

STATE FAUNA SERIES 3

FAUNA OF WEST BENGAL

PART 3

ZOOLOGICAL SURVEY OF INDIA
1992



STATE FAUNA SERIES 3

FAUNA OF WEST BENGAL

PART - 3
(ARACHNIDA AND ACARI)

Edited by
Director, Zoological Survey of India



ZOOLOGICAL SURVEY OF INDIA
1992

Copyright, Government of India, 1992

Published : November, 1992

**Project Co-ordinator :
Dr. A. K. Ghosh, Director, ZSI**

Price

**Inland : Rs. 430.00
Foreign : £ 21.00 \$ 30.00**

**Printed at PRESTECH, 39 Mahatma Gandhi Road, Calcutta - 82 and Published by the
Director, Zoological Survey of India, Calcutta**

STATE FAUNA SERIES 3

FAUNA OF WEST BENGAL
PART - 3

CONTENTS

SCORPIONS : ARACHNIDA <i>S. Ahmed</i>	.....	1
IXODID TICKS (ACARI : IXODIDAE) <i>A. K. Sanyal & S. K. De</i>	.....	17
ARACHNIDA : PLANT MITES (ACARI) <i>S. K. Gupta</i>	.....	61
ORIBATID MITES (ACARI) <i>A. K. Sanyal</i>	.....	213
ARANEAE : SPIDERS <i>Bijan Biswas & Kajal Biswas</i>	.....	357

SCORPIONS : ARACHNIDA

S. AHMED

Zoological Survey of India, Calcutta

INTRODUCTION

The study on the scorpions of West Bengal is based on the material deposited in the collection of Zoological Survey of India. First comprehensive work on Indian scorpions was done by R.I. Pocock (1900)- *The Fauna of British India*. Later on many workers like Hirst (1915) ; Henderson (1919) ; Rahimullah (1939) ; Rajtilak (1970) ; Mani (1959) ; Basu (1964) ; Couzijn, (1981) ; Tikader (1973) ; Tikader & Bastawade (1983) etc. have worked on systematics and various aspects of Indian scorpions in general. But some zones of India remained untouched by the scorpionologists. West Bengal is one of such zones whose scorpion fauna are yet to be explored. Keeping the above view in mind, the author has studied thoroughly the collections of scorpions of West Bengal present in National Zoological Collections. The result of study of scorpions from this zone reveals the presence of 14 species belonging to 8 genera referable to 5 families, of these, 8 species are new records from West Bengal.

As regards the current distribution of scorpions from West Bengal , see Map 1. It is evident the much of the district show no record or hardly record of 1-2 species of Scorpion and further survey in all likeliness will reveal more records specially from northern district of West Bengal.

SYSTEMATICS AND MORPHOLOGY

Scorpions are arthropodous animals in which the body is composed of eighteen segments and is divided into two parts—Cephalothorax and abdomen. Cephalothorax consists of six segments which are covered by a dorsal shield or carapace. The ventral surface of cephalothorax is covered with median plates or sterna. There are seven free segments in the anterior part of abdomen. The posterior part of it is called the tail consisting of five segments. At the end of the tail is a bladder like appendage extended at its tip to form a stinging spine (telson). Each of the anterior seven segments of abdomen is covered dorsally by a plate (tergum) and ventrally with a corresponding plate (Sternum).

The first paired appendages (chelicerae) are trisegmental but short ; the second pair of appendages or pedipalps are strongly developed with pincers at their tips; the walking legs show no special modifications.

The cephalic or head region is furnished with simple eyes which are usually eight in number, two being situated close together in the middle line, and three on each side.

