

State Fauna Series, 14

FAUNA OF MIZORAM
(Part-2)

Edited by
The Director
Zoological Survey of India, Kolkata



सत्यमेव जयते

Zoological Survey of India
Kolkata

CITATION

Editor-Director, 2009. *Fauna of Mizoram, State Fauna Series, 14(Part-2) : 1-30* (Published by the Director, *Zool. Surv. India*, Kolkata)

Published : October, 2009

ISBN 978-81-8171-242-4

© *Government of India*, 2009

ALL RIGHTS RESERVED

- No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.
- This book is sold subject to the condition that it shall not, by way of trade, be lent, re-sold hired out or otherwise disposed of without the publisher's consent, in any form of binding or cover other than that in which it is published.
- The correct price of this publication is the price printed on this page. Any revised price indicated by a rubber stamp or by a sticker or by any other means is incorrect and should be unacceptable.

PRICE

India : Rs. 50.00

Foreign : \$ 3; £ 2

Published at the Publication Division by the Director, Zoological Survey of India, 234/4, A. J. C. Bose Road, 2nd MSO Building, (13th Floor), Nizam Palace, Kolkata-700 020 and printed at East India Photo Composing Centre, Kolkata-700 006.

FAUNA OF MIZORAM STATE FAUNA SERIES

No. 14

2009

Pages 1-30

CONTENTS

	<i>Pages</i>
1. ORIBATID MITES (ACARI : ORIBATEI)	1-17
A. K. Sanyal	
2. INSECTA : HIMIPTERA : HOMOPTERA : FULGOROIDEA, CERCOPOIDEA, CICADOIDEA AND MEMBRACIDAE	19-30
B. Biswas, M. Ghosh and Animesh Bal	

ORIBATID MITES (ACARI : ORIBATEI)

A. K. SANYAL

Zoological Survey of India, M-Block, New Alipore, Kolkata-700 053

INTRODUCTION

Mites constitute one of the major groups of arthropod in the animal kingdom. Among the mites, oribatids or 'beetle' or 'moss' mites are the most commonly found and numerically dominant group. They are very common inhabitants of all possible habitats in nature (Sanyal, 2000).

Oribatid mites are of great economic importance. They help to promote soil fertility through humification of organic matter. They also act as an agent for biological control of pests. These tiny mites feed on plants, carry fungal spores causing diseases to plants and transmit helminth diseases to domestic animals. The saprophytic oribatids help in regulating soil nematode populations. There are many Oribatids occurring in house-dust cause respiratory allergic diseases in man.

No work on oribatid fauna of Mizoram was known before the present work was initiated. The present work is based on collection of oribatid mites from Mizoram done by the author and his associates.

A brief account of the surveys undertaken for the study is given below :

1. Mizoram survey — Dr. B.K. Biswas and party (1994).
2. Mizoram survey — Dr. A.K. Sanyal and party (1995).

The most important habitats like litter, soil, humus, decomposed cowdung, etc. were thoroughly surveyed for collection of oribatid mites.

THE CONTENTS OF THE PRESENT PAPER

The paper deals with the oribatid fauna collected from Mizoram during 1994 and 1995. Altogether 40 species belonging to 29 genera and 22 families have been recorded in the paper. All the species incorporated are reported for the first time from the State of Mizoram. The original and most recent references, if any, diagnostic features and distribution of each species and keys to the identification of families, genera and species known from the State have been provided. The species studied in the work are deposited in the National Zoological Collection, Zoological Survey of India.

For details of the morphological features of oribatid mite, various terminologies and materials and methodology followed Sanyal, 2002 may be consulted.

The species were diagnosed on the basis of the keys for identification prepared by Balogh (1972), Balogh and Mahunka (1983), Balogh and Balogh (1988), Subias and Balogh (1989) and Balogh and Balogh (1990).

**LIST OF ORIBATID TAXA KNOWN
FROM MIZORAM**

1. Family PHTHIRACARIDAE
 1. Genus *Atropacarus* (*Hoplophorella*)
Niedbala
 1. *A. (H). scapellatus* (Aoki)
 2. *A. (H). sp.*
 2. Genus *Hoplophthiracarus* Jacot
 3. *H. punctatus* Mondal and Kundu
2. Family EUPHTHIRACARIDAE
 3. Genus *Rhysotritia* Markel and Meyer
 4. *R. ardua* (Koch) var. *otaheitensis* Hammer
3. Family HYPOCHTHONIIDAE
 4. Genus *Hypochthonius* Koch
 5. *Hypochthonius sp.*
4. Family HAPLOCHTHONIIDAE
 5. Genus *Haplochthonius* Willmann
 6. *H. clavatus* (Hammer)
5. Family LOHMANNIIDAE
 6. Genus *Javacarus* Balogh
 7. *J. kuhnelti* Balogh
6. Family EPILOHMANNIIDAE
 7. Genus *Epilohmannia* Berlese
 8. *E. pallida indica* Bhattacharyya and Banerjee
7. Family NOTHRIDAE
 8. Genus *Nothrus* Koch
 9. *N. gracilis* Hammer
8. Family TRHYPOCHTHONIIDAE
 9. Genus *Allonothrus* Hammer
 10. *A. russeolus* Wallwork
 10. Genus *Archegozetes* Grandjean
 11. *A. longisetosus* Aoki
9. Family NANHERMANNIIDAE
 11. Genus *Cyrthermannia* Balogh
 12. *C. vicinicornuta* Aoki
10. Family PLASMOBATIDAE
 12. Genus *Plasmobates* Grandjean
 13. *P. pagoda* Grandjean
11. Family MICROZETIDAE
 13. Genus *Berlesezetes* Mahunka
 14. *B. auxiliaris* (Grandjean)
12. Family EREMOBELBIDAE
 14. Genus *Eremobelba* Berlese
 15. *E. himalayensis* Mondal and Kundu
13. Family TECTOCEPHEIDAE
 15. Genus *Tectocepheus* Berlese
 16. *T. velatus* (Michael)
14. Family OTOCEPHEIDAE
 16. Genus *Dolicheremaeus* Jacot
 17. *D. himalayensis* Chakrabarti, Bhaduri and
Kundu
 18. *D. nepalensis* Aoki
 19. *Dolicheremaeus sp.*
15. Family OPPIIDAE
 17. Genus *Arcoppia* Hammer
 20. *A. bidentata* Hammer
 18. Genus *Hexoppia* Balogh
 21. *H. heterotricha* Balogh
 19. Genus *Multioppia* Hammer
 22. *M. gracilis* Hammer
 20. Genus *Oppia* Koch
 23. *O. yodai* Aoki
16. Family CHAUNOPROCTIDAE
 21. Genus *Chaunoproctus* Pearce
 24. *C. clavisetosus* Bhaduri, Bhattacharya and
Chakrabarti

17. Family XYLOBATIDAE Balogh and Balogh
22. Genus *Xylobates* Jacot
25. *X. seminudus* Hammer
18. Family HAPLOZETIDAE
23. Genus *Phalacrozetes* Aoki
26. *P. sinatus* Aoki
24. Genus *Rostrozetes* Sellnick
27. *R. foveolatus* Sellnick
28. *R. punctatus* Karppinen
19. Family SCHELORIBATIDAE
25. Genus *Scheloribates* Berlese
29. *S. albialatus* Hammer
30. *S. indicus* Sanyal
31. *S. natalensis* Pletzen
32. *S. parvus* Pletzen
33. *S. praeincisus* (Berlese)
34. *S. thermophilus* Hammer
20. Family AUSTRACHTERIIDAE
26. Genus *Hypozetes* Balogh
35. *H. laysanensis* Aoki
27. Genus *Lamellobates* Hammer
36. *L. hauseri* Mahunka
37. *L. palustris* Hammer
21. Family CERATOZETIDAE
28. Genus *Ceratozetes* Berlese
38. *C. gracilis* Michael
22. Family GALUMNIDAE
29. Genus *Galumna* von Heyden
39. *G. crenata* Deb and Raychaudhuri
40. *G. flabellifera orientalis* Aoki
- SYSTEMATIC ACCOUNT**
- Key to the families*
- 1(4) Body ptychoid, propodosoma can be shut back against the hysterosoma and ventral region like blade of penknife; body generally laterally compressed
- 2(3) Anogenital region wide; body not much compressed laterally **Phthiracaridae** Perty, 1841
- 3(2) Anogenital region narrow; body considerably compressed laterally **Euphthiracaridae** Jacot, 1930
- 4(1) Body not ptychoid, propodosoma can not be shut back against the hysterosoma and ventral region; body never laterally compressed
- 5(14) Anogenital region macropyline type
- 6(9) Notogaster with 1-3 transverse sutures
- 7(8) Notogaster with a single transverse suture; notogaster flattened, elongate or pentagonal, without reticulation **Hypochthoniidae** Berlese, 1910
- 8(7) Notogaster with three transverse sutures; shield NA bearing only setae c; peranal plate absent **Haplochthoniidae** Hammer, 1959
- 9(6) Notogaster without transverse suture
- 10(11) Body dichoid; preanal plate present **Lohmaniidae** Berlese, 1916
- 11(10) Body holooid; preanal plate absent
- 12(13) Epimeral neotrichy strong; epimeres II with 3-6 pairs of setae **Nothridae** Berlese, 1985
- 13(12) Epimeral neotrichy absent; epimeres II with 0 or 1 pair of setae **Thrypochthoniidae** Willmann, 1931
- 14(5) Anogenital region of brachypyline type
- 15(32) Notogaster pycnonotic i.e., areae sacculi or pori absent, usually without pteromorphae
- 16(21) Eight or nine pairs of genital setae present
- 17(20) Ventral plate with transverse suture
- 18(19) Anogenital region of schizogastric type (genital and anal plates separated by a

- straight continuous line); notogastral setae 14 pairs; eight pairs of genital setae arranged in two longitudinal rows; anal setae 3 pairs
 **Epilohmanniidae** Oudemans, 1923
- 19(18) Anogenital region of diagastric type (genital and anal plates separated by a medially incomplete curved line); notogastral setae 15 pairs; nine pairs of genital setae aligned in a single longitudinal row; anal setae 2 pairs
 **Nanhermanniidae** Sellnick, 1928
- 20(17) Ventral plate without transverse suture (hologastric type); lamellar setae hardly visible; hysterosoma with concentrically arranged scalps, notogaster foveolate; notogastral setae 6-8 pairs, minute; seven pairs of genital setae
 **Plasmobatidae** Grandjean, 1961
- 21(16) Genital setae 3-6 pairs
- 22(23) Notogaster with ventrally deflected, immovable pteromorphae; smaller species; lamellae very large; notogaster broad; apodemata IV thickened
 **Microzetidae** Grandjean, 1936
- 23(22) Notogaster without pteromorphae
- 24(27) Prodorsum having lamellae with cuspides
- 25(26) Dorsosejugal suture absent; lamellar-interlamellar complex H-shaped; notogastral setae hardly visible
 **Tectocephidae** Grandjean, 1958
- 26(25) Dorsosejugal suture incomplete in the middle; lamellar-interlamellar complex not H-shaped; notogastral setae long
 **Chaunoproctidae** Pearce, 1906
- 27(24) Prodorsum without true lamellae; either thin crest-shaped lamellae or thin costulae present or both lamellae and costulae absent
- 28(29) Ventral neotrichy present, more than four pairs of aggenital + adanal setae; notogaster usually with polygonally arranged granulation; two pairs of anal setae
 **Eremobelbidae** Balogh, 1961
- 29(28) Ventral neotrichy absent
- 30(31) Body elongate, mostly at least twice longer than wide; prodorsal and notogastral condyles present
 **Otocephidae** Balogh, 1961
- 31(30) Body not elongate, mostly never twice as long as wide; chelicerae normal; prodorsum without tectopodial-fields and lamellar knob
 **Oppiidae** Grandjean, 1954
- 32(15) Notogaster poronotic i.e. areae porosae, sacculi or pori present; pteromorphae usually present
- 33(34) Pteromorphae movable; articulate or semicircular; prodorsum without true projecting lamellae; some chitinous lines present on the prodorsum
 **Galumnidae**, Jacot, 1925
- 34(33) Pteromorphae immovable but never articulate, sometimes absent
- 35(36) Prodorsum without tutorium; usually 3-5 pairs of genital setae (exceptionally six pairs) of genital setae (exceptionally five or four pairs); lamellae broad, sometimes synlamella type
 **Austrachipteriidae** Luxton, 1985 (35)
- 36(35) Prodorsum without tutorium; usually 3-5 pairs of genital setae (exceptionally six pairs)
- 37(40) Notogaster with true areae porosae
- 38(39) Sensillus long, reclinate, setiform, often slightly lanceolate at its tip
 ... **Xylobatidae** Balogh and Balogh, 1984
- 39(38) Sensillus capitate with short stalk; 6 pairs of genital setae **Ceratozetidae**
 Jacot, 1925
- 40(37) True areae porosae absent, notogaster with sacculi or pori
- 41(42) Pteromorphae movable, hinged
 **Haplozetidae** Grandjean, 1936
- 42(41) Pteromorphae immovable or absent
 **Scheloribatidae** Grandjean, 1953

