergus fulvus* Burr by Sakai and Zhang (1995) from India: Assam is referable to this species only.

### ***Hypergus humeralis* (Kirby)**

(Figs. 441-445)

*Opisthocosmia humeralis* Kirby, 1891, *J. Linn. Soc. Zool.*, **23**: 523 (Female; Ceylon); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 38; Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 400; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 95; Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**: 333, pl. B, fig. 9; Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 334.

*Hypergus humeralis*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 101; Burr, 1910, *Fauna British India, Dermaptera*: 188, pl. 8, fig. 68 (Male, in dorsal view); Burr, 1911, *Genera Insect.*, **122**: 78; Burr, 1911, *Stettin ent. Ztg.*, **72**: 34; Burr, 1912, *Annln naturf. Mus. Wien*, **26**: 98; Burr, 1916, *J. R. micr. Soc.*, **1916**: 14, pl. 3, fig. 6 (Male genitalia); Borelli, 1931, *Rev. suisse. Zool.*, **38**: 308; Hincks, 1947, *Ark. Zool.*, **39A**(1): 27; Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 621; Brindle, 1967, *Ark. Zool.*, **20**(7): 161; Brindle, 1971, *Ent. scand.*, *Suppl.*, **1**: 232, figs 40 and 44; Brindle, 1987, *Courier Forsch.-Inst. Senckenberg*, **93**: 339 (Female; Nepal, 450 m); Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 43; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 46; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 124 (5453); Sakai and Zhang, 1995, In: *Dermapterorum Catalogus*, **30**: 9287, pl. 1, fig. 5 (1 Female; India: Manipur, Khangirim, 1382 m and 1 Female; Uttarakhand, Bageshwar, 1067 m); Biswas and Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(4): 134 (India: Uttarakhand, Dehra Dun and Rishikesh); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 69; Srivastava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 124 (Male, Female; Thailand); Srivastava, 1989, *Fauna of Orissa, State Fauna Series 1*, Pt. **2**: 168, figs. 35-36 (Male; India: Orissa, Keonjargarh and Sundargarh Dists.); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 427, figs. 191-192 (India: W.B., Jalpaiguri Dist.); Srivastava, 1995, *Fauna of Western Himalaya (U.P.), Himalayan Ecosystem Series 3*, Pt. **4**: 339; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 339,

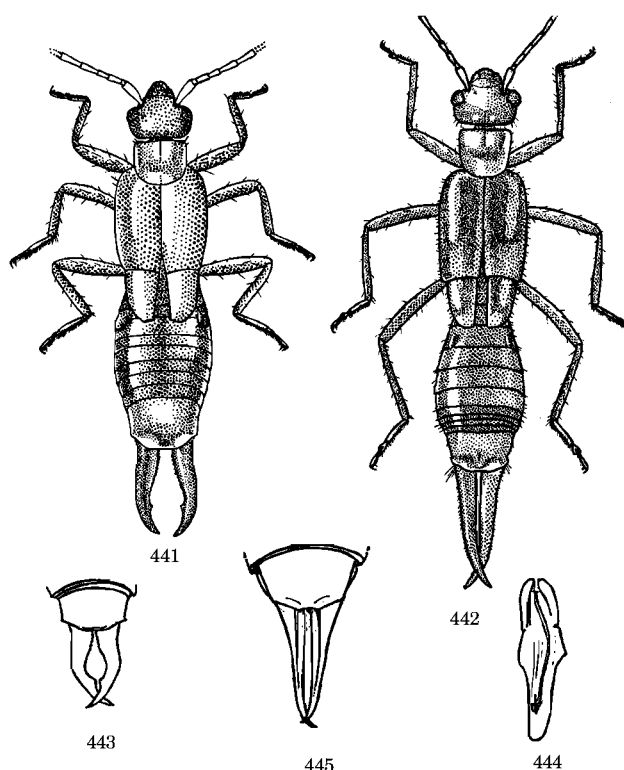
fig. 108 (Male; India: Meghalaya, Garo Hills); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 178 (Male, Female; India: Andaman and Nicobar Isl, North and South Andaman Isl.); Steinmann, 1983, *Zool. Zh.*, **62**: 1764 (Vietnam); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 708; Steinmann, 1993, *Das Tierreich*, **108**: 208, figs. 438 - 439.

*Hypergus humeralis* var. *vittatus* Burr, 1911, *J. Asiat. Soc. Beng.* (N. S.), **7**(11): 799 (1 Male; India: North Bengal, Jalpaiguri Dist.).

*Hypergus humeralis* sub. sp. *vittatus* Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 29.

*Sadiya grata* Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**(11): 323, pl. 21, figs 25-26 (Type Male, Allotype Female; India: Sadiya, Assam; Paratype 1 Male, 1 Female, Margherita, Assam); Hincks, 1947, *Ark. Zool.*, **39A**(1): 27; Bharadwaj and Kapoor, 1970, *Entomologist*, **103**: 5 (treated as a synonym of *Opisthocosmia humeralis* Kirby, 1891); Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5981 (coloured photograph of Type Male and Allotype Female).

*Hypergus grata*; Srivastava, 1979, *J. zool. Soc. India*, **27**(1-2) (1975): 110, fig. 3G (ultimate tergite



**Figs. 441-445.** *Hypergus humeralis* (Kirby), Male, 441-442. Dorsal view; 443. Ultimate tergite and forceps, 444. Genitalia; Female, 445. Ultimate tergite and forceps (fig. 442 from Holotype Male of *Sadiya grata* Hebard).

and forceps), fig. 3H (genitalia, Male, not Female as mentioned) (India: Manipur, Churachandrapur, 914 m); Srivastava, 1975, *Rec. zool. Surv. India, Occ. pap.*, **2**: 69.

*Hypergus fulvus* (nec Burr, 1907); Sakai and Zhang, 1995, In: *Dermapterorum Catalogus*, **30**: 9287, pl. 1, fig. 8 (5 Males; India: Manipur, Marou, 1219 m).

Male; General colour blackish to orange brown; antennae and elytra black, latter with an elongated yellow band extending from shoulder to middle of the length, close to costal margin and wings yellow with a blackish brown broad band running along the entire length close to internal margin, tip yellow. Abdomen and forceps dark brown with shades of black in parts.

Head about as long as broad, smooth, frons and occiput moderately raised, sutures faint, hind margin in middle scarcely emarginated. Eyes shorter than the post-ocular length. Antennae 12-segmented or more (since apical ones tend to break off easily), 1<sup>st</sup> stout, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> slightly shorter than 4<sup>th</sup>, remaining long, slender, gradually increasing in length distally. Pronotum about as long as broad, anterior margin straight, as wide as head, lateral margins straight, a little reflexed, converging posteriorly, hind margin rounded, suture fine but distinct, prozona moderately convex, metazona depressed. Elytra and wings well developed, smooth, both meeting along the median line. Legs long, hind tarsi with 1<sup>st</sup> segment slightly longer than the 3<sup>rd</sup>, covered with thick pubescence on underside. Abdomen gently expanded in middle, tergites convex, faintly punctate, lateral folds on 3<sup>rd</sup> tergite weakly and on 4<sup>th</sup> strongly developed, sides of segments 5<sup>th</sup> to 8<sup>th</sup> convex, finely tuberculated along the hind margin. Penultimate sternite transverse, pubescent, broadly rounded posteriorly, obtuse in middle. Ultimate tergite transverse, slightly sloping and contracted posteriorly, tumid fold above the bases of forceps and in the middle with a slight depression, hind margin incrassate, trisinuate, lateral portion of hind margin oblique. Forceps with branches stout, depressed in basal one third, afterwards gradually attenuated apically, internal margin crenulated, at base contiguous, gradually diverging in basal two thirds enclosing a pear shaped space and terminating into a triangular tooth, afterwards branches gently incurved, tip pointed and gently hooked. Genitalia as seen in fig. 444.

Female: Agrees with males, in most characters except that ultimate tergite more strongly contracted and depressed posteriorly and forceps with branches simple, straight, subcontiguous throughout, internally finely crenulated.

*Measurements:* (in mm)

|                   | Male      | Female     |
|-------------------|-----------|------------|
| Length of body    | 7.4 - 9.4 | 8.0 - 10.6 |
| Length of forceps | 2.1 - 2.7 | 2.0 - 2.6  |



*Types:*

1. *Hypergus humeralis* Kirby, 1891 - Type Female at BMNH.
2. *Sadiya grata* Hebard, 1923 - Type Male, Allotype Female at ANSP and Paratypes, Male, 1 Female at IARI.

*Distribution:* India (Assam, Manipur, Meghalaya, West Bengal, Uttarakhand, Madhya Pradesh, Orissa, Kerala and Andaman and Nicobar Islands), Nepal, Sri Lanka, Myanmar, China (Yunnan), Thailand and Vietnam.

Besides in the collections of the MZM it is represented by following specimens not hitherto reported:

India: Madhya Pradesh, Jabalpur, 1600 ft., 4 Males, 4 Females, ..vii. 1951; Kerala, South Malabar, Walayar Forest, 305 m., 1 ex. (abdomen broken), ..ix. 1956 (coll. *P. S. Nathan*), det. by G.K.Srivastava.

*Remarks:* In the typical form the spot on elytra is prominent but in certain specimens it is faint or totally absent. Similarly the spot on wings at basal one third is also variable. Abdominal segments on sides are generally tuberculated but sometimes devoid of tubercles.

Male forceps are also variable. These are normally stout, internally in basal one third enclosing a pear shaped space and terminating into a tooth, afterwards straight. Sometimes in a few specimens branches are straight, contiguous throughout, internal margin crenulated.

The pronotum in *Sadiya grata* Hebard, is slightly contracted posteriorly, sides of abdominal segments are smooth (not with fine tuberculations) and forces are straight. Since all these characters fall within the variational limits of *H. humeralis*, the synonymy of *H. grata* is further confirmed.

The record of *Hypergus fulvus* Burr, 1911 by Sakai and Zhang (1995: 9287, pl. 1, fig. 8) based on 5 Males from India: Manipur (not Assam now), Marau is referable to this species. The photograph of one of the above specimen (l. c.) shows elytra and wings are uniformly coloured. Such condition is reported in *H. humeralis* also.

The Type Male, Allotype Female and Paratypes 1 Male, 1 Female of *Sadiya grata* Hebard, 1923 were examined through the courtesy of Dr. Daniell Otte, Chairman, Department of Entomology, Philadelphia Academy of Sciences, Philadelphia, PA, USA and Dr. (Miss) S. Ghai, Division of Entomology, Indian Agricultural Research Institute, New Delhi, India, respectively.

### Genus *Pareparchus* Burr

*Pareparchus* Burr, 1911, *Genera Insect.*, **122**: 92 (Type species: *Opisthocosmis minusculus* Bormans, 1888); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 34; Popham and Brindle, 1968, *Entomologist*, **101**: 277; Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 49; Sakai,

1982, *Bull. Daito Bunka Univ.*, **20**: 46; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 69; Srivastava, 2002, *Rec. zool. Surv. India*, **100** (3-4): 139; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43):719; Steinmann, 1993, *Das Tierreich*, **108**: 267.

Build slender. Antennae multi-segmented, 1<sup>st</sup> segment slightly shorter than the distance between antennal bases; 3<sup>rd</sup> and 4<sup>th</sup> subequal, former slender and latter stouter; 5<sup>th</sup> onwards segments gradually increasing in length, not slender. Eyes shorter than the post-ocular length. Pronotum transverse, semicircular. Elytra and wings well developed, former not keeled along the costal margin. Legs slender, hind tarsi with 1st segment equal to 3<sup>rd</sup>; 2<sup>nd</sup> lobed and claw without an arolium. Ultimate tergite transverse, sloping backwards. Forceps in males, stout, elongated.

Type species: *Opisthocosmis minusculus* Bormans, 1888.

*Distribution*: Oriental Region.

*Remarks*: This genus can be separated from other genera of Opithocosmiinae by comparatively shorter and thicker antennal segments; semicircular, transverse pronotum and transverse ultimate tergite.

At present besides type species, *P. pelvimeter* Hebard, 1923 and *P. pillai* Srivastava, 2002 are known from India.

Shape of antennal segments and swollen fore-femora exhibit similarity with *Timomenus* Burr.

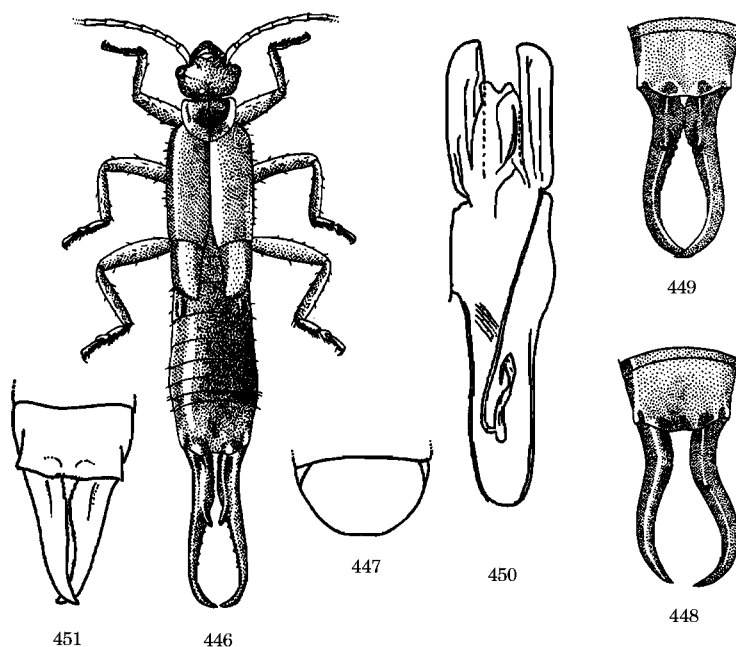
#### Key to the species (on males)

- 1(2). Size larger (11.0 - 13.0 mm, including forceps); abdominal tergites obscurely punctated; branches of forceps depressed, contiguous in basal one third, afterwards compressed, incurved, enclosing broadly oblong space, internal margin serrated with a vertical, triangular, posteriorly directed inward tooth at basal one third .  
..... *P. pelvimeter* Hebard
- 2(2). Size smaller (7.0 - 7.1 mm, including forceps); abdominal tergites with heavier punctation; forceps cylindrical, regularly incurved from base to apex, internal margin armed with a triangular tooth at basal one fourth, directed inwards and posteriorly ..... *P. pillai* Srivastava

#### *Pareparchus pelvimeter* Hebard

(Figs. 446-451)

*Pareparchus pelvimeter* Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**(11): 236, pl. 21, fig. 28 (Type Male; Hansey Estate, Coorg, 1219 m, India; Paratype 1 Male, Manantoddy, Wynaad, 762 m); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 34; Kapoor, 1969, *Entomologist*, **102**: 177, fig. (Male genitalia); Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 50; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 46; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5486,



**Figs. 446-451.** *Pareparchus pelvimeter* Hebard, Male. 446. Dorsal view, 447. Penultimate sternite, 448-449. Ultimate tergite and forceps, showing variations, 450. Genitalia; Female; 451. Ultimate tergite and forceps (figs. 446-447. ex Holotype Male).

5980 (coloured photographs of 6 Males, 2 Females, ex. Manchester Mus.), 5981 (coloured photographs 1 Male, 1 Female each ex Paris and Ann Arbor Mus and Holotype Male), 6042 (black and white photographs of 1 Male, 1 Female ex Ann Arbor Mus.); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 69; Srivastava, 2002, *Rec. zool. Surv. India*, **100**(3-4): 140, fig. 6; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 720; Steinmann, 1993, *Das Tierreich*, **108**: 269.

*Kosmetor cornutus* Ramamurthi, 1968, *Zool. Anz.*, **182**(1-2): 135, figs. 8-10 (Holotype Male, Allotype Female and Paratypes 1 Male, 1 Female; India: Anamalai Hills, 1067 m) - **Syn n.**

Male: Head, antennae, abdomen and forceps dark reddish brown; pronotum yellowish but prozona dark reddish brown; legs yellowish brown with traces of black; elytra and wings blackish yellow, latter with an oblong yellow spot in basal half, often faintly marked and tip yellow.

Head about as long as broad, moderately convex, hind margin faintly emarginated in middle. Antennae 12-segmented, 1<sup>st</sup> stout, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> subequal; 5<sup>th</sup> longer than the preceding two, afterwards gradually increasing in length distally, each gently expanded apically. Pronotum transverse, semicircular, hind margin in middle obtuse, median sulcus distinct, prozona moderately and metzona weakly raised. Elytra and wings well

developed, smooth. Legs short, slender, fore-femora rather thick; hind tarsi with 1<sup>st</sup> segment almost equal to 3<sup>rd</sup>; 2<sup>nd</sup> greatly enlarged with hind margin rounded. Abdomen elongated, slightly expanded beyond middle, tergites convex, punctate, sides of segments rounded. Penultimate sternite transverse, posterior margin rounded. Ultimate tergite transverse, slightly sloping and narrowed posteriorly, faintly tumid above the bases of forceps, disc with longitudinal punctate and smooth stripes alternating, hind margin thickened, trisinate, lateral portion of hind margin oblique. Pygidium scarcely visible from above, vertical, narrowed posteriorly. Forceps with branches stout, externally depressed above and contiguous in basal one fourth, afterwards arcuate, compressed, tapering apically, tip pointed and gently hooked, internal margin crenulated, crenulations weaker in apical half, at base above with a stout, vertical and posteriorly directed tooth. Genitalia with parameres a little less than three times longer than broad; virga chitinous and tubular.

Female: Agrees with males in most characters except that ultimate tergite strongly narrowed posteriorly but weakly sloping and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male       | Female    |
|-------------------|------------|-----------|
| Length of forceps | 8.3 - 10.0 | 9.0 - 9.5 |
| Length of forceps | 2.8 - 4.5  | 2.0 - 2.5 |

*Types:*

1. *Periparchus pelvimeter* Hebard, 1923 - Holotype Male and Paratype 1 Male at ANSP.
2. *Kosmetor cornutus* Ramamurthi, 1968 - Holotype Male, Allotype Female and Paratypes 1 Male, 1 Female with the author.

*Distribution:* India: Karnataka, Hansey Estate, Coorg, 1219 m and Manantoddy, Wynaad, 762 m; Tamil Nadu, Coimbatore Dist, Anamalai Hills, 1067 m and Nilgiri Hills, Devala, 975 m

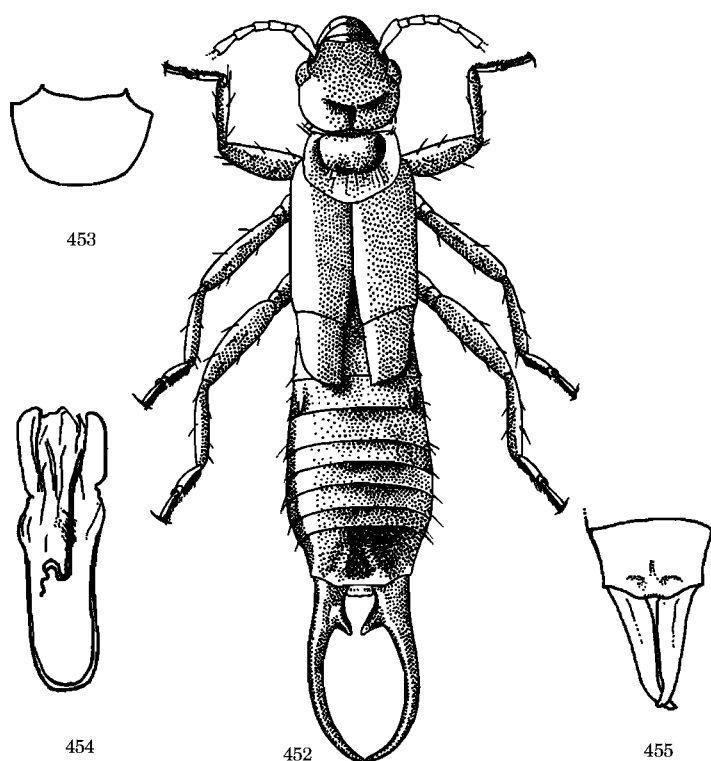
In the collections of the Zoological Survey of India, Kolkata, it is represented by 1 Male, 1 Female from India: Tamil Nadu, Coimbatore Dist., Nilgiri Hills, 975 m (*P.S. Nathan* Coll.), det. by G.K. Srivastava, not reported earlier.

*Remarks:* The vertical tooth near base is sometimes poorly developed or obsolete.

The Holotype Male of *Pareparchus pelvimeter* Hebard, 1923 was placed at my disposal through the courtesy of Dr. Daniell Otte, Chairman, Department of Entomology, Philadelphia Academy of Sciences, Philadelphia, PA, U.S.A.

***Pareparchus pillai* Srivastava**  
(Figs. 452-455)

*Pareparchus pillai* Srivastava, 2002, *Rec. zool. Surv. India*, **100**(3-4): 140, figs 1-4 (Holotype Male, Paratypes 1 Male, 1 Female, 3 nymphs: India: Kerala, Silent Valley, Kayapara Forest, 1160



**Figs. 452-455.** *Pareparchus pillai* Srivastava, Holotype Male, 452. Dorsal view, 453. Penultimate sternite; 454. Genitalia; Paratype Female, 455. Ultimate tergite and forceps (after Srivastava, 2002c).

m and Kayapara Dam site and Paratype 1 Male; India: Tamil Nadu, Coimbatore Dist., Nilgiri Hills, Devala, 975 m).

**Male:** General colour chocolate brown with shades of black; pronotum on sides and posteriorly, legs and basal two antennal segments yellow; elytra with an oblong yellow spot near shoulder; wings yellow with a faint stripe of brown in middle and abdomen with tergites blackish brown, along the hind margin yellowish brown.

Head about as long as broad, frons convex, sutures faint, hind margin scarcely emarginate in middle. Antennae 12-segmented, stout, 1<sup>st</sup> expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> a trifle shorter, but a little stouter, gently expanded apically; 5<sup>th</sup> stouter, longer than the 3<sup>rd</sup>, remaining gradually increasing in length distally. Pronotum transverse, smooth, sides along with hind margin semicircular, median sulcus distinct, prozona raised and metazona depressed. Elytra and wings well developed, smooth. Legs typical of the genus, hind tarsi with 1<sup>st</sup> segment compressed, equal to 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed, covered on underside with pubescence. Abdomen long, slightly enlarged in middle,

tergites convex, punctate. Penultimate sternite transverse, shallowly punctate, hind margin rounded. Ultimate tergite transverse, weakly convex, gently narrowed and sloping backwards, punctures deeper than on the abdominal tergites, in the middle posteriorly depressed, hind margin incrassate, in the middle straight, laterally oblique above the bases of forceps. Pygidium vertical, transverse, posterior margin in middle with a small triangular point. Forceps cylindrical, tapering apically, regularly incurved, tip gently hooked and pointed, internally unarmed, at base with a sharp, triangular tooth close to inner dorsal border, directed inwardly and posteriorly. Genitalia with parameres flat, longer than broad; virga thin and tubular.

Female: Agrees with males in most characters except that the pronotum complete yellow; elytra unicolourous with shades of yellow in middle; abdominal tergites obscurely punctate; ultimate tergite strongly narrowed posteriorly, punctuation heavier than on other tergites but weaker than the male and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male      | Female |
|-------------------|-----------|--------|
| Length of body    | 5.3 - 5.5 | 7.0    |
| Length of forceps | 1.5 - 1.7 | 1.7    |

*Types:* Holotype Male, Paratypes 2 Males, 1 Female and 3 nymphs in ZSI.

*Distribution:* India: Kerala, Kayapara Forest and Kayapara Dam Site, Silent Valley, 1160 m; Tamil Nadu, Coimbatore Dist, Nilgiri Hills, Devala, 975 m.

*Remarks:* Some variation in the body colour is noted. In the Paratype Male from Nilgiri Hills the elytra and wings are unicolourous brown and the posterior margin of abdominal tergites is lighter in colour.

This species can be easily separated from *P. pelivimeter* Hebard, by its smaller size; heavier punctuation on abdominal tergites and shape of male forceps, especially internal tooth.

### Genus *Prosadiya* Burr

*Prosadiya* Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**(11): 233 (Type species: *Prosadiya tricota* Hebard, 1923); Popham, 1965, *Entomologist*, **98**: 135; Popham and Brindle, 1968, *Entomologist*, **101**, 177; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1)(1967): 34; Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 38; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 46; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 120(5405); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 69; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 720; Steinmann, 1993, *Das Tierreich*, **108**: 270.

*Chaetocosmia* Nishikawa, 1973, *Bull. Biogeogr. Soc. Japan*, **29**(2): 7 (Type species: *Chaetocosmia taiwanica* Nishikawa, 1973) - **Syn. n.**

Body densely pubescent; size small (6.5 - 9.7 mm, including forceps). Head with frons convex, occiput tumid, sutures distinct. Antennal segments long, cylindrical.; 3<sup>rd</sup> and 4<sup>th</sup>

almost equal in length, remaining gradually increasing in length. Pronotum about as long as broad, gently widened posteriorly. Elytra and wings well developed, former ecarinate along the costal margin. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed. Forceps, in males, straight, tapering apically.

*Type species: Prosadiya tricota* Hebard, 1923.

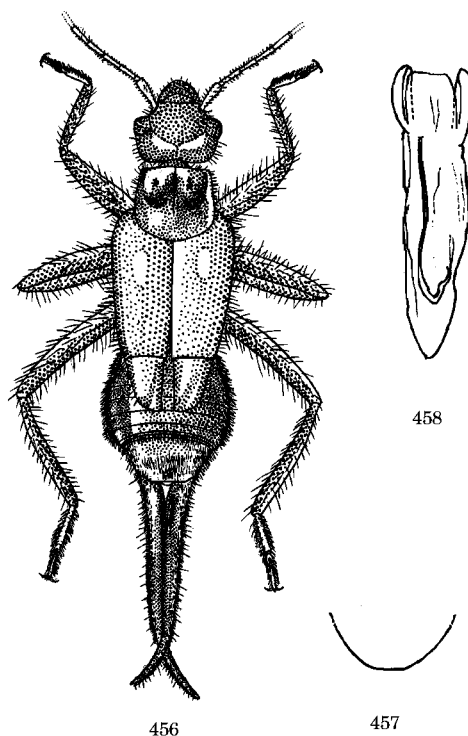
*Distribution:* Oriental Region.

*Remarks:* Genus *Chaetocosmia* described by Nishikawa (1973) from Taiwan is considered as a synonym since both are based on similar characters. Second tarsal segment is briefly lobed, besides small size, thickly pubescent body, slender build and cylindrical antennal segments are some of the characteristics common to both the genera.

***Prosadiya tricota* Hebard**

(Figs. 456-458)

*Prosadiya tricota* Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**(11): 234, pl. 21, fig. 27 (Type Male; India: Dibrugarh, Assam); Brindle, 1968, *Entomologist*, **101**: 277; Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 39; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 46; Sakai, 1994,



**Figs. 456-458.** *Prosadiya tricota* Hebard, Male. 456. Dorsal view, 457. Posterior margin of penultimate sternite, 458. Genitalia (fig. 456 ex Holotype and figs. 457-458 ex another male specimen).

*Dermapterorum Catalogus*, **26**: 122 (5407), 6030 (black and white photograph of Type Male), 5977 (coloured photograph of Type Male); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 69; Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, **81**: 486 (1 Male; India: Assam, North Cachar Hills, Jatinga); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 720; Steinmann, 1993, *Das Tierreich*, **108**: 270.

**Male:** Build slender; body thickly pubescent. General colour yellowish brown with shades of blackish brown on certain body parts. Antennae light blackish brown; head with frons blackish brown and occiput yellowish orange. Eyes black; pronotum orange, sides yellow; elytra blackish brown with a round yellow spot in basal half; wings yellow with a vertical brownish stripe internally in basal half, afterwards narrowing obliquely externally; legs clear yellow; abdomen and forceps yellowish brown and ultimate tergite blackish brown.

Head slightly longer than broad, frons and occiput tumid, but latter more so; sutures deep and distinct, hind margin emarginated in middle. Eyes prominent but about as long as the post-ocular length. Antennae 10-segmented or more (since apical ones tend to break off easily), segments long, cylindrical, 1<sup>st</sup> long, slightly expanded apically, slightly longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>, 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal in length, slender; 5<sup>th</sup> slightly longer than preceding two, remaining gradually increasing in length distally. Pronotum about as long as broad, anteriorly convex, lateral margins diverging posteriorly, gently reflexed, hind angles and margin rounded, latter in middle gently obtuse, median sulcus distinct in apical two thirds; prozona raised and metazona depressed. Prosternum narrow, elongated; mesosternum rounded posteriorly and metasternum (not very broad) posteriorly produced between hind coxae with its hind margin truncate. Legs long, slender, hind tarsi with 1<sup>st</sup> segment slightly longer than 3<sup>rd</sup>, 2<sup>nd</sup> briefly lobed. Abdomen enlarged in middle, convex, faintly punctate, sides of segments broadly rounded. Penultimate sternite transverse, lateral margin converging to obtuse point in middle posteriorly. Ultimate tergite transverse, narrowed posteriorly, hardly raised above the bases of forceps, hind margin thickened, faintly trisinate, lateral portion of hind margin oblique. Pygidium short, strongly declivitous, filling the space between the bases of forceps, narrowed apically. Forceps with branches slender, tapering apically, almost straight in basal two thirds, afterwards slightly incurved with apices pointed, hooked and crossing, internal margin above, at a little distance from base with a short, faint ridge. Genitalia with parameres two and half times longer than broad, narrowed at tip, virga tubular and chitinous.

**Female:** Not known.

*Measurements:* (in mm)

|                   | Male       |
|-------------------|------------|
| Length of body    | 6.1 - 6.3  |
| Length of forceps | 3.1 - 3.44 |

*Type:* Holotype Male at ANSP.

*Distribution:* India (Assam).



*Remarks:* It is known by its "Type" Male and another male reported by Srivastava and Lahiri (1983).

It can be easily separated from other related species by its small size, strongly pubescent body, shape of pronotum and forceps.

The above description is based upon the Type received through the courtesy of Dr. Daniell Otte, Chairman, Department of Entomology, Academy of Natural Sciences Philadelphia, Philadelphia, PA, U.S.A

#### Genus *Timomenus* Burr

*Timomenus* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 96 (Type species: *Opisthocosmia oannes* Burr, 1900); Burr, 1909, *Dt. ent. Z.*, **1909**: 327; Burr, 1910, *Fauna British India, Dermaptera*: 194; Burr, 1911, *Genera Insect.*, **122**: 93; Bey-Bienko, 1935, *Faune de L'URSS, Dermapterès*: 196; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 35; Popham and Brindle, 1968, *Entomologist*, **101**: 277; Brindle, 1969, *Entomologist's mon. Mag.*, **104**: 204; Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 51; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 46; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5489; Srivastava, 1976, *Rec. zool. Surv. India, Occ. Pap.*, **2**: 70; Srivastava, 1976, *Pacif. Insects*, **17**(1): 131; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 423; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. 3: 333; Steinmann, 1982, *Acta zool. hung.*, **28**: 362; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 724; Steinmann, 1993, *Das Tierreich*, **108**: 283.

*Rhadamanthus* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 121 (Type species: *Forficula lobophoroides* Dohrn, 1865); Steinmann, 1982, *Acta zool. hung.*, **28**: 362 (treated as a synonym of *Timomenus* Burr, 1907).

Build stout; generally dark coloured and elongated.

Head convex, sutures faint; antennae 12 to 13 segmented, basal segment swollen, 3<sup>rd</sup> and 4<sup>th</sup> equal but both shorter than the 5<sup>th</sup>, remaining long and slender; eyes slightly shorter than the post-ocular length. Pronotum anteriorly as wide as head, gently narrowed or widened posteriorly, hind margin rounded. Elytra and wings well developed, smooth. Legs not very long, slender, fore-femora thickened, hind tarsi with 1<sup>st</sup> segment broad and equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>. Abdomen convex, enlarged in middle, lateral tubercles distinct; ultimate tergite transverse, strongly sloping backwards. Forceps, in males, long or short, internally armed with sharp teeth, often with dorsal tooth as well; in females simple and straight.

*Type species:* *Opisthocosmis oannes* Burr, 1900.

*Distribution:* Oriental Region.

*Remarks:* Four species of the genus occur in the Indian Subcontinent, confined to the North East India. Besides, record of *Timomenus ares* (Burr, 1900) by Steinmann (1983) from India is doubtful. It is so far known by its Type from Malaysia: Sarawak, Borneo.

**Key to the species (based on males)**

- 1(4). Pronotum strongly narrowed posteriorly, hind margin and angles together semicircular
- 2(3). Forceps elongated, undulated, armed with a dorsal tooth near base and another one at apical two third; pygidium rounded ..... *T. lugens* (Bormans)
- 3(2). Forceps less elongated, not undulated, in basal one third above and internally with several small dentations; pygidium bifid ..... *T. josephi* Srivastava
- 4(1). Pronotum may be slightly narrowed posteriorly or of uniform width, hind angles and margin together rounded
- 5(6). General colour dull red or black; forceps stout, at base remote, diverging gradually posteriorly, incurved in apical one fourth, armed near base with a sharp, vertical tooth and another smaller internal tooth at apical one third ..... *T. oannes* (Burr)
- 6(5). General colour deep red to shining black with greenish sheen; forceps long, slender, subcontiguous in basal one third to one half, afterwards incurved, at basal one third above with a broad triangular tooth, often poorly marked and followed by another internal tooth at apical one third ..... *T. nevilli* (Burr)

***Timomenus lugens* (Bormans)**

(Figs. 459-464)

*Opisthocosmisa lugens* Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)14: 398 (2 Males, 1 Female; Burma: Carin Chèba, 900 - 1100 m; Carin Ascuii Chèba, 1200 - 1300 m); Bormans and Krauss, 1900, *Das Tierreich*, 11: 98; Kirby, 1904, *Syn. Cat. Orthoptera*, 1: 38 (nec Burr, 1900, *Ann. Mag. nat. Hist.*, (9)6: 101); Burr, 1904, *Trans. ent. Soc. Lond.*, 1904: 205 (nec Burr, 1900: 101).

*Eparchus lugens*; Burr, 1907, *Trans. ent. Soc. Lond.*, 1907: 121.

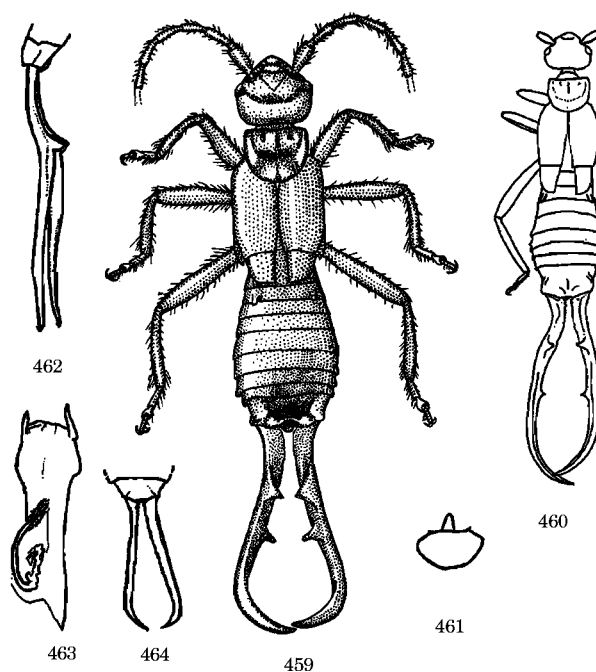
*Timomenus lugens*; Burr, 1910, *Fauna British India, Dermaptera*: 198, pl. 8, fig. 72; Burr, 1911, *Genera Insect.*, 122: 93; Burr, 1911, *Annln. naturh. Mus. Wien*, 26: 106 (Syntypus- sex not mentioned; Birma: Carin Chèba, 900-1100 m, 5.xii. 88); Burr, 1914, *Rec. Indian Mus.*, 11: 294 (1 Male; India: W. B., Darjeeling Dist., Singla, 457 m); Borelli, 1932, *Bull. Raffles Mus.*, 7: 93 (1 Male; Malaysia: Malaya, Pahang, Frasers hill); Hinck, 1947, *Ark. Zool.*, 39A (1): 42; Bey-Bienko, 1959, *Ent. Obozr.*, 38(3): 623 (China: Yunnan); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, 16(1)(1967): 35; Brindle, 1969, *Entomologist's mon. Mag.*, 104: 240; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, 2: 71; Srivastava, 1982, *Ent. basiliensia*, 7: 76 (Male; India: W. B., Darjeeling Dist., Jhepi, 1900 - 1400 m, Rimbik - Lodhama, 2300 - 1100 m); Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, 81: 487 (Assam and Meghalaya); Srivastava, 1987, *Annali Mus. civ. Stor. nat. Giacomo Doria*, 85: 504 (Lactotype Male, Paralactotypes 1 Male, 1 Female - designated); Srivastava, 1987, *Bull. zool. Surv. India*, 8(1-3): 124 (Male, Female; Thailand); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* 3, Pt. 4: 424, figs 183 - 185 (Male, Female; India: W. B., Darjeeling Dist., Kalimpong, 1243 m); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series* 4, Pt. 3: 336, fig. 105 (Male; India: Meghalaya, East

Garohills Dist, Darugiri); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series* **9**: 217, figs 60 - 61 (Male, Female; India: Sikkim, Namchi, 1200 m, Tadang, 1176 m); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 58 (Male, Female; Laos and Thailand); Steinmann, 1981, *Atti. Soc. Ital. Sci. nat. Museo civ. nat. Milano*, **122**(3-4): 163 (1 Male; Birmania: Carin Hills); Steinmann, 1982, *Acta. zool. hung.*, **28**(3-4): 374, figs. 30-31; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 730; Steinmann, 1993, *Das Tierreich*, **108**: 305, figs 447 - 448; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 47; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5511, 5982 - 5986 (coloured photographs of specimens from various Museums), 6046 - 6047 (black and white photographs of specimens); Sakai and Zhang, 1995, *Dermapterorum Catalogous*, **33**: 9288 (Male, Female; India: Manipur, Apong, 810 m and Uttarakhand, Lingari, 1467 m); Sakai, 1997, *Bull. Biogeogr Soc. Japan*, **52**(2): 50 (Male, Female; India: Manipur, Bongha Khulen, 833 m, Sikkim, Lathong, 2187 m; Arunachal Pradesh (localities mentioned not under Assam at present), Nyukmadong, 2200 - 2667 m, Moshing, 2267 m, Lungdor, 933 m, Chug, 2267-2433 m, Lifakpo, 1023 m); Chaturvedi and Srivastava, 2002, *J. Bombay. nat. Hist. Soc.*, **99**(2): 216.

*Opisthocosmia aesculapius* Burr, 1905, *Boll. Soc. esp. Hist. nat.*, **1905**: 230 (Male; Bhutan, Maria Basti).

*Eparchus aesculapius*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 121.

*Timomenus aesculapius*; Burr, 1910, *Fauna British India, Dermaptera*: 196; Borelli, 1915, *Boll.*



**Figs. 459-464.** *Timomenus lugens* (Bormans), Male, 459-460. Dorsal view, 461. Penultimate sternite, 462. Forceps, in profile, 463. Genitalia; Female, 464. Ultimate tergite and forceps (figs. 460-463 ex Lactotype Male; fig. 464 ex Paralactotype Female after Srivastava 1987).

*Musei Zool. Anat. comp. R. Univ., Torino*, **30**(697): 3 (China: Kiau - Tschou); Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 112 (Male, Female; Indonesia: Java and Sumatra); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 70; Srivastava, 1987, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **85**: 504 (treated as a synonym of *Opisthocosmia lugens* Bormans, 1894).

Male: General colour shining black with bluish metallic sheen, sometimes dull brownish black; antennae black, with one or two ante-apical segments pale; elytra dull black or brownish black and wings with a yellow patch at apical angle.

Head triangular, convex, sutures obsolete, hind margin almost straight. Antennae 13-segmented, basal segment stout, strongly clubbed apically; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal in length but both shorter than 5<sup>th</sup>, remaining long and slender. Pronotum with anterior margin straight, slightly narrower than head, sides gently convex, converging posteriorly with margin rounded, pro-zona tumid and well differentiated from flat meta-zona. Elytra and wings well developed, smooth. Abdomen with tergites strongly convex, sparsely punctate, gradually enlarging posteriorly, lateral tubercles on 3<sup>rd</sup> weakly and 4<sup>th</sup> strongly developed, sides of segments 6<sup>th</sup> to 9<sup>th</sup> obtuse angled with a faint ridge and apically with a tubercle. Penultimate sternite transverse, hind margin rounded with a slight emargination in middle. Ultimate tergite transverse, sloping backwards, disc with longitudinal smooth and punctate stripes alternating, above the bases of forceps tumid and area in between depressed, hind margin trisinate, lateral portion of hind margin oblique. Pygidium rounded, postro-laterally below with a minute point. Forceps with branches elongated, subcontiguous for a short distance near base, afterwards cylindrical, gradually diverging, thence strongly arcuate, internal margin in basal one fourth denticulated, at basal one fourth above with a vertical triangular, compressed and strongly incurved tooth, followed by another smaller but sharper tooth; in profile branches undulated, gently raised upwards in basal one third, afterwards horizontal. Genitalia with parameres narrow, aciculate; virga thick and tubular.

Female: Agrees with males in most characters except that sides of abdominal segments convex; ultimate tergite strongly narrowed posteriorly and tumid elevations above the roots of forceps weaker and forceps simple and straight, somewhat depressed, subcontiguous, internally with several small teeth throughout.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 8.7 - 11.5 | 8.4 - 10.0 |
| Length of forceps | 4.5 - 10.1 | 4.3 - 4.5  |

*Types:*

1. *Opisthocosmia lugens* Bormans, 1894 - Lactotype Male, Paralactotypes 1 Male, 1 Female at MSNG.
2. *Opisthocosmia aesculapius* Burr, 1905 - Type Male at MCNM.

*Distribution:* India (Sikkim (1200 - 2187 m), West Bengal (Darjeeling Dist., 475 - 2300 m), Meghalaya, Assam, Manipur (810-833 m), Arunachal Pradesh (933-2433 m) and Uttarakhand (Garhwal Dist., 810 - 1467 m); China (Yunnan, 1200 - 1280 m; Kiau-Tschou); Myanmar (900 - 1100 m); Laos, Thailand; Malaysia (Malaya, Pahang, Fraser Hills) and Indonesia (Sumatra and Java).

*Remarks:* Some variations exist in general body colour, size, vestiture and shape of sides of abdominal segments and length of forceps, in males.

This species commonly occurs in the leaf crown of sugar cane and leaf axils of other plants.

It comes closer to *T. nevillei* (Burr) in having dull colour of elytra and wings and somewhat similar forceps, in males, but differs in having forceps strongly arcuate in apical one third (*vs* almost straight in apical one half in *T. nevillei*); and vertical basal tooth compressed, large, pointed and incurved (*vs* weakly developed, sometimes sharp and pointed but not as strong or incurved).

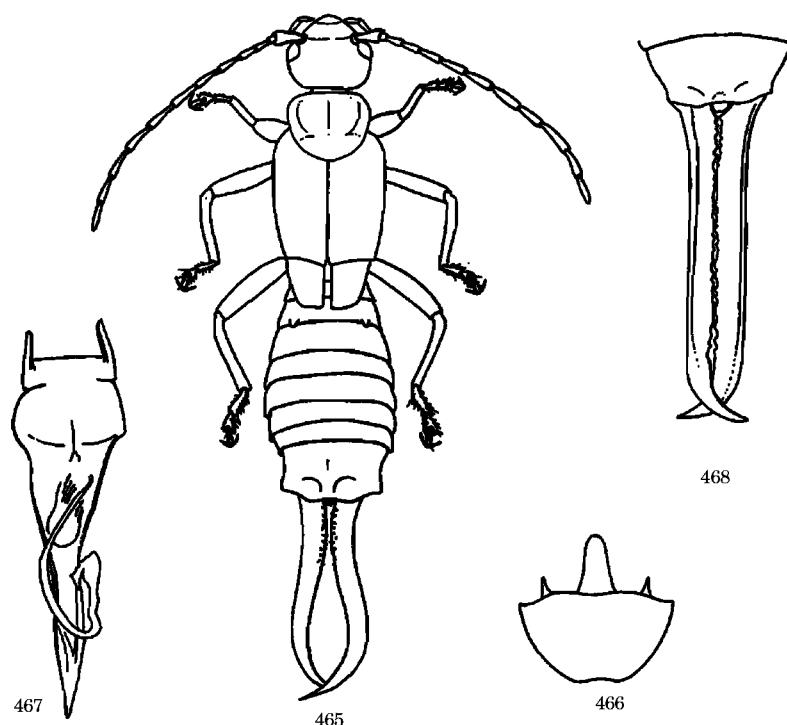
***Timomenus josephi* Srivastava**

(Figs. 465-468)

*Timomenus josephi* Srivastava, 1977, *Dt. ent. Z.*, **24**(4 - 5): 290, figs 4 - 6 (Holotype Male, Allotype Female and Paratype 1 Female; India: Arunachal Pradesh, Subansiri Dist, Tamen, 457 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 47; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5558, 5989, 5991 (coloured photographs of Holotype Male, Allotype Female), 6062, 6063 (black and white photographs of Holotype Male and Allotype Female and diagrams of male genitalia); Steinmann, 1982, *Acta zool. hung.*, **28**(3-4): 366, figs 6-7; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 728; Steinmann, 1993, *Das Tierreich*, **108**: 447.

Male: General colour shining black with bluish green sheen; antennae with two or three ante-apical segments, whole of tarsi brownish; elytra dull black and wing tip yellow. Head, pronotum and elytra with fine pubescence; distal part of tibiae and whole of tarsi covered with fine pubescence on underside.

Head triangular, convex, smooth, sutures obsolete, hind margin almost straight. Antennae 12-segmented, basal segment stout, clavate; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal in length but shorter than 5<sup>th</sup>, remaining long and slender. Eyes black, about half as long as the post-ocular length. Pronotum about as long as broad, smooth, anteriorly straight, hardly narrower than head, lateral margins convex, gently contracted posteriorly with margin rounded, median suture obsolete, prozona raised, well differentiated from flat metazona. Elytra ample, smooth, humeral angles well rounded, hind margin very slightly obliquely truncate. Wings well developed, smooth. Legs long, slender, anterior femora swollen, hind tarsi with 1<sup>st</sup> segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>. Abdomen gradually enlarging posteriorly, sparsely and



**Figs. 465-468.** *Timomenus josephi* Srivastava, Holotype Male, 465. Dorsal view, 466. Penultimate sternite, 467. Genitalia; Allotype Female, 468. Ultimate tergite and forceps (all figs. after Srivastava, 1977c)

shallowly punctate, sides of segments 7<sup>th</sup> to 9<sup>th</sup> acute angled with a small tubercle apically. Penultimate sternite rounded posteriorly with slight emargination in middle, finely pubescent posteriorly. Ultimate tergite almost smooth, one and half times broader than long, slightly sloping backwards, sides faintly emarginate, weakly tumid above the bases of forceps and depressed in between, hind margin scarcely emarginate in middle, lateral portion of hind margin oblique and concave. Pygidium short, subvertical, narrowed apically and bifid. Forceps stout, branches somewhat depressed, remote near base for a short distance, afterwards contiguous but again diverging upto apical two thirds, later incurved, internal margin finely tuberculated, tuberculations more pronounced in basal half. Genitalia with parameres aciculate; virga short, tubular.

**Female:** Agrees with males in most characters except that penultimate sternite obtusely rounded posteriorly; ultimate tergite strongly narrowed posteriorly and lacking tumid elevations above the bases of forceps; pygidium obtuse and forceps simple and straight, contiguous, somewhat depressed, tapering apically, apices pointed and crossing, internally with fine teeth all along the margin.

*Measurements:* (in mm)

|                   | Male | Female     |
|-------------------|------|------------|
| Length of body    | 11.4 | 10.2 -11.1 |
| Length of forceps | 5.0  | 4.7 - 4.8  |

*Types:* Holotype Male, Allotype Female and Paratype 1 Female in ZSI.

*Distribution:* India: Arunachal Pradesh, Subansiri Dist., Tamen, 457 m.

*Remarks:* It comes close to *Timomenus lugens* (Bormans) in general body colour but differs having fine pubescence on head, pronotum and elytra and smooth ultimate tergite; pygidium bifid apically and forceps lacking internal as well as dorsal large teeth, in males.

***Timomenus oannes* (Burr)**

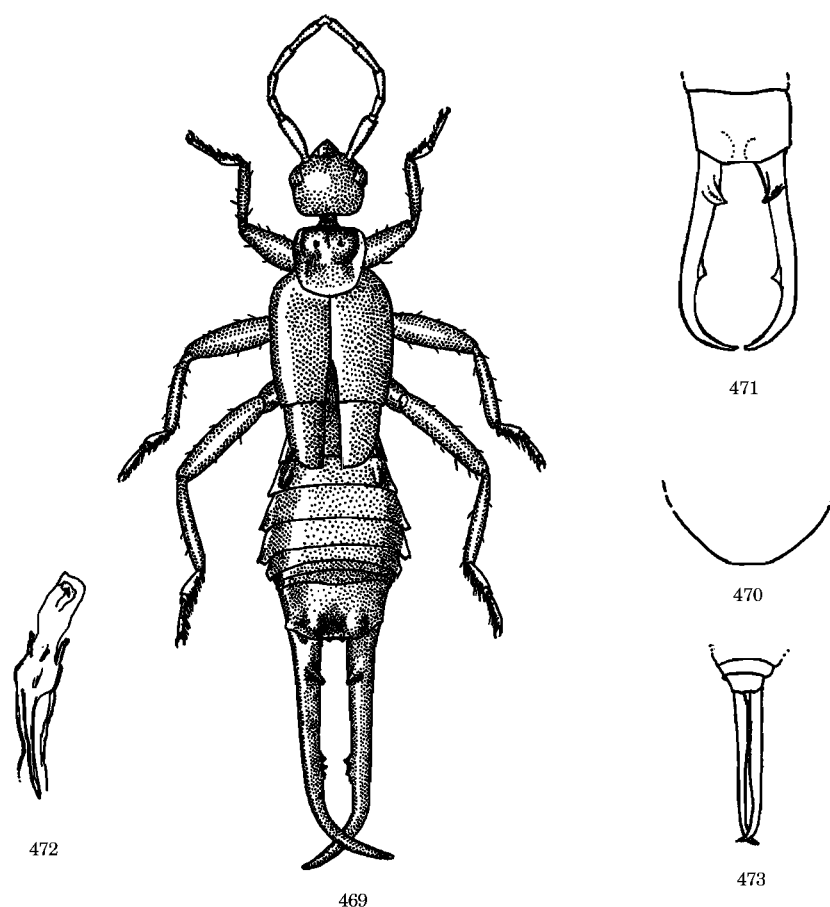
(Figs. 469-473)

*Opisthocosmia oannes* Burr, 1900, *Ann. Mag. nat. Hist.*, (7) **6**: 85 (Male: Assam, India); Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 306; Burr, 1905, *J. Asiat. Soc. Beng.* (N. S.), **1**: 29 (1 Male; India: Khasi Hills); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 38.

*Timomenus oannes*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 96, pl. 4, fig. 1; Burr, 1910, *Fauna British India, Dermaptera*: 197, pl. 8, fig. 69, pl. 10, fig. 104 (India: Assam: Khasi Hills and Tonkin (now Vietnam); Burr, 1911, *Genera Insect.*, **122**: 93; Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**: 239; Borelli, 1927, *Boll. Lab. zool. gen. agr. Portici*, **22**: 77 (Male, Female; China: Lo Chouei Tang (Yunnan); Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 623 (Males, Females; China: Yunnan); Brindle, 1969, *Entomologist's mon. Mag.*, **104**: 247; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 71; Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, **81**: 487 (Male; India: Meghalaya); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 335, figs 103 - 104 (Male; India: Meghalaya, East Khasi Hills, Shillong, Ribhoi Dist., Umshing; species redescribed); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 58 (Male, Female; Nymphs; South China); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 46; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5521, 5986 (coloured photographs of 2 Males, 1 Female; Assam (Shillong): India; China), 6048 - 6049 (black and white photographs of 1 Male, 1 Female, Assam (Shillong), India and male genitalia); Steinmann, 1982, *Acta. zool. hung.*, **82**(3-4): 377, fig. 36; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 731; Steinmann, 1993, *Das Tierreich*, **108**: 307, figs 481-482.

**Male:** General colour reddish black, head and forceps black; antennae with basal segment black, remaining brownish black; pronotum on sides yellow; legs with femora black and tibiae and tarsi brownish; elytra and wings brick red with a fuscous band along the internal margin and latter with a fuscous band extending on posterior margin and base of external margin or black with inner tip yellow and abdomen black.

Head slightly longer than broad, smooth, frons weakly convex, sutures obsolete, hind margin almost straight. Eyes distinctly shorter than the post ocular length. Antennae 13-segmented, 1<sup>st</sup> stout, apically expanded, slightly longer than the distance between



**Figs. 469-473.** *Timomenus oannes* (Burr), Male; 469. Dorsal view, 470. Posterior half of penultimate sternite, 471. Ultimate tergite and forceps, 472. Genitalia; Female, 473. Ultimate tergite and forceps (fig. 469 ex specimen from China and figs. 470-473 ex specimen from India, Shillong).

antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> cylindrical; 4<sup>th</sup> a little shorter than preceding, but stouter; 5<sup>th</sup> onwards long, cylindrical, gradually increasing in length. Pronotum about as long as broad, anterior margin straight, lateral margins gently convex, hind margin rounded, prozona convex, metazona depressed, median sulcus faint. Legs with fore-femora thickened, hind tarsi with 1st segment stout, flat below, trigonal above; 2<sup>nd</sup> lobed; third, narrowed, a little longer than 1<sup>st</sup>. Elytra and wings well developed, smooth. Abdomen strongly convex, enlarged in middle, micro-reticulate or obscurely punctate, sides of segments 5<sup>th</sup> to 9<sup>th</sup> convex, 5<sup>th</sup> or 6<sup>th</sup> with a tubercle posteriorly, 7<sup>th</sup> to 9<sup>th</sup> striated. Penultimate sternite transverse, hind margin rounded with slight emargination in middle. Ultimate tergite weakly transverse, narrowed posteriorly, disc obscurely punctate, sloping backwards, tumid above the bases of forceps



and depressed in the middle, hind margin in middle thickened, straight, lateral portion of hind margin oblique. Pygidium vertical, transverse, posteriorly in middle with two tubercles and postero-lateral angles produced into minute points. Forceps with branches remote and cylindrical at base, undulated in basal one third, tapering apically, almost straight, gently incurved in apical one third and somewhat compressed, on upper surface, at basal one third a vertical, triangular tooth present and on internal margin, at apical one third a small tooth also present. Genitalia with parameres aciculate; virga thick, tubular.

Female: Agrees with males in most characters except that ultimate tergite strongly narrowed posteriorly and forceps simple, contiguous, straight, or sometimes in posterior one third subcontiguous, internal margin serrated.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 10.0 - 14.0 | 10.8 - 12.0 |
| Length of forceps | 4.0 - 7.0   | 6.4 - 6.5   |

*Type:* Type Male at BMNH.

*Distribution:* India (Meghalaya, East Khasi Hills), China (Yunnan) and Vietnam.

*Remarks:* This species can be easily separated by its sturdy build, characteristic colouration, especially elytra and wings brick red with a fuscous band along the sutural margin on former and on latter band extending along the posterior margin as well or black with inner tip yellow, in males, forceps stout, at basal one third with a vertical tooth and another smaller one on internal margin at apical one third. The latter tooth, sometimes represented by one or two small dentations.

***Timomenus nevillei* (Burr)**

(Figs. 474-479)

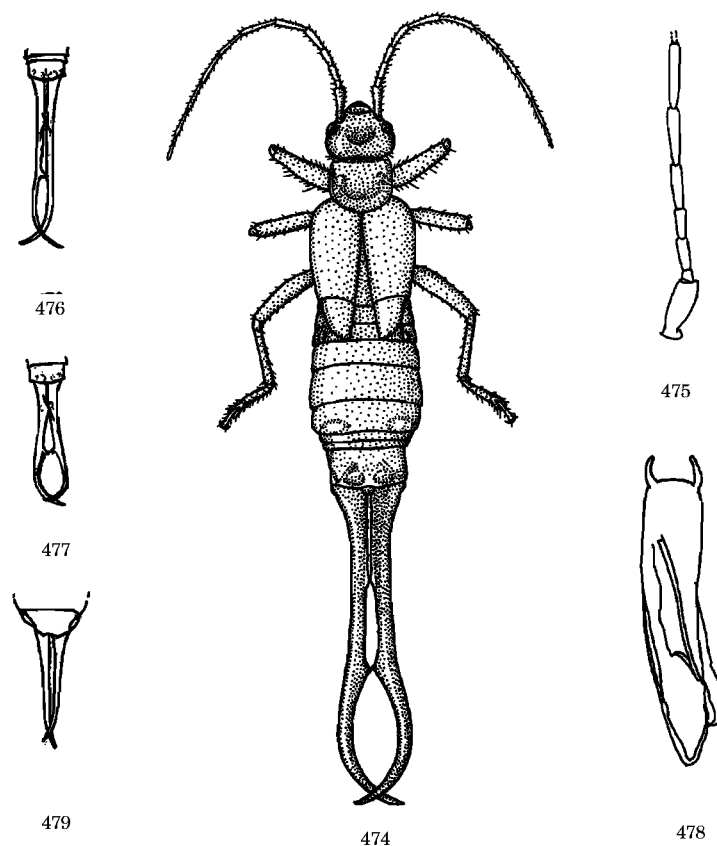
*Opisthocosmia nevillei* Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 305, 309 (3 Males, 5 Females; Bhoutan, Maria Basti); Burr, 1908, *Bull. Mus. Hist. nat, Paris*, **14**: 117.

*Timomenus nevillei*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 121; Burr, 1910, *Fauna British India, Dermaptera*: 147, pl. 8, fig. 71; Yamasaki, 1968, *J. College Arts and Sci. Chiba Univ.*, (3)**4**: 313 (1 Male; Nepal, Resingo, 1770 m, Chitre, 2200 m); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 35; Brindle, 1969, *Entomologist's mon. Mag.*, **104**: 246; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 70; Srivastava, 1993, *Rec. zool. Surv. India*, **91**(1): 81, figs 56 - 58 (Male, Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area - species redescribed); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 203, fig. 62 (India: Sikkim); Sakai, 1982, *Bull. Daito Bunka Univ.* **20**: 46; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5535, 5987 (coloured photographs of Syntypes (not Holotype and Paratype), 5988 (coloured photographs), 6054 - 6055 (black and white photographs); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **33**: 9288, pl. 1, fig. 8 (Male, Female; India: Sikkim, Dethong,

1219 m, Lathong, 1999 m, Lingdok, 1402 m; Arunachal Pradesh (localities recorded now not under Assam), Nyukmadong, 2000- 2667 m, Chug, 2267-2433 m and Domkho, 2167 m; Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 50 (various localities recorded in preceding reference and Manipur, Sinda, 1333 m, Bongba Khulen, 833 m and Chingsao, 1267 m, Arunachal Pradesh, Dirang Dzong, 1767-2167 m; Uttarakhand, Kumaon, Naini Tal, Naukucchiya, 1367 m); Steinmann, 1982, *Acta. Zool. hung.*, **28**(3-4): 373, fig. 28 - 29; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 730; Steinmann, 1993, *Das Tierreich*, **108**: 304, figs 474-476.

Male: General colour dark black to blackish brown with metallic greenish sheen; pronotum light brown on lateral margin; elytra light brown with shades of black and legs dark blackish brown and wings shining greenish black, inner tip with an orange spot.

Build slender, elongated. Head about as long as broad, smooth, frons convex, sutures obsolete, hind margin scarcely emarginate in middle. Eyes distinct, about half as long as



**Figs. 474-479.** *Timomenus nevillei* (Burr), Male, 474. Dorsal view, 475. A few basal antennal segments; 476-477. Ultimate tergite and forceps, exhibiting variations in the armature of forceps, 478. Genitalia; Female, 479. Ultimate tergite and forceps.

the post-ocular length. Antennae 14- segmented, 1<sup>st</sup> stout, apically swollen, longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> almost equal to preceding, but thinner, remaining gradually increasing in length and thinning. Pronotum about as long as broad, smooth, lateral margin parallel, gently reflexed, hind angles and margin rounded; prozona raised and metazona depressed. Legs with anterior femora swollen, ; hind tarsi with 1<sup>st</sup> segment stout, about as long as the 3<sup>rd</sup>; 2<sup>nd</sup> lobed, clad with long and short pubescence on underside. Elytra and wings well developed, smooth, former with humeral angles prominent, costal margin ecarinate, hind margin truncate. Abdomen convex, enlarged in middle, finely punctulated, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> tergites prominent, but former slightly weaker, sides of segments 4<sup>th</sup> to 9<sup>th</sup> obtuse angled, but on segments 5<sup>th</sup> and 6<sup>th</sup> with an oblique fold or tubercle, either poorly or well marked. Penultimate sternite with posterior margin well rounded. Ultimate tergite transverse, weakly convex, sloping backwards, slightly narrowed posteriorly, above the bases of forceps with low folds and area in between with slight depression, hind margin trisinate, lateral portion of hind margin oblique. Pygidium obtuse, above in the middle with a faint convexity. Forceps with branches slender, horizontal, subcontiguous in basal one fourth to one third, afterwards gradually diverging beyond middle, thence strongly or elongatedly incurved to hooked and pointed apices, internal margin crenulated in the basal subcontiguous portion, at a little beyond middle with a vertical, triangular tooth (not recurved) followed by another weak or strong tooth internally. Genitalia with parameres narrow, aciculate.

Female: Agrees with males in most characters except that sides of abdominal segments without tubercle or fold posteriorly; penultimate sternite with posterior margin obtuse in middle; ultimate tergite strongly narrowed posteriorly and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male       | Female      |
|-------------------|------------|-------------|
| Length of body    | 11.0 -15.5 | 10.0 - 12.5 |
| Length of forceps | 8.0 - 12.0 | 6.0 - 7.5   |

*Types:* Syntypes 3 Males, 5 Females at MNHP.

*Distribution:* Bhutan, India (Sikkim, 400 - 1550 m, Arunachal Pradesh, 1267 - 2667 m, Manipur, 833 - 1333 m) and Nepal (1770 - 2200 m).

*Remarks:* This species is quite common under the bark of logs and foliage during monsoon in North Sikkim (India).

It comes close to *T. lugens* (Bormans) but differs by the greenish sheen on the body; slender build; and in males, forceps with a vertical triangular tooth above in basal one third to one fourth and is more compressed and broadly incurved with tip acute.

**Doubtful record*****Timomenus ares* (Burr, 1900)**

Steinmann (1983) records this species from India (Kumaon, U.P.(now Uttarakhand) and Garhwal) and Nepal

So far it is known by its Type Male from Borneo, not adequately described. Perhaps this may be a case of misidentification.

**Genus *Paratimomenus* Steinmann**

*Paratimomenus* Steinmann, 1974, *Folia ent. hung.*, **27**: 200 (Type species: *Opisthocosmia flavocapitata* Shiraki, 1905); Steinmann, 1975, *Acta. zool. hung.*, **21**: 217; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 717; Steinmann, 1993, *Das Tierreich*, **108**: 311; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5564. Srivastava, 1983, *Rec. zool. Surv. India*, **80**: 501

This genus agrees well with *Timomenus* Burr, in most characters except that male genitalia with broad parameres, about two to two and half times longer than broad, almost of uniform width throughout except at apices very slightly narrowed and tip acute.

*Type species: Opisthocosmia flavocapitata* Shiraki, 1905.

*Distribution:* Oriental and Australian Regions.

*Remarks:* Only two species are known from the Indian Subcontinent. This genus shares the characters of genera *Timomenus* Burr and *Pterygida* Verhoeff.

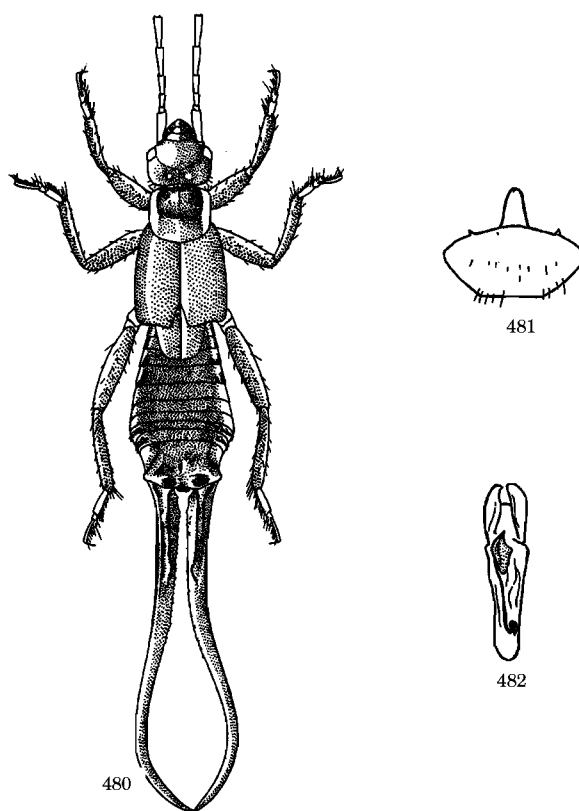
**Key to the species (based on males)**

- 1(2). Build stout; head shining with metallic greenish sheen; pronotum about as long as broad, hind angles and margin briefly rounded; ultimate tergite on sides with an oblique ridge in posterior half; forceps long, cylindrical, subremote at base, depressed in basal one third with an oblique ridge, afterwards gradually diverging and elongatedly incurved, inner margin with small dentations ..... *P. nathani* (Srivastava)
- 2(1). Build slender; head yellow; pronotum transverse, hind angles and margin well rounded; ultimate tergite without any ridge on sides in posterior half; forceps with branches very slender, remote, straight in basal two thirds, afterwards elongatedly incurved, internally with a sharp, posteriorly directed tooth at apical one third . ..... *P. brahma* (Burr)

***Paratimomenus nathani* (Srivastava)**

(Figs. 480-482)

*Timomenus nathani* Srivastava, 1970, *Eos, Madr.*, **44**: 428., figs 5 - 8 (Holotype Male; India: Tamil Nadu, Coimbatore Dist., Anamalai Hills, Cinchona, 1067 m.); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 71; Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 61; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 47;



**Figs. 480-482.** *Paratrimomenus nathani* (Srivastava), Holotype Male, 480. Dorsal view; 481. Penultimate sternite, 482. Genitalia.

*Paratrimomenus nathani*; Steinmann, 1974, *Folia ent. hung.*, **27**: 201, fig.39; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 718; Steinmann, 1993, *Das Tierreich*, **108**: 315; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5574, 5592 and 5597 (coloured photograph of Type Male), 6070 (black and white photograph of Type Male).

Male: Head, pronotum, abdomen shining black with greenish purple sheen; pronotum on sides dirty white; abdomen and legs dark blackish brown; elytra dark brown; wings yellowish brown with a yellow spot at tip and forceps black.

Head triangular, about as long as broad, frons tumid and occiput slightly convex, sutures distinct, on either side of median suture a small tubercle present close to hind margin, posterior margin straight. Eyes, black, shorter than the post-ocular length. Antennae 12-segmented or more (since the apical ones tend to break off easily on slightest jerck), 1<sup>st</sup> segment, stout, expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> slightly longer than the preceding, remaining gradually increasing in length distally, each slightly

narrowed basally. Pronotum about as long as broad, anterior margin straight, lateral margins convex, gently reflexed, hind angles and margin rounded, median sulcus distinct, prozona raised and metazona weakly so. Legs stout, fore- femora short, thick, hind ones slender; tibiae comparatively longer and slender than femora, smooth above apically, covered with golden yellow pubescence on underside, especially dense at apex; tarsi with 1<sup>st</sup> segment broad, and shorter than the 3<sup>rd</sup>, 2<sup>nd</sup> lobed. Elytra slightly less than twice the length of pronotum, smooth, costal margin without carina, humeral angles not prominent, hind margin truncate, slightly oblique. Wings well developed, smooth. Abdomen with tergites convex, smooth, except 9<sup>th</sup> sparsely punctate in anterior half only, gradually enlarging posteriorly, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but latter slightly weaker, sides of segments convex, sides of segment 7<sup>th</sup> with two, 8<sup>th</sup> with three and 9<sup>th</sup> with four tubercles posteriorly. Ultimate tergite transverse, smooth, sloping and contracted backwards, above the bases of forceps with weak folds, hind margin trisinate, lateral portion of hind margin oblique, laterally with an oblique ridge extending from middle to caudal angles, median sulcus represented by a short vertical depression. Penultimate sternite transverse, in anterior half with a few shallow punctures, hind margin subtruncate or scarcely emarginate; manubrium slightly longer than broad, narrowed apically, tip obtuse. Forceps with branches long, cylindrical, subcontiguous in basal one third, afterwards gradually diverging for a short distance, thence enclosing oblong space, incurved, tip pointed and gently hooked, in basal one third above depressed with a ridge, inner margin with numerous small teeth. Genitalia with parameres broad, about two and half times longer than broad, narrowed apically, tip gently incurved; virga chitinous, tubular, narrowed apically.