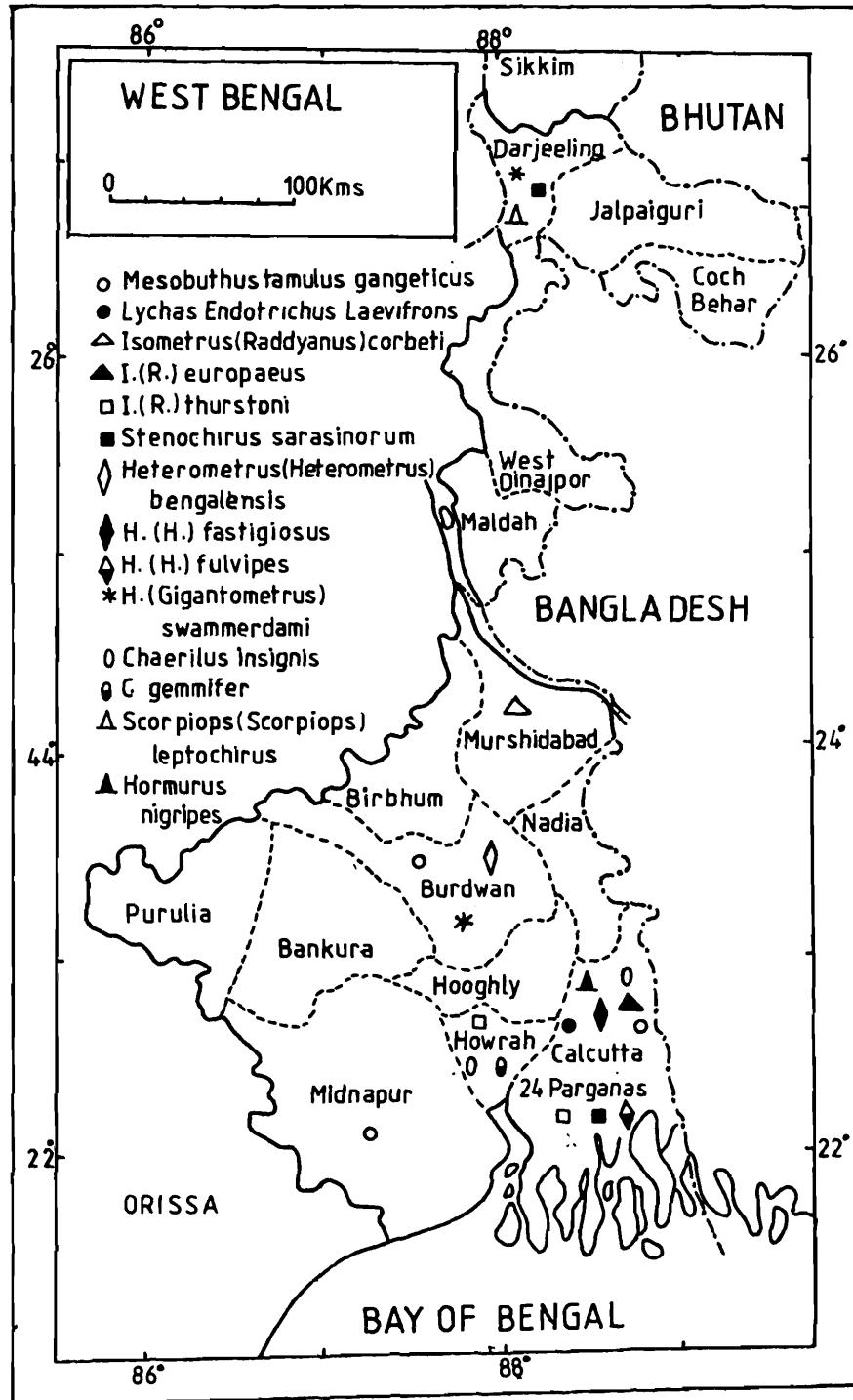


Fig.1. DISTRIBUTION OF SCORPIONS IN WEST BENGAL

Scorpions have originated from an extinct group, the Eurypterids existing during Silurian period. These eurypterids were aquatic in habits. First terrestrial scorpions appeared on earth in Europe and north America during Carboniferous period.

Scorpions are distributed all over the world with the exception of New Zealand and extreme south of South America. They are abundant in tropical and sub-tropical zones. They are nocturnal in habits. They live in soil, under stones, in burrows or in crevices.