1. Family PHTHIRACARIDAE

Perty, 1841

Key to the genera of Phthiracaridae

- 1(2) Genital setae forming a row or almost a row located near the paraxial margin, distance between g_6 and g_5 greater than that between g_5 and g_4 *Atropacarus (Hoplophorella)* Niedbala, 1986
- 2(1) Genital setae g_1 and g_5 forming, almost one row located near paraxial margin; seta g_5 away from paraxial margin; g_7 - g_9 displaced from the side of paraxial margin and forming one row; distance between g_5 and g_6 shorter than that between g_5 and g_4 *Hoplophthiracarus* Jacot, 1933

1. Genus *Atropacarus* Ewing

1917. *Atropacarus* Ewing, *J. Economic Ent. Concord*, 10 : 131.
Atropacarus (Hoplophorella) Niedbala
1986. *Atropacarus (Hoplophorella)* Niedbala, *Acarologica*, 287(1) : 80.

1. *Atropacarus (Hoplophorella) scapellatus*
(Aoki)

1965. *Hoplophorella scapellata* Aoki, *Nat. Life Southeast Asia*, 4 : 131.

Diagnosis : Colour yellowish brown; lateral carina reaches, sinus; rostral setae robust, thick, rough, directed inwards; lamellar setae spiniform, minute; interlamellar setae lanceolate, rough; sensillus long, narrow, inflated in middle, covered with thin spines; notogastral setae 15 pairs, foliate, covered with thin spines; $c_1 < c_1 - d_1$; genitoaggenital plate with formula of genital setae; $6(4 + 2) : 3$; ad_2 foliate with spines, ad_1 and ad_3 spiniform; short, smooth.

Material examined : Aizawl district : 6 ♀ ♀, Aizawl, Pachhunga University College Campus, 10.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Assam, Bihar, Gujarat, Manipur, Meghalaya, Sikkim, Tripura, West Bengal.

2. *Atropacarus (Hoplophorella)* sp.

Material examined : Aizawl district : 2 ♀ ♀, Aibawk, 17.iii.1994, from litter, coll. A. K. Sanyal.

Remark : The specimens could not be identified up to species level as they are in damaged condition.

2. Genus *Hoplophthiracarus* Jacot

1933. *Hoplophthiracarus* Jacot, *J. Elisha Mitchell Sci. Soc.*, 48 : 239.

3. *Hoplophthiracarus punctatus* Mondal and Kundu

1988. *Hoplophthiracarus punctatus* Mondal and Kundu, *Rec. zool. Surv. India*, 85(1) : 111.

Diagnosis : Densely punctate aspis with foveolation antero-dorsally; smooth and simple rostral setae; lamellar setae finely barbed distally; interlamellar setae long, erect, stout, distally barbed; sensillus with slender stalk, anteriorly wide, distal part with uneven rounded brims; notogaster densely punctated; notogastral setae 15 pairs, stiff, erect, distal one third finely barbed; genital setae 9 pairs.

Material examined : Aizawl district : 3 ♀ ♀, Aizawl, Tuirial, 11.x.1995, from soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Sikkim, West Bengal.

2. Family EUPHTHIRACARIDAE,
Jacot, 19303. Genus *Rhysotritia* Markel and Meyer

1959. *Rhysotritia* Markel and Meyer, *Zool. Anz.*, 163 : 329.

4. *Rhysotritia ardua* (Koch) var. *otaheitensis*
Hammer

1972. *Rhysotritia ardua* (Koch) var. *otaheitensis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 19 (3) : 12.

Diagnosis : The variety differs from the main form by the shape of pseudostigmatic organ and

number of claws. The pseudostigmatic organ in the variety is dilated distally into a flat head set with coarse bristles on its surface. The variety possesses one or three claws.

Material examined : Aizawl district : 4 ♀ ♀, Aizawl, Sirang, 10.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Manipur, Meghalaya, Sikkim, Tripura, West Bengal.

3. Family HYPOCHTHONIDAE Berlese, 1910

4. Genus *Hypochthonius* Koch

1836. *Hypochthonius* Koch, *Deutschlands Crustacean, Myriapoden und Arachniden*, 1-9.

5. *Hypochthonius* sp.

Material examined : Aizawl district : 1 ♀, Kolasib, 28.iii.1994, from litter and soil, coll. A. K. Sanyal.

Remark : Due to bad condition of the specimen specific identification could not be done.

4. Family HAPLOCHTHONIIDAE van Der Hammen, 1959

5. Genus *Haplochthonius* Willmann

1930. *Haplochthonius* Willmann, *Abh. nature. Ver. Bremen.*, 28(1) : 2.

6. *Haplochthonius clavatus* (Hammer)

1958. *Tetrochthonius clavatus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 10(1) : 23.

1961. *Haplochthonius clavatus* (Hammer), Balogh, *Acta Zool. Hung.*, 7 : 243.

Diagnosis : Both rostral and lamellar setae on short apophyses, strong, equally thick throughout, a faint line connects the apophyses; a distinct sharp line between lamellar setae; sensillus long, flat, club-shaped, beset with fine bristles; notogastral setae 15 pairs, straight, stiff.

Material examined : Lunglei district : 2 ♀ ♀, Lunglei, 25.iii.1994, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Lunglei), Tripura, West Bengal.

5. Family LOHMANIIDAE Berlese, 1916

6. Genus *Javacarus* Balogh

1961. *Javacarus* Balogh, *Acta Zool. Acad. Sci. Hung.*, 7 : 24.

7. *Javacarus kuhnelti* Balogh

1961. *Javacarus kuhnelti* Balogh, *Acta Zool. Acad. Sci. Hung.*, 7 : 31.

Diagnosis : Prodorsum with small-sized tubercles; rostrum sculptured; prodorsal setae lanceolate; sensillus with 7 secondary branches; notogaster with light spots forming a pattern of beaded line; notogastral setae lanceolate without midrib; 10 pairs of genital setae.

Material examined : Aizawl district : 1 ♀, Aizawl, Pachhunga University College Campus, 10.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Tripura, West Bengal.

6. Family EPILOHMANIIDAE Oudemans, 1923

7. Genus *Epilohmannia* Berlese

1916. *Epilohmannia* Berlese, *Redia*, 12 : 176.

8. *Epilohmannia pallida indica* Bhattacharyya and Banerjee

1979. *Epilohmannia pallida indica* Bhattacharyya and Banerjee, *Indian J. Acar.*, 4(1) : 19.

Diagnosis : Rostral setae small, fine, smooth; lamellar and interlamellar setae long, thick, strongly barbed; slightly fusiform with a distal

barbed thickening; notogastral setae 13 pairs, finely barbed; genital setae 7 pairs.

Material examined : Aizawl district : 3 ♀ ♀, Teirei, 21.iii.1994, from soil, coll. S. Basak, 2 ♀ ♀, Champhai, 13.x.1995, from pine forest soil and litter, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), West Bengal.

7. Family NOTHRIDAE Berlese, 1896

8. Genus *Nothrus* Koch

1836. *Nothrus* Koch, *Deutschlands Crustacean, Myriapoden und Arachniden*, 2 : 17.

9. *Nothrus gracilis* Hammer

1961. *Nothrus gracilis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 28.

Diagnosis : Hysterosoma with parallel lateral border; rostral setae short, stiff; lamellar setae on apophyses, connected by thin straight line, thick, bushy, tips bent down wards; interlamellar setae broad, flat, feathered; sensillus equally thick throughout, with minute bristles; notogastral setae transparent, delicate, hardly discernible; K_1 , pn_1 and pn_2 situated on short apophyses.

Material examined : Lunglei idistrict : 1 ♀, Lunglei, 25.iii.1994, from litter and soil, coll. S. Basak; Aizawl district : 1 ♀, Kolasib, 28.iii.1994, from litter and soil, coll. S. Basak.

Distribution : India : Mizoram (Aizawl, Lunglei), Gujarat, West Bengal.

8. Family TRHYPOCHTHONIIDAE Willmann, 1931

Key to the genera of Trhypochthoniidae

1(2) Legs monodactylous; seven pairs of genital setae; notogastral setae simple; quadrangular notogaster
..... *Archezogetes* Grandjean

2(1) Legs tridactylous; seven to fourteen pairs of genital setae; notogastral setae flabelliform; pentagonal notogaster
..... *Allonothrus* Hammer

9. Genus *Allonothrus* Hammen

1953. *Allonothrus* Hammen, *Proc. Acad. Sci. Amst.*, 56C : 244.

10. *Allonothrus russeolus* Wallwork

1960. *Allonothrus russeolus* Wallwork, *Acarologia*, 2(4) : 571.

Diagnosis : Prodorsum with minute punctations; lateral prodorsal ridges strongly curved, central ridges fused anteriorly; rostral setae pointed, barbed; an interrupted transverse ridge behind the interlamellar setae; other dorsal setae fan-shaped; notogaster with circular or polygonal areolae surrounded by reddish-brown ridges; genital setae 13 pairs.

Material examined : Aizawl district : 16 ♀ ♀, Aizawl, Sirang, 10.x.1995, from litter and soil, coll. A. K. Sanyal; 1 ♀, Aizawl, Zemabawk, 11.x.1995, from litter and soil, coll. A. K. Sanyal, 4 ♀ ♀, Aizawl, Tuinal, 11.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Assam, Manipur, Meghalaya, Sikkim, West Bengal.

10. Genus *Archezogetes* Grandjean

1931. *Archezogetes* Grandjean, *Bull. Mus. Hist. Nat. Paris*, 3(2) : 144.

11. *Archezogetes longisetosus* Aoki

1965. *Archezogetes longisetosus* Aoki, *Nat Life Southeast Asia*, 4 : 147.

Diagnosis : Prodorsum punctate; prodorsal and notogastral setae long, fine, densely beset with fine bristles; sensillus long, fine, densely beset with bristles, d_1 longer than their mutual distance; genital setae 7 pairs, $4a$ about half as long as $4b$; solenidia on palp sharp.