Female: Not known.

*Measurements:* (in mm)

|                   | Male  |
|-------------------|-------|
| Length of body    | 10.26 |
| Length of forceps | 9.12  |

*Type:* Holotype Male at ZSI.

*Distribution:* India: Tamil Nadu, Coimbatore Dist., Anamalai Hills, Cinchona, 1067 m.

***Paratimomenus brahma* (Burr)**

(Figs. 483-487)

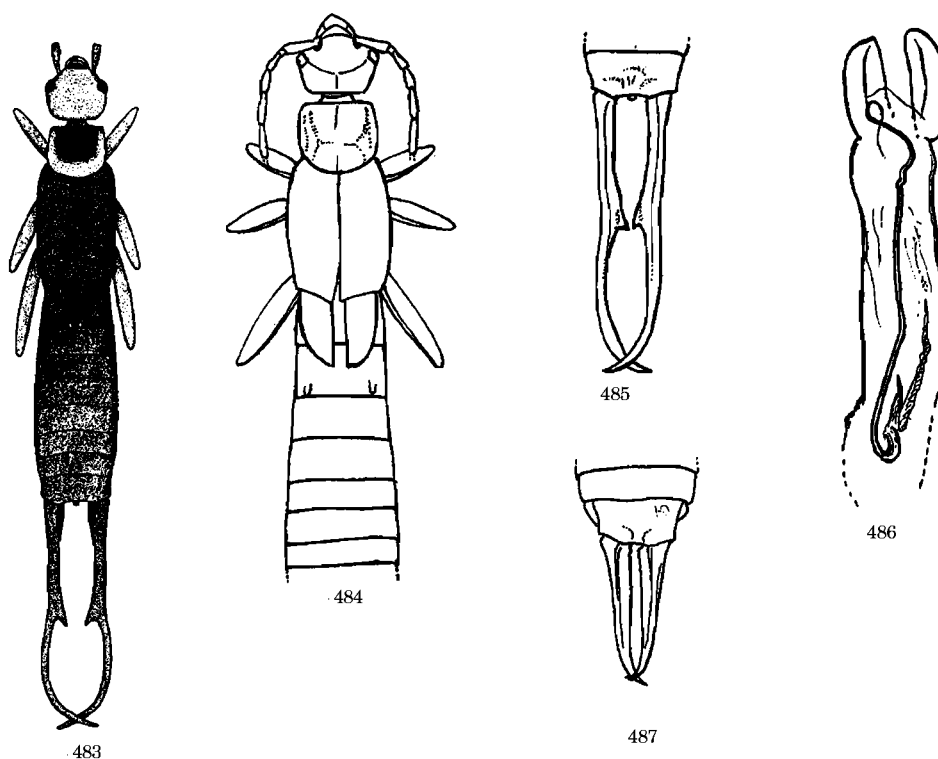
*Opisthocosmia brahma* Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 310 (2 Males; India Borealis, Darjeeling; Bhoutan: Maria Basti); Burr, 1908, *Bull. Mus. Hist. nat., Paris*, **14**: 117.

*Kosmetor brahma*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 123, pl. 4, fig. 5 (male in dorsal view); Burr, 1910, *Fauna British India, Dermoptera*: 202; Burr, 1911, *Genera Insect.*, **122**: 83; Burr, 1913, *Rec. Indian Mus.*, **8**(2): 146 (1 Male; India: Abor Region (now Arunachal Pradesh), Renging, 655 m); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 34; Sakai,

1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 99; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 73.

*Timomenus brahma*; Brindle, 1975, *Ent. basiliensis*, **1**: 57, fig. 63 (Male; dorsal view, Bhutan); Steinmann, 1982, *Acta. zool. hung.*, **28**(3-4): 373, fig. 25; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 46; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 424, figs 179-182 (Male, Female: India: Sikkim and Arunachal Pradesh).

*Paratimomenus brahma*; Steinmann, 1989, *World Catalogue of Dermapters* (Series entomologica v. 43): 717; Steinmann, 1993, *Das Tierreich*, **108**: 313; Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 217, figs 63 - 63 (Male, Female: India: Sikkim, Gangtok, Deorali, 1442 m); 1 Male; Arunachal Pradesh, W. Siang Dist., Kambang); Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5566, 5993 (coloured photograph of Holotype Male (Syntype actually), 6066 (black and white photographs of Syntype 2 Males, ex India: Darjeeling and Bhoutan (Maria Basti); Sakai and Zhang, 1995, In: *Dermapterorum Catalogus*, **30**: 9288, pl. I, fig. 7 (Male; India : Meghalaya (now locality mentioned not under Assam), Cherrapunji, 1500 m; Arunachal Pradesh, Nizong, 1600 m and Sikkim, Manu, 1640 m, Teng, 1533 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2):50.



**Figs. 483-487.** *Paratimomenus brahma* (Burr), Male, 483. Dorsal view, 484. Dorsal view, except ultimate tergite and forceps, 485. Ultimate tergite and forceps, 486. Genitalia; Female, 487. Ultimate tergite and forceps (fig. 483 after Brindle, 1975).

Male: General colour blackish brown; head, one or two ante-apical segments of antennae, lateral margins of pronotum and legs yellow; inner wing tip with an yellow spot. Cuticle of head and pronotum smooth; elytra and wings corieaceous and abdominal tergites with large, shallow punctures

Head about as long as broad, frons tumid, hind margin almost straight. Eyes distinctly shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, slightly longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal, latter slightly stouter, remaining gradually increasing in length and thinning. Pronotum weakly transverse or about as long as broad, anterior margin almost straight, lateral margins gently convex, slightly widened posteriorly, median sulcus distinct, hind angles and margin together well rounded, prozona weakly raised and metazona depressed. Elytra and wings well developed, smooth. Legs long, slender, hind tarsi with 1<sup>st</sup> segment depressed, almost equal to 3<sup>rd</sup> in length; 2<sup>nd</sup> lobed. Abdomen elongated, gently dilated in middle, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but latter weaker, tergites convex. Penultimate sternite rounded posteriorly. Ultimate tergite transverse, slightly narrowed posteriorly, lateral margins straight, disc weakly convex, hind margin trisinate, in middle strongly and lateral portion of hind margin weakly sinuate and oblique, above the bases of forceps with weak folds and area in between depressed. Forceps with branches remote at base, tapering apically, almost straight in basal two thirds, afterwards elongatedly incurved, apices hooked and pointed, at base above with a short and faint ridge, internal margin with a sharp, triangular and posteriorly directed tooth at a little beyond middle. Pygidium short, rounded. Genitalia with parameres, broad, about two and half times longer than broad; virga long, tubular, at base with chitinous accessory plates.

Female: Agrees with males in most characters except that penultimate sternite posteriorly in middle obtuse; ultimate tergite strongly narrowed posteriorly and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male        | Female     |
|-------------------|-------------|------------|
| Length of body    | 11.0 - 12.0 | 8.2 - 10.0 |
| Length of forceps | 5.2 - 5.6   | 3.2 - 3.9  |

*Types:* Syntypes 2 Males at MNHP.

*Distribution:* India : West Bengal (Darjeeling Dist.), Meghalaya (Cherrapunji, 1500 m) Sikkim (Gangtok, 1425 m, Manu, 1640 m, Teng, 1533 m); Arunachal Pradesh (Subansiri dist., Lekhabali, 50 m, Chukru, 1128 m, Siang Dist., Renging, 665 m, Lekhabali, Kambang and Nizong, 1600 m) and Bhutan (1700 - 2000 m).

*Remarks:* This species can be easily differentiated from the other species of the genus by its slender build; yellow head and shape of forceps, in males.



Genus *Eparchus* Burr

*Eparchus* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 120 (Type species: *Forficula insignis* Haan, 1842); Burr, 1910, *Fauna British India, Dermaptera*: 120; Burr, 1911, *Genera Insect.*, **122**: 94; Bey-Bienko, 1936, *Faune de l'URSS, Dermapterès*: 201; Towens, 1945, *Ann. ent. Soc. Am.*, **38**: 347; Popham and Brindle, 1968, *Entomologist*, **101**: 277; Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 63; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 47; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5580; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 72; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 425; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. 3: 336; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 697; Steinmann, 1993, *Das Tierreich*, **108**: 320.

*Nerberia* Burr, 1911, *Genera Insect.*, **122**: 49 (Type species: *Opisthocosmia biroi* Burr, 1902); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 697 (treated as a synonym); Steinmann, 1993, *Das Tierreich*, **102**: 320 (treated as a **syn. n.**).

Head convex, sutures faint or distinct; antennae 12-segmented; 3<sup>rd</sup> and 4<sup>th</sup> equal but shorter than the 5<sup>th</sup>; remaining long and slender; eyes distinctly shorter than the post ocular-length. Pronotum anteriorly equal to head in width, about as long as head, hind margin rounded. Legs long, slender, hind tarsi with 1<sup>st</sup> segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>. Abdomen, in males, convex, sides of certain segments with tubercles posteriorly, often weak or absent. Ultimate tergite longer than wide, narrowed posteriorly. Forceps, in males, contiguous, generally provided with a vertical tubercle or lobe, sometimes weakly developed, afterwards strongly incurved or elongated; in females simple and straight.

*Type species: Forficula insignis* Haan, 1842.

*Distribution*: Oriental Region.

## Key to the species (based on males)

- 1(2). Sides of abdominal segments 5<sup>th</sup> or 6<sup>th</sup> to 8<sup>th</sup> with a conical tubercle; forceps horizontal, near base with a vertical rounded tubercle, often weakly developed .  
..... *E. insignis* (Haan)
- 2(1). Sides of abdominal segments convex, sometimes 8<sup>th</sup> and 9<sup>th</sup> obtuse angled posteriorly, with an oblique serrated ridge on segments 7<sup>th</sup> to 9<sup>th</sup>, sometimes absent; forceps undulated with a faint ridge or triangular crest above close to inner margin at basal one third or a little beyond ..... *E. simplex* (Bormans)

*Eparchus insignis* (Haan)

(Figs. 488-492)

*Forficula insignis* Haan, 1842, *Verh. nat. Ges. Nederl. Overz. Bezitt.*, **1842**: 243, pl. 23, fig. 15 (mentioned in the text and legend to plate as fig. 14 - not correct) (Male, Female; Java).

*Opisthocosmia insignis*; Dohrn, 1865, *Stettin ent. Ztg.*, **26**: 81; Dubrony, 1879, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **14**: 337; Bormans, 1888, *Annali. Mus. civ. Stor. nat. Giacomo Doria*, (2)**6**: 444; Bormans, 1894, *Annali. Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 394;

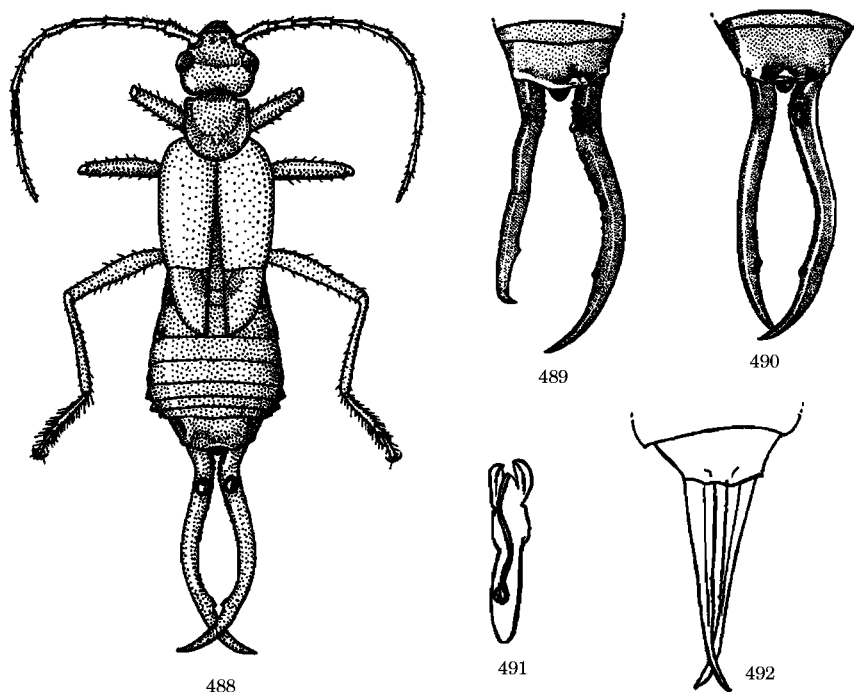
Bormans and Krauss, 1900, *Das Tierreich*, **11**: 96; Bolivar, 1897, *Ann. Soc. ent. Fr.*, **66**: 286; Burr, 1900, *Ann. Soc. ent. Belg.*, **44**: 53; Termètzter Fuz., **25**: 485; Burr, 1908, *Bull. Mus. Hist. nat., Paris*, **14**: 111; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 39.

*Eparchus insignis*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 121; Burr, 1910, *Fauna British India, Dermaptera*: 192, pl. 10, fig. 99; Burr, 1911, *Genera Insect.*, **122**: 94; Burr, 1911, *Annln. naturf. Mus. Wien*, **26**: 107; Burr, 1912, *Sber. Ges. naturf. Fr. Berlin*, **1912**: 392; Burr, 1913, *Rec. Indian Mus.*, **8**(2): 146; Burr, 1914, *Rec. Indian Mus.*, **10**: 294; Burr, 1916, *J. R. micr. Soc.*, **1916**: 16, pl. 4, fig. 4 (male genitalia); Burr, 1917, *Ann. Soc. ent. Fr.*, **81**: 61; Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**: 239; Hebard, 1927, *Proc. Acad. nat. Sci. Philad.*, **79**: 47; Borelli, 1927, *Treubia*, **8**: 272; Borelli, 1931, *Rev. suisse. Zool.*, **38**: 308; Borelli, 1932, *Bull. Raffles. Mus.*, **7**: 95; Günther, 1933, *Arch. Hydrobiol.*, Stuttgart, **12**(Suppl.): 515; Bey-Bienko, 1936, *Faune de l'URSS, Dermapterès*: 202, 234; Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 623 (South China); Hincks, 1945, *Trans. ent. Soc. Lond.*, (B) **14**: 61; Hincks, 1947, *Ark. Zool.*, **39A**(1): 41; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 113; Ramamurthi, 1960, *Bull. Ent.*, **1**: 37 (India: Western Ghats); Gangola, 1965, *Entomologist*, **99**: 227 (India: Kumaon Hills); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 35; Kapoor, Malla and Shah, 1978, *J. nat. Hist. Mus.*, **2**(2): 62 (Male, Female; Nepal); Srivastava, 1970, *Eos, Madr.*, **45**: 332 (Male, Female; India: Tamil Nadu, Coimbatore Dist., Anamalai Hills, Cinchona, 1067 m); Srivastava and Saha, 1975, *Ceylon J. Sci. (Bio. Sci.)*, **11**(2): 68 (India West Bengal, Darjeeling Dist.); Srivastava, 1979, *Proc. Sym. zool. Surv. India*, **1**: 70, fig. 14 (Male, in dorsal view); Srivastava, 1982, *Bull. Inst. r. Sci. nat. Belg., Bruxelles*, **54**(11): 9 (Male, Female; India: Tamil Nadu, Yercaud, Shevroy Hills, 1372 m); Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, **81**: 487 (India: Arunachal Pradesh, Manipur and Meghalaya); Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 17 (Male; India, Karnataka, Mudigere area, ca. 900 m); Srivastava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 124 (Male, Female; Thailand); Srivastava, 1990, *Rec. zool. Surv. India*, **87** (1 - 2): 52 (Male, Female; Bangladesh, Baraiyadhla Forest, 150 m; Lava Cherra Forest, Srimangal, 110 m); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 425, figs 186-187; (Male, Female; India: West Bengal, Darjeeling Dist., Tindharia, Rambh and Kurseong, 1432-1524 m); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 337, fig. 106 (Male, Female; India: Meghalaya, East Khasi Hills, Shillong and Motinagar); Srivastava, 1995, *Fauna of Western Himalaya (U. P.), Himalayan Ecosystem Series*, Pt. **3**: 44 (Western Himalaya, Uttar Pradesh (now Uttarakhand); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 316, fig 58 (Male, Female; Sikkim); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(1-2): 132 (Female; India: Assam, North Cachar Hills, Garampani); Srivastava, 2003, *Rec. zool. Surv. India*, **101**(3-4): 178 (Male, Female; India: Andaman and Nicobar Isls, Great Nicobar Isl); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 61 (Male, Female and nymphs; Thailand, Vietnam, Laos and China (South); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 47; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5587, 5597 (coloured photographs), 6073 - 6075 (black and white photographs); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9285 (Male, Female; India: Arunachal Pradesh ( now not Assam), Lifakpo, 1033 m, Manipur, Bongba Khulen 833 m, Pansong, 917 m, Vangal Changpao, 100 m and Khopum, 833 m; Sikkim, Samdong, 1200 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 49 - 50 (India: Arunachal Pradesh, 1749-2400 m; Manipur, alt. 908 - 1322 m); Steinmann, 1981, *Atti. Soc. Ital. Sci. nat. Mus. civ. nat. Milano*, **122** (3-4): 163 (Birmanian: Carin Hills, Palaing); Steinmann, 1983, *Richenbenchia Mus. Tierk. Dresden*,

**21(7):** 52 (Indonesia: Java and China); Steinmann, 1983, *Zool. Zh.*, **62**: 1747 (Vietnam); Steinmann, 1984, *Acta. zool. hung.*, **30**(1-2): 201 (Females: Thailand); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 701; Steinmann, 1993, *Das Tierreich*, **108**: 321, figs 504 - 506; Brindle, 1987, *Courier Forsch.-Inst. Scenkenberg*, **93**: 339 (Female: Nepal, alt. 750 - 900 m); Chaturvedi and Srivastava, 2002, *J. Bombay nat. Hist. Soc.*, **99** (2): 215.

Male: General colour blackish brown, sometimes lighter with varying shades; elytra occasionally yellowish brown and wings with a yellow spot.

Head slightly longer than broad, smooth, slightly depressed in middle, sutures fine but distinct, hind margin emarginated in middle. Antennae 12-segmented, 1<sup>st</sup> long, slightly expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal in length but both shorter than the 5<sup>th</sup>, remaining gradually increasing in length distally, each slightly expanded apically. Eyes slightly shorter than the post-ocular length. Pronotum slightly longer than broad, anterior margin straight, about as wide as head, lateral margins straight, parallel, rarely contracted posteriorly, hind margin rounded, prozona slightly raised and metazona depressed, median sulcus faint. Elytra and wings well developed, smooth. Legs long,



**Figs. 488-492.** *Eparchus insignis* (Haan), Male, 488. Dorsal view, 489-490. Ultimate tergite and forceps, exhibiting variations, 491. Genitalia; Female, 492. Ultimate tergite and forceps.

slender, hind tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> lobed. Abdomen greatly enlarged in middle, tergites strongly convex, punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergite prominent but former slightly weaker, sides of segments 5<sup>th</sup> or 6<sup>th</sup> to 8<sup>th</sup> with a strong conical tubercle, of which last one often weakly developed. Penultimate sternite with hind margin rounded. Ultimate tergite transverse, smooth, declivitous, strongly narrowed posteriorly, above the bases of forceps with weak folds, hind margin trisinate, lateral portion of hind margin oblique. Pygidium short, rounded. Forceps with branches cylindrical, contiguous for a short distance near base and with a vertical rounded tubercle above, afterwards diverging, enclosing an elongated, oval space or strongly incurved, apices gently hooked and pointed, internal margin crenulate and with a tooth at apical one third. Genitalia with parameres broad, about two and half times longer than broad, apical margin rounded, tip pointed; virga thin, tubular.

Female: Agrees with males in most characters except that sides of abdominal tergites lacking lateral conical tubercles; ultimate tergite more strongly narrowed apically and forceps with branches simple and straight.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 7.8 - 10.4 | 8.2 - 10.5 |
| Length of forceps | 3.5 - 5.6  | 2.3 - 3.4  |

*Type:* Male, Female Syntypes at RNHL.

*Distribution:* Widely distributed in the Oriental Region.

In India it occurs in plains and Himalaya (2133 m) and other mountains.

*Remarks:* General body colour and of elytra and wings is extremely variable. The lateral abdominal tubercles and basal vertical tubercles of forceps, in males, are often poorly developed, especially in specimens with weaker form of forceps.

***Eparchus simplex* (Bormans)**

(Figs. 493-497)

*Opisthocosmia simplex* Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)14: 396 (6 Males, 2 Females; Birmania: Carin Asciuii Gheæu, 1400 - 1500 m, Carin Asciuii Chèba, 1200 - 1300 m, Carin Gheæu, 1300 - 1400 m); Bormans and Krauss, 1900, *Das Tierreich*, 11: 39; Bolivar, 1897, *Ann. Soc. ent. Fr.*, 66: 286; Burr, 1902, *J. Bombay nat. Hist. Soc.*, 14: 334; Burr, 1904, *Trans. ent. Soc. Lond.*, 1904: 306; Kirby, 1904, *Syn. Cat. Orthoptera*, 1: 39.

*Hypurgus simplex*; Burr, 1907, *Trans. ent. Soc. Lond.*, 1907: 102; Burr, 1910, *Fauna British India, Dermaptera*: 189; Burr, 1912, *Annln naturf. Mus., Wien*, 26: 98 (1 Male, 1 Female (Syntypes); Birmania: Carin Asciuii Chèba, 1200 - 1300 m - ex Bormans Syntypes).

*Narberia simplex*; Burr, 1911, *Genera Insect.*, 122: 98; Burr, 1916, *J. R. micr. Soc.*, 1916, pl. 4, fig. 6 (male genitalia); Burr, 1917, *Ann. Soc. ent. Fr.*, 86: 61; Borelli, 1923, *Boll. Musei. Zool. Anat. comp. R. Univ., Torino*, No. 38 (N. S. 1): 19; Borelli, 1932, *Bull. Raffles Mus.*, 7: 95; Bey-Bienko,

1959, *Ent. Obozr.*, **38** (3): 624; Brindle, 1967, *Ark. Zool.*, (2) **20**, No. 7: 162; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 74.

*Eparchus simplex*; Srivastava, 1981, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **83**: 302, figs 42 - 45 (Lactotype Male, Paralactotypes 1 Male, 2 Females in MSNG and Paralactotypes 1 Male, 2 Females in IRSNB); Srivastava, 1983, *Rec. zool. Surv. India*, **80**: 504 (Burma: Htawgaw); Srivastava, 1987, *Bull. zool. Surv. India*, **8** (1-3): 124 (Male; Thailand); Srivastava, 1993, *Rec. zool., Surv. India*, **91**(1): 82, figs 59-60 (Male, Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 426, figs 189-190 ((Male, Female; India: West Bengal, Darjeeling Dist, Reseium Forest, 1890 m); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. 3: 333, fig. 107 (India: Meghalaya. East Khasi Hills, Shillong); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 216, fig. 59 (India: Sikkim); Srivastava, 2003, *Rec. zool. Surv. India, Occ. Pap.*, **210**: 60 (Male, Female; S. China: Fukein); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 703; Steinmann, 1993, *Das Tierreich.*, **108**: 334; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 47; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5625, 6001-6002 (coloured photographs), 6083-6084 (black and white photographs); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9285, pl. 1, fig. 2 (India: Arunachal Pradesh (localities mentioned are now not under Assam), alt. 1267-2433 m, and Manipur, 833-1333 m and Sikkim, 2297 m), Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 50 (India: Arunachal Pradesh, Manipur and Meghalaya);

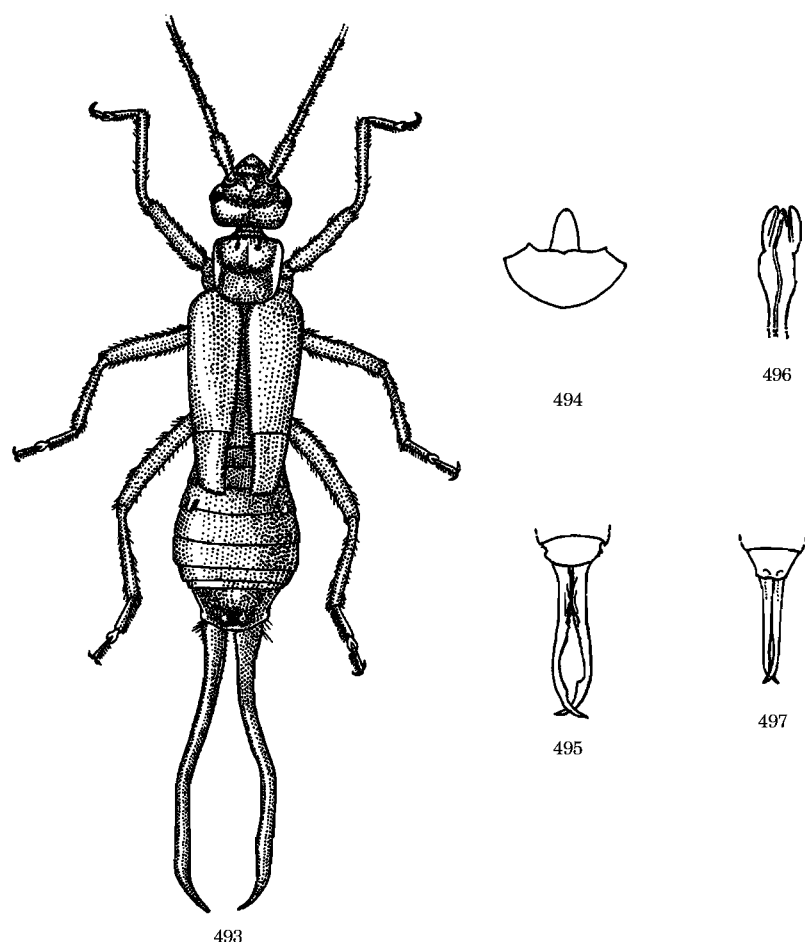
*Eparchus oberthuri* Borelli, 1912, *Bull. Mus. Hist. nat., Paris*, **18**: 13, fig. 4(3 Males, 1 Female; Bhoutan anglais); Brindle, 1974, *Senckenbergiana biol.*, **55**(1-3): 163, fig 26 (Male, Female; Nepal, alt. range 1800-2600 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 73 (treated as a synonym of *Forficula (Opisthocosmis) forcipata* Haan, 1842); Srivastava, 1981, *Annali Mus. civ. Sor. nat. Giacomo Doria*, **83**: 302 (treated as a synonym *Opisthocosmia simplex* Bormans, 1894); Steinmann, 1983, *Rev. suisse Zool.*, **90**(3): 554 (Male, Female; Bhutan, Nepal and India, alt. range 200 - 3100 m); Brindle, 1987, *Courier Forsch.-Inst. Senckenberg*, **93**: 339 (1 ex.; Nepal, 2000 - 2500 m).

*Narberia tuberculata* Borelli, 1921, *Bull. Mus. Hist. nat.*, **27**: 160 (Male, Female; NE China: Kouy Tchèou région de Fin Fa); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 705; Steinmann, 1993, *Das Tierreich*, **108**: 338 (treated as a synonym of *Eparchus simplex* Bormans, 1894); Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5661, 6003 (coloured photograph of Type Male), 6095 (black and white photograph of Type Male).

*Eparchus inermis* Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser. 7*: 237, pl. 21, fig. 29 (Type Male; India: Assam (now Meghalaya), Khasi Hills, Shillong); Brindle, 1974, *Seckenbergiana biol.*, **55**(1/3): 163 (treated as a synonym of *Eparchus oberthuri* Borelli, 1912); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 73 (treated as a synonym of *Forficula (Opisthocosmia) forcipata* Haan, 1842); Srivastava, 1981, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **83**: 302 (treated as a synonym of *Opisthocosmia simplex* Bormans, 1894); Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5601 (treated as variety), 6001 (coloured photograph of Type Male).

*Narberia tuberculata* var. *parallela*, *recurva* and *sinuosa* Borelli, 1932, *Bull. J. fed. Malay. St. Mus.*, **17**(1): 201 (1 Male each for the three var. from Borneo).

*Eparchus panfilovi* Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 624 (1 Male; China: Yunnan Wuliang Shan near Chintung, 1850 m); Srivastava, 1981, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **81**: 302 (treated as a synonym of *Opisthocosmia simplex* Bormans, 1894).



**Figs. 493-497.** *Eparchus simplex* (Bormans), Male, 493. Dorsal view, 494. Penultimate sternite; 495. Ultimate tergite and forceps, 496. Genitalia; Female, 497. Ultimate tergite and forceps.

*Cordax forcipatus* (nèc Haan); Burr, 1911, *J. Asiat. Soc. Bengal.* (N.S.), **7**: 797 (2 Males; E. Himalaya: Kurseong, 1524 m); Srivastava, 1972, *Rec. zool. Surv. India*, **66**(1-4): 141 (1 Male; India: Arunachal Pradesh: Kameng Dist., Kalaktang, Sangloom).

Male: General colour blackish brown, head slightly lighter; wings at base externally with an yellow spot and forceps reddish brown. Body finely pubescent.

Head longer than broad, frons and occiput convex, sutures distinct, hind margin scarcely emarginated in middle. Eyes black, about as long as the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, expanded apically, longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal in length, 5<sup>th</sup> onwards gradually increasing in length, each gently expanded apically. Pronotum about

as long as broad, anterior margin straight, lateral margins straight, gently reflexed, contracted posteriorly, hind margin rounded, median suture distinct in anterior half, prozona raised and metazona depressed. Elytra and wings well developed, smooth. Legs long, slender, hind tarsi with 1<sup>st</sup> segment distinctly longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>, covered with thick pubescence on underside. Abdomen elongated, enlarged in middle, tergites convex and smooth, lateral tubercles distinct on 3<sup>rd</sup> and 4<sup>th</sup> but former slightly weaker, sides of segments convex, sometimes sides of segments 8<sup>th</sup> and 9<sup>th</sup> obtuse angled posteriorly with a faint oblique ridge on segments 7<sup>th</sup> to 9<sup>th</sup> and recurved. Penultimate sternite broadly rounded posteriorly. Ultimate tergite strongly sloping and narrowed posteriorly, smooth, faintly tumid above the bases of forceps and with a slight depression in between, hind margin faintly trisinate, lateral portion of hind margin oblique, postero-lateral angles a little projecting. Forceps long, slender, contiguous in basal one third or a little beyond, a faint subvertical ridge above present, reminiscent of triangular crest in normal form, afterwards gradually diverging, to enclose an elliptical or oblong space upto apical two thirds where internally thickened in the form of a faint tubercle, apices gently hooked and pointed, internal margin with minute tubercles throughout, often restricted in basal contiguous part. Genitalia with parameres about two and half times longer than broad, lateral margin lightly convex in middle, narrowed apically; virga long, chitinous and tubular.

Female: Agrees with males in most characters except that penultimate sternite with posterior margin obtuse in middle; ultimate tergite more strongly narrowed posteriorly and forceps simple and straight, contiguous throughout, apices gently hooked and pointed.

*Measurements:* (in mm)

|                   | Male       | Female      |
|-------------------|------------|-------------|
| Length of body    | 8.7 - 19.5 | 11.0 - 17.5 |
| Length of forceps | 3.4 - 8.1  | 4.5 - 5.6   |

*Types:*

1. *Opisthocosmia simplex* Bormans, 1894 - Lactotype Male, Paralactotypes 1 Male, 2 Females at MSNG; Paralactotypes 1 Male, 2 Females at IRSNB and Syntypes 1 Male, 1 Female at NMWA. (Syntypes 1 Male and 1 Female were not examined).
2. *Eparchus oberthuri* Borelli, 1912 - 3 Males, 1 Female (actually Syntypes) at MNHP.
3. *Narberia tuberculata* Borelli, 1921 - Type 1 Male, 1 Female at MNHP.
4. *Eparchus inermis* Hebard, 1923 - Male (Type) at ANSP.
5. *Eparchus panfilovi* Bey-Bienko, 1959 - Type Male at AZL.

*Distribution:* India (Uttarakhand, Kumaon Hills, 600 m; Meghalaya, 700-1500 m; West Bengal, Darjeeling Dist., 200-1800 m; Assam, 200 m; Sikkim, 2297 m; Arunachal Pradesh, 1267-2433 m and Manipur, 833-1333 m); Bhutan, Nepal, 1400-2600 m; Myanmar, 1300-1500 m; China (Yunnan, 1700-1800 m) and Thailand.

*Remarks:* It is a mountain dwelling species commonly occurring under stones, loose bark of logs and leaf axils.

Some variations are noted in the shape of sides of abdominal segments, in males, in being either convex or obtuse angled, slightly recurved, with a faint, oblique ridge on 7<sup>th</sup> to 9<sup>th</sup> segments. Ultimate tergite is with a faint tubercle laterally in posterior half or only with an oblique fold. Forceps are generally undulated with a faint ridge or short crest above at a little distance from base or simply depressed and horizontal.

### Genus *Cordax* Burr

*Cordax* Burr, 1910, *Fauna British India, Dermaptera*: 184 (Type species: *Forficula armata* Haan, 1842); Srivastava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 52.

*Eutimomena* Bey-Bienko, 1970, *Zool. Zh.*, **49**: 1819 (Type species: *Eutimomena paradoxa* Bey-Bienko, 1970); Srivastava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 52 (treated as a synonym of *Cordax* Burr, 1910).

Head smooth, convex. Eyes shorter than the post ocular length. Antennae multi-segmented, 1<sup>st</sup> segment, slightly longer than the distance between antennal bases, slightly expanded apically, flat above, sides slightly raised or forming a sort of ridge and ventrally convex, 3<sup>rd</sup> onwards segments long, cylindrical. Elytra and wings normal. Legs long, slender, fore femora swollen; 2<sup>nd</sup> lobed; hind tarsi with 1<sup>st</sup> segment slightly longer than the 3<sup>rd</sup>. Forceps, in males, stout, strongly incurved in apical half, internally armed with strong teeth.

*Type species:* *Forficula armata* Haan, 1842.

*Distribution:* India, Myanmar and Vietnam.

*Remarks:* This genus agrees with *Timomenus* Burr, in most characters except that 1<sup>st</sup> antennal segment depressed above with lateral margins raised and ventral side depressed.

It may be mentioned here that Burr (1910) although assigned *Forficula armata* Haan, 1842 as the type species he based the description and diagram on a specimen from Borneo, perhaps belonging to some other species.

It includes only the type species and all other species under the genus belong to *Paracordax* Srivastava.

### *Cordax armatus* (Haan)

(Figs. 498-501)

*Forficula armata* Haan, 1842, *Verh. nat. Ges. nederl. Overz. Bezitt.*, **1842**: 243, pl. 23, fig. 13 (in the text and legend to plate mentioned as fig. 12 - not correct) (Male; Sumatra: Batang, Singalang).



*Opisthocosmia armata*; Dohrn, 1865, *Stettin ent. Ztg.*, **26**: 81; Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**6**: 444; Bormans, 1894, *Annali. Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 394 (1 Male; 1 Female; Birmania); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 96; Burr, 1899, *Ann. Mag. nat. Hist.*, (4)**7**: 260; Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 304; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 100; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 39.

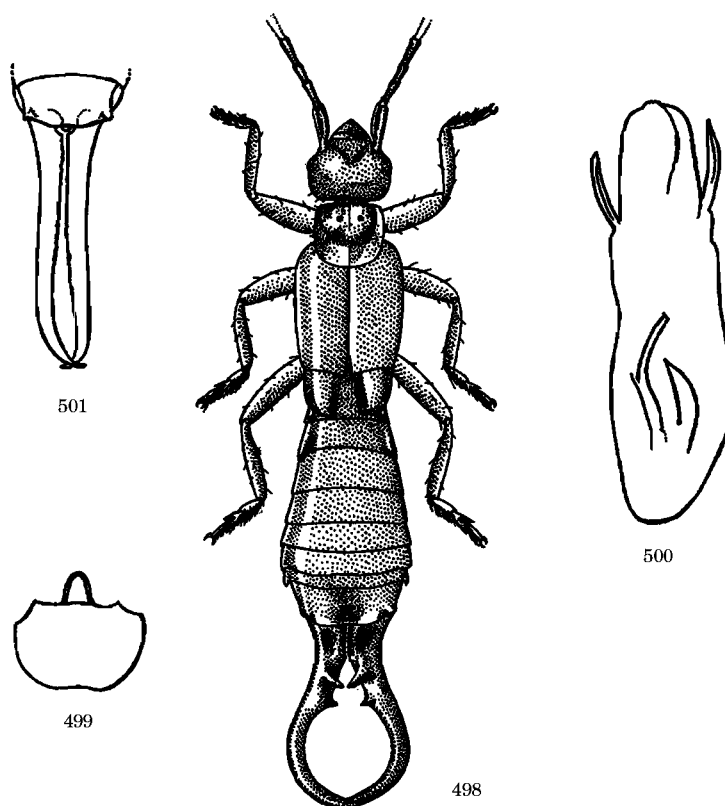
*Cordax armatus*; Burr, 1910, *Fauna British India, Dermaptera*: 185, pl. 7, fig. 85; Burr, 1911, *Genera Insect.*, **122**: 95; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 116 (1 Male; Sumatra: Batang, Singalang and 1 (ex)?; Padang and 1 Male; Sumatra: North Korintji Vally, 5000 m (perhaps alt. is not correctly recorded); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 74; Srivastava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 52, fig. 15-19 (Lactotype Male designated and figured); Srivastava, 1990, *Rec. zool. Surv. India*, **87**(1-4): 53 (Male; China: Lung-Tan-Shan, N. Kwangtung, 305-610 m); Srivastava, 2003, *Rec. zool. Surv., Occ. pap.*, **210**: 62 (Male, Female; Thailand: Chiang Mai, Fang, 1500 m; Laos, Vietnam; S. China, Fukien and Kwangtungn); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5675, 6003 (coloured photographs), 6099 (black and white photographs); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 50 (3 Males, 1 Female; Arunachal Pradesh (localities mentioned are not under Assam now), Chug, 2383-2433 m, Lungdor, 933 m and Meghalaya, Nangrong, 900 m); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 694; Steinmann, 1993, *Das Tierreich*, **108**: 347, figs 555 - 556.

*Eutimomina paradoxa* Bey-Bienko, 1970, *Zool. Zh.*, **49**: 1819, figs 8-9 (Male (Type); North Vietnam, Bakthai Province, Tamdao); Srivastava, 1982, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **84**: 103 (1 Male, 1 Female; Birmania, 900-1100 m, det. by Bormans as *Opisthocosmia armata* Haan); Srivastava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 52 (treated as a synonym of *Forficula armata* Haan, 1842).

Male: General colour brownish black; pronotum yellowish on lateral margin and posterior half; elytra somewhat yellowish brown; wings darker, with inner tip yellow and abdominal tergites light brown in middle.

Head about as long as broad, smooth, weakly convex in middle, sutures obsolete, hind margin straight. Eyes distinctly shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, about as long as the distance between antennal bases, gently expanded apically, dorsal margin depressed, lateral margins sharp, raised, ventral margin convex; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> slightly shorter than 4<sup>th</sup>; 5<sup>th</sup> longer than 4<sup>th</sup>, remaining gradually increasing in length distally, thinning, each slightly expanded apically. Pronotum about as long as broad, anterior margin straight, lateral margins straight or lightly convex, gently reflexed, hind angles and margin rounded, median sulcus faint, prozona convex and well differentiated from depressed metazona. Legs long, slender, fore-femora swollen, middle and hind ones compressed; hind tarsi with 1<sup>st</sup> segment slightly longer than the 3<sup>rd</sup>; 2<sup>nd</sup> lobed, hind margin emarginated in middle, covered with thick pubescence on underside. Prosternum longer than broad, narrowed posteriorly. Mesosternum about as long as broad, slightly narrowed posteriorly with hind margin rounded. Metasternum transverse, narrowed between hind coxae, with

its hind margin truncate. Elytra and wings well developed, smooth. Abdomen narrowed at base, gradually enlarging upto 9<sup>th</sup> tergite, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> prominent, but former slightly weaker, obscurely punctate, sides of segments from 6<sup>th</sup> to 9<sup>th</sup> with a posteriorly directed tubercle, but their size variable, on 6<sup>th</sup> weakest, on 7<sup>th</sup> strongest and of intermediate size on 8<sup>th</sup> and 9<sup>th</sup>. Penultimate sternite transverse, obscurely punctate, hind margin rounded with slight emargination in middle. Ultimate tergite transverse, sloping and contracted backwards, vertical smooth and faintly punctate stripes alternating, faintly tumid above the bases of forceps and depressed in the middle, hind margin in middle straight and lateral portion of hind margin oblique, postero-lateral angles projecting. Pygidium vertical, about as long as broad with a faint median groove in the middle. Forceps with branches stout, in basal one third straight, contiguous, depressed above with a faint median depression, afterwards compressed, gradually diverging for a short distance and strongly incurved in apical one third to one half, internally serrated in basal one third, armed with a vertical, triangular, postero-internally directed tooth at



**Figs. 498-501.** *Cordax armatus* (Haan), Male, 498. Dorsal view, 499. Penultimate sternite, 500. Genitalia; Female, 501. Ultimate tergite and forceps.

basal one third or middle and another internal tooth at middle or a little beyond, in profile branches a little raised in middle. Genitalia with parameres aciculate; virga short, thick and tubular.

Female: Agrees with males in most characters except that sides of abdominal segments convex, lacking tubercles; penultimate sternite with posterior margin obtuse in middle; ultimate tergite comparatively more strongly narrowed posteriorly and forceps simple and straight, slightly elongatedly incurved.

*Measurements:*

|                   | Male        | Female    |
|-------------------|-------------|-----------|
| Length of body    | 10.0 - 12.1 | 7.0 - 8.0 |
| Length of forceps | 5.0 - 8.1   | 4.0 - 5.0 |

*Types:*

1. *Opisthocosmia armata* Haan, 1842 - Lactotype Male at RNHL.

(Haan, 1842 did not mention the number of specimens. However, Boeseman, 1954 considers above specimen and 1 (ex)?, examined by Bormans as the Type of Haan).

2. *Eutimomena paradoxa* Bey-Bienko, 1970 - Type Male at AZL.

*Distribution:* India (Nagaland - ZSI; Arunachal Pradesh, 933-2267 m; Meghalaya, 900 m), Myanmar, 900 - 1100 m, Vietnam, Laos and China (Sichuan, Fukein and Kwangtung) and Indonesia (Sumatra).

In the collections of ZSI following specimen is represented which is so far not reported:

India: Naga Hills, 1 Male, ... v.1943 (ex FRI, Dehradun coll., RDP 284) (*N. L. Bor* coll.), determined by G. K. Srivastava..

*Remarks:* In general appearance this species resembles members of *Timomenus* Burr, but the shape of 1<sup>st</sup> antennal segment is similar to *Eudohrnia* Burr.

Genus: ***Paracordax*** Srivastava

*Paracordax* Srivastava, 1998, *Rec zool. Surv. India*, **96**(1-4) (1997): 179 (Type species: *Cordax politus* Burr, 1911).

Build slender, elongated. Head tumid, sutures obsolete or distinct; eyes distinct but shorter than the post-ocular length. Antennal segments long, cylindrical, 1<sup>st</sup> segment longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> slightly shorter than 4<sup>th</sup>, 5<sup>th</sup> a little longer than 4<sup>th</sup>, remaining gradually increasing in length distally. Pronotum longer than broad, anteriorly a little narrower than head, lateral margins straight, hind margin briefly or well rounded. Elytra and wings well

developed, former ecarinate along the costal margin. Legs long, slender, femora not thickened, tibiae compressed, tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed., covered with pubescence on underside. Abdomen elongated or spindle shaped, tergites convex; ultimate tergite narrowed and sloping backwards. Forceps, in males, long, slender, remote or contiguous at base, internal margin either with several minute or one or two sharp teeth. Forceps, in males, simple and straight.

*Type species: Opisthocosmis politus* Burr, 1911.

*Distribution:* Oriental, Ethiopian and Australian (Papua, New Guinea) Regions.

*Remarks:* Altogether five species, namely, *P. ceylonicus* (Motschulsky), *P. politus* (Burr), *P. vandermeermohri* (Menozzi), *P. julkai* Srivastava and *P. cornutus* Srivastava are known from the Oriental Region. Of these four are known from the area under study.

All the species, except *Forficula armata* Haan, 1842, earlier placed under *Cordax* Burr, are now included under this genus.

Taxonomic status of *P. ceylonicus* (Motschulsky, 1863) is not satisfactorily established. It was originally described on a female. Dohrn (1865) described male having the branches of forceps at base contiguous, afterwards broadly arcuate, touching each other at apex. Sakai (1994: 6104) has given a figure of male from British Museum of Natural History, London which has identical forceps. Besides one male from Sri Lanka, determined by Brindle (1971) was examined which possesses branches of forceps contiguous all along the length.

#### Key to the species (based on males)

- 1(4). Forceps remote at base; pygidium distinct, vertical, narrowed with hind margin emarginate
- 2(3). Penultimate sternite with hind margin truncate in middle; forceps with branches almost straight, slightly undulated in middle, attenuated apically with tip gently hooked, internal margin in basal two thirds differentiated into dorsal and ventral borders with several small and large teeth ..... *P. politus* (Burr)
- 3(2). Penultimate sternite with hind margin in middle rounded; forceps with branches broadly arched enclosing an elongated oval space, afterwards contiguous, tips gently hooked, internally at base with fine serrations, at basal one third with a vertical, triangular tooth, directed internally and another blunt tooth ventrally at apical one third ..... *P. julkai* Srivastava
- 4(1). Forceps with branches subcontiguous or contiguous at base for a short distance; pygidium short, not as above
- 5(6). Forceps with branches contiguous at base for a short distance, afterwards, slightly

arcuate or contiguous all along its length, almost straight except slightly incurved at apical one third, tapering apically, tips gently hooked and pointed .....  
 .....*P. ceylonicus* (Motschulsky)

- 6(5). Forceps with branches subcontiguous and feebly dilated at base for a short distance, afterwards elongatedly incurved, internal margin with an obscure tooth or convexity at about apical one third, tapering apically, tips hooked and pointed .....  
*P. vadermeermohri* (Menozzi)

***Paracordax politus* (Burr)**

(Figs. 502-506)

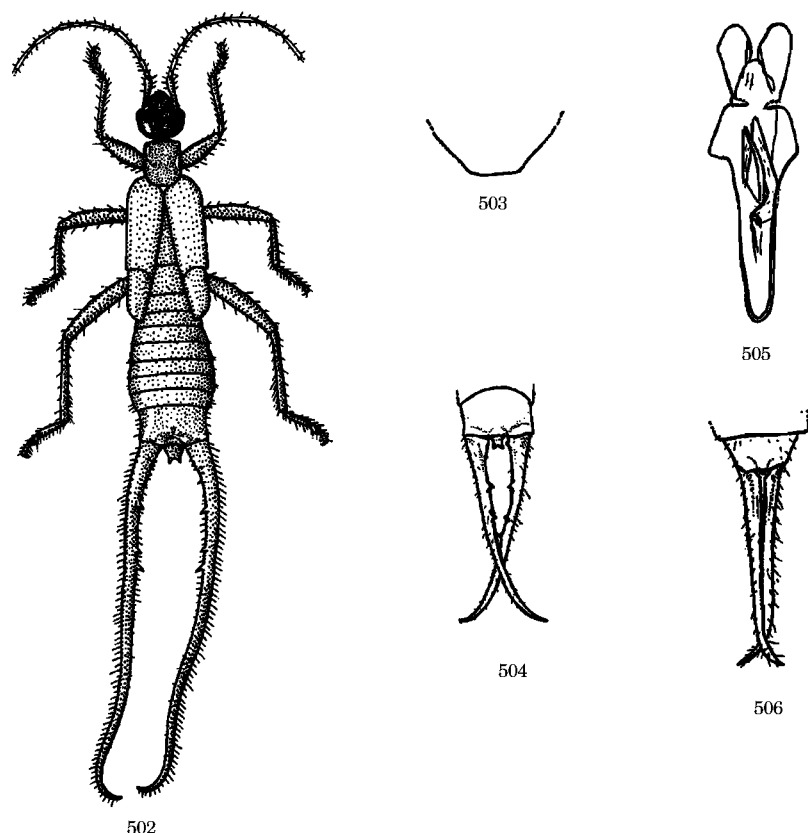
*Cordax politus* Burr, 1911, *J. Asiat. Soc. Beng.* (N.S.), **7**(11): 789 (Male; N. E. Burma, Chinese Frontier, Take-Pun Mountain, 1219 - 1524 m); Hincks, 1947, *Ark. Zool.*, **39A**(1): 41 (2 Females, N. E. Burma, Kambaiti, 2000 m); Srivastava, 1972, *Rec. zool. Surv. India*, **66**(1-4): 141 (1 Female; India: Arunachal Pradesh); Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5704, 6106 (black and white photographs of Type Male and 1 Female); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9286, pl. 1, fig. 3 (Males, Females; India: Arunachal Pradesh (localities not under Assam now), Phutang, 2267 m; Manipur, Sinda, 1333 m, Longbi Khulen, 1500 m, Marou, 1333m and Sikkim, Ramtang, 1927 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 94 (India: Arunachal Pradesh (localities mentioned now under Assam), 1 Male, Phuntang, 2267 m, Manipur, 1 Male, Sinda, 1333 m, 1 Male, Longbi Khulen, 1500 m, 1 Male; Marou, 1333 m, 1 Male, 1 Female; Sikkim, Ramtang, 1827 m); Brindle, 1987, *Courier Forsch.-Inst. Senckenberg.*, **93**: 339 (1 Female; Nepal, 2250 - 2500 m); Srivastava, 1993, *Rec. zool. Surv. India*, **89**(1-4): (1991): 68, fig. 47; Srivastava, 1998, *Rec. zool. Surv. India*, **96**(1-4): 180, figs 1-2; Srivastava, 2003, *Fauna of Sikkim, State Fauna Series*, **9**: 216, fig. 57 (India: Sikkim, West Bengal (Darjeeling Dist.), Manipur and Arunachal Pradesh).

Male: General colour shining chocolate brown with metallic sheen on certain parts; elytra and wings uniformly coloured or former with shoulder yellow and latter with a yellow rounded spot; tibiae distally and tarsi yellowish brown. Body thickly and finely pubescent, especially forceps

Head longer than broad, sutures distinct and deep, frons and occiput convex, hind margin almost straight. Eyes shorter than the post-ocular length. Antennae 12-segmented or more (since the apical ones generally tend to break off easily on slightest jerck), 1<sup>st</sup> longer than the distance between antennal bases; slightly expanded apically; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal in length, 5<sup>th</sup> onwards segments gradually increasing in length and thinning. Pronotum longer than broad, anterior margin straight, narrower than head anteriorly, lateral margins straight, gently reflexed, hind angles and margin rounded, median sulcus faint in anterior half only, prozona convex and metazona weakly depressed. Elytra and wings well developed, smooth. Legs long, slender, hind tarsi with 1<sup>st</sup> segment slightly longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed, covered with thick pubescence on underside. Abdomen elongated, gradually enlarging posteriorly upto 9<sup>th</sup> tergite, convex, micro-reticulated, lateral folds

on 3<sup>rd</sup> and 4<sup>th</sup> weak. Penultimate sternite transverse, narrowed posteriorly with hind margin in middle truncate. Ultimate tergite transverse, smooth, disc weakly convex, posteriorly above the roots of forceps feebly tumid and area in middle with a slight depression, hind margin trisinate, lateral portion of hind margin oblique, postero-lateral angles a little projecting. Pygidium subvertical, longer than broad, narrowed apically, hind margin incised, postero-lateral angles pointed. Forceps with branches remote at base, long, cylindrical, almost straight, tapering apically, incurved in apical one third or one fourth, apices gently hooked and pointed, internal margin differentiated into dorsal and ventral borders, armed with small and several sharp teeth. Genitalia with parameres expanded apically, tip rounded; virga stout, tubular and stout.

Female: Agress with males in most characters except that the occiput and eyes less prominent; pygidium short, obtuse; penultimate sternite broadly rounded posteriorly and forceps simple, straight, contiguous throughout, inner margin finely serrated.



**Figs. 502-506.** *Paracordax politus* (Burr), Male, 502. Dorsal view, 503. Penultimate sternite, 504. Ultimate tergite and forceps, 505. Genitalia; Female, 506. Ultimate tergite and forceps (figs. 502 ex Male from India, Arunachal Pradesh and fig. 505 ex specimen from India, W.B., Darjeeling dist.).

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 8.5 - 12.5 | 9.0 - 10.0 |
| Length of forceps | 5.0 - 12.4 | 5.0 - 6.1  |

*Type:* Type Male at BMNH.

*Distribution:* India: Arunachal Pradesh, (Kameng Dist., 2436 m); West Bengal (Darjeeling Dist.), Manipur, 1333- 1500 m; and Sikkim, 1927), Myanmar NE, Chinese Frontier, Take-Pum Mountain, 1219 - 1524 m and Kambaiti, 200 m).

In the collections of the ZSI it is represented by following specimens, det. by G. K. Srivastava, not reported earlier:

India: Arunachal Pradesh, Kameng Dist., Kalaktang Village, 1 Male, 16.iii. 1961 (*K. C. Jayaramakrishnan* coll.) and West Bengal, Darjeeling Dist, Neora Vally, 3 Males, 3 Females and 5 nymphs, 29.xi. 1980 (*R. K. Kacker* coll.).

*Remarks:* The male specimen from India: Arunachal Pradesh (fig. 502) differs from the original description by its slightly larger size (body - 12.5; forceps 12.4 mm) and unicolourous elytra and wings.

This species comes close to *P. ceylonicus* (Motschulsky) but differs by the shape of pygidium and forceps, in males.

***Paracordax julkai* Srivastava**

(Figs. 507-509)

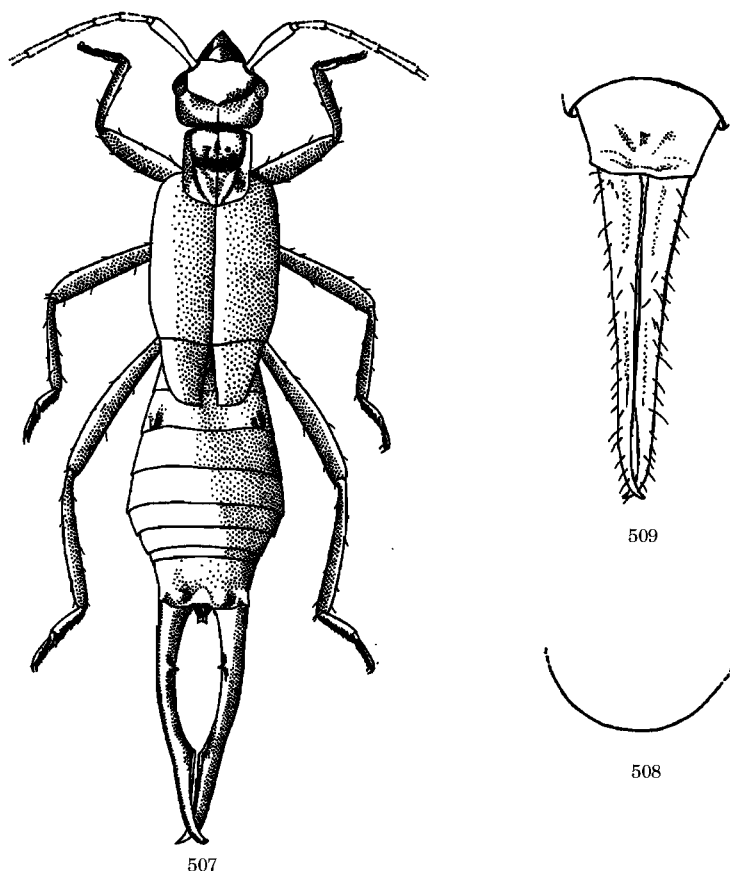
*Paracordax julkai* Srivastava, 1998, *Rec. zool. Surv. India*, **96**(1-4) (1997): 180, figs 3-6 (Holotype Male, Paratype 1 Female; India: Arunachal Pradesh, Subansiri Dist., Galeusiank, 1350 m; Paratypes 2 Females; Damia, 1100 m. and Paratype 1 Female; Taksing, Surita Top, 3200 m).

Male: General colour shining brownish black with oily luster, sides of pronotum yellowish. Build slender.

Head about as long as broad, smooth, frons and occiput convex, sutures fine but distinct, hind margin scarcely emarginate in middle, postero-lateral angles rounded. Eyes distinctly shorter than the post-ocular length. Antennae (in the only known male specimen, Holotype, only basal segment present) with basal segment long, slightly expanded apically, longer than the distance between antennal bases. Pronotum longer than broad, smooth, anteriorly narrower than head, margin straight, lateral margins straight, parallel, gently reflexed, hind margin rounded, median sulcus distinct, prozona tumid and well differentiated from depressed metozona. Legs long, slender, femora and tibiae compressed; hind tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed, covered with pubescence on underside. Elytra and wings well developed, coriaceous, former obscurely reticulated with hind margin oblique. Penultimate sternite transverse, hind margin rounded. Ultimate tergite transverse, depressed,

narrowed and sloping backwards, smooth, feebly tumid above the bases of forceps and depressed in the middle, hind margin trisinate, lateral portion of the hind margin oblique and postero-lateral angles slightly prominent. Pygidium vertical, broader at base, narrowed apically, hind margin feebly concave. Forceps with long and short pubescence, branches cylindrical, remote at base, gently incurving enclosing an elongated space in basal two thirds, afterwards contiguous, straight, apices attenuated and gently hooked, internal margin with fine serrations at base, a small, vertical, triangular tooth above, directed inwards, close to inner margin at basal one third and another smaller, blunt, ventral tooth at apical one third. Genitalia with parameres longer than broad, narrowed at base, tip rounded; virga short, tubular and thick.

Female: Agrees with males in most characters except that head orange; legs occasionally clear yellow; long pubescence on sides of abdominal segments and more pronounced on forceps; antennae with maximum segments remaining 9, long, thin,



**Figs. 507-509.** *Paracordax julkai* Srivastava, Holotype Male, 507. Dorsal view, 508. Posterior margin of penultimate sternite; Paratype Female, 509. Ultimate tergite and forceps.



cylindrical, 3<sup>rd</sup> slightly shorter than 4<sup>th</sup>, narrowed basally; 4<sup>th</sup> thin, feebly narrowed basally; 5<sup>th</sup> onwards gradually increasing in length distally and thinning; penultimate sternite obtusely rounded posteriorly; pygidium short, indistinct from above and forceps simple, contiguous and straight.

*Measurements:* (in mm)

|                   | Male | Female    |
|-------------------|------|-----------|
| Length of body    | 9.2  | 8.7 - 9.1 |
| Length of forceps | 3.9  | 3.1 - 4.6 |

*Types:* Holotype Male, Paratypes 4 Females at ZSI.

*Distribution:* India: Arunachal Pradesh, Subansiri Dist., Galeusiank, 1350 m, Damia, 1100 m and Taksing, Surita Top, 3200 m

*Remarks:* This species comes close to *P. politus* (Burr) in having long, cylindrical body; long pubescence on the sides of abdomen and forceps and somewhat similar pygidium, in males, but differs by the shape of penultimate sternite with posterior margin rounded (*vs* truncate in *P. politus*); pygidium more strongly narrowed posteriorly, hind margin feebly emarginate (*vs* broader, hind margin distinctly emarginated and postero-lateral angles produced into minute points) and forceps with branches long, cylindrical, broadly incurved in basal two thirds, afterwards contiguous and straight, inner margin with fine dentation at base, at basal one third with a dorsal, triangular, inwardly directed tooth and a ventral obtuse tooth at apical one third (*vs* branches almost straight, at about middle undulated, gently incurved in apical one third, inner margin dorsally and ventrally with several small or large, triangular teeth in basal two thirds).

***Paracordax ceylonicus* (Motschulsky)**

(Figs. 510-513)

*Labia ceylonica* Motschulsky, 1863, *Bull. Soc. Imp. Moscou*, **36**: 4 (Female; Nuwara-Eliya Mountains, Ceylon).

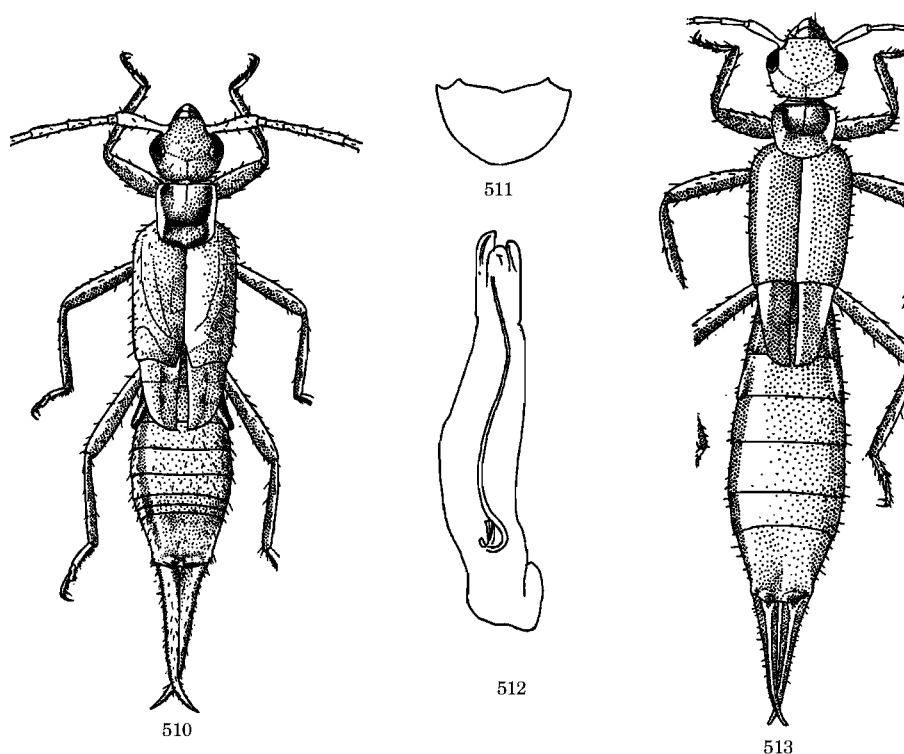
*Opisthocosmia ceylonica*; Dohrn, 1865, *Stettin ent. Ztg.*, **26**: 83; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 93; Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**: 335 Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 305; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 100; Kirby, 1904, *Syn. Cat., Orthoptera*, **1**: 38.

*Cordax ceylonicus*; Burr, 1910, *Fauna British India, Dermaptera*: 186, pl. 7, fig. 67; Burr, 1911, *Genera Insect.*, **122**: 95; Burr, 1912, *Annl. naturf. Mus. Wien*, **26**: 107 (4 Females; Ceylon: Peradeniya); Brindle, 1971, *Ent. scand. Suppl.*, **1**: 232 (1 Male, several Females; Sri Lanka); Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 83; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5691, 6104 (black and white photographs of Male, Female); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 74; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 696; Steinmann, 1993, *Das Tierreich*, **108**: 353, figs 561-562.

*Paracordax ceylonicus*; Srivastava, 1998, *Rec. zool. Surv. India*, **96**(1-4) (1997): 180, figs 8-9.

Male: General colour brownish yellow but darker on abdomen and ultimate tergite; elytra uniform brown; wings with a faint yellow spot at base externally and at tip and legs yellowish.

Head longer than broad, frons and occiput convex, sutures fine but distinct, hind margin emarginated in middle, postero-lateral angles rounded. Eyes prominent, slightly longer than the post-ocular length. Antennae 12-segmented or more (since apical ones generally broken off), segments long, cylindrical, 1<sup>st</sup> long, slightly expanded apically, longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> a trifle shorter than 4<sup>th</sup>; 5<sup>th</sup> onwards segments gradually increasing in length and thinning, each slightly expanded apically. Pronotum about as long as broad, anteriorly slightly narrower than head, feebly contracted posteriorly, lateral margins straight, gently reflexed, hind margin obtusely rounded, median sulcus distinct, prozona convex, well differentiated from depressed metazona. Elytra and wings well developed, smooth, hind margin of former slightly concave and oblique. Legs long, slender, femora and tibiae compressed; hind tarsi with 1<sup>st</sup> segment almost equal to 3<sup>rd</sup> in length; 2<sup>nd</sup> lobed, covered with thick pubescence on underside. Abdomen elongated, spindle shaped, tergites



**Figs. 510-513.** *Paracordax ceylonicus*(Motschulsky), Male, 510. Dorsal view, 511. Penultimate sternite, 512. Genitalia; Female, 513. Ultimate tergite and forceps.

convex, sparsely punctulate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites prominent but former slightly weaker, sides of segments convex. Penultimate sternite transverse, hind margin rounded with an obtuse projection in middle. Ultimate tergite transverse, strongly contracted and sloping backwards, above the bases of forceps with tumid elevations and in between with a depression, hind margin in middle emarginate, lateral portion of hind margin oblique. Forceps with branches contiguous at base for a short distance, afterwards slightly incurved or almost straight, contiguous all along its length, tapering apically, slightly incurved in apical one third, apices gently hooked, tip pointed, internal margin finely serrated. Genitalia four to four and a half times longer than broad, apical external angle convex, tip pointed inwards; virga long, tubular, chitinous, slightly incurved at base.

Female: Agrees with males in most characters except that general body colour sometimes slightly darker; pronotum a trifle broader than long, hind margin rounded; penultimate sternite obtusely rounded posteriorly; ultimate tergite more strongly narrowed posteriorly and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 6.6 - 8.0 | 8.0 - 9.0 |
| Length of forceps | 2.2 - 5.0 | 2.5 - 2.7 |

*Type:* Type repository not known.

*Distribution:* Sri Lanka.

*Remarks:* The above description is based upon 1 male, 1 female from Sri Lanka determined by Brindle (1971), received from ZILS

***Paracordax vandermeermohri* (Menozzi)**

(Figs. 514-517)

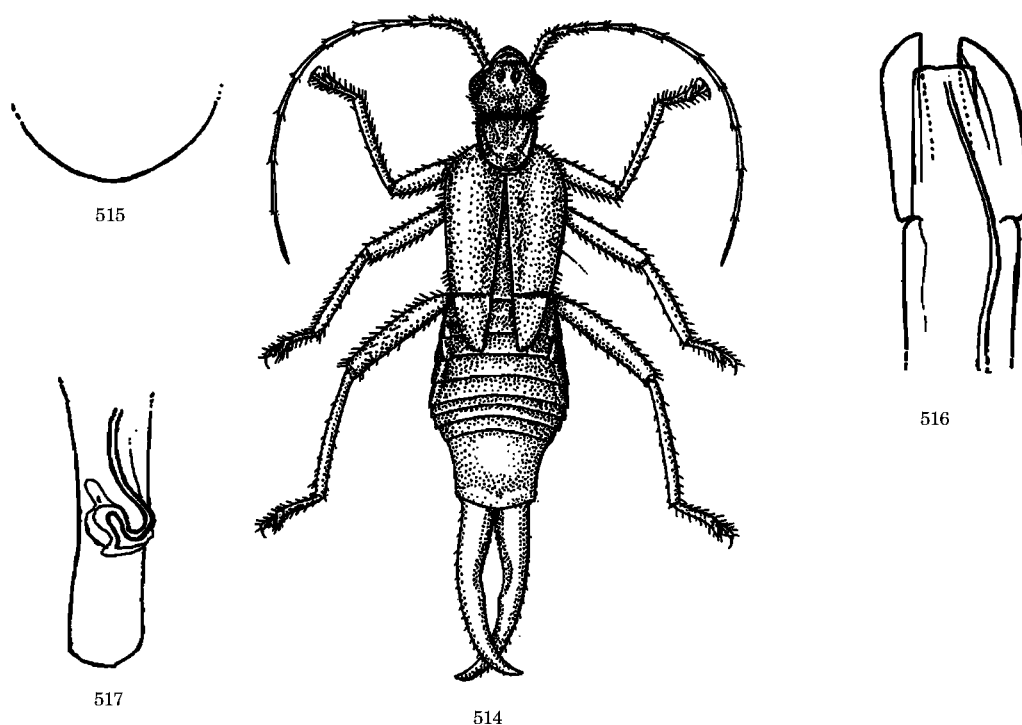
*Cordax vandermeermohri* Menozzi, 1933, *Misc. Zool., Sumatra*, **77**: 3, fig. 2 (Male; Sumatra); Sakai, 1973, *Dermapterorum Catalogus, Praeliminaris*, **7**: 84; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 48; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 7507, 6005 (coloured photographs of Male, Female), 6107-6108 (diagrams and black and white photographs of male and female); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 74; Srivastava, 1978, *Eos, Madr.*, **52**: 304 (Male, Female; Philippine Isl; Palawan and Mindanao); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 696; Steinmann, 1993, *Das Tierreich*, **108**: 352, figs. 563-565.