Carnivorous in habit, scorpions prey consists of beetles, cockroaches and other arthropods.

The scorpions are oviparous. The females carry the young on their backs for sometime after birth.

The majority of scorpions are more or less harmless to man ; others produce painful stings, swelling, and sometimes fever as well ; such symptoms usually disappear after one or two days. Some species are dangerous ; their sting can lead to death, especially for children. These poisonous scorpions are found in north African and American desert regions. The poison from the SAHARA SCORPION (*Androctonus australis*) is comparable in strength to that of the cobra and can kill a dog within seconds.

Among 600 different species of Scorpions in the world, 99 species distributed in 5 families are found in India. Of these, 14 species occur in West Bengal.

SYSTEMATIC LIST OF SPECIES

Order I SCORPIONIDA

Family I. BUTHIDAE

1. *Mesobuthus tamulus gangeticus* (Pocock)
2. *Lychas (Endotrichus) laevifrons* Pocock
3. *Stenochirus sarasinorum* Karsch
4. *Isometrus (Raddyanus) europaeus* Linnacus
5. *I. (R.) thurstoni* Pocock
6. *I. (R.) corbeti* Tikader & Bastwade

Family 2. CHAERILIDAE

7. *Chaerilus insignis* Pocock
8. *C. gemmifer* Pocock

Family 3. VAEJOVIDAE

9. *Scorpiops (Scorpiops) leptochirus* Pocock

Family 4. ICHNURIDAE

10. *Hormurus nigripes* Pocock

Family 5. SCORPIONIDAE

11. *Heterometrus (Gigantometrus) swammerdami* Simon
12. *H. (Chersonesometrus) fulvipes* (Koch)
13. *H. (C.) fastigosus* Couzijn
14. *H. (Heterometrus) bengalensis* (Koch)

Key to the Families of SCORPIONIDA

1. Strnum pentagonal2
Sternum usually triangular Buthidae
2. Stigmata roundChaerilidae
Stigmata elongate3
3. Legs with two pedal spurs Vaejovidae
Legs with a single pedal spur4
4. Distal lateral edges of la tarsus not lobate and forming a right angle with the base of the claw lobe Ischnuridae
Distal lateral edges of a tarsus lobate and forming an acute angle with the base of the clawlobe .
..... Scorpionidae

Family 1. BUTHIDAE

Characters : Cephalothoracic sternum triangular in shape ; legs with a pair of pedal spurs ; tibial spurs on the legs of 3rd and 4th pairs ; three to five pairs of lateral eyes ; inner margin of dorsal arm of movable finger of chelicera provided below with one or two small teeth ; femur of pedipalp provided with 11 trichobothria ; patella with 13 trichobothria ; no trichobothria on the ventral surface of patella.

Key to the sub families of the family BUTHIDAE

1. Tibial spurs on the legs of 3rd and 4th pairs Buthinae
No. tibial spurs on the legs of 3rd and 4th pairs Centurinae

Key to the genera of the Subfamily BUTHINAE

1. No triangular spine but a small tubercle on the vesicle at the base of aculeus2
A trinangular spine on the vesicle at the base of the aculeus*Lychas*

2. Three crests on abdominal terga *Mesobuthus*
 One median crest on abdominal terga *Stenochirus*

Genus 1. *Mesobuthus* Vachon, 1950

Characters: Carapace with strong keels, central keels joining with the posterior keels from a "Lyre-form" configuration; immovable finger of the mandible with two teeth on ventral surface; pedipalp finger with four non-linear distal granules just proximal to terminal tooth; inner margin of pedipalp fingers with many rows of teeth, an outer series consisting of couplets of large teeth, and an inner of single tooth arranged anteriorly to those of the outer series; sternum triangular; ventral surface of vesicle granular and with a subocular nodule.

A single species under this genus occurs in West Bengal.

1. *Mesobuthus tamulus gangeticus* (Pocock)

1990. *Buthus tamulus gangeticus* Pocock, *Fauna Brit. India Arachn.* : 25.