Material examined : Aizwal district : 2 ♀ ♀, Aibawk, 17.iii.1994, from forest floor litter and soil, coll. S. Basak; 2 ♀ ♀, Aizwal, Keitang, 12.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Assam, Gujarat, Kerala, Meghalaya, Sikkim, Tripura, West Bengal.

9. Family NANHERMANNIIDAE

Sellnick, 1928

11. Genus *Cyrthermannia* Balogh

1958. *Cyrthermannia* Balogh, *Rev. Zool. Bot. Aft.*, 58(102) : 3.

12. *Cyrthermannia vicinicornuta* Aoki

1965. *Cyrthermannia vicinicornuta* Aoki, *Nat. Life Southeast Asia*, 4 : 153.

Diagnosis : Prodorsum and notogaster foveolated; prodorsal setae smooth; lamellar setae short, placed very closely on tubercles; two triangular horn-like processes present on postero-median border of prodorsum; notogastral setae 14 pairs, simple and lanceolate; epimeral setae pilose; genital setae 7 pairs, simple; epimeral setal formula 3-2-3-3.

Material examined : Aizwal district : 1 ♀, Aizawl, Republic Veng, 10.x.1995, from litter and soil, coll. A. K. Sanyal; 4 ♀ ♀, Kelkang, 25 kms south of Champhai, 14.x.1995, from decomposed cowdung, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), West Bengal.

10. Family PLASMOBATIDAE

Grandjean, 1961

12. Genus *Plasmobates* Grandjean

1929. *Plasmobates* Grandjean, *Bull. Soc. Zool. Fr.*, 54(5) : 410.

13. *Plasmobates pagoda* Grandjean

1929. *Plasmobates pagoda* Grandjean, *Bull. Soc. Zool. Fr.*, 54(5) : 410.

Diagnosis : Rostrum incised; rostral setae inwards, smooth, setiform; lamellar setae very small, on small tubercle; interlamellar setae minute; baciliform, obtusely bifurcate; aggenital setae close to genital plate; ventral setae fine, short.

Material examined : Aizawl district : 1 ♀, Kolasib, from litter and soil, coll. S. Basak.

Distribution : India : Mizoram (Aizawl), West Bengal.

11. Family MICROZETIDAE

Grandjean, 1936

13. Genus *Berlesezetes* Mahunka

1980. *Berlesezetes* Mahunka, *Acta zool. Acad. Sci. Hung.*, 26(6) : 397.

14. *Berlesezetes auxiliaris* (Grandjean)

1936. *Microzetes auxiliaris* Grandjean, *Bull. Mus. Hist. Nat. Paris*, 8(2) : 138.

1980. *Berlesezetes auxiliaris* (Grandjean), Mahunka, *Acta Zool. Acad. Sci. Hung.*, 26(4) : 397.

Diagnosis : Lamellae long, folded to a sharp angle along the paraxial crest, not reaching the tip of rostrum; translamella well developed; rostral setae long, fine, smooth; apex of cuspis with incision; lamellar setae very long, stout, extended beyond the tip of rostrum, notogaster granulated.

Material examined : Lunglei district : 4 ♀ ♀, Lunglei, 25.iii.1994, from litter and soil, coll. S. Basak.

Distribution : India : Mizoram (Lunglei), Orissa, Sikkim, Tripura, West Bengal.

12. Family EREMOBELBIDAE

Balogh, 1961

14. Genus *Eremobelba* Berlese

1908. *Eremobelba* Berlese, *Redia*, 5(1) : 9.

15. *Eremobelba himalayensis* Mondal and Kundu

1984. *Eremobelba himalayensis* Mondal and Kundu, *Bull. zool. Surv. India*, 6(1-3) : 231.

Diagnosis : Rostral setae barbed unilaterally on the outside; interlamellar setae sparsely barbed bilaterally; sensillus long, filiform, barbed sparsely and unilaterally; two semilunar structures in the interpseudostigmatic region; notogastral setae 11 pairs, curved at the distal end; right half of ventral plate with 19 and left half with 16 setae; genital setae 6 pairs; epimeral setae 1a, 2a, 3a and 4a simple, others pentra or hexaradiate.

Material examined : Aizawl district : 2 ♀♀, Teirei, 21.iii.1994, from moss and soil, coll. S. Basak; 3 ♀♀, Champhai, 13.x.1995, from pine forest litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Manipur, West Bengal.

13. Family TECTOCEPHEIDAE
Grandjean, 1954

15. Genus *Tectocephus* Berlese

1913. *Tectocephus* Berlese, *Redia*, 9 : 91.

16. *Tectocephus velatus* (Michael)

1988. *Tectocephus velatus* (Michael), *Roy. Soc.*, 65.

Diagnosis : Body rough with irregularly raised dots; rostrum trifid; lamellae large detached blades, lying nearly horizontal, extend beyond the lateral margin of the cephalothorax, median portion broad, cusps narrow or thick, almost reaching the tip of rostrum; translamella distinct; rostral and lamellar setae curved inward and barbed unilaterally; interlamellar setae minute, smooth, inserted near the base of lamellae; sensillum long with slender stalk, head licheniform, dorsosejugal suture interrupted; paired *iad* large, placed parallel to the anterior part of the lateral side of anal field.

Material examined : Aizawl district : 2 ♀♀, Aibawk, 18.iii.1994, from litter and soil, coll. S. Basak; 3 ♀♀, Teirei, 22.iii.1994, from litter and soil, coll. S. Basak; 3 ♀♀, Aizawl, Tuirial, 11.x.1995, from litter and soil, coll. A. K. Sanyal; 2 ♀♀, Champhai, 13.x.1995, from pine forest litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Bihar, Gujarat, Himachal Pradesh, Manipur, Meghalaya, Sikkim, Tripura, West Bengal.

14. Family OTOCEPHEIDAE
Balogh, 1961

16. Genus *Dolicheremaeus* Jacot

1938. *Dolicheremaeus* Jacot, *Florida Ent.*, 21(4) : 51.

Key to the species of *Dolicheremaeus*

- 1(2) Median prodorsal condyle semilunar-shaped; sensillus lanceolate *himalayensis* Chakrabarti, Bhaduri and Kundu, 1981
- 2(1) Median prodorsal condyle form a frame-like structure; sensillus filiform
..... *nepalensis* Aoki, 1967

17. *Dolicheremaeus himalayensis* Chakrabarti, Bhaduri and Kundu

1981. *Dolicheremaeus himalayensis* Chakrabarti, Bhaduri and Kundu, *Mitt. Zool. Mus. Berlin*, 57(1) : 15.

Diagnosis : Rostral and lamellar setae unilaterally barbed on outside; interlamellar setae bilaterally barbed; sensillus slender, lanceolate; notogastral setae 10 pairs, bilaterally finely barbed; genital setae 4 pairs.

Material examined : Lunglei district : 1 ♀, Lunglei, 25.iii.1994, from moss and soil, coll. S. Basak; Aizawl district : 3 ♀♀, Kolasib, 28.iii.1994, from litter and soil, coll. S. Basak.

Distribution : India : Mizoram (Aizawl, Lunglei), Manipur, Sikkim, West Bengal.

18. *Dolicheremaeus nepalensis* Aoki

1967. *Dolicheremaeus nepalensis* Aoki, *Bull. natn. Sci. Mus., Tokyo*, 10 : 329.

Diagnosis : Rostral and lamellar setae barbed, terminating in fine tips; interlamellar setae blunt at tips, finely barbed; sensillus filiform, apex pointed; anterior extension of *co. pm.* on each side forms a frame-like suture; *co. nl.* sharply triangular; genital setae 4 pairs.

Material examined : Aizawl district : 3 ♀ ♀, Aizawl, Zemabawk, 11.x.1995, from litter and soil, coll., A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), West Bengal.

19. *Dolicheremaeus* sp.

Material examined : Aizawl district : 4 ♀ ♀, Aizawl, Tuirial, 11.x.1995, from litter and soil, coll. A. K. Sanyal.

Remark : The specimens were not in good condition, hence specific identification was not possible.

15. Family OPPIIDAE Grandjean,
1954

1977. *Arcoppia* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 21(4) : 32.

20. *Arcoppia bidentata* Hammer

1979. *Arcoppia bidentata* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 22(9) : 29.

Diagnosis : The tip of rostrum tripartite; rostral setae slightly rough, twice as long as their mutual distance; lamellar arch incomplete; lamellar setae short, smooth, little shorter than their mutual distance; interlamellar setae thick, longer than rostral setae; a light furrow in front of interlamellar setae; sensillus with moderately long stalk having angular head with one long branch and two tiny tips or teeth; integument on the sides of prodorsum covered with tubercles; notogastral setae slightly

rough, different in lengths, *ti*, *te*, *ms* longer than remainder, *r*₂ longer than *r*₁, *r*₃ and *p*₁-*p*₃; genital setae 6 pairs, short; aggenital setae longer than adanal setae.

Material examined : Aizawl district; 12 ♀ ♀, Aizawl, Tuirial, 11.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Tripura.

17. Genus *Hexoppia* Balogh

1958. *Hexoppia* Balogh, *Rev. Zool. Bot. Afr.*, 58 : 1-34.

21. *Hexoppia heterotricha* Balogh

1958. *Hexoppia heterotricha* Balogh, *Rev. Zool. Bot. Afr.*, 58 : 1-34.

Diagnosis : Crista strongly developed, extending posteriorad at least to 1/3 of notogastral length; 3 pairs of notogastral setae essentially longer and thicker than all other ones.

Material examined : Aizawl district : 1 ♀, Aizawl, Sirang, 10.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl).

19. *Multioppia* Hammer

1961. *Multioppia* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 61.

22. *Multioppia gracilis* Hammer

1972. *Multioppia gracilis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 19(3) : 30.

Diagnosis : Rostral setae proximally barbed; lamellar setae smooth, shorter than their mutual distance; interlamellar setae smooth, little longer than lamellar setae; three pairs of light spots in between interlamellar setae; exopseudostigmatic setae slightly barbed, situated on low tubercles; sensillus very long, slender secondary branches on a thin stalk; notogaster broad, circular; notogastral setal 12 pairs, short, smooth; sternum

well developed; epimeres faintly reticulated; epimeral setal formula 3 : 1 : 2 : 3; distance between genital and anal fields less than twice the length of genital field; genital setae 5 pairs; *iad* parallel to sides of anal field; genital, anal and adanal setae smooth.

Material examined : Aizawl district : 3 ♀ ♀, Champhai, 13.x.1995, from pine forest litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Tripura.

20. Genus *Oppia* Koch

1836. *Oppia* Koch, *Deutschlands Crustaceen, Myriapoden und Arachniden*, 1-9.

23. *Oppia yodai* Aoki

1965. *Oppia yodai* Aoki, *Nat. Life Southeast Asia*, 4 : 169.

Diagnosis : Prodorsal setae finely barbed; lamellar setae twice as long as their mutual distance; interlamellar setae directed backwards; sensillus spindleshaped, beset with fine bristles; one pointed protrusion behind the bothridium; notogastral setae 5 pairs.

Material examined : Aizawl district : 4 ♀ ♀, Kolasib, 28.iii.1994, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Manipur, Sikkim, Tripura, West Bengal.

16. Family CHAUNOPROCTIDAE Balogh, 1961

21. Genus *Chaunoproctus* Pearce

1906. *Chaunoproctus* Pearce, *Journ. Roy Micro. Soc.*, 271.

24. *Chaunoproctus clavisetosus* Bhaduri, Bhattacharya and Chakraborti

1975. *Chaunoproctus clavisetosus* Bhaduri, Bhattacharya and Chakraborti, *Mitt. Zool. Mus. Berlin*, 51(1) : 60.