*Paracordax vandermeermohri*; Srivastava, 1998, *Rec. zool. Surv. India*, **96**(1-4) (1997): 180, fig. 10.

Male: General colour blackish brown; a few anteapical antennal segments yellowish white and wings at base externally with a yellow spot and tip yellow.

Head slightly longer than broad, frons and occiput convex, former with a pair of faint

depressions in middle, sutures faint, hind margin emarginated, postero-lateral angles rounded. Eyes prominent, distinctly longer than the post-ocular length. Antennae 14-segmented (or more since apical ones generally broken off), segments slender, 1<sup>st</sup> stout, gently expanded apically, slightly longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> a trifle longer than 4<sup>th</sup>; 4<sup>th</sup> slightly stouter than preceding, 5<sup>th</sup> onwards gradually increasing in length and thinning, a few apical ones thin and rod shaped. Pronotum longer than broad, anteriorly about as broad as head, antero-lateral angles a little projecting, slightly contracted posteriorly, hind angles along with margin rounded, median sulcus distinct, prozona convex, metazona depressed. Legs long, slender, femora and tibiae compressed, hind tarsi with 1<sup>st</sup> segment distinctly longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed, covered with golden pubescence on underside. Elytra and wings well developed, coriaceous, former with humeral angles prominent. Abdomen spindle shaped, tergites convex, smooth, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> strongly marked but former comparatively weaker, sides of segments convex, rugose. Penultimate sternite with hind margin broadly rounded; manubrium about three times longer than broad, narrowed anteriorly. Pygidium indistinct, not visible from above.



**Figs. 514-517.** *Paracordax vandermeermohri* (Menozzi), Male, 514. Dorsal view, 515. Posterior margin of penultimate sternite, 516. Anterior portion of genitalia, 517. Posterior portion of genitalia.

Ultimate tergite longer than broad, smooth, declivitous and contracted posteriorly, above the bases of forceps with broad low folds and depressed in the middle, hind margin incrassate, convex in middle, lateral portion of hind margin above the bases of forceps oblique. Forceps with branches stout, depressed, tapering apically, almost straight in basal half, afterwards incurved, apices gently hooked and pointed, internal margin finely serrated, at base contiguous, enclosing an elongated pear shaped space, at about middle or a little beyond with a convexity or weak tooth. Genitalia with parameres broad, three and a half times longer than broad, apical external angle convex, tip pointed inwards; virga tubular, chitinous, at base sigmoid.

Female: Agrees with males in most characters except that penultimate sternite obtuse in middle posteriorly; ultimate tergite more strongly narrowed posteriorly and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 13.0 - 14.2 | 10.3 - 11.7 |
| Length of forceps | 4.0- 5.0    | 3.7 - 4.6   |

*Type:* Type Male at MSNG.

*Distribution:* India; Indonesia (Sumatra) and Philippine Isl (Palawan and Mindanao).

This species is represented in the collections of the Zoological Survey of India, Kolkata by following specimen, not so far reported:

India: Arunachal Pradesh, Tirap Dist., Changlong, 540 m, at light, 1 Male (*G.S. Arora* coll.) determined by Dr. G. K. Srivastava.

*Remarks:* It may be mentioned that amongst the coloured photographs of *Eparchus simplex* (Bormans, 1894) by Sakai (1994, pp. 5995 and 6000), a few photographs belong to this species which are from Myanmar, Indonesia, China and Philippine Isls.

#### Subfamily ALLODAHLIINAE

*Allodahliinae* Verhoeff, 1902, *Zool. Anz.*, **25**(665): 194 (type genus: *Allodahlia* Verhoeff, 1902); Steinmann, 1975, *Acta. zool. hung.*, **21**: 218; Steinmann, 1983, *Reichenbachia*, **21**(7): 54; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 737; Steinmann, 1993, *Das Tierreich*, **108**: 365.

This subfamily is characterized by shape of mesosternum broader than long; elytra with a sharp ridge along the costal margin and genitalis with a median proparamere.

*Type genus:* *Allodahlia* Verhoeff, 1902.

*Distribution:* Oriental Region.

*Remarks:* At present only two genera, namely, *Allodahlia* Verhoeff and *Brindeliana* Steinmann are included under the subfamily.

From the area under study only former is reported by eight species of which the status of *A. guptae* Kapoor, 1968, is doubtful. Beside *Allodahlia martensi* Brindle, 1974, also from Nepal is different from other species of the genus by its abbreviated elytra; concealed wings and transverse pygidium with its apical margin turned upwards, in males.

#### Genus: *Allodahlia* Verhoeff

*Allodahlia* Verhoeff, 1902, *Zool. Anz.*, **25**(665): 194 (Type species: *Forficula brachynota* Haan, 1842 = *Forficula scabriuscula* Serville, 1839) - designated by Burr, 1911; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 95; Burr, 1910, *Fauna British India, Dermaptera*: 194; Burr, 1911, *Genera Insect.*, **122**: 71; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 27; Brindle, 1972, *Entomologist's mon. Mag.*, **106**: 23; Sakai, 1973, *Dermapterorum Catalogus, Praeliminaris*, **7**: 178; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 54; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7389; Steinmann, 1975, *Folia ent. hung.*, **28**(1): 164; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 738; Steinmann, 1993, *Das Tierreich*, **108**: 371; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 52; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 428; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 339.

Head with sutures distinct; antennae 12 or 13 segmented, 3<sup>rd</sup> and 4<sup>th</sup> subequal, 5<sup>th</sup> longer than the preceding two, remaining gradually increasing in length distally. Pronotum transverse; elytra well developed or abbreviated, scabrous or punctate, costal margin with a sharp ridge; wings projecting well beyond elytra, of same texture. Legs long, slender, tarsi with 2<sup>nd</sup> segment lobed. Abdomen generally spindle shaped, punctate; ultimate tergite, in males, transverse, punctate, postero-lateral angles generally projecting; in females, slightly narrowed apically. Pygidium, in males, transverse, often triangular, drawn out medially into a sharp spine; in females, short, tumid, rounded or conical. Forceps, in males, remote at base, branches often undulated, internal margin armed with sharp teeth; in females, simple, contiguous and straight.

*Type species: Forficula brachynota* Haan, 1842 (Syn. of *Forficula scabriuscula* Serville, 1839).

*Distribution:* Oriental Region.

#### Key to the species (based on males)

- 1(2). Elytra abbreviated; wings wanting; pygidium transverse, in posterior half turned upwards, with posterior margin rounded ..... *A. martensi* Brindle
- 2(1). Elytra and wings well developed; pygidium either transverse or triangular, posteriorly produced into a median point or long spine
- 3(4). Wings at base with a yellow spot; elytra and abdomen finely punctulate ..... *A. ahrimanes* (Burr)
- 4(3). Wings unicolorous; elytra and abdomen scabrous or rugosely punctate
- 5(6). Pronotum crescent shaped, antero-lateral angles produced into a sharp point; elytra and abdomen tuberculated ..... *A. scabriuscula* (Serville)

- 6(5). Pronotum square shaped, antero-lateral angles weak; elytra and abdomen punctate, not as above
- 7(8). Pygidium produced into a long spine, a little over twice longer than the basal width of pygidium, tip obtuse, in profile undulated in middle; forceps with branches strongly incurved in basal two thirds, afterwards, straight and subcontiguous ..  
..... *A. julkai* Srivastava
- 8(7). Pygidium transverse at base or triangular with a small median spine or fold; forceps with branches broadly incurved in basal one third to one half, afterwards converging to pointed apices
- 9(12). Pygidium triangular with a small, pointed median spine; forceps stout
- 10(11). Forceps with branches stout, strongly undulated with a pair of sharp teeth internally.....  
*A. macropyga* (Westwood)
- 11(10). Forceps with branches slender, horizontal, either with a sharp or sometimes with a trace of another tooth, internally ..... *A. dineshi* Gangola
- 12(9). Pygidium transverse, postero-laterally with a minute point and medially with a short, pointed lobe; forceps cylindrical ..... *A. coriacea* (Bormans)

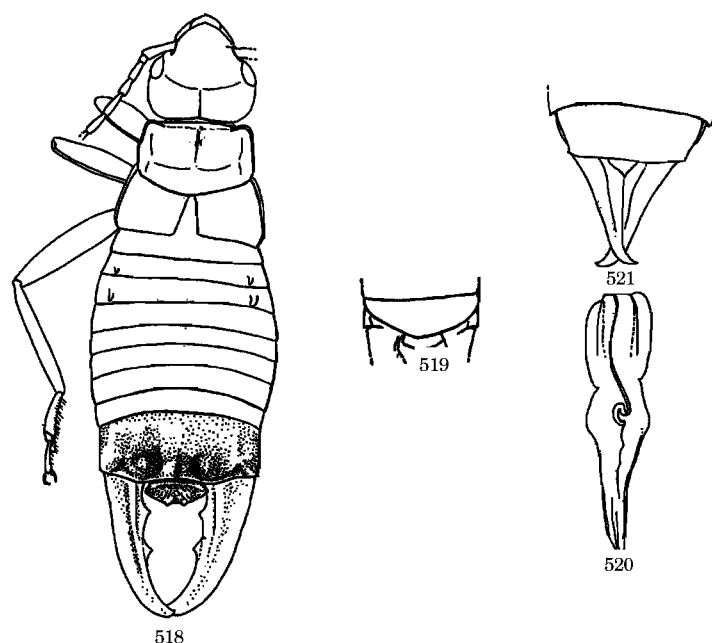
***Allodahlia martensi* Brindle**

(Figs. 518-521)

*Allodahlia martensi* Brindle, 1974, *Senckenbergiana biol.*, **55**(1/3): 154, figs 13 - 18 (Holotype Male, Allotype Female, Paratypes 6 Males, 5 Females; Nepal, 2650 - 4100 m); Srivastava, 1984, *Proc. Wkshp. High Alt. Ent. & Wildl. Ecol. zool. Surv. India* (1983): 115, figs 6A - C; Sakai, 1995, *Dermatopterorum Catalogus*, **28**: 7469, 7130 (coloured photographs of Paratypes 1 Male, 2 Females), 7204 (black and white diagrams); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 741; Steinmann, 1993, *Das Tierreich*, **108**: 382, figs 610 - 612.

Male: General colour blackish brown; head orange and legs light brownish black.

Head transverse, sparsely punctate, frons tumid, micro-reticulated, sutures fine but distinct, hind margin lightly emarginated. Eyes about half as long as the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> slightly shorter than preceding; 5<sup>th</sup> almost equal to 3<sup>rd</sup>, remaining gradually increasing in length but 7<sup>th</sup> onwards thinning, pubescent except for 1<sup>st</sup> and 2<sup>nd</sup>. Pronotum strongly transverse, with shallow and sparse punctures, anterior margin lightly concave and angles prominent, sides straight, gently reflexed, slightly widened posteriorly, median sulcus distinct in anterior half only, prozona and metazona weakly raised. Legs long, slender, hind tarsi with 1<sup>st</sup> segment slightly longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> lobed, covered on underside with golden yellow pubescence. Elytra abbreviated, rugose, with a raised keel along the costal margin, hind margin feebly oblique. Wings



**Figs. 518-521.** *Allodahlia martensi* Brindle, Paratype Male, 518. Dorsal view, 519. Penultimate sternite with base of forceps, 520. Genitalia; Paratype Female, 521. Ultimate tergite and forceps.

concealed. Abdomen elongated, enlarged in middle, tergites convex, punctulate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> distinct, former slightly weaker, sides of segments convex of same texture. Penultimate sternite transverse, broadly rounded posteriorly, obtuse in middle. Ultimate tergite transverse, disc weakly depressed, sides straight, above the bases of forceps with low folds and depressed in middle, hind margin trisinate, lateral portion of hind margin feebly oblique. Pygidium broad, turned upwards, narrowed at extreme base, afterwards expanding upto middle, thence contracted apically, at extreme apex with a concavity and on either side with minute tubercle. Forceps with branches stout, depressed, gradually tapering and incurving apically, internally with a vertical, internally directed tooth at basal one third, followed by another ventro-posteriorly directed tooth at middle. Genitalia with parameres three times longer than broad; virga tubular with basal vesicle.

Female: Agrees with males in most characters except that penultimate sternite narrowed posteriorly; ultimate tergite transverse but narrowed posteriorly and folds above the bases of forceps weaker; pygidium triangular and forceps with branches simple, straight and contiguous.

*Measurements:* (in mm)

|                   | Male        | Female     |
|-------------------|-------------|------------|
| Length of body    | 10.0 - 11.0 | 10.0- 11.0 |
| Length of forceps | 3.0 - 4.0   | 1.5        |



*Types:* Holotype Male, Allotype Female and Paratypes 4 Males, 3 Females at SMF; Paratypes 1 Male, 1 Female at BMNH and Paratypes 1 Male, 1 Female at MM.

*Distribution:* Nepal, 2650 - 4100 m.

*Remarks:* Through the courtesy of Dr. J. Martins, Senckenberg Museum, Frankfurt Museum, Frankfurt a M, Germany, Paratypes 1 Male, 1 Female; Nepal, Thaksand, 3150 m, were examined. This species comes close to *Brindleiana atlas* Steinmann, from Myanmar in having stout build and abbreviated elytra but differs by the shape of male pygidium, forceps and genitalia. Further studies are required for its inclusion under *Brindleiana* Steinmann, with evaluation for the validity of the latter.

***Allodahlia ahrimanes* (Burr)**

(Figs. 522-525)

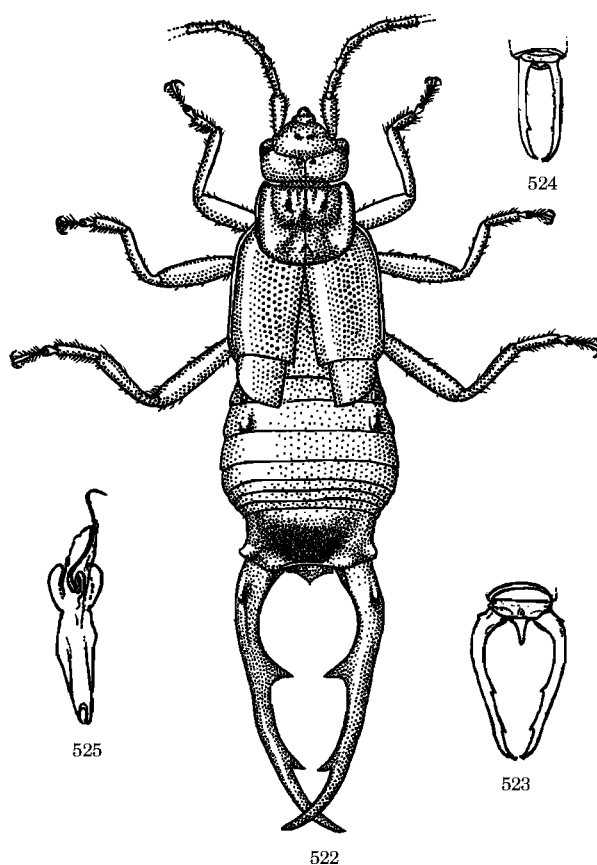
*Anechura ahrimanes* Burr, 1900, *Ann. Mag. nat. Hist.*, (7)6: 179, pl. 4, fig. 5 (2 Males; North India: Sikkim); Kirby, 1904, *Syn. Cat. Orthoptera*, 1: 41.

*Allodahlia ahrimanes*; Burr, 1910, *Fauna British India, Dermaptera*: 154, pl. 10, fig. 98 (India: Sikkim; West Bengal, Darjeeling Dist., Kurseong); Burr, 1911, *Genera Insect.*, 122: 72; Burr, 1914, *Rec. zool. Surv. India*, 10: 292 (1 Male; India: West Bengal, Darjeeling Dist, Passumbing, 1433 m); Hincks, 1947, *Ark. Zool.*, 39A (1): 26 (1 Female; N. E. Burma, Kambaiti, 2134 m); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, 16(1) (1967): 28; Popham and Brindle, 1968, *Entomologist*, 101: 199; Brindle, 1972, *Entomologist's mon. Mag.*, 108: 29 (1 Male (Type); Himalaya Sikkim and 1 Male Paratype; Sikkim; actually both are Syntypes); Sakai, 1973, *Dermapterorum Catalogus, Praeliminaris*, 7: 186; Sakai, 1982, *Bull. Daito Bunka Univ.*, 20: 54; Sakai, 1995, *Dermapterorum Catalogus*, 28: 7451, 7127 (coloured photographs of 2 males, Ind. Mus., and 1 Female, Genève), 7129 (1 Male, 1 Female; Burma: Nam Tanai, 1067 m, 25.xi. 1931, Lord Cranbook leg. and det. by G. K. Srivastava), 7199-7200 (black and white photographs); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, 2: 58; Srivastava, 1993, *Rec. zool. Surv. India*, 91 (1-2) (1992): 82, figs 61 - 66 (6 Males, 2 Females; India: Arunachal Pradesh, Tirap Dist, Gandhigram ca 135 km from Miao); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* 3, Pt. 4: 429, figs. 194-196 (Male, Female; India (Darjeeling Dist.) and Myanmar); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 738; Steinmann, 1993, *Das Tierreich*, 108: 375, figs 597-598.

Male: General colour yellowish with shades of black on certain body parts; head red or reddish black; elytra reddish, shaded with black posteriorly; wings black with a yellow rounded spot basally; abdomen anteriorly and pygidium black.

Head transverse, frons and occiput convex, sutures distinct, hind margin sinuate in middle. Eyes shorter than the post-ocular length. Antennae 12-segmented, long, slender, 1<sup>st</sup> stout, slightly expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> a little shorter than preceding, somewhat oval; 5<sup>th</sup> equal to 3<sup>rd</sup>, but thinner, narrowed basally, remaining gradually increasing in length and thinning, each gently narrowed at base. Pronotum weakly

transverse, finely punctulate, anterior margin straight, angles weak, lateral margins slightly convex, gently reflexed, hind margin briefly rounded, median sulcus distinct, prozona convex with a pair of small depressions on either side of middle line, metazona depressed. Elytra ample, punctulate, costal margin with a raised keel, hind margin truncate, faintly oblique. Wings smooth, projecting well beyond elytra. Abdomen enlarged posteriorly, tergites convex, punctulate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former slightly weaker. Penultimate sternite rounded posteriorly with a convexity in middle. Ultimate tergite transverse, lateral margin straight or lightly concave, posteriorly above the bases of forceps with low folds and in middle with a broad depression, hind margin trisinate, lateral portion of hind margin feebly oblique, postero-lateral angles projecting. Pygidium triangular, postero-laterally with small points and median spine short or long, tip pointed. Forceps with branches undulated or horizontal, stout, remote at base, triangular, broadly incurved, tapering apically, apices gently hooked, pointed, at



**Figs. 522-525.** *Allodahlia ahrimanes* (Burr), Male, 522. Dorsal view, 523-524. Ultimate tergite, pygidium and forceps exhibiting variations, 525. Genitalia.

base above externally with a small tubercle, internal margin with sharp, triangular teeth at middle and apical one third. Genitalia with parameres about two and half times longer than broad, external margin convex, tip obtuse; virga, thin, tubular, at base with a vesicle.

Female: Similar to male in most details but ultimate tergite narrowed posteriorly; pygidium short, obtuse posteriorly and forceps simple, straight, subcontiguous, apices gently hooked and pointed.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 12.0 - 19.0 | 15.2 - 17.0 |
| Length of forceps | 8.4 - 18.0  | 7.5 - 8.1   |

*Types:* Syntypes 2 Males at BMNH.

*Distribution:* India (W. B., Darjeeling, Dist., 1438 m, Arunachal Pradesh, Tirap dist. and Sikkim); Myanmar (Sansi Gorge, Chinese Frontier, NE Myanmar, 1829 m - ZSI coll.; Nam Tanai, 1067 m - FNH coll.) and Vietnam.

*Remarks:* Forceps, in males, may be either undulated in normal form or horizontal with intermediate stages in weaker forms with the position of internal teeth variable. Besides, pygidium is generally triangular with a posterior median, short spine; often aciculate, about two and half times as long as the basal transverse portion.

***Allodahlia scabriuscula* (Serville)**

(Figs. 526-528)

*Forficula scabriuscula* Serville, 1839, *Hist. nat. Orth.*, **1839**: 38 (Female Holotype; Amerique meridionale (locality erroneous); Scudder, 1876, *Proc. Boston Soc. nat. Hist.*, **18**: 317.

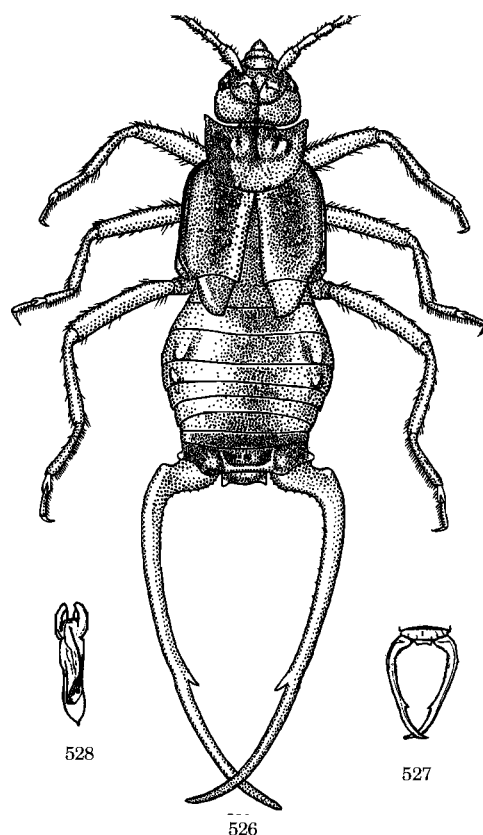
*Anechura scabriuscula*; Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2) **6**: 441 (considered *Forficula brachynota* Haan, 1842 as a synonym of *Forficula scabriuscula* Serville, 1839); Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2) **14**: 402; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 103; Sharp, 1895, *The Cambridge Natural History*, London, **5**: 207; Burr, 1900, *Ann. Soc. ent. Belg.*, **44**: 52; Burr, 1900, *Ann. Mag. nat. Hist.*, (7) **6**: 99; Burr, 1902, *Termètzter Füz.*, **25**: 486; Burr, 1908, *Bull. Mus. Hist. nat., Paris*, **14**: 118; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 41.

*Allodahlia scabriuscula*; Verhoeff, 1902, *Zool. Anz.*, **25**(665): 194; Burr, 1905, *J. Asiat. Soc. Beng.* (N. S.), **1**: 28; Burr, 1910, *Fauna British India, Dermaptera*: 150, pl. 6, fig. 49 (Bhutan, India (Assam) and Burma (Tenasserim); Burr, 1911, *Genera Insect.*, **12**: 71; Burr, 1912, *Annln naturh. Mus., Wien*, **26**: 97; Burr, 1912, *Notes Leyden Mus.*, **34**: 229; Burr, 1912, *Sber. Ges. naturf. Fr. Berlin*, **1912**: 339; Burr, 1913, *Rec. Indian Mus.*, **8**(2): 145; Burr, 1913, *Ent. Mitt.*, **2**: 69; Burr, 1914, *Rec. Indian Mus.*, **10**: 292; Burr, 1915, *Tijdschr. Ent.*, **58**(Suppl.): 118; Burr, 1917, *Ann. Soc. ent. Fr.*, **86**: 61; Borelli, 1918, *Boll. Musei. Zool. Anat. comp. R. Univ., Torino*, **33**(726): 5; Borelli, 1926, *Treubia*, **8**: 270; Borelli, 1932, *Bull. Raffles Mus.*, **7**: 92; Borelli, 1932,

- J. fed. Malay. St. Mus.* **17**(1): 190; Shiraki, 1928, *Insecta Matsum.*, **3**(1): 18; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 102; Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 620 (South China); Brindle, 1966, *Ark. Zool.*, **18**(18): 444; Brindle, 1972, *Entomologist's mon. Mag.*, **108**: 26, figs 4-5; Sakai, 1973, *Dermapterorum Catalogus, Praeliminaris*, **7**: 179; Sakai, 1982, *Bull. Daito Bunak Univ.*, **20**: 54; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7339 (description), 7119-7120, 7122-7123 (coloured photographs of specimens from various Museums), 7197 (black and white diagrams); Sakai and Zhang, *Dermapterorum Catalogus*, **30**: 9290, pl. II, fig. 1 (India: Arunachal Pradesh (not Assam at present), Warangpand, 1403-1650 m, Rahung, 2310 m, Talung Dzong, 2310 m, Shergaon, 2013-2178 m, Chug, 2342-2552 m, Damkho, 2294 m and Prudong, 3630 m; Manipur, Hawpyut, 1320 m, Uttarakahand, Pauri Garhwal, Akhrotkoti, 1881-2145 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 52; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 59; Srivastava, 1976, *Pacif. Insects*, **17**(1): 127 (Male, Female; Philippine Isls: Luzon and Mindanao); Srivastava, 1978, *Eos, Madr.*, **52**: 295 (Male, Female; Philippine Isls: Mindanao); Srivastava, 1982, *Bull. Inst. r. Sci. nat. Belg., Bruxelles*, **54**(11): 8 (Male; Indonesia: Java); Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, **81**: 286 (India: Meghalaya and Arunachal Pradesh); Srivastava, 1985, *Rec. zool. Surv. India*, **84**(1-4): 51 (Male, Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area); Srivastava, 1987, *Bull. zool. Surv. India*, **8**(1-3): 183 (Male, Female; Thailand); Srivastava, 1993, *Rec. zool. Surv. India*, **91**(1) (1992): 83, fig. 70 (Male, Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area); Srivastava, 1993, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **89**: 224 (Male, Female; Malaysia: Borneo, Sarawak); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 403, figs 202-204 (1 Male, 1 Female; India: West Bengal, Darjeeling Dist., Samsing); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 340, figs 109-110 (Male, Female; India: Meghalaya, E. Khasi Hills Dist, Cherrapunji and Garo Hills, Nokrek Biosphere Reserve); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 62 (Male, Female; Laos, Vietnam and South China: Fukien, Shaown; Chimangan and Sanchiang); Steinmann, 1981, *Acta. zool. hung.*, **27**(1-2): 190 (Male, Female; China; Fuschien); Steinmann, 1983, *Reichenbachia, Mus. Tierk. Dresden*, **21**(1): 54 (Indonesia (Java), Taiwan, Philippine Isls (Mindanao) and China); Steinmann, 1983, *Rev. suisse Zool.*, **90**(3): 554 (Male, Female; India: Meghalaya, Khasi Hills, 700-1200 m); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 742; Steinmann, 1993, *Das Tierreich*, **108**: 381, figs 592-594; Chaturvedi and Srivastava, 2002, *J. Bombay nat. Hist. Soc.*, **99**(2): 216.
- Forficula brachynota* Haan, 1842, *Verh. nat. Ges. Nederl. Overz. Bezitt., Orth.*, **1842**: 243, pl. 23, fig 10 (mentioned as fig. 11 in the text as well as legend to plate 23) (Syntypes Male, Female; Sumatra: Batang, Singalang); Dohrn, 1865, *Stettin ent. Ztg.*, **26**: 94 (nec Dubrony, 1879: 383); Scudder, 1876, *Proc. Boston Soc. nat. Hist.*, **18**: 312; Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**6**: 441 (considered *Forficula brachynota* Haan, 1842 as a synonym of *Forficula scabriuscula* Serville, 1839).
- Allodahlia bispina* Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 620, fig. 37 (Type Male; China: Yunnan near Pingpian, 700 m; 1 Female; Wuliang Shan, 1800-2400 m); Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7458 (description), 7200-7201 (black and white diagrams and photographs including Type Male), 7129 (coloured photographs of Holotype Male and other 2 Males) - **Syn.n.**

Male: General colour dark to light blakish brown or black. Build stout; glabrous and whole body scabrous.

Head longer than broad, frons and occiput tumid, sutures distinct, hind margin emarginated in middle. Eyes shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> two and a half times longer than broad, slightly expanded apically; 4<sup>th</sup> twice longer than broad, expanded apically; 5<sup>th</sup> equal to 3<sup>rd</sup> in length, remaining gradually increasing in legth distally and thinning (variation in the relative length of segments of both sides observed). Pronotum transverse, punctate, anterior margin emarginated and angles acute and directed anteriorly, lateral and hind margin together forming an arch, former gently reflexed, median sulcus distinct, prozona tumid with several small tubercles, metazona depressed. Elytra scabrous with small tubercles, humeral angles prominent, costal margin with a sharp, raised carina, absent near apex. Wings of the same texture as the elytra but comparatively less scabrous. Legs long,



**Figs. 526-528.** *Allodahlia scabriucula* (Serville), Male, 526. Dorsal view, 527. Ultimate tergite, pygidium and forceps exhibiting variations, 528. Genitalia.

slender, tibiae and tarsi covered with thick pubescence on underside, hind tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>. Abdomen strongly enlarged in middle, tergites convex, punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former slightly weaker. Penultimate sternite with posterior margin rounded. Pygidium transverse, hind margin truncate or lightly convex, postero-lateral angles produced into a sharp point. Ultimate tergite transverse, strongly sloping backwards, above the bases of forceps with low folds and area in middle with a broad depression, median sulcus short, hind margin in middle slightly reflexed, subtruncate and incrassate, lateral portion of hind margin above the bases of forceps lightly concave and oblique, postero-lateral angles projecting. Forceps with branches remote, trigonal at base, above with a small tubercle close to external margin, broadly incurved, tapering apically, tips hooked, pointed, internal margin with crenations near base, at apical one third with a sharp, triangular, posteriorly directed tooth. Genitalia with parameres twice as long as broad, external margin convex, apices obtuse; virga tubular, chitinous.

Female: Agrees with males in most characters except that ultimate tergite narrowed posteriorly, postero-lateral angles not projecting; pygidium short, rounded and forces with branches simple, straight, contiguous except at base with concavity to accommodate pygidium.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 11.5 - 15.5 | 10.5 - 15.5 |
| Length of forceps | 7.0 - 12.3  | 5.5 - 7.0   |

*Types:*

1. *Forficula scabriuscula* serville, 1839 – Holotype Female, NMWA.
2. *Forficula brachynota* Haan, 1842 – Syntypes Male, Female at RNHL.
- 3., *Allodahlia bispina* Bey-Bienko, 1959 – Holotype Male CASP.

*Distribution:* India (W.B.), Darjeeling Dist.; Sikkim, Arunachal Pradesh, Meghalaya and Uttarakhand, 700-3630 m); Myanmar (Chinese Frontier, Sansi Gorge, 1829-3438 m and Pum-Pa-tung, 1097m - ZSI Coll); South China; Vietnam; Thailand; Laos; Indonesia (Sumatra and Java); Philippine Isls. and Taiwan.

It is mainly monticolous species and very common in Himalaya at higher altitudes.

*Remarks:* Some variations are noted in the body colour, intensity of rugosity on elytra and male pygidium.

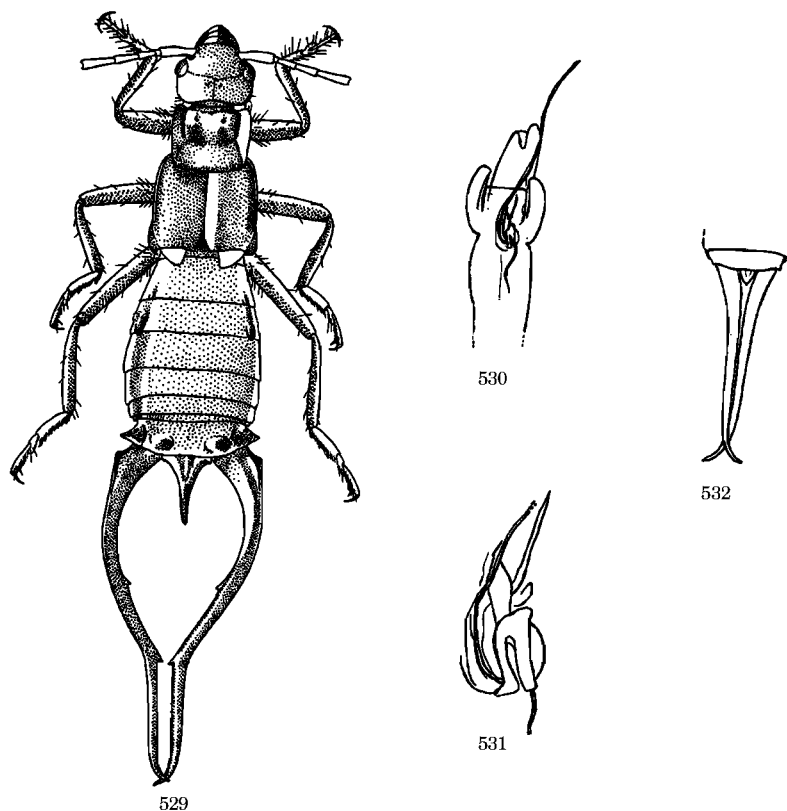
From the coloured photograph of Type Male of *Allodahlia bispina* Bye-Bienko, 1959 given by Sakai (1995 : 7189) it is evident that this species is a synonym of *Forficula scabriuscula* Serville, 1839.

***Allodahlia julkai* Srivastava**

(Figs. 529-532)

*Allodahlia julkai* Srivastava, 1979, *Entomologist's mon. Mag.*, **114**: 231, figs 1-5 (Holotype Male, Paratype Female; India: Arunachal Pradesh, Subansiri Dist., Gelamo, 600 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 54; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7471 (description), 7204 (black and white diagrams), 7130 (coloured photographs of Holotype Male, Paratype Female); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9291, Pl. II, fig. 5 (Male, Female; India: Arunachal Pradesh (localities mentioned, not under Assam at present), Dirang Dzong, 1749-2145 m, Rahung, 2310 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 51 (Male, Female; India: Arunachal Pradesh (localities mentioned not under Assam at present), Talung Dzong, 2310-2574 m, Sangti, 1815 m, Shergaon, 2046-2178 m); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 741; Steinmann, 1995, *Das Tierreich*, **108**: 385, figs 616-618.

Male: Reddish black; abdomen darker; legs and forceps slightly lighter in colour. Head about as long as broad, pilose, smooth, frons and occiput moderately convex, sutures fine



**Figs. 529-532.** *Allodahlia julkai* Srivastava, Holotype Male, 529. Dorsal view, 530. Genitalia, 531. Basal Portion of virga, enlarged; Female, 532. Ultimate tergite and forceps.

but distinct, hind margin emarginated in middle. Eyes shorter than the post-ocular length. Antennae (partly broken), basal segment, long, stout, slightly expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slightly expanded apically; 4<sup>th</sup> slightly longer than preceding. Pronotum pilose, smooth, only slightly punctulate in posterior half only, transverse, anterior margin lightly concave, and antero-lateral angles weakly prominent, lateral margins straight, gently reflexed, scarcely contracted posteriorly, hind margin briefly rounded, median sulcus faint, prozona tumid and well differentiated from flat metazona. Legs typical of the genus. Elytra well developed, shallowly punctate, humeral angles weak, ridge on the costal margin sharp. Wings very slightly projecting beyond elytra, smooth. Abdomen enlarged posteriorly, tergites convex, punctation heavier than on elytra, sides of segments convex, rugosely punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former comparatively weaker. Penultimate sternite transverse, broadly rounded posteriorly. Ultimate tergite transverse, above the bases of forceps with weak fold and depressed in middle, hind margin thickened, faintly concave in middle, lateral portion of hind margin above the bases of forceps oblique, postero-lateral angles a little projecting with an oblique, serrated ridge. Pygidium broader at base, in the middle produced into a long, tapering spine with its apex blunt, in profile gently incurved in middle. Forceps with branches remote at base, strongly incurved in basal two thirds, afterwards straight, with apices gently hooked and pointed, at base with a triangular crest above externally, internally with a pair of teeth, at basal one third and apical one third, respectively. Genitalia with parameres broad, about two and half times longer than broad, external margin convex, tip obtuse; virga long, tubular, at base with an inverted U-shaped structure.

Female: Agrees with males in most characters except that ultimate tergite without projecting postero-lateral angles and ridge; pygidium short, triangular and forceps simple, straight, subcontiguous in basal one third afterwards contiguous.

*Measurements:* (in mm)

|                   | Male | Female |
|-------------------|------|--------|
| Length of body    | 16.0 | 15.1   |
| Length of forceps | 12.6 | 6.7    |

*Types:* Holotype Male, Paratype 1 Female at ZSI.

*Distribution:* India: Aunachal Pradesh, 600-2574 m.

*Remarks:* In males, the pygidium is produced into a long median spine which is a little over twice as long as the basal transverse portion, undulated and forceps broadly incurved in basal two thirds and afterwards subcontiguous and straight.

It comes close to *A. ahrimanes* (Burr) but in the latter male pygidium is normally triangular, only occasionally produced into a median point which is only slightly longer



than the basal transverse portion, not undulated in middle and forceps incurved at base, gradually converging posteriorly with apices meeting.

***Allodahlia macropyga* (Westwood)**

(Figs. 533-535)

*Forficula macropyga* Westwood, 1839, in Royale, *Illst. Himalayas*, **2**: liii (Male Holotype; Himalayas); Dohrn, 1865, *Stettin ent. Ztg.*, **26**: 93; Scudder, 1876, *Proc. Boston. Soc. nat. Hist.*, **18**: 315.

*Anechura macropyga*; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 103; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 41.

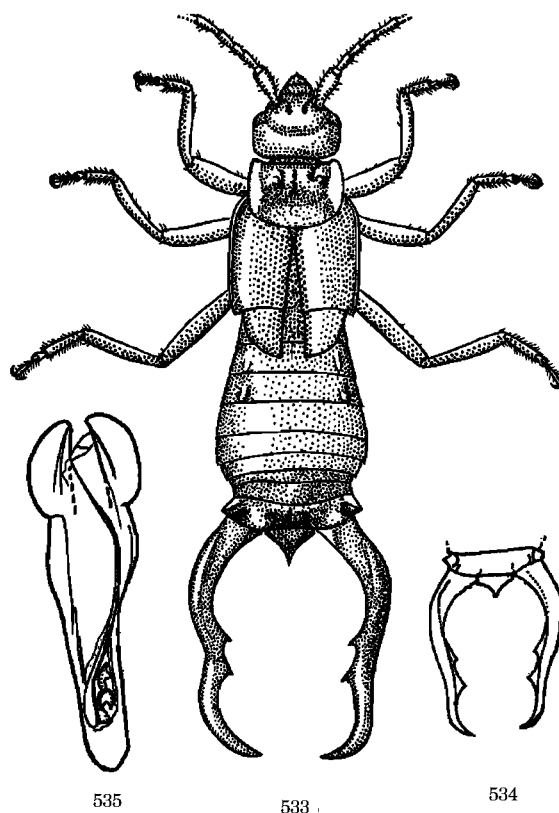
*Allodahlia macropyga*; Burr, 1910, *Fauna British India, Dermaptera*: 151, pl. 6, fig. 50; Burr, 1911, *Genera Insect.*, **122**: 71; Burr, 1912, *Annln naturh. Mus., Wien*, **26**: 97; Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**: 233; Hincks, 1947, *Ark. Zool.*, **39A** (1): 26; Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 620 (South China); Baharadwaj and Bhatnagar, 1961, *Ark. Zool.*, **167**(7-8): 288, figs 12-16 (India: U.P. (localities are under Uttarakhand), Kumaon Hills); Brindle, 1968, *Ark. Zool.*, **20**(25): 550; Brindle, 1974, *Senckenbergiana biol.*, **55**(1/3): 156 (Male, Female; Nepal; 2530 - 2700 m); Brindle, 1975, *Ent. basiliensia*, **1**: 38 (Bhutan; 1680 - 3100 m); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 28; Kapoor and Malla, 1978, *J. Ins. Sci.*, **1**: 135 (Nepal); Biswas and Srivastava, 1978, *Newsl. zool. Surv. India*, **2**(4): 33 (India; U.P. (area now under Uttarakhand), Dehra Dun Dist., Mussorie); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 59; Srivastava, 1979, *J. zool. Soc. India*, **27**(1-2) (1975): 109 (India: Manipur, South Dist., Tadubi, 1646 m and 4 km W. of Mao, 1737 m); Srivastava, 1978, *Ent. basiliensia*, **7**: 66 (India: Himachal Pradesh, Chopal Khanga Nallah, 2250 m); Srivastava and Lahiri, 1983, *Rec zool. Surv. India*, **81**: 286 (India: Meghalaya); Srivastava, 1984, *Proc. Wkshp High. Alt. Ent. & Wildl. Ecol. zool. Surv. India* (1983): 113 (India: Uttarakhand and Arunachal Pradesh); Srivastava and Lal, 1993, *Rec. zool. Surv. India*, **91**(1-2) (1992): 122, fig. 29 (Male, Female; India: Himachal Pradesh, Simla Dist.); Srivastava, 1995, *Fauna of Western Himalaya (U.P.), Himalayan Ecosystem Series*, **4**: 45 (India: U.P. (area now under Uttarakhand); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series* **3**, Pt. **4**: 340, fig. 11 (Male; India: Maghalaya, East Khasi Hills, Umtayangar); Srivastava, 1997, *Fauna of Conservation Area, Fauna of Nanda Devi Biosphere Reserve*: 56 (Male, Female; India: U. P. (area now under Uttarakhand), Almora Dist., Nanda Devi Biosphere Reserve, 2000-2300 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 54; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7417 (description), 7124 (coloured photographs), 7193-7194 (black and white diagrams); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9291, pl. II, fig. 4 (Male, Female; India: Arunachal Pradesh (localities mentioned now not under Assam), Nyukmadong, 2178-2640 m, Shergaon, 2046-2178 m, Chug, 2360-2409 m, Sangti, 1815 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 51 (India: Manipur, Hawpyut, 1320 m) Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 741; Steinmann, 1993, *Das Tierreich*, **108**: 384, figs. 613-615.

*Forficula huegeli* Dohrn, 1965, *Stettin ent. Ztg.*, **26**: 92 (Type Male; India Orientali); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 103 (treated as a synonym of *Forficula macropyga* (Westwood, 1836).

*Liparura sinensis* Chen, 1935, *Sinensia*, **6**: 219, fig. female (Type Female (mentioned as Male); China: Kwangsi) - **Syn. n**

Male: General colour black or reddish brown; antennae and legs reddish brown; inner wing tip with a patch of yellow. Build stout; cuticle shining with copperish sheen.

Head slightly longer than broad, smooth, frons and occiput raised, sutures faint, hind margin emarginate in middle. Eyes shorter than the post-ocular length. Antennae 13-segmented, 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> almost equal; 5<sup>th</sup> slightly longer than the preceding two, gently expanded apically, remaining gradually increasing in length distally and thinner. Pronotum transverse, punctate, anterior margin straight and angles slightly projecting, lateral margins slightly reflexed, almost straight, gently converging posteriorly, hind margin convex, median sulcus faint; prozona convex with impressed spot on either side of median line, sparsely punctate; prozona flat. Elytra ample, densely punctate, humeral angles not prominent, costal margin with a sharp,



**Figs. 533-535.** *Allodahlia macropyga* (Westwood), Male, 533. Dorsal view, 534. Ultimate tergite and forceps, 535. Genitalia.

raised carina, but dying out a little before apex, hind margin concave. Wings projecting beyond elytra, punctation weaker. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>, 2<sup>nd</sup> lobed, covered with thick pubescence on underside. Abdomen elongated, enlarged posteriorly, tergites convex, punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct, former slightly weaker. Penultimate sternite transverse, punctate, hind margin rounded with a convexity in middle. Ultimate tergite transverse, punctulate, median sulcus faint, hind margin thickened, almost straight in middle, lateral portion of hind margin oblique, postero-lateral angles produced into a conical spine, pointing outwards. Pygidium triangular, medially produced into a pointed spine. Forceps with branches stout, remote, diverging and raised upwards near base, afterwards gradually bent downwards in a little beyond middle, undulated in apical one third, incurved with tips gently hooked and pointed, internally armed at middle with a pair of sharp teeth. Genitalia with parameres broad, about two times longer than broad, external margin convex, tip obtuse; virga, long, tubular, at base with accessory plates.

Female: Agrees with males in most characters except that the ultimate tergite slightly narrowed posteriorly, postero-lateral angles not projecting; pygidium short, posteriorly produced into an obtuse lobe and forceps simple, straight, contiguous.

*Measurements:* (in mm)

|                  | Male       | Female      |
|------------------|------------|-------------|
| Length of body   | 9.2 - 11.5 | 12.0 - 13.3 |
| Length of foreps | 5.7 - 7.0  | 5.1 - 5.8   |

*Types:*

1. *Forficula macropyga* Westwood, 1839 - Type Male at OMU.
2. *Forficula huegeli* Dohrn, 1865 - Type Male at NMWA.
3. *Liparura sinensis* Chen, 1935 - Type Female (not Male, evident from the figure) at CASP.

*Distribution:* India (all along the Himalaya from NW to NE and adjoining Hills, alt. 1300 - 2640 m), Nepal (alt. 2530 - 2700 m), Bhutan (alt. 1680 - 3100 m); mountain regions of NE Myanmar and South China.

*Remarks:* Variations occur in the body punctation and general colour. Punctation on elytra are deep and closely placed thus appear rugose whereas punctation on abdominal tergites are distantly placed

Forceps, in weaker or smaller forms, are horizontal, straight and slender.

On the basis of figure of Type Female (not Male, as mentioned) of *Liparura sinensis* by Chen (1935), it appears to be a synonym of *Forficula macropyga* Westwood, 1839. The shape of pronotum and body punctation are more or less similar. The absence of wings in mountain forms is often reported.

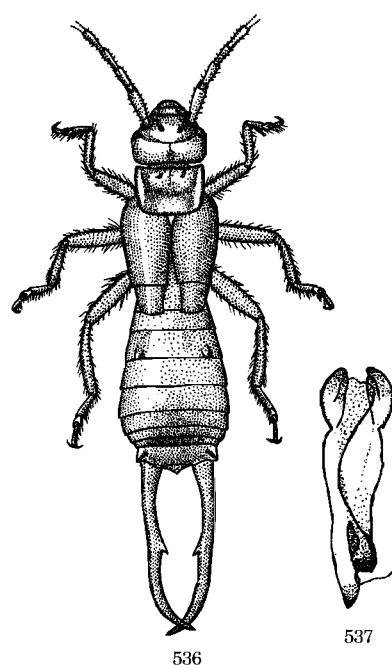
***Allodahlia dinesh* Gangola**

(Figs. 536-537)

*Allodahlia dineshi* Gangola, 1965, *Entomologist*, **98**: 235, figs 18-21 (Holotype Male; India: Kumaon Hills, Sukhatal (Naina Tal), 2057 m; Paratypes 3 Males; Gathia (Naina Tal), 1676 m - feeding on flowers of stinging nettles); Brindle, 1972, *Entomologist's mon. Mag.*, **108**: 29, fig. 10; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 58; Srivastava, 1995, *Fauna of Western Himalaya (U.P.), Himalayan Ecosystem Series*, Pt. **3**: 45 (the area now under Uttarakhand); Biswas and Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(4): 163 (3 Males; India: Uttarakhand (now localities mentioned are not under U.P.), Dehra Dun Dist., Dhobighat, Mussorie); Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 187; Sakai, 1982, *Bull. Daito Buku Univ.*, **20**: 54; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7461 (description), 7202 (black and white diagrams); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 51 (Males, Females; Arunachal Pradesh (localities mentioned are not at present under Assam), Domkho, 2145 - 2294 m, Talung Dzong, 2310- 2574 m, Prudong, 3630 m, Shergaon, 2046 - 2178 m, Sangti, 1815 m); Steinmann, 1983, *Revue suisse Zool.*, **90**(3): 555 (1 Female; Nepal: Prov. Bagmati, Dobata Ridge, NE Barabhis, 3000 m); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 740; Steinmann, 1993, *Das Tierreich*, **108**: 377, figs 601-603

Male: General colour blackish brown to black; antennal segments apically, lateral margin of pronotum lighter in colour; femora and tibiae reddish brown; wing tip with an yellow spot internally. Build slender; glabrous.

Head about as long as broad, frons and occiput tumid, sutures distinct, hind margin emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, slightly longer than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, slightly expanded apically; 4<sup>th</sup> a trifle shorter than the preceding; 5<sup>th</sup> equal to 3<sup>rd</sup>, thinner, remaining gradually increasing in length distally and thinning. Pronotum transverse, anterior margin straight, anterior angles weak, lateral margins scarcely concave, gently reflexed, contracted posteriorly, hind margin briefly rounded, median sulcus distinct, prozona convex, with a slight impression on either side of median line and metazona depressed. Elytra and wings ample, former punctate, humeral angles prominent. Legs long, slender, hind tarsi with 1<sup>st</sup> segment slightly longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> lobed, covered with thick pubescence on underside. Abdomen elongated, gradually enlarging posteriorly, tergites punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> distinct, former comparatively weaker. Penultimate sternite rounded posteriorly. Ultimate tergite transverse, disc weakly convex, hind margin trisinate, lateral portion of hind margin oblique, postero-lateral angles projecting. Pygidium triangular with a slight median spine. Forceps with branches remote at base, elongatedly slightly incurved, tapering apically, tips gently hooked and pointed, internal margin with a triangular, posteriorly directed tooth at a little beyond middle. Genitalia with parameres broad, twice as long as broad, external margins convex, tip obtuse; virga tubular.



**Figs. 536-537.** *Allodahlia dineshi* Gangola, Male, 536. Dorsal view, 537. Genitalia (fig. 537 after Gangola, 1965).

Female: Agrees with males but forceps simple and straight.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 11.0 - 11.5 | 10.0 - 11.0 |
| Length of forceps | 4.5 - 5.0   | 3.5 - 4.0   |

*Types:* Holotype Male, Paratypes 3 Males; repository not known.

According to original description (Gangola, 1965) these are supposed to be present at the Department of Zoology, Th. D. S. B. Government College, Nainital (Uttarakhand). On personal enquiry it is found that these are not available there.

*Distribution:* India: Uttarakhand, Kmaon Hills, Sukh Tal, 2057 m and Gethia, 1676 m; Dehra Dun Dist., Dhobi Ghat, Mussoorie, 1676 m and Arunachal Pradesh, 1815 -3630 m.

*Remarks:* Sakai (1997) has recorded males and females of the species from Arunachal Pradesh.

The above description is based upon original description and 3 males reported by Biswas and Srivastava (1976). It may be mentioned here that in one of the males there is an indication of second tooth on the internal margin of forceps.

This species has a close resemblance with weaker and smaller form of *Allodahlia macropyga* (Westwood) having somewhat similar but slightly weaker punctation on elytra and abdominal tergites and the shape of pygidium but differs by the shape of male forceps in being almost straight, in profile slightly undulated and with a single internal tooth.

Most likely when further material is available, it may prove to be a synonym of *Allodahlia coriacea* (Bormans) in having identical pronotum; similar punctation on elytra and abdominal tergites; shape of pygidium and forceps, in males. Interestingly, Burr (1907a) has reported specimens of *A. coriacea* from India: Kumaon "feeding on flowers of stinging nettles" and the Types of *A. dineshi* were also collected from the same area and habitat.

***Allodahlia coriacea* (Bormans)**

(Figs. 538-542)

*Anechura coriacea* Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)14: 403 (Holotype Male; Myanmar: Carin Chebá, 900 - 1100 m); Bormans and Krauss, 1900, *Das Tierreich*, 11: 102, fig. 37; Burr, 1900, *Ann. Soc. ent. Belg.*, 44: 97; Burr, 1902, *Termètzter Füz*, 25: 486 (Borneo); Kirby, 1904, *Syn. Cat. Orthoptera*, 1: 41.

*Allodahlia coriacea*; Burr, 1907, *Rec. Indian Mus.*, 1: 209 (Males, Females; India: Bhim Tal, 1372 m, Kumaon, feeding on flowers of stinging nettles); Burr, 1910, *Fauna of India, Dermaptera*: 150, pl. 6, fig. 51 (India (Kumaon), Bhutan and Burma); Burr, 1911, *Genera Insect.*, 122: 72; Burr, 1912, *Annln naturh. Mus., Wien*, 26: 97 (Tonkin (now Vietnam): Montes Mousen, 2000-3000 m; 1 Female); Burr, 1913, *Rec. Indian Mus.*, 8(2): 146 (Male; India: Arunachal Pradesh, Siang Dist., Upper Rotung); Borelli, 1932, *J. fed. Malay. St. Mus.*, 17(1): 197 (Female; Malaysia: Borneo, Bettotan, nr. Sandakan); Boeseman, 1954, *Verh. Zool. Leiden*, 21: 102 (Male; Indonesia: Sumatra, Suban Ajam; Male; Malaysia: Borneo, Gunung Kenapai, Pondok); Kapoor, 1968, *Agra Univ. J. Res (Sci.)*, 16(1) (1967): 28; Popham and Brindle, 1968, *Entomologist*, 101: 199; Brindle, 1972, *Entomologist's mon. Mag.*, 108: 27, figs 2, 7; Sakai, 1973, *Dermapterorum Catalogus, Praeliminaris*, 7: 185; Sakai, 1982, *Bull. Daito Bunka Univ.*, 20: 54; Sakai, 1995, *Dermapterorum Catalogus*, 28: 7438 (description), 7126 (coloured photographs), 7196 - 7198 (black and white diagrams and photographs); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, 30: 9290, Pl. II, fig. 3 (India: Manipur, Marou, 1320 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, 52(2): 51; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, 2: 58; Srivastava, 1978, *Eos, Madr.*, 52: 295 (Male, Female; Philippine Isls, Palawan); Srivastava, 1982, *Bull. Inst. r. Sci. nat. Belg., Bruxelles*, 54(11): 8 (Male, Female; Birmania and Indonesia (Java); Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, 81: 285 (Male, Female; India: Meghalaya, Garo Hills); Srivastava, 1987, *Bull. zool. Surv. India*, 8(1-3): 123 (Male: Thailand: Chiag Mai Prov., 550-600 m); Srivastava & Lal, 1993, *Rec. zool. Surv. India*, 91(1) (1992): 122 (Male, Female; India: Himachal Pradesh, Simla Dist., 1850 - 2686 m); Srivastava, 1993, *Rec. zool. Surv. India*, 93(1) (1992): 83, figs 67-69 (Male, Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area); Srivastava, 1993, *Annali Mus. civ. Stor. nat. Giacomo Doria*, 89: 242, figs 45-50 (Holotype Male, 1 Male

and nymph figured); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, Pt. **4**: 429, figs 199-201 ((Male, Female; India: West Bengal, Darjeeling Dist., Kurseong, 1459 m and Samsing); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series* **4**, Pt. **3**: 341, fig 112 (Male, Female; India: Meghalaya, East Khasi Hills, Shillong and West Garo Hills, Nakrek Biosphere Reserve); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 64 (Male, Female and nymph; Vietnam, Laos and Thailand); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 740; Steinmann, 1993, *Das Tierreich*, **108**: 381.

*Forficula brachynota* (nèc Haan, 1842); Dubrony, 1879, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **14**: 385 (2 Males; Malaysia: Borneo, Sarawak); Burr, 1910, *Fauna British India, Dermaptera*: 153 (included Dubrony's record under *Allodahlia coriacea* Bormans).

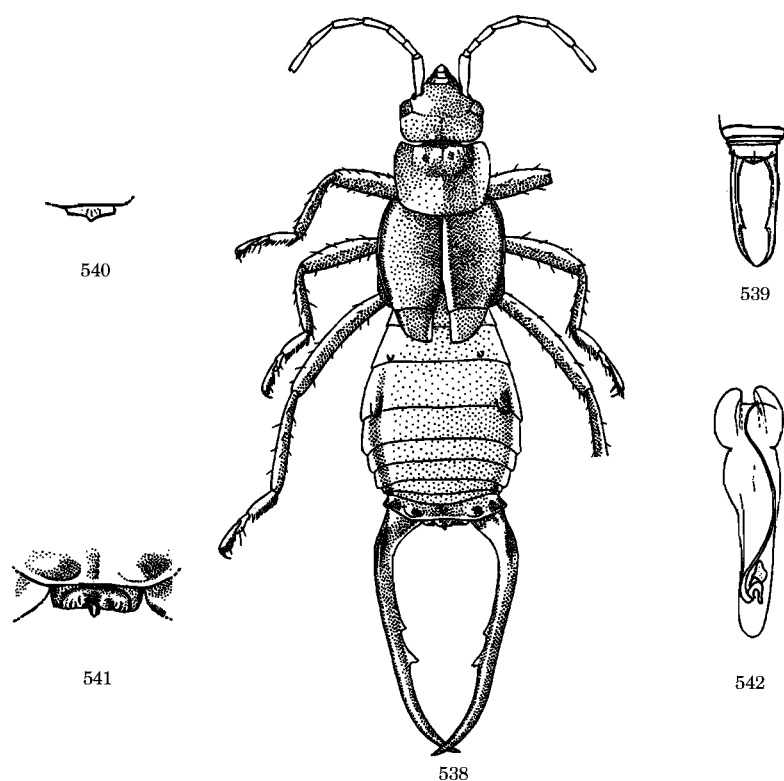
*Allodahlia coriacea coriacea*; Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 620 (South China).

*Allodahlia coriacea signata* Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 620 (Type Male, Paratypes 20 Males, 39 Females; China : Yunnan, alt 370 - 1400m); Srivastava and Saha, 1975, *Ceylon J. Sci. (Bio. Sci.)*, **11**(2): 66 (1 Female; India: W. B., Darjeeling, Dhobi Khola Stream, 1459m); Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7449 (description), 7125 (coloured photographs of Paratypes, Leningrad), 7128 (coloured photographs including Holotype (Type) Male and Allotype (Paratype) Female), 7199 (black and white photographs of Holotype (Type) Male, Allotype (Paratype) Female); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9290, Pl. II, fig. 5 (2 Males, 1 Female; India : Uttarakhand, Kumaon Hills, Lingari, 1452 m; 1 Male; Mizoram, Phailang, 1155 m.); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 51; Steinmann, 1975, *Folia ent. hung.*, **28**: 164 (29 Paratypes; treated as a synonym of *Anechura coriacea* Bormans, 1894).

*Allodahlia ochroptera* Brindle, 1972, *Entomologist's mon. Mag.*, **108**: 27 (Holotype Male; Burma: Teinzo, Allotype Female; Burma: Bhamo; Paratype 1 Male; data same as the Allotype and other specimens; India: Sikkim, 1 Male, 1 Female; Hinterindien, 1 Male, 1 Female; India Orientali 1 Male, Pedong, 1 Male); Srivastava, 1993, *Rec. zool. Surv. India*, **91**(1) (1992): 83 (treated as a synonym of *Anechura coriacea* Bormans, 1894).

Male: General colour black or reddish black; head some times orange; antennae black with one or two ante-apical segments yellow; elytra dark reddish black or clear red and wings yellow or with an yellow spot near tip.

Head about as long as broad, frons and occiput convex, sutures distinct, hind margin emarginated in middle, postero-lateral angles rounded. Eyes slightly shorter than the post-ocular length. Antennae 12-segmented, basal segment stout, slightly expanded apically, about as long as the distance between antennal bases; 2nd short, about as long as broad; 3rd long, slender; 4th a trifle shorter than preceding, slightly expanded apically; 5th longer than 3rd, thinner, slightly expanded apically, remaining gradually increasing in length distally and thinning, each narrowed basally. Pronotum weakly transverse, punctate, anterior margin straight and angles weakly projecting, lateral margins gently convex, slightly reflexed, hind angles and margin briefly rounded, median sulcus distinct, prozona tumid, slight impressions on either side of middle line and metazona depressed. Elytra ample, punctation deep and coalescent, humeral angles prominent,



**Figs. 538-542.** *Allodahlia coriacea* (Bormans), Male, 538. Dorsal view, 539. Ultimate tergite and forceps, 540-541. Pygidium, enlarged, 542. Genitalia (figs. 539-540 ex Holotype Male after Srivastava, 1993h).

carina on costal margin sharp and complete. Wings projecting well beyond elytra, punctation almost obsolete. Legs long, slender, hind tarsi covered with thick pubescence on underside, 1<sup>st</sup> tarsal segment longer than the 3<sup>rd</sup> and 2<sup>nd</sup> lobed. Abdomen greatly enlarged in middle, tergites weakly convex, densely punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> well marked, former comparatively weaker. Penultimate sternite with hind margin rounded, in the middle with a slight convexity. Ultimate tergite strongly transverse, densely punctulate, disc weakly convex, above the bases of forceps with or without low tumidity, hind margin trisinate, lateral portion of hind margin oblique, postero-lateral angles slightly projecting. Pygidium transverse, postro-lateral angles and medially with a spine, latter more prominent, margin on either side of median spine slightly oblique. Forceps with branches remote at base, slightly incurved, afterwards straight, tapering and gradually converging posteriorly, gently undulated in apical one third, tips gently hooked and pointed, internal margin with an indication of a tooth at a little beyond middle, followed by another posteriorly directed tooth. Genitalia with parameres twice as long as broad, external margin convex; virga tubular, chitinous.



Female: Agrees with males in most characters except that ultimate tergite sloping, narrowed posteriorly; pygidium short, obtuse and forceps with branches simple, straight, subcontiguous, slightly incurved, a little before apex.

*Measurements*: (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 11.1 - 15.0 | 11.0 - 14.0 |
| Length of forceps | 6.0 - 6.5   | 6.0 - 6.2   |

*Types*:

1. *Anechura coriacea* Bormans, 1894 - Type Male at MSNG.

2. *Allodahlia coriacea signata* Bey-Bienko, 1959 - Type Male, Paratypes 20 Males, 39 Females (According to Bey-Bienko (1959) Type Male should be at CASP. Steinmann (1975b) states 29 Paratypes deposited at AZL. Remaining 30 Paratypes should, therefore, be present at CASP).

3. *Allodahlia ochroptera* Brindle - Holotype Male, Allotype Female at BMNH; Paratype 1 Male at MM.

*Distribution*: India (Meghalaya; W.B., Darjeeling Dist., 1450m; Uttarakhand, Kumaon Hills, 1452 m; Himachal Pradesh, Simla Dist., 1850 - 2686 m; Arunachal Pradesh, 1155 m; Manipur, Marou, 1320 m and Mizoram and Sikkim), Myanmar (900 - 1100 m), Vietnam (2000 m), Thailand (Chiang Mai Prov., 450 - 1100 m), China (Yunnan, 370 - 1200 m), Malaysia (Borneo: Sarawak); Indonesia (Sumatra and Java) and Philippine Isls (Palawan, 853 - 1311 m).

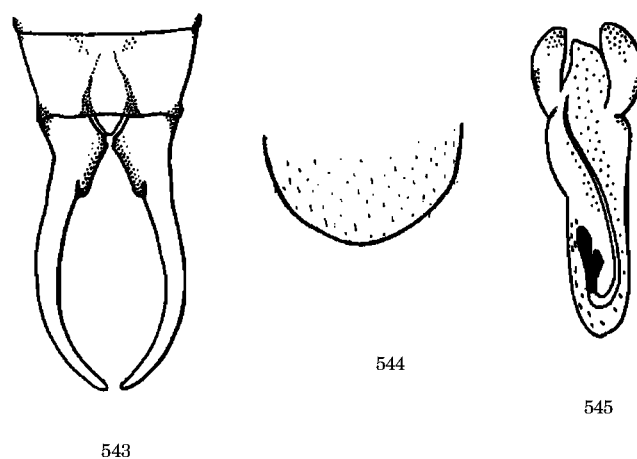
*Remarks*: This species is intermediate between *A. scabriuscula* (Serville) and *A. macropyga* (Westwood). From the former it can be differentiated by the slightly weaker build and the shape of pronotum with anterior angles weak; punctation on elytra and wings weak and coarsened and forceps of male, undulated in apical one third, internally with an obsolete tooth, followed by another minute tooth. From the latter it can be separated by the shape of pronotum, pygidium and forceps, in males.

### Doubtful species

#### *Allodahlia guptae* Kapoor

(Figs. 543-545)

*Allodahlia guptae* Kapoor, 1968, *Entomologist*, **101**: 80, figs 2 - 4 (Holotype Male; India: Sikkim, Gangtok, 1675 m); Brindle, 1972, *Entomologist's mon. Mag.*, **108**: 30, fig. 11; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 51; Srivastava, 2003, *Fauna of Sikkim, State Fauna Series*, **9**: 220 (treated as a doubtful species); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 740 Steinmann, 1993, *Das Tierreich*, **108**: 376, figs 599-600; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7463 (description), 7202-7203 (black and white diagrams).



**Figs. 543-545.** *Allodahlia guptae* Kapoor, Male, 543. Ultimate tergite and forceps, 544. Posterior margin of penultimate sternite, 545. Genitalia (all figs. after Kapoor, 1968).

Male: Medium sized; reddish black. Head longer than broad, frons tumid, occiput depressed, sutures faint. Eyes shorter than the post-ocular length. Antennae 12 (?) segmented, 1<sup>st</sup> club shaped, longer than combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 4<sup>th</sup> a little shorter than 3<sup>rd</sup>; 5<sup>th</sup> nearly equal to 3<sup>rd</sup>, rest gradually lengthening and cylindrical. Pronotum broader than long, anterior margin truncate, sides straight, posterior margin rounded; prozona strongly tumid, greatly differentiated from depressed metazona, sulcus distinct. Tegmina three times longer than broad, anal margin rounded, costal margin straight, with fully developed keel, apex sinuate. Wings a little less than half the length of elytra, at base with an oval yellow spot. Legs small, slender. Abdomen narrowed apically, depressed in middle, lateral folds distinct, 10<sup>th</sup> tergite with distinct angles on sides, hind margin subsinuate. Pygidium small, triangular. Forceps elongate, slightly remote, depressed basally, with a pair of small blunt teeth basally, followed by a crest and then gently arcuate with apices meeting. Penultimate sternite rounded. Genitalia with metaparameres small, broad having outer margin deeply convex and inner margin sinuate; virga about two and a half times longer than the metaparameres and connected at base with an elongated basal vesicle.

Female: Unknown.

*Measurements:* (in mm)

|                   | Male |
|-------------------|------|
| Length of body    | 9.0  |
| Length of forceps | 3.5  |

*Type:* Male Holotype stated to be present with the author; repository not known.

*Distribution:* India: Sikkim, Gangtok, 1675 m.

*Remarks:* The above description is after Kapoor (1968c). The Holotype was not available for study.

The interpretation of costal keel on elytra by Kapoor is not clear. In *Forficula abbottabadiensis* Kapoor, 1967, in the original description it is mentioned that elytra are keeled on costal margin whereas in "Type Male" it is lacking. Only costal fold is very prominent, especially on humeral angles. Perhaps this prominent costal fold is mentioned as keel.

However, the status of this species remains doubtful pending examination of Type.

#### Subfamily: ANECHURINAE

*Anechurinae* Verhoeff, 1902, *Zool. Anz.*, **25**(665): 196 (Type genus: *Anechura* Scudder, 1876); Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 94 (Type genus designated); Burr, 1911, *Genera Insect.*, **122**: 70 (partim); Bruce, Melander and Carpenter, 1954, *Bull. Mus. comp. Zool. Harvard*, **108**: 106; Popham and Brindle, 1968, *Entomologist*, **101**: 198; Sakai, 1973, *Dermapterorum Catalogus, Praeliminaris*, **7**: 40 (as synonym of Forficulinae); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 52; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 745; Steinmann, 1993, *Das Tierreich*, **108**: 387.

Body stout, depressed., thickly pubescent. Pronotum generally transverse. Elytra and wings well developed or abbreviated, former without carina on costal margin. Sternal plates broad.

*Type genus:* *Anechura* Scudder, 1876.

*Distribution:* Oriental and Palaearctic Regions.

*Remarks:* Members of this genus contain mainly mountain dwelling forms, generally occurring above 2000 m in altitude with a few exception.

#### Key to the genera (based upon males)

- 1(4). Body strongly or weakly convex; penultimate sternite entire posteriorly
- 2(3). Body densely pubescent, especially on pygidium and forceps; in normal forms ultimate tergite with mammiform tubercles, directed posteriorly above the bases of forceps, sometimes poorly marked or obsolete; pygidium prominent, transverse..... *Oreasiobia* Semenov
- 3(2). Body without thick pubescence; ultimate tergites in normal forms lack mammiform tubercles above the bases of forceps, sometimes with small triangular, pointed, posteriorly directed hook; pygidium not transverse, narrow, sometimes prominent ..... *Anechura* Scudder
- 4(1). Body strongly depressed, especially abdominal tergites; penultimate sternite posteriorly in middle with a deep, narrow cleft with a ridge apically ..... *Neopterygida* Srivastava

Genus: **Oreasiobia** Semenov

*Oreasiobia* Semenov in Bey-Bienko, 1936, *Faune de L'URSS, Dermapterès*: 158 (Type species: *Forficula fedtschenkoi* Saussure, 1874; Semenov, 1938, *Knowia*, **16**(3-4): 241; Towens, 1945, *Ann. ent. Soc. Am.*, **38**: 252; Popham, 1965, *Entomologist*, **98**: 135; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 27; Sakai, 1973, *Dermapterorum Catalogus, Praeliminaris*, **7**: 143; Sakai, 1980, *Bull. Daito Bunka Univ.*, **20**: 53; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7289; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 55; Steinmann, 1977, *Acta zool. hung.*, **23**: 203; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 769; Steinmann, 1993, *Das Tierreich*, **108**: 446.