Diagnostic characters: Metasoma thinner, 2nd and 3rd segments longer than wide; total length of adult ranges from 65-80 mm; pectinal teeth from 28 to 39; third and fourth sternites with smooth lateral carinae; the entire surface of each tergum coarsely and thickly granular; metasoma and its crests coarsely granular and thickly hairy.

Measurement in mm

	Total length	Carapace	Mesosoma	Metasoma
2 Males	51.3 - 70.3	6.3 8.5	17 33.5	28 - 44
3 Females	63.1 - 80	7 - 8.5	18 33.5	32 - 44

Material: 1(F) Kharagpur, Dist. Medinipur; 17.2.1955; A.G.K. Menon (Regd. No. 5179/18). 1(M) Shergur, Dist. 24-Parganas; 4.3.1986; Sirajuddin Ahmed (Reg. No. 5178/18). 1(M) Frazergaunge, Dist. 24-Parganas; 9.12.1965; K.V. Surya Rao & S. Ahmed (Reg. No. 5180/18). 1(F) Kollayaneshwar, northwest of Barakar Rly. Stn., Dist. Burdwan; ? T.B. Sinha (Reg. No. 5181/18). 1 (F) Indian Museum Building, Calcutta; 1.1.1926; M. Sharif (Reg. No. 5182/18).

Distribution: West Bengal: Calcutta, 24 Parganas, Barddhaman; Madhya Pradesh and Uttar Pradesh.

Remarks: This scorpion is found in high attitude as well as in low plain land. This species is reported for the first time from West Bengal.

Genus 2. *Lychas* C. Koch, 1845

Characters: Carapace without keels; antecocular area horizontal, terga with two to three crests;

cephalothoracic sternum longer than wide ; metasomal segments carinate ; a distinct triangular tooth on the vesicle at the base of the aculeus ; immovable finger of mandible with one tooth ; movable finger of pedipalp armed with many rows of teeth arranged end to end, nor overlapping.

West Bengal is represented by a single species under this genus

2. *Lychas (Endotrichus) laevifrons* Pocock

1897. *Lychas laevifrons* Pocock, *J. Bombay nat. Hist. Soc.*, 11 : 113.

Diagnostic characters : Frontal area of carapace smooth ; lateral crests on terga marked by a small granule on posterior margin ; movable finger longer than twice the length of the underhand ; the two fingers together longer than 1st, 2nd and 5th metasomal segments.

Measurements in mm :

	Total length	Carapace	Mesosoma	Metasoma
2 Males	49.9 - 59.7	5 5.2	17.8 - 19.5	27.1 - 29
3 Females	52.5 - 56.1	5 - 5.1	19 20	28.5 - 31

Material : 2(M), 3(F) Thakuranagar, Dist. 24-Parganas ; 27.2.1966 S.K. Talukder (Reg. No. 5183/18). 1 (Juv.) Calcutta ; 30.4.1913 ; S.W. Kemp (Reg. No. 5184/18).

Distribution : India : West Bengal : Calcutta, 24-Parganas ; Gujarat.

Remarks : Though this species has so far been reported from eastern and western parts of India, there is possibility of its occurrence in the intermediate zones also.

Genus 3. *Stenochirus* Karsch, 1891

Characters : Carapace with no keels but weakly granular ; immovable finger of mandible with two teeth on its lower surface ; terga, smooth or finely granular at the sides ; monocarinate ; cephalothoracic sternum longer than wide, as long as the genital operculum ; metasomal segments robust and with no keels on ventral surface ; no spine on vesicle at the base of the aculeus ; manus narrow ; fingers long, the median rows of teeth overlapping each other by nearly half their length.

A single species under the above genus occurs in West Bengal.

3. *Stenochirus sarasinorum* Karsch

1892 *Stenochirus sarasinorum* Karsch, *Berl. ent. Z.*, 36: 306.

Diagnostic characters: Carapace with fine granules only in the mid dorsal groove behind the ocular tubucle ; terga with median carina only and entirely smooth ; patella smooth, rounded in front.