Diagnosis : Rostral setae mounted on apophyses; rostral and lamellar setae barbed;

interlamellar setae club-shaped, densely feathered; sensillus with granulated rounded head; notogastral setae 10 pairs, setose, clavate; genital plates trapezoid in shape with 6 pairs of setae.

Material examined : Lunglei district : 2 ♀ ♀, Lunglei, 25.iii.1994, from moss and soil, coll. S. Basak; 3 ♀ ♀, Aizawl, Zemabawk, 11.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl, Lunglei), West Bengal.

17. Family XYLOBATIDAE J. Balogh and P. Balogh, 1984

22. Genus *Xylobates* Jacot

1929. *Xylobates* Jacot, *Trans. Amer. Micr. Soc. Menasha*, 48 : 429.

25. *Xylobates seminudus* Hammer

1971. *Xylobates seminudus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 16 : 38.

Diagnosis : Rostral setae unilaterally barbed; lamellar and interlamellar setae also barbed; sensillus with long stalk and lanceolate head, both of which beset with long bristles on outer border; notogastral setae 10 pairs represented by pores on the dorsum; ventral setae present; genital setae 5 pairs.

Material examined : Aizawl district : 3 ♀ ♀, Aizawl, Zemabawk, 11.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Manipur, Meghalaya, Sikkim, Tripura, West Bengal.

18. Family HAPLOZETIDAE Grandjean, 1936

Key to the genera of Haplozetidae

- 1(2) 14 pairs of notogastral setae; dorsosejugal suture with three arches
..... *Rostrozetes* Sellnick, 1925

- 2(1) 10 pairs 1 of notogastral setae; dorsosejugal suture with a single arc
..... *Phalacrozetes* Aoki, 1965

23. Genus *Phalacrozetes* Aoki

1965. *Phalacrozetes* Aoki, *Nat. Life Southeast Asia*, 4 : 188.

26. *Phalacrozetes sinatus* Aoki

1965. *Phalacrozetes sinatus* Aoki, *Nat. Life Southeast Asia*, 4 : 188.

Diagnosis : Rostral setae rough, directed inward; lamellar setae on the tip of lamellar cuspis, minute; interlamellar setae very minute; sensillus directed backward, spindle-shaped, distal end pointed; head beset with fine setae; notogastral setae represented by 10 pairs of alveoli; *At* elliptical and placed on dorsosejugal suture; *ps*₁ distinct; genital setae 5 pairs.

Material examined : Aizawl district : 2 ♀ ♀, Aizawl town, 15.iii.1994, from litter and soil, coll. S. Basak.

24. Genus *Rostrozetes* Sellnick

1925. *Rostrozetes* Sellnick, *Suppl. Ent. Berlin*, 11 : 84.

Key to the species of *Rostrozetes*

- 1(2) Prodorsum and notogaster foveolated
..... *foveolatus* Sellnick, 1925
2(1) Prodorsum and notogaster punctated
..... *punctatus* Karppinen, 1966

27. *Rostrozetes foveolatus* Sellnick

1925. *Rostrozetes foveolatus* Sellnick, *Suppl. Ent. Berlin*, 11 : 84.

Diagnosis : Body distinctly foveolated; prodorsal setae long, thin, unilaterally finely barbed; sensillus with swollen brush-like head; notogastral setae 10 pairs, short, fine; distance between *t*₁-*ms* and *ms*-*h*₃ almost same; genital setae 5 pairs, minute, fine.

Material examined : Aizawl district : 10 ♀ ♀, Champhai, 13.x.1995, from litter and soil, coll. A. K. Sanyal; 5 ♀ ♀, Kelkang, 25 kms south of Champhai, 14.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Himachal Pradesh, Meghalaya, Sikkim, West Bengal.

28. *Rostrozetes punctatus* Karppinen

1966. *Rostrozetes punctatus* Karppinen, *Ann. ent. Fenn.*, 32(4) : 280.

Diagnosis : Body punctated; rostral and lamellar setae curved sharply medially; 10 pairs of notogastral setae, minute.

Material examined : Aizawl district : 3 ♀ ♀, Kolasib, 28.iii.1994, from litter and soil, coll. S. Basak.

Distribution : India : Mizoram (Aizawl), Tripura, West Bengal.

29. Family SCHELORIBATIDAE Grandjean, 1953

25. Genus *Scheloribates* Berlese

1908. *Scheloribates* Berlese, *Redia*, 5 : 2.

Key to the genera of *Scheloribates*

- 1(2) All tarsi monodactylous; apodemata III and IV meet each other and abutting anterior rim of genital capsule; notogaster longer than broad; sensillus long and lanceolate, the head reaching the lateral margin of pteromorph
..... *natalensis* Pletzen, 1963
2(1) All tarsi tridactylous; apodemata III and IV never meet each other.
3(4) Hysterosoma as broad as long; lamellar setae thinner than rostral setae; sensillus with short stalk and disc-shaped head
..... *albialatus* Hammer, 1961

- 4(3) Hysterosoma longer than broad.
 5(6) Prodorsal setae smooth
*indicus* Sanyal, 1992
 6(5) Prodorsal setae barbed.
 7(8) Sensillus club-shaped; lamellae thin not keel-shaped; notogastral setae minute
*praeincisus* (Berlese, 1910)
 8(7) Sensillus not club-shaped.
 9(10) Sensillus with clavate head; rostral setae on apophyses*parvus* Pletzen, 1963
 10(9) Sensillus with lanceolate head; rostral setae not on apophyses
*thermophilus* Hammer, 1961

29. *Scheloribates albialatus* Hammer

1961. *Scheloribates albialatus* Hammer, *Biol. Skr. Dan. Selsk.*, 13(1) : 94.

Diagnosis : Rostral and lamellar setae barbed; interlamellar setae smooth; sensillus with short, round, disc-shaped head set with fine scales; no setae on notogaster; chitinous pores on notogaster; genital setae 4 pairs.

Material examined : Aizawl district : 2 ♀ ♀, Kolasib, 28.iii.1994, from litter and soil, coll. S. Basak; 1 ♀, Aizawl, Republic Veng, 10.x.1995, from litter and soil coll. A. K. Sanyal, 4 ♀, Zemabawk, 10 kms from Aizawl, 11.x.1995, from litter and soil, coll. A. K. Sanyal; 4 ♀, Keifang, 50 kms south of Aizawl toward Champhai, 12.x.1995, from litter and soil, coll. A. K. Sanyal; 5 ♀, Kelkang, 25 kms south of Champhai, 14.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Gujarat, Sikkim, West Bengal.

30. *Scheloribates indicus* Sanyal

1992. *Scheloribates indicus* Sanyal, *State Fauna Series 3 : Fauna of West Bengal*, part 3 : 315.

Diagnosis : All prodorsal setae thin, smooth; sensillus with club-shaped head, directed outward

and forward; notogastral setae 10 pairs, smooth, minute; faint pockmarks on ventral surface, genital setae 4 pairs; epimeral setae minute; all tarsi tridactylous.

Material examined : Aizawl district : 1 ♀, Champhai, 13.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Manipur, West Bengal.

31. *Scheloribates natalensis* Pletzen

1963. *Scheloribates natalensis* Pletzen, *Acarologia*, 5(4) : 700.

Diagnosis : Prodorsal setae short, fine; lamellar and dorsal setae barbed throughout; distal halves of interlamellar setae unilaterally barbed; sensillus very long, with slightly thickened heads, unilaterally barbed on the anterior side; notogastral setae minute; *ad*₃ very small; genital setae 5 pairs; monodactylous tarsi.

Material examined : Aizawl district : 3 ♀ ♀, Aizawl, Pachhunga University College Campus, 10.x.1995, from litter and soil, coll. A. K. Sanyal; 5 ♀ ♀, Kelkang, 25 kms south of Champhai, 14.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Sikkim, West Bengal.

32. *Scheloribates parvus* Pletzen

1963. *Scheloribates parvus* Pletzen, *Acarologia*, 5(4) : 701.

Diagnosis : All prodorsal setae barbed; sensillus with short stalk and clavate head beset with distinct setae; *ad*₃ nearly parallel with *iad*; nearly parallel with *iad*; genital setae 4 pairs, legs tridactylous.

Material examined : Aizawl district : 5 ♀ ♀, Aizawl, 15.iii.1994, from litter and soil, coll. A. K. Sanyal; 1 ♀, Aibawk, 17.iii.1994, from forest floor litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Assam, Meghalaya, West Bengal.

33. *Scheloribates praeincisus* (Berlese)

1910. *Protoribates (Protoribates) praeincisus* Berlese, *Redia*, 6 : 384.

1925. *Protoribates (Scheloribates) praeincisus*, Sellnick, *Supplementa Entomologica*, No. 11 : 82.

Diagnosis : Prodorsal setae very long, lamellar and interlamellar setae almost equal in length; sensillus long, club-shaped; notogastral setae hardly discernible.

Material examined : Lunglei district : 19 ♀ ♀, Lunglei, 25.iii.1994, from litter and soil, coll. A. K. Sanyal. Aizawl district : 10 ♀ ♀, Kolasib, 28.iii.1994, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl, Lunglei), Tripura, West Bengal.

34. *Scheloribates thermophilus* Hammer

1958. *Scheloribates thermophilus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 10(1) : 77.

Diagnosis : All prodorsal setae finely barbed; lamellar and interlamellar setae not much longer than lamellae; sensillus with lanceolate head, pointed at tip and anterior margin set with fine setae; notogastral setae not discernible except at the posterior end of notogaster; all tarsi with 3 claws.

Material examined : Aizawl district : 41 ♀ ♀, Aizawl, 14/15.iii.1994, from litter and soil, coll. S. Basak; 9 ♀ ♀, Aibawk, 17/18.iii.1994, from forest floor litter and soil, coll. S. Basak. Lunglei district : 11 ♀ ♀, Lunglei, 25.iii.1994, from moss and soil, coll. S. Basak; 5 ♀ ♀, Aizawl, Sirang, 10.x.1995, from litter and soil, coll. A. K. Sanyal; 3 ♀ ♀, Aizawl, Pachhunga University College campus, 10.x.1995, from litter and soil, coll. A. K. Sanyal; 2 ♀ ♀, Zemabawk, 25 kms from Aizawl, 11.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl, Lunglei), Gujarat, Manipur, Meghalaya, Sikkim, West Bengal.

20. Family AUSTRACHTERIIDAE

Luxton, 1985

Key to the genera of Austrachipteriidae

- 1(2) Adanal region with 3 pairs of setae
..... *Hypozetes* Balogh, 1959
- 2(1) Adanal region with 1 or 2 pairs of setae ..
..... *Lamellobates* Hammer, 1958

27. Genus *Hypozetes* Balogh

1959. *Hypozetes* Balogh, *Acta zool. Acad. Sci. Hung.*, 5 : 15.

35. *Hypozetes laysanensis* Aoki

1964. *Hypozetes laysanensis* Aoki, *Pacific Ins.*, 6 : 655.

Diagnosis : Rostrum tricuspidate; rostral setae densely barbed on each side and situated on apophyses; lamellar and interlamellar setae minutely barbed; sensillus with a finely barbed club-shaped head; notogastral setae 10 pairs, minutely barbed; sacculi *sa* placed closer to *ti* than to *te*.

Material examined : Aizawl district : 1 ♀, Kolasib, 28.iii.1994, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Tripura, West Bengal.

27. Genus *Lamellobates* Hammer

1958. *Lamellobates* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 10(1) : 100.