Body covered with dense long and short hairs, especially on legs and forceps. Elytra and wings generally well developed, smooth. Ultimate tergite, in normal male, with a pair of mammiform, posteriorly directed tubercles above the bases of forceps; rarely weakly developed. Pygidium transverse and forceps at base with a bifid tooth, sometimes lacking.

Type species: *Forficula fedtschenkoi*, Saussure, 1874.

Distribution: Central Asia, Pakistan (NW Prov.) and India (Kashmir)

## Key to the species (based upon males)

- 1(2). Pronotum transverse; elytra with a yellow spot, sometimes poorly marked; genitalia with parameres broadest at base, gradually narrowed apically ..... *O. fedtschenkoi* (Saussure)
- 2(1). Pronotum strongly transverse; elytra uniformly coloured; genitalia with parameres expanded at base and apex, constricted in middle ..... *O. calciatii* (Borelli)

***Oreasiobia fedtschenkoi*** (Saussure)

(Figs. 546-552)

*Forficula fedtschenkoi* Saussure, in Fedtschenko, 1874, *Turkestan Orth.*, **6**, pl. 2, fig. 1 (Type Male; Turkistan).

*Anechura fedtschenkoi*; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 103; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 41; Semenov, 1908, *Ent. Obozr.*, **2**: 170; Burr, 1911, *Genera Insect.*, **122**: 73; Burr, 1912, *Annln naturf. Mus., Wien*, **26**: 95.

*Oreasiobia fedtschenkoi*; Semenov in Bey-Bienko, 1936, *Faune de l' URSS, Dermapterès*: 161, figs 49-50; Bey-Bienko, 1967, *Act. ent. Bohem.*, **64** (6): 435 (Males, Females; Afghanistan, 2300 - 2900m); Popham and Brindle, 1968, *Entomologist*, **101**: 198; Sakai, 1973, *Dermapterorum Catalogus, Praeliminaris*, **7**: 147 (Turkestan, Dhungari, Kirghistan and Afghanistan); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 53; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7293 (description), 7104, 7106-7108 (coloured photographs); Steinmann, 1977, *Acta zool. hung.*, **23**: 203, fig. 8 (Turkestan, Afghanistan, Kashmir); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 770; Steinmann, 1993, *Das Tierreich*, **108**:

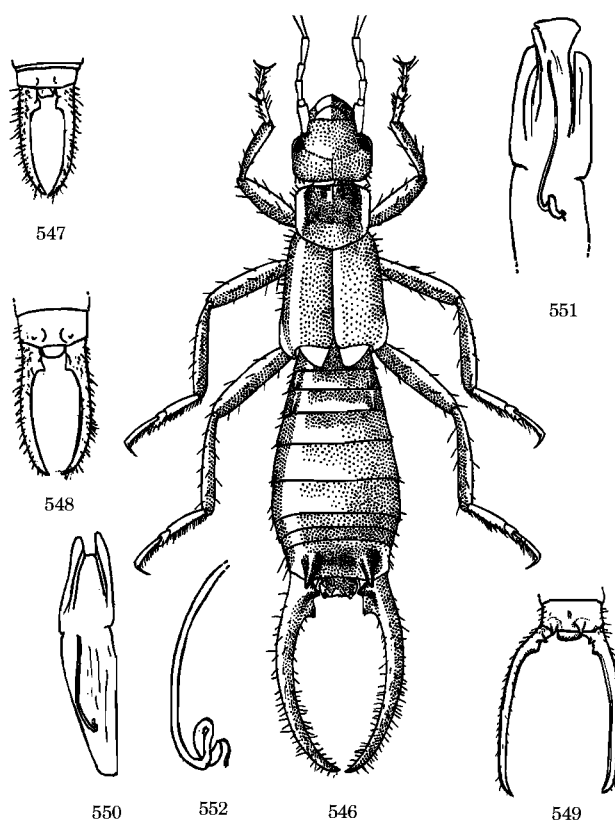
447, figs 717-718; Srivastava, 1982, *Rec. zool. Surv. India*, **79**: 465, figs 1A-C (Male, Female; Pakistan: Chitral).

*Anechura fedtschenkoi fedtschenkoi*; Bey-Bienko, 1934, *Ark. Zool.*, (20) **25A**: 4.

*Oreasiobia fedtschenkoi fedtschenkoi*; Srivastava, 1979, *Proc. zool. Surv. India*, **1**: 64, figs 8A-B (male ultimate tergite and forceps exhibiting variations).

Male: General colour dark blackish brown; head, antennae, mouth parts, sides of pronotum and legs yellowish brown; elytra with a yellow spot, sometimes poorly marked; forceps and pygidium blackish brown to yellowish brown. Body densely pubescent, especially on forceps.

Head longer than broad, smooth, frons and occiput convex, sutures distinct, hind margin scarcely emarginated in middle. Antennae 12-segmented, 1<sup>st</sup> stout, expanded apically, about as long as the distance between antennal bases; 2nd short, about as long



**Figs. 546-552.** *Oreasiobia fedtschenkoi* (Saussure), Male, 546. Dorsal view, 547-549. Ultimate tergite and forceps, exhibiting variations, 550. Genitalia, 551. Anterior portion of genitalia, 552. A portion of virga, enlarged (figs. 546-548 and 550 ex Males from Pakistan, Chitral and figs. 549, 551-552 ex Male, India, Kashmir).

as broad; 3<sup>rd</sup> long, cylindrical, gently expanded apically; 4<sup>th</sup> a little shorter and stouter than preceding; 5<sup>th</sup> slightly longer than 3<sup>rd</sup>, thinner, narrower basally, remaining gradually increasing in length distally and thinning. Eyes shorter than the post-ocular length. Pronotum transverse, anterior margin straight, about as broad as head, lateral margins straight, a little reflexed, hind margin and angles rounded, former obtuse in middle, median sulcus distinct, prozona tumid and metazona depressed. Elytra and wings well developed, smooth, latter sometimes scarcely projecting beyond elytra. Legs long, slender, hind tarsi with 1<sup>st</sup> segment slightly longer than 3<sup>rd</sup>; 2<sup>nd</sup> lobed, covered on underside with thick hairs. Abdomen elongated, fusiform, tergites convex, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> distinct, former comparatively weaker. Penultimate sternite broadly rounded posteriorly. Ultimate tergite transverse, disc moderately convex, above the roots of forceps with prominent, posteriorly directed mammiform tubercles, often absent or represented by intermediate or transitory stages. Pygidium transverse, rectangular, slightly narrowed posteriorly, hind margin wavy. Forceps in macrolabic form, long, broadly incurved, at base armed with a dorsal and ventral tooth; in cyclolabic forms branches almost straight with intermediate stages, the internal dorsal tooth represented by a faint fold. Genitalia with parameres broader at base, narrowed apically; virga chitinous, long, tubular, with a basal vesicle.

Female: Agrees with males in most characters except that penultimate sternite with hind margin obtuse in middle; ultimate tergite narrowed posteriorly, lacking mammiform tubercles above the roots of forceps and forceps simple, contiguous and straight.

*Measurements:* (in mm)

|                   | Male        | Female     |
|-------------------|-------------|------------|
| Length of body    | 10.0 - 16.0 | 9.0 - 17.0 |
| Length of forceps | 7.0 - 10.5  | 4.5 - 5.0  |

*Types:* Type repository not known.

*Distribution:* Turkistan, Afghanistan, Pakistan (NW Province, Chitral) and India (Kashmir).

It is a mountain dwelling species generally occurring between 1829-3658 m in altitude.

In the ZSI collections this species is represented by following specimens determined by G. K. Srivastava, not reported earlier:

India: Jammu and Kashmir, Srinagar, Domel, 3500 m, 1 Male, 1 Female, 14.iii.1981 (*M. Chandra* coll.).

*Remarks:* This species exhibits great variations in body size, colouration of elytra, projecting part of wing, degree and development of mammiform tubercles on the ultimate tergite, pygidium and the dorsal tooth at base of forceps in macrolabic and cyclolabic forms, in males.

***Oreasiobia calciatii* (Borelli)**

(Figs. 553-558)

*Anechura calciatii* Borelli, 1909, *Boll. Musei zool. Anat. comp. R. Univ., Torino*, (603) **24**: 3 (1 Male, 3 Females; lungo la strada che conduce da Sirinagur a Gilghit, altitudine 2500 m): Burr, 1910, *Fauna British India, Dermaptera*: 150, pl. 10, fig. 95; Burr, 1911, *Genera Insect.*, **122**: 73.

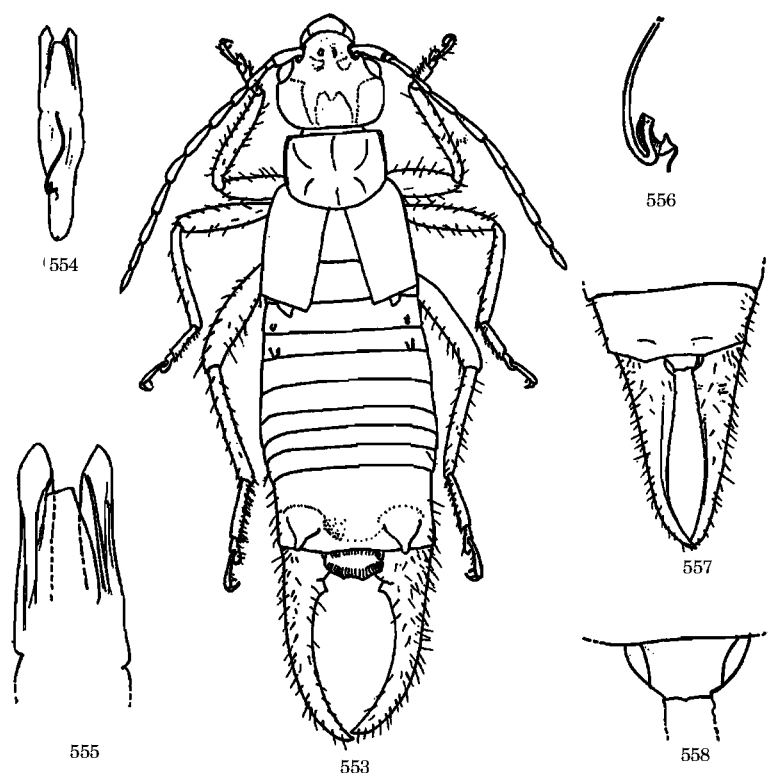
*Anechura fedtschenkoi calciatii*; Bey-Bienko, 1934, *Ark. zool.*, (20) **25A**: 5; Bey-Bienko, 1935, *Wiss. Ergebn. Nederl. Exped. Karakorum, Zool.*: 201 ( 2 Males, 1 Female; Kashmir, Sonamarg, Sind Valley, 1600 - 2900 m).

*Oreasiobia fedtschenkoi calciatii*; Semenov in Bey-Bienko, 1936, *Faune de l'URSS, Dermapterès*: 229; Semenov, 1938, *Konowia*, **16**(3-4): 242; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 27 (treated as a subspecies); Sakai, 1973, *Dermapterorum Catalogus, Praeliminaris*, **7**: 145; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 53; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 55.

*Oreasiobia calciatii*; Srivastava, 1984, *Proc. Wkshp. High Alt. Ent. & Wildl. Ecol. zool. Surv. India*: (1983)120, figs 10A - B (Syntypes Male figured and described); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 769; Steinmann, 1993, *Das Tierreich*, **108**: 449, figs 721- 722; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7302 (description), 7166-7168 (black and white diagrams and photographs, including Syntypes), 7108 (coloured photographs of Syntypes 1 Male, 3 Females).

Male: General colour black; head with an orange patch in the middle of frons and narrowed to form a stripe on occiput; pronoun, elytra, abdomen darker; legs with knee joints darker. Body covered with long dense hairs, more pronounced on forceps.

Head longer than broad, frons and occiput convex, sutures faint, hind margin scarcely emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennae 12-segmented, basal stout, gently expanded apically, almost equal in length to distance between antennal bases; 2<sup>nd</sup> short, slightly longer than broad; 3<sup>rd</sup> long, slender, gently expanded spically; 4<sup>th</sup> a little shorter than 3<sup>rd</sup>, 5<sup>th</sup> longer than 3<sup>rd</sup>, remaining gradually increasing in length, thinning, each narrowed at base. Pronotum broader than long, anterior margin straight, lateral margins straight, parallel, gently rflexed, hind margin and angles rounded, median suture faint, prozona tumid and metazona depressed. Elytra well developed, smooth, humeral angles weak, hind margin straight, oblique. Wings scarcely projecting beyond elytra. Legs long, slender, femora and tibiae compressed, hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>, 2<sup>nd</sup> lobed. Abdomen spindle shaped, tergites weakly convex, impunctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct, former comparatively weaker. Penultimate sternite with hind margin rounded. Ultimate tergite transverse, lateral margins parallel, above the bases of forceps with mammiform tubercles directed backwards, hind margin feebly emarginated in middle, lateral portion of hind margin oblique. Pygidium transverse, sightly narrowed at base, posterior margin turned upwards, hind margin with two faint tubercles in middle. Forceps with branches



**Figs. 553-558.** *Oreasiobia calciatii* (Borelli), Syntype Male, 553. Dorsal view, 554. Genitalia, 555. Paramere, enlarged, 556. Basal portion of virga, enlarged; Syntype Female, 557. Ultimate tergite and forceps, 558. Pygidium, enlarged.

stout, remote at base, depressed, broadly and gradually incurved, tapering backwards, at base internally with a dorsal and ventral tooth directed inwards. Genitalia with parameres constricted in middle, apices obtuse; virga longer than the parameres, undulated.

Female: Agrees with males in most characters except that ultimate tergite lacking mammiform tubercles above the roots of forceps; pygidium about as long as broad, hind margin and angles with minute points and forceps with branches straight, tapering apically, incurved a little before apex, internally at base with a short cocavity to accommodate pygidium.

*Measurements:* (in mm)

|                   | Male | Fmales    |
|-------------------|------|-----------|
| Length of body    | 11.1 | 11.3-13.2 |
| Length of forceps | 3.5  | 3.4 - 4.1 |

*Types:* Syntypes 1 Male, 3 Females at MITZ.



*Distribution*: India: Jammu and Kashmir, Srinagar Gilgit Road, ca 2500 m.

*Eemarks*: This species is included under the genus on the basis of dense body pubescence; transverse pronotum and ultimate tergites, in males, with mammiform tubercles above the roots of forceps, directed posteriorly.

It can be easily separated from *Oreasiobia fedtschenkoi* (Saussure) by strongly transverse pronotum (*vs* weakly transverse pronotum in *F. fedtschenkoi*) and parameres broader at base and apically, constricted in middle (*vs* broadest at base, gradually narrowed apically).

### Genus *Anechura* Scudder

*Anechura* Scudder, 1876, *Proc. Boston Soc. nat. Hist.*, **18**: 289 (Type species : *Forficula bipunctata* Fabricius, 1781); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 100; Burr, 1910, *Fauna British India, Dermaptera*: 159; Burr, 1911, *Genera Insect.*, **122**: 73; Bey-Bienko, 1936, *Faune de l'URSS, Dermapterès*: 136; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 26; Popham, 1968, *Entomologist*, **101**: 199; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 56; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 431; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 52; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 6512; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 746; Steinmann, 1993, *Das Tierreich*, **108**: 454.

*Odontopsalis* Burr, 1904, *Trans ent. Soc. Lond.*, **1904**: 315 (Type species: *Odontopsalis harmandi* Burr, 1900); Burr, 1911, *Genera Insect.*, **122**: 73 (treated as synonym of *Anechura* Scudder, 1876).

*Himanechura* Singh, 1955, *Agra Univ. J. Res. (Sci.)*, **4**(1): 183 (Type species: *Himanechura lahaulensis* Singh, 1955); Srivastava, 1978, *Rec. zool. Surv. India, Occ. pap.*, **2**: 56 (treated as a synonym of *Anechura* Scudder, 1876).

Build stout, body smooth, without pubescence. Antennae 13 segmented or more (since apical ones generally tend to break off easily on slightest jerck); 3<sup>rd</sup> long, expanded apically; 4<sup>th</sup> shorter than preceding; 5<sup>th</sup> equal to 3<sup>rd</sup>, expanded apically. Elytra and wings normal, former without costal carina and latter sometimes concealed. Sternal plates transverse. Ultimate tergite, in males, above the bases of forceps, often produced as posteriorly pointed spine; pygidium distinct, not transverse generally and forceps of various types.

*Type species*: *Forficula bipunctata* Fabricius, 1781.

*Distribution*: Oriental and Palaearctic Regions.

*Remarks*: Members of this and *Oreasiobia* Semenov are very similar in external features. Examination of specimens and photographs of various species of both the genera reveals that members of the latter are densely pubescent and ultimate tergite, in males, possess a pair of mammiform tubercles above the bases of forceps, often weakly developed

and pygidium broader than long normally. However, members of *Anechura* Scudder, 1876 are glabrous (without pubescence); in males, normally ultimate tergite without tubercles posteriorly and pygidium about as long as broad with the exception of *A. filchneri* (Burr).

#### Key to the species (based on males)

- 1(4). Pygidium about as long as broad
- 2(3). Pronotum strongly transverse; elytra and wings unicolourous, pilose; pygidium scarcely convave posteriorly and forceps at base internally with a triangular tooth ..... *A. stoliczkae* Burr
- 3(2). Pronotum weakly transverse; elytra and wings maculated, former rugose with a reddish spot near shoulder and wings at base close to external margin and tip yellow; pygidium longer than broad, deeply incised apically, lateral angles produced into a sharp spine ..... *A. biswasi* Srivastava
- 4(1). Pygidium transverse
- 5(6). Pronotum about as long as broad; pygidium posteriorly in middle produced into a sharp spine ..... *A. crinitata* (Shiraki)
- 6(5). Pronotum transverse; pygidium not as above, sometimes in middle posteriorly convex or obtuse
- 7(8). Pronotum weakly transverse; elytra and wings with a yellow spot; pygidium with hind margin either convex or slightly emarginated in middle, lateral angles projecting ..... *A. zubovskii* Semenov
- 8(7). Pronotum strongly transverse; elytra and wings unicolourous; pygidium variously shaped with one or two tubrcles, hind margin broadly or obtusely convex ..... *A. filchneri* (Burr)

#### *Anechura stoliczkae* Burr

(Figs. 559-563)

*Anechura stoliczkae* Burr, 1911, *J. Asiat. Soc. Beng.* (N.S.), **7**: 792 (2 Males, 3 Females; North India: Upper Sutluj Dist., Bashahr); Burr, 1912, *Annln naturh. Mus., Wien*, **26**: 96 (Type, 1 Male, 2 Females; India); Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**: 224, Pl. 20, figs 19-20 (India: Himachal Pradesh, Kulu and Jalore Pass, Kulu Kangra); Brindle, 1974, *Senckenbergiana biol.*, **55**(1/3): 154, fig. 23 (Male, Female; Nepal, alt. 330 - 3700 m); Brindle, 1975, *Ent. basiliensia*, **1**: 39 (Bhutan, alt. 1680-2500 m); Brindle, 1978, *Senckenbergiana biol.*, **58**(3-4) (1977): 207, figs. 5-8 (Male, Female; India: Himalaya, Kashmir, alt. 2400 - 4200 m); Biswas and Srivasava, 1978, *Newsl. zool. Surv. India*, **2**(4): 133 (India: U.P. (now Uttarakahnd), Mussoorie); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 56; Srivastava, 1979, *Proc. zool. Surv. India*, **1**: 65, figs 9A-B (Male forceps exhibiting polymorphism); Srivastava, 1982, *Ent. basiliensia*, **7**: 67 (India: Himachal Pradesh, Kothi, 1900 - 2500 m); Srivastava, 1984, *Proc. Wkshp High Alt. Ent. & Wildl. Ecol. zool. Surv. India* (1983): 116,

figs 7A-B (Male, Female; India: Himachal Pradesh, Uttarakhand (now mentioned localities not under U. P.), Garhwal Dist., Uttarkashi, 2671 m); Srivastava and Lal, 1993, *Rec. zool. Surv. India*, **91**(1)(1992): 122 (Male, Female; India: Himachal Pradesh, Kinnaur and Mandi Dists.); Srivastava, 1995, *Fauna of Western Himalaya (U.P.)*, *Himalayan Ecosystem Series*, Pt. **3**: (India: Himalaya, U.P. (area now included under Uttarakhand)); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series*, **9**: 217, figs 67-68 (Male, Female; India: Sikkim, North Sikkim, Zema, 2620 m).

*Oreasiobia stoliczkae*; Semenov in Bey-Bienko, 1936, *Faune de l'URSS, Dermapterès*: 229; Semenov, 1938, *Konowia*, **16**(3-4): 241; Kapoor, 1968, *Agra univ. J. Res. (Sci.)*, **16**(1) (1967): 27; Sakai, 1973, *Dermapterorum Catalogus, Praeliminaris*, **7**: 146; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 53; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7038 (description), 7167-7169 (black and white diagrams and photographs), 7108-7110 (coloured photographs of Males and Females); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9291, Pl. II, fig. 6 (Male, Female; India: Uttarakhand, Pauri Garhwal, Gangreia, 2475-3300 m, Ukna, 2970-3234 m, Khumyara, 1419-1650 m, Akhrotkot, 1881-2145 m; Sikkim, North Sikkim, Lathong, 1999 m, Benshoi, 2301 m, Chetang, 2871 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 52; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 56; Srivastava, 1976, *Newsl zool. Surv. India*, **2**(4): 272 (India: Uttarakhand (now area not under U. P.), Garhwal Himalaya); Steinmann, 1977, *Acta. zool. hung.*, **23**: 203, fig. 10; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 771; Steinmann, 1993, *Das Tierreich*, **108**: 453, figs. 727-730.

*Anechura himalayana* Singh, 1955, *Agra Univ. J. Res. (Sci.)*, **4**(1): 180, figs 1-5 (Holotype Male, Allotype Female, Paratypes 60 Males, 73 Females; India: Upper Chenab Valley, 3054-3685 m); Brindle, 1975, *Ent. basiliensis*, **1**: 39 (treated as a synonym of *Anechura stoliczkae* Burr, 1911).

*Himanechura lahaulensis* Singh, 1955, *Agra Univ. J. Res. (Sci.)*, **4**(1): 184, figs 11-14 (Holotype Male, Paratypes 13 Males; India: Upper Chenab Valley (Lahaul Valley, Khoksar, 3658 m - in fact all specimens are nymphs); Singh, Bajjal, Mathew and Gupta, 1955, *Agra Univ. J. Res. (Sci.)*, **4** (Suppl.): 741 (treated as a synonym of *Anechura himalayana* Singh, 1955).

*Anechura nyari* Kapoor, 1966, *Ann. Mag. nat. Hist.*, (13)**9**: 389, figs 1-6 (Holotype Male, Paratype 1 Male; India: Himachal Pradesh, Rahla, Kulu Valley, on the right bank of river Vyas, 2991 m) - **Syn. n.**

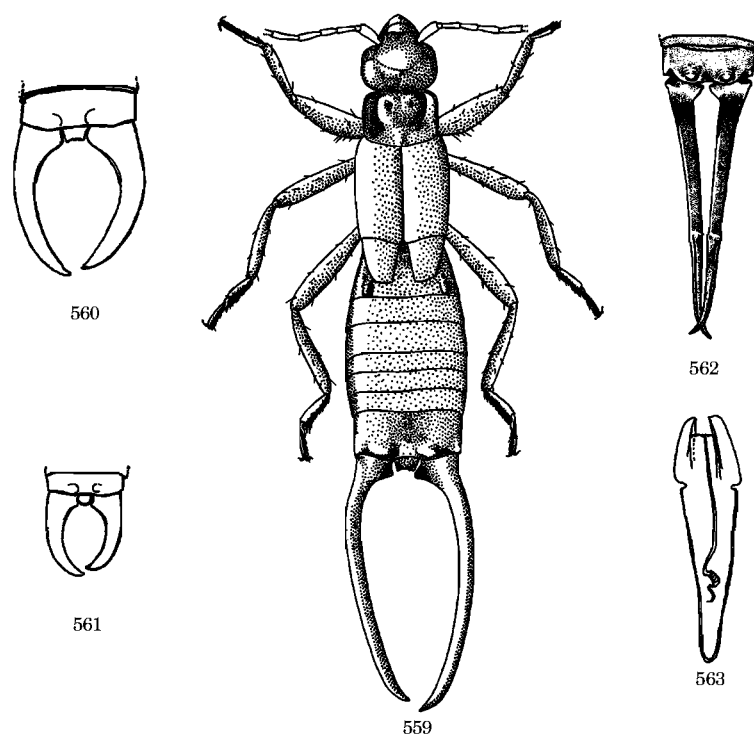
*Forficula puella* Steinmann, 1988, *Acta zool. hung.*, **34**(1): 4, figs 1-2 (Holotype Male, Paratype 1 Male; China: Szechwan, Huaying Shan) - **Syn. n.**

*Forficula fontana* Steinmann, 1988, *Acta zool. hung.*, **34**(1): 8, figs 14-15 (Holotype Male; India: Kashmir) - **Syn. n.**

Male: General colour black to brownish black, head sometimes orange reddish and abdominal tergites lighter in colour. Body glabrous, cuticle coriaceous, hind margin of abdominal tergites rugose with indistinct punctulations.

Head slightly broader than long, frons convex, smooth, sutures deep and distinct, hind margin emarginate in middle. Eyes distinctly shorter than post-ocular length. Antennae

12-segmented, 1<sup>st</sup> stout, expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, quadrate; 3<sup>rd</sup> three to three and half times longer than broad; 4<sup>th</sup> slightly longer than the preceding; 5<sup>th</sup> almost equal to 3<sup>rd</sup>, remaining gradually increasing in length and thinning distally. Pronotum strongly transverse, lateral margins straight, gently reflexed, hind margin briefly rounded, median sulcus distinct, prozona tumid, metazona depressed. Elytra and wings broad, well developed, smooth. Legs long, slender, hind tarsi with 1<sup>st</sup> segment almost equal to 3<sup>rd</sup>; 2<sup>nd</sup> lobed, covered with thick pubescence on underside. Abdomen long, enlarged in middle, tergites weakly convex, smooth. Penultimate sternite broadly rounded posteriorly. Ultimate tergite transverse, obscurely punctate, above the bases of forceps with tumid folds or produced in the form of mammiform tubercles with sharp points directed posteriorly, hind margin trisinate, lateral portion of hind margin oblique. Pygidium subvertical, about as long as broad, gently narrowed posteriorly, hind margin emarginated. Forceps with branches short (f. cyclolabia) or long (f. macrolabia) with intermediate stages, curving and tapering apically, at base internally with a triangular tooth. Genitalia with parameres broader at base, narrowed apically, tip obtuse; virga chitinous, tubular, basal vesicle distinct.



**Figs. 559-563.** *Anechura stoliczkae* Burr, Male, 559. Dorsal view, 560-561. Ultimate tergite and forceps, exhibiting meso- and cyclolabic forms, 562. Ultimate tergite and forceps, deformed perhaps due to injury, 563. Genitalia (fig. 560 ex Holotype Male of *Anechura nyayari* Kapoor, 1966).

Female: Similar to males in most details except that penultimate sternite obtuse in middle posteriorly; ultimate tergite with weak folds above the roots of forceps; pygidium slightly longer than broad and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 10.0 - 15.9 | 10.0 - 13.0 |
| Length of forceps | 3.0-10.0    | 2.5 - 4.5   |

*Types:*

1. *Anechura stoliczkae* Burr, 1911 - Syntypes 2 Males and 3 Females, according to original description (Burr, 1911b) at NMWA. However, Brindle (1975a) mentions Syntype (part) at BMNH.

2. *Anechura himalayana* Singh, 1955 - Holotype, Allotype and Paratypes at ZSI.

3. *Himanechura lahaulensis* Singh, 1955 - Holotype and Paratypes at ZSI.

4. *Anechura nyyari* Kapoor, 1966 - Holotype Male at IARI.

5. *Forficula puella* Steinmann, 1988 - Holotype at HNAB.

6. *Forficula fontana* Steinmann, 1988 - Holotype at HNAB

*Distribution:* Himalaya NW India to Bhutan, alt. 2400-4100 m. and China (Szechuwan).

*Remarks:* It is essentially a high altitude species commonly occurring under stones on the edge of streams and rivers.

This species exhibits great variations in the length of male forceps with short (cyclolabial) to long (macrolabial) forms with various intermediate stages. Besides, tumid elevations on ultimate tergite above the roots of forceps may be weakly developed or produced posteriorly into a sharp spine. In view of this *Anechura nyyari* Kapoor, 1966, *Forficula puella* Steinmann, 1988 and *F. fontana* Steinmann, 1988 are treated as synonyms since all three come within the variational limits of the species.

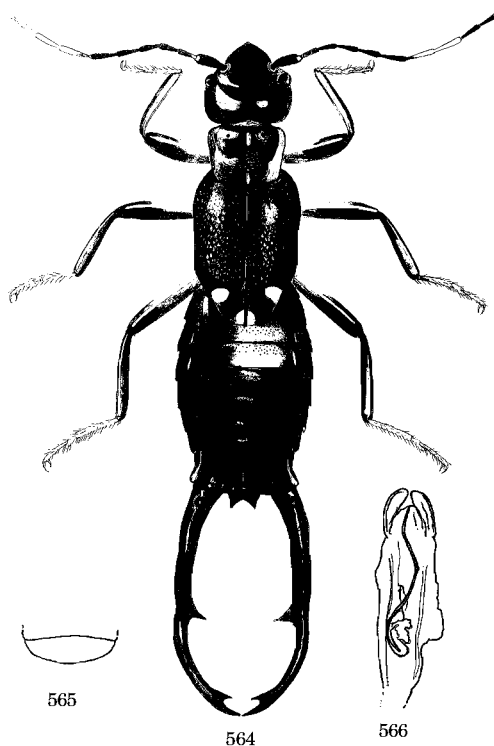
***Anechura biswasi* Srivastava**

(Figs. 564-566)

*Anechura biswasi* Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, Pt. 4: 431, figs 205-208 (Holotype Male; India: West Bengal, Darjeeling Dist., Darjeeling, Birch Hill, 1981 m).

*Opisthocosmia cervipyga* (nec Kirby, 1891); Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5977 (only photograph of a Male labelled as "Madrid Mus., SS-1127-S").

Male: General colour dark brownish black with metallic lustre; antennae with two ante-apical segments yellow; elytra with a faint rounded brown spot at base; wings with a yellow rounded spot externally at base and inner wing tip yellow; legs with femora light brown in basal half and tarsi with 1<sup>st</sup> segment yellow. Build stout.



**Figs. 564-566.** *Anechura biswasi* Srivastava, Holotype Male, 564. Dorsal view, 565. Penultimate sternite, 566. Genitalia.

Head about as long as broad, smooth, convex, occiput weakly raised, sutures marked by deep impressed lines, hind margin emarginated in middle. Eyes about half as long as the post-ocular length. Antennae 12-segmented, basal segment stout, expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> slender; 4<sup>th</sup> slender, slightly shorter than the preceding; 5<sup>th</sup> slightly longer than 3<sup>rd</sup>, thinner, remaining gradually increasing in length and thinning and each narrowed basally. Pronotum about as long as broad, lateral margins straight, gently reflexed, slightly narrowed posteriorly, hind margin briefly rounded, prozona strongly raised and well differentiated from flat metazona. Elytra ample, shoulder prominent, striated, scabrous, meeting along the median line. Wings smooth, about one third as long as the elytra. Prosternum longer than broad; mesosternum transverse, broader at base, posteriorly narrowed with hind margin convex and metasternum transverse, narrowed posteriorly between hind coxae with hind margin concave. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>; 2<sup>nd</sup> lobed, covered on underside with thick pubescence. Abdomen enlarged in middle, tergites convex, each punctate in basal half only, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former comparatively weaker. Penultimate sternite with posterior margin rounded. Ultimate tergite transverse,

impunctate, median sulcus short, tumid above the bases of forceps and in the middle with a slight depression, hind margin faintly trisinate, lateral portion of hind margin oblique, postero-lateral angles a little projecting. Pygidium slanting, longer than broad, posteriorly divided into two triangular lobes with angle produced into sharp spine. Forceps with branches stout, in profile undulated, remote at base, tapering apically, almost straight in basal two thirds, afterwards incurved with apices hooked and sharply pointed, at base above with a small tubercle, internally below armed with a sharp, triangular tooth, directed ventrally at a little beyond middle and with somewhat similar but smaller tooth, a little before apex, on ventral side also with a tubercle at basal one third. Genitalia with parameres broad, about twice as long as broad, external margin convex; virga chitinous, tubular.

Female: Unknown.

*Measurements:* (in mm)

|                   | Male |
|-------------------|------|
| Length of body    | 17.0 |
| Length of forceps | 9.1  |

*Type:* Holotype Male at ZSI.

*Distribution:* India: West Bengal Darjeeling Dist., Darjeeling, Birch Hill, 1981 m.

*Remarks:* This species is quite distinct from other members of the genus by the presence of a metallic sheen on the body. Strongly rugose elytra, shape of pygidium and forceps, in males, are characteristic.

It has close resemblance with members of *Allothalia* in general stout build and rugosely striated elytra but lacking ridge on the costal margin

Sakai (1994) has given a photograph of a male specimen labelled as "*Opisthocosmia cervipyga* Kirby, 1891, Madrid Mus., SS-1127-S" without mentioning its locality, belongs to this species.

### ***Anechura crinitata* (Shiraki)**

(Figs. 567-571)

*Anechura crinitata* Shiraki, 1906, *Trans. Sapporo nat. Hist. Soc.*, **1**(2): 11 (Type Male; Formosa); Burr, 1911, *Ann. Mag. nat. Hist.*, (8)**8**: 52; Burr, 1911, *Genera Insect.*, **122**: 73, pl. 7, fig. 10, pl. 8, fig. 4; Borelli, 1927, *Boll. Lab. zool. gen. agr., Portici*, **20**: 75 (Male, Female; Formosa - species redescribed); Popham, 1968, *Entomologist*, **101**: 199; Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 163; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 52; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6574 (description), 7029 (black and white diagrams and photographs of Male and Females), 6933-6934 (coloured photographs of Male and Females); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 57; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 747; Steinmann, 1993, *Das Tierreich*, **108**: 474, fig. 762.

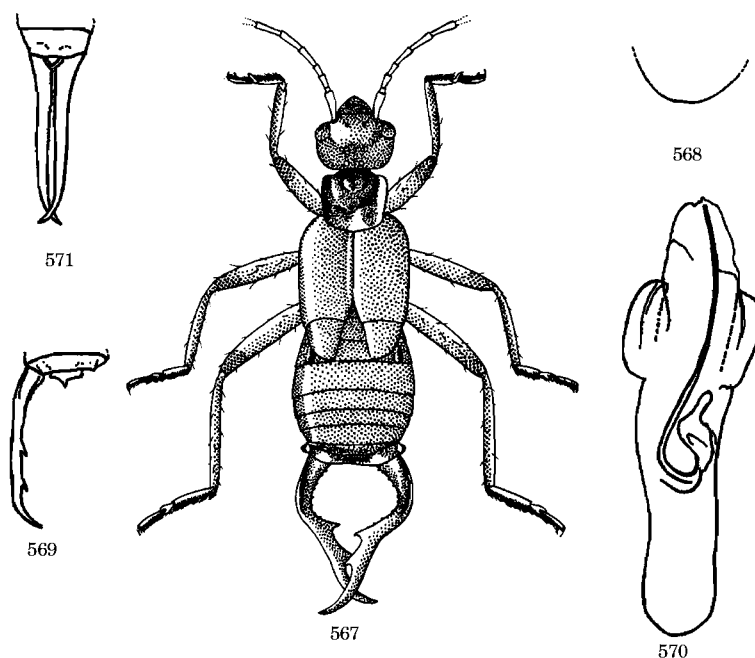
*Taipinia crinitata*; Shiraki, 1928, *Ins. Matsum.*, **3**(1): 17.

*Taipinia pulla* Shiraki, 1907, *Trans. Sapporo nat. Hist. Soc.*, **2**: 105 (Type Male; Formosa) - **Syn. n.**

*Eparchus pullus*; Sakai, 1994, *Dermapterorum Catalogus*, **26**: 5658 (description), 6009 (coloured photographs of 2 Males), 6094-6095 (black and white diagrams and coloured photographs of Males).

Male: General colour blackish brown; antennae and sides of pronotum brown; legs yellowish brown, in apical one third black; wings with tip yellow; forceps and pygidium light brown. Body covered with sparse, short, golden yellow pubescence.

Head about as long as broad, smooth, frons convex, sutures faint, hind margin in middle emarginated. Eyes distinctly shorter than the post-ocular length. Antennae 9-segmented or more (since the apical ones tend to break off on slightest jerck), 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, a little over twice as long as broad; 4<sup>th</sup> almost equal to preceding but slightly stouter.; 5<sup>th</sup> onwards gradually increasing in length, thinning, each gently narrowed basally. Pronotum as long as broad, obscurely punctulate, lateral margin straight, gently reflexed, slightly contracted posteriorly, hind



**Figs. 567-571.** *Anechura crinitata* (Shiraki), Male, 567. Dorsal view, 568. Posterior margin of penultimate sternite, 569, Ultimate tergite and forceps of one side only, exhibiting variation, 570, Genitalia; Female, 571, Ultimate tergite and forceps.



margin briefly rounded, in middle feebly obtuse, median sulcus distinct, prozona raised and well differentiated from flat metazona. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed, covered with pubescence on underside. Elytra and wings ample, coriaceous, smooth, covered with fine pubescence. Prosternum longer than broad, meso- and metasternum transverse. Abdomen elongated, narrowed basally, dilated up to 7<sup>th</sup> tergite, afterwards slightly narrowed, tergites strongly convex, punctulate, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former comparatively weaker. Penultimate sternite transverse, obscurely punctulate, hind margin broadly rounded with slight emargination in middle. Ultimate tergite transverse, obscurely punctulate, sloping backwards, hind margin in middle straight, lateral portion of hind margin above the bases of forceps oblique, postero-lateral angles produced into a tubercle. Pygidium declivitous, transverse at base, in the middle produced into a sharp spine, lateral angles projecting. Forceps with branches remote at base, strongly incurved in basal one half, afterwards straight undulated, internally armed at middle with two sharp teeth, tapering backwards, apices pointed and gently hooked. Genitalia with parameres two and a half times longer than broad; virga chitinous, tubular.

Female: Agrees with males in most characters except that ultimate tergite strongly narrowed posteriorly; pygidium short, narrowed to a small point in middle and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male      | Female     |
|-------------------|-----------|------------|
| Length of body    | 8.5 - 9.5 | 8.0 - 10.0 |
| Length of forceps | 4.0 - 4.5 | 4.0 - 4.5  |

*Types:*

1. *Anechura crinitata* Shiraki, 1906 - Type Male; repository not known.
2. *Taipinia pulla* Shiraki, 1907 - Type Male at HUSS.

*Distribution:* Taiwan, Formosa and India.

This species is represented in the collections of the Zoological Survey of India, Kolkata, India by following specimens, not reported earlier:

India: Arunachal Pradesh, Lohit Dist., Tihun, 1268 m, 3 Males, 4 Females, 22.xi.1969, Chowkham, 1 Male, 1 Female, 12.xii.1969 (*J. M. Julka* coll.), determined by G. K. Srivastava.

*Remarks:* Forceps, in males, are undulated but sometimes almost horizontal.

*Anechura torquata* Burr, 1905 appears to be very close to this species but differs by the glabrous body and stouter forceps. In case it is found to conspecific it will have priority.

Even *Brindleiana atalas* Steinmann (1975c) appears to be very close to *A. torquata* in having stout build and very similar pygidium, in males, but differs by a distinct rim (not carina) on costal margin of elytra. There is need to examine this character from the Types of both the species. Should they prove to be identical *A. torquata* will have priority over other three species, namely *A. crinitata* Shiraki, 1906, *Taipinia pulla* Shiraki, 1907 and *B. atlas* Steinmann, 1975 as synonyms.

***Anechura zubovskii* Semenov**

(Figs. 572-574)

*Anechura zubovskii* Semenov, 1901, *Horae Soc. ent. Ross.*, **35**: 188 (4 Males, 2 Females; Himalaya, Occid., Ladak: Vallis fluvii Drass, 2743-3353 m); Kirby, 1904, *Syn Cat. Orthoptera*, **1**: 41 (India: Kashmir); Borelli, 1909, *Boll. Musei zool. Anat. comp. R. Univ., Torino*, (603)**24**: 4 (India: Kahmir, on road from Srinagar to Gilgit, 2500 m); Burr, 1910, *Fauna British India, Dermaptera*: 180, pl. 6, fig. 52, 52a; Burr, 1911, *Genera Insect.*, **122**: 74, pl. 9, fig. 6 (sternum); Burr, 1911, *Annl. naturf. Mus., Wien*, **26**: 95 (1 Female; India: Kashmir); Burr, 1914, *Rec. Indian Mus.*, **10**: 291 (1 Female; India: Himachal Pradesh, Simla Hills, Theog, 2438 m); Bey-Bienko, 1934, *Ark. Zool.*, (20) **25A**: 6; Bey-Bienko, 1935, *Wiss. Ergben. Niederlandischen Exped. Karakorum, Zool.*: 209 (Males, Females; India: Kashmir, Kargil and Ladakh area, 1600-4100 m); Bey-Bienko, 1967, *Acta. ent. Bohem.*, **64**(6): 434 (Male, Female; Afghanistan, Nuristan, 1100-1500m); Srivastava, 1976, *Newsl. zool. Surv. India*, **2** (2): 273 (India: Uttarakahand, Garhwal, Goting, 3778 m); Srivastava, 1982, *Rec. zool. Surv. India*, **79**: 467, fig. 2 (Male, Female; Pakistan: NWF Prov., Chitral area); Srivastava, 1982, *Ent. basiliensia*, **7**: 67 (India: Kashmir, Ladakh, Mulbekh-Fatula, 3050-3800 m); Srivastava, 1983, *Ent. basiliensia*, **8**: 42 (Female; India: Kashmir, Ladakh and Sikkim); Srivastava, 1984, *Proc. Wkshp High Alt. Ent. & Wildl. Ecol. zool. Surv. India* (1983): 117, figs 8A-C (Males, Females; India: Himachal Pradesh, Lahaul and Spiti Valley, 2747-4100 m; Kashmir, Ladakh, Drass, 3900 m); Srivastava and Lal, 1993, *Rec. zool. Surv. India*, **91**(1) (1992): 2, figs 20-22 (India: Himachal Pradesh); Srivastava, 1997, *Fauna of Nanda Devi Biosphere Rserve, Fauna of Conservation area 9*: 56 (Male, Female; India: Uttarakahand, Chamoli and Pithoragarh Dists, Nanda Devi Biosphere Reserve, 2100-3500 m); Brindle, 1978, *Scenkenbergiana biol.*, **58**(3/4): 209 (India: Kashmir, 3000-4200 m); Steinmann, 1975, *Folia ent. hung.*, **28**(1): 162, fig. 32 (6 Typus); Steinamann, 1977, *Acta zool. hung.*, **23**: 208; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 754; Steinmann, 1990, *Acta. zool. hung.*, **36**(1-2): 149, figs 28-30; Steinmann, 1993, *Das Tierreich*, **108**: 472, figs 758-759.

*Anechura asiatica zubovskii*; Bey-Bienko, 1936, *Faune de l'URSS, Dermapterès*: 177; Bey-Bienko, 1967, *Act ent. Bohem.*, **64**(6): 434 (Male, Female; Afghanistan, Nuristan, 1100-1500 m); Sakai, 1973, *Dermapterorum Catalogus Praeliminaris*, **7**: 157; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6559 (description), 6932-6934 (coloured photographs of Males and Females), 7027-7028 (black and white diagrams and photographs).

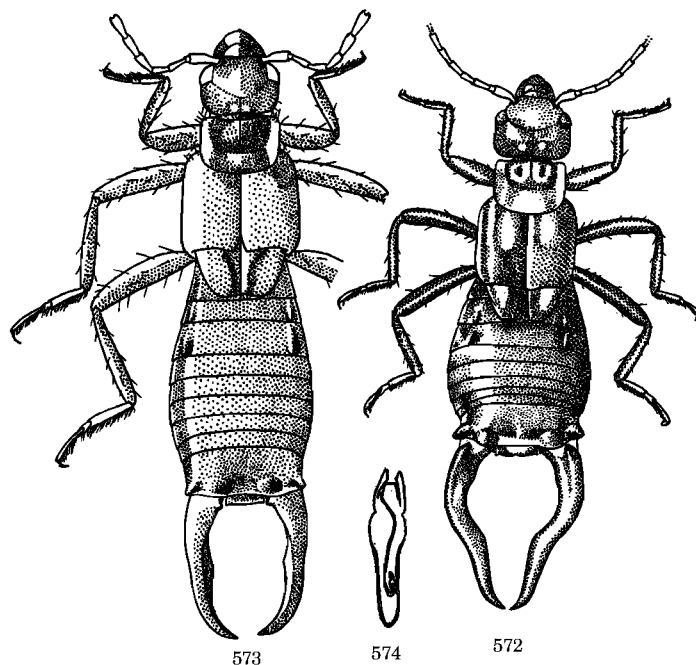
*Anechura bipunctata zubovskii*; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 103 (Himalaya: Tibet); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 26 (treated as a subspecies); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 56.

*Anechura bipunctata pirpanjalae* Singh, 1955, *Agra Univ. J. Res. (Sci.)*, 4(1): 182, figs. 6-10 (Holotype Male, Allotype Female, Paratypes 1 Male, 1 Female; India; Himachal Pradesh, Upper Chenab Valley (Lahaul Valley), Khoksar, 3658 m).

*Anechura pirpanjalae* (as a new species) Kapoor, 1966, *Ann. Mag. nat. Hist.*, (13)9: figs 7-13 (Holotype Male, Allotype Female, Paratypes 2 Males, 6 Females; India: Himachal Pradesh, Khoksar, 3658 m, Upper Chenab Valley (Lahaul Valley); Srivastava, 1984, *Proc. Wkshp High Alt. Ent. & Wildl Ecol. zool. Surv. India* (1983): 117 (treated as synonym of *Anechura zubovskii* Semenov, 1901).

Male: General colour black to brownish, somewhat shining; pronotum on lateral margin yellow; elytra and wings with a yellow spot. Cuticle glabrous and smooth.

Head longer than broad, smooth, frons and occiput tumid, sutures fine but distinct hind margin slightly emarginated in middle. Eyes shorter than post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, slightly transverse; 3<sup>rd</sup> long, slender, gently expanded apically; 4<sup>th</sup> slightly shorter than preceding, 5<sup>th</sup> slightly longer than 3<sup>rd</sup>, remaining gradually increasing in length and thinning, each narrowed basally. Pronotum transverse, anteriorly as broad as head, angles slightly distinct, lateral margins straight, gently reflexed, hind margin rounded, median sulcus distinct, prozona tumid, well



**Figs. 572-574.** *Anechura zubovskii* Semenov, Male, 572, Dorsal view, typical form, 573, Dorsal view, weak form of forceps, 574, Genitalia.

differentiated from depressed metazona. Elytra and wings ample, former almost equal in length to hind femora. Legs long, slender, hind tarsi with 1<sup>st</sup> segment equal in length to 3<sup>rd</sup>; 2<sup>nd</sup> lobed, covered with thick pubescence on underside. Abdomen elongated, greatly or slightly enlarged in middle, strongly convex, smooth, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former comparatively weaker. Penultimate sternite broadly rounded posteriorly. Ultimate tergite transverse, with a slight depression in middle posteriorly, above the bases of forceps with tumid elevations, hind margin in middle faintly emarginated, lateral portion of hind margin oblique, postero-lateral angles with a sharp ridge. Pygidium transverse, declivitous, square, hind margin in middle faintly convex, postero-lateral angles with very small point. Forceps with branches stout, roundedly trigonal, remote at base, strongly undulated or less so, strongly incurved and raised upwards in basal one third, afterwards bent downwards upto middle, in apical one third almost straight, horizontal, apices gently hooked and pointed, armed at base above with a short, conical tooth, often poorly marked, internally at about middle with a blunt projection. Genitalia with parameres broader at base, narrowed apically, apices pointed; virga, chitinous, tubular.

Female: Similar to males in most details except that ultimate tergite narrowed posteriorly, above the roots of forceps with elevations weak, postero-lateral angles without ridge; pygidium narrow, about as long as broad and forceps, simple, straight.

*Measurements:* (in mm)

|                   | Male       | Female      |
|-------------------|------------|-------------|
| Length of body    | 9.5 - 14.0 | 10.0 - 13.0 |
| Length of forceps | 5.7 - 6.0  | 3.6 - 4.0   |

*Types:*

1. *Anechura zুবовskii* Semenov, 1901 - Types (Syntypes) 2 Males, 4 Females at AZL.

2. *Anechura bipunctata pirpanjalae* Singh, 1955 - Holotype Male, Allotype Female, Paratypes 1 Male, 1 Female at ZSI.

3. *Anechura pirpanjalae* Kapoor, 1966 - Holotype Male, Allotype Female at IARI.

*Distribution:* India (Jammu and Kashmir, Kargil and Ladakh, 1600-4200 m; Himachal Pradesh, 3315-4001 m; and Uttarakhand, Chamoli and Pithoragarh Dists, 2100-3500 m), Afghanistan (Nuristan, 1100-1500 m) and Pakistan (NWF Prov. and Punjab, 3040 m).

*Remarks:* It generally occurs under stones in large numbers on the edge of streams and rivers. Under the bark of trees also it is found.

Yellow spot on elytra and wings is sometimes poorly marked or obsolete. Forceps, in males, are generally undulated and strongly incurved in basal half but occasionally may be horizontal, almost straight and lacking spine at base on upper surface.

***Anechura filchneri* (Burr)**

(Figs. 575-579)

*Odontopsalis filchneri* Burr in Filchner 1908, *Wiss. Ergebn. Exped. China-Tibet Zool.-Bot.*, **10**: 58, pl. 3, fig. 8 (Male; Lan-Tshóu (Kansu Prov.), China).

*Anechura filchneri*, Burr, 1911, *Genera Insect.*, **122**: 73; Bey-Bienko, 1934, *Ann. Mag. nat. Hist.*, (10)**13**: 408; Bey-Bienko, 1934, *Ark. Zool.*, (20)**25A**: 2 (China: S. Kansu); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 56; Srivastava, 1980, In: *Some Guide Signs on Insect Integrated Taxonomy*, ed. S. Sakai: 97, figs 9A-E (showing variations in male forceps and pygidium); Srivastava, 1984, *Proc. Wkshp. High Alt. Ent. & Wildl. Ecol. zool. Surv. India* (1983): 119, figs A-B (Male, Female; India: Uttrarakand, Kumaon Hills, 3777 m; Garhwal Hills, 2671 m); Srivastava, 1995, *Fauna of Western Himalaya (U. P.), Himalayan Ecosystem Series*, Pt. **3**: 44 (India: Uttarakahand (area now not under U. P.); Srivastava, 1997, *Fauna of Nanda Devi Biosphere Reserve, Fauna of Conservation area 9*: 57 (Male, Female; India: Uttarakahand, Pithoragarh dist., 3200-3500 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 52; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6577 (description), 6933-6934, 6936 (coloured photographs of Male, Female), 7031 (black and white diagrams and photographs of Male, Female); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 748; Steinmann, 1990, *Act. zool. Hung.*, **36**: 145, figs 6-9; Steinmann, 1993, *Das Tierreich*, **108**: 467, figs 749-750.

Male: General colour brownish black; sides of pronotum, elytra and wings yellowish brown. Build stout, smooth.

Head slightly longer than broad, smooth, frons and occiput tumid, sutures fine, hind margin scarcely emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennal segments stout, 12-segmented, 1<sup>st</sup> stout, gently expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, expanded apically; 4<sup>th</sup> a little shorter than the preceding; 5<sup>th</sup> about as long as 3<sup>rd</sup>, slender, narrowed basally, remaining, gradually increasing in length. Pronotum strongly transverse, anterior margin straight, and angles slightly distinct, lateral margins convex, gently reflexed, hind margin briefly rounded, prozona convex, median suture short, distinct with small depressions on either side of it, metazona flat. Elytra ample, about as long as the hind femora, shoulders weak, meeting along the median line, smooth. Wings smooth, projecting beyond elytra or concealed. Legs long, slender, hind tarsi with 1<sup>st</sup> segment slightly longer than the third; 2<sup>nd</sup> lobed, covered on underside with thick pubescence. Abdomen elongated, very slightly enlarged in middle, tergites weakly convex, punctated, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but on former comparatively weaker. Penultimate sternite transverse, posterior margin broadly rounded. Ultima tergite transverse, disc weakly convex, above the roots of forceps with weak or prominent elevations, often with small tubercles with striations, hind margin trisinate, lateral portion of hind margin oblique, postero-lateral angles a little projecting. Pygidium transverse, a little reflexed along the hind margin, laterally produced into a point or

tubercle, hind margin concave, postero-lateral angles with a small point or convex, sometimes with an obtuse point in middle. Forceps with branches remote at base, short, stout, strongly incurved (f. cyclolabia) and long, slender (f. macrlabia), armed at base with a small vertical tooth on dorsal border and somewhat similar tooth on ventral border. Genitalia with parameres long, narrowed apically, tip obtuse; virga chitinous, tubular.

Female: Similar to males in most characters except that penultimate sternite obtuse in middle posteriorly; ultimate tergite narrowed posteriorly; pygidium slightly longer than broad, narrowed posteriorly; hind margin subsinuate and forceps simple, subcontiguous and straight.

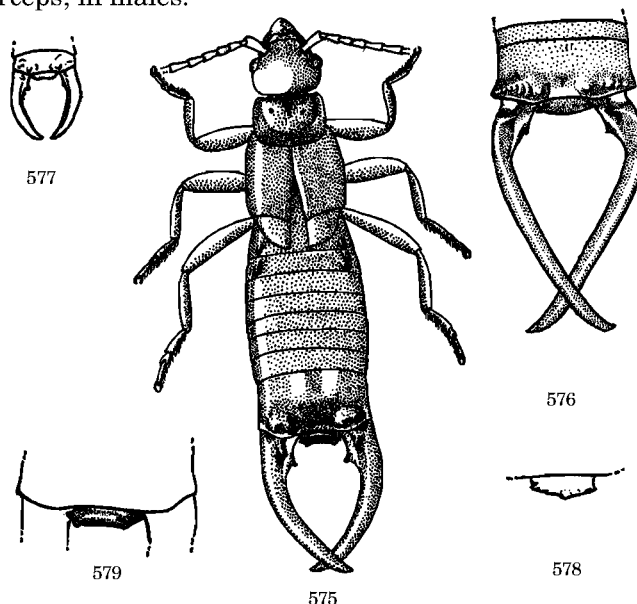
*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 7.7 - 8.5 | 8.0 - 8.5 |
| Length of forceps | 2.6 - 4.5 | 1.9 - 2.0 |

*Type:* Holotype Male; repository not known.

*Distribution:* China (Szechwan, Gansu), Mongolia and India (Uttarakhand, Kumaon and Garhwal Hills, 2633 - 3777 m).

*Remarks:* Great variations are noted in the length of elytra and wings, shape of pygidium and forceps, in males.



**Figs. 575-579.** *Anechura filchneri* (Burr), Male, 575. Dorsal view, 576-577. Ultimate tergite and forceps exhibiting macro- and cyclolabic forms of forceps, 578-579. Pygidium enlarged, exhibiting variations.

Generally, in cyclolabic forms, in males, forceps are short, stout and strongly incurved; pygidium is transverse, laterally with a triangular lobe and ultimate tergite possess prominent fold above the root of forceps whereas, in forma macrolabia, forceps are elongated, broadly incurved and slender and pygidium is convex posteriorly. Various intermediate stages are also found, in a large series, with ultimate tergite having weak folds above the bases of forceps and pygidium gently obtuse in middle and forceps of varying length.

This species can be easily separated from other species of the genus by the shape of pygidium and forceps, in males.

### Doubtful record

#### *Anechura svenhedini* Bey-Bienko, 1934

This species is recorded by Steinmann (1983) from Nepal, 2000-2200 m and India: Uttarakhand, Kumaon Hills, 1800-1900 m; Garhwal, 1400-1700 m and Meghalaya, Khasi Hills, 1880-1900 m by a large number of specimens.

From the above records this species appears to be quite common in the mountains of Nepal and India. In spite of several surveys conducted in the area covering mentioned localities by self and several other Survey parties from the Zoological Survey of India it could not be collected. Perhaps it may be a case of misidentification.

It may be mentioned that this species appears to very similar to *Anechura zubovskii* Semenov.

### Genus *Neoterygida* Srivastava

*Neoterygida* Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 159 (Type species: *Forficula circulata* Dohrn, 1865); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 786; Steinmann, 1993, *Das Tierreich*, **108**: 289; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7325.

Size medium (20.2 mm, including forceps); body strongly depressed.

Head depressed, sutures marked by faint depression. Antennae (broken in the Type, only basal segment remaining), basal segment stout, narrowed basally, about as long as the distance between antennal bases. Pronotum about as long as broad, quadrate. Elytra and wings ample, smooth, former ecarinate on costal margin. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>; 2<sup>nd</sup> lobed with its hind margin deeply emarginated. Prosternum longer than broad, narrowed apically; mesosternum transverse with hind margin entire and metasternum beyond hind coxae projecting as a narrow lobe with hind margin faintly emarginated. Abdomen strongly enlarged and strongly depressed in middle; ultimate tergite with disc depressed. Penultimate sternite rounded posteriorly, with a deep cleft in middle and a small median ridge apically. Pygidium transverse, subvertical, deeply emarginated in middle. Forceps with branches compressed, regularly arcuate

*Type species: Forficula circulata* Dohrn, 1865.

*Remarks:* On the basis of general build and shape of sternal plates this genus comes under family Anechurinae. It can be easily differentiate from various genera of Anechurinae and Opisthocosmiinae by strongly depressed body, shape of penultimate sternite and pygidium, in males.

***Neopterygida circulata* (Dohrn)**  
(Figs. 580-581)

*Forficula circulata* Dohrn, 1865, *Stettin. ent. Ztg.*, **26**: 95 (Type Male; India Orientali: Madras); Scudder, 1876, *Proc. Boston Soc. nat. Hist.*, **18**: 313

*Apterygida circulata*; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 16, fig. 42.

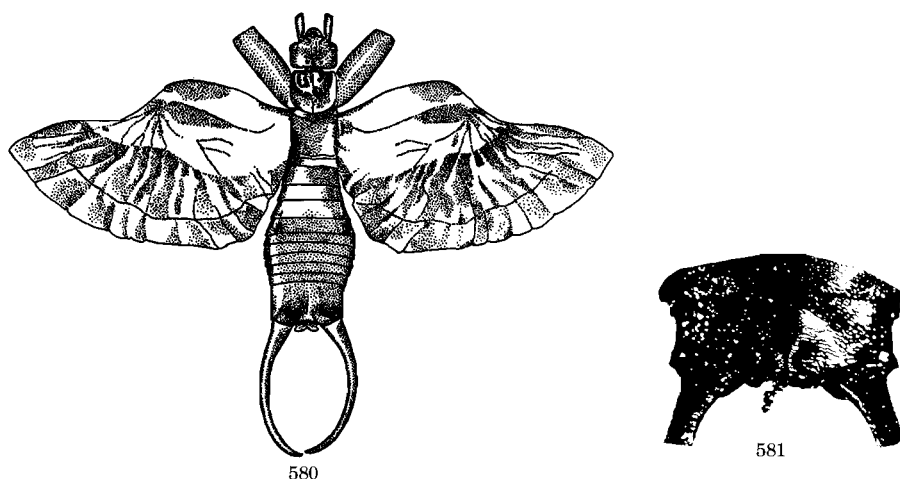
*Pterygida circulata*; Verhoeff, 1902, *Zool. Anz.*, **25**(665): 197; Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 44; Burr, 1910, *Fauna British India, Dermaptera*: 158, pl. 10, fig. 96 (Northern India and Madras); Burr, 1911, *Genera Insect.*, **122**: 72, pl. 6, figs. 16a-b; Burr, 1912, *Annln naturf. Mus. Wien*, **26**: 97 (Dohrn's Typus); Poham and Brindle, 1968, *Entomologist*, **101**: 200; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 59; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 53.

*Neopterygida circulata*; Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 160, figs 1-2 (Type male figured and redescribed); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 768; Steinmann, 1993, *Das Tierreich*, **108**: 390, figs 620-621; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7327 (description), 7172 (black and white figures and photographs of two Males), 7111 (coloured photographs of four Males, one specimen lacking hind portion of body, all ex BMNH), 7112 (coloured enlarged photograph of 1 Male ex BMNH).

Male: Head, pronotum and abdomen upto middle black; basal antennal segment, posterior half of abdomen and forceps reddish brown (or brick red); legs with femora black; tibiae and tarsi somewhat reddish; ultimate tergite with four faint, black longitudinal stripes. Elytra yellowish brown, Wings yellow in apical half and black in remaining half.

Head slightly longer than broad, moderately depressed, sutures marked by fine depressed lines, hind margin emarginated in middle. Antennae (?) with basal segment stout, expanded apically, about as long as the distance between antennal bases. Eyes shorter than the post-ocular length of head. Pronotum about as long as broad, anterior margin straight, lateral margins gently convex, hind angles and margin rounded, median sulcus distinct, prozona raised, with small depressions on either side of median line, metazona depressed. Elytra ample, impunctate, humeral angles slightly prominent, hind margin truncate. Wings projecting beyond elytra, of same texture as the elytra. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>, 2<sup>nd</sup> lobed with its hind margin deeply emarginate, covered with pubescence on underside. Abdomen enlarged in middle, tergites depressed, obscurely punctate, giving an impression of micro-reticulations, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former slightly less marked, sides of





**Figs. 580-581.** *Neopterygida circulata* (Dohrn), Male, 580, Dorsal view, 581, A photograph showing 8th and 9th sternites and base of forceps (fig. 580 ex Holotype Male, after Srivastava, 1984 and fig. 581 ex another male at the University Museum, Oxford, U.K.).

segments convex. Penultimate sternite broadly rounded posteriorly with a deep emargination in middle, a short, faint median ridge present apically. Ultimate tergite transverse, smooth, depressed, above the roots of forceps with lobular folds and area inbetween with slight depression, hind margin in middle straight, lateral portion of hind margin concave and oblique. Pygidium subvertical, transverse, divisible into two triangular lobes. Forceps with branches compressed, regularly incurved and tapering apically.

Female: Unknown.

*Measurements:* (in mm)

|                   | Type Male |
|-------------------|-----------|
| Length of body    | 14.0      |
| Length of forceps | 6.2       |

*Type:* Type Male at NMWA.

*Distribution:* India (Madras (now under Tamil Nadu) and North India).

*Remarks:* This species is known by Type Male, from Madras (now under Tamil Nadu); 1 Male from Northern India, in the entomological collections of the University Museum, Oxford (U. K.) and 4 Males, ex BMNH, photographs of which are given by Sakai (1995 a) with locality as Madras.

Probably this species is from South India, Madras, now under Tamil Nadu and the record from Northern India may be doubtful. It is also not clear whether the recorded specimens belong to one or different lots. This point, if anyhow, is possible, needs investigation.

## Subfamily EUDOHRNIINAE

*Eudohrniinae* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 93, 97 (Type genus: *Eudohrnia* Burr, 1907); Burr, 1911, *Genera Insect.*, **122**: 82; Burr, 1912, *Annln naturf. Mus., Wien*, **26**: 103; Brindle, 1969, *Entomologist's mon. Mag.*, **104**: 230 (as synonym of *Opisthocosmiinae*); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 50; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 124 (6299); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 783; Steinmann, 1993, *Das Tierreich*, **108**: 478 (treated as synonym of *Neolobophorinae*).

Build stout or normal. Antennae with basal segment stout, sometimes with lateral margins sharp or carinate; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> longer than fourth. Elytra and wings ample, former deeply punctate or smooth, costal margin without carina. Mesosternum quadrate, about as long as broad. Forceps, in males, remote at base, cylindrical.

Type genus: *Eudohrnia* Burr, 1907.

Distribution: Oriental Region.

Remarks: This subfamily is treated as valid. Genus *Pterygida* Verhoeff, 1902 is transferred to this subfamily on account of quadrate mesosternum, about as long as broad with hind margin rounded. Besides, *Paradohrnia* Shiraki, 1928 considered as synonym of *Pterygida* by Steinmann (1989a) is also reinstated.

## Key to the genera (based on males)

- 1(4). Body with metallic sheen; elytra strongly and densely punctate, antennal segments stouter
- 2(3). Basal antennal segment depressed above, lateral margin produced as sharp border or carina ..... *Eudohrnia* Burr
- 3(2). Basal antennal segment, cylindrical, lateral margin without sharp border or carina  
*Paradohrnia* Shiraki
- 4(1). Body without metallic sheen; elytra smooth; antennal segments slender .....  
..... *Pterygida* Verhoeff

Genus *Eudohrnia* Burr

*Eudohrnia* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 97 (Type species: *Forficula metallica* Dohrn, 1865); Burr, 1910, *Fauna British India, Dermaptera*: 178; Burr, 1911, *Genera Insect.*, **122**: 82; Burr, 1911, *J. Asiat. Soc. Beng. (N. S.)*, **7**: 771; Burr, 1912, *Annln naturf. Mus., Wien*, **26**: 103; Towns, 1945, *Ann. Soc. ent. Am.*, **38**: 348; Popham, 1965, *Entomologist*, **98**: 135; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 33; Brindle, 1969, *Entomologist's mon. Mag.*, **104**: 230; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 65; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 783; Steinmann, 1993, *Das Tierreich*, **108**: 479; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 50; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 128 (6303).

Build stout, long, slender, generally with metallic sheen. Antennae with basal segment stout, depressed above, convex below, lateral margin with sharp or weak carina. Eyes shorter than the post-ocular length. Elytra and wings well developed, former strongly and deeply punctate. Legs long, slender, hind tarsi with 1<sup>st</sup> segment slightly longer than 3<sup>rd</sup>; 2<sup>nd</sup> lobed. Abdomen long, slender, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct. Forceps, in males, remote at base, internally finely crenulate in basal two thirds.

*Distribution:* India, Nepal, Bhutan, Myanmar and China (Szechuan).

*Remarks:* This genus contains two species, *E. metallica* (Dohrn) and *E. zae* (Liu). Former is the Type of the genus and latter was transferred from *Timomenus* Burr, by Brindle (1969a) to this genus.

***Eudohrnia metallica* (Dohrn)**

(Figs. 582-585)

*Forficula metallica* Dohrn, 1865, *Stettin. ent. Ztg.*, **26**: 90 (Male, Female; India Orientali: Assam); Scudder, 1876, *Proc. Boston Soc. nat. Hist.*, **18**: 315 (E. India).

*Anechura metallica*; Bormans, 1888, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **2**(6): 444 (Male, Female; Tenasserim: Thagatá); Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **(2)14**: 402 (Male, Female; Thagatá; Carin Chebà, 900-1100 m); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 104, figs 39a-c (Assam; Birma); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 41; Burr, 1905, *J. Asiat. Soc. Beng. (N.S.)*, **1**(2): 29 (Males; India: Meghalaya, Khasi Hills and West Bengal, Darjeeling Dist., Kurseong).