Measurement in mm :

	Total length	Carapace	Mesosoma	Metasoma
Calcutta (F)	20.4	2.7	7.5	8.9
Howrah (F)	27.1	2.8	10.2	12.7

Material : 1 (F), Zoological Garden, Calcutta ; ?? (Reg. No. 1880/17); 1 (F) Botanical Garden, Howrah dist.; 23.4.1916 ; F.H. Gravely (Reg. No. 1653/17).

Distribution : West Bengal : Calcutta; Haora. Elsewhere : Sri Lanka.

Sub family CENTRURINAE

Genus 4. *Isometrus* Hempr. & Ehrenb, 1828

Characters : Carapace with a median keel ; immovable finger of mandible armed below with one tooth ; pedipalp fingers with 5 - 6 median rows of teeth arranged end to end but not overlapping and also an inner and corresponding outer series of large teeth towards the apices of the median rows arranged transversely.

Key to the species of the genus *Isometrus*

1. Subocular spines with one to two small denticles on inner margin of vesicle ; aculeus long about half the length of vesicle 2
 Subocular spine with three pairs of denticles on inner margin of vesicle ; aculeus short less than one third the length of the vesicle *I. (Raddyanus) corbeti*
2. Large triangular yellow patch in the antecular area ; one pair of denticles on inner margin of vesicle at the base of aculeus *I.(R.) europaeus*
 Only one tubercle on the inner margin of vesicle at the base of aculeus *I.(R.) thurstoni*

4. *Isometrus (Raddyanus) europaeus* (Lennacus)

1758. *Scorpio europaeus* Linnaeus, *Syst. Nat. ed.*, 10 : 625.

Diagnostic characters : Carapace with a triangular yellow patch in front ; tail about five and a half times the length of the carapace ; vesicle furnished with a pair of denticles at the base of the aculeus

pectinal teeth 17-19 (M, F.).

Measurements in mm. Total length 37.1, Carapace 4.9, mesosoma 10.2, metasoma 22.

Material : 1(F) Calcutta ; J.T. Meade (Reg. No. 1896/17).

Distribution : India : West Bengal : Calcutta ; Maharashtra ; Andaman Islands ; Minicoy and Laccadive Islands. Elsewhere : Pakistan ; Sri lanka and Burma.

Remarks : This species is reported for the first time from West Bengal.

5. *Isometrus (Raddyanas) thurstoni* Pocock

1893. *Isometrus thurstoni* Pocock, *J. Bombay nat. Hist. Soc.*, 7 (3) : 297.

Diagnostic characters : Carapace with a median long yellow patch in the frontal area ; length of underhand half that of movable finger in Female tail in male seven and a half times the length of carapace; hand in Male thick, its width half the length of underhand.

Measurement in mm. : Total length 33.5, Carapace 5, Mesosoma 6, Metasoma 18.

Material : 1(M), Ballygunge, Calcutta ; ?? (Reg. No. 5185/18)

Distribution : India : West Bengal : Calcutta ; Andhra Pradesh ; Madhya Pradesh ; Maharashtra; Karnataka ; Tamil Nadu.

Remarks : This species is widely distributed in India and is reported for the first time from West Bengal.

6. *Isometrus (Raddyanus) corbeti* Tikader & Bastwade

1983. *Isometrus (Raddyanus) corbeti* Tikader & Bastawade, *The Fauna of India, Scorpions*, 3 : 305-311.

Diagnostic characters : Carapace with no carinae and entirely granular ; subocular spine with three pairs of denticles on inner margin of vesicle ; aculeus about one third the length of the vesicle.

Measurements in mm. : Total length 40.8 ; Carapace 3.5 ; Mesosoma 8.5; Metasoma 28.8.

Material : 1(M), Puruliya, Dist. Medinipur; 17.11.1974 ; A.K. Hazra (Reg. No. 5186/18).

Distribution : India : West Bengal : Medinipur; Uttar Pradesh.

Remarks : This species of *Isometrus* is a new record from West Bengal.