Key to the species of *Lamellobates*

- 1(2) Outer lamellar cuspides extremely long and narrow *hauseri* Mahunka, 1977
- 2(1) Outer lamellar cuspides not long and narrow *palustris* Hammer, 1958

36. *Lamellobates hauseri* Mahunka

1977. *Lamellobates hauseri* Mahunka, *Rev. Suisse Zool.*, 84(1) : 247.

Diagnosis : Inner cuspides of lamellae convexly rounded, outer lamellar cuspides extremely long and narrow; lamellar setae obtuse, densely barbed; interlamellar setae attenuating, densely barbed; sensillus spatulate, heavily barbed; notogastral setae 9 pairs; genital setae 6 pairs.

Material examined : Aizawl district : 1 ♀, Kelkang, 25 kms south of Champhai, 14.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), West Bengal.

37. *Lamellobates palustris* Hammer

1958. *Lamellobates palustris* Hammer, *Biol. Skr. Dan. vid. Selsk.*, 10(1) : 100.

Diagnosis : Inner cuspides of lamella rounded, outer lamellar cuspides tapering into a short and sharp point; lamellar setae equally very thick throughout, rough; interlamellar setae long, rough; sensillus club-shaped, tip pointed, beset with short setae; notogastral setae 9 pairs, genital setae 6 pairs.

Material examined : Aizawl district : 5 ♀, Aizawl, Republic Veng, 10.x.1995, from litter and soil, coll. A. K. Sanyal; 1 ♀, Zemabawk, 10 kms from Aizawl, 11.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Gujarat, Himachal Pradesh, Meghalaya, Tripura, West Bengal.

21. Family CERATOZETIDAE Jacot,
1925

28. Genus *Ceratozetes* Berlese

1908. *Ceratozetes* Berlese, *Redia*, 5 : 4.

38. *Ceratozetes gracilis* Michael

1884. *Ceratozetes gracilis* Michael, *Roy. Soc.*, 61 : 225.

Diagnosis : Rostral setae long, stout, unilaterally finely barbed; lamellae long, inclining, broadest at the base of cusps; no translamella; lamellar setae stiff, slightly rough; interlamellar setae long, stout, unilaterally barbed; sensillus long, slender, head swollen with fine setae; notogastral setae represented by pores; genital setae 6 pairs.

Material examined : Aizawl district : 1 ♀, Aizawl, Pachhunga University College campus, 10.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Sikkim, West Bengal.

21. Family CERATOZETIDAE, Jacot,
1925

28. Genus *Ceratozetes* Berlese

1908. *Ceratozetes* Berlese, *Redia*, 5 : 4.

38. *Ceratozetes gracilis* Michael

1884. *Ceratozetes gracilis* Michael, *Roy. Soc.*, 61 : 225.

Diagnosis : Rostral setae long, stout, unilaterally finely barbed; lamellae long, inclining, broadest at the base of cusps; no translamella; lamellar setae stiff, slightly rough; interlamellar setae long, stout, unilaterally barbed; sensillus long, slender, head swollen with fine setae; notogastral setae represented by pores; genital setae 6 pairs.

Material examined : Aizawl district : 1 ♀, Aizawl, Pachhunga University College campus, 10.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl), Sikkim, West Bengal.

22. Family GALUMNIDAE Jacot,
1925

29. Genus *Galumna* von Heyden

1826. *Galumna* von Heyden, *Isis Oken*, 18 : 611.

Key to the species of Galumna

- 1(2) Sensillus with club-shaped head; *im* curved and directed antero-posteriorly; a crenate line runs across the hypostome; *gen*₁ and *gen*₂ placed on the anterior border of genital plate
.....*crenata* Deb and Raychaudhuri, 1975
- 2(1) Sensillus with long broad head; *im* straight and placed obliquely; no crenate line; *gen*₁-*gen*₃ placed on the anterior border of left part of genital plates
.....*flabellifera orientalis* Aoki, 1965

39. *Galumna crenata* Deb and Raychaudhuri

1975. *Galumna crenata* Deb and Raychaudhuri, *Annot. Zool. Japan*, 48(3) : 167.

Diagnosis : Rostral setae not found; lamellar and interlamellar setae represented by pits; sensillus club-shaped with short but stout bristles; *ad* guittiform, provided with comma-like slit on the inner end; *hy* leaf-like; *Aa* placed obliquely; *im* slightly curved, directed antero-posteriorly; notogastral setae represented by 10 pairs of pits; a crenate line runs across the hypostome; genital setae 6 pairs.

Material examined : Aizawl district : 1 ♀, Aizawl, 15.iii.1994, from litter and soil, coll. S. Basak; 1 ♀, Aibawk, 18.iii.1994, from litter and soil, coll. S. Basak. Lunglei district : 3 ♀ ♀, Lunglei, 25.iii.1994, from moss and soil, coll. S. Basak. Aizawl district : 8 ♀ ♀, Kolasib, 28.iii.1994, from litter and soil, coll. S. Basak; 1 ♀, Aizawl, Sirang, 10.x.1995, from litter and soil, coll. A. K. Sanyal; 3 ♀ ♀, Zemabawk, 10 kms from Aizawl, 11.x.1995, from litter and soil, coll. A. K. Sanyal; 2 ♀ ♀, Keifang, 50 kms south of Aizawl towards Champhai, 12.x.1995, from litter and soil, coll. A. K. Sanyal; 1 ♀, Kelkang, 25 kms south of Champhai, 14.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl, Lunglei), Manipur, Meghalaya, Sikkim, West Bengal.

40. *Galumna flabellifera orientalis* Aoki

1965. *Galumna flabellifera Orientalis* Aoki, *Nat. Life Southeast Asia*, 4 : 187.

Diagnosis : Rostral and interlamellar setae thin, short, lamellar setae very minute; sensillus with long broad head, anterior margin round and beset with spur-like bristles, posterior margin flat, without bristles; *ia* placed obliquely to the longitudinal axis of the body; areae porosae large; *gen*₁-*gen*₃ placed on the anterior border of left genital plate; *gen*₃ in right genital plate not placed on the anterior border.

Material examined : Aizawl district : 1 ♀, Aizawl, 15.iii.1994, from litter and soil, coll. S. Basak. Lunglei district : 2 ♀ ♀, Lunglei, 25.iii.1994, from litter and soil, coll. S. Basak. Aizawl district : 3 ♀ ♀, Kolasib, 28.iii.1994, from litter and soil, coll. S. Basak; 5 ♀ ♀, Aizawl Sirang, 1 ♀, .iv.1995, from litter and soil, coll. A. K. Sanyal; 7 ♀ ♀, Aizawl, Pachhunga University College Campus, 10.x.1995, from litter and soil, coll. A. K. Sanyal; 3 ♀ ♀, Zemabawk, 10 kms from Aizawl, 11.x.1995, from litter and soil, coll. A. K. Sanyal.

Distribution : India : Mizoram (Aizawl, Lunglei), Manipur, Sikkim, Tripura, West Bengal.

DISCUSSION

The oribatid mites of Mizoram was not studied by anybody till the present work was started in 1994. The present work is an overall assessment of this group of mite of Mizoram which shows that a total of 40 species under 29 genera and 22 families are known from the State. All the species are recorded here for the first time from Mizoram. The analysis of the present account shows that 9.5% of Indian oribatid fauna are known from the State. It is also noted that Oppiidae, Scheloribatidae and Galumnidae are numerically dominant families in the State of Mizoram.

SUMMARY

The paper deals with the Oribatid fauna collected from different districts of Mizoram. A

total of 40 species pertaining to 29 genera and 22 families have been recorded. All the species incorporated here are the first record from the State of Mizoram. Before undertaking the present work no species of oribatid was known from the State. Keys to identification of families, genera and species are dealt in paper. The first reference, diagnostic features and distribution of species in India have also been incorporated.

ACKNOWLEDGEMENT

The author expresses his gratefulness to Dr. J.R.B. Alfred, Director, Zoological Survey of India for encouragement and providing laboratory facilities. Thanks are also due to Shri B.J. Sarkar, Senior Zoological Assistant and Shri S. Basak, Junior Zoological Assistant, Zoological Survey of India for assistance during the study.

REFERENCES

- Balogh, J. 1972. The oribatid genera of the World. *Academiai Kiado, Budapest, Hungary*, 188 pp.
- Balogh, J. and Balogh, P. 1988. Oribatid mites of the Neotropical region I. Elsevier, Amsterdam, 335 pp.
- Balogh, J. and Balogh, P. 1990. Oribatid mites of the Neotropical region II. Elsevier, Amsterdam, 333 pp.
- Balogh, J. and Mahunka, S. 1983. Primitive oribatids of the Palaearctic region. Elsevier, Amsterdam, 372 pp.
- Sanyal, A.K. 2000. Oribatid mites (Acari : Oribatei). *State Fauna Series : Fauna of Tripura*, part 2, 33-112.
- Subias, L.S. and Balogh, P. 1989. Identification keys to the genera of Oppiidae Grandjean, 1951 (Acari : Oribatei). *Acta zool. Acad. Sci. Hung.*, 35(3-4) : 335-412.

INSECTA : HIMIPTERA : HOMOPTERA : FULGOROIDEA, CERCOPOIDEA, CICADOIDEA AND MEMBRACIDAE

B. BISWAS, M. GHOSH AND ANIMESH BAL

Zoological Survey of India, M-Block, New Alipore, Kolkata-700 053

INTRODUCTION

Homopteran insects are mainly characterized by the presence of uniformly chitinous forewings, which differs from the Heteropterans insects by having more sclerotized forewings with membranous apical portion. Homopterans also have sloping wings over the abdomen whereas wings are overlapping on the abdomen in case of Heteropterans.

This paper deals with the homopterous insects with antennae having the terminal aristae called Auchenorhyncha except Cicadellidae, which has been dealt with separately with 22 species, under 16 genera belonging to 6 families. The other series being Sternorhyncha or soft bodied Homopteran insects without terminal aristae on the antennae. In the present paper Superfamily Fulgoroidea has been reported with 3 families while a single family and 2 families represent Cicadoidea and Cercopoidea respectively whereas a single family Membracidae represents Superfamily Cicadelloidea.

The present paper gives an account of 22 species under 18 genera and 7 families. All the species are recorded for the first time from the state of Mizoram. Diagnostic characters, references and distribution in India and abroad of each species, taxonomic keys to different taxas and a chart showing district wise distribution have also been provided in this paper.