*Eudohrnia metallica*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 97 (Males, Females; India: Uttarakhand, Kumaon Hills, Bhim Tal, 1372 m and Nepal); Burr, 1910, *Fauna British India, Dermaptera*: 179, text fig. 14 (India: Bombay; Uttarakhand, Bhim Tal, 1372 m; West Bengal, Darjeeling Dist., Kurseong; Meghalaya, Khasi Hills, Dimple to Cherrapunji, 914-1524 m, Shillong; Nepal; Myanmar and Vietnam); Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 622 (Males, Females and larvae; China: Yunnan); Bey-Bienko, 1968, *Ent. Obozr.*, **47**: 127 (Nepal, 2000 m); Brindle, 1969, *Entomologist's mon. Mag.*, **104**(1968): 230; Brindle, 1974, *Senckenbergiana biol.*, **55**(1/3): 161 (Male, Female; Nepal, 800-1500 m); Brindle, 1983, *Senckenbergiana biol.*, **63**(1/2) (1982): 103 (Male; Nepal, 1700-1750 m); Brindle, 1987, *Courier Forsch.-Inst. Senckenberg*, **93**: 339 (2 Immatures; Nepal, 1400-1600 m); Biswas and Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(4): 274 (Male, Female; India: Uttarakhand, around Dehra Dun Dist.); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 65; Srivastava, 1976, *Newsl. zool. Surv. India*, **6**(2): 274 (1 Female; India: Uttarakhand, Garhwal Hills, Mopata, 2649 m); Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 17 (1 Female; India: Uttarakhand, Dehra Doon valley, 700 m); Srivastava and Lahiri, 1983, *Rec. zool. Surv. India*, **81**: 486 (Male; India: Meghalaya); Srivastava and Lal, 1993, *Rec. zool. Surv. India*, **91**(1) (1992): 125, fig. 28 (Male, Female; India: Himachal Pradesh, Rajgarh); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 324, figs 113-115 (Male; India: Meghalaya, Shillong and Cherrapunji); Srivastava, 1995, *Fauna of Western Himalaya, Himalayan Ecosystem Series (U. P.)*, Pt. **3**:

44 (area now under Uttarakhand); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 66 (Male; Female; China (South, Fukein) and Laos); Kapoor and Malla, 1978, *J. Inst. Sci.*, **1**: 135 (2 Males; Nepal: Kathmandu); Kapoor, Malla and Shah, 1978, *J. nat. Hist Mus.*, **2**: 62 (Male, Female; Nepal); Steinmann, 1979, *Folia ent. hung.*, **32**(1): 169, fig. 36 (Holotype Male; Himalaya; Paratype Female; Himalaya (1 ex.); Tennaserim, Thagata, 5 exs; Tonkin (now Vietnam), 3 exs); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 784; Steinmann, 1993, *Das Tierreich*, **108**: 480, figs. 768-770; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 51; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6310 (description), 6906-6909 and 6911 (coloured photographs from various museums), 6984 (black and white photograph and diagrams); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9289, pl 1, fig. 10 (India: Mizoram, Phaileng, 1155 m, Sawleng, 1320 m; Manipur, Khulen, 908 m, Pangsang, 908 m, Bongba Khulen, 825 m, Barlon, 1155 m; Arunachal Pradesh (localities included now not under Assam), Amatulla, 413-660 m, Salari, 1320 m, Uttarakhand, Pauri Garhwal, Gwaldam, 1980-2112 m, Kumaon Hills, Lingari); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 51.

*Sondax pubescence* Liu, 1946, *Jl. W. China Border Res. Soc.*, **16**: 15, pl. 1, fig. 1 (Larvae (not Male as mentioned); China: Mount Omei); Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 622 (treated as a synonym since only larvae, not male as mentioned in the original publication).

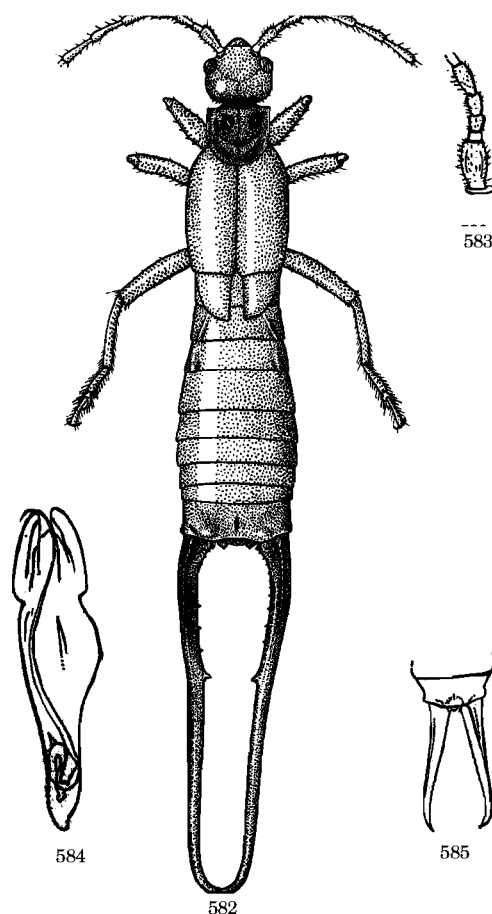
*Kometor bosei* Bharadwaj and Kapoor, 1967, *Bull. Ent.*, **6**(2): 6, figs 3-15 (Type Male; India: Meghalaya (not Assam as mentioned), Shillong, 1524 m); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. 3: 343, figs 113-115 (treated as a synonym).

Male: General colour brownish black or black with bluish green or purple sheen; elytra occasionally brownish and wings with tip yellow.

Head about as long as broad, frons and occiput convex, sutures fine but distinct, hind margin emarginated in middle. Eyes about half as long as post-ocular length. Antennae 15 segmented, 1<sup>st</sup> segment stout, expanded apically, slightly longer than the distance between antennal bases, depressed above, laterally produced into a flang or cairna, ventrally convex; 2<sup>nd</sup> a trifle longer than broad; 3<sup>rd</sup> twice as long as broad; 4<sup>th</sup> slightly longer than preceding; 5<sup>th</sup> onwards gradually increasing in length, each gently expanded apically. Pronotum longer than broad, faintly punctulate, anterior margin straight, angles produced into small acute points, lateral margins lightly convex, contracted posteriorly with hind margin and angles together rounded, median sulcus distinct, on either side of middle line with small impressions, prozona tumid and metazona depressed. Elytra and wings ample, former strongly and densely punctate and latter lightly so. Legs long, slender, hind tarsi with 1<sup>st</sup> segment slightly longer than the 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed, covered on underside with pubescence. Abdomen long, slender, gradually enlarging posteriorly, tergites convex, faintly punctate, sides of segments rugosely punctate and convex, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former comparatively weaker. Penultimate sternite obtusely rounded in middle posteriorly. Ultimate tergite transverse with punctate and smooth, longitudinal stripes alternating, sloping backwards, slightly

tumid above the roots of forceps and with a depression in middle, median sulcus short, lateral margins faintly emarginated in middle, hind margin trisinate, lateral portion of hind margin oblique. Pygidium transverse, blunt or obtuse in middle posteriorly and angles with spine. Forceps with branches remote at base, long, cylindrical, tapering apically, tip gently hooked, pointed, carinate above near base, internal margin crenulated in basal half, with a small tooth at middle, sometimes weakly developed, afterwards branches unarmed. Genitalia with parameres about two and a half times longer than broad, narrowed apically, tip obtuse; virga long, tubular.

Female: Similar to males in most details except that ultimate tergite strongly narrowed posteriorly, tumid elevations above the roots of forceps comparatively much weaker; pygidium short, obtuse and forceps simple, straight, crenulate near base for some distance.



**Figs. 582-585.** *Eudohrnia metallica* (Dohrn), Male, 582, Dorsal view, 583, A few basal antennal segments; 584, Genitalia; Female, 585, Ultimate tergite and forceps.

*Measurements:* (in mm)

|                   | Male        | Female     |
|-------------------|-------------|------------|
| Length of body    | 10.7 - 24.7 | 12.0- 16.3 |
| Length of forceps | 7.1 - 11.2  | 6.6 - 7.7  |

*Types:*

1. *Forficula metallica* Dohrn, 1865 - Number of specimens not mentioned in the original description. According to Steinmann (1979a) "...Holotype Male Himalaya, Paratype Female Himalaya (1 ex)..." at IZAP.

2. *Sondax pubescence* Liu, 1946 - In the original description number of specimens not mentioned. From the description it is evident only Male was present which from the fig. 1, appears to be a nymph. This specimen is stated to be deposited at MZSC.

3. *Kosmetor bosei* Bharadwaj and Kapoor, 1967 - Holotype Male at IARI.

*Distribution:* India (Meghalaya, Khasi Hills, Shillong and Cherrapunji, 914-1524 m; Arunachal Pradesh, 413-1155 m; Manipur, 825-908 m; Mizoram, 1155-1320 m; West Bengal, Darjeeling Dis.; Uttarakhand, Naini Tal, Gwaldam and Lingari, 1372-2112 m, Mopata, 2649 m, Dehra Dun Dist., 700 m; Madhya Pradesh, Panch Dhara, 4 km from Doodh Dhara and Maharashtra, Bombay).

Also known from Nepal (1100-2000 m), China (Yunnan, Fukien and Mt Omei), Myanmar (900-1100 m), Laos and Vietnam.

In the collections of the Zoological Survey of India, Kolkata, India following specimens determined by G. K. Srivastava, not reported earlier are present:

India: Arunachal Pradesh, Subansiri Dist, Tamen, 457 m, 1 Males, 2 Females and 2 nymphs, 18.v.1966, 3 Males, 5 Females, 20.v.1966 (A. N. T. Joseph coll.); Madhya Pradesh, Panch Dhara, 4 km from Doodh Dhara, 3 Males, 12 Females, 30.v.1962 (S. Chakrapany coll.).

*Remarks:* Lateral carina on 1<sup>st</sup> antennal segments is sometimes faint and internal tooth at the middle of forceps, in samller males, is weakly marked.

Genus *Paradohrnia* Shiraki

*Paradohrnia* Shiraki, 1928, *Insecta Matsum.*, **3**(1): 21 (Type species: *Paradohrnia ornatipitata* Shiraki, 1928); Brindle, 1969, *Entomologists mon. Mag.*, **103**: 230; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 56; Srivastava, 2002, *Rec. zool. Surv. India*, **100**(1-2): 5 (treated as a valid genus); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 51; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6323 (under *Pterygida* Verhoeff, 1902); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 777 (treated as synonym of *Pterygida* Verhoeff, 1902); Steinmann, 1993, *Das Tierreich*, **108**: 391.

Build generally stout, dark coloured, often with metallic sheen. Head about as long as broad. Antennae multi-segmented, 1<sup>st</sup> stout, about as long as the distance between antennal bases; 2<sup>nd</sup> quadrate; 3<sup>rd</sup> two and a half times longer than broad; 4<sup>th</sup> almost equal to the preceding but stouter; 5<sup>th</sup> onwards slightly longer but stout. Eyes shorter than the post-ocular length. Elytra and wings well developed, deeply punctate, punctures coalescing. Abdominal tergites less strongly punctate. Forceps, in males, long, cylindrical, internally serrated.

*Type species: Paradohrnia ornatcapitata* Shiraki, 1928.

*Distribution:* India and Formosa.

*Remarks:* This genus agrees well with *Eudohrnia* Burr, in most characters except that basal antennal segment is cylindrical (not bicarinate laterally).

It was synonymised under *Pterygida* Verhoeff, by Steinmann (1989a) but it can be easily separated from the latter by the stout build, metallic sheen on the body densely and strongly punctate elytra, wings and abdominal tergites. Accordingly, it has been resurrected by Srivastava (2002). At present, besides type three other species are included from India and Bhutan.

#### Key to the species (based upon males)

- 1(2). Forceps armed internally at middle with a distinct tooth..... ..  
..... *P. mundgodae* (Kapoor, Bharadwaj and Banerjee)
- 2(1). Forceps internally without tooth at middle
- 3(4). Pygidium transverse, hind margin subtruncate, angles pointed; forceps about half as long as the body ..... *P. punctata* Srivastava
- 4(3). Pygidium short, about as long as broad, bilobed; forceps slightly longer than the body ..... *P. uniformes* (Brindle)

#### ***Paradohrnia mundgodae* (Kapoor, Bharadwaj and Banerjee)** (Figs. 586-590)

*Kosmetor mundgodae* Kapoor, Bharadwaj and Banerjee, 1971, *Bull. Ent.*, **12**: 29, figs 16-18 (Holotype Male, Paratype 2 Females ; India: Mundgod, R. Gungavati Poona); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 66; Sakai, 1980, *Bull. Daito Bunka Univ.*, **20**: 51.

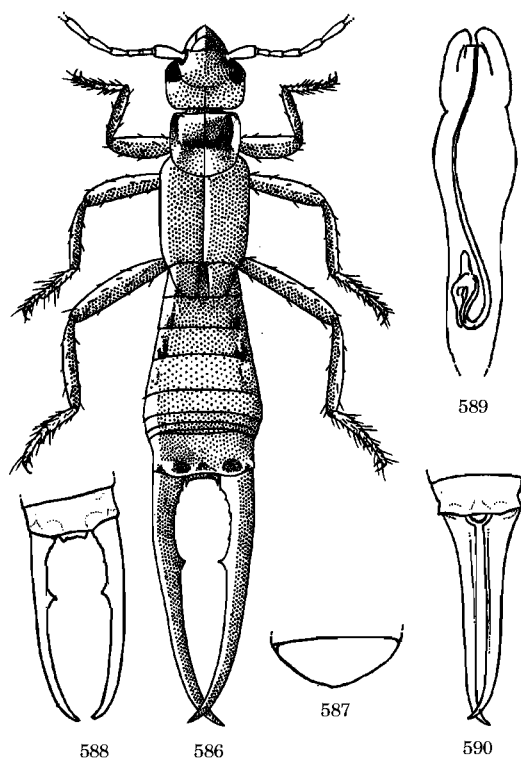
*Pterygida mundgodae*; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6358 (description), 6996 (diagrams).

*Paradohrnia mundgodae*; Srivastava, 2002, *Rec. zool. Surv. India*, **100**(1-2): 5, fig. 7 (ultimate tergite and forceps of Holotype Male).

Male: Build stout. General colour black; elytra and wings copper coloured with bluish green metallic sheen.

Head longer than broad, frons tumid, sutures distinct, occiput weakly depressed, hind margin scarcely emarginated in middle. Eyes shorter than the post-ocular length.

Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, slightly broader than long; 3<sup>rd</sup> twice longer than broad; 4<sup>th</sup> slightly shorter than the preceding, stouter; 5<sup>th</sup> onwards segments gradually increasing in length, each gently narrowed basally. Pronotum weakly transverse, anterior margin straight, sides gently convex, scarcely contracted posteriorly, hind margin and angles together rounded, median sulcus distinct; prozona raised and metazona depressed. Legs long, stout, hind tarsi with 1<sup>st</sup> segment almost equal in length to 3<sup>rd</sup>; 2<sup>nd</sup> lobed, covered on underside with thick pubescence. Elytra well developed, deeply punctate, humeral angles weak, costal margin without carina, hind margin concave. Wings one fourth as long as the elytra. Penultimate sternite transverse, narrowed posteriorly with hind margin rounded. Abdomen long, gradually enlarging posteriorly, tergites convex, punctate but weaker than on the elytra, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but on former comparatively weaker. Ultimate tergite transverse, weakly convex, sloping backwards, above the bases of forceps with low elevations and in middle with slight depression, hind margin trisinate, lateral portion of hind margin oblique. Pygidium declivitous, about as long as broad, hind margin in



**Figs. 586-590.** *Paradohrnia mundgodae* (Kapoor, Bharadwaj and Banerjee), Male, 586, Dorsal view, 587, Penultimate sternite, 588, Ultimate tergite and forceps, 589, Genitalia; Female, 590, Ultimate tergite and forceps (figs, 588-589 ex Holotype male).



middle convex and postero-lateral angles produced into a minute spine. Forceps with branches stout, remote, tapering, gradually incurving backwards, apices hooked and pointed, internal margin crenulated in basal half, at middle with a sharp, triangular tooth. Genitalia with paramers about three times longer than broad, external margin convex, narrowed towards apex; virga long, tubular.

Female: Agrees with males except that ultimate tergite comparatively narrowed posteriorly; pygidium short, rounded and forceps simple, subcontiguous in middle, straight.

*Measurements:* (in mm)

|                   | Male        | Femal       |
|-------------------|-------------|-------------|
| Length of body    | 12.0 - 15.0 | 10.0 - 14.0 |
| Length of forceps | 8.0 - 9.0   | 6.0 - 7.0   |

*Types:* Holotype Male, Paratypes 2 Females at IARI.

*Distribution:* India: Maharashtra, Poona, River Gungavati.

Besides types these are represented in the collections of Zoological Survey of India, Kolkata, India by following specimens, not reported earlier and are from the same lot as the types:

India: Maharashtra, Poona, Indravati, Mundgod River, 4 Males, 8 Females, ex. *Bambusa arundinacea* (Culm), 18.iii.1950 (I. M. Qureshi coll., ex FRI, Dehra Dun coll), determined by G. K. Srivastava.

*Remarks:* The cylindrical basal antennal segment besides deeply and densely punctate elytra with metallic bluish green sheen justifies its inclusion under *Paradohrnia* Shiraki.

### ***Paradohrnia punctata* Srivastava**

(Figs. 591-594)

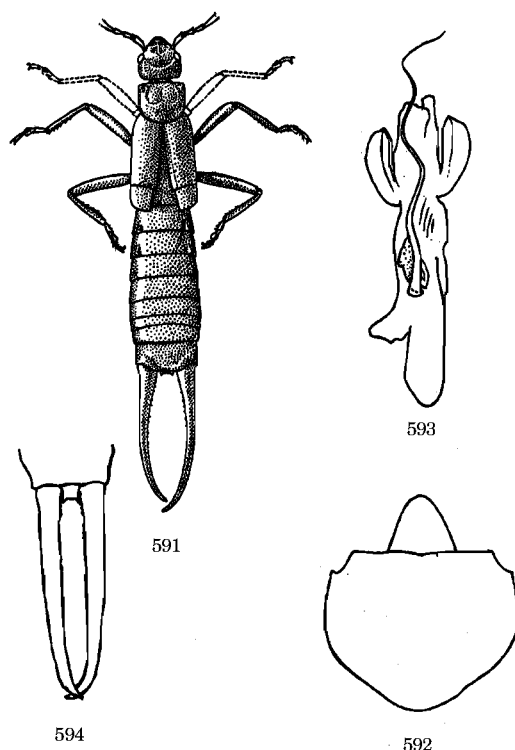
*Paradohrnia punctata* Srivastava, 1979, *Ceylon J. Sci. (Bio. Sci.)*, **13**(1-2): 23, figs 1A-C (Holotype Male: India: Arunachal Pradesh, Kameng Dist., Shergaon, 2011 m); Srivastava, 2002, *Rec. zool. Surv. India*, **100**(1-2): 5; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 51.

*Pterygida harpya* Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 779 (New name proposed for *Paradohrnia punctata* Srivastava, 1979 since name preoccupied for *Kosmetor punctata* Srivastava, 1976 consequent to synonymy of *Eudohrnia* Shiraki, 1928 under *Pterygida* Verhoeff, 1902 resulting in transfer of *Paradohrnia punctata* to *Pterygida*.); Srivastava, 2002, *Rec. zool. Surv. India*, **100**(1-2): 5 (treated as a secondary junior synonym).

*Eudohrnia subuniformes* Kapoor and Malla, 1980, *Ent. Ber. Amst.*, **40**: 12, fig. 3-4 (Holotype Male, Allotype Female and Paratype 1 Female; Nepal: Godavari, Kathmandu); Srivastava, 2002, *Rec. zool. Surv. India*, **100**(1-2): 5 (treated as a synonym).

Male: General colour dull brownish black; elytra and wings dull brown latter with tip black; legs with femora reddish brown, tibiae and tarsi black; head, antennae, pronotum, abdomen and forceps black. Abdominal tergites with greenish purple sheen.

Head about as long as broad, smooth, vortex depressed in the centre, weakly convex, sutures fine but distinct, hind margin emarginated in middle. Eyes shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, expanded apically, a little shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> and 4<sup>th</sup> subequal but both shorter than 5<sup>th</sup>, remaining gradually increasing in length. Pronotum a trifle broader than long, rugosely punctate, anterior margin straight, about as broad as head, lateral margins straight, depressed, gently widened posteriorly, hind angles and margin rounded, median sulcus distinct, prozona convex, metazona well differentiated, depressed. Elytra ample, rugosely punctate, humeral angles moderately prominent, hind margin straight; elytra short, exposed portion about as long as broad, smooth. Legs long, slender, apical part of tibiae and whole tarsi covered with golden yellow pubescence; hind tarsi with 1<sup>st</sup> segment shorter than 3<sup>rd</sup>, 2<sup>nd</sup> lobed, Abdomen long, tergites convex,



**Figs. 591-594.** *Paradohrnia punctata* Srivastava, Holotype Male, 591, Dorsal view, 592, Penultimate sternite, 593, Genitalia, 594, Ultimate tergite and forceps (figs, 591-593 ex Holotype Male; fig, 594 ex Holotype of *Eudohrnia subuniformes*, after Kapoor and Malla, 1980).

gradually enlarging posteriorly, surface rough, strongly punctate, sides of segments convex, lateral tubercles on 3<sup>rd</sup> and 4th distinct but former comparatively weaker. Penultimate sternite rugose, punctate, with a smooth median broad band, hind margin rounded, obtuse in middle. Ultimate tergite transverse, longitudinal smooth and punctate stripes alternating, sloping backwards, above the roots of forceps with weak folds and area in middle depressed, hind margin in middle faintly concave and lateral portion of hind margin oblique, concave, postero-lateral angles projecting. Pygidium transverse, declivitous, very slightly narrowed posteriorly, hind margin almost straight, postero-lateral angles pointed. Forceps with branches remote, cylindrical, long, tapering, regularly incurved apically with tip gently hooked and pointed, inner margin with minute tubercles in basal two thirds only, afterwards unarmed. Genitalia with parameres broad, about two and a half times longer than broad, lateral margin convex; virga long, tubular.

Female: Agrees with males in most characters with forceps simple and straight.

*Measurements:* (in mm)

|                   | Male        |
|-------------------|-------------|
| Length of body    | 11.5 - 13.8 |
| Length of forceps | 3.0 - 6.8   |

*Types:*

1. *Paradohrnia punctata* Srivastava, 1979 - Holotype Male at ZSI.
2. *Eudohrnia subuniformes* Kapoor and Malla, 1980 - Holotype Male, Paratype (Allotype, 1 Female; repository not mentioned, presumably at Institute of Sciences, Tribhuan University, Kathmandu, Nepal).

*Remarks:* *Paradohrnia punctata* Srivastava is known by Holotype Male and *Eudohrnia subuniformes* Kapoor and Malla, a synonym of the former, is known by male and females but measurements for females are not given. For this reason measurements for males only are given.

This species is close to *P. uniformes* Brindle, but differs, in males, by the shape of pronotum broadly rounded posteriorly; elytra rugose and more strongly punctate; pygidium with hind margin subtruncate and postero-lateral angles with small spine and forceps shorter than the body.

### ***Paradohrnia uniformes* (Brindle)**

(Figs. 595-597)

*Eudohrnia uniformes* Brindle, 1975, *Ent. basiliensia*, **1** : 550, fig. 59 (Holotype Male, Paratype (Allotype) 1 Female; Bhutan, 21 km O Wangdiphodrang, 1700-2000 m; 1 larva, from Changra, 18 km S Tongsa, 1900 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 51; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6320 (description), 6910 (coloured photograph of Holotype Male, Female), 6986 (black and white diagrams); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9289, pl. 1, fig. 11 (no mention of specimens in the text,

figure labelled as Assam: But, 1792 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 51 (Males, Females; India: Manipur (localities mentioned are now not under Assam), Datum, 1950 m, Kaibhunnai, 330 m; Sikkim, Yagtang, 3845 m and Arunachal Pradesh, Jhum La, 2376-2640 m); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 784; Steinmann, 1993, *Das Tierreich*, **108**: 481, fig. 771.

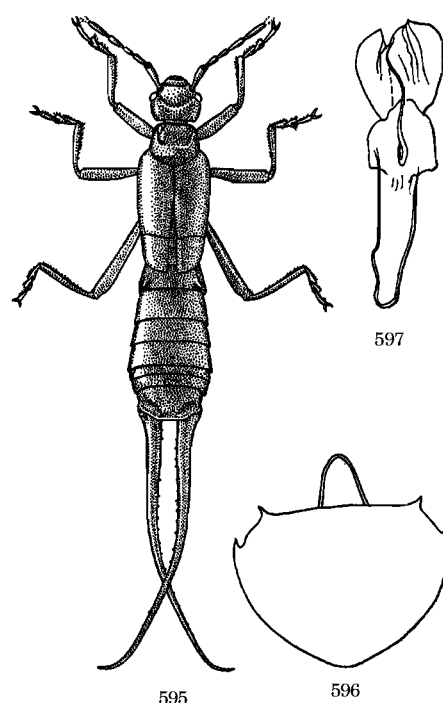
*Paradohrnis uniformes*; Srivastava, 2002, *Rec. zool. Surv. India*, **100**(1-2): 5.

*Paradohrnia longiforceps* Srivastava, 1979, *Ceylon J. Sci. (Bio. Sci.)*, **13**(1-2): 25, figs 1A-C (Holotype Male; India: Arunachal Pradesh, Kameng Dist., Butt village, 1968 m; Paratype 1 Female; Subansiri Dist., Chukru, 1128 m); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9290 (treated as synonym).

Male: General colour dull brownish black; head and pronotum darker; abdomen with greenish sheen.

Head about as long as broad, frons and occiput convex, vortex somewhat depressed in the centre, sutures faint, hind margin faintly emarginated. Eyes shorter than the post-ocular length. Antennae 12-segmented or more (since the apical ones tend to break off on slightest jerk), basal segment stout, expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> two and a half times longer than broad; 4<sup>th</sup> a little shorter than preceding; 5<sup>th</sup> onwards gradually increasing in length. Pronotum slightly broader than long, roughly pentagonal, anterior margin straight, slightly narrower than head, lateral margins straight, diverging posteriorly, hind angles and margin rounded, latter obtuse in middle, prozona convex, smooth, with small depressions on either side of median line; metazona weakly convex, rugosely striated. Legs long, slender, hind tarsi with 1<sup>st</sup> segment slightly shorter than 3<sup>rd</sup>; 2<sup>nd</sup> lobed. Elytra three times longer than broad, humeral angles weak, hind margin straight, strongly punctate. Wings slightly longer than broad, deeply punctate. Abdomen long, cylindrical, gradually enlarging posteriorly, tergites faintly punctate, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former comparatively weaker, sides of segments convex. Penultimate sternite obtusely rounded posteriorly. Ultimate tergite transverse, about one and a half times broader than long, strongly sloping backwards, longitudinal smooth and punctate stripes alternating, tumid above the roots of forceps, depressed in the middle, hind margin incrassate, trisinate, lateral portion of hind margin oblique. Pygidium vertical, bilobed. Forceps with branches subremote, long, slender, tapering apically, almost straight in basal half, afterwards gradually incurved, apices strongly hooked and pointed, somewhat depressed in basal two thirds, internal margin with a row of small but distinct tubercles. Genitalia with parameres broad, about two and a half times longer than broad, external apical angle convex, apices acute; virga chitinous, tubular, at base thickened.

Female: Similar to males but smaller in size; ultimate tergite strongly narrowed posteriorly; pygidium short, obtuse and forceps simple, very slightly incurved in middle, apices pointed, trigonal above in basal two thirds, internal margin with very small crenulations.



**Figs. 595-597.** *Paradohrnia uniformis* (Brindle), Male, 595, Dorsal view; 596, Penultimate sternite, 597, Genitalia (all figs ex Holotype Male, *Paradohrnia longiforceps* Srivastava, 1979c).

*Measurements:* (in mm).

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 17.0 - 17.7 | 13.1 - 13.5 |
| Length of forceps | 13.3 - 14.5 | 5.2 - 6.0   |

*Types:*

1. *Eudohrnia uniformes* Brindle, 1975 - Holotype Male, Paratype (Allotype), 1 Female and 1 larva at NMW.

2. *Paradohrnia longiforceps* Srivastava, 1979 - Holotype Male, Paratype 1 Female at ZSI.

*Distribution* : India (Arunachal Pradesh, Kameng Dist., Butt Village, 1967 m and Subansiri Dist., Chukru, 1128 m and Jhum La, 2376-2640 m); Sikkim (3845 m) and Manipur (330-1950 m) and Bhutan (21 km O. Wangdiphodrang, 1700-2000 m and Changra 18 km S Tongsa, 1900 m).

Records by Sakai (1997) need checking with the specimens.

*Remarks:* It can be easily separated from *Paradohrnia punctata* Srivastava, in having

slightly weaker punctuation on elytra; in males, pygidium bilobed and forceps, about as long as the body, long, cylindrical, tip strongly hooked and acuminate pointed.

### Genus *Pterygida* Verhoeff

*Pterygida* Verhoeff, 1902, *Zool. Anz.*, **25**(665): 197 (part); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 44 (*Forficula jagori* Dohrn, 1865 - designated as the Type); Burr, 1910, *Fauna British India, Dermaptera*: 157; Burr, 1911, *Genera Insect.*, **122**: 72; Burr, 1912, *Annln naturf. Mus. Wien*, **26**: 97; Popham, 1965, *Entomologist*, **98**: 135; Popham, 1968, *Entomologist*, **101**: 200; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 59; Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 162; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 776 (under Anechurinae); Steinmann, 1993, *Das Tierreich*, **108**: 391; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6323 (under Eudohrniinae).

*Kosmetor* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 123 (Type-species: *Opisthocosmia annandalei* Burr, 1904); Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 162 (treated as a synonym of *Pterygida* Verhoeff, 1902).

Build slender, pubescent and moderately convex.

Head convex or moderately depressed, sutures distinct or obsolete. Eyes shorter than the post-ocular length. Antennae 12-segmented or more (since the apical ones tend to break off on slightest jerck), 1<sup>st</sup> about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> almost equal to preceding, stouter, gently expanded apically, remaining gradually increasing in length, each narrowed basally. Pronotum anteriorly about as broad as head, as long as broad or slightly longer. Elytra and wings ample, smooth. Legs with femora swollen; tarsi smooth above; tibiae with 1<sup>st</sup> segment compressed, stout, almost equal to 3<sup>rd</sup>; 2<sup>nd</sup> lobed, hind margin entire; 3<sup>rd</sup> slender, narrowed basally. Prosternum longer than broad, posterior margin truncate; mesosternum about as long as broad, hind margin rounded and metasternum projecting beyond hind coxae as narrow lobe with its hind margin truncate. Abdomen elongated; ultimate tergite, in males, transverse or subquadrate; pygidium short, obtuse or transverse and forceps generally remote at base, long, slender, sometimes gently incurved, internally variously armed. In females, pygidium short, obtuse; ultimate tergite narrowed posteriorly and forceps simple and straight.

*Type species: Forficula jagori* Dohrn, 1865.

*Distribution*: Mainly Oriental except one species from New Guinea.

*Remarks*: Slender antennal segments and quadrate mesosternum, about as long as broad suggest the inclusion of this genus under Eudohrniinae.

Three species from the area under study are known, of which one is represented by only females, is placed under the doubtful category.

### Key to the species (based upon males)

- 1(2). Pronotum broader than long; forceps with a pair of teeth on internal margin ....  
 ..... *P. vishnu* (Burr)

- 2(1). Pronotum about as long as broad; forceps with two pairs of teeth on internal margin  
*P. temora* (Burr)

***Pterygida vishnu* (Burr)**  
(Figs. 598-602)

*Apterygida vishnu* Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 318 (4 Males (Syntypes); India Borealis: Darjeeling); Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 119.

*Kosmetor vishnu*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 123, pl. 4, fig. 10; Burr, 1910, *Fauna British India, Dermaptera*: 202, pl. 8, fig. 74; Burr, 1911, *Genera Insect.*, **122**: 83; Borelli, 1932, *Bull. Raffles Mus.*, **7**: 92 (1 Male; Malaysia: Borneo, Kheda Peak, 1204 m); Popham, 1968, *Entomologist*, **101**: 196; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 34; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 66; Srivastava, 1982, *Ent. basiliensia*, **7**: 75, figs 24-27 (Male, Female; India: West Bengal, Darjeeling Dist., Lopchu and Chimbhona (Ghoom), 2200 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 51.

*Pterygida vishnu*; Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 162 (genus *Pterygida* redescribed with *Kosmetor* treated as a synonym); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 428, figs 193-195 (Male, Female; India: West Bengal Darjeeling Dist., and Sikkim, Gangtok, 1759 m); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 218, fig. 74 (Male, Female; India: Sikkim, Gangtok, 1759 m); Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6340 (description), 6988-6989 (black and white diagrams and photograph of Syntype Male), 6910 (Syntypes 3 Males), 6913 (coloured photographs of 4 Males, 1 Female, including 2 Male Syntypes); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 782; Steinmann, 1993, *Das Tierreich*, **108**: 197, figs 630-631

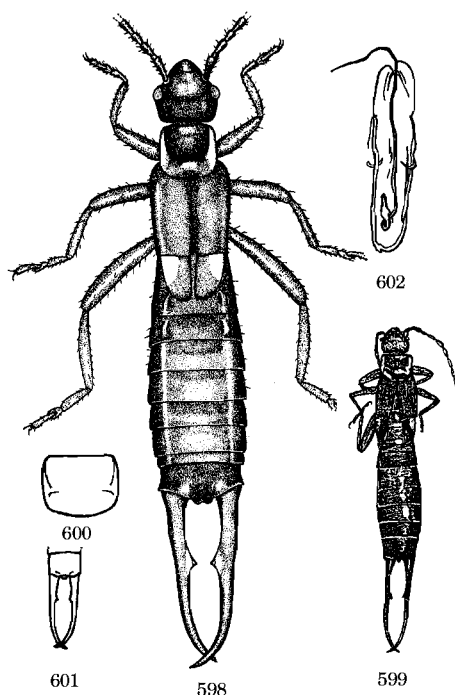
*Kosmetor josephi*; Kapoor, 1967, *Oriental Insects*, **1**(1-2): 56, figs 6-8 (Holotype Male; India: West Bengal, Darjeeling Dist., Rangiroon); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 426, figs 193-195 (figures drawn from the Holotype Male; treated as a synonym).

*Kosmetor gracilis* Brindle, 1975, *Ent. basiliensia*, **1**: 53, fig. 52 (Holotype Male; Bhutan: km 87 von Phuntsholing, 1680 m) - **Syn. n.**

*Pterygida gracilis*; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6359 (description), 6913 (coloured photograph of Holotype Male), 6996 (black and white diagrams of Holotype Male and diagrams).

Male: General colour dark backish brown; lateral margins of pronotum orange or yellowish; elytra yellowish brown and wings with an orange or yellow spot close to external margin basally. Body pubescent, thickly on underside.

Head slightly broader than long, smooth, frons and occiput convex, sutures fine but distinct, hind margin scarcely emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, slightly expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> a trifle shorter than the preceding, stouter, gently expanded apically; 5<sup>th</sup> onwards segments gradually increasing in length, stouter, each expanded apically except the last one narrowed at both ends. Pronotum slightly broader than long,



**Figs. 598-602.** *Pterygida vishnu* (Burr), Male, 598-599, Dorsal view, 600, Pronotum; 601, Ultimate tergite and forceps, 602, Genitalia (fig. 599 ex Holotype Male, *Pterygida gracilis* (Brindle, 1975) after Sakai, 1995).

anterior margin straight, lateral margins straight, depressed, hind angles and margin rounded; prozona convex and well differentiated from flat metazona. Elytra about three times longer than broad, smooth, humeral angles feebly prominent, hind margin truncate. Wings about one third as long as elytra, smooth. Pro-sternum longer than broad, constricted between fore-coxae, hind margin truncate; meso-sternum slightly longer than broad, hind margin rounded and meso-sternum transverse, narrowed between hind-coxae, produced as a narrow lobe with its hind margin truncate. Legs long, slender, fore-femora swollen; hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>; 2<sup>nd</sup> lobed, covered with thick pubescence on underside. Abdomen slender, almost parallel sided, a little before last tergite feebly enlarged, tergites convex, punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former slightly weaker. Penultimate sternite transverse, posterior margin broadly rounded. Pygidium vertical, about as long as broad, somewhat narrowed posterly, hind margin rounded, convex above with a median longitudinal impressed line or narrowed apically. Ultimate tergite transverse, punctulate, moderately convex, above the roots of forceps with low tubercular folds and depressed in the centre, hind margin trisinate, lateral portion of hind margin oblique. Forceps with branches remote, slender, elongated, almost straight, tapering apically, incurved gently in apical one third, tip hooked and pointed, internally armed with a triangular tooth at



a little before middle. Genitalia with parameres broad, a little over twice as long as broad; virga chitinous, tubular.

Female: Agrees with males, in most characters except that the penultimate sternite obtusely rounded posteriorly; ultimate tergite contracted posteriorly; pygidium short, narrowed posteriorly and forceps simple, straight, internally unarmed.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 6.5 - 13.0 | 4.5 - 10.5 |
| Length of forceps | 4.0 - 9.5  | 1.5 - 2.6  |

*Types:*

1. *Apterygida vishnu* Burr, 1904 - Syntypes, 4 Males at MNHP.
2. *Kosmetor josephi* Kapoor, 1967 - Holotype Male at IARI.
3. *Kosmetor gracilis* Brindle, 1975 - Holotype Male at NMB.

*Distribution:* India (West Bengal, Darjeeling Dist., 1829-2200 m and Sikkim, 1759 m) and Bhutan, 1680 m.

*Remarks:* This species exhibits slight variation in general colour. Pronotum, in males is either transverse or weakly so.

*Kosmetor gracilis* Brindle, 1975 is considered as a synonym since it agrees in most characters except that general build is slightly weaker.

It is a monticolus species occurring under stones on the edge of rivers and streams.

### ***Pterygida temora* (Burr)**

(Figs. 603-605)

*Opisthocosmia temora* Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 312 (1 Male; India Borealis, Darjeeling); Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 117.

*Kosmetor temora*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 213, pl. 4, fig. 10; Burr, 1910, *Fauna British India, Dermaptera*: 201, pl. 8, fig. 73, Burr, 1911, *Genera Insect.*, **122**: 83; Boeseman, 1954, *Zool. Verh., Leiden*, **21**: 107, figs 25 a-b (Male, Female; Indonesia: Sumatra); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 34; Popham, 1968, *Entomologist*, **101** 96; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 66; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 51.

*Pterygida temora*; Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 162; Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 216, figs 72-73; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6338 (description), 6988 (black and white diagrams including that of Holotype Male mentioned as BMNH- perhaps an error because Type is stated to be present in MHNP); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 782; Steinmann, 1993, *Das Tierreich*, **108**: 402, fig. 638.

*Opisthocosmia ramosae* Zhang, Ma and Chen, 1992, *Insects of Wuling Mountain area, South Western China*: 115, fig. 1 (Holotype Male, Paratype Male; China: Hunan Sangzhi, Mt. Tianping, 1630 m); Sakai, 1994, *Dermapterorum Catalogus*, **26**: 119 (5404) (description), 5975 (coloured photograph, Paratype Male, 1 Female, from China: Sichan, Tianquan Province Erlang Shan, 1300 m, labelled as Allotype but it is other than the Type), 6030 (black and white diagrams and photograph of Paratype 1 Male and 1 Female with same data as given for coloured photograph); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9287 (2 Males, 2 Females; India: Kumaon, Naini Tal, Naukuchia Tal, 1250 m), 9298 (pl 1, fig. 4); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 49 (2 Males, 2 Females; India: Uttarakhand, Kumaon, Naini Tal, Naukuchiat, 1367 m; Sikkim, North, 1 Male, Ramtang, 1927 m, 1 Male, 1 Female, Samdong, 1200 m); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 218, figs 73-73 (treated as a synonym).

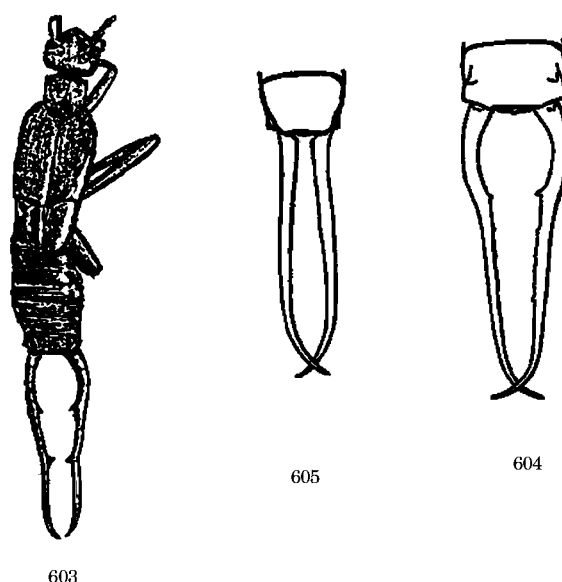
Male: General colour brownish black; antennal segments brown; pronotum pale on lateral margins; elytra yellowish brown; wings yellow, shaded with brown; legs yellowish brown and abdomen black. Body pubescent.

Head slightly longer than broad, frons and occiput tumid, sutures distinct, hind margin emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennae 12-segmented, long, slender, 1<sup>st</sup> stout, gently expanded apically, slightly longer than the distance between antennal bases; 2<sup>nd</sup> short, broader than long; 3<sup>rd</sup> and 4<sup>th</sup> subequal, slender; 5<sup>th</sup> longer than 3<sup>rd</sup>, remaining gradually increasing in length and thinning. Pronotum about as long as broad or a trifle longer, anterior margin straight, slightly narrower than head, lateral margins straight, parallel, hind margin rounded, prozona tumid, metazona depressed. Elytra and wings ample, smooth. Legs long, slender, hind tarsi with 1<sup>st</sup> segment almost equal to 3<sup>rd</sup>, 2<sup>nd</sup> lobed, covered with pubescence on underside. Abdomen elongated, very slightly enlarged a little before apex, tergites weakly convex, smooth, sides of segments convex, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former comparatively weaker. Penultimate sternite broadly rounded posteriorly. Ultimate tergite weakly transverse, sloping backwards, above the roots of forceps tumid and depressed in the middle, hind margin incrassate, straight, lateral portion of hind margin oblique. Pygidium indistinguishable from above. Forceps with branches remote at base, slender, tapering apically, tips pointed and hooked, slightly incurved in basal one third, afterwards almost straight, internally with two pairs of upwardly pointing, sharp teeth, thus dividing length of forceps in three equal parts. Genitalia with parameres apically expanded.

Female: Similar to males except that ultimate tergite narrowed posteriorly and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male       | Female |
|-------------------|------------|--------|
| Length of body    | 9.7 - 14.1 | 9.0    |
| Length of forceps | 6.0 - 7.2  | 5.0    |



**Figs. 603-605.** *Pterygida temora* (Burr), Male, 603, Dorsal view, 604-605, Ultimate tergite and forceps (fig. 603 ex Holotype Male of *Pterygida temora* (Burr, 1904) after Sakai, 1995; figs, 604-605 after Boeseman 1954).

*Types:*

1. *Opisthocosmia temora* Burr, 1904 - Holotype Male at MNHP.
2. *Opisthocosmia ramosae* Zhang, Ma and Chen, 1992 - Holotype Male and Paratype 1 Male at CASP.

*Distribution:* India (West Bengal: Darjeeling; Sikkim: North, 1200-1367 m and Uttarakhand: Kumaon Hills, 1360 m), China (Hunan and Tianquan Province, 1300-1630m) and Indonesia (Sumatra).

*Remarks:* Sakai (1994) gives photographs of Paratype 1 Male and 1 Female, although latter labelled as Allotype, it is not so.

The above description is based upon information by Burr (1910) and photographs and information by Sakai (1995) and Sakai and Zhang in Sakai (1995a).

Although, *O. ramosae* Zhang, Ma and Chen is treated as synonym of *O. temora* Burr, 1904 there is need to examine the Types of both the species to confirm this view.

**Doubtful species**

***Pterygida pulchripes* (Bormans)**  
(Figs. 606-608)

*Forficula? pulchripes* Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **2**(14): 408 (1 Female; Burma: Hab. Carin Chebá, 900-1100 m); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 128;

Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 53; Burr, 1910, *Fauna British India, Dermaptera*: 205; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 75; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 56.

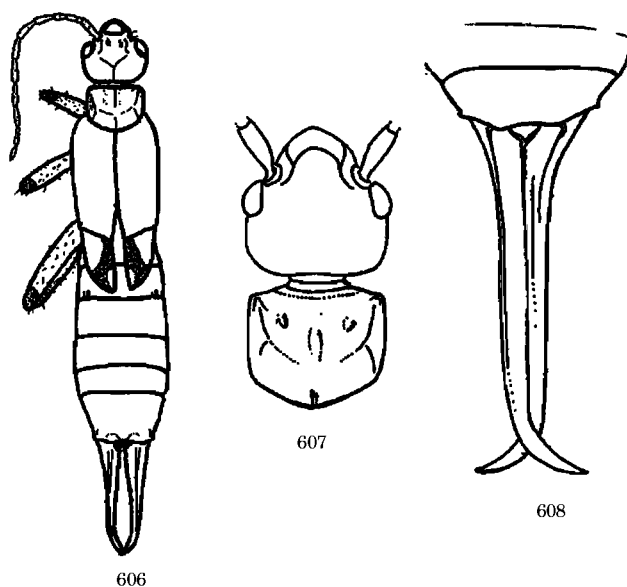
*Kosmetor pulchripes*; Srivastava, 1983, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **85**: 103, fig. 12 (Type Female figured).

*Pterygida pulchripes*; Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 162 (since *Kosmetor* treated as synonym of *Pterygida*); Srivastava, 1993, *Rec. zool. Surv. India*, **91**(1) (1992): 85 (5 Females; India: Arunachal Pradesh, Tirap Dist., Lower Jheel Camp - Namdapha National Park); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 781; Steinmann, 1993, *Das Tierreich*, **108**: 409; Sakai, 1995, *Dermapterorum Catalogus*, **27**: 6335 (description), 6988 (diagram).

Male: Not Known.

Female: General colour blackish brown; head and elytra brown; antennae brown with 10th segment yellow; wings black with a yellow spot at base externally and tip yellow; legs yellow, knee joints black and apical one fourth of femora and basal half of hind tibiae black.

Head smooth, about as long as broad, frons convex, sutures fine but distinct, hind margin emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, narrowed basally, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> about as



**Figs. 606-608.** *Pterygida pulchripes* (Bormans); Female; 606, Dorsal view, 607, Head and pronotum, 608, Ultimate tergite and forceps; (figs. 606 ex Type Female of *Pterygida pulchripes* (Bormans, 1894) after Srivastava, 1982c).

long as 3<sup>rd</sup> but gently expanded apically; 5<sup>th</sup> longer than preceding, remaining gradually increasing in length and thinning except apical one shorter than preceding and narrowed at both ends. Pronotum a trifle broader than long, sides straight, gently reflexed, hind margin and angles broadly rounded, median sulcus distinct, prozona tumid, metazona depressed. Elytra well developed, a little over three times longer than broad, smooth, humeral angles weakly projecting, hind margin straight, oblique. Wings projecting beyond elytra, of same texture. Legs with 2<sup>nd</sup> tarsal segment lobed. Abdomen elongated, enlarged in middle, tergites convex, punctation shallow and coalescent. Penultimate sternite obtusely rounded in middle posteriorly. Ultimate tergite contracted posteriorly. Pygidium obtuse. Forceps simple, straight, internally serrated.

*Measurements:* (in mm)

|                                   | Female      |
|-----------------------------------|-------------|
| Length of body                    | 10.1 - 11.0 |
| Length of forceps                 | 1.5 - 1.7   |
| <i>Type:</i> Type Female at MSNG. |             |

*Distribution:* India (Arunachal Pradesh) and Myanmar.

*Remarks:* In general body colouration it comes close to *Pterygida annandalei* (Burr, 1904) from Thailand known by type male. Unless both the sexes are collected together it would be advisable to treat them as valid species.

#### Subfamily FORFICULINAE

*Forficulinae* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 109 (Type genus: *Forficula* L, 1758); Burr, 1910, *Fauna British India, Dermaptera*: 162; Burr, 1911, *Genera Insect.*, **122**: 74; Bey-Bienko, 1936, *Faune de l'URSS, Dermaptera*: 124; Popham, 1965, *Entomologist*, **98**: 135; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 60; Srivastava, 2003, *Fauna of India and the adjacent countries, Dermaptera*, **2**: 10, 13; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 791; Steinmann, 1993, *Das Tierreich*, **108**: 500; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7491.

Body moderately depressed. Antennae 12 to 15 segmented, 1<sup>st</sup> stout, shorter than the distance between antennal bases; other segments not thin; 4<sup>th</sup> usually shorter than the 3<sup>rd</sup>. Mesosternum about as long as broad. Legs with 2<sup>nd</sup> tarsal segment broadly lobed. Abdomen depressed and forceps in males, with branches depressed or cylindrical, at base generally deplanate.

*Type:* *Forficula* L, 1758.

*Distribution:* World wide; prominent in Palaearctic Region.

*Remarks:* From the area under study three genera are represented. Of which, *Forficula* L., is dominant, especially in Himalayan and other mountain regions.

**Key to the genera (on males only)**

- 1(2). Elytra abbreviated, hind margin strongly oblique (inner margin distinctly shorter than costal margin); ultimate tergite slightly narrowed posteriorly ..... *Guanchia* Burr
- 2(1). Elytra well developed, sometimes abbreviated, hind margin scarcely oblique (inner margin only a trifle shorter than costal margin); ultimate tergite not narrowed posteriorly
- 3(4). Antennal segments 3<sup>rd</sup> and 4<sup>th</sup> almost equal; legs comparatively shorter, hind tarsi with 1<sup>st</sup> segment equal to combined length of 2<sup>nd</sup> and 3<sup>rd</sup> ..... *Elaunon* Burr
- 4(3). Antennal segment 3<sup>rd</sup> longer than 4<sup>th</sup>; legs longer, hind tarsi with 1<sup>st</sup> segment longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup> ..... *Forficula* L

**Genus *Guanchia* Burr**

*Guanchia* Burr, 1911, *Genera Insect.*, **122**: 80 (Type species: *Forficula cabreræ* Bolivar, 1893); Burr, 1911, *J. Asiat. Soc. Beng.* (N. S.), **7**: 793; Bey-Bienko, 1936, *Faune de l'URSS, Dermapterès*: 132; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 30; Popham and Brindle, 1969, *Entomologist*, **102**: 62; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 61; Srivastava, 1976, *News. zool. Surv. India*, **2**(2): 56; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 55; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7679; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 845; Steinmann, 1993, *Das Tierreich*, **108**: 554.

Elytra abbreviated, hind margin strongly oblique, resulting in short sutural margin compared to costal margin; wings abortive. Forceps, in males, usually with a vertical crest or tooth at base; occasionally deplanate near base.

*Type species: Forficula cabreræ* Bolivar, 1893.

*Distribution*: Canary Islands, Algeria and India.

*Remarks*: As mentioned by Burr (1911b) it is not a natural genus but a convenient assemblage of species.

Steinmann (1993) included several species lacking wings, placed earlier under *Forficula* L. It may be mentioned that in certain species of *Forficula* both macropterous and brachypterous forms are found with hind margin of elytra faintly oblique. Care should, therefore, be taken not to include such species under this genus.

In the present work the interpretation of the genus is after Burr (l. c.) to include those species which possess the hind margin of elytra strongly oblique, resulting in shortening of sutural margin as compared to costal margin. Even this character is sometimes variable intraspecifically, especially in shorter forms.

Only three species are known from the India, of which two occur in Himalaya and one in the Western Ghats.

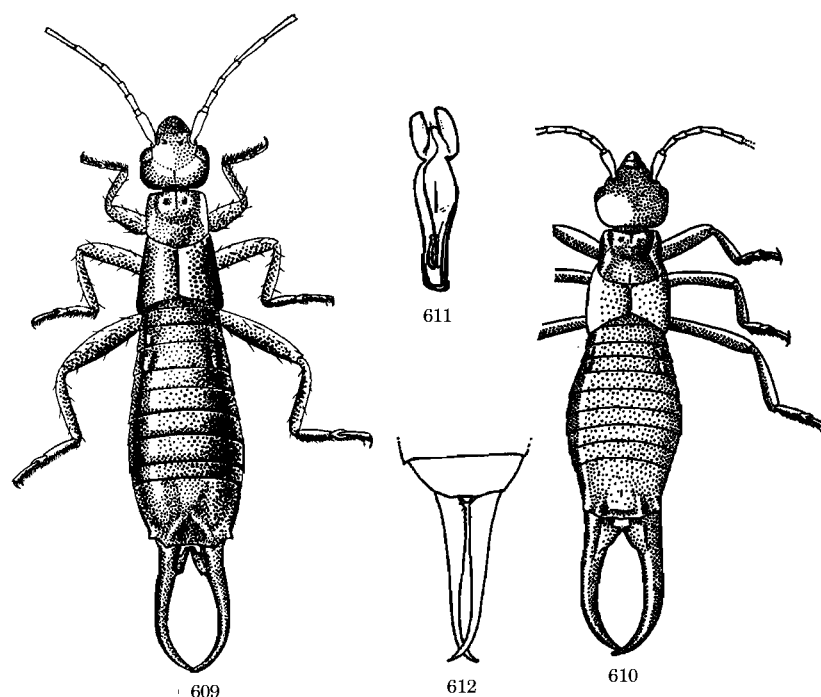
**Key to the species (based on males)**

- 1(4). Forceps not dilated in basal half but with a lamellated vertical crest, variously shaped
- 2(3). Body punctate; pronotum about as long as broad or weakly transverse; sides of abdominal segments 6<sup>th</sup> to 8<sup>th</sup> rounded; ultimate tergite with an inverted V-shaped carina in middle posteriorly ..... *G. bicarinata* Hincks
- 3(2). Body smooth; pronotum transverse; sides of abdominal segments 6<sup>th</sup> to 8<sup>th</sup> obtuse; ultimate tergite lacking inverted V-shaped carina ..... *G. chirurga* Burr
- 4(1). Forceps deplanate internally in basal one third to one half with its inner margin parallel ..... *G. medica* Burr

***Guanchia bicarinata* Hincks**

(Figs. 609-612)

*Guanchia bicarinata* Hincks, 1947, *Ark. zool.*, **39A**(1): 22, fig. 14 (Holotype and Allotype pair; N. E. Burma, Kambaiti, 2000 m and Paratype pair, same data, 7000 ft.); Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 618 (Male, Female; China: Shezchuan, 2100 m and above and Yunnan, 1250 m); Popham and Brindle, 1969, *Entomologist*, **102**: 62; Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(2): 56 (Males, Females; India: Arunachal Pradesh, Kamneng Dist., Tsela, 3657 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 61; Srivastava, 1984, *Proc. Wkshp.*



**Figs. 609-612.** *Guanchia bicarinata* Hincks, Male, 609-610, Dorsal view, 611, Genitalia; Female, 612, Ultimate tergite and forceps (fig. 609 ex Holotype Male).

*High Alt. Ent. & Wildl. Ecol. zool. Surv. India* (1983): 122, fig. 11A; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 55; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7774 (description), 7266 (black and white diagrams); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 845; Steinmann, 1993, *as Tierreich*, **108**: 587, figs 936 - 937.

**Male:** General colour brownish black, head occasionally orange; pronotum yellowish on sides; antennae, legs with distal half of tibiae and whole of tarsi yellowish brown; abdomen slightly lighter in colour and forceps somewhat reddish black.

Head about as long as broad, frons convex, sutures obsolete, hind margin almost straight. Eyes shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> slightly longer than 4<sup>th</sup>, remaining long and slender. Pronotum narrower than head anteriorly, slightly longer than broad or about as long as broad, sides straight, gently widened posteriorly, hind margin rounded, median sulcus faint, prozona weakly tumid and metazona depressed. Elytra abbreviated, inner margin distinctly shorter than the costal margin, hind margin oblique, costal margin ecarinate. Wings concealed. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than 3<sup>rd</sup>; 2<sup>nd</sup> lobed. Abdomen gently enlarged in middle, sparsely punctate, sides of segments convex, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former comparatively weaker. Penultimate sternite transverse, punctate, hind margin rounded with a convexity in middle. Ultimate tergite transverse, narrowed and sloping backwards, posteriorly with an inverted V-shaped carina, hind margin in middle subtruncate and lateral portion of hind margin oblique, postero-lateral angles produced into a minute point. Forceps with branches remote at base, tapering, elongatedly incurved from base to apex, apices hooked and pointed, at base above internally with a triangular crest with apex pointed and directed apically. Genitalia with parameres about two and a half times longer than broad, slightly narrowed apically; virga chitinous, tubular, at base thickened.

**Female:** Agrees with males in most characters except that ultimate tergite weakly sloping backwards and without carina posteriorly and postero-lateral angles not acute and forceps with branches simple and straight, slightly incurved in apical one third, internal margin crenulated in basal two thirds.

*Measurements:* (in mm)

|                   | Male       | Female    |
|-------------------|------------|-----------|
| Length of body    | 9.4 - 10.0 | 9.6 - 9.8 |
| Length of forceps | 3.0 - 3.7  | 3.1 - 3.3 |

*Types:* Holotype and Allotype pair at NRSS and Paratypes pair at MM.

*Distribution:* India (Arunachal Pradesh, Kameng Dist., Tsela, 3654 m), Myanmar (Kambaiti, 2000 - 2134 m) and China (Szechuan, 2100 m and above and Yunnan, 1250 m).



*Remarks:* The Holotype Male and Allotype Female were examined through the courtesy of Dr. Per Inge Persson, Naturhistoriska Riksmuseet, Stockholm, Sweden.

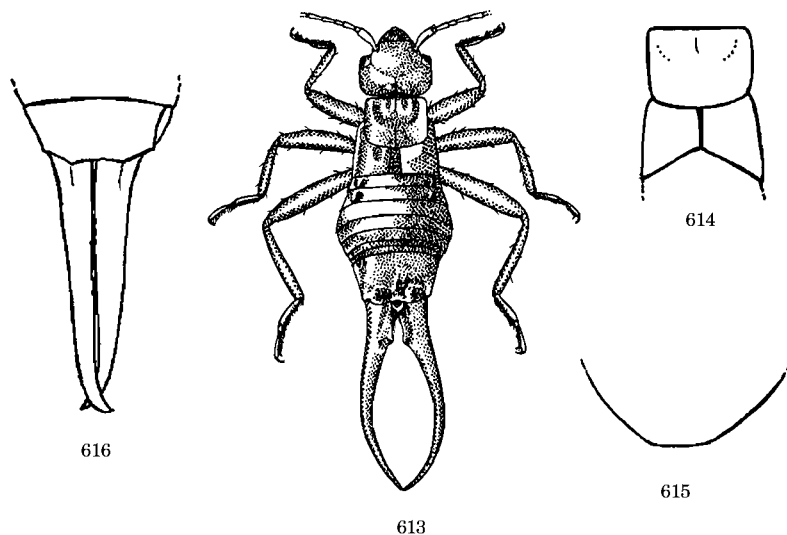
The specimens reported by Srivastava (1976) possess orange head which represents high altitude melanism.

***Guanchia chirurga* Burr**

(Figs. 613-616)

*Guanchia chirurga* Burr, 1911, *J. Asiat. Soc. Beng.* (N. S.), **7**: 749 (2 Males; Sikkim: Tista Valley, Tunglu, 3962-4267 m); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 30; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 61; Srivastava, *Newsl. zool. Surv. India*, **2**(2): 57 (3 Males; India: Sikkim, Lachen, 2706 m, Thombyak, 3879 m); Srivastava, 1984, *Wkshp. High Alt. Ent. & Wildl. Ecol. zool. Surv. India* (1983): 123, fig. 11B; Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 218, figs 75-76 (Male, Female; India: Sikkim, 5 km NW of Lachen, 3500 m, Thangoo, ca 3775 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 55; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7767 (description), 7161 (coloured photograph 1 Male, Sikkim, Tambal, 442 m), 7263 (black and white diagrams and photograph of Syntype 1 Male); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9292, pl. II, fig. 7 (Male Female, India: Sikkim, 442 m and between 2950 and 4542 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 52; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 847; Steinmann, 1993, *Das Tierreich*, **108**: 588, fig. 938.

Male: General colour light to dark blackish brown; head sometimes yellow (above 3000 m in India: Sikkim); tibiae and tarsi also occasionally yellow and femora yellowish brown.



**Figs. 613-616.** *Guanchia chirurga* Burr, Male, 613, Dorsal view, 614, Pronotum and elytra, 615, Posterior margin of penultimate sternite; Female, 616, Ultimate tergite and forceps.

Head slightly longer than broad, frons and occiput convex, sutures fine but distinct, hind margin feebly emarginated in middle. Eyes prominent, but shorter than the post-ocular length. Antennae 13-segmented, 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> about two and a half times longer than broad, gradually expanded apically; 4<sup>th</sup> shorter than preceding; 5<sup>th</sup> almost equal to 3<sup>rd</sup>, remaining gradually increasing in length distally. Pronotum gently transverse, anteriorly as wide as head, sides straight or gently convex and reflexed, hind margin briefly rounded, prozona tumid with small impressions on either side of median suture and metazona depressed. Elytra abbreviated, smooth, usually hind margin strongly oblique (rarely weakly oblique). Wings wanting. Legs long, slender, hind tibiae with 1<sup>st</sup> segment slightly longer than 3<sup>rd</sup>; 2<sup>nd</sup> briefly lobed, covered with thick pubescence on underside. Abdomen greatly enlarged in middle, tergites convex, smooth, sides of segments 6<sup>th</sup> to 8<sup>th</sup> acute posteriorly, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former comparatively weaker. Penultimate sternite with hind margin rounded, in middle subtruncate. Ultimate tergite transverse, smooth, narrowed and sloping backwards, posteriorly in middle with a slight depression and above bases of forceps with low folds, hind margin trisinate, lateral portion of hind margin oblique. Pygidium short, obtuse. Forceps with branches long, slender, tapering and gradually incurving to pointed apices, enclosing an elongated oval space, at base with a vertical, lamellate tooth internally with its inner margin crenulated. Genitalia with parameres about two and a half times longer than broad; virga chitinous and tubular.

Female: Agrees with males in most characters except that generally smaller in size; penultimate sternite obtusely rounded in middle posteriorly; ultimate tergite strongly narrowed posteriorly and forceps with branches simple, straight and contiguous.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 6.9 - 9.0 | 4.5 - 6.5 |
| Length of forceps | 4.5 - 6.5 | 1.9 - 2.9 |

*Types:* Syntypes 2 Males at BMNH.

*Distribution:* India: Sikkim, between 442 m and 2950 - 4542 m.

*Remarks:* This species is an essentially a high altitude species and orange or yellow head represents high altitude melanism. Records from lower altitudes are purely accidental.

Hind margin of elytra, in normal form is strongly oblique but in the smaller form (11.4 mm including forceps) from Sikkim (Srivastava, 1976), figured here possesses feebly oblique hind margin of elytra.

***Guanchia medica* Burr**

(Fig. 617)

*Guanchia medica* Burr, 1911, *J. Asiat. Soc. Beng.* (N. S.), **7**: (3 Males; India Madura Dist., Shembaganur, Kodaikanal Hills); Burr, 1914, *Ann. Mag. nat. Hist.*, (8)**8**: 585; Popham and Brindle, 1969, *Entomologist*, **102**: 62; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 61; Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(2) : 57; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 55; Sakai, 1995, *Dermapterorum Catalogue*, **28**: 7766 (description); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9292, pl. II, fig. 8 (1 Male; South India: Hiver Kodaikanal (Madras), 1981-2195 m); Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 850; Steinmann, 1993, *Das Tierreich*, **108**: 583

Male: General colour blackish brown; antennae light brown; head shining blackish brown; pronotum on sides and legs yellow; elytra yellowish brown and abdomen shining with greenish sheen.



617

**Figs. 617.** *Guanchia medica* Burr, Male, 617. Dorsal view (after Sakai and Zhang, 1995).

Head about as long as broad, smooth, frons tumid. Eyes shorter than the post-ocular length. Antennae 12-segmented, segments relatively short, especially 3<sup>rd</sup> and 4<sup>th</sup>. Pronotum transverse, anteriorly as wide as head, sides straight, gently reflexed, hind margin rounded, prozona tumid and metazona depressed. Elytra abbreviated, hind margin strongly oblique. Wings obsolete. Legs long, slender. Abdomen long, slightly dilated in middle, tergites convex, smooth. Ultimate tergite transverse, smooth, above the bases of forelegs with low folds, hind margin trisinate. Pygidium short. Forceps internally deplanate in basal one third to one half, its inner margin straight, denticulated, afterwards elongatedly incurved, tapering apically, tips pointed, meeting. Genitalia not described.

Female: Not known

*Measurements:* (in mm)

|                   | Male      |
|-------------------|-----------|
| Length of body    | 7.0 - 9.5 |
| Length of forceps | 2.0 - 3.5 |

*Types:* Syntypes 3 Males in BMNH.

*Distribution:* India: Tamil Nadu, Madura Dist, Kodaikanal, 1981 - 2195 m and Shembaganur (Kodaikanal Hills).

*Remarks:* This species besides types is known by a single Male (Sakai and Zhang, 1995). The above description is based upon the original description and the photograph by Sakai and Zhang (l.c.).

Genus ***Elaunon*** Burr

*Elaunon* Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 123 (Type species: *Sphingolabis bipartita* Kirby, 1891 - under Eparchinae); Burr, 1910, *Fauna British India, Dermaptera*: 163 (under Forficulinae); Burr, 1911, *Genera Insect.*, **122**: 79; Zacher, 1911, *Dt. ent. z.*, **1911**: 145; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 29; Popham and Brindle, 1969, *Entomologist*, **102**: 61; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 60; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 55; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7626; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 806; Steinmann, 1993, *Das Tierreich*, **108**: 536.

Body, long, slender, weakly depressed. Head with frons convex, sutures fine but distinct; antennae 12-segmented, 3<sup>rd</sup> almost equal to 4<sup>th</sup> but shorter than 5<sup>th</sup>. Pronotum about as long as broad, sides and hind margin forming an arch. Legs short, hind tarsi with 1<sup>st</sup> segment stout, equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>. Elytra and wings well developed. Abdomen elongated, parallel sided or gently dilated in middle. Forceps, in males, polymorphic, at base internally with an obtuse lobe or dilated in basal one fourth or a little more; in females, simple, straight and contiguous. Pygidium in both sexes small.

*Type species:* *Sphingolabis bipartita* Kirby, 1891.

*Remarks:* This genus comes very close to *Forficula* L., but can be separated in having the 3<sup>rd</sup> and 4<sup>th</sup> antennal segments almost equal and hind tarsi with 1<sup>st</sup> segment equal to combined length of 2<sup>nd</sup> and 3<sup>rd</sup>. All other characters to separate two genera mentioned by Burr (1910 and 1911a) are variable.

***Elaunon bipartitus*** (Kirby)

(Figs. 618-621)

*Sphingolabis bipartita* Kirby, 1891, *J. Linn. Soc. Zool.*, **23**: 526 (Male, Female (number of specimens not mentioned); India); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 46; Holdaus, 1906, *Denkscher. math. - naturw. Kl. K. Wiss. Wien*: 84 (Samoa).

*Apterygida bipartita*; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 112; Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**: 331 (Male, Female; North India and Ceylon); Burr, 1905, *J. Asiat. Soc. Beng. (N.S.)*, **1**(2): 29 (Male, Female; India: Karnataka, Bangalore); Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 119 (Female; Annam).

*Elaunon bipartita*; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 123.

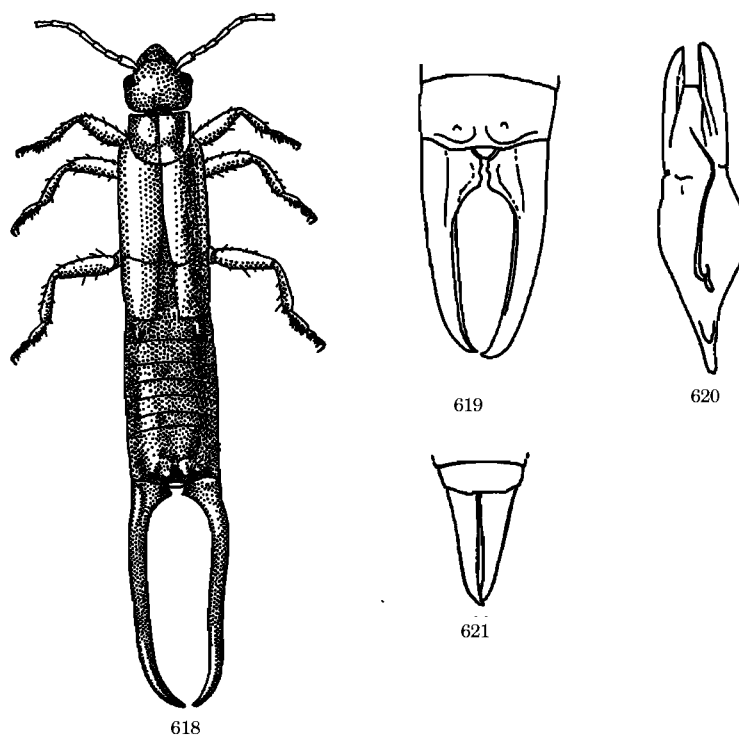
*Apterygida bipartita* var. *macrolabia*; Burr, 1907, *Rec. Indian Mus.*, **1**: 209 (India: Uttarakhand, Mussoorie).