SYSTEMATIC ACCOUNT

Suborder HOMOPTERA

Superfamily FULGOROIDEA

Family 1. LOPHOPIDAE

Genus 1. *Pitambara* Distant, 1906

1. *Pitambara interrupta* Distant

Genus 2. *Corethrura* Hope, 1845

2. *Corethrura fuscovararia* Hpope

Family 2. DICTYOPHARIDAE

Genus 3. *Symplana* Kirby, 1891

3. *Symplana viridinervis* Kirby

Genus 4. *Chanithus* Kalenati, 1857

4. *Chanithus pallida* Donovan

Family 3. CIXIIDAE

Genus 5. *Oliarus* Stal, 1862

5. *Oliarus indicus* Distant

Genus 6. *Mnemosyne* Stal, 1862

6. *Mnemosyne punctipennis* (Distant)

Superfamily II CERCOPOIDEA

Family 4. APHROPHORIDAE

Genus 7. *Philagra* Walker, 1853

7. *Philagra fusiformis* (Walker)

Genus 8. *Clovia* Stal, 1866

8. *Clovia conifer* (Walker)

9. *Clovia puncta* (Walker)

Genus 9. *Peuceptyelus* Sahlberg, 1871

10. *Peuceptyelus sigilifer* (Walker)

Family 5. CERCOPIDAE

Genus 10. *Abidama* Distant, 1908

11. *Abidama producta* (Walker)

- Genus 11. *Leptaspis* Schmidt, 1911
2. *Leptaspis fulviceps* (Dallas)
- Genus 12. *Cosmoscarata* Stal, 1869
13. *Cosmoscarta dimidiata* var. *tripunctata* (Dallas)
14. *Cosmoscarta elegns* (Walker)
- Superfamily III CICADOIDEA
- Family 6. GAENINIDAE
- Genus 13. *Platylomia* Stal, 1870
15. *Platylomia assamensis* Stal
16. *Platylomia similis* Distant
17. *Platylomia nagarasinga* Distant
- Superfamily IV CICADELLOIDEA
- Family 7. MEMBRACIDAE
- Division 1. Gargararia
- Genus 14. *Ebhul* Distant, 1902
18. *Ebhul formicarius* Distant
- Genus 15. *Gargara* Amy. & Serv., 1843
19. *Gargara robusta* Distant
- Division 2. Centrotusaria
- Genus 16. *Tricentrus* Stal, 1866
20. *Tricenrrus cuneatus* Distant
- Division 3. Leptocentraria
- Genus 17. *Leptocentrus* Stal, 1866
21. *Leptocentrus taurus* (Fabr.)
- Genus 18. *Darthula* Kirk., 1900
22. *Darthula hardwickii* (Gray)

**Key to the Superfamily of the order
HOMOPTERA**

1. Wings without ambient veins, 1A & 2A of the forewings joined apically to form "Y" vein; tegulae usually present; antennal pedicle with numerous sensilla DORYLAIMINA
- Wings with ambient veins; tegulae absent 2
2. Head with distinct horns and three ocelli; hind legs elongated, slender but not saltatorial; male with conspicuous stimulatory organ at the base of abdomen CICADELLOIDEA
- Head with horns not distinct and with two ocelli; hind legs saltatorial 3

3. Head with postclypeus greatly expanded occupying most part of the face and extending on the dorsal side; hind legs with tibiae elongated and bearing one or two large lateral spines and double apical groups of small spines CERCOPOIDEA
- Head with postclypeus not greatly expanded on dorsal side; hind legs with tibiae ridged and bearing longitudinal rows of spines on lateral margin CICADELLODOIDEA
2. Odontostyle long and attenuated oesophagus with only three glands ... LONGIDOROIDEA
- Cheilostome usually thin walled without onchia or denticles 2
- Odontostyle comparatively much smaller, Oesophagus with five glands 3
3. Expanded part of Oesophagus enclosed in spiral muscular sheath BELONDIROIDEA
- Expanded part of oesophagus not enclosed in spiral muscular sheath 4

Superfamily 1 FULGOROIDEA

**Key to family of the Superfamily
FULGOROIDEA**

1. Claval vein not reaching apex, united with commissural margin near apex 2
- Claval vein continued to the apex or united with claval suture near apex, thorax tricarinate or tubercular on disk; first joint of posterior tarsi robust only moderately long .. LOPHOPIDAE
2. Face without an apical ocellus, lateral margin of the clypeus always carinate or acute DICTYOPHORIDAE
- Face usually with three ocelli, one on which is sinuate on the apex of the front; lateral margin of clypeus are convex and not carinate. CIXIIDAE

Family 1 LOPHOPIDAE

**Key to genera of the Family
LOPHOPIDAE**

1. Tegmina about three times twice as long as broad *Pitambara*
- Tegmina not twice but three times longer than broad *Corethrura*

Genus 1. *Pitambara* Distant, 1906

1906. *Pitambara* Distant, *Fauna Brit, India, Rhynchota*, 3 : 319.

1. *Pitambara interrupta* Distant

1906. *Pitambara interrupta* Distant, *Fauna Brit, India, Rhynchota*, 3 : 319.

1955. *Pitambara interruttta* : Metcalf, *General catalogue of Homoptera*, 17 : 45.

Material examined : 1 ex. Chownhu forest lunglai, Dist. Chin tui pui, 2.5.1994, A. K. Hazra & party.

General Diagnosis : Body brownish yellow; vertex with two oblique linear black central spots; pronotum and scutellum black, its central and lateral portion brownish, tegmina blackish red, its basal area deep brown and its apical area paler, crossed by broad transverse irregular blackish red fasciae with spots on basal portion of costal membrane, a large subtriangular spot on the middle lateral area two oblique reddish spots interrupted and not meeting inwardly, wings smoky brown, legs brownish and with blackish red spots, abdomen blackish red.

Length : 4 mm.

Distribution : Mizoram (Chin tui pui Dist.)

Genus 2. *Corethrura* Hope, 1845

1845. *Corethrura* Hope, *Tr. Linn. Soc.*, 19 : 135.

2. *Corethrura fuscovaria* Hope

1845. *Corethrura fuscovaria* Hope, *Tr. Linn. Soc.*, 19 : 135.

1955. *Corethrura fuscovaria* : Metcalf, *General catalogue of Homoptera*, 17 : 19.

Material examined : 1 ex., Chawnhi forest, near Lung lai, Dist. Chin tui pui, 2.4.1994, A. K. Hazra and party.

General Diagnosis : Body dark brown in color; vertex somewhat long, its anterior angles prominent, base of face appearing above as a short cephalic process; pronotum with two or three dark brown spots with the lateral area having some grayish pubescences mesonotum with four distinct

carinae, tegmina pale brownish in colour with scattered grayish pubescences; costal membrane of tegmina with three distinct blackish red spots, before apical margin irregularly lineate; wings dark brown; legs brownish yellow; abdomen brownish sometime longer than broad.

Length : 12 mm.

Distribution : Mizoram (Chin tui pui Dist.)
Assam Elsewhere : Myanmar.

Family 2 DICTYOPHARIDAE

Key to genera of the family Dictyopharidae

1. Posterior tibiae with seven spines : pro and meso sternum longitudinally sulcate
..... SYMPLANA
- Posterior tibiae with seven spines; pro and mesosternum not sulcate CHANITHUS

3. *Symplana* Kirby, 1891

1891. *Symplana* Kirby, *J. Linn. Soc. Zool.*, 24 : 136.

3. *Symplana viridinervis* Kirby

1891. *Sym. plana viridinervis* Kirby, *J. Linn. Soc. Zool.*, 24 : 136.

1946. *Symplana viridinervis* Metcalf, *General catalogue of the Homoptera*, 8 : 114.

Material examined : 2 exs., Champai, Dist. Aizawl, 5. 4. 1994, G. C. Sen & party.

Diagnostic character : Body greenish brown; vertex centrally deeply grooved; pronotum blood red; body beneath blackish red; tegmina brownish with inner margin blood red; a double series of transverse veins before apex, outermost straight, inner series obliquely angulate, upper portion beyond the transverse series obliquely veined and the lower portion longitudinally veined, wings pale brownish, legs and abdomen blackish red.

Length : 6 mm.

Distribution : Mizoram (Aizawl Dist.)

Genus 4 *Chanithus* Kolenati, 1857

1857. *Chanithus* Kolenati, *Bull. Soc. Nat. Moscow*, 30 : 427.

4. *Chanithus pallida* (Donovan)

1800. *Fulgora pallida* Donovan, *Insect of India*, : 8.
 1998. *Chanithus pallida* Ghosh & Ghosh, *State Fauna Series 4 : Fauna of Meghalaya, Part-4* : 353.

Material examined : 1 ex., 1 km east of Aibak F.R.H., Diost. Aizwal, 26.3.1994, G. C. Sen & party.

General Diagnosis : Body pale yellowish brown, eyes reddish brown; head robust, longitudinally sulcate, the ridges very prominent and six in number; cephalic process shorter; apex of cephalic process and central ridge of face subacutely rounded, pronotum and mesonotum with three yellowish carinae; mesonotum with pitchy black spots at its basal angle; tegmina glassy transparent, its venation and stigma reddish brown, legs with longitudinal pitchy black strip; abdomen yellowish brown.

Length : 22.5 mm.

Distribution : Mizoram (Dist., Aizwal), Maharashtra, Meghalaya, Sikkim, Tamil Nadu, West Bengal, Elsewhere : Borneo, Myanmar, Sri Lanka.

Family 3 CIXIIDAE

Key to genera of the family CIXIIDAE

1. Apical ocellus present on face *Oliarus*
 – Apical ocellus absent on face *Mnemosyne*

Genus 5 *Oliarus* Stal, 1862

1862. *Oliarus* Stal, *Burlimer. Ent. ziet.*, 6 : 3067.

5. *Oliarus indicus* Distant

1911. *Oliarus indicus* Distant, *A.M.N.H.* (8)8 : 735.
 1913. *Oliarus indicus* : Metcalf, *General catalogue of Homoptera*, 2 : 69.

Material examined : 2 exs., Aibak F.R.H., Dist. Aizwal, 29.3.1994, G. C. Sen & party

General Diagnosis : Body black; margin of vertex longer than broad its lateral margin strongly elevated, pronotal margin prominent, mesonotum

with five longitudinal ridges, tegmina whitish semihyaline, with deep brown shade and with narrow basal fasciae before middle to apical margin, its vein and stigma reddish brown, wings subhyaline; legs brownish yellow; abdomen black.

Length : 6 mm.

Distribution : Mizoram (Aizwal Dist.).

Genus 6. *Mnemosyne* Stal, 1866

1866. *Mnemosyne* Stal, *Hemip. Africana.*, 4 : 150.

6. *Mnemosyne punctpennis* (Distant)

1906. *Oliarus punctpennis* Distant, *Fauna Brit. India, Rhynchota*, 3 : 250.
 1936. *Mnemosyne punctpennis* : Metcalf, *General catalogue of Homoptera*, 2 : 42.

Material examined : 2 exs., Aibak F.R.H., Dist. Aizwal, 29.3.1994, G. C. Sen & party.

General Diagnosis : Body brightly red brownish, face and clypeus centrally longitudinally carinate, their lateral margins acute; pronotum centrally strongly longitudinally ridged and near each lateral margin of pronotum an obliquely carinate line; tegmina transparent, with cellular area thickly minutely setose with fuscous spots, their venation and stigma reddish brown; mesonotum with distinct longitudinal carinae; legs brownish yellow; hind tibiae with two spines; abdomen brownish yellow.

Length : 9 mm.

Distribution : Mizoram (Aizwal), Sikkim, Tamil Nadu, West Bengal, Elsewhere : Myanmar.

Superfamily II CERCOPOIDEA

Key to families of the Superfamily CERCOPOIDEA

1. Anterior margin of pronotum rounded or angulate; eyes moderately transverse, scutellum flat & triangular APRHOPHORIDAE
 – Anterior margin of pronotum straight; eyes as long as broad CERCOPIDAE

Family 4 APHROPHORIDAE

Key to the genera of the family
APHROPHORIDAE

1. Vertex of head as long as broad, subangularly or elongately produced; ocelli nearer to each other than to eyes; face centrally carinate
..... *Philagra*
- Vertex of head wider than length; convexly rounded anteriorly 2
2. Head and pronotum with a single central longitudinal carination *Peuceptyleus*

Genus 7 *Philagra* Walker, 1854

1853. *Philagra* Walker, *List of Homopterous insects in the coll. of Brii. Mus.*, 3 : 731.

7. *Philagra fusiformis* (Walker)

1858. *Cyrene fusiformis* Walker, *List Hem. Suppl.*, 47.
1994. *Philagra fusiformis* : Biswas, Ghosh and Ghosh, *State fauna Series 4 : Fauna of Meghalaya, part-4* : 477.

Material examined : 1 ex., Chin tui pui, 3.4.1994, S. K. Ghosh & M. Prasad.

Diagnostic character : Body, legs, abdomen, tegmina ochraceous; tegmina with scattered fuscous markings, head above strongly tricarinate with the apex slightly recurved, facecentrally carinate with the posterior area transversely striate.

Length : Excluding tegmina 10-14 mm.;
Expansion tegmina 18-27 mm.

Distribution : Mizoram (Chin tui pui Dist.), Arunachal Pradesh, Assam, Sikkim. Elsewhere : China, Myanmar.

Genus 8. *Clovia* Stal, 1866

1866. *Clovia* Stal, *Hem. Afr.*, 4 : 75.

8. *Clovia conifer* (Walker)

1851. *Ptyelus conifer* Walker, *List. Hem.*, 3 : 711.
1908. *Clovia conifer* : Distant, *Fauna Brit. India*, 4 : 93.
1996. *Clovia conifer* : Biswas, Ghosh and Basu, *State fauna series 3 : Fauna of West Bengal, Part-5* : 17.

Material examined : 4 exs., Teivei, Dist. Aizwal, 9.11.95, M. S. Sishodia and party; 2 exs., Teivei, Dist. Aizwal, J. K. Jonathan & party; 2 exs, Chin tui pui, Dist. Chin tui pui, 3.4.1994, S. K. Ghosh & party; Lung Lai, Dist. Lung Lai 3.4.94, A. K. Hazra & party; 3 exs. Aibwak, Aizwal, 29.3.1994, G. C. Sen & party; 2 exs., Kwanpur, 13.11.95, M. S. Sishodia & party; 1 ex., Dampa, Dist. Aizwal, 9.10.95, M. S. Sishodia & party.

Diagnostic character : Body testaceous or fuscous, flavescent, face castaneous with ochraceous margins, lateral areas of sternum castaneous with ochraceous longitudinal fascia; tegmina with median large and a larger apical, costal, hyaline spot, head between the eyes subtriangularly rounded, its length almost as long as center of pronotum which is posteriorly sinuate.

10. *Clovia conifer* (Walker)

1851. *Ptyelus conifer* Walker, *List. Homopterous insects in the coll. of Brit. Mus.*, 3 : 718.
1908. *Clovia puncta* : Distant, *Fauna Brit. India*, 4 : 94.
1994. *Clovia puncta* : Biswas, Ghosh and Ghosh, *State Fauna Series 5 : Fauna of West Bengal, Part-4* : 476.

Material examined : 2 exs., East of S.C.R.H. Champai, Dist. Aizwal, 3.4.94, G. C. Sen & party; 2 exs., 1 Km. East of S.C.R.H., Champai, Dist. Aizwal, 22.3.94, G. C. Sen & party.

Diagnostic character : Testaceous covered with large deep, round, brown pits; head brown, but the central carina and a spot on each side behind and broader of scutellum pale; some smooth spaces surrounded with brown area in front of pronotum; face with deep brown punctures in transverse rows, a pale spot broadened with darker areas sometime visible in the middle of the tegmina.

Length : 7-7.5 mm.

Distribution : Mizoram (Aizwal Dist.).

Family CERCOPIDAE

Key to genera of the family CERCOPIDAE

1. Anterior legs elongate, anterior femora longly passing the lateral margin of body; head in male longly acute produced in front of eyes
..... *Abidama*

- Anterior legs of moderate length, anterior femora only slightly passing the lateral margin of body 2
- 2. Posterior margin of pronotum foliaceous and without any protuberances
..... *Leptataspis*
- Posterior margin of pronotum not foliaceous, its greatest breadth about two thirds of its length
..... *Cosmoscarta*

Genus 10 *Abidama* Distant, 1908

1908. *Abidama* Distant, *Fauna Brit. India*, 4 : 144.

11. *Abidama producta* (Walker)

1851. *Sphenorthina producta* Walker, *List of Homopteran insects in the coll. of Brit. Mus.*, 3 : 189.

1994. *Abidama producta* : Biswas, Ghosh and Basu, *State Fauna Series, 4 : Fauna of West Bengal, part-5* : 6.

Material examined : 3 exs., Champai, Dist. Aizwal, 15.10.1995 A. K. Sanyal and party; 3 es., Paechen, 10.10.1995, A. K. Sanyal & party, 2 exs., Twiriai, Dist. Aizwal, 11.10.1995, A. K. Sanyal & party; 1 ex., Lalan, Dist. Aizwal, 1.12.1995, P. Parui & party.

General Diagnosis : Head, pronotum, scutellum, abdomen beneath black; apex of scutellum and tegmina rufotestaceous but the apical margin of tegmina black, metasternum and legs dark blood reddish, apices of the tibiae and tarsi piceous; wings hyaline with the veins dark.

Length : Including tegmina 7-8 mm.

Distribution : Mizoram (Aizwal Dist.), Assam, Bihar, Uttar Pradesh; Elsewhere : China, Myanmar, Nepal.

Genus 11. *Leptataspis* Schmidt, 1911

1911. *Leptaspis* Schmidt, *Stett. Ent. Zeit.*, 72 : 81.

12. *Leptaspis fulviceps* (Dallas)

1850. *Cercopis fulviceps* Dallas, *Ent. Soc. London Trans.*, 2(1) : 10.

1974. *Leptaspis* (= *Cosmoscarta*) *fulviceps* : Biswas, Ghosh and Basu, *State Fauna Series, 3 : Fauna of West Bengal, part-5* : 13.

Material examined : 1 ex., Champai, Dist. Aizwal, 30.10.1991, J. K. Jonathan & party.

Diagnostic character : Head, pronotum and lateral margin of pronotum luteous, abdomen above, body beneath, tegmina black; tegmina with a short sanguineous basal streak to clavus, pronotum with three transverse foveations before anterior margin, one central and other two behind it on each side.

Genus 12 *Cosmoscarta* Stal, 1869

1869. *Cosmoscarta* Stal, *Hem. Fabr.*, 2 : 111.

Key to species of the genus *Cosmoscarta*

1. Pronotum with a pale transverse fascia or with pale discal spots, tegmina black with two angulated transverse fasciae, the first at about middle and the second broken, near apical area sanguineous *dimidiata*
- Pronotum unicolorous, tegmina black with a short slender basal longitudinal streak, a broader curved fascia at base of clavus and a transverse fascia before apical area testaceous red
..... *egens*

13. *Cosmoscarta dimidiata* var. *tripunctata* (Dallas)

1866. *Cercopis dimidiata* Dallas, *Tr. E. S.*, : 11.

1908. *Cosmoscarta dimidiata* : Distant, *Fauna Brit. India*, 4 : 136.

1999. *Cosmoscarta dimidiata* var. *tripunctata*; Biswas, B, Ghosh, M & Ghosh, L. K., *State fauna Series, 4 : Fauna of Meghalaya, Part-4* : 469.

Material examined : 1 ex., Champai, Aizwal, 15.10.1995, A. K. Sanyal & party.

Diagnostic character : Head, pronotum, scutellum sternum, legs, black; pronotum with a transverse ochraceous fascia on disk nearer to anterior margin; abdomen bluish black with segmental margin brownish, tegmina black with two sanguineous fasciae first at middle and the second broken near apical area; mesonotum with two flattened sub triangular tubercle.

Length : Excluding tegmina 5-8 mm.; Expansion tegmina 27-33 mm.

Distribution : Mizoram (Aizwal Dist.), Assam, Nagaland, Sikkim, West Bengal, Elsewhere; China, Myanmar, Oriental region.

Superfamily III. CICADOIDEA

Family 6. GAENINIDAE

Genus 13. *Platylomia* Stal, 1870

1870. *Platylomia* Stal, *Ovf. Vet.-Ak. Forh.*, : 708.

Key to species of the genus *Platylomia*

1. Opercula in male with their apices rounded 2
 - Opercula in male with their apices obtusely angulate and just passing the posterior margin of the penultimate abdominal segment; tegmina without the marginal spots at the apices of the longitudinal veins to apical area *assamensis*
2. Opercula in male not reaching penultimate abdominal segment; the venation of the tegmina greenish ochraceous; costal membrane greenish *similis*
 - Opercula in male reaching base of the last abdominal segment; venation of tegmina ochraceous or fuscous; costal membrane ochraceous *nagarasingna*

15. *Platylomia assamensis* Distant

1905. *Platylomia assamensis* Distant, *A. M. N. H.* (7) 15 : 65.

1963. *Platylomia assamensis* : Metcalf, *General catalogue of Homoptera*, 8 : 614.

Material examined : 1 ex., Ruantlang, Dist. Aizwal, 22.10.93, A. R. Lahiri & party.

General Diagnosis : Body greenish brown; vertex, lateral margin of head, front, black; pronotum with two central mesonotum with two obconical central black spots and a central black fascia in front of cruciform elevation, the apices of the opercula obtusely angulate; tegmina short without marginal spots and the marginal veins smoky brown in colour, legs brownish, abdomen black.

Length : 40 mm.

Distribution : Mizoram (Aizawl), Assam, Uttar Pradesh.

16. *Platylomia similis* (Distant)

1888. *Dundubia similis* Distant, *A. M. N. H.* (6) : 292.

1963. *Platylomia similis* : Metcalf, *General catalogue of Homoptera*, 8 : 625.

Material examined : 1 ex., Ruatlong, Aizawal, 22.9.1993, A. R. Lahiri & party coll.

General Diagnosis : Body pale-greenish; head and the area of ocelli blackish red in colour, posterior and anterior margin of pronotum black, mesonotum with two longitudinal black fasciae on each side of which a short oblique black fascia at outer margin; cruciform with two black spots at front side, tegmina and wings hyaline, its venation greenish brown its costal membrane greenish, abdomen with short, broad oblique chalky white tomentose fascia; legs pale greenish brown.

Length : 50 mm.

Distribution : Mizoram (Aizawal), Assam, Sikkim.

17. *Platylomia nagarasingna* (Distant)

1881. *Dundubia nagarasingna* Distant, *Jr. E. S.*, : 635.

1963. *Platylomia nagarasingna* : Metcalf, *General catalogue of the Homoptera*, 8 : 622.

Material examined : 2 exs., Lawngtlai, chin tui pui, 18.9.1999, A. R. Lahiri coll.

Diagnostic characters : Body brownish, an oblique brownish fascia on each side of ocelli at central position on front of vertex, pronotum with a central brownish fascia; two anterior central black obconical blackspot and basal cruciform elevation present on mesonotum; tegmina hyaline, its costal membrane brownish; its venation blackish red, legs light brown; abdomen tomentose and greyish pilose.

Length : 36 mm.

Distribution : Mizoram (Chikntuipui), Tamil Nadu. Elsewhere : China, Japan, Myanmar.

Superfamily IV. CICADELLOIDEA

Family 7. MEMBRACIDAE

Key to division of the family
MEMBRAEIDAE

1. lateral process of the pronotum absent or at least practically obsolete; scutellum complete *Gargararia*
- lateral process of the pronotum present 2
2. Wings have three apical area..... *Centrotusaria*
- Wings have four apical areas, scutellum transverse, nearly equally as long as broad, the apex broad, sinuate or truncate and on each side prominently durtate *Leptocentraria*

Division 1. GARGARARIA

Key to the genera of the division
Gargararia

1. Posterior pronotal process strongly sinuate
..... EBHUL
- Posterior pronotal process straight; veins to the apical area of tegmina straight.... GARGARA

Genus 14. *Ebhul* Distant, 1902

1902. *Ebhul* Distant, *Fauna Brit India*, 4 : 59.