*Elaunon bipartitus*: Burr, 1910, *Fauna British India, Dermaptera*: 163, pl. 6, fig. 53, 53a, pl. 10, fig. 102 (Male, Female; India: Uttarakhand, Mussoorie; Karnataka, Bangalore and Ceylon); Burr, 1911, *Genera Insect.*, **122**: 79, pl. 9, fig. 10; Burr, 1911, *Annln naturf. Mus. Wien*, **26**: 101 (Male, Female; Australia: Queensland, Sydney, New South Wales; India and Ceylon); Burr, 1912, *Sitz. Ges. naturh. Fr. Berlin*, **1912**: 327 (Male, Female; Formosa); Burr, 1913, *Rec. Indian Mus.*, **8**(2): 146 (Male Female; India: Arunachal Pradesh, Abor Region, above Pangi, 1219 m); Burr, 1913, *Ent. Mitt.*, **2**(3): 69 (Male, Female; Formosa: Taihorin and Takao); Burr, 1913, *J. Asiat. Soc. Beng. (N.S.)*, **9**(5): 186 (Male, Female; India: Uttarakhand, Himalaya, Kumaon Hills, Dinapani, Almora, Naini Tal and Dehra Dun); Burr, 1914, *Rec. Indian Mus.*, **10**: 292 (Male, Female; India: Karnataka, Bangalore; Tamil Nadu, Coimbatore, Shevroy Hills, Kadiar Rock, 1402 m; Uttarakhand, Almora, 1981 m); Burr, 1916, *J. R. micr. Soc.*, **1916**: 14, pl. 3, fig. 5 (male genitalia); Borelli, 1916, *Boll. Musei zool. Anat. comp R. Univ., Torino*, **31**: 6 (Female; Philippine Isls); Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**(11): 224 (Male; India: Tamil Nadu, Coimbatore); Hebard, 1933, *Mem. Queensland Mus.*, **10**: 154 (Male, Females; Australia); Shiraki, 1929, *Insecta Matsum.*, **3**(1): 20 (Formosa); Günther, 1929, *Mitt. zool. Bull. Mus. Berl.*, **15**: 78 (New Guinea); Günther, 1933, *Sber. Ges. naturh. Freunde Berl.*: 480 (Indonesia: Flores Isl); Ramammurthi, 1960, *Bull. ent.*, **1**: 36 (Female; India: Tamil Nadu, Nilgiri Hills); Bharadwaj and Bhatnagar, 1961, *Zool. Anz.*, **167**(7-8): (Male; India: Uttarakhand, Kumaon Hills, Nainital, 1935 m); Brindle, 1967, *Mem. est. Mus. Zool. Mus. Coimbra*, No. **302**: 24; Brindle, 1971, *Ent. scand.*, *Suppl.*, **1**: 231, fig. 45; Brindle, 1971, *Ent. Tidskr.*, **92**(1-2): 23 (Female; Australia: Queensland); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 29; Kapoor, Malla and Shah, 1978, *J. nat. Hist. Mus.*, **2**(2): 62 (Male, Female; Nepal: Kathmandu); Biswas and Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(4): 134 (India: Uttarakhand, Mussoorie); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 60; Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(6): 273 (Male, Female; India: Uttarakhand, Garhwal Hills, Hilang, Joshimath, 2134 m and Dhak); Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 14 (Female; India: Karnataka, Nandi Hills, 1200-1500 m); Srivastava, 1989, *Fauna of Orissa, State Fauna Series 1*, Pt. **2**: 167, figs 37-38 (Male, Female; India: Orissa, Koraput Dist., Jeypore, 541 m); Srivastava and Lal, 1993, *Rec. zool. Surv. India*, **91**(1) (1992): 125, figs 34-35 (Male, Female; India: Himachal Pradesh, Simla, Solan and Kullu Dists); Srivastava, 1995, *Fauna of Western Himalaya (U. P.), Himalayan Ecosystem Series*, Pt. **3**: 45 (Laoclities mentioned, now under Uttarakhand, not U. P.); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 68 (Males, Females; China (South), Laos and Vietnam); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 55; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7631 (description), 7149-7151 (coloured photographs), 7236-7237 (black and white diagrams and photographs); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9292 (Male, Females; India: Manipur, Matang, 1485 m; Imphal, 762 m and Sinda, 1320 m; Uttarakhand, Garhwal Hills, Joshimath, 2343 m, Tapoban, 2409 m,

Khumarya, 1419-1650 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 52;; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 806; Steinmann, 1993, *Das Tierreich*, **108**: 536; Chaturvedi and Srivastava, 2003, *J. Bombay nat. Hist. Soc.*, **99**(2): 216.

Male: General colour shining yellowish brown, shaded with black; head and pronotum brownish, latter on lateral margin yellow; elytra and wings yellow, former with a fuscous band along the sutural and costal margin; legs brownish, abdomen and forceps brownish black.

Head slightly longer than broad, smooth, sutures fine but distinct, frons convex, hind margin slightly emarginated in middle. Eyes small, distinctly shorter than the post-ocular length. Antennae 12-segmented, basal segment, stout, expanded apically, about as long as the distance between antennal bases or a trifle shorter; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> about as long as 4<sup>th</sup> or latter a trifle shorter; 5<sup>th</sup> longer than preceding two segments, remaining gradually increasing in length and thinning. Pronotum about as long as broad, slightly narrowed posteriorly, lateral and hind margins together forming a sort of arc, median suture distinct, prozona convex, metazona depressed. Legs rather short, hind tarsi with 1<sup>st</sup> segment stout, almost equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup>



**Figs. 618-621.** *Elauon bipartitus* (Kirby), Male, 618, Dorsal view, 619, Ultimate tergite and forceps, cyclolabic form, 620, Genitalia; Female, 621, Ultimate tergite and forceps.

lobed, covered on underside with thick pubescence. Elytra and wings ample, smooth, former with humeral angles weak, three times longer than broad, hind margin oblique, latter about one third as long as the elytra. Abdomen elongated, parallel sided or gently dilated in middle, tergites weakly depressed, deeply punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> strongly developed but former comparatively weaker. Penultimate sternite narrowed posteriorly but margin in middle rounded. Ultimate tergite transverse, disc weakly convex, punctate, above the bases of forceps with prominent elevations, separated by a deep groove, hind margin trisinate, postero-lateral angles projecting. Pygidium short, rounded. Forceps polymorphic, in f. *macrolabia*, branches long, cylindrical, often undulated, attenuate posteriorly, apices gently hooked, pointed and meeting, internally at base with a short blunt or conical tooth, in f. *cyclolabia* branches stout, shorter, at base internally dilated in one fourth with its inner margin dentate. Genitalia with parameres long, broad, about three times longer than broad, slightly narrowed apically; virga tubular, chitinous.

Female: Agrees with males in most characters except that the ultimate tergite narrowed posteriorly, lacks tubercles above the bases of forceps; pygidium about as long as broad, narrowed apically and forceps with branches rather depressed, straight, contiguous, inner margin finely crenulated.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 7.5 - 11.8 | 8.1 - 12.4 |
| Length of forceps | 2.7 - 5.4  | 2.0 - 2.5  |

*Types:* Syntypes (Males and Females - number not mentioned in the original description) at BMNH.

*Distribution:* India (almost throughout the country in plains and hills), Nepal, Myanmar, China (Yunnan), Sri Lanka, Vietnam, Laos, Philippine Isls, Indonesia (Flores Isl), New Guinea and Australia; also reported from Samoa.

It is represented in the Zoological Survey of India, Kolkata by following specimens:

India: Arunachal Pradesh, Siang dist., Above Pangi, 1234 m, 3 Males, 5 Females, 16.i.1912, under bark; Uttarakhand, Almora, 1694 m, 1 Male, 17.iii.1911, 1 Male, 27.vii.1911, 1 Male, 28.ix.1911, 1 Male, -.xi.1911, 1 Male, 18.vi.1911 and 1 Male, 13-16.ix.1911 (*C. Paiva* coll.)

Myanmar: N. E. Burma, Chienese Frontier, Take-pum Mountain, 1234-1542 m, 1 Male, -.ix.1910, Sansi Gorge, 1829-3438 m, 1 Male, -.xii.1910 (*C. W. Beebe* coll.). Sri Lanka: Madulsima, 1 Male, 1 Female, -.xii.1906.

Besides, in the collections of MZM following specimens, determined by Dr. G. K. Srivastva, not reported earlier, are present:

India: Tamil Nadu, Coimbatore, 14 Males, 4 Females, -x-xi.1958, 1 Male, -ii.1956; Karnataka, Mysore, Shimoga Dist., 1 Male, 26.vii.1938, at light (*P.S. Nathan* coll.).

*Remarks:* In the material examined the 4<sup>th</sup> antennal segment is twice as long as broad, never transverse as mentioned by Burr (1910, 1911a). In some males the tumid elevations above the bases of forceps are weakly developed.

This species is quite common in India and often attracted to light.

### Doubtful species

#### *Elaunon gangoli* Gangola

(Figs. 622-626)

*Elaunon gangoli* Gangola, 1965, *Entomologist*, **98**: 231, figs 12-16 (Holotype Male; India: Uttarakhand, Almora, 1676 m; Paratype 1 Male, same data, Dharamnagar (Pithoragarh, 1524m).

Male: Upper half except head and appendages bright shining yellow, under surface smooth; red in colour shaded with black and tumid head, occiput bulb-like and shining, sutures faint. Neck long and prominent. Pronotum yellow, sides parallel, rounded anteriorly in middle, posterior end with a triangular appearance but convex, slightly broader than long. Elytra quite long and parallel sided, hairy at base, bright yellow with clear fuscous band down the suture and costal margin. Wings very long, shining yellow. Abdomen parallel sided, comparatively short. red in middle, black on sides, lateral tubercles dull black, well developed, tiny hairs on sides, last dorsal segment rectangular, transverse, not depressed in middle, short, black tumid elevations on each side over the roots of forceps. Pygidium short, convex apically, sides concave, broad at base. Forceps stout with inner margin smooth, narrower towards apex, apices smooth, turning inwards almost at right angles facing each other, not much depressed, the dilated portion of base forming a blunt indistinguishable projection facing each other on inner side.

Female: Not known.

*Measurements:* (in mm)

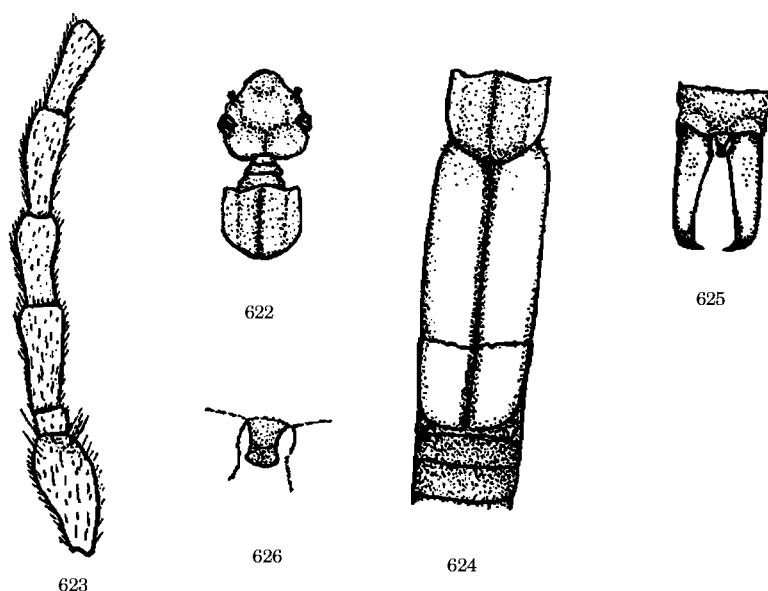
|                   | Male |
|-------------------|------|
| Length of body    | 9.2  |
| Length of forceps | 2.5  |

*Types:* Holotype Male and Paratype, 1 Male, stated to be present at Th. D. S. B. Government College, Naini Tal, Uttarakhand, to be passed on to Z.S.I. but not available at both the Institutions.

*Distribution:* India: Uttarakhand, Nainital and Pithoragarh.

*Remarks:* Above description is after Gangola (1965). This species is so far known by its type specimens. Although mentioned as Males, from the figures and description appear to be Females and perhaps belong to *Elaunon bipartitus* (Kirby).





**Figs. 622-626.** *Elauanon gangoli* Gangola, Male, 622, Head and pronotum, 623, A few basal antennal segments, 624, Pronotum, elytra, wings and a few basal abdominal segments, 625, Ultimate tergite & forceps; 626, Pygidium, enlarged (all figs, after Gangola, 1968).

#### Genus *Forficula* L.

*Forficula* Linnaeus, 1758, *Syst. Nat.*, **10**(2): 423 (Type species: *Forficula auricularia* Linnaeus, 1758 by subsequent designation); Latreille, 1802, *Hist. nat. Crus. Ins.*, **3**: 268; Latreilli, 1810, *Consid. Gener. sur l'ordre Nat.*: 244; Serville, 1839, *Ins. Orth.*: 35; Dohrn, 1865, *Sttetenent. ztg.*, **26**: 64; Scudder, 1876, *Bull. U. S. Geol. Surv.*, **2**: 254; Brünner, 1882, *Prodr. Ent. Orth.*: 11; Kirby, 1891, *J. Linn. Soc. zool.*: 23; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 119; Semenov, 1901, *Horae Soc. Ent. Ross*, **35**: 92; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 109; Burr, 1910, *Fauna British India, Dermaptera*: 164; Burr, 1911, *Genra Insect.*, **122**: 80; Chopard, 1922, *Faune de France, Dermapterés*: 186; Bey-Bienko, 1936, *Faune de l'URSS, Dermapterès*: 124; Hincks, 1947, *Ark. Zool.*, **39A**(1): 29; Hincks, 1957, *South African Animal Life*, **4**: 82; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1)(1967): 30; Kapoor, Bharadwaj and Banerjee, 1971, *Bull. ent.*, **1**(2): 35; Brindle, 1971, *Entomologist's mon. Mag.*, **107**: 195; Brindle, 1973, *Ann. Mus. Roy. Afr. Centr.*, Tervuren, in 8°, *Zool.*, **205**: 234; Steinmann, 1975, *Acta zool. hung.*, **21**: 218; Steinmann, 1988, *Acta zool. hung.*, **34**: 1; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 807; Steinmann, 1993, *Das Tierreich*, **108**: 589; Srivastava, 1975, *Rec. zool. Surv. India, Occ. pap.*, **2**: 61; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, pt. **4**: 432; Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, pt. **3**: 343; Sakai, 1995, *Dermapterorum Catalogus*, **29**: 7971.

*Forfidula* Houlbert, 1924, *Thysan. -Derm., Orth., de Francei*, **1**: 246 (Type species: *Forficula decipiens* Géné, 1832)

*Emiforficula* Menozzi, 1927, *Ent. Mitt.*, **16**: 239 (Type species: *Forficula ornate* Bormans, 1884).

Body weakly depressed. Head smooth, convex; antennae 10-15 segmented, 3<sup>rd</sup> long, conico-cylindrical, slightly longer than 4<sup>th</sup> but shorter than 5<sup>th</sup>, remaining gradually increasing in length. Pronotum rectangular or trapezoidal, transverse to about as long as broad with intermediate stages. Elytra well developed, sometimes feebly abbreviated, without carina on costal margin, humeral fold sometimes prominent. Wings well developed, consealed or wanting. Legs long, slender, hind tarsi with 1<sup>st</sup> segment slightly longer than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> distinctly lobed. Abdomen weakly depressed, dilated in middle; ultimate tergite, in males, transverse; in females, narrowed posteriorly. Pygidium short, rounded, occasionally projecting. Forceps, in males, generally deplanate internally in basal half to two thirds of the length; in females simple, straight and contiguous.

*Type species: Forficula auricularia* L, 1785.

*Distribution:* Europe, Africa, Asia, mainly palaearctic.

*Remarks:* Steinmann (1989a and 1993) included under *Guanchia* those species, earlier placed under *Forficula* which possessed slightly abbreviated elytra with its hind margin feebly oblique and concealed wings.

It has been noted during the course of study that certain species of this genus exhibit brachypterism, though rarely, with hind margin of elytra faintly oblique intraspecifically. Similarly in *Guanchia* generally elytra is distinctly abbreviated with hind margin strongly oblique. But in smaller individual of certain species, occasionally hind margin of elytra is faintly oblique. In view of the above it is very difficult to separate two genera.

As stated by Burr (1911b) *Guanchia* is only a convenient assemblage of species having strongly abbreviated elytra with sutural margin distinctly shorter than the costal margin. Accordingly, only three species, *G. chirurga*, *G. bicarinata* and *G. medica* are included under the genus from the area under study and all other species having brachypterous elytra are placed under *Forficula*.

Altogether 25 species are known from the area of which 22 are distributed within India in Himalaya and other hills of NE India and only three are found in Western Ghats.

#### Key to the species (based upon males)

- 1(2). Size small (6.0 mm, including forceps) ..... *F. nepalensis* Kapoor and Malla
- 2(1). Size larger (9.0 mm or more, including forceps)
- 3(6). Body, especially forceps covered with thick, short and long pubescence
- 4(5). Elytra and wings yellow, former with a stripe of dark brown along the costal and sutural margin; pronotum weakly transverse, gently widened posteriorly with hind margin rounded; forceps with a flange internally in basal one fourth, afterwards gently incurved and narrowed ..... *F. taoyuanensis* Ma and Chen

- 5(4). Elytra yellowish brown with a yellow spot in the middle or extending a little in posterior half; wings yellow with a shade of fuscous; pronotum semi-circular, lateral and posterior margins together strongly rounded; forceps internally dilated, dilation gradually narrowing apically, disappearing in apical one fourth, afterwards narrow, gently incurved ..... *F. ornata* Bormans
- 6(3). Body and forceps lacking thick pubescence
- 7(16). Elytra abbreviated; wings generally wanting
- 8(13). Size smaller (8.5-11.0 mm, including forceps); pronotum transverse
- 9(10). Pygidium distinct, subvertical, rectangular, sides almost straight, hind angles produced as minute points and in middle also with a minute point; forceps with branches gradually incurving from base to apex, slightly broader at base with a tubercle above, close to inner margin ..... *F. beebei* Burr
- 10(9). Pygidium short, obtuse; forceps deplanate internally in basal one fourth to one half, afterwards tapering apically
- 11(12). Head orange, sutures distinct; pronotum with hind margin rounded, feebly obtuse in middle; abdominal tergites strongly punctate; ultimate tergite strongly transverse; forceps slender, internal dilation extending upto basal one half .....  
..... *F. lucens* Brindle
- 12(11). Head Black, sutures obsolete; pronotum with hind margin briefly rounded; abdominal tergites punctulate; ultimate tergite transverse; forceps stout, inner dilation extending upto basal one third ..... *F. kashmirensis* Srivastava
- 13(8). Size larger (14.5-15.5 mm, including forceps); pronotum strongly transverse
- 14(15). Abdomen greatly distended, parallel sided; forceps almost straight, inner dilation extending in less than basal one half, afterwards branches almost straight, cylindrical ..... *F. distendens* Brindle
- 15(14). Abdomen greatly enlarged in middle; forceps dilated internally in basal one half or a little more; afterwards branches strongly incurved, a little before apex with a blunt projection internally ..... *F. jayarami* Srivastava
- 16(7). Elytra and wings well developed (in normal forms)
- 17(18). Forceps at base above with a vertical crest, close to inner margin .....  
..... *F. cristata* Srivastava
- 18(17). Forceps at base above without any vertical crest
- 19(26). Pronotum semi-circular, sides convex, forming a sort of arc with rounded hind margin

- 20(21). Elytra and wings with a yellow spot ..... *F. greeni* Burr
- 21(20). Elytra and wings unicolourous
- 22(23). General colour uniform blackish brown with a metallic lusture; size larger (13.1-15.3, including forceps); branches of forceps lamellate internally in a little less than basal one half with its inner margin dentate, lamellation dying out gradually apically, in apical one third unarmed except for a small triangular, ventral tooth ..... *F. wittmeri* Srivastava
- 23(22). General colour smoky brown; size smaller (9.5-11.0, including forceps); forceps dilated internally in basal one half or a little less with its internal margin crenulate, afterwards abruptly attenuated
- 24(25). Forceps with branches deplanate internally in basal one half, afterwards branches straight, cylindrical, attenuate posteriorly, apices gently hooked and pointed and wide apart ..... *F. interrogans* Burr
- 25(24). Forceps deplanate internally in basal one third, afterwards branches gradually attenuate, incurved, apices crossing ..... *F. genitalia* Kapoor
- 26(19). Pronotum quadrate, weakly transverse, often hind margin briefly rounded or obtuse in middle, other margins straight
- 27(34). Pygidium distinctly longer than broad
- 28(29). Pronotum with lateral margin feebly convex; (forceps flattened internally in a little beyond basal half); pygidium with lateral margin a little raised and hind margin subtruncate ..... *F. abbottabadiensis* Bharadwaj and Kapoor
- 29(28). Pronotum with lateral margin straight; (forceps in most of the species deplanate internally in basal half or a little less except *F. tawangensis*, forceps deplanate in a little beyond basal half); pygidium with lateral margin not raised
- 30(31). Pygidium apically with a triangular notch; forceps at base lamellate, lamellation represented by two or three horizontal teeth, merging gradually with margin .  
..... *F. mogul* Burr
- 31(30). Pygidium with hind margin entire; forceps dilated internally in basal one fifth to one half
- 32(33). Pygidium with hind margin convex; forceps dilated internally in basal half or a little less ..... *F. beelzebub* (Burr)
- 33(32). Pygidium with hind margin subtruncate; forceps dilated internally in basal one fifth or a little less ..... *F. davidi* Burr
- 34(27). Pygidium short, obtuse or pointed, often broader than long

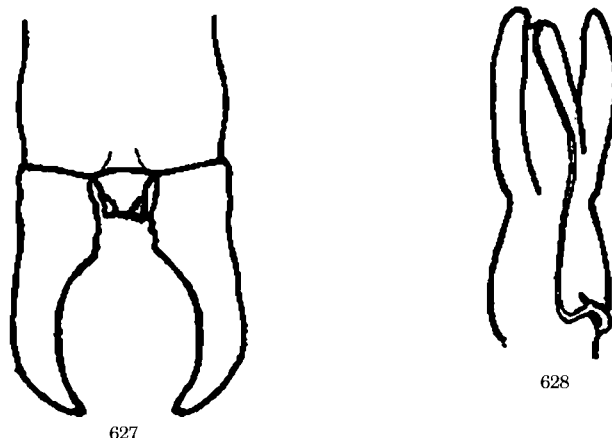
- 35(44). Pronotum transverse
- 36(37). Legs with femora generally darker in colour; abdominal tergites punctulate; (forceps dilated in basal one half or a little more, afterwards branches strongly incurved) ..... *F. tawangensis* Srivastava
- 37(36). Legs uniformly coloured; abdominal tergites punctate
- 38(39). Pronotum with hind margin obtuse in middle, looking like a pentagonal in shape; forceps dilated internally in basal two thirds (beyond dilated portion branches not strongly bowed) ..... *F. gravellyi* Burr
- 39(38). Pronotum with hind margin rounded; forceps dilated internally in basal one fourth to one half
- 40(41). Wings yellow; pygidium broader than long, pointed in middle posteriorly; forceps dilated internally in basal one half ..... *F. flavalis* Brindle
- 41(40). Wings not yellow; pygidium short, rounded; forceps dilated internally in a little less than basal one half
- 42(43). Pygidium short, narrowed apically with hind margin straight; forceps deplanate internally in slightly less than basal one half with its inner margin dentate, afterwards branches cylindrical, straight, apices gently hooked, pointed ..... *F. biplaga* Bey-Bienko
- 43(42). Pygidium short, rounded, laterally near apex with short projections; forceps deplanate internally in basal one fourth; afterwards forceps either strongly bowed or elongate ..... *F. palnicollis* Kirby
- 44(35). Pronotum strongly transverse
- 45(46). Pygidium about as long as broad, narrowed posteriorly with hind margin truncate ..... *F. choprai* sp.n.
- 46(45). Pygidium short, obtuse
- 47(48). Forceps at base internally with a large somewhat rounded lobe, its margin finely crenulated, afterwards strongly bowed or slightly elongatedly incurved, in cross section branches rounded ..... *F. schlagintweiti* (Burr)
- 48(47). Forceps internally dilated in basal one fifth to one half, afterwards branches strongly bowed, in cross section branches quadrangular
- 49(50). Forceps dilated internally in basal one fifth or less ..... *F. bhutanensis* Brindle
- 50(49). Forceps dilated internally in basal one third or more ..... *F. asketi* Purohit, Julka and Lal

***Forficula nepalensis* Kapoor and Malla**  
(Figs. 627-628)

*Forficula nepalensis* Kapoor and Malla, 1980, *Ent. Ber. Amst.*, **40**: 10, figs 1-2 (Holotype Male, Paratype 1 Male; Nepal: Kathmandu, Godavari); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 57; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9071 (description), 8712 (diagrams).

Male: Small; reddish yellow, head smooth, distinctly longer than broad; frons dark, moderately tumid; occiput light brown, slightly depressed; posterior margin prominently sinuate in middle; sutures feeble. Eyes small, distinctly smaller than genae. Antennae dark red, 12 (?), 1<sup>st</sup> segment a little smaller than the combined length of 2<sup>nd</sup> and 3<sup>rd</sup> segments, rest lengthening gradually, becoming slightly longer than 1<sup>st</sup>. Pronotum dark red, nearly square, anterior margin straight, sides and posterior margin gently rounded; prozona prominently tumid, metazona depressed; sulcus feeble. Tegmina brownish yellow, almost as long as the head and pronotum combined. Wings coloured like tegmina, exposed portion  $\frac{1}{2}$  the tegmina. Legs normal, brownish yellow. Abdomen reddish brown, shining, slightly depressed, tubercles distinct on 3<sup>rd</sup> and 4<sup>th</sup> segments; 10<sup>th</sup> tergite small, rectangular, with a deep depression postero-medially. Pygidium small, transverse, slightly sinuate posteriorly. Forceps about half the abdomen, about  $\frac{1}{3}$  basal side dilated and its inner margin nearly straight, denticulated with teeth blunt and ending in blunt tooth, almost facing straight; beyond this forceps gently arcuate, unarmed with moderately pointed apices. 9<sup>th</sup> sternite small, rounded posteriorly. Male genitalia: metaparameres with gently convex outer margin and sinuate inner margin with slightly pointed apices. Virga little smaller than the whole genital armature, more than 1.5 times as long as the metaparameres, forming an angle at the junction with basal vesicle.

Female: Unknown.



**Figs. 627-628.** *Forficula nepalensis* Kapoor and Malla, Male, 627, Ultimate tergite and forceps, 628, Genitalia; (figs. 627-628 after Kapoor and Malla, 1980).

*Measurements:* (in mm)

|                   | Male |
|-------------------|------|
| Length of body    | 4.0  |
| Length of forceps | 2.0  |

*Types:* Holotype Male, Paratype 1 Male; repository not mentioned.

*Distribution:* Nepal.

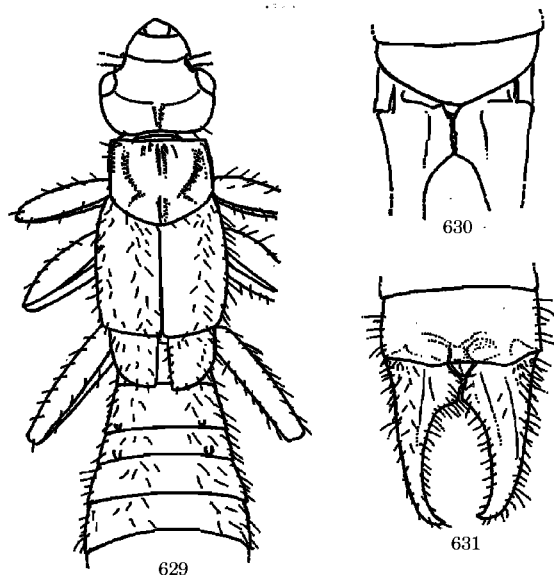
*Remarks:* The above description is after Kapoor and Malla (1980). This species is quite distinct from others members of the genus by its small size.

The body size, shape of pygidium and forceps are reminiscent of *Circolabia curvicauda* (Motschulsky).

***Forficula taoyuanensis* Ma and Chen**  
(Figs. 629-631)

*Forficula taoyuanensis* Ma and Chen, 1992, In: *Iconography of Forest Insects in Hainan China*: 94, figs 273a-b (Holotype Male, Allotype Female; China: Hainan Province, Lingxian); Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9092 (description), 8613 (coloured photograph of Holotype male), 8722 (black and white photograph of Holotype male and diagrams).

Male: General colour shining reddish brown with shades of black on certain body parts; elytra and wings yellow, former with a faint stripe of brown along the sutural and costals margin and legs yellowish brown. Whole body covered with thick golden yellow hairs.



**Figs. 629-631.** *Forficula taoyuanensis* Ma and Chen, Male, 629, Anterior portion of body, 630, Penultimate sternite and basal portion of forceps, 631, Ultimate targite and forceps.

Head longer than broad, smooth, frons weakly raised, sutures fine, hind margin emarginated in middle. Antennae with basal segment, stout, slightly expanded apically, slightly shorter than the distance between antennal bases. Eyes shorter than the post-ocular length. Pronotum slightly broader than long, gently widened posteriorly, hind margin convex; prozona tumid and metazona depressed, median sulcus distinct. Elytra and wings well developed, smooth. Legs typical of the genus. Abdomen elongated, gently widened in middle, tergites convex, punctate, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former comparatively weaker. Penultimate sternite transverse, hind margin broadly rounded with slight convexity in middle. Ultimate tergite transverse, weakly depressed, disc with vertical punctate and smooth stripes alternating, above the bases of forceps with tumid fold and depressed in between, hind margin trisinate, postro-lateral angles a little projecting. Pygidium small, subvertical, narrowed apically. Forceps almost straight, dilated internally in basal one fourth with its margin dentate, contiguous, afterwards attenuate to gently hooked apices. Genitalia with parameres about three and a half times longer than broad; virga tubular, basal vesicle distinct.

Female: Agrees with males but forceps simple and straight.

*Measurements:* (in mm)

|                   | Male |
|-------------------|------|
| Length of body    | 11.5 |
| Length of forceps | 3.0  |

(In the original description measurements are given, including forceps as: 12.5 - 13.5 mm).

*Types:* Holotype Male and Allotype Female at CASP.

*Distribution:* China: Hunan; India: Arunachal Pradesh (2134-2225 m),

*Remarks:* Record of this species from India rests on a male from Arunachal Pradesh, Rahung, 2134-2225 m, 29.iii.1961 (*F. Schmid* coll.), determined by Prof. S. Sakai as *Forficula lucasi* (Dohrn). It was placed at my disposal for study through the courtesy of Dr. Bob Skidmore, Biosystematics Research Institute (Department of Agriculture, Canada), Ottawa, Ontario, Canada.

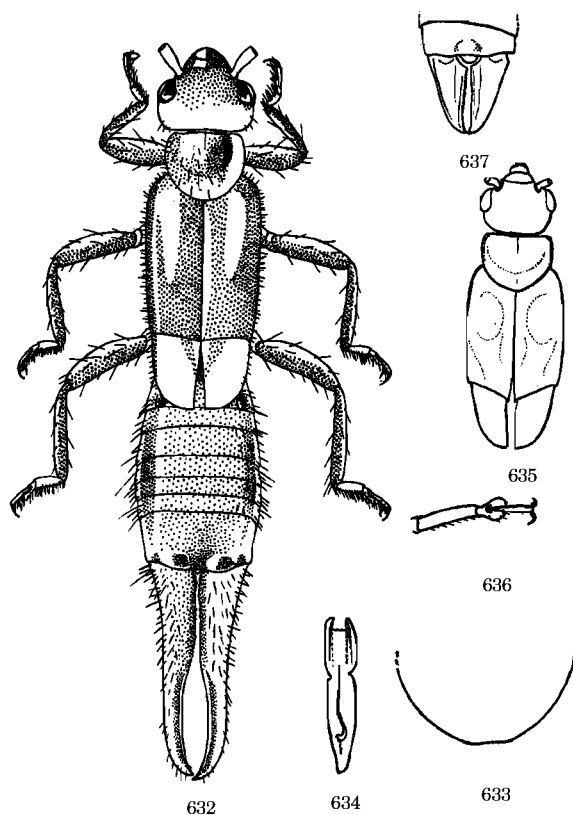
This species comes close to *Forficula ornata* Bormans, in having thick pubescence all over the body but differs by the weakly transverse pronotum, gently widened posteriorly; colour of elytra yellow with a dark brown band along the costal and sutural margin and forceps dilated internally in basal one fourth only.

***Forficula ornata* Bormans**  
(Figs. 632-637)

*Forficula ornata* Bormans, 1884, *Notes Leyden Mus.*, **6**: 192 (1 Male; Sumatra: Padang); Bormans, 1988, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**6**: 448 (2 ex Male; Birmanie; Signalee de: Madras, Sumatra); Bormans, 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**:



408 (2 Males; Burma); Bormans and Krauss, 1900, *Das Tierreich*, **11**: 124, fig. 44 (Vorder - Indien (Madras, Trichinopoly), Birma, Sumatra); Bolivar, 1897, *Ann. Soc. ent. Fr.*, **66**: 286 (Elle a été signalée de Birmanie, Madras et Sumatra); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 53; Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 111; Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 120 (Tonkin, Male Female; var., Female, Mou Pin) Burr, 1910, *Fauna British India, Dermaptera*: 169, (Madras, Trichinopoly (coll. Bolivar), Burma, Sumatra and Tonkin); Burr, 1911, *Genera Insect.*, **122**: 81; Burr, 1914, *Rec. Indian Mus.*, **10**: 292 (1 Male; Chutri Gouri, Nepal Tarai); Hincks, 1947, *Ark. Zool.*, **39A**(1): 38 (1 Female; Burma); Bormans, 1954, *Zool. Verh., Leiden*, **21**: 105 (Male; Female; Indonesia: Sumatra); Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 618 (Male; Female; China: Yunnan); Kapoor, 1968, *Agra Univ. J. res. (Sci.)*, **16**(1) (1967): 31; Popham and Brindle, 1969, *Entomologist*, **102**: 63; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 64; Srivastava, 1993, *Annali Mus. civ. hist. nat. Giacomo Doria*, **89**: 244, figs 51-53 (1 Female; Burma: Carin Ghecù); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 70 (Male, Female; China (South) and Thailand); Brindle, 1987, *Courier Forsch.-Inst. Secnkenburg*, **93**: 345 (Nepal); Steinmann, 1988, *Act. zool. hung.*, **34**(1): 24; Steinmann,



**Figs. 632-637.** *Forficula ornata* Bormans, Male, 632, Dorsal view, 633, Posterior margin of penultimate sternite; 634, Genitalia; Female, 635, Anterior portion of body; 636, Hind tarsi, 637, Ultimate tergite and forceps (figs. 632-634 ex Male from China and figs 635-637 after Srivastava, 1993h).

1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 831; Steinmann, *Das Tierreich*, **108**: 627, figs 1094-1096; Ma and Chen, 1992, In: *Insects of the Hunan, China*: 94 (China); Sakai, 1995, *Dermapterorum Catalogus*, **30**: 8886 (description), 8587 (coloured photograph of 1 Female), 8588 (coloured photographs, not correctly labelled since no specimens are available at IM (Zoological Survey of India, Kolkata) and other specimens labelled as Paratypes Paris Mus. also not correct), 8589 (coloured photographs of Males and Females, some of them appear to belong to other species), 8658 (black and white photographs of Male, Female and diagrams).

*Forficula (Emiforficula) ornata*; Menozzi, 1927, *Ent. Mitt.*, **16**: 239, fig. 9 (1 Male, 2 Females; Annam: Phuc-Son).

*Spongophora semiflava* Bormans (part), 1894, *Annali Mus. civ. Stor. nat. Giacomo Doria*, (2)**14**: 385 (1 Female; Burma: Carin Ghecù, 1300-1400 m, Fevrier, Mars, 88); Srivastava, 1993, *Annali Mus. civ. Stor. nat. Giacomo Doria*, **89**: 244, figs 51-53 (referred this Female det. by Bormans to this species).

Male: General colour blackish brown with shades of black on abdominal tergites; legs and sides of pronotum yellow; elytra with an elongated yellow spot extending from humeral angles to middle or a little beyond; wings yellow. Bulid medium; thickly pubescent, especially forceps.

Head about as long as broad, convex, sutures obsolete, hind margin scarcely emarginated in middle. Eyes prominent, only very slightly shorter than the post-ocular length. Antennae 12-segmented, yellow, basal segment almost equal to the distance between antennal bases, slightly expanded apically; 2<sup>nd</sup> about as long as broad; 3<sup>rd</sup> long, gently expanded apically; 4<sup>th</sup> a little shorter than the preceding, stouter; 5<sup>th</sup> longer than the 3<sup>rd</sup>, remaining increasing in length gradually. Pronotum slightly broader than long, semi-circular, lateral and hind margin conjointly rounded, slightly narrowed posteriorly, prozona convex and metazona depressed, median sulcus short on prozona. Elytra and wings well developed, smooth. Legs long, slender, hind tarsi with 1<sup>st</sup> segment about as long as 3<sup>rd</sup>; 2<sup>nd</sup> lobed, covered on underside with thick pubescence. Abdomen elongated, gently widened in middle, tergites weakly convex, punctulate, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> distinct, former comparatively weaker. Penultimate sternite rounded posteriorly with slight emargination in middle. Ultimate tergite transverse, slightly narrowed posteriorly, disc weakly depressed, punctated, above the bases of forceps with weak folds, inbetween depressed, hind margin trisinate, lateral portion of hind margin above the roots of forceps slightly oblique. Pygidium short, obtuse. Forceps with branches almost straight, depressed, in basal half internally dilated with its inner margin crenulated, dilation gradually dying out from apical half to one third, slightly incurved, enclosing an elongated oval space. Genitalia with parameres long, four to five times longer than broad, tip obtuse; virga long, tubular, basal vesicle present.

Female: Agrees with males in most characters except that ultimate tergite in middle posteriorly with slight depression; pygidium short, rounded and forceps with branches trigonal, depressed and straight.

*Measurements:* (in mm)

|                   | Male      | Female     |
|-------------------|-----------|------------|
| Length of body    | 7.5 - 8.5 | 8.5 - 10.5 |
| Length of forceps | 2.5 - 2.7 | 1.3 - 2.5  |

*Types:* Type Male at RNHL.

*Distribution:* India (Trichinopoly?), Nepal, Myanmar, Vietnam, China (Yunnan) and Indonesia (Sumatra).

*Remarks:* This species was described by Bormans (1884) on a Male from Sumatra: Padang and subsequently recorded by him (1888, 1894) from Myanmar, Tenasserim and Signalée de: Madras, Sumatra. Besides, Bolivar (1897) mentions "Elle a été signalée de Birmanie, Madras et Sumatra" whereas Bormans and Krauss (1900) records as "Vorder - Indien (Madras Trichinopoly), Birma, Sumatra". Perhaps, Burr (1910) records it from Madras: Trichinopoly (coll. Bolivar) on the basis of earlier records.

It is included here on a record from Nepal on a male (Burr, 1914) and record from India should be treated with reserve till the specimens reported from Madras are traced. It is most likely they may belong to *Forficula greeni* which is common in South India with which it has close resemblance.

It can be differentiated from the latter by strongly pubescent body (*vs* not pubescent in *F. greeni*); pronotum weakly transverse, semicircular, narrowed posteriorly (*vs* about as long as broad or weakly transverse, not semicircular and this portion narrowed posteriorly); and forceps, in males, deplanate in basal one half and dying out gradually afterwards (*vs* basal dilation extending in a little than basal half, not dying out gradually, instead attenuate).

The available material, of both the species, look somewhat similar but differ on the above characters. However, a doubt certainly arises whether both are conspecific or different? This could be sorted out only when further studies are conducted on the availability of more material.

***Forficula beebei* Burr**

(Figs. 638-641)

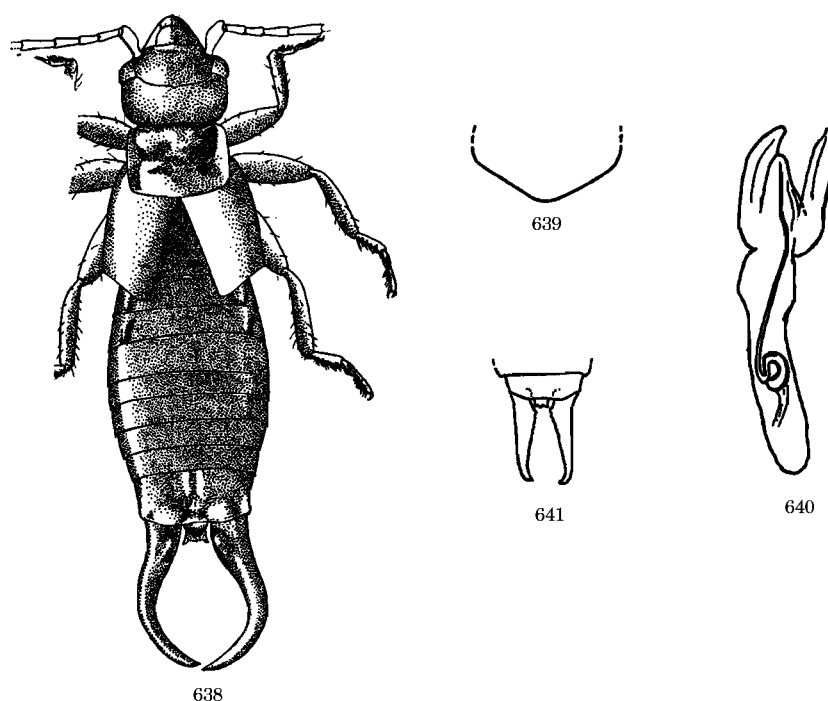
*Forficula beebei* Burr, 1911, *J. Asiat. Soc. Beng.* (N.S.), **7**: 795 (1 Male, 1 Female; India: E. Himalaya, Darjeling dist., Phallut, 3658 m); Burr, 1914, *Ann. Mag. nat. Hist.*, (8)**13**: 585; Brindle, 1974, *Senckenbergiana biol.*, **55**(1/3): 159, figs 21-22 (Male, Female; Nepal, 3250-4200 m); Brindle, 1975, *Ent. basiliensis*, **1**: 44, fig. 48 (Male, Female; Bhutan, 3100-3300 m); Brindle, 1987, *Courier Forsch-Inst. Senckenberg*, **93**: 339 (Males; Nepal, 2800-3600 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 62; Srivastava, 1984, *Proc. Wkshp. High Alt. Ent. & Wildl. Ecol. zool. Surv. India* (1983): 130, fig. 15 (Males, Females; India: Arunachal Pradesh, Tsela, 3657 m, Bomdila, 2621 m, Pinjuli, 244 m; West Bengal, Darjeeling Dist., Tonglu (macropterus), 3609 m, Sandakphu (brachypterus), 3600 m); Srivastava, 1993, *Fauna of West Bengal, State*

*Fauna Series 3*, Pt. 4: 437, figs 227-228 (Male: India: West Bengal, Darjeeling Dist., Sandakphu, 3600 m, Tonglu, 3069 m); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 219, fig. 83 (Males, Females; India: Sikkim, Lachen, 3500 m, Thangoo, 3750 m and Zema, 2620 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 57; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9007 (description), 8691-8692 (black and white photograph and diagram), 8606 (coloured photograph of a male); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9297 (1 Male; India: Sikkim, Chachu, 3031 m); Steinmann, 1988, *Acta. zool. hung.*, **34**: 5, fig. 3; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 813; Steinmann, 1993, *Das Tierreich*, **108**: 635, figs 1029-1030.

*Forficula schlagintweiti* (nèc Burr); Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**: 225, pl. 20, fig. 21 (Anechuroid forceps).

Male: General colour black, certain parts brownish, reddish or orange yellow.

Head transverse, frons and occiput convex, sutures faint, hind margin emarginated in middle. Antennae 12-segmented, 1<sup>st</sup> stout, expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, slightly broader than long; 3<sup>rd</sup> long, feebly expanded apically; 4<sup>th</sup> slightly shorter than preceding; 5<sup>th</sup> longer than 3<sup>rd</sup>, remaining gradually increasing in length, each gently expanded apically. Pronotum transverse, anterior and lateral margins straight and latter parallel, hind margin briefly rounded,



**Figs. 638-641.** *Forficula beebei* Burr, Male, 538, Dorsal view; 639, Posterior margin of penultimate sternite, 640, Genitalia; Female, 641, Ultimate tergite and forceps.

prozona weakly tumid and metazona depressed. Elytra smooth, one and a half times longer than the pronotum, hind margin truncate. Wings generally wanting, sometimes present. Abdomen elongated, enlarged in middle, tergites weakly convex, punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former comparatively weaker. Penultimate sternite obtusely rounded in middle posteriorly. Ultimate tergite transverse, punctate, slightly narrowed apically, weakly convex, sloping backwards, above the bases of forceps with tumid folds and in the middle with a depression, hind margin trisinate, lateral portion of hind margin oblique, postero-lateral angles a little prominent. Pygidium distinct, about as long as broad or slightly longer, subvertical, sides almost straight, gently narrowed apically with hind margin straight and angles slightly pointed and often with a median tubercle also. Forceps remote and gently depressed at base, afterwards tapering apically, elongatedly incurved, apices gently hooked and pointed, at base above internally with a blunt fold, inner margin crenulate. Genitalia with parameres broader at base, apex obtusely pointed; virga long, tubular.

Female: As male but ultimate tergite with tumid elevations at base of forceps weak; pygidium concealed and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 6.5 - 7.8 | 6.1 - 7.5 |
| Length of forceps | 2.8 - 2.9 | 1.7 - 2.0 |

*Types:* Syntypes 1 Male, 1 Female at BMNH.

*Distribution:* All along the Himalaya in India, Nepal and Bhutan, generally above 3000 m.

*Remarks:* According to Srivastava (1984) this species is a high altitude form generally occurring at 3000 m and above in Himalaya. But record of a female from Pinjuli at 244 m in India: Arunachal Pradesh is curious. Perhaps its occurrence at such a low height may not be natural. This could be further explained if we look into the habitat of these insects. They are secretive and conceal themselves in a variety of habitats. Most common habitat is under the bark of trees and logs which are transported to different places through human agency.

This species exhibits great variations in general body colour and punctuation on abdominal tergites. It can be easily separated from *F. schlagintweiti* (Burr) by smaller size, punctate abdominal tergites, distinct pygidium and forceps, in males.

### ***Forficula lucens* Brindle**

(Figs. 642-645)

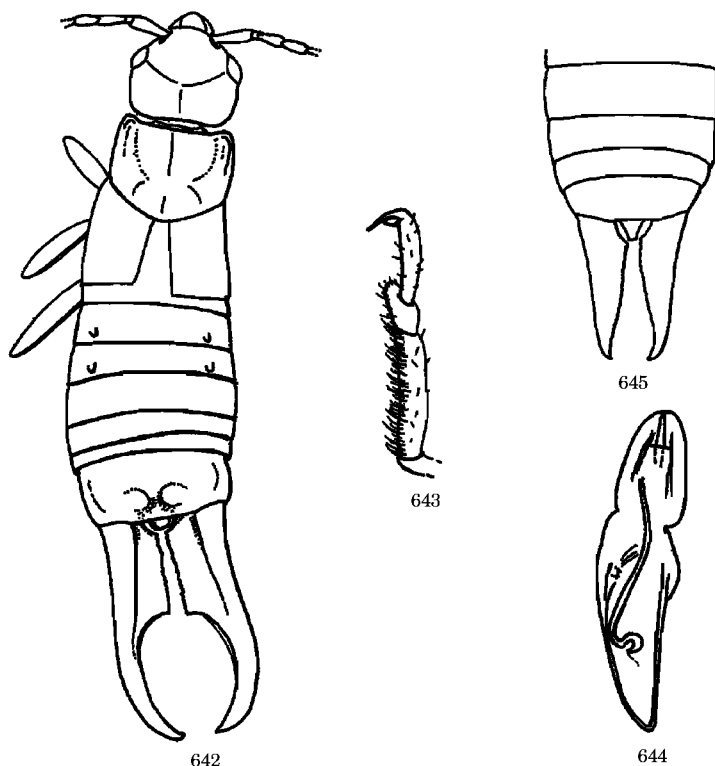
*Forficula lucens* Brindle, 1975, *Ent. basiliensia*, **1**: 48, figs 56-57 (Holotype Male, Paratypes (including Allotype), 3 Males, 4 Females and 1 larva; Bhutan); Brindle, 1987, *Courier Forsch.-Inst. Senckenberg*, **93**: 40 (Males, Females; Nepal, 2150-2450 m); Sakai, 1982, *Bull.*

*Daito Bunka Univ.*, **20**: 57; Srivastava, 1982, *Ent. basiliensis*, **7**: 69, fig. 7 (Male, Female; India: West Bengal, Darjeeling Dist., Jhepi, 1300-1400 m); Srivastava, 1984, *Proc. Wkshp. High Alt. Ent. & Wildl. Ecol. zool. Surv. India* (1983): 131, figs. 16A-B; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 432, figs 233-235; Srivastava, 2007, *Fauna of Mizoram, State Fauna Series 14*: 239 (16 Females; India: Mizoram).

*Guanchia lucens*; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 894; Steinmann, 1993, *Das Tierreich*, **108**: 583, figs 929-931; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7795 (description), 7158 (coloured photographs of 9 specimens of Type series), 7161 (coloured photograph of Holotype Male and Allotype Female).

Male: general body colour reddish with shades of yellow and black; head orange or red; antennae blackish brown; lateral margins of pronotum and legs yellow and forceps slightly light blackish brown.

Head weakly transverse, convex, smooth, sutures fine, posterior margin emarginate in middle. Eyes about half as long as the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> about as long as the distance between antennal bases, gently expanded apically; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> two and a half times longer than broad; 4<sup>th</sup> slightly shorter than



**Figs. 642-645.** *Forficula lucens* Brindle, Male, 642, Dorsal view, 643, Hind tarsi, 644, Genitalia; Female, 645, Ultimate tergite and forceps.

preceding; 5<sup>th</sup> slightly longer than 3<sup>rd</sup>, remaining long, slender, apical ones thin and shorter. Pronotum transverse, smooth, sides straight, parallel, gently reflexed, hind margin rounded but obtuse in middle, median suture distinct, prozona tumid, metazona depressed. Elytra short, only slightly longer than the pronotum, smooth, hind margin feebly truncate or straight. Wings concealed. Pro-sternum longer than broad; meso-sternum about as long as broad with hind margin rounded and meta-sternum transverse, narrowed between the hind coxae with hind margin truncate. Abdomen elongated, gently dilated in middle, weakly convex, punctation distantly placed, sides of segments 6<sup>th</sup> to 9<sup>th</sup> punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former weaker. Legs long, slender, hind tarsi with 1<sup>st</sup> segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>, covered with thick pubescence on underside. Penultimate sternite rounded posteriorly. Ultimate tergite transverse, lateral margins feebly convex, disc weakly depressed, above the bases of forceps with tumid folds and in the middle depressed, hind margin straight in middle, lateral portion of hind margin gently concave and oblique. Pygidium short, obtuse. Forceps with branches dilated internally in basal half or a little less with a leniar convexity in middle, inner margin dentate, afterwards branches cylindrical, tapering apically, gently incurved, tips gently hooked and pointed. Genitalia with parameres narrowed apically, tip obtuse; virga chitinous, tubular, basal vesicle distinct.

Female: Agrees with males in most characters except that ultimate tergite narrowed posteriorly; pygidium sloping and narrowed backwards and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 7.0 - 8.0 | 7.0 - 9.5 |
| Length of forceps | 3.0       | 1.5 - 4.0 |

*Types:* Holotype Male, Paratypes (including Allotype Female): 1 Male, 3 Females, 1 larva at NMB; Paratype 1 Male, 1 Female at MM.

*Distribution:* India (West Bengal, Darjeeling Dist., 1300-1400 m; Mizoram), Bhutan (2150-3300 m) and Nepal (2150 -2450 m).

*Remarks:* This species is placed under *Forficula*, on the basis of overall characters and elytra with hind margin either truncate or only feebly oblique.

It comes very close to *Forficula jayarami* Srivastava but differs only by smaller size. Perhaps it may prove to be a synonym of latter when more material is available.

***Forficula kashmirensis* Srivastava**

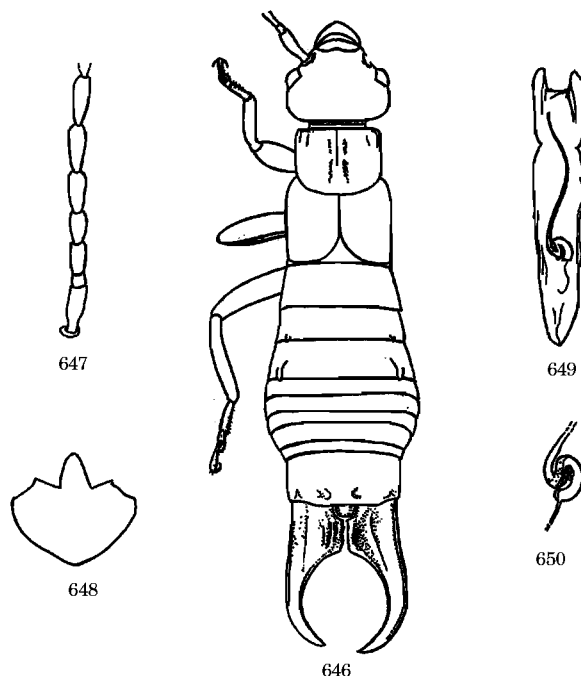
(Figs. 646-650)

*Forficula kashmirensis* Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 14 (Holotype Male; India: Kashmir, Gulmarg, ca 2600-3000 m); Steinmann, 1988, *Acta zool. hung.*, **34**(1): 6, figs 6-7;

Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 826; Steinmann, 1993, *Das Tierreich*, **108**: 637, figs 1033-1034; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9097 (description), 8715 (diagrams).

Male: General colour yellowish brown with shades of black in part in the middle of pronotum, abdominal tergites and forceps; head except mouth parts, ultimate tergite and the pygidium complete black.

Head slightly longer than broad, smooth, convex in middle, sutures obsolete, hind margin in middle straight, postero-lateral angles rounded. Eyes small, about half as long as the post-ocular length. Antennae 12-segmented (or more since the apical ones tend to break off easily on slightest jerck), 1<sup>st</sup> stout, expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, about as long as the 5<sup>th</sup>; 4<sup>th</sup> slightly shorter than the preceding, stouter, expanded apically; 6<sup>th</sup> onwards segments gradually increasing in length, each narrowed basally, mostly stout except one or two apical ones thinner. Pronotum slightly broader than long, smooth, anterior and lateral margins straight, hind angles and margin rounded, prozona moderately tumid with median sulcus faint, metazona not much differentiated from prozona. Elytra abbreviated, not much longer than the pronotum, shoulder weak, hind



**Figs. 646-650.** *Forficula kashmirensis* Srivastava, Holotype Male, 646, Dorsal view, 647, A few basal antennal segments, 648, Penultimate sternite, 649, Genitalia, 650, A portion of basal part of virga with vesicle, enlarged (all figs, after Srivastava, 1984c).



inner angles rounded off. Wings concealed or absent. Legs slender, long, hind tarsi with 1<sup>st</sup> segment almost equal to combined length of 2<sup>nd</sup> and 3<sup>rd</sup>, 2<sup>nd</sup> lobed; covered with thick pubescence on underside. Abdomen spindle shaped, tergites convex, faintly punctulate, sides of segments convex with punctulations more pronounced, lateral tubercles on 3<sup>rd</sup> weak and on 4<sup>th</sup> well marked. Penultimate sternite transverse, faintly punctulate, hind margin rounded but obtuse in middle. Ultimate tergite transverse, disc moderately depressed, with smooth and punctate vertical stripes alternating, lateral margins straight, above the bases of forceps with weak folds, hind margin trisinate, lateral portion of hind margin oblique. Pygidium subvertical, slightly longer than broad, narrowed posteriorly, apex convex. Forceps deplanate internally in basal one third with its inner margin straight and finely crenulate, afterwards branches cylindrical, attenuate apically, incurved, apices gently hooked and pointed, not meeting. Genitalia with parameres three to four times longer than broad, of uniform width; virga tubular, thin apically, basal vesicle distinct.

Female: Not known.

*Measurements:* (in mm)

|                   | Male |
|-------------------|------|
| Length of body    | 8.3  |
| Length of forceps | 2.6  |

*Type:* Holotype Male at UZMC.

*Distribution:* India: Kashmir, Gulmarg, ca 2600-3000 m.

*Remarks:* This species comes close to *Forficula beebei* Burr, *F. lucens* Brindle, *F. distendens* Brindle and *F. jayarami* Srivastava, all known from India and adjacent countries on brachypterous forms with the exception of *F. beebei* which is occasionally represented by macropterous form as well. All these species can be easily differentiated by the following key, based upon males only:

- 1(4). Size larger (14.5 to 25.5 mm, including forceps); pronotum strongly transverse
- 2(3). Abdomen greatly distended, parallel sided; forceps almost straight, inner dilation of forceps extending in a little less than basal half, afterwards branches almost straight, cylindrical ..... *F. distendens* Brindle
- 3(2). Abdomen greatly enlarged in middle; forceps with inner dilation extending in basal half or beyond, afterwards branches strongly incurved with a faint projection internally, a little before apex ..... *F. jayarami* Srivastava
- 4(1). Size smaller (8.5 to 11.0 mm, including forceps); pronotum transverse
- 5(6). Pygidium distinct, rectangular, subvertical, sides almost straight, hind angles projecting in the form of a minute point and sometimes in the middle also with a point; forceps with branches incurving gradually from base to apex, slightly broader

- at base with a faint tubercle or ridge above, close to inner margin .....  
 ..... *F. beebei* Burr
- 6(5). Pygidium short, obtuse; forceps deplanate internally in basal one third to half, afterwards cylindrical, tapering apically
- 7(8). Head orange, sutures distinct; pronotum with hind margin rounded, obtuse in middle; abdominal tergites strongly punctate; ultimate tergite strongly transverse; forceps slender with inner dilation extending in basal half .....  
 ..... *F. lucens* Brindle
- 8(7). Head black, sutures obsolete; pronotum with hind margin briefly rounded; abdominal tergites finely punctulate; forceps with inner dilation extending in basal one third only ..... *F. kashmirensis* Srivastava

***Forficula distendens* Brindle**

(Figs. 651-652)

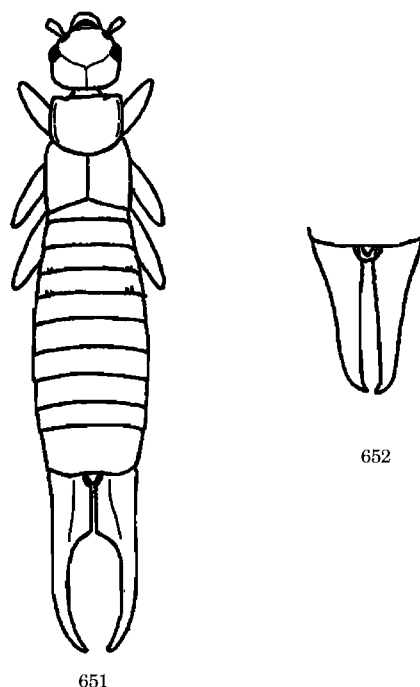
*Forficula distendens* Brindle, 1975, *Ent. basiliensia*, **1**: 47, figs 54-55 (Holotype Male, Paratypes (including Allotype), 3 Females; Bhutan: Thimpu, 2300-2500 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 57.

*Guanchia distendens*; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 484; Steinmann, 1993, *Das Tierreich*, **108**: 585, figs 932-933; Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7797 (description), 7195 (coloured photographs of Holotype Male, Paratypes 3 Females), 7273 (diagrams and black and white photograph of Holotype Male).

Reddish brown or dark reddish-brown, head partly or entirely reddish or reddish yellow; antennae dark brown; legs brown, femora darker. Cuticle of head smooth, rest of body coriaceous, abdominal tergites 1-5 punctured and those on tergites 2-4 tending to form transverse striations largely towards base; tergites 6-7 coarsely coriaceous; abdominal tergites of female impunctate.

Male: head transverse, tumid except for a slight depression on vertex; antennal segments somewhat variable in size, ratio of antennal segments 3, 4, 5 = 1.75: 1.25: 2 (holotype), 2: 1.25: 2.25 (allotype), 2.5: 2.25: 2.5 (other female paratypes). Distal segments elongated and narrow, segments pubescent, pubescence short and yellow. Pronotum strongly transverse, lateral margins almost straight, posterior margin weakly convex. Elytra short, wings absent or concealed. Abdomen long, almost parallel-sided lateral tubercles on third tergite very small, those on fourth small; last tergite transverse, with a median depression near posterior margin. Each branch of forceps almost straight, with a large inner basal flange, the flange with a low rounded longitudinal ridge medially, and margins of flange darkened and with small crenulations, distal part of branch cylindrical or nearly so, inner margin somewhat flattened; pygidium bluntly triangular.

Female: similar to male; last tergite narrower; each branch of forceps simple, broad at base and excised at extreme base; narrowed distally, inner margin finely dentated; pygidium declivent, ventral surface rectangular.



**Figs. 651-652.** *Forficula distendens* Brindle, Male, 651, Dorsal view; Female, 652, Ultimate tergite and forceps (all figs. after Brindle, 1975a).

*Measurements:* (in mm)

|                   | Male | Female      |
|-------------------|------|-------------|
| Length of body    | 11.0 | 11.0 - 12.0 |
| Length of forceps | 4.5  | 1.5 - 1.75  |

*Types:* Holotype Male, Paratypes: 2 Females (including Allotype) at NMB and 1 Female at MM.

*Distribution:* Bhutan: Thimpu, 2300-2500 m.

*Remarks:* This species is known by types and the above description is after Brindle (1975a).

From the photograph of Holotype male (Sakai, 1995a) it is evident that elytra are slightly shortened with hind margin scarcely oblique. It is included under *Forficula* on account of this.

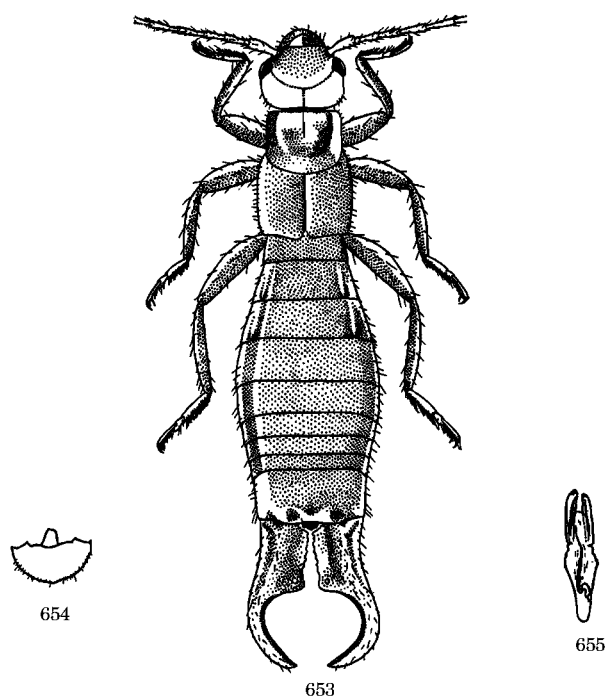
From the photographs *Forficula lucens* and *F. distendens* appear conspecific. Perhaps both may be individual variant of *Forficula jayarami* Srivastava. It is for the future workers to decide this when more material is available for study.

***Forficula jayarami* Srivastava**  
(Figs. 653-655)

*Forficula jayarami* Srivastava, 1972, *Rec. zool. Surv. India*, **66**(1-4): 139, figs 3c-e (Holotype Male, Paratypes 2 Females; India: Arunachal Pradesh, Domko, 1981 m and Dirang Dzong, Chug Valley, 2135 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 63; Srivastava, 1979, *J. zool. Soc. India*, **27**(1-2) (1975): 109 (2 Females; India: Manipur); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 219, figs 87-88; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 57; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9064 (description), 8612 (2 Females, IMM, though not labelled, from the details of the labels and photographs it is evident, are Paratypes of this species), 8710 (diagrams); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9295, Pl III, fig. 4 (2 Males; India: Arunachal Pradesh (locality mentioned now not under Assam), Domkho, 1981 m); Sakai, 1997, *J. Biogeogr. Soc. Japan*, **52**(2): 54 (Males, Females; India: Arunachal Pradesh (localities mentioned not under Assam), Domkho, 2145 m (3 Males), Amatulla, 594 m (1 Male) and Sikkim, Lathong, 2165 m (1 Male); Steinmann, 1988, *Acta zool. hung.*, **34**(1): 16, figs 39-40; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 825; Steinmann, 1993, *Das Tierreich*, **108**: 657, figs 1065-1066.

Head, abdominal tergites and forceps brownish red, latter with shades of black partially; pronotum black, laterally yellow; elytra brownish yellow; legs dirty yellow.

Head weakly transverse, frons tumid, micro-reticulated, sutures faint, hind margin feebly emarginated in middle. Eyes shorter than the post-ocular length. Antennae 12-segmented (or more since the apical ones tend to break off easily on slightest jerck), clad with hairs, basal segment stout, gently expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> almost equal to preceding, remaining gradually increasing in length distally, each narrowed basally. Pronotum smooth, transverse, anteriorly as wide as head, anterior and lateral margins straight, latter gently reflexed, hind margin rounded, in the middle obtuse, prozona tumid with median sulcus distinct, metazona depressed. Elytra slightly longer than the pronotum, smooth, humeral angles weak, hind margin truncate, Wings concealed or wanting. Legs long, slender, hind tarsi with 1<sup>st</sup> segment almost equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> lobed, covered with thick pubescence on underside. Abdomen elongated, enlarged in middle, tergites micro-reticulated, punctate, weakly depressed, sides of segments 6<sup>th</sup> to 9<sup>th</sup> rugosely punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> not very prominent but latter comparatively larger. Penultimate sternite transverse, punctate in basal half, hind margin rounded, very gently obtuse in middle. Ultimate tergite transverse, almost smooth, only at places with longitudinal stripes of fine punctulations, above the bases of forceps with broad and low folds and area in between with slight depression, hind margin trisinate, lateral portion of hind margin oblique. Pygidium obtusely rounded posteriorly. Forceps dilated from base to half of its length with a longitudinal convexity, diverging along the internal margin from base to apex, inner margin of dilated portion crenulated and apical angle forming an obtuse lobe, afterwards



**Figs. 653-655.** *Forficula jayarami* Srivastava, Holotype Male, 653, Dorsal view, 654, Penultimate sternite, 655, Genitalia.

branches cylindrical, tapering, incurved to gently hooked apices, inner margin unarmed. Genitalia with parameres roughly four times longer than broad, apex obtuse; virga, tubular, narrowed apically, basal vesicle, distinct.

Female: Agrees with males in most characters except that sides of abdominal segments smooth, not rugose; ultimate tergite with folds above the bases of forceps almost obsolete and forceps contiguous and straight.

*Measurements:* (in mm)

|                   | Male  | Female    |
|-------------------|-------|-----------|
| Length of body    | 10.81 | 8.8 - 9.2 |
| Length of forceps | 3.35  | 2.3 - 2.4 |

*Types:* Holotype Male, Paratypes 2 Females in ZSI.

*Distribution:* India: Arunachal Pradesh, Domkho, 1981-2145 m, Dirang Dzong, Chug Valley, 1749 m and Amatulla, 594 m; Sikkim, Lathong, 2165 m.

*Remarks:* This species comes close to *Forficula lucens* Brindle, in general body colouration and somewhat similar forceps, in males but differs by stouter build and larger size.

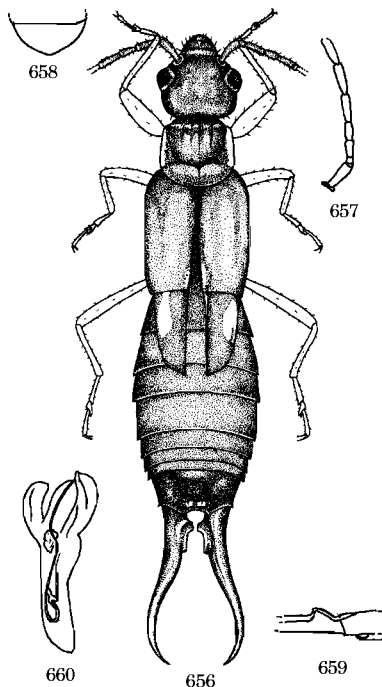
***Forficula cristata* Srivastava**

(Figs. 656-660)

*Forficula cristata* Srivastava, 1982, *Ent. basiliensia*, **7**: 72, figs 16-23 (Holotype Male; India: West Bengal, Darjeeling Dist., Lebong, 1600-1860 m); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, Pt. **4**: 434, figs 209-210; Steinmann, 1988, *Act. zool. hung.*, **34**(1): 13, figs 29-30; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 818; Steinmann, 1993, *Das Tierreich*, **108**: 652, figs 1057-1058; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9074 (description), 8714 (diagrams); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9297, pl. III, fig. 8 (coloured photograph of 1 Male; India: Kumaon Nainital, Naukuchiatal, 1250 m; 2 Males - Locality not known); Sakai, 1997, *J. Biogeogr. Soc. Japan*, **52**(2): 54 (1 Male; India: Kumaon, Nainital, Naukuchiatal. 1353 m).