18. *Ebhul formicarius* Distant

1916. *Ebhul formicarius* Distant, *Fauna Brit. India*, 6.

Diagnostic characters : Head pronotum brownish, sternum and legs dark brownish ochraceous, feimora piceous; abdomen beneath piceous, segmental margins ochraceous, legmina brownish with greyish markings which are more prominent in apical area; pronotum strongly elevated at base and apex is strongly foveate with the margin ridged. The posterior process sinuately waved arched at base and separated from the scutellum, which is slightly longer than broad with its apex slightly recurved.

Length : 5.5 mm.

Distribution : Mizoram (Aizawl); Elsewhere : Myanmar.

Genus 15. *Gargara* Amy & Serv. 1843

1843. *Gargara* Amy & Serv., *Hem.*, : 537.

19. *Gargara robusta* Distant

1902. *Gargara robusta* Distant, *Fauna Brit India*, 4 : 61.

Material examined : 1 ex., Aibak, Aizawl, 17.11.1995; M. S. Shishodia & party coll.

Diagnostic characters : Body beneath, head, pronotum black; tegmina subhyaline, black at base and punctate at extreme apical margin and near the end of clavus a pale brownish transverse spot; posterior process short and robust only just passing the apex of the claval area, centrally and laterally carinate.

Length : 3.5 mm; breadth lateral pronotal angle 2 mm.

Distribution : Mizoram (Aizawl); West Bengal.

Division II CENTROTUSARARIA

Genus 16. *Tricentrus* Stal, 1866

1866. *Tricentrus* Stal, *Hem. Afr.*, 4 : 89.

20. *Tricentrus cuneatus* Distant

1902. *Tricentrus cuneatus* Distant, *Fauna Brit. India*, 4 : 56.

Material examined : 1 ex., Dampa, Aizawl, 9.11.1995, M. S. Shishodia coll.

Diagnostic characters : Body black, tegmina subhyaline, veins fuscons, apical area bronzy brown, base black, transverse lateral prouss not carinate, broad, slightly directed upward, their apices broadly obliquely truncate, ridged, posterior proeus centrally carinate, broad, robust, reaching the posterior angle of the inner margin.

Length : 7 mm. breadth lat. Pronotal process 4.5 mm.

Distribution : Mizoram (Aizawl); West Bengal.

Division III LEPTOCENTRARIA

Genus 17. *Leptocentrus* Stal, 18661866. *Leptocentrus* Stal, *Hem. Afr.*, 4 : 87 & 90.21. *Leptocentrus taurus* (Fabr.)1775. *Membraeis taurus* Fabr., *Syst. Ent.*, : 676.1902. *Leptocentrus taurus* : Distant, *Fauna Brit. India*, 4 : 28.*Material examined* : 1 ex., Dampa, Aizawl, 9.11.1995, M. S. Shishodia coll.*Diagnostic characters* : Body beneath, head, pronotum thickly punctate, in fresh specimens pale ochraceously pilose; posterior pronotal process strongly tyricarinate above; curved and apically touching the interior margin of tegmina; transverse process robust, strongly recurved above tricarinate.*Length* : 6-8 mm. width lateral pronotal process 5.6 mm.*Distribution* : Mizoram (Aizawl); Assam, Sikkim, West Bengal; Elsewhere : Borneo.

Division II CENTROTUSARARIA

Genus 16. *Tricentrus* Stal, 18661866. *Tricentrus* Stal, *Hem. Afr.*, 4 : 89.20. *Tricentrus cuneatus* Distant1902. *Tricentrus cuneatus* Distant, *Fauna Brit. India*, 4 : 56.*Material examined* : 1 ex., Dampa, Aizawl, 9.11.1995, M. S. Shishodia coll.*Diagnostic characters* : Body black, tegmina subhyaline, veins fuscons, apical area bronzy brown, base black, transverse lateral prouss not carinate, broad, slightly directed upward, their apices broadly obliquely truncate, ridged, posterior proeus centrally carinate, broad, robust, reaching the posterior angle of the inner margin.*Length* : 7 mm. breadth lat. Pronotal process 4.5 mm.*Distribution* : Mizoram (Aizawl), West Bengal.

Division III LEPTOCENTRARIA

Genus 17. *Leptocentrus* Stal, 18661866. *Leptocentrus* Stal, *Hem. Afr.*, 4 : 87 & 90.21. *Leptocentrus taurus* (Fabr.)1775. *Membraeis taurus* Fabr., *Fauna., Syst. Ent.*, : 676.1902. *Leptocentrus taurus* : Distant, *Fauna Brit. India*, 4 : 28.*Material examined* : (ex.) Jairei, xi. 1995, M. S. Shishodia coll.*Diagnostic characters* : Body beneath, head, pronotum black; pronotum thickly punctate, in fresh specimens pale ochraceously pilose; posterior pronotal process strongly tyricarinate above; curved and apically touching the interior margin of tegmina; transverse process robust, strongly tyricarinate above; curved and apically touching the interior margin of tegmina; transverse process robust, strongly recurved above tricarinate.*Length* : 7 mm. breadth lat. Pronotal process 4.5 mm.*Distribution* : Mizoram (Aizawl), West Bengal

Division III LEPTOCENTRARIA

Genus 17. *Leptocentrus* Stal, 18661866. *Leptocentrus* Stal, *Hem. Afr.*, 4 : 87 & 90.21. *Leptocentrus taurus* (Fabr.)1775. *Membraeis taurus* Fabr., *Fauna., Syst. Ent.*, : 676.1902. *Leptocentrus taurus* : Distant, *Fauna Brit. India*, 4 : 28.*Material examined* : (ex.) Jairei, xi. 1995, M. S. Shishodia coll.*Diagnostic characters* : Body beneath, head pronotum black; pronotum thickly punctate, in fresh specimens pale ochraceously pilose; posterior pronotal process strongly tyricarinate above; curved and apically touching the interior margin of tegmina; transverse process robust, strongly recurved above tricarinate.

Length : 6-8 mm. width lateral pronotal process 5.6 mm.

Distribution : Mizoram (Aizawl), Assam, Sikkim, West Bengal; Elsewhere : Borneo.

Genus 18. *Darthula* Krik, 1900

1900. *Darthula* Krik., *Entomologist* : 242.

22. *Darthula hardwicki* (Gray)

1832. *Urophora hardwicki* Gray, Griff, *Anim. Kingd. Ins.*, 2 : 261.

1902. *Darthula hardwicki* : Distant, *Fauna Brit. India*, 4 : 78.

Material examined : 7 exs., sairep, Lunglei, 24.iv.1995. T. P. Bhattacharjee coll.; 25 exs., sairep Lunglei, 24.iv.1995, S. S. Saha & Party coll.

Diagnostic characters : Pronotum and scutellum ferruginous or piceous brown, finely punctate; central carination laminately raised; ligmina ferruginous or piceous brown abdomen above with segmental margins more or less ochraceous posterior process piceous or piceous brown, clothed with erect bristly hairs.

Length : Exch post process 12-17 mm.; post process 13-17 mm. Exp. Tegmina 26-33 mm.

Distribution : Mizoram (Lunglei), Assam, Meghalaya, Nagaland, West Bengal.

Elsewhere : Nepal, Myanmar.

SUMMARY

This paper deals with 22 species under 18 genera belonging to 4 super families of the sub-order Homoptera from the State of Mizoram. Keys to the various taxas, original references, diagnostic characters, distribution of each species in India as well as abroad have been incorporated in the present paper. A chart showing the districtwise distribution of each species has also been cited. All the species dealt with in this paper, have been recorded for the first time from the State.

ACKNOWLEDGEMENT

The authors are grateful to Dr. J.R.B. Alfred, the Director, Zoological Survey of India for extending laboratory facilities. Sincere thanks are also due to Dr. A.K. Hazra, Scientist-SF (Retd.) for numerous courtesies. Various helps extended by the staff of the Hemiptera section are also thankfully acknowledged.

REFERENCES

- Biswas, B., Ghosh, M. and Basu, R. C. 1994. *Fauna of West Bengal, State Fauna Series*, 3(Part-5) : 1-27.
- Biswas, B., Ghosh, M and Ghosh, L. K. 1999. *State Fauna of Meghalaya part-4* : 463-485.
- Distant, W. L., 1906. *The fauna of British India, including Ceylon & Burma, Rhynehota, Homoptera*, 3 : 175-491.
- Distant, W. L., 1908. *The fauna of British India including Ceylon & Butms, Rhynchota, Homoptera*, 4 : 1-490.
- Distant, W. L., 1911. *Rhynchota from the Solomon Islands Ann. And Mag. Nat. Hist.*, 8(8) : 384-388.
- Distant, W. L., 1916. *The fauna of British India including Ceylong & Burma, Rhynchota, Homoptera*, 6 : 1-248.
- Ghosh, M. and Ghosh, L. K. 1999. Metcalf, Z. P. 1936. *General catalogue of Homoptera Fascide II. Agric. Res. Ser.*, : 1-269.

- Metcalf, Z. P., 1947. *General catalogue of Homoptera* Fascide VIII. Fulgoridae, *Agric. Res. Serv.*, : 1-246.
- Metcalf, Z. P. 1955. *General catalogue of Homoptera* Fascide XVII. Fulgoridae, *Agric. Res. Serv.*, : 1-84.
- Metcalf, Z. P. 1960. *General catalogue of Homoptera* Fascide VII, Cercopoidea, Part-I, *Machaerotidae* Raleigh, North Carolina : 1-608.
- Metcalf, Z. P. 1962. *General catalogue of the Homoptera* Fascide VII. Cercopoidea. Part-II. *Cercopidae* Raleigh, North Carolina : 1-608.
- Metcalf, Z. P. 1962. *General catalogue of the Homoptera* Fascide VII, Cercopoidea Part-III. *Aphrophoridae* Raleigh, North Carolina : 1-597.

Sl. No.	Name of the species	Districts of Mizoram		
		Aizawl	Lunglei	Chin Tui Pui
	Super family FULGOROIDEA Family LOPHOPIDAE			
1.	<i>Pitambara interrupta</i> Distant	-	-	+
2.	<i>Corethrura fuscovaria</i> Hope	-	-	+
	Family			
3.	<i>Symplana viridinervis</i> Kirby	+	-	-
4.	<i>Chanithus pallida</i> Donovan	+	-	-
	Family CIXIIDAE			
5.	<i>Oliarus indicus</i> Distant	+	-	-
6.	<i>Mnemosyne punctipennis</i> (Distant)	+	-	-
	Super family CERCOPOIDEA Family APHROPHVRIDAE			
7.	<i>Philagra fusiformis</i> (Walker)	-	-	+
8.	<i>Clovia conifer</i> (Walker)	+	+	+
9.	<i>Clovia puncta</i> (Walker)	+	-	-
10.	<i>Peuceptyelus sigilifer</i> (Walker)	+	-	-
	Family CERCOPIDAE			
11.	<i>Abidama producta</i> (Walker)	+	-	-
12.	<i>Leptataspis fulviceps</i> (Dallas)	+	-	-
13.	<i>Cosmoscarta dimidiata</i> var <i>tripunctata</i> (Dallas)	+	-	-
14.	<i>Cosmoscarta egens</i> (Walker)	+	-	-
	Super family CICADOIDEA Family GAEANINIDAE			
15.	<i>Platylomia assamensis</i> Stal	+	-	-
16.	<i>Platylomia similes</i> Distant	+	-	-
17.	<i>Platylomia nagarasinga</i> Distant	-	-	+