Male: General colour dark brownish black, a few ante-apical antennal segments lighter in colour; pronotum laterally, apical one fourth of tibiae, whole of first tarsal segment and extreme base of third tarsal segment and tip of forceps yellowish; wings with an oblong yellow spot along the external margin in basal half.

Head about as long as broad, smooth, frons convex, sutures obsolete, hind margin slightly emarginated in middle. Eyes shorter than the post-ocular length. Antennae 12-segmented, basal stout, gently expanded apically, slightly shorter than the distance



**Figs. 656-660.** *Forficula cristata* Srivastava, Holotype Male, 656, Dorsal view, 657, A few basal antennal segments, 658, Penultimate sternite, 659, Basal portion of forceps, in profile exhibiting vertical crest, 660, Genitalia.

between antennal bases; 2<sup>nd</sup> about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> about as long as preceding, gently expanded apically; 5<sup>th</sup> onwards segments gradually increasing in length and thinning distally, each narrowed basally. Pronotum weakly transverse, smooth, lateral margins convex in middle, gently reflexed, postero-lateral angles and hind margin rounded, median sulcus distinct, prozona tumid, either side of middle line with faint impressed vertical stripes, metazona depressed and well differentiated from prozona. Elytra and wings well developed, Pro-sternum longer than broad, narrowed posteriorly, constricted between fore-coxae; meso-sternum about as long as broad and meta-sternum transverse, narrowed between hind coxae, hind margin truncate. Legs with fore-femora swollen, middle and hind ones compressed; hind tarsi with 1<sup>st</sup> segment compressed, about one and a half times longer than the 3<sup>rd</sup>; 2<sup>nd</sup> lobed with a faint emargination in middle posteriorly. Abdomen spindle shaped, tergites convex, punctate, lateral folds moderately developed but former comparatively weaker. Penultimate sternite transverse, posterior margin with a small convexity in middle. Ultimate tergite transverse, moderately sloping and contracted backwards, in posterior half in the middle with a triangular depression, hind margin trisinate, lateral portion of hind margin oblique, postero-lateral angles a little projecting. Pygidium short, triangular, sharply pointed posteriorly. Forceps with branches subcontiguous at base, depressed, gradually curving from base to apex, internally at base deplanate, followed by a triangular vertical lamellation, apical point of which directed posteriorly, afterwards unarmed and tapering to pointed apices. Genitalia with parameres about twice as long as broad, external margin convex; virga tubular, chitinous, basal vesicle not very prominent.

Female: Unknown.

*Measurements:* (in mm)

|                   | Male |
|-------------------|------|
| Length of body    | 8.9  |
| Length of forceps | 3.5  |

*Type:* Holotype Male at NMB.

*Distribution:* India: West Bengal, Darjeeling Dist., Lebong, 1600-1800 m; Uttarakhand, Naukuchital, 1250-1353 m.

*Remarks:* On account of third antennal segment equal to fourth in length and quadrate mesonotum this species is included under *Forficula* L. It differs from all other Indian species by the shape of males forceps with a vertical triangular tooth (crest) near base.

### ***Forficula greeni* Burr**

(Figs. 661-670)

*Chelisoches pulchellus* (nèc Gerstaecker, 1883); Burr, 1901, *J. Bombay nat. Hist. Soc.*, **14**: 327 (specimens from Ceylon only, determined by Burr).

*Forficula greeni* Burr, 1907, *Transent. Soc. Lond.*, **1907**: 115 (Male, Female (number not mentioned); Ceylon: Punduloya and Ambegammoa); Burr, 1910, *Fauna British India, Dermaptera*: 170, pl. 10, fig. 103 (Type Male) (Male, Female; Ceylon); Burr, 1911, *Genera Insect.*, **122**: 81; Burr,

1911, *J. Asiat. Soc. Beng.* (N. S.), **7**: 795 (India: Tamil Nadu, Madura Dist., Shembaganur, Palni Hills); Burr, 1914, *Rec. Indian Mus.*, **10**: 292 (Female; India: West Bengal, Calcuta); Borelli, 1932, *Bull. Raffles Mus.*, **7**: 92 (Male; Malaysia: Malayan Peninsula, Pahang, Fraser's Hill, 1219 m); Ramaurthi, 1960, *Bull. Ent.*, **1**: 36, fig. 4 (Male genitalia) (1 Male; India: Tamil Nadu, Coimbatore Dist., Niligiri Hills, Coonoor, 1524 m; 1 Female; Madura dist., Shembaganur); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 32; Srivastava, 1970, *Eos, Madr.*, **45**: 331 (1 Female; India: Tamil Nadu, Coimbatore Dist., Anamalai Hills, Cinchona, 1067 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 63; Brindle, 1971, *Ent. scand, Suppl.*, **1**: 231, fig. 46 (Ceylon); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 65; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 8986 (description), 8604-8605 (coloured photographs of Males and Females), 8687 (black and white diagrams and photographs); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9294, pl. II, fig. 12 (2 Males; India: Tamil Nadu, Hiver, Shembaganur, 1676-1981 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 54 (3 Females; India: Assam, Bhairabkunda, 231 m; 4 Males, 8 Females; Manipur, Singkap, 1254 m); Steinmann, 1988, *Acta. zool. hung.*, **34**(1): 61, figs. 41-42; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 823; Steinmann, 1993, *Das Tierreich*, **108**: 658, figs. 1067-1068.

*Forficula baijali* Kapoor, 1968, *Entomologist*, **101**: 13, pl. II, figs. 1-3 (Holotype Male; India: Madhya Pradesh, Guna, Ashok Nagar) - **Syn. n.**

*Forficula indie* Kapoor, 1968, *Entomologist*, **101**: 15, pl. III, figs. 1-3 (Holotype Male; India: Tamil Nadu, Madura Dist., Shembaganur (not Shembaganum), Kodaikanal) - **Syn. n.**

*Forficula vesca* Zhang and Yang, 1992, *Sinozoologia*, **9**: 167, figs. 4A-F (Holotype Male; China: Yunnan Province, Jiele, Ruili); Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9090 (description), 8813 (coloured photograph of Holotype Male), 8721 (black and white diagrams and photograph of Holotype Male) - **Syn. n.**

Male: General color reddish or yellowish brown with shades of black on certain parts; elytra with an elongated yellow spot in basal half only; wings yellow or with a yellow spot and legs clear yellow.

Head convex, smooth, sutures obsolete, sometimes median suture finely marked, hind margin scarcely emarginated in middle. Eyes about half as long as the post-ocular length. Antennae 12-segmented, stout, 1<sup>st</sup> gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, gently expanded apically; 4<sup>th</sup> slightly shorter than the preceding but stouter, remaining gradually increasing in length distally, each gently narrowed basally, a few apical ones thin and rod shaped. Pronotum anteriorly with margin straight, about as broad as head, sides convex, gently converging posteriorly, roughly semi-circular; prozona convex with distinct median sulcus, metazona depressed. Elytra and wings well developed, smooth. Legs short, stout, hind tarsi with 1<sup>st</sup> segment equal to 3<sup>rd</sup>, 2<sup>nd</sup> lobed, covered with thick pubescence on underside. Abdomen weakly convex, gradually enlarging posteriorly, finely punctulate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites weak but former comparatively weaker. Penultimate sternite with hind margin rounded. Ultimate tergite quadrate, transverse, lateral margin straight, disc weakly depressed, above the roots of forceps

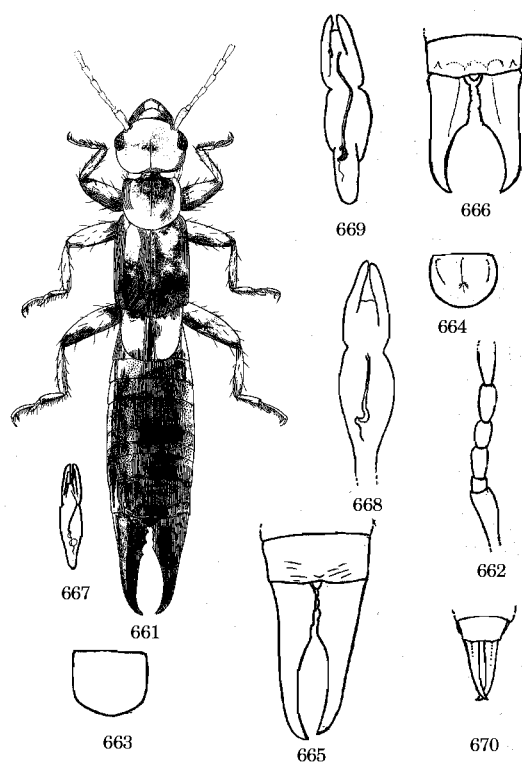


weakly tumid, hind margin trisinate, lateral portion of hind margin oblique. Pygidium short, subvertical, narrowed posteriorly. Forceps with branches deplanate in basal one third to a little less than basal one half with its inner margin crenulate or dentate, dilation ends gradually, afterwards branches attenuate, gently or elongatedly incurved, apices gently hooked and pointed. Genitalia with parameres three to four times longer than broad, narrowed apically, virga long, tubular, basal vesicle distinct.

Female: As male but ultimate tergite strongly narrowed posteriorly, lacking elevations above the roots of forceps and forceps simple, straight, subcontiguous, slightly incurved at apices.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 6.7 - 9.0 | 6.2- 8.9  |
| Length of forceps | 1.7 - 3.0 | 1.4 - 1.9 |



**Figs. 661-670.** *Forficula greeni* Burr, Male. 661, Dorsal view, 662, A few basal antennal segments, 663-664, Pronotum; 665-666, Ultimate tergite and forceps, 667-669, Genitalia; Female, 670, Ultimate tergite and forceps (figs. 661 and 667, ex Male Sri Lanka; figs. 663, 665 and 668, ex Holotype Male of *Forficula baijali* Kapoor, 1968; figs. 662, 664, 666 and 669 ex Holotype Male of *Forficula indie* Kapoor, 1968).

*Types:*

1. *Forficula greeni* Burr, 1907 - Number of specimens not mentioned in the original description. According to Burr (1910) Type is at BMNH.
2. *Forficula baijali* Kapoor, 1968 - Holotype Male in IARI.
3. *Forficula indie* Kapoor, 1968 - Holotype Male in IARI.
4. *Forficula vesca* Zhang and Yang, 1992 - Holotype Male in CASP.

*Distribution:* Sri Lanka (Peradeniya, Punduluoya and Ambegammoa); India (Tamil Nadu: Coimbatore Dist., Anamalai Hills, Chinchona, 1067 m, Nilgiri Hills, Coonoor, 1524 m and Madura Dist., Shembaganur, 1676-1981 m; Madhya Pradesh: Guna) and China (Yunnan Prov.: Jiele, Ruili).

Records of this species from India: West Bengal, Calcutta on 1 female (Burr, 1907); Arunachal Pradesh on 2 females (Srivastava, 1972) are doubtful. Besides Sakai's (1997) record from Assam, Bhairabkunda on 3 females and Manipur, Singkap on 4 males and 8 females need checking.

*Remarks:* Some variations exist in body colour, especially yellow spot on elytra which may be either well marked or diffused.

Holotype males of *Forficula baijali* Kapoor and *F. indie* Kapoor were examined and found to agree with this species and treated as synonyms. Besides, *Forficula vesca* Zhang and Yang is also treated as a synonym on the basis of original description and the coloured photograph of Holotype male by Sakai (1995c).

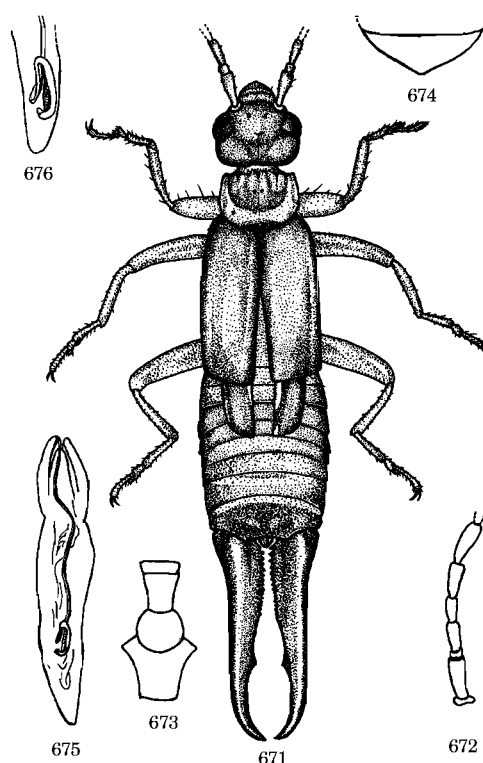
This species comes very close to *Forficula ornata* Bormans in general body colour and somewhat similar pronotum but differs by sparse pubescence on body (*vs* strongly pubescent body, especially forceps with long and thick pubescence in *F. ornata*); pronotum about as long as broad (*vs* strongly transverse and semicircular) and forceps, in males, with basal dilation extensive in width with its inner margin dentate (*vs* basal dilation less extensive in width with its inner margin crenulated).

### ***Forficula wittmeri* Srivastava**

(Figs. 671-676)

*Forficula wittmeri* Srivastava, 1982, *Ent. bsiliensia*, **7**: 70, figs 8-15 (Holotype male, Paratype 1 Male; India: West Bengal, Darjeeling Dist., Rimbick-Lodhama, 2350-1100 m); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, Pt.4: 434, figs. 211-214; Steinmann, 1988, *Acta. zool. hung.*, **34**(1): 12, figs. 25-26; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 844, Steinmann, 1993, *Das Tierreich*, **108**: 650, figs. 1052-1053; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9072 (description), 8013 (diagrams).

Male: General colour dark brown with traces of black on certain body parts; antennae clear yellow; elytra, wings and abdominal tergites with metallic sheen.



**Figs. 671-676.** *Forficula wittmeri* Srivastava, Holotype Male, 671, Dorsal view, 672, A few basal antennal segments, 673, Sternal plates, 674, Penultimate sternite, 675, Genitalia, 676, Hind portion of genitalia, enlarged.

Head slightly broader than long, frons convex, sutures almost obsolete, hind margin emarginated in middle. Eyes large, black, only slightly shorter than the post-ocular length. Antennae 12-segmented or more (since the apical ones tend to break off easily on slightest jerck), 1<sup>st</sup> stout, narrowed basally, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> slightly shorter than preceding, stouter; 5<sup>th</sup> slightly longer than 3<sup>rd</sup>, stouter, remaining gradually increasing in length and thinning distally, a few apical ones very thin. Pronotum slightly broader than long, sides straight, gently reflexed and diverging, hind angles and margin rounded, median sulcus distinct, prozona tumid, well demarcated from depressed metazona. Legs typical of the genus, covered on underside with golden yellow pubescence, hind tarsi with 1st segment about as long as the 3<sup>rd</sup>, 2<sup>nd</sup> lobed with hind margin entire. Elytra and wings ample, smooth, latter faintly yellowish along the inner margin. Abdomen elongated, slightly enlarged in middle, tergites weakly convex, punctulations fine and distantly placed, sides of segments rounded posteriorly, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> weak but former comparatively weaker. Penultimate sternite transverse, hind margin rounded with a

slight convexity in middle. Ultimate tergite strongly transverse, above with a few shallow punctures near basal margin, lateral margins a little diverging posteriorly, sloping backwards, weak tumid folds above the roots of forceps and area in the middle depressed, hind margin trisinate, lateral portion of hind margin oblique, postero-lateral angles a little projecting. Pygidium short, almost triangular. Forceps with branches depressed, contiguous, almost straight, gently incurved a little before apex, apices pointed and hooked, internally lamellate in a little less than basal half with its inner margin dentate, lamellation dying out gradually posteriorly, a small internal tooth ventrally placed at apical one third. Genitalia with parameres narrowed apically with tip obtuse; virga long, tubular, basal vesicle distinct.

Female: Unknown.

*Measurements:* (in mm)

|                   | Male      |
|-------------------|-----------|
| Length of body    | 9.4 -10.2 |
| Length of forceps | 3.7 - 5.1 |

*Types:* Holotype Male at NMB and Paratype 1 Male at ZSI.

*Distribution:* India: West Bengal, Darjeeling Dist., Rimbik-Lodhama, 1000-2350 m.

*Remarks:* This species comes close to *Forficula ornata* Bormans and *F. greeni* Burr but differs from both by uniform blackish brown colour of the body with a metallic sheen; larger body size and pronotum transverse, slightly widened posteriorly with margin and angles rounded.

### ***Forficula interrogans* Burr**

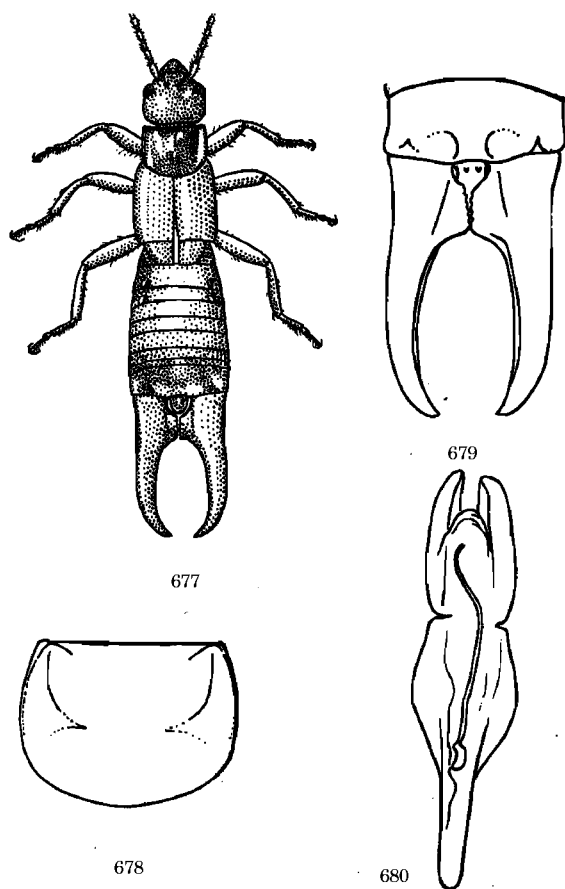
(Figs. 677-680)

*Forficula interrogans* Burr, 1905, *Entomologist's mon. Mag.*, (2), vol. **16**: 85 (Type Male; India: West Bengal, Darjeeling); Burr, 1907, *Trans ent. Soc. Lond.*, **1907**: 114, pl. 4, fig. 7; Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 122; Burr, 1910, *Fauna British India, Dermaptera*: 173, pl. 7, fig. 61 (Type Male figured); Burr, 1911, *Genera Insect.*, **122**: 82; Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**: 230 (1 Male, 6 Females; India: West Bengal, Darjeeling Dist., Kurseong); Gangola, 1965, *Entomologist*, **98**: 229 (1 Male; India: Uttarakhand, Nainital (Brook Hill, 2042 m); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 32; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 63; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, pt. **4**: 435, figs. 218-220 (2 Males, 2 Females; India: West Bengal, Darjeeling Dist., Goomti, near Kurseong, 1300 m); Srivastava, 2003, *Rec. zool. Surv. India, Occ. pap.*, **210**: 70 (1 Male; China: W. Hupeh, Lichuan dist., Sui-sa-pa, 1000 m); 1982, Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 56; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 8978 (description), 8682 (black and white diagrams and photographs of Male and Female, determined by Hebard), 8604 (coloured photographs of Male and Female determined by Hebard); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9293, pl. II, fig. 11 (coloured photograph of 1 male from India; Arunachal Pradesh (not Assam), Rahung, 2134-2225 m); Sakai, 1997, *Bull. Biogeogr. Soc.*

*Japan*, **52**(2): 54; Steinmann, 1988, *Acta zool. hung.*, **34**(1): 19, fig. 54; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 825; Steinmann, 1993, *Das Tierreich*, **108**: 662, fig. 1075.

Male: General colour dark reddish; pronotum laterally, elytra and wings yellowish, shaded with brown and legs clear yellow.

Head slightly longer than broad, smooth, frons convex, sutures obsolete, hind margin scarcely emarginated in middle. Eyes shorter than the post-ocular length. Antennae 12-segmented, stout, basal segment expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> slender, about two and a half times longer than broad; 4<sup>th</sup> slightly shorter than the preceding; 5<sup>th</sup> longer than the 3<sup>rd</sup>, remaining gradually increasing in length distally and each cylindrico-conical. Pronotum weakly transverse, anterior margin straight, lateral margins gently convex,



**Figs. 677-680.** *Forficula interrogans* Burr, Male, 677, Dorsal view, 678, Pronotum, enlarged, 679, Ultimate tergite and forceps, enlarged, 680, Genitalia.

reflexed, hind margin rounded, median sulcus distinct, prozona tumid and metazona depressed. Elytra and wings well developed, smooth. Legs typical of the genus, hind tarsi with 1<sup>st</sup> segment longer than the 3<sup>rd</sup>; 2nd lobed with hind margin entire, covered with thick pubescence on underside. Abdomen slightly narrowed near base, afterwards sides parallel, tergites convex, punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former comparatively weaker, sides of segments convex. Penultimate sternite with posterior margin broadly rounded. Ultimate tergite transverse, weakly convex above, sparsely but strongly punctate, sloping backwards, above the roots of forceps with weak folds and depressed in middle, hind margin trisinate, lateral portion of hind margin feebly oblique, postero-lateral angles a little prominent. Pygidium short, obtuse. Forceps short, internally in basal half dilated with inner margin straight and crenulated, afterwards, cylindrical, straight or gently arcuate and attenuate posteriorly, tips pointed. Genitalia with parameres three times longer than broad, narrowed apically, tip obtuse; virga tubular, thinning apically, basal vesicle short.

Female: As male but ultimate tergite narrowed posteriorly, lacking folds above the roots of forceps; pygidium comparatively shorter and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male      | Female    |
|-------------------|-----------|-----------|
| Length of body    | 7.5 - 7.8 | 6.9 - 9.1 |
| Length of forceps | 2.0 - 3.1 | 1.5 - 1.6 |

*Type:* Type Male at MNHP.

*Distribution:* India (West Bengal Darjeeling Dist., 914-1524 m; Uttarakhand, Nainital, 2316 m and Arunachal Pradesh, Rahung, 2134-2225 m) and China (W. Hupeh, Lichuan Dist., Sui-sa-pa, 1000 m).

Besides, following specimens determined by G. K. Srivastava, not reported earlier are present in the National collections of the Zoological Survey of India, Kolkata:

India: Arunachal Pradesh, Kameng dist., Milankang, 2133 m, 1 Male, 3 Females, 18.iv.1961; Dikon-Ko River, 2133 m, 3.iv.1961; Dirong Dzong Village, 1618 m, 1 Female, 11.iv.1961 and Bomdila Town, 2648 m, 1 female, 29.iv.1961 (coll. *K. C. Jayaramakrishnan*).

*Remarks:* Slight variations in the inner basal dilation of forceps, in males, are noted.

This species comes close to *Forficula flavalis* Brindle, 1983 from Nepal.

### ***Forficula genitalia* Kapoor**

(Figs. 681-688)

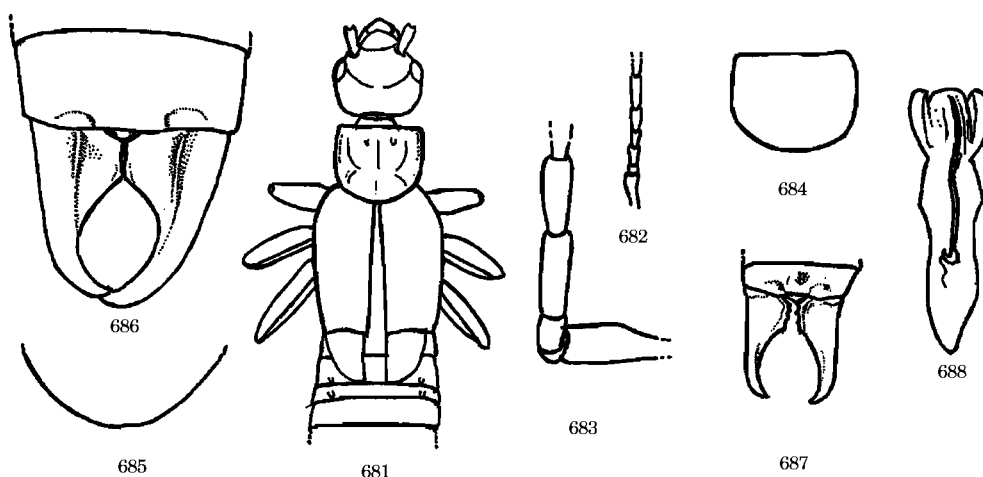
*Forficula genitalia* Kapoor, 1968, *Entomologist*, **101**: 17, pl. 4, figs. 1-3 (Holotype Male; India: West Bengal, Darjeeling); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 63; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, Pt. **4**: 434, figs. 215-217 (figures from the Holotype Male); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series* **4**, Pt. **3**: 348, figs. 126-127 (1 Male; India: Meghalaya, E. Khasi Hills, Shillong, Squit Falls and 1 Male; Nongkrem); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series*, **9**: 218, figs. 77-78

(India: Sikkim); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 57; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9060 (description), 8708 (diagrams); Steinmann, 1988, *Acta zool. hung.*, **34**(1): 23, figs. 65-66; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 822; Steinmann, 1993, *Das Tierreich*, **108**: 668, figs. 1084-1085.

*Forficula stenotica* Zhang and Yang, 1992, *Sinozoologia*, **9**: 164, figs. 2A-F (Holotype Male; China: Yunnan, Simao, 1320 m); Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9088 (description), 8113 (coloured photograph of Holotype Male), 8719-8720 (diagrams and black and white photograph of Holotype Male); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9295 (Male, Female; India: Meghalaya, Laitlyngkot, 660-1485 m; Arunachal Pradesh, Lifakpo, 945 m, Amatulla, 412- 660 m and Sikkim, Denthem, 1372 m, Dethong, 1485 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 55; Srivastava, 2003, *Fauna of Sikkim, State Fauna Series*, **9**: 219 (treated as a synonym).

Male: General colour yellowish to smoky brown; antennae, pronotum on sides, elytra, wings and legs dirty whitish yellow; abdomen dark blackish brown or yellowish brown and forceps yellowish brown or slightly lighter.

Head smooth, convex, a small depression on vortex, sutures distinct, hind margin slightly emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennae 12-segmented, basal segment stout, gently expanded apically, shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> slightly shorter than the preceding, gently expanded apically; 5<sup>th</sup> onwards segments gradually increasing in length distally except a few apical ones thin and shorter. Pronotum about as long as broad, lateral margins straight or gently convex, slightly widened



**Figs. 681-688.** *Forficula genitalia* Kapoor, Male, 681, Anterior portion of body, 682-683, A few basal antennal segments, 684, Pronotum, 685, Posterior margin of penultimate sternite, 686-687, Ultimate tergite and forceps, 688, Genitalia (figs. 683-684, 686 and 688 ex Holotype Male and other figs ex specimen from India, Shillong).

posteriorly, hind angles and margin rounded, median sulcus distinct, prozona tumid and metazona depressed. Elytra and wings ample, smooth. Legs typical of the genus. Abdomen long or short, tergites slightly expanded apically, weakly depressed, punctulated, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites weak but former comparatively weaker. Penultimate sternite transverse, posterior margin rounded but obtuse in the middle. Ultimate tergite strongly transverse, disc above weakly convex, punctated, sloping backwards, feebly tumid above the roots of forceps and depressed inbetween, hind margin incrassate, trisinate, lateral portion of hind margin oblique. Pygidium short, obtuse. Forceps depressed, internally deplanate in basal one third or a little more with its inner margin dentate, afterwards branches attenuate, compressed, strongly or weakly incurved, apices pointed. Genitalia with parameres two and a half times longer than broad, tips obtuse, lateral margin convex; virga thick, chitinous, tubular and basal vesicle distinct.

Female: Unknown.

*Measurements:* (in mm)

|                   | Male      |
|-------------------|-----------|
| Length of body    | 6.8 - 9.2 |
| Length of forceps | 1.8 - 2.9 |

*Types:*

1. *Forficula genitalia* Kapoor, 1968 - Holotype Male at IARI.
2. *Forficula stenotica* Zhang and Yang, 1992 - Holotype Male at BAU.

*Distribution:* India: West Bengal (Darjeeling Dist.), Meghalaya (Shillong, Nongkrek and Laitlyngkot, 650-1485 m) and Sikkim (Detham, 1372 m and Dethang, 1485 m), Arunachal Pradesh (Lifakpo, 654 m, Amatulla, 412-660 m); China: Yunnan, Simao, 1320 m.

*Remarks:* This species comes close to *Forficula flavalis* Brindle, in having yellow wings and forceps, of males, deplanate internally in basal one third or a little beyond but differs by its slightly larger size.

### ***Forficula abbottabadiensis* Bharadwaj and Kapoor**

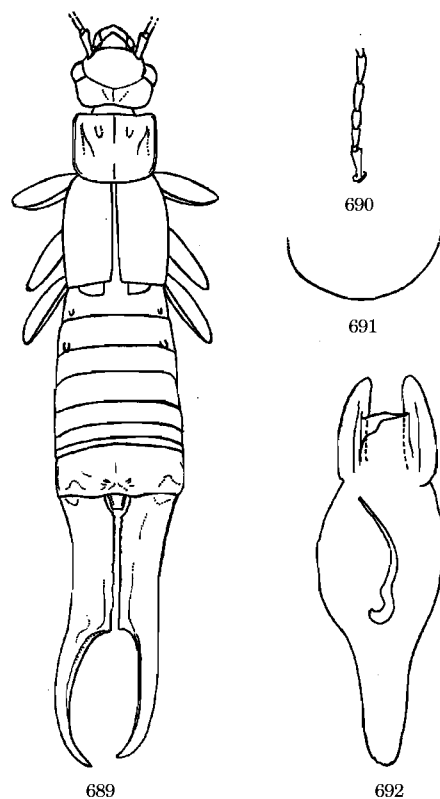
(Figs. 689-692)

*Forficula abbottabadiensis* Bharadwaj and Kapoor, 1968, *Bull. Ent.*, **8**(2) (1967): 127, Figs. 10-12 (Holotype Male; Pakistan: Hazara, 1219 m, Abbottabad); Srivastava and Tandon, 1975, *Newsl. zool. Surv. India*, **1**(3): 43 (1 Male; India: Jammu and Kashmir- no further data); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 61; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 57; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9055 (description), 8706 (diagrams); Steinmann, 1988, *Acta. zool. hung.*, **34**(1): 19, figs. 52-53; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 808; Steinmann, 1993, *Das Tierreich*, **108**: 661, figs. 1073-1074.



Male: Head yellowish brown; antennae, pronotum, elytra, wings and legs yellow; abdomen brown but on sides and hind margin of certain tergites shaded with black.

Head slightly longer than broad, frons convex, obscurely reticulated, sutures distinct, hind margin emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennae 13-segmented or more (since the apical ones generally broken off), basal segment stout, slightly expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> slightly shorter than the preceding but a little stouter; 5<sup>th</sup> longer than 3<sup>rd</sup>, narrowed basally, remaining gradually increasing in length distally and thinner. Pronotum weakly transverse, squarish, antero-lateral angles a little projecting, lateral margins straight, gently reflexed, hind margin briefly rounded, median sulcus distinct, prozona tumid and well differentiated from flat metazona. Elytra smooth, three times longer than broad, hind margin straight. Wings smooth, scarcely projecting beyond elytra. Legs typical of the genus. Abdomen elongated, gradually expanding posteriorly, tergites moderately con-



**Figs. 689-692.** *Forficula abbotabadiensis* Bharadwaj and Kapoor, Male, 689, Dorsal view, 690, A few basal antennal segments, 691, Posterior margin of penultimate sternite, 692, Genitalia.

vex, punctated, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former comparatively weaker. Penultimate sternite transverse, hind margin rounded. Ultimate tergite transverse, disc weakly convex, longitudinal sparsely punctate and smooth stripes alternating, sloping backwards, low elevations above the roots of forceps and inbetween depressed, median sulcus short, lateral margins straight, hind margin incrassate, trisinate, lateral portion of hind margin oblique. Pygidium longer than broad, narrowed posteriorly, hind margin truncate, lateral margin a little raised, leniar depression in middle. Forceps with branches deplanate in a little beyond basal half, flattened portion sloping downwards with internal margin crenulated with a blunt fold at its inner apical angle, directed inwards, afterwards branches slender, attenuate posteriorly and incurved, tip gently hooked and pointed. Genitalia with parameres about three and a half times longer than broad, narrowed apically with tip obtuse, virga chintinous, tubular, slightly incurved in middle, basal vesicle prominent.

Female: Unknown.

*Measurements:* (in mm)

|                   | Male        |
|-------------------|-------------|
| Length of body    | 12.0 - 12.1 |
| Length of forceps | 6.0 - 7.0   |

*Type:* Holotype Male at IARI.

*Distribution:* Pakistan (Hazra, Abbottabad, 1219 m) and India (Jammu and Kashmir, without further data).

*Remarks:* This species is almost similar to *Forficula sagitta rufula* Bey-Bienko from Afghanistan and may prove to be a synonym when further material is available for study.

### ***Forficula mogul* Burr**

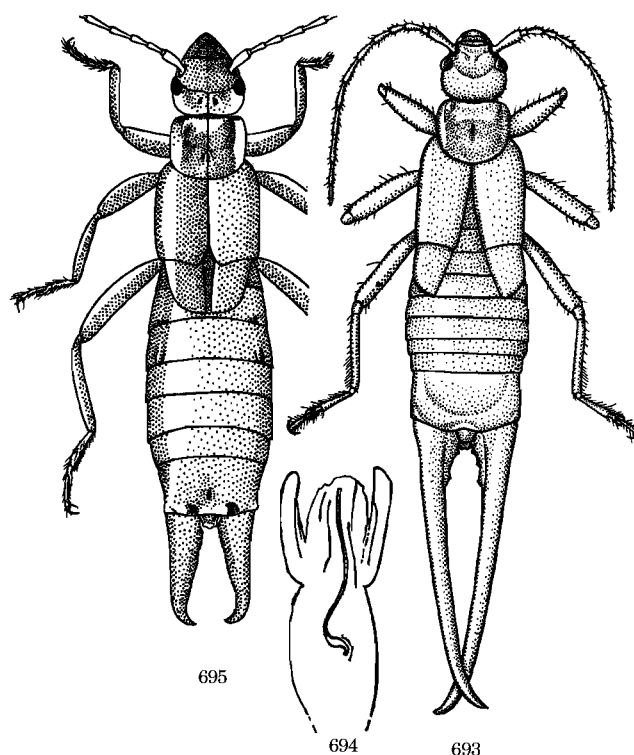
(Figs. 693-695)

*Forficula mogul* Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 321 (Male, Female; India: West Bengal (not Sikkim), Darjeeling); Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 111, pl. 4, fig. 3 (Male, in dorsal view); Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 121 (Male, Female Types); Burr, 1910, *Fauna British India, Dermaptera*: 167, pl. 6, fig. 55 (Male, in dorsal view); Burr, 1911, *Genera Insect.*, **122**: 81; Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 31; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 64; Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 435, figs. 221-223 (Male, Female; India: West Bengal, Darjeeling Dist., Ghoom, 2490 m and Birch Hill, 2290 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 56; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 8957 (description), 8599 (Male, Female; coloured photographs), 8676-8677 (diagrams and black and white photographs); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9295 (Male, Female; India: Arunachal Pradesh (not Assam), Moshing, 2073-2286 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 53 (2 Males, 6 Females; India: Arunachal Pradesh, Moshing, 2073-2286 m; 2 Females; Rahung, 2145-2310 m); Steinmann, 1988, *Folia ent. hung.*, **34**(1): 10, fig. 20; Steinmann, 1989, *World Catalogue*

of *Dermaptera* (Series entomologica v. 43): 831; Steinmann, 1993, *Das Tierreich*, **108**: 645, figs. 1047.

Male: General colour blackish brown; head orange; pronotum on lateral margins and legs yellow, latter with joints blackish brown; inner wing tip with trace of yellow; abdomen dark brown; pygidium and forceps reddish brown. Build stout.

Head slightly longer than broad, frons convex, sutures distinct, hind margin feebly emarginated in middle. Eyes distinctly shorter than the post-ocular length. Antennae 12-segmented or more (since apical ones generally broken off), 1<sup>st</sup> stout, slightly expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> two and a half to three times longer than broad, slender; 4<sup>th</sup> slightly shorter than the preceding; 5<sup>th</sup> longer than the 3<sup>rd</sup>, remaining gradually increasing in length and thinning. Pronotum weakly transverse, smooth, lateral margins gently convex, reflexed, hind margin briefly rounded, median sulcus distinct, prozona tumid, well differentiated from depressed metazona. Elytra and wings ample, smooth, coriaceous, former with hind margin feebly concave. Legs long, slender, hind tarsi with 1<sup>st</sup>



**Figs. 693-695.** *Forficula mogul* Burr, Male, 693, Dorsal view, 694, Genitalia; Female, 695, Dorsal view.

segment slightly longer than the 3<sup>rd</sup>; 2<sup>nd</sup> lobed with hind margin entire; covered on underside with thick pubescence. Abdomen elongated, spindle shaped, tergites weakly convex, smooth, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> moderately developed but former comparatively weaker. Penultimate sternite with posterior margin rounded. Ultimate tergite transverse, lateral margins straight, disc weakly convex, smooth, sloping backwards, above the roots of forceps with low folds and area inbetween depressed, hind margin in middle emarginated, lateral portion of hind margin feebly emarginated and oblique. Pygidium declivitous, longer than broad, convex above in basal half, narrowed apically, hind margin with a deep triangular notch in middle. Forceps with branches long, depressed, straight, tapering apically with tip gently hooked and pointed, internal margin at base with slight dilation represented by two or three teeth, dying out gradually afterwards. Genitalia with parameres about four times longer than broad, almost of uniform width except near apices with tip obtuse; virga tubular, chitinous; basal vesicle small.

Female: Agrees with males in most characters except that ultimate tergite slightly narrowed posteriorly with folds above the roots of forceps almost obsolete; pygidium declivitous, hind margin in middle with a small tubercle and forceps with branches depressed, straight, in apical one third gently incurved, apices hooked and pointed, internal margin finely serrated.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 16.0 - 18.0 | 16.0 - 18.0 |
| Length of forceps | 5.0 - 13.0  | 4.0 - 4.5   |

*Types:* Syntypes Male and Female (number of specimens not mentioned in the original description) an MNHP.

*Distribution:* India: West Bengal, Darjeeling Dist., Goohm, 2490 m, Birch Hill, 2290 m; Arunachal Pradesh, Moshing, 2073-2286 m, Rahung, 2145-2310 m.

*Remarks:* This species can be easily differentiated from the other members of the genus by its robust build and characteristic male forceps.

***Forficula beelzebub* (Burr)**

(Figs. 696-702)

*Chelisoches beelzebub* Burr, 1900, *Ann. Soc. ent. Belg.*, **44**: 51 (1 Male; India: Kurseong); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 33.

*Forficula beelzebub*; Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 322; Burr, 1905, *J. Asiat. Soc. Beng.* (N.S.), **1**(2): 29 (Female; India: West Bengal, Darjeeling); Burr, 1907, *Rec. Indian Mus.*, **1**(3): 121 (Male, Female; Nepal); Burr, 1911, *Genera Insect.*, **122**: 80; Burr, 1908, *Bull. Mus. Hist.*

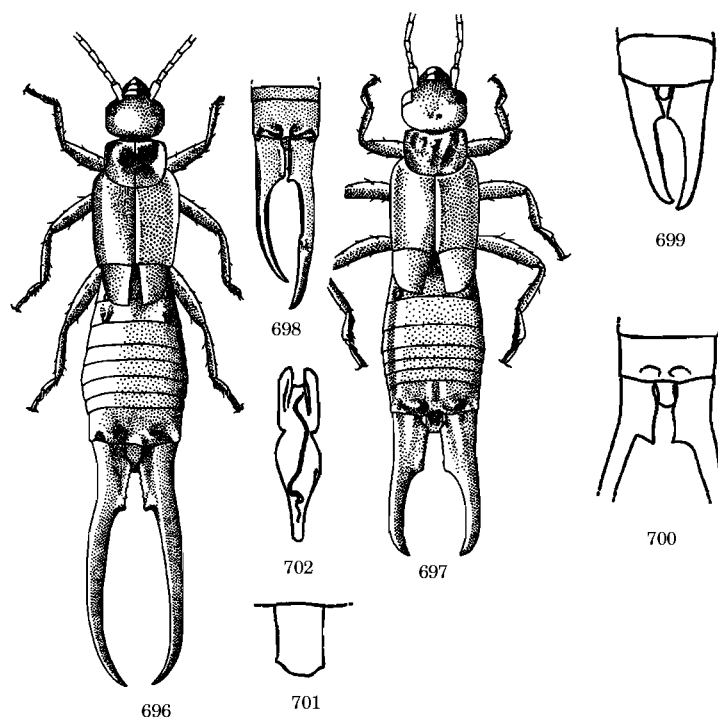
*nat. Paris*, **14**: 121; Burr, 1910, *Fauna British India, Dermaptera*: 167, pl. 4, fig. 56, 56a (Nepal and India); Burr, 1912, *Annln naturh. Mus. Wien*, **26**: 102 (Male; India: Sikkim and China); Burr, 1913, *J. Asiat. Soc. Beng.* (N.S.), **9**(5): 186 (India: Himalaya, Uttarakhand, Almora, 1585 m, Binsar, 2438 m, Dharmoti, Smalkhet, near Bhowali, Sat Tal, 1219 m and Mussoorie; Himachal Pradesh, Simla, Jaunsar: Kurdi ); Burr, 1914, *Rec. Indian Mus.*, **10**: 292 ((India: West Bengal, Darjeeling, 2134 m and Sanchal, 2438 m); Burr, 1916, *J. R. micr. Soc.*, **1916**: 115, pl. 4, fig. 1 (male genitalia); Hebard, 1923, *Mem. Dep. Agri. India ent. Ser.*, **7**(11): 227 (21 Males, 10 Females and 1 Juvenile; India: West Bengal, Darjeeling Dist., Kurseong); Gangola, 1965, *Entomologist*, **98**: 232, fig. 17 (male genitalia); Bharadwaj and Kapoor, 1968, *Bull. Ent.*, **8**(2): 127 (Males, Females; India: Uttarakhand, Kumaon Hills and Meghalaya (not Assam); Srivastava, 1972, *Rec. zool. Surv. India*, **66**(1-4): 138 (Males, Females; India : Arunachal Pradesh (not NEFA now); Srivastava and Saha, 1975, *Ceylon J. Sci. (Bio. Sci.)*, **1**(2): 66 (Males, Females; India: West Bengal, Darjeeling Dist); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 62; Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(4): 134 (India: Uttarakhand, Garhwal Hills); Srivastava, 1979, *Proc. Sym. zool. Surv. India*, **1**: 66, figs. 10A, B (Dorsal view of Male showing cyclolabic and macrolabic forms); Srivastava, 1979, *J. zool. Soc. India*, **27**(1-2) (1975): 109 (India: Manipur, Imphal, 792 m); Srivastava, 1982, *Bull. Inst. r. Sci. nat. Belg., Bruxelles*, **54**(11): 8 (Male, Female; China: Yunnan); Srivastava, 1982, *Ent. basiliensia*, **7**: 67 (Males, Females; India: West Bengal, Darjeeling Dist., 2400-2500 m, Assam (Kaziranga), Meghalaya ( Shillong and Mawphlong, 1850 m ) and Himachal Pradesh (Manali, 2000-2300 m); Srivastava, 1983, *Rec. zool. Surv. India*, **80**: 501 (Female; Myanmar: Hatgaw); Srivastava, 1984, *Wksh. High Alt. Ent. & Wildl. Ecol. zool. Surv. India*: (1983) 129, figs. 12A-B (Males, Females; India: Arunachal Pradesh, 1618-2971 m., Meghalaya, Himachal Pradesh, 1828-2133 m. and Uttarakhand (Mussoorie); Srivastava, 1984, *Bull. zool. Surv. India*, **5**(2-3): 14 (India: Uttarakhand, Mussoorie, 1500-2200 m); Srivastava, 1993, *Rec. zool. Surv. India*, **91**(1) (1992): 86, figs. 74-75 (Male, Female; India: Arunachal Pradesh, Tirap Dist., Namdapha area); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. **4**: 234, figs. 224-226 (Male, Female; India: West Bengal, Darjeeling Dist., Tindharia, 860 m, Lava, 2195 m, Mirik, 1968 m and Badekhasmahal); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. **3**: 437, figs. 124-125 (Male, Female; India: Meghalaya, East Khasi Hills, Jaintia Hills and Ribhoi Dists.); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 219 (India: Sikkim); Srivastava, 2005, *Fauna of Western Himalaya* (Himachal Pradesh) **2**: 110 (India: Himachal Pradesh, Simla); Brindle, 1973, *Ann. Mus. Roy. Afr. Centr.* Tervuren, in *8° Zool.*, **205**: 243 (1 Male; Kenya: Mombasa - adventive); Brindle, 1974, *Senckenbergiana biol.*, **55**(1-3): 159, fig. 3 (Males, Females and larvae; Nepal, 100-3000 m); Brindle, 1975, *Ent. basiliensia*, **1**: 46 (Males, Females; Bhutan, 1680-3600 m); Brindle, 1983, *Senckenbergiana biol.*, **63**(1-2) (1982): 102 (Males, Females and immatures; Nepal, 1900-3400 m); Brindle, 1987, *Courier Forsch.-Inst. Senckenberg*, **93**: 339 (Males, Females; Nepal, 1600-2600 m); Kapoor and Malla, 1978, *J. Inst. Sci.*, **1**: 135 (Males; Nepal: Godavari); Kapoor, Malla and Shah, 1978, *J. nat. Hist. Mus.*, **2**(2): 134 (Males; Nepal: Kathmandu); Biswas and Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(4): 134 (Male, Female; India: Uttarakhand, Mussoorie); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 56; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 8919 (description), 8592-8593 (coloured photographs including Holotype Male - IRNSB and labelled as Type in red Male BMNH - probably of *F. acris* Burr), 8867-8871 (black and white diagrams and photographs); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9294,

- pl. II, figs 1-3 (Males, Females: India: Uttarakhand, Pauri Garhwal Hills, Rampur, 693-990 m, Dhar, 2376 m, Lata, 2475 m; Manipur, Datum, 1650 m; Arunachal Pradesh (not Assam), Chug, 2360-2409 m, Rupa, 1716-1980 m, Shergaon, 2046-2178 m, Talung Dzong, 2310-2574 m, Dirang Dzong, 1749 m and Assam, Gaigaon, 1980 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **2**(2): 53 (India: Kumaon, Akhrotkot, 1881 m; Sikkim, Chachu, 3277 m.); Steinmann, 1988, *Acta zool. hung.*, **34**(1): 25, figs. 74-76; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 813; Steinmann, 1993, *Das Tierreich*, **108**: 601, figs. 954-957.
- Forficula acer* (sic) Burr, 1905, *J. Asiat. Soc. Beng.* (N. S.), **1**(2): 30 (Male; India: Sikkim, Mung Phu - macrolabic form).
- Forficula aceris* (sic); Burr, 1910, *Fauna British India, Dermaptera*: 168, pl. 7, fig. 57 (Type Male); Burr, 1913, *J. Asiat. Soc. Beng.* (N. S.), **9**(5): 186 (treated as a synonym).
- Forficula acris*; Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**: 228; Bey-Bienko, 1959, *Ent. Obozr.*, **38**(3): 616 (Males, Females; China: Yunnan); Bharadwaj and Bhatnagar, 1961, *Zool. Anz.*, **167**(7/8): 286, figs. 7-8; Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 61.
- Forficula celer* Burr, 1905, *J. Asiat. Soc. Beng.* (N.S.), **1**(2): 31 (1 Male; India: Khasi Hills); Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**: 228 (treated as a synonym of *F. acris* Burr).
- Forficula ingota* Burr, 1909, *Ann. Mag. nat. Hist.*, (8)4: 120 (1 Male; ? South Europe); Burr, 1914, *Ann. Mag. nat. Hist.*, (8)8: 585 (treated as a synonym of *F. beelzebub* (Burr))
- Forficula splendida* Bey-Bienko, 1934, *Ark. Zool.*, **25A**(20): 7, pl. 4 (2 Males, 3 Females; China: South Kansu, Tan-chang); Steinmann, 1975, *Folia ent. hung.*, **28**(1): 170, figs. 58-59 (Type repository not known); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9296 (India: Arunachal Pradesh (localities mentioned not under Assam now), 1 Male, Chug, 2244-2409 m.; Uttarakhand, Pauri Garhwal, 1 Male, Dhar, 2383 m and 1 Male, Kanol, 2815 m) - **Syn. n.**
- Forficula kumaoniensis* Kapoor, 1973, *Entomologist's mon. Mag.*, **109**: 57, figs. 1-4 (Holotype Male; India: Uttarakhand (not Uttar Pradesh now), Kumaon Hills, Almora, Chaubatia, 2000 m) - **Syn. n.**
- Forficula meenae* Kapoor, 1974, *J. Linn. Soc. Zool.*, **55**(3): 245, figs 9-10 (Holotype Male, Paratype 1 Male; India: Kashmir, Sonamarg, 3000 m) - **Syn. n.**
- Forficula indie* (nec Kapoor, 1968); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9297, pl. III, fig. of male from Khanggoi but not numbered (India:), Manipur (Khanggoi, 1593 m, 1 Male, 1 female) and Uttarakhand (Pauri Garhwal, Gwaldam, 1980 m, 1 Male); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 55 (India: Assam (Silchar, 1 Female).

Male: General colour orange reddish to testaceous brown with shades of black on certain parts; head orange often shaded with black; antennae, pronotum elytra, wings and legs dark testaceous brown; abdomen and forceps reddish or orange, former black laterally.

Head longer than broad, smooth, frons convex, sutures faint, scarcely emarginated posteriorly. Eyes shorter than the post-ocular length. Antennae 15-segmented, 1<sup>st</sup> stout,

gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender; 4<sup>th</sup> shorter than preceding, slightly expanded apically, stouter; 5<sup>th</sup> longer than the 3<sup>rd</sup>, remaining gradually increasing in length distally and thinning. Pronotum weakly or distinctly transverse, smooth, anterior and lateral margins straight, latter gently reflexed, hind margin feebly rounded, median sulcus distinct, prozona tumid, often with a faint depression on either side of median suture, metazona depressed. Elytra and wings ample, smooth, former with hind margin feebly concave. Legs long, slender, hind tarsi with 1<sup>st</sup> segment longer than 3<sup>rd</sup>, covered with thick pubescence on underside. Abdomen long or short, greatly enlarged posteriorly or gently dilated in middle, tergites moderately convex, punctation strong and dense, sides of segments convex, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> strongly marked but former comparatively weaker. Penultimate sternite transverse, hind margin rounded with slight emargination in middle. Ultimate tergite strongly transverse, lateral margins straight, disc moderately convex with longitudinal punctate and smooth stripes alternating, gently sloping backwards, above the roots of forceps with tumid folds and area in between depressed, hind margin in middle emarginated, lateral portion of hind margin lightly



**Figs. 696-702.** *Forficula beelzebub* (Burr), Male, 696-697, Dorsal view, 698, Ultimate tergite and forceps, deformed due to injury, 699-700, Ultimate tergite and forceps, 701, Pygidium enlarged, 702, Genitalia (fig. 699 ex Holotype Male, *Forficula kumaoniesis* Kapoor; 1973, figs. 700-701 ex Hologype Male *Forficula meenae* Kapoor, 1974).

concave and oblique. Pygidium scarcely visible from above, mostly covered laterally by basal dilation of forceps, in ventral view longer than broad, sides gently concave, apex convex. Forceps with branches stout (in forma cyclolabia), internally dilated in basal one half, afterwards strongly attenuate and incurved or straight and (in forma macrolabia) internally dilated in basal one third or a little less than basal one half, and apical portion attenuate, elongatedly arcuate with apices pointed and meeting, internal margin of dilated portion crenulate and terminating into an obtuse or acute tooth. Genitalia with parameres three to three and a half times longer than broad, tip obtuse; virga chitinous, tubular; basal vesicle present.

Female: As male but ultimate tergite slightly narrowed posteriorly; pygidium short and forceps simple, straight with apices gently arcuate.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 8.7 - 12.2 | 8.2 - 12.3 |
| Length of forceps | 3.1 - 5.7  | 2.7 - 3.4  |

*Types:*

1. *Chelisoches beelzebub* Burr, 1900 - Type 1 Male at IRSNB.
2. *Forficula acer* Burr, 1905 - Type Male; Burr (1910) mentions at "India Mus."
3. *Forficula celer* Burr, 1905 - Types Male, Female; Burr (1910) mentions as "Indiam Mus.". (Zoological Survey of India, Kolkata, India has inherited the animal collections of Asiatic Society, Kolkata and Indian Museum, Kolkata but a few specimens and Types, out of this are now available in the BMNH. The Types of species mentioned under item 2 and 3 are not available at Zoological Survey of India, Kolkata. Perhaps these may be at BMNH).
4. *Forficula ingota* Burr, 1909 - Type Male at UMO.
5. *Forficula splendida* Bey-Bienko, 1934 - Syntypes 2 Males, 3 Females - repository not known.
6. *Forficula kumaoniensis* Kapoor, 1973 - Holotype Male at IARI.
7. *Forficula meenae* Kapoor, 1974 - Holotype Male at IARI; Paratype Male - repository not known.

*Distribution:* All along the Himalaya in India, Nepal, Bhutan and mountains of South China and Myanmar.

Also known from South Africa: Kenya (as adventive).

*Remarks:* This species exhibits great variations in general body colour, size, shape of pronotum in being either transverse or only a trifle broader than long. Besides, forceps,



in males, are polymorphic, in having shorter and robust (cyclolabial) or longer and slender (macrolabial). In a large series both the forms of forceps with various intermediate stages are found.

*Forficula splendida* Bey-Bienko, 1934, is only an individual variant of this species and treated as a synonym. According to Bey-Bienko (1959) it possesses pronotum about as long as broad or weakly transverse.

Types of *Forficula kumaoniensis* Kapoor, 1973 and *Forficula meenae* Kapoor, 1974 were examined and both fall within the variational limits of the species and are considered as synonyms.

### ***Forficula davidi* Burr**

(Figs. 703-706)

*Forficula davidi* Burr, 1905, *Entomologist's mon. Mag.*, **2**(18): 85 (3 Males, 1 Female; China: Mou Pin); Burr, 1907, *Trans. ent. Soc. London*, **1907**: 112, pl. 4, fig. 8; Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 122; Burr, 1911, *Genera Insect.*, **122**: 80; Burr, 1912, *Annln. naturh. Mus. Wien*, **26**: 102 (1 Male; China: Genseu); Borelli, 1915, *Boll. Musei. zool. Anat. comp. R. Univ. Torino*, **30**(698): 2 (Male, Female; China: Kiau-Tschou); Bey-Bienko, 1933, *Ark. Zool.*, **25A**(20): 6, pl. 1, fig. 3 (Male; China: Kansu; Female; N. E. Szechuan); Bey-Bienko, 1934, *Ann. Mag. nat. Hist.*, (10)**13**: 432 (Female; Tibet, 1829 m); Bey-Bienko, 1936, *Fauna de l'URSS, Dermapterès*, No. **5**: 145, fig. 42; Bey-Bienko, 1959, *Ent. Obozr.*, **38**(9): 617 (Male, Female; China: Yunnan, 2000 m; Szechuan); Srivastava, 1976, *Rec. zool Surv. India, Occ. pap.*, **2**: 62; Purohit, Julka and Lal, 1985, *Bull. zool Surv. India*, **7**(2-3): 166, figs. 4-7 (7 Males, 7 Females; India: Himachal Pradesh, Sirmour Dist., Habban, 2334 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 56; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 8973 (description), 8683-8685 (diagrams and black and white photographs), 8603-8604 (coloured photographs); Steinmann, 1988, *Acta. zool. hung.*, **34**(1): 9, figs 16-17; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 819; Steinmann, 1993, *Das Tierreich*, **108**: 843, figs. 1043-1044; Zhang and Yang, 1992, *Sinozoologica* : 163; Ma and Chen, 1992, *Insects of Hengduan Mt. Region*, **1**: 101.

Male: General colour black to brownish black; lateral margins of pronotum yellowish; legs, elytra and wings light brown.

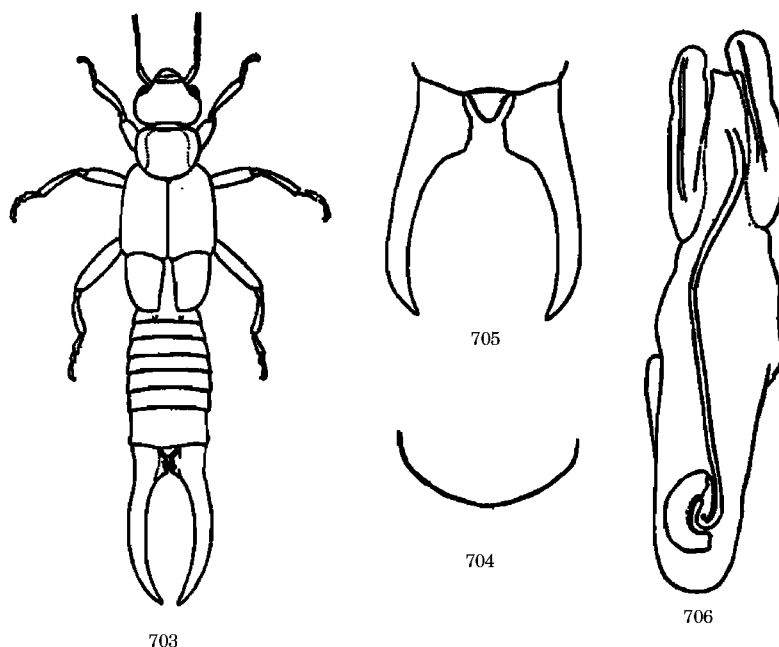
Head weakly transverse, smooth, frons convex, sutures faint or obsolete, hind margin emarginated in middle. Eyes shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> slightly longer than 4<sup>th</sup> but shorter than 5<sup>th</sup>, remaining gradually increasing in length distally and thinning. Pronotum transverse, smooth, lateral margins lightly convex, hind margin rounded, prozona tumid and metazona depressed. Elytra and wings ample, smooth. Legs long, slender, hind tarsi with 1<sup>st</sup> segment almost equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; 2<sup>nd</sup> lobed, hind margin entire, covered on underside with thick pubescence. Abdomen elongated, gently dilated in middle, tergites convex, punctated, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former

comparatively weaker. Penultimate sternite transverse, hind margin rounded. Ultimate tergite transverse, disc weakly convex, sloping backwards, above the roots of forceps tumid and in middle depressed, sides straight, hind margin trisinate, lateral portion of hind margin oblique. Pygidium declivitous, at base convex above, about as long as broad or a trifle longer, slightly narrowed posteriorly, hind margin obtusely rounded. Forceps in cyclobic form short and in macrolabic form long, internally dilated in basal one fifth with its internal margin crenulated, afterwards cylindrical, attenuate apically, slightly incurved or straight, apices gently hooked and pointed. Genitalia with parameres broad, about three times longer than broad, laterally with a slight constriction a little beyond middle from base, apices convex; virga chitinous, tubular; basal vesicle large.

Female: Agrees with males in most characters except that ultimate tergite slightly narrowed posteriorly, folds above the roots of forceps weaker; pygidium short, obtuse and forceps simple, straight.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 7.2 - 14.5 | 8.0 - 10.0 |
| Length of forceps | 2.0 - 11.2 | 1.4 - 4.0  |



**Figs. 703-706.** *Forficula davidi* Burr, Male, 703, Dorsal view, 704, Posterior margin of penultimate sternite, 705, Ultimate tergite and forceps, 706, Genitalia (all figs. after Purohit, Julka and Lal, 1985).

*Types:* Syntypes 3 Males and 1 Female at MNHP.

*Distribution:* China (Szechwan, Yunnan, Gansu and Tibet) and India (Himachal Pradesh, Sirmour Dist., Habban, 2334 m).

*Remarks:* Amongst the Indian species it comes close to *Forficula beelzebub* (Burr) but differs, in males, in having the pygidium about as long as broad, narrowed posteriorly with tip obtusely rounded and internal dilation of forceps extending in basal one fifth only.

***Forficula tawangensis* Srivastava**  
(Figs. 707-710)

*Forficula tawangensis* Srivastava, 1984, *Proc. Wkshp. High Alt. Ent. & Wildl. Ecol. zool. Surv. India* (1983): 133, figs. 17A-D (Holotype Male, Allotype Female, Paratypes 3 Males, 4 Females and 10 nymphs; India: Arunachal Pradesh, Kameng Dist., Tawang, 3200 m); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 438, figs. 229-232 (Male, Female; India: West Bengal, Darjeeling Dist., Takdah, Mirik, 1698 m and Lava, 2195 m); Steinmann, 1988, *Acta zool. hung.*, **34**(1): 15, figs. 37-38; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 842; Steinmann, 1993, *Das Tierreich*, **108**: 655, figs. 1062-1064; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9067 (description), 8714-8715 (diagrams); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9295, pl. III, fig. 5 (3 Males; India: Arunachal Pradesh (not Assam now), Shergaon, 1890-2012 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 54.

Male: General colour deep black, sometimes testaceous black; a few anteapical antennal segments, lateral margins of pronotum, tibiae and tarsi brown; abdomen and forceps reddish black.

Head longer than broad, smooth, frons and occiput convex, sutures faint, hind margin emarginated in middle. Eyes shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> slightly shorter than preceding, 5<sup>th</sup> longer than 3<sup>rd</sup>, narrowed basally, remaining gradually increasing in length distally and thinning. Pronotum smooth, one and a half times longer than broad, anterior margin straight, lateral margins gently convex, flat, hind margin broadly rounded, median suture faint, prozona weakly tumid, little differentiated from flat metazona. Elytra twice longer than broad, smooth, humeral angles weak, hind margin gently concave. Wings one third as long as elytra, smooth. Legs long, slender, hind tarsi with 1<sup>st</sup> segment equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>; apical part of tibiae and tarsi covered with thick pubescence. Abdomen elongated, narrowed at base, enlarged gradually backwards, tergites convex, punctulate, sides of segments rounded posteriorly, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former comparatively weaker. Penultimate sternite with posterior margin broadly rounded. Ultimate tergite transverse, punctation distinct in anterior half, lateral margins almost straight, disc weakly convex, sloping gently backwards, weak folds above the roots of forceps and depressed in the middle, hind margin

trisinuate, lateral portion of hind margin oblique. Pygidium short, obtuse, with a few thick hairs posteriorly. Forceps with branches stout, externally concave and internally dilated in a little beyond basal half with its internal margin crenulate and terminating into a obtuse lobe, afterwards strongly incurved, cylindrical, tapering apically with tip pointed. Genitalia with parameres about three times longer than broad, slightly narrowed towards apex, tip obtuse; virga thick, chitinous, tubular, basal vesicle vey small.

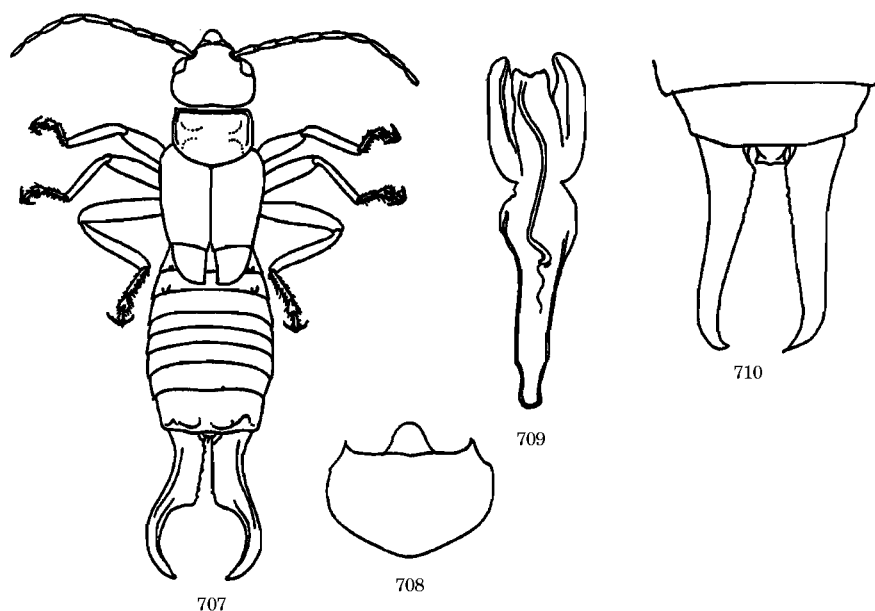
Female: Agrees with males in most characters except that ultimate tergite narrowed posteriorly, lacking elevations above the roots of forceps; pygidium about as long as broad, subvertical, at base convex above, hind margin postero-laterally and in the middle with small points and forceps simple, straight, tapering apically with tip gently hooked and pointed, internal margin crenulate.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 12.4 - 12.8 | 12.1 - 13.3 |
| Length of forceps | 3.7 - 4.7   | 3.6 - 3.9   |

*Types:* Holotype Male, Allotype Female, Paratypes 3 Males, 4 Females and 10 nymphs at ZSI.

*Distribution:* India: West Bengal, Darjeeling Dist. (Takdah, Mirik, 1698 m, Lava, 2195 m) and Arunachal Pradesh (Kameng Dist., Tawang, 3200 m, Shergaon, 1890-2012 m).



**Figs. 707-710.** *Forficula tawangensis* Srivastava, Male, 707, Dorsal view, 708, Penultimate sternite, 709, Genitalia; Female, 710, Ultimate tergite and forceps.

*Remark:* This species comes close to *Forficula kambaitiensis* Hincks from Myanmar but differs in having lateral margins of pronotum feebly convex and hind margin broadly rounded; elytra and wings ample, former with humeral angles weak and basal dilation of forceps, in males extending upto a little beyond middle.

***Forficula gravelyi* Burr**

(Figs. 711-717)

*Forficula gravelyi* Burr, 1914, *Rec. India Mus.*, **10**: 293 (Male, Female; India: Poona, Khed dist.); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 33; Srivastava, 1976, *Rec. zool. Surv India, Occ. pap.*, **2**: 63; Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 57; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9012; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 823; Steinmann, 1993, *Das Tierreich*, **108**: 667.

Male: General colour yellowish brown or blackish brown; head yellowish brown; pronotum, elytra and wings yellow, often elytra with traces of brown; legs clear yellow; abdomen dark brown, tergites with shades of black along the posterior margin; forceps yellowish brown but along the internal margin with a narrow stripe of blackish brown.

Head slightly longer than broad, smooth, frons weakly convex, sutures obsolete, hind margin emarginated in middle. Eyes prominent, only slightly shorter than the post-ocular length. Antennae 13-segmented (or more since the apical ones generally broken off), 1<sup>st</sup> stout, expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> short, about as long as broad; 3<sup>rd</sup> long, slender, a little over twice longer than broad; 4<sup>th</sup> a trifle shorter than preceding; 5<sup>th</sup> onwards gradually increasing in length distally and thinning except a few apical ones thin and rod shaped. Pronotum a trifle broader than long, smooth, lateral margins straight, gently reflexed, scarcely narrowed posteriorly, hind angles and margin rounded, median sulcus faint, prozona tumid and metazona weakly depressed. Elytra twice as long as broad, smooth, humeral angles weak, meeting along the median line, hind margin truncate. Wings of the same texture as the elytra, scarcely projecting beyond elytra. Legs typical of the genus, hind tarsi with 1<sup>st</sup> segment equal to 3<sup>rd</sup>, covered on underside with golden pubescence. Abdomen elongated, fusiform or gradually enlarging posteriorly, tergites weakly convex, punctate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites prominent but former comparatively weaker. Penultimate sternite transverse, punctulate, narrowed posteriorly, hind margin rounded with a slight emargination in middle. Ultimate tergite strongly transverse, lateral margins straight, disc punctate, weakly convex, sloping backwards, above the roots of forceps with weak convexity and area in between depressed, hind margin trisinate, lateral portion of hind margin oblique, postro-lateral angles distinct. Pygidium short, narrowed posteriorly, lateral margins gently raised, hind margin truncate. Forceps with branches internally dilated in a little beyond basal half to two thirds with its internal margin crenulated, afterwards branches cylindrical, incurved, attenuated apically, tips gently hooked and pointed. Genitalia with parameres a little over three times longer than broad, of uniform width except near apices slightly narrowed, tip obtuse, virga tubular, chitinous; basal vesicle moderately distinct.

Femal: Agrees with males except that ultimate tergite narrowed posteriorly, lacking convexity above the roots of forceps; pygidium short, narrowed posteriorly, obtuse apically and forceps simple, straight, apices gently hooked and pointed, internal margin crenulated.

*Measurements:* (in mm)

|                   | Male       | Female |
|-------------------|------------|--------|
| Length of body    | 9.0 - 11.5 | 7.5    |
| Length of forceps | 3.5 - 4.5  | 3.0    |

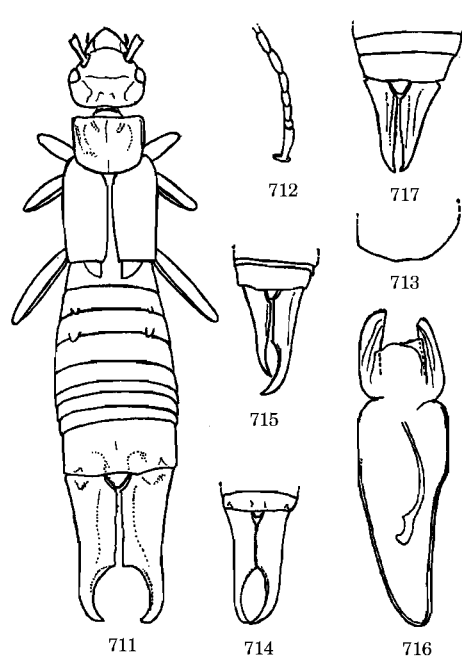
*Type:* Type Male at BMNH.

*Distribution:* India: Maharashtra, Poona.

In the collections of the Zoological Survey of India, Kolkata, India following specimens, determined by Dr. G. K. Srivastava, not reported earlier are present:

India: Maharashtra, Poona, Rajbag, 1 Male, 1 Female, 10.x.1968 (*B. S. Lamba* coll.); Satara Dist., Mahuli, Kshetra, 3 Males (in one male, basal dilation of forceps not fully developed), 13.i.1972 (*K. Rai* and party coll.).

*Remarks:* Basal dilation of forceps, in males, extends a little beyond middle to two third of the length and in one specimen it is not properly developed.



**Figs. 711-717.** *Forficula graveyi* Burr, Male. 711, Dorsal view, 712, A few basal antennal segments, 713, Posterior half of penultimate sternite, 714-715, Ultimate tergite and forceps, 716, Genitalia; Female, 717, Ultimate tergite and forceps.

***Forficula flavalis* Brindle**

(Figs. 718-719)

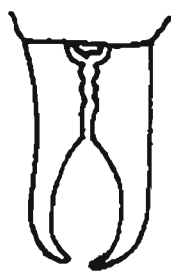
*Forficula flavalis* Brindle, 1983, *Senckenbergiana biol.*, **93**(1982): 102, figs. 19, 25 (Holotype Male; Nepal: Lamjung Dist., Marsyandi, 1150 m, Nayagaon-Bahundanda); Steinmann, 1988, *Acta zool hung.*, **34**(1): 24, figs. 70-71; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 821; Steinmann, 1993, *Das Tierreich*, **108**: 669, figs. 1086-1087; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9078 (description), 8715 (diagrams).

Male: Black, shining; segments of flagellum dark brown; sides of pronotum narrowly yellow; tarsi paler; exposed part of wings dark yellow. Head broad, widened behind eyes; eyes small; 1<sup>st</sup> antennal segment short, second quadrate, third segment two and half times as long as broad, fourth twice as long as broad, 5<sup>th</sup> almost three times as long as broad, distal segments four times as long as broad, gradually narrowed to base, actual base and apex narrow; pronotum strongly transverse, lateral margins curving smoothly into convex posterior margin; elytra well developed, hind margin slightly concave; wings prominent; abdomen almost parallel sided, lateral tubercles on third tergite very small, those on 4<sup>th</sup> tergite large; pygidium triangular, short. Each branch of forceps broad, with inner flange reaching nearly to mid point, margin of flange serrated, distal part of branch evenly curved (fig. 718). Genitalia: Fig 719.

Female: Unknown.

*Measurements:* (in mm)

|                   | Male |
|-------------------|------|
| Length of body    | 11.5 |
| Length of forceps | 3.6  |



718



719

**Figs. 718-719.** *Forficula flavalis* Brindle, Male, 718, Ultimate tergite and forceps, 719, Genitalia; (figs. 718-719 after Brindle, 1983).

*Type:* Holotype Male at SMF.

*Distribution:* Nepal, Lamjung Dist., Marsyandi, 1150 m, Nayagaon- Bahundanda.

*Remarks:* The above description is after Brindle (1983). He compares it with *Forficula beelzebub* (Burr) stating that latter is never black with yellow wings. But it has been noted in a large series from Arunachal Pradesh present in the collection of the Zoological Survey of India, Kolkata that sometimes body may be black to brown with various intermediate shades and wings may be brown, black or yellow.

It also comes close to *Forficula genitalia* Kapoor occurring in NE India.

***Forficula biplaga* Bey-Bienko**  
(Figs. 720-723)

*Forficula biplaga* Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 616, fig. 34 (1 Male; China: Szemao, Omei Shan 580-1150 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. Pap.*, **2**: 62; Steinmann, 1988, *Acta. zool. hung.*, **34**(1): 15, fig. 36; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 815; Steinmann, 1993, *Das Tierreich*, **108**: 665, fig. 1061; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9051 (description), 8704 (diagrams and black and white photograph of Type Male), 8611 (coloured photograph, Type (Holotype) Male).

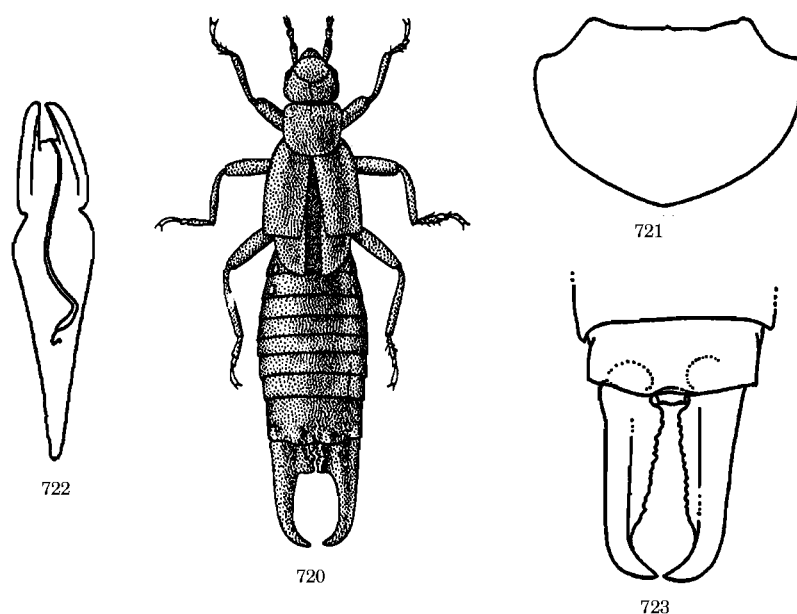
*Forficula lii* Zhang and Yang, 1992, *Sinozoologia*, **9**: 164, figs. 1A-G (Holotype Male, Allotype Female; Yadong, Tibet (2800 m); Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9087 (description), 8613 (coloured photograph of Holotype Male), 8719 (diagrams and black and white photograph of Holotype Male) - **Syn. n.**

*Forficula brachyptera* Sakai and Zhang, 1994, *Dermapterorum Catalogus*, **26**: 5970, figs. A-E and black and white photograph of Type Male (Holotype Male); China: Mt. Lingkong, Shanxi Province); Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9094 (description), 8723 (diagrams and black and white photograph of Type Male) - **Syn. n.**

Male: General colour blackish to reddish brown; wings may be uniform blackish brown or yellow with a broad stripe internally, sometimes with a yellow patch externally and wing tip yellow.

Head about as long as broad, weakly depressed, smooth, sutures fine but distinct, hind margin feebly emarginated in middle. Eyes black, about half as long as the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> quadrate; 3<sup>rd</sup> about two and half times longer than broad; 4<sup>th</sup> twice longer than broad; 5<sup>th</sup> three times longer than broad, remaining gradually increasing in length distally and thinning. Pronotum very slightly broader than long, anterior and lateral margins straight, hind angles and margin together rounded, median sulcus faint, prozona weakly tumid, little differentiated from flat metazona. Elytra well developed, smooth, about two and half times longer than broad, humeral angles prominent, hind margin concave. Wings concealed or well developed, smooth, about half as long as the elytra. Legs long, slender, hind tarsi with 1<sup>st</sup> segment





**Figs. 720-723.** *Forficula biplaga* Bey-Bienko, Male, 720, Dorsal view, 721, Penultimate sternite, 722, Genitalia; Female, 723, Ultimate tergite and forceps.

equal to the combined length of 2<sup>nd</sup> and 3<sup>rd</sup>, 2<sup>nd</sup> lobed, hind margin entire, covered on underside with yellow pubescence. Abdomen elongated, enlarged in middle, tergites weakly convex, punctulate, punctulations heavier in posterior half of tergites, hind margin of tergites 6<sup>th</sup> to 9<sup>th</sup> somewhat incrassate, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites distinct but former comparatively weaker. Penultimate sternite transverse, narrowed posteriorly, with a convexity in middle. Ultimate tergite strongly transverse, two times broader than long, disc weakly convex, longitudinal smooth and punctate stripes alternating, sloping backwards, above the roots of forceps with broad, tumid elevations, separated by a median depression, hind margin trisinate, lateral portion of hind margin gently oblique. Pygidium scarcely visible from above, slanting, narrowed posteriorly, hind margin straight. Forceps stout, depressed, internally dilated in a little less than basal half, internal margin of dilated portion irregularly dentate and with a median linear convexity, afterwards branches cylindrical, thinning apically, gently incurved, apices gently hooked and pointed. Genitalia with parameres four times longer than broad, narrowed apically, tip obtuse; virga, chitinous, tubular and basal vesicle small.

Female: Like male but ultimate tergite feebly narrowed posteriorly; pygidium slanting, narrowed posteriorly, hind margin convex in middle, postero-lateral angles with minute points and forceps stout, straight, depressed, internally with a flange, dying out gradually apically with its margin crenulate, apices hooked and pointed.

*Measurements: (in mm)*

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 11.0 - 17.0 | 17.0 - 18.7 |
| Length of forceps | 3.0 - 5.0   | 4.0 - 5.5   |

*Types:*

1. *Forficula biplaga* Bey-Bienko, 1959 - Type Male at CASP.
2. *Forficula lii* Zhang and Yang, 1992 - Holotype Male, Allotype Female at BAU.
3. *Forficula brachyptera* Sakai and Zhang, 1994 - Holotype Male at CASP

*Distribution:* India (Arunachal Pradesh, Kameng Dist.-first record) and China (Yadong, Tibet, 2800 m, Mt. Lingkong, Shanxi Prov., Yunnan, Szemao, Omei Shan, 580-1150 m).

Following specimens determined by Dr. G. K. Srivastava, not reported earlier are present in the collections of the Zoological Survey of India, Kolkata:

India: Arunachal Pradesh, Kameng dist., Mursing, 704.5 m, 1 Male; four and half miles from Mursing village, 1 Female, 8-9.ix.1961 (S. Biswas coll.). (Male: Length of body - 16.5 mm; forceps - 4.9 mm; Female: Length of body - 18.7 mm, forceps - 4.0 mm).

*Remarks:* *Forficula lii* Zhang and Yang (macropterous) and *Forficula brachyptera* Sakai and Zhang (brachypterous) are conspecific and treated as synonyms of this species since both agree in most characters except for brachypterous and macropterous forms and slight variation in the colour of wings.

***Forficula planicollis* Kirby**

(Figs. 724-731)

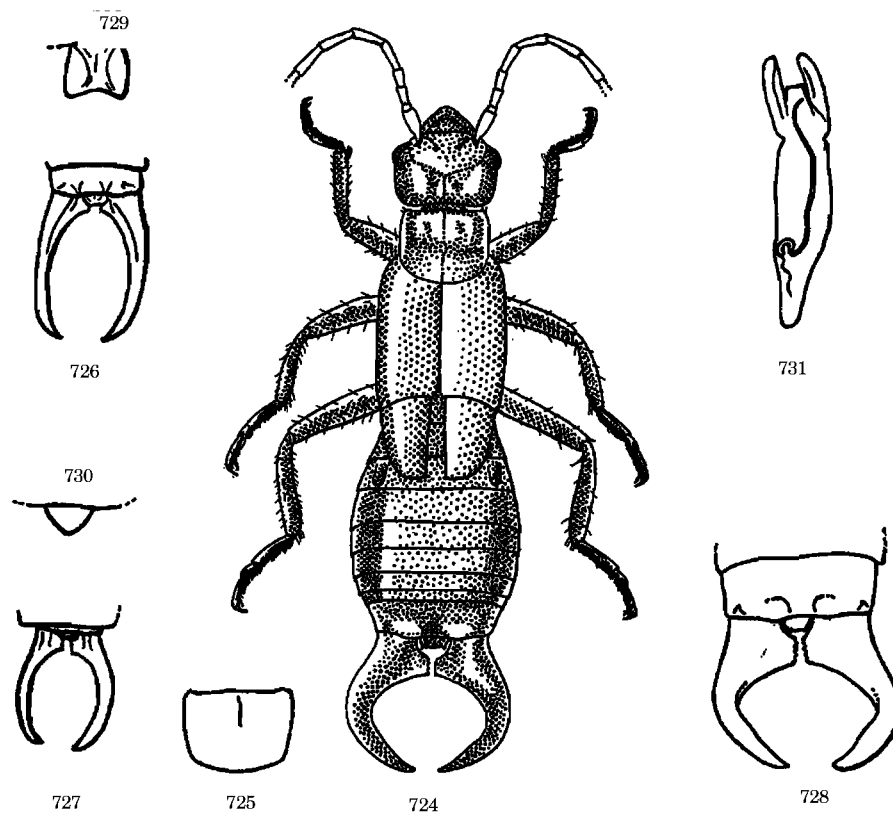
*Forficula planicollis* Kirby, 1891, *J. Linn. Soc. Zool.*, **23**: 525 (Female; North India); Kirby, 1904, *Syn. Cat. Orthoptera*, **1**: 53; Bormans and Krauss, 1900, *Das Tierreich*, **11**: 128; Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 320 (2 Males, 1 Female; India: Darjeeling); Burr, 1907, *Rec. Indian Mus.*, **1**: 210 (Male, Female; India: West Bengal (Darjeeling Dist, Sandakphu, 3627 m), Uttarakhand (Bhimtal, Kumaon, 1372 m); Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 121; Burr, 1910, *Fauna British India, Dermaptera*: 174; Burr, 1911, *Genera Insect.*, **122**: 82; ? Bey-Bienko, 1935, *Ergebn. Niederl. Exped. Karakorum Zool.*: 211 (?1 Female; Kashmir, Gandarbal); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1)(1967): 33; Srivastava and Saha, 1975, *Ceylon. J. Sci. (Bio. Sci.)*, **11**(2): 67, figs. 2B-I (Males, Females and nymphs; India: West Bengal, Darjeeling Dist. (various localities, 1850-2220 m); Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(6): 273 (Male, Female; India: Uttarakhand, Garhwal Hills, Mandoli, 2438 m, Pipalkoti, 1829 m, Sitapuri, 1788 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 64; Srivastava, 1979, *Proc. Sym. zool. Surv. India*, **1**: 67, figs. 11A-C; Srivastava, 1982, *Ent. basiliensis*, **7**: 67 (Male, Female; India: Meghalaya, Cherrapunji; West Bengal, Darjeeling Dist., Sandakphu, 3500-3600 m), Nepal (Jiri, 1800-1900 m); Srivastava, 1984, *Proc. Wksh. High Alt. Ent. & Wildl. Ecol. zool. Surv. India*: (1983) 26, figs. 13A-B (Male, Female; India:

- Arunachal Pradesh, 2621 m, Meghalaya, West Bengal (Darjeeling Dist.), Uttarakhand (Garhwal Hills), Sikkim, 3600 m and Myanmar (1234-1542 m)., Srivastava and Lal, 1993, *Rec. zool. Surv. India*, **91**(1) (1992): 123, fig. 25 (Male, Female; India: Himachal Pradesh, Simla Dist.); Srivastava, 1993, *Rec. zool. Surv. India*, **91**(1) (1992): 86, figs. 76-77 (Male, Female; India: Arunachal Pradesh, Tirap Dist, Namdapha area); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 439, figs. 236-238 (Male, Female; India: West Bengal, Darjeeling Dist., 1524-3048 m); Srivastava, 1995, *Fauna of Meghalaya, State Fauna Series 4*, Pt. 3: 345, figs 116-123 (Male; Female; India: Meghalaya); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 219, figs. 89-90 (Male; India: Sikkim, Namchi, 1230 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 56; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 8909 (description), 8590-8591 (coloured photographs of Males, Females), 8665-8667 (diagrams and black and white photographs); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9296, pl. III, fig. 6 (Males, Females; India: Uttarakhand (Pauri Garhwal, Khumyara, 1419-1650 m; Akhrotkotti, 1881 m; Uknal, 2970-3234 m) and Sikkim (Tsongo, 3267-4125 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 52 (India: Arunachal Pradesh (not under Assam now), Sangti, 1815 m, Rahung, 2310-2574 m; Manipur, Poi, 1254-1386 m); Steinmann, 1988, *Acta zool. hung.*, **34**(1): 13, figs. 27-28; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 833; Steinmann, 1993, *Das Tierreich*, **108**: 251, figs. 1055-1056.
- Forficula ambigua* Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 321 (3 Males, 3 Females; India: West Bengal, Darjeeling Dist.); Srivastava and Saha, 1975, *Ceylon J. Sci. (Bio. Sci.)*, **11**(2): 67 (treated as a synonym); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9296, pl. III, fig 7 (Males, Females; India: Arunachal Pradesh (not under Assam now), Eujjalong, 1485 m; Talung Dzong, 2310-2374 m; Nyukmadong, 2178-2640 m; Uttarakhand, Garhwal, Dhar, 2383 m); Sakai, 1995, *Dermapterorum Catalogus*, **30**: 8970, 8601-8602 (coloured photographs including Syntypes).
- Forficula lebongae* Hebard, 1923, *Mem. Dep. Agric. India, ent. Ser.*, **7**: 227, pl. 20, fig. 23 (Type Male; India: Darjeeling (not Sikkim), Phoobsering, Lebong, 1524 m); Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 616 (China: Yunnan); Brindle, 1975, *Ent. basiliensia*, **1**: 44, figs. 51-52 (2 Mals; Bhutan: 2150-3400 m); Srivastava, 1976, *Rec. zool. Surv. India, Occ. pap.*, **2**: 64 (treated as a synonym).
- Forficula bhatnagari* Gangola, 1965, *Entomologist*, **98**: 129, figs. 3-8 (Holotype Male; India: Uttarakhand, Kumaon Hills, Naini Tal, College Road, 1996 m); Srivastava and Saha, 1975, *Ceylon J. Sci. (Bio. Sci.)*, **11**(2): 67 (treated as a synonym).
- Forficula cherrapunjiae* Kapoor, 1968, *Entomologist*, **101**: 11, pl. I, figs. 1-3 (Holotype Male; India: Meghalaya, Khasi Hills, Cherrapunji, 1355 m); Srivastava, 1995, *Fauna of Meghalaya State Fauna Series 4*, Pt. 3: 345, figs. 120-123 (from Holotype Male) (treated as a synonym).
- Forficula gardneri* Kapoor, Bharadwaj and Banerjee, 1971, *Bull. Ent.*, **12**(1): 37, figs. 9-11 (Holotype Male, Paratype 1 Female; India: West Bengal, Darjeeling Dist., Debrapani, 1829 m); Srivastava and Saha, 1975, *Ceylon J. Sci. (Bio. Sci.)*, **11**(2): 64 (treated as a synonym).
- Forficula virgae* Kapoor, 1974, *Proc. Linn. Soc. Zool.*, **179**(1): 33, figs. 1-4 (Holotype Male, Allotype Female; India: Meghalaya, Khasi Hills, Cherrapunji, 1355 m); Srivastava, 1995, *Fauna of*

Meghalaya, *State Fauna Series* 4, Pt. 3: 345, figs. 118-119 (from Holotype Male) (treated as a synonym).

Male: General colour blackish brown to yellowish brown. Build slender to moderately stout.

Head longer than broad, smooth, frons convex, sutures fine, hind margin emarginated in middle. Eyes shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> quadrate; 3<sup>rd</sup> about two and half times longer than broad; 4<sup>th</sup> about twice longer than broad, slightly stouter than preceding; 5<sup>th</sup> about three times longer than broad, narrowed basally, remaining gradually increasing in length except last two. Pronotum weakly transverse, smooth, lateral margins straight, gently reflexed, hind margin briefly



**Figs. 724-731.** *Forficula planicollis* Kirby, Male; 724, Dorsal view, 725, Pronotum, 726-728, Ultimate tergite and forceps, exhibiting variations, 729-730, Pygidium showing variations, 731, Genitalia (figs. 726, 729 and figs. 727, 730 ex same specimens, respectively; figs. 725, 728 ex Holotype Male, *Forficula gardneri* Kapoor, Bharadwaj & Banerjee, 1971).

rounded, median sulcus distinct, prozona tumid, metazona depressed. Elytra and wings generally well developed, smooth, latter sometimes concealed. Legs long, slender, hind tarsi covered with thick pubescence on underside, 1<sup>st</sup> segment compressed, longer than the 3<sup>rd</sup>; 2<sup>nd</sup> lobed, hind margin entire. Abdomen elongated or enlarged in middle, tergites convex, finely punctulated, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites moderately developed, former comparatively weaker. Penultimate sternite transverse, hind margin narrowed posteriorly with a slight convexity in middle. Ultimate tergite strongly transverse, disc weakly depressed, sloping backwards, above the roots of forceps with tumid folds and depressed in the middle, sometimes folds above the bases of forceps sub-vertical, pointed backwards, sides straight, hind margin trisinate, lateral portion of hind margin gently oblique. Pygidium (in f. *cyclolabia*) subvertical, posteriorly in middle rounded with small tubercle laterally, (in f. *macrolabia*) elongated, narrowed, in middle posteriorly obtuse or hind margin emarginated, in middle with a leniar concavity. Forceps at base internally deplanate for a shoert distance with its inner margin serrulate, afterwards strongly bowed (in f. *cyclolabia*) or elongated (in f. *macrolabia*), tapering apically, tip gently hooked and pointed. Genitalia with with parameres three to four times longer than broad, very slightly narrowed at apex; virga thin, tubular; basal vesicle moderately distinct.

Female: Agrees with males in most characters except that ultimate tergite slightly narrowed posteriorly, above the roots of forceps folds weak; pygidium slightly longer than broad, convex above at base, hind margin with small tubercles in middle and postero-laterally and forceps simple and straight.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 7.0 - 10.0 | 6.4 - 10.5 |
| Length of forceps | 2.6 - 3.5  | 1.5 - 2.8  |

*Types:*

1. *Forficula planicollis* Kirby, 1891 - Type Female at BMNH.
2. *Forficula ambigua* Burr, 1904 - Syntypes 1 Male, 3 Females at MNHP.
3. *Forficula lebongae* Hebard, 1923 - Type Male at ANSP.
4. *Forficula bhatnagari* Gangola, 1965 - Holotype Male; repository not known.

(As per the original description it should be in the collections of Department of Zoology, Th. D. S. B. College, Naini Tal, Uttarakhand, India but on a personal visit there it could not be traced. Besides no other collection determined by Gangola (1965) was present).

5. *Forficula cherrapunjiae* Kapoor, 1968 - Holotype Male at IARI.

6. *Forficula gardneri* Kapoor, Bharadwaj and Banerjee, 1971 - Holotype Male, Allotype Female at FRI.

7. *Forficula virgae* Kapoor, 1974 - Holotype Male, Allotype Female at IARI

*Distribution:* India (Uttarakhand, Meghalaya, West Bengal (Darjeeling Dist.), Arunachal Pradesh, Sikkim and Manipur, alt. between 1254 m and 4125 m).

Also reported from Nepal, Bhutan, Myanmar and China (South).

It is primarily a mountain dwelling species occurring at high altitudes.

*Remarks:* This species varies greatly in colour, size and in males, in ultimate tergite, pygidium and forceps.

The colour varies from reddish brown to testaceous black. In forma *cyclolabia* the ultimate tergite has low tumid elevations corresponding bases of forceps; pygidium obtusely rounded with hind margin wavy or with two minute tubercles postero-laterally and forceps short, deplanate internally in basal one fourth to one fifth with its inner margin finely crenulate, afterwards branches strongly incurved. In forma *macrolabia* ultimate tergite is provided with subvertical, posteriorly directed spines corresponding bases of forceps; pygidium obtuse or emarginated posteriorly and forceps elongated, straight with various intermediate stages, attenuate apically, only gently incurved at apices.

The interpretation of the species is primarily based upon photograph of Type female and 1 male determined and reported by Burr (1904) sent to me by Mr. Julian Huxley, British Museum (Natural History), London, in 1969. Both the specimens from the photograph appear to be conspecific, though former is a little stunted. According to Brindle (1987, P. 347) "...the Holotype of *planicollis* seems to be female of *Forficula beelzebub* (Burr) but it is difficult to be absolutely sure with old discoloured specimens...".

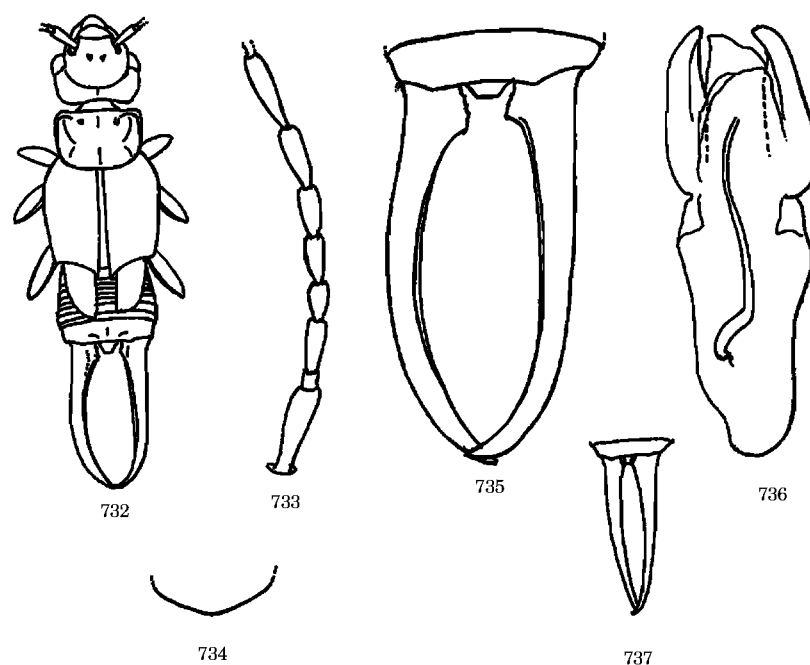
In the light of above, it would be advisable to follow the description of the species by Srivastava and Saha (1975) and Srivastava (1995b) for the taxonomic stability of the species

***Forficula choprai* sp. n.**

(Figs. 732-737)

Male: General colour balckish brown; antennae, pronotum on lateral margins and forceps lighter in colour.

Head longer than broad, smooth (impunctate), frons moderately convex, sutures faint, hind margin emarginated in middle. Eyes prominent but shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> about as long as broad; 3<sup>rd</sup> long, slender, about two and half times longer than broad; 4<sup>th</sup> slightly shorter than the preceding; 5<sup>th</sup> onwards gradually increasing in length, each gently expanded apically and thinning. Pronotum strongly transverse (broader than long in the ratio of 15:11), smooth, anteriorly about as



**Figs. 732-737.** *Forficula choprai* sp.n., Holotype Male, 732, Dorsal view; 733, A few basal antennal segments, 734, Posterior half of penultimate sternite, 735, Ultimate tergite and forceps, enlarged, 736, Genitalia; Paratype Female, 737, Ultimate tergite and forceps.

wide as head, sides straight, gently reflexed, hind angles and margin briefly rounded, median sulcus faint, prozona tumid with small impressions on either side of median suture, metazona depressed. Elytra and wings well developed, smooth, coriaceous, former about two and half times longer than broad, humeral angles prominent, hind margin obliquely concave and latter a little half the length of elytra. Legs typical of the genus, hind tarsi covered with thick pubescence on underside, 1<sup>st</sup> segment compressed, longer than the combined length of remaining two; 2<sup>nd</sup> lobed, hind margin entire. Abdomen slightly enlarged posteriorly, mostly covered by elytra and wings, tip of the latter almost reaching up to ultimate tergite, convex, smooth, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> weakly developed. Penultimate sternite transverse, narrowed posteriorly, hind margin rounded but obtuse in middle. Ultimate tergite transverse, disc weakly depressed, impunctate, above the roots of forceps with low elevations, depressed in middle, median sulcus represented by a short linear impression, hind margin feebly trisinuate, lateral portion of hind margin oblique. Pygidium subvertical, about as long as broad, narrowed apically with hind margin truncate. Forceps long, cylindrical, attenuate and gradually curving posteriorly, enclosing an elongated oval space, tip pointed, at base internally with a short deplanate area with internal margin finely serrated and separated by pygidium.

Genitalia with parameres about four times longer than broad, narrowed apically, tip obtuse, virga tubular, almost straight and basal vesicle distinct.

Female: Agrees with males in most charactes except that ultimate tergite slightly narrowed posteriorly; pygidium about as long as broad, of uniform width and forceps simple, cylindrical, very slightly incurved in middle.

*Measurements:* (in mm)

|                   | Holotype | Male | Female |
|-------------------|----------|------|--------|
|                   | Male     | 1 ex | 1 ex   |
| Length of body    | 5.9      | 5.9  | 6.1    |
| Length of forceps | 3.1      | 3.8  | 1.8    |

*Material examined:* India: Himachal Pradesh, Noradhar, ca 2134 m, Holotype Male (genitalia mounted between two coverslips and pinned with the specimen), Paratypes 1 Male (hind portion of right branch of forceps broken off), 1 Female, 5.v.1982 (R. N. Chopra coll.); deposited at ZSI.

*Remarks:* In having strongly transverse pronotum it comes close to *Forficula schlagintweiti* (Burr) but differs by the shape of male pygidium and forceps.

### ***Forficula schlagintweiti* (Burr)**

(Figs. 738-743)

*Anechura schlagintweiti* Burr, 1904, *Trans. ent. Soc. Lond.*, **1904**: 313 (1 Male; Tibet, Lahol; India Borealis, Darjeeling); Burr, 1907, *Trans. ent. Soc. Lond.*, **1907**: 110; Burr, 1908, *Bull. Mus. Hist. nat. Paris*, **14**: 118.

*Forficula schlagintweiti*; Burr, 1910, *Fauna British India, Dermaptera*: 11, pl. 6, figs. 54, 54a; Burr, 1911, *Genera Insect.*, **122**: 81; Burr, 1911, *J. Asiat. Soc. Beng. (N. S.)*, **7**(2): 796 (a yellow variety - mentioned in 8<sup>th</sup> line from below); Semenov and Bey-Bienko, 1935, *Eos., Madr.*, **10**: 227 (Tibet); Bey-Bienko, 1935, *Wiss. Ergebn. Niederl. Exped. Karakorum, Zool.*: 211 (7 Females; India: Kashmir, Sonamarg, 2400 m); Bey-Bienko, 1936, *Faune de l'URSS Dermaptères*: 130, 223 (N. India from Sikkim to Punjab, Kashmir and Tibet); Bey-Bienko, 1959, *Ent. Obozr.*, **38**: 615 (2 Males, 2 Females; China: Yunnan); Bey-Bienko, 1967, *Acta ent. bohém.*, **64**: 433 (1 Male, 2 Females; 4 larvae; Afghanistan: Nuristan, 1200-1250 m); Bey-Bienko, 1968, *Ent. Obozr.*, **47**: 126 (Males, Females, larvae; Eastern Nepal, 2050-4370 m); Hincks, 1947, *Ark. Zool.*, **39A**(1): 32, figs. 17-19 (Males, Females, Juv.; NE Burma, Kambaiti, 2000 m); Yamasaki, 1965, *J. Coll. Arts Sci., Chiba Univ. (Nat. Sci. Ser.)*, (3)**4**: 313 (1 Male; Nepal); Kapoor, 1968, *Agra Univ. J. Res. (Sci.)*, **16**(1) (1967): 30; Srivastava, 1972, *Rec. zool. Surv. India*, **66**(1-4): 138 (2 Males, 1 Female; India: Arunachal Pradesh (not NEFA now), Kameng Dist., Bomdila Town); Srivastava, 1976, *Newsl. zool. Surv. India*, **2**(6): 273 (India: Garhwal Hills, Pipalkoti, 1829 m, Ugsara, 2375 m); Srivastava, 1979, *Proc. Sym. zool. Surv. India*, **1**: 68, fig. 12 (Male, dorsal view), 13A-D (ultimate tergite and forceps exhibiting variations); Srivastava, 1982, *Ent. basiliensia*, **7**: 67 (India: West Bengal, Darjeeling Dist., Tonglu-Garibas, 3050-2600 m and Sandakphu, 3500-3600 m); Srivastava, 1984, *Proc. Wkshp. High*



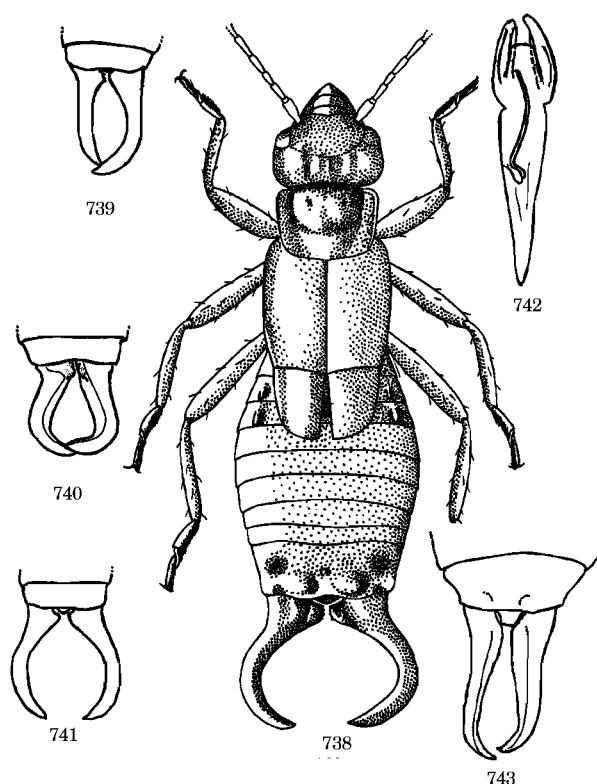
*Alt. Ent. & Wildl. Ecol. zool. Surv. India*: (1983): 127, fig. 14A (Males, Females; India: Arunachal Pradesh, 1234-3200 m; West Bengal, Darjeeling Dist., 1941-3600 m); Srivastava and Lal, 1993, *Rec. zool. Surv. India*, **91**(1)(1992): 123, fig. 26 (Males, Females; India: Himachal Pradesh); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series* **3**, Pt. **4**: 440, figs 242-244 (Males, Females; India: West Bengal, Darjeeling Dist., 1941-3600 m); Srivastava, 1995, *Fauna of Western Himalaya (U. P. (now Uttarakhand), Himalayan Ecosystem Series*, Pt. **3**: 45; Srivastava, 1997, *Fauna of Nanda Devi Biosphere Reserve, Fauna of Conservation area*, Pt. **9**: 59 (Males, Females; India: Uttarakhand, Almora, Chamoli and Pithoragarh Dists, 1900-3300 m - all under Nanda Devi Biosphere Reserve); Srivastava, 2003, *Fauna of Sikkim, State Fauna Series* **9**: 220, figs. 93-95 (Males, Females; India: Sikkim, Lachen, ca. 3500 m, Zema, ca. 2620 m); Brindle, 1974, *Senckenbergiana biol.*, **55**(1/3): 157, figs. 93-95 (Males, Females and larvae; Nepal, various localities, 2400-3600 m); Brindle, 1975, *Ent. basiliensis*, **1**: 40, figs. 46-47, 53, 58 (Males, Females (brachypterous form also); Bhutan, 1900-3300 m); Brindle, 1987, *Courier Forsch.-Inst. Senckenberg*, **93**: 339 (Males, Females and immatures; Nepal, 2250-3600 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 56; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 8944 (description), 8673-8676 (figures and black and white photographs), 8596-8598, 8600 (coloured photographs, including syntypes); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9293 (Males, Females; India: Uttarakhand (Pauri Garhwal, Tarak Tal, 2488 m, Gangrea, 2475-3300 m), Arunachal Pradesh (Nyukmadong, 2178-2540 m) and Sikkim (Chateng, 2671 m, Lachen, 2937 m), West Bengal (Darjeeling Dist., Dilpa, 1676 m); Steinmann, 1988, *Acta zool. hung.*, **34**(1): 20; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 837; Steinmann, 1993, *Das Tierreich*, **108**: 671, figs. 1090-1093.

*Oreasiobia piger* Steinmann, 1983, *Revue suisse Zool.*, **90**(3): 556, figs. 11-12 (Holotype Male; Nepal: Prov. Bagmati, below Tarke Ghyang, 2600 m); Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7322 (description), 7111-7112 (coloured photograph Holotype Male), 7170 (diagram and black and white photograph Holotype Male) - **Syn. n.**

*Oreasiobia similis* Steinmann, 1983, *Revue Suisse Zool.*, **90**(3): 556, figs. 13-14 (Holotype Male; Nepal: Prov. Bagmati, above Shermanthang, 2900 m, Paratypes 2 Females; ditto, 1 Female; Kutumsang, 200-2400 m, 1 Female; ditto, 2500-2700 m at MHNG and Paratypes 1 Male, 1 Female; Nepal: Prov. Bagmati, above, Shermanthang, 2900 m at HANB); Sakai, 1995, *Dermapterorum Catalogus*, **28**: 7323 (description), 7109 (Holotype Male, Paratypes 4 Females, of which one labeled as Allotype - Genève), 7112 (coloured photograph of Holotype Male, Allotype Female and male genitalia), 7171 (diagrams and black and white photographs of Holotype Male, Allotype Female) - **Syn. n.**

Male: General colour shining jet black, occasionally brownish, sometimes head and abdominal tergites reddish brown. Build stout, glabrous.

Head slightly longer than broad, smooth, frons convex, occiput on either side of median suture with a pair of faint, linear impressions, hind margin emarginae in middle. Eyes distinct but shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, slightly shorter than the distance between antennal bases; 2<sup>nd</sup> quadrate; 3<sup>rd</sup> about two and half times longer than broad; 4<sup>th</sup> slightly shorter than the



**Figs. 738-743.** *Forficula schlagintweiti* (Burr), Male, 738, Dorsal view, 739-741, Ultimate tergite and forceps, exhibiting variations, 742, Genitalia; Female, 743, Ultimate tergite and forceps.

preceding; 5<sup>th</sup> slightly longer than 3<sup>rd</sup> but thinner, remaining gradually increasing in length and thinning distally and each gently narrowed basally. Pronotum strongly transverse (length and breadth in the ratio of 2 : 3), smooth, anterior and lateral margins straight, latter gently reflexed, very slightly contracted posteriorly with hind margin rounded, median sulcus faint, prozona tumid, on either side of median suture with faint impressions, metazona depressed, little differentiated from former. Elytra and wings generally well developed, rarely latter concealed or wanting, smooth, former with humeral angles moderately prominent, hind margin feebly oblique and concave. Legs typical of the genus, hind tarsi covered with thick pubescence on underside, 1<sup>st</sup> segment longer than the 3<sup>rd</sup>; 2<sup>nd</sup> lobed, hind margin entire. Abdomen enlarged in middle, tergites convex, smooth or sparsely punctate, lateral tubercles on 3<sup>rd</sup> and 4<sup>th</sup> distinct but former comparatively weaker. Penultimate sternite with posterior margin rounded with a small convexity in middle. Ultimate tergite transverse, smooth, disc weakly convex, sloping backwards, above the roots of forceps with tumid folds and depressed in middle, median sulcus short, lateral margins straight, very slightly converging posteriorly, hind margin

trsinuate, lateral portion of hind margin feebly oblique, postero-lateral angles a little prominent. Pygidium short, obtuse. Forceps (in forma cyclobia) with branches cylindrical, externally constricted near base, afterwards strongly bowed, tapering apically, tip pointed and gently hooked, internally at base with short rounded or obtuse lobe with its internal margin crenulated and (in forma macrolabia) branches elongated, gradually curving from base to apex with various intermediate stages, at base internally with an obtuse crenulated lobe, sometimes much reduced. Genitalia with parameres three times longer than broad, narrowed apically, tip obtuse; virga long, tubular and basal vesicle not very prominent.

Female: As male but abdomen feebly enlarged in middle; ultimate tergite strongly narrowed posteriorly; pygidium about as long as broad, subvertical, slightly narrowed posteriorly, hind margin straight and forceps simple, straight, sometimes feebly incurved in middle inclosing a narrow elongated space.

*Measurements:* (in mm)

|                   | Male        | Female      |
|-------------------|-------------|-------------|
| Length of body    | 10.0 - 14.0 | 11.7 - 15.3 |
| Length of forceps | 2.5 - 4.1   | 4.7 - 5.7   |

*Types:*

1. *Anechura schlagintweiti* Burr, 1904 - Syntypes 5 Males, 2 Females; out of this 4 Males, 1 Female at MHNP and 1 Male, 1 Female at BMNH.

2. *Oreasiobia piger* Steinmann, 1983 - Holotype Male at MHNG.

3. *Oreasiobia similis* Steinmann, 1983 - Holotype Male, Paratypes 4 Females at MHNG and Paratypes 1 Male, 1 Female at HNAB.

*Distribution:* All along the Himalayas in India (1941 - 3600 m), Nepal (2000-3200 m), Bhutan (1900-3200 m) and mountains of Myanmar and China (Yunnan) and Tibet.

*Remarks:* This species varies greatly in size, general colour and shape of forceps in males. Generally specimens are shining jet black but at higher elevations, above 3000 m, brachypterous specimens with orange head are reported (Brindle, 1974). Besides, Srivastava (2003) has recorded from India, Sikkim specimens with head and abdominal tergites reddish brown.

In normal males forceps are stout, strongly incurved with a blunt or rounded tooth at base internally. But in a large series branches of forceps, in males, are elongated, almost straight or very slightly incurved in middle with various intermediate stages. *Oreasiobia piger* Steinmann and *Oriasiobia similis* Steinmann, represent such variants and are treated as synonyms.

***Forficula bhutanensis* Brindle**

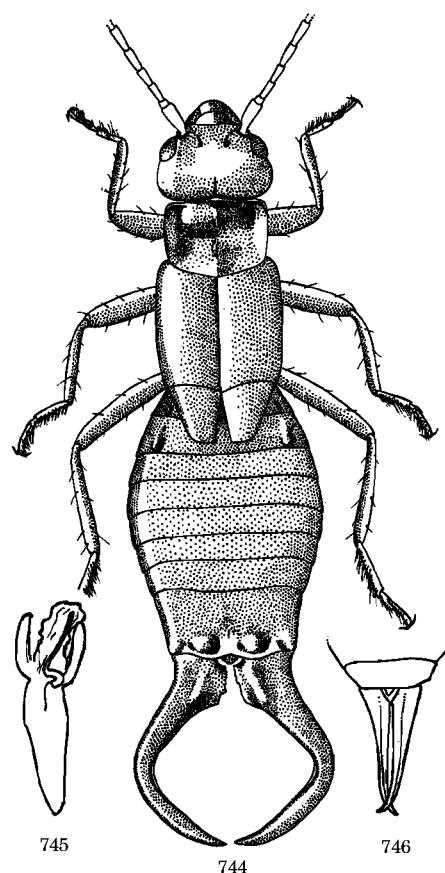
(Figs. 744-746)

*Forficula bhutanensis* Brindle, 1975, *Ent. basiliensia*, **1**: 43, fig. 45 (Holotype Male, Paratypes (including Allotype); Bhutan: Kotoka-Gogona, 2600-3400 m, Paratypes 10 Males, 8 Females; Gogona, 3100 m); Srivastava, 1982, *Ent. basiliensia*, **7**: 68 (Males, Females (including a brachypterous specimen); India: West Bengal, Darjeeling Dist., Tonglu-Garibas, 3050-2600 m); Srivastava, 1984, *Proc. Wkshp. High Alt. Ent. & Wildl. Ecol. zool. Surv. India*: (1983) 129, fig. 14B (Males, Females; India: West Bengal, Darjeeling Dist., Sandakphu, 3600 m, Tonglu, 3669 m); Srivastava, 1993, *Fauna of West Bengal, State Fauna Series 3*, Pt. 4: 440, figs. 239-241; Srivastava, 2003, *Fauna of Sikkim, State Fauna Series 9*: 220, figs 91-92 (Male, Female; India: Sikkim, Lachen, ca 3500- 3600 m, Yumthang, ca 3200 m); Sakai, 1982, *Bull. Daito Bunka Univ.*, **20**: 57; Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9068 (description), 8612 (coloured photograph - Type series), 8613 (enlarged coloured photograph, Holotype Male), 8711-8713 (diagrams and black and white photographs of Holotype Male and other Paratypes); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9293, pl. II, fig. 9 (Males, Females; India: Sikkim, Yagtang, 3846 m, Yamtang, 4006 m, Chetang, 2871 and Yedang, 3194 m; West Bengal, Darjeeling Dist., Dilpa, 1815 m; Uttarakhand, Kumaon, Binaik Chatti, 2134-2286 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 54; Steinmann, 1988, *Act zool. hung.*, **34**(1): 20, fig. 55; Steinmann, 1989, *World Catalogue of Dermaptera* (Series entomologica v. 43): 814; Steinmann, 1993, *Das Tierreich*, **108**: 663, fig. 1076.

*Forficula schlagintweiti* (néc Burr, 1904); Hebard, 1923, *Mem. Dep. Agric. India ent. Ser.*, **7**: 225, fig. 22 (Forficuloid forceps).

Male: General colour shining black to dull blackish brown, sometimes a few abdominal segments testaceous brown and forceps lighter in colour.

Head longer than broad, smooth, frons convex, epicranial suture distinct, hind margin emarginate in middle. Eyes distinct but shorter than the post-ocular length. Antennae 12-segmented, 1<sup>st</sup> stout, gently expanded apically, about as long as the distance between antennal bases; 2<sup>nd</sup> quadrate; 3<sup>rd</sup> long, cylindrical; 4<sup>th</sup> slightly shorter than the preceding, stouter; 5<sup>th</sup> slightly longer than the 3<sup>rd</sup>, expanded apically, remaining gradually increasing in length and thinning distally. Pronotum strongly transverse, length and breadth in the ratio of 2 : 3.2, coriaceous, sides straight, a little reflexed, very slightly contracted posteriorly, hind margin rounded with a small convexity in middle, prozona tumid with median sulcus distinct, metazona depressed. Elytra and wings generally well developed, rarely latter wanting, smooth, former with hind margin obliquely concave. Legs typical of the genus, hind tarsi covered with thick pubescence on underside, 1<sup>st</sup> segment longer than the combined length of remaining two; 2<sup>nd</sup> lobed, hind margin entire. Abdomen enlarged in middle, tergites depressed, coriaceous, sparsely punctated, lateral folds on 3<sup>rd</sup> and 4<sup>th</sup> tergites well marked but former comparatively slightly weaker. Penultimate sternite with posterior margin rounded. Ultimate tergite transverse, smooth, very slightly narrowed posteriorly, depressed, above the roots of forceps with broad rounded elevations and depressed in the middle, median sulcus short, hind margin trisinate,



**Figs 744-746.** *Forficula bhutanensis* Brindle, Male, 744, Dorsal view, 745, Genitalia; Female, 746, Ultimate tergite and forceps.

lateral portion of hind margin oblique, postero-lateral angles slightly projecting. Pygidium short, obtuse. Forceps with branches at base externally a little constricted, internally at base flattened in basal one fourth with a linear convexity in middle and its internal margin crenulate, afterwards branches narrowed apically, depressed, in cross section quadrate, with a sharp bend at middle, enclosing a rhomboid space, apices gently hooked, pointed. Genitalia with parameres three and a half times longer than broad, external margin convex, tip obtuse; virga thick, tubular and basal vesicle distinct.

Female agrees with males in most characters except that ultimate tergite comparatively strongly narrowed and tumid folds above the bases of forceps weak; pygidium short, narrowed apically and forceps simple, straight, very slightly incurved in apical one third, inner margin faintly crenulated.

*Measurements:* (in mm)

|                   | Male       | Female     |
|-------------------|------------|------------|
| Length of body    | 9.0 - 13.0 | 8.0 - 12.5 |
| Length of forceps | 3.0 - 4.0  | 2.5 - 3.5  |

*Types:* Holotype Male, Paratypes 18 Males, 12 Females at NMB; Paratypes 5 Males, 7 Females at MM and Paratypes 2 Males, 2 Females at BMNH.

*Distribution:* India (West Bengal, Darjeeling Dist., 1815 m, 2600-3600 m; Sikkim, 2871-4006 m; Uttarakhand, 2134-2286 m) and Bhutan (2400-3600 m).

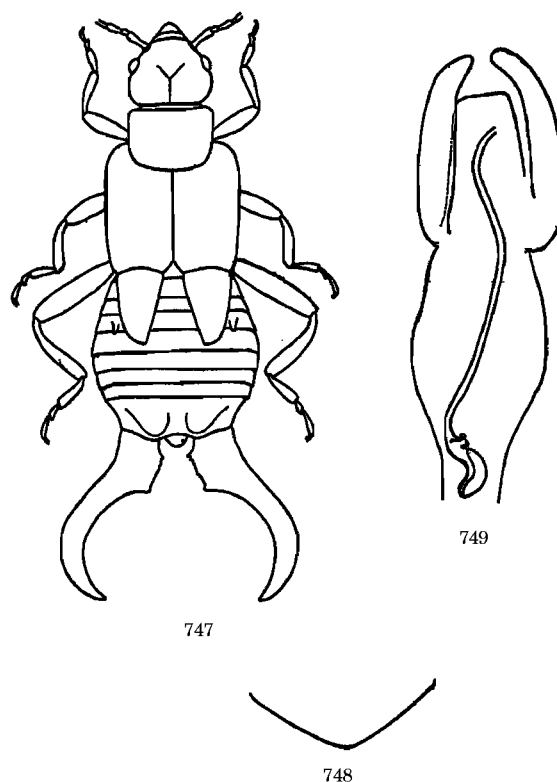
*Remarks:* This species comes close to *Forficula schlagintweiti* (Burr) but differs by more strongly transverse pronotum (*vs* strongly transverse but comparatively less so, in *F. schlagintweiti*); abdominal tergites with punctures sparse and comparatively more pronounced (*vs* less marked comparatively) and forceps, in males, with a rectangular inner basal lamellation extending in one fourth of the length, afterwards narrowed, strongly bend in middle enclosing rhomboid space, in cross section branches quadrate (*vs* internally at base with a blunt, obtuse tooth, afterward strongly bowed or elongated, enclosing roughly rounded or elongated space and in cross section branches rounded).

***Forficula asketi*** Purohit, Julka and Lal  
(Figs. 747-749)

*Forficula asketi* Purohit, Julka and Lal, 1985, *Bull. zool. Surv. India*, **7**(2-3): 165, figs. 1-3 (Holotype Male, Paratype 1 Male; India: Himachal Pradesh, Sirmour Dist., Kotla nr. Habban, 2092 m); Sakai, 1995, *Dermapterorum Catalogus*, **30**: 9081 (description), 8716-8717 (diagrams); Sakai and Zhang, 1995, *Dermapterorum Catalogus*, **30**: 9293, pl. II, fig. 10 (Males; India: Uttarakhand, Khumyara, 1311-1372 m, Akhrotkotti, 1737-1981 m and Tarsali, 1829-2134 m); Sakai, 1997, *Bull. Biogeogr. Soc. Japan*, **52**(2): 55..

Male: General colour shining black, legs unicolourous, brown.

Head smooth, broader than long, tumid, occiput depressed, epicranial suture distinct, hind margin scarcely emarginated in middle. Antennae 10-segmented, 1<sup>st</sup> long, stout; 2<sup>nd</sup> small; 3<sup>rd</sup> longer than 4<sup>th</sup> but slightly shorter than 5<sup>th</sup>, remaining long, cylindrical. Pronotum coriaceous, about one and half times broader than long, lateral margins straight, slightly reflexed, posterior margin rounded. Elytra coriaceous, humeral angles weak, posterior margin concave. Wings well developed. coriaceous. Legs slender, tibiae and tarsi densely pubescent below, hind leg with 1<sup>st</sup> tarsal segment almost as long as the combined length of second and third. Abdomen convex, sparsely punctulate, lateral folds on 3<sup>rd</sup> slightly and on 4<sup>th</sup> well developed. Penultimate sternite with posterior margin well rounded. Ultimate tergite smooth, about three times broader than long, faintly tumid above the roots of forceps, posterior margin trisinate. Pygidium distinct, small, broader than long, obtuse. Forceps short, concave externally, dilated internally in basal one third with margin straight and crenulate, branches strongly bowed in distal two thirds, tapering



**Figs. 747-749.** *Forficula asketi* Purohit, Julka and Lal, Male, 747, Dorsal view, 748, Posterior margin of penultimate sternite, 749, Genitalia (all figs. after Purohit, Julka and Lal, 1985).

with apices pointed. Genitalia with parameres three times longer than broad, slightly narrowed apically with tip obtuse; virga thick, tubular and basal vesicle distinct.

Female: Not known.

*Measurements:* (in mm)

|                   | Male      |
|-------------------|-----------|
| Length of body    | 10.2-10.8 |
| Length of forceps | 4.1-4.4   |

*Types:* Holotype Male, Paratype 1 Male at ZSI.

*Distribution:* India: Himachal Pradesh, 2092 m; Uttarakhand, 1311-2134 m.

*Remarks:* This species comes close to *Forficula bhutanensis* Brindle, but differs by the male forceps dilated internally in basal one third and distal two third portion incurved enclosing somewhat rounded space.

### Doubtful or erroneous records

1. ***Forficula lucasi* (Dohrn, 1865)** - Sakai (1997) records this species from India: Arunachal Pradesh (not Assam now), Kameng Dist., Rahung, 2310-2409 m, 1 Male; Nafra, 1155-1320 m, 1 Male and Nakhu, 1254-1584 m, 1 Female.

The male from Rahung was examined and belongs to *Forficula taoyuanensis* Ma and Chen, 1992. A coloured photograph of male from Nafra is given in Sakai and Zhang (1995, pl. II, not numbered). On the basis of this photograph it is certain it does not belong to this species. However, in having semicircular pronotum and elytra and wings with yellow spot it comes close to *Forficula ornata* Bormans but differs by the forceps dilated in basal two thirds and afterwards strongly bowed. And the identification of 1 female is doubtful.

Besides, Gangola (1965) records 2 males from India (Uttarakhand, Kumaon Hills, Nainital, 2195 m, and Sukhtal, 2057 m). Perhaps this identification is also doubtful.

2. ***Forficula vicaria* Semenov, 1902** - Record of this species from India: Arunachal Pradesh (not Assam now), Shergaon, 2046-2178 m, 3 females and Rupa, 1716-1815 m, 1 female (Sakai, 1997: 55). Of the above lot 1 female from Rupa was examined through the courtesy of Dr. Bob Skidmore, Biosystematic Research Institute (Department of Agriculture Canada), Ottawa, Ontario, Canada.

The specimen measures 10.0 mm, including forceps and lacks wings and on the basis of similar general colour it comes close to *Forficula lucens* Brindle and *Forficula jayarami* Srivastava, but on female alone it is not possible to determine up to specific level satisfactorily. Perhaps the other two females may be identical.

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## INDEX

Taxa given in *italics* are synonyms**A**

*abbottabadiensis* Bharadwaj & Kapoor — 372, 400  
*abdominalis* Ramamurthi — 201, 204  
*aborum* Burr — 53, 55  
*acer* Burr — 406, 408  
*acuminata* Srivastava — 107, 119  
*Adiathella* Brindle — 142, 150  
*Adiathetus* Burr — 142, 147  
*aesculapius* Burr — 259, 260  
*Afrolabia* Hincks — 45  
*agrawali* Srivastava — 74, 79  
*ahrimanes* (Burr) — 294, 297  
*albomarginata* Haan — 213, 215  
*alfredi* Srivastava — 107, 112  
*Allodahlia* Verhoeff — 293, 294  
 ALLODAHLIINAE — 293  
*ambigua* Burr — 419, 420  
*anamalaiensis* Srivastava (Chaetospania) — 107, 110  
*anamalaiensis* Srivastava (Spongovostox) — 45  
*anderssoni* Brindle — 107, 114  
*Andex* Burr — 45  
*Anechura* Scudder — 305, 321  
 ANECHURINAE — 315  
*annandalci* Burr — 350  
*Apachya* Serville — 21  
 APACHYIDAE — 20  
 APACHYINAE — 20  
 APACHYOIDEA — 20  
*Apachys* Agassig — 21

*appendicina* (nèc Menozzi, 1941); Steinmann, 1983 — 31  
*aptera* (nèc Verhoeff, 1902); Sakai 1997 — 225  
*Apachyus* Serville — 20  
*Apovostox* Hebard — 69, 73  
*arachidis* (Yersin) — 39, 42  
*arcuata* Scudder — 92  
*ares* Burr — 257, 268  
*arguata* Steinmann — 132, 134  
*Argusina* Hebard — 73  
*armatus* (Burr) — 280, 283  
*ascensionis* Hebard — 40, 42  
*asciatica* Bormans in Bolivar, 1897, Burr, 1907 — 218, 221  
*asiatica* (Bormans) — 240  
*asiatica zubovaskii* Bey-Bienko — 330  
*asketi* Purohit, Lal & Julka — 373, 430  
*assamensis* Sakai — 53, 55  
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 AUCHINOMINI Steinmann — 64  
*Auchinomus* Karsch — 64  
*auricularia* L. — 369, 370  
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**APPENDIX - I**

List of species included in parts 1 and 2 with certain additions and modifications

Superfamily : PYGIDICRANOIDEA

Family : PYGIDICRANIDAE

**Subfamily : PYGIDICRANINAE**

Genus : ***Cranopygia*** Burr, 1908

*C. cumingi* (Dohrn, 1863)

*C. nietneri* (Dohrn, 1863)

*C. bhallaie* Kapoor, 1966

*C. kallipygos* (Dohrn, 1863)

*C. burri* (Hincks, 1955)

*C. raja* (Burr, 1911)

*C. parva* Brindle, 1974

*C. manipurensis* Srivastava, 1979

*C. brindlei* Srivastava, 1988

*C. vittipennis* Hincks, 1955

*C. eximia* (Dohrn, 1863)

*C. bifurcata* Srivastava, 1980

*C. dravidia* Burr, 1914

*C. similis* (Zacher, 1910)

Genus : ***Acrania*** Burr, 1915

*A. assamensis* (Hincks, 1955)

*A. fletcheri* (Kapoor and Bharadwaj, 1967)

*A. picta* (Guerin-Meneville, 1838)

*A. steinmanni* (Srivastava, 1988)

*A. constricta* (Hincks, 1955)

**Uncertain species**

*A. angustata* (Dohrn, 1863)

*A. tumida* Borelli, 1931

Subfamily : DIPLATYINAE

Genus : ***Nannopygia*** Dohrn, 1863

*N. gerstaeckeri* (Dohrn, 1863)

*N. angustatus* (Burr, 1910)

Genus : ***Paradiplatys*** Zacher, 1910

*P. gladiator* (Burr, 1905)

Genus : ***Diplatys*** Serville, 1831

*D. brindlei* Steinmann, 1974

*D. chopardi* Hincks, 1955

*D. devlensis* Srivastava, 1974

*D. papovi* Bey-Bienko, 1959

*D. excidens* Hincks, 1954

*D. confusus* Hincks, 1955

*D. coelebs* Hincks, 1955

*D. jawalagiriensis* Kapoor, Bharadwaj and Banerjee, 1971

*D. chowdhuryi* Srivastava, 1989

*D. nathani* Hincks, 1960

*D. dolens* Hincks, 1957

*D. tikaderi* Srivastava, 1988

*D. lefroyi* Burr, 1910

*D. menoni* Kapoor and Bharadwaj, 1968

*D. ernesti* Burr, 1910

*D. fletcheri* Burr, 1910

*D. anamaliensis* Srivastava, 1970

*D. greeni* Burr, 1904

*D. carli* Srivastava, 1988

*D. adjacens* Hincks, 1955

*D. sinuatus* Hincks, 1955

*D. propinquus* Hincks, 1955

*D. santoshi* Srivastava, 1975

*D. nilgiriensis* Hincks, 1955

*D. carinatus* Srivastava, 1988

Genus : ***Haplodiplatys*** Hincks, 1955

*H. niger* Hincks, 1955

*H. siva* (Burr, 1904)

*H. kurseongensis* Srivastava, 1988

*H. glenis* (Kapoor, 1968)

*H. bhowmiki* (Srivastava and Saha, 1975)



*H. bidentatus* (Hincks, 1955)  
*H. malaisei* (Hincks, 1947)  
*H. trisinuatus* Srivastava, 1988  
*H. chinensis* (Hincks, 1955)  
*H. shillongensis* Srivastava, 1988  
*H. brancuccii* Srivastava, 1983  
*H. stemmleri* (Brindle, 1975)  
*H. rileyi* (Hincks, 1955)  
*H. urbanii* (Brindle, 1975)  
*H. srivastavai* (Kapoor, 1974)  
*H. rufescens* (Kirby, 1896)  
*H. simlaensis* (Kapoor, 1968)  
*H. lobatus* Srivastava, 1988  
*H. transversalis* Brindle, 1983  
*H. triangulatus* Brindle, 1987

**Uncertain species**

*D. flavobrunneus* Chopard, 1924  
*D. baijali* Duda and Malhotra, 1970

Subfamily : ECHINOSOMATINAE

Genus : *Echinosoma* Serville, 1839

**Yorkense - Group**

*E. trilineatum* Borelli, 1921

**Parvulum - Group**

*E. parvulum* Dohrn, 1863  
*E. andamanensis* Srivastava, 1988

**Sumatranum - Group**

*E. convolutum* Hincks, 1959  
*E. dentiferum* Borelli, 1912  
*E. nandii* Srivastava, 1988

**Uncertain species**

*E. rufomarginatum* Borelli, 1931

Subfamily : PROLABISCINAE

Genus : *Parapsalis* Borelli, 1921

*Parapsalis infernalis* (Burr, 1913)

Superfamily : ANISOLABOIDEA

Family : ANISOLABIDIDAE

Subfamily : PLATYLABIINAE

Genus : ***Platylabia*** Dohrn, 1867

*P. brindlei* Srivastava, 1982

*P. nathani* Srivastava, 1982

Subfamily : TITANOLABIDINAE

Genus : ***Titanolabis*** Burr, 1910

*T. maindroni* (Borelli, 1911)

Subfamily : ANISOLABIDINAE

Genus : ***Epilandex*** Hebard, 1927

*E. burri* (Borelli, 1921)

Genus : ***Aborolabis*** Srivastava, 1969

*A. emarginata* Srivastava, 1974

*A. meghalayaensis* Srivastava, 1993

*A. nepalensis* (Brindle, 1974)

*A. kalaktangensis* Srivastava, 1972

*A. sikkimensis* Srivastava, 1993

*A. pervicina* (Burr, 1913)

Genus : ***Euborellia*** Burr, 1910

*E. dattai* Srivastava, 1977

*E. rajasthanensis* Srivastava, 1977

*E. annulipes* (Lucas, 1837)

*E. compressa* (Borelli, 1907)

*E. plebeja* (Dohrn, 1863)

*E. femoralis* (Dohrn, 1863)

*E. annandalei* (Burr, 1906)

*E. annulata* (Fabricius, 1793)

( = *E. stali* (Dohrn, 1864)

*E. abbreviata* Srivastava, 1977

*E. manipurensis* Srivastava, 1979

#### Uncertain species

*E. kumaoensis* Gangola, 1968

*E. askotensis* Gangola, 1968

Genus : ***Mongolabis*** Zacher, 1911

*M. vallakadaiensis* (Ramamurthi & David, 1973)

*M. affinis* Ramamurthi, 1973

Genus : ***Anisolabella*** Zacher, 1911

*A. dohrni* (Kirby, 1891)

*A. greeni* (Burr, 1899)

*A. nandii* (Srivastava, 1987)

*A. carinatus* (Srivastava, 1987)

*A. montshadskii* (Bey-Bienko, 1959)

*A. denticulatus* (Srivastava, 1987)

Genus : ***Gonolabis*** Burr, 1900

*G. electa* Burr, 1910

*G. penicillata* (Borelli, 1911)

*G. emarginatus* (Ramamurthi & David, 1973)

*G. analis* (Ramamurthi & David, 1973)

*G. sisera* (Burr, 1914)

*G. burri* (Srivastava, 1970)

*G. punctata* (Srivastava, 1978)

*G. krishnappai* Srivastava, 2003

*G. nilgiriensis* (Srivastava, 1978)

Genus : ***Apolabis*** Burr, 1915

*A. aborensis* (Burr, 1913)

*A. castetsi* (Bormans, 1897)

*A. genitalis* (Kapoor, 1967)

*A. ramachandrai* (Ramamurthi & David, 1973)

*A. thushargiriensis* Srivastava, 2003

Genus : ***Anisolabis*** Fieber, 1853

*A. rubella* Brindle, 1977

*A. kudgae* Burr, 1901

*A. deplanata* Srivastava, 1985

*A. bhowmiki* Srivastava, 1991

#### Uncertain species

*A. gaudens* Burr, 1904

Subfamily : BRACHYLABIDINAE

Genus : ***Metisolabis*** Burr, 1910

*M. bifoveolata* (Bolivar, 1897)

*M. caudelli* (Burr, 1908)

Genus : ***Ctenisolabis*** Verhoeff, 1902

*C. fletcheri* Burr, 1910

#### Uncertain species

*C. pusilla* Steinmanan, 1879

Genus : ***Brachylabis*** Dohrn, 1864

*B. philetas* Burr, 1901

*B. willeyi* (Burr, 1910)

*B. formicoides* (Burr, 1911)

Subfamily : ANTISOLABIDINAE

Genus : ***Antisolabis*** Burr, 1911

*A. ceylonica* (Brindle, 1977)

*A. kelangi* (Brindle, 1969)

Subfamily : ISOLABOIDINAE

Genus : ***Isolabaoides*** Hincks, 1958

*I. burri* (Borelli, 1909)

*I. immsi* (Burr, 1913)

*I. rimosus* Steinmann, 1983

#### Uncertain species

*I. tenera* (Burr, 1910)

*I. elegans* (Hebard, 1917)

Family : LABIDURIDAE

Subfamily : ALLOSTETHINAE

Genus : ***Allostethus*** Verhoeff, 1904

*A. anamalayanus* Ramamaurthi, 1968

Genus : ***Gonolabidura*** Zacher, 1910

*G. astruci* Burr, 1911

*G. minor* Burr 1914

*G. nathani* Brindle, 1965

*G. biswasi* Srivastava, 1993

Subfamily : NALINAE

Genus : *Nala* Zacher, 1910

*N. lividipes* (Dufour, 1829)

*N. nepalensis* (Burr, 1907)

*N. basalis* Bey-Bienko, 1970

Subfamily : LABIDURINAE

Genus : *Labidura* Leach, 1815

*L. riparia* (Pallas, 1773)

**Uncertain species**

*L. dharchulensis* Gangola, 1968

Genus : *Forcipula* Bolivar, 1897

*F. lurida* Bolivar, 1897

*F. tuberculata* Srivastava, 1977

*F. quadrispinosa* (Dohrn, 1863)

*F. trispinosa* (Dohrn, 1863)

*F. despinosa* Hebard, 1917

*F. borellii* Chopard, 1924

*F. aborensis* Brindle, 1966

*F. indica* Brindle, 1966

*F. elongata* Srivastava, 1986

*F. clavata* Liu, 1946

*F. abbreviata* Srivastava, 1986

**Uncertain species**

*F. leonardi* Steinmann, 1981