Family 2. CHAERILIDAE

Characters : Carapace narrow in front, its anterior margin transversely truncate ; cephalic sternum pentagonal, parallel sides ; legs with a pair of pedal spur ; but the anterior never double ; maxillary process of 1st pair of legs expanded at the anterior margin forming a broad truncate border ; pectin short ; stigmata round ; movable and immovable fingers of mandible furnished below with a series of small teeth ; fingers of pedipalp provided with many overlapping rows of small teeth ; the terminal tooth of each series on the outer side developed ; tarsi furnished below with two series of strong bristles and a median series of very fine spicules ; males having longer narrower chelae than females, and longer tail.

Genus *Chaerilus* Simon, 1877

Characters : Carapace narrow in front, its anterior margin transversely truncate ; cephalic sternum pentagonal, parallel sides ; legs with a pair of pedal spur ; but the anterior never double ; maxillary process of 1st pair of legs expanded at the anterior margin forming a broad truncate border ; pectin short ; stigmata round ; movable and immovable fingers of mandible furnished below with a series of small teeth ; fingers of pedipalp provided with many overlapping rows of small teeth ; the terminal tooth of each series on the outer side developed ; tarsi furnished below with two series of strong bristles and a median series of very fine spicules ; males having longer narrower chelae than females, and longer tail.

Key to the species of the genus *Chaerilus*

Femur, patella and underhand exceeding length of carapace *C. insignis*
 Femur, patella and carapace much shorter than carapace *C. gemmifer*

7. *Chaerilus insignis* Pocock

1894. *Chaerilus insignis* Pocock, *Ann. Mag. nat. Hist.*, 13 (6) : 82.

Diagnostic characters : Carapace furnished with fine granules; humerus longer than carapace ; manus long and narrow, its width much less than half the length of underhand ; movable finger longer than the carapace.

Measurements in mm. : Total length 56.1, carapace 7.8, mesosoma 21, metasoma 27.3.

Material : 1(M) Kurseong, Dist. Darjiling ; 21 - 29.5. 1906 ; T.N. Annandale (Reg. No. 2082/17).

Distribution : India : West Bengal : Darjeeling ; Uttar Pradesh ; Kashmir.

Remarks : This species is a small sized scorpion and is not widely distributed in India. This is a new record from West Bengal.

8. *Chaerilus gemmifer* Pocock

1894. *Chaerilus gemmifer* Pocock, *Ann. Mag. nat. Hist.*, 13 (6) : 81.

Diagnostic characters : Carapace covered with coarse shining granules on the sides ; frontal area weakly and sparsely granular ; terga furnished with coarse, pearly granules and yellow > < shaped mark on lateral surface ; width of manus nearly equal to length of underhand; aculeus shorter than half the length of vesicle.

Measurements in mm.:

	Total length	Carapace	Mesosoma	Metasoma
Male	55.8	6.9	21.7	27.2
Female	32.1	4.9	7.2	20.00

Material : 1(M), 1(F), 5 juveniles, Calcutta ; 25.7.1918 ; Abhoy Chandra Chowdhury (Reg. No. 5189/18).

Distribution : India : West Bengal : Calcutta. Elsewhere : Bangladesh.

Remarks : This species is reported for the first time from West Bengal.

Family 3. VAEJOVIDAE

Characters : Carapace with three lateral eyes on each side ; cephalic sternum pentagonal, wider than long ; legs with a pair of pedal spurs ; maxillary processes of 1st pair of legs narrowed anteriorly ; pectin weakly developed ; stingmata elliptical in shape ; tarsi armed below with two rows of spines ; femur of pedipalp furnished with 3 trichobothria ; patella with 28 - 47 trichobothria.

Genus *Scorpiops* Peters, 1861

Characters : Carapace with a deep notch on the medioanterior border ; movable finger of mandible with a row of 4 - 6 small teeth below ; movable finger of pedipalp furnished along the middle line with many small teeth set in a double row ; manus large, flattish above, with strong finger-keel dividing the upper surface into an outer vertical and inner horizontal portion; patella of pedipalp provided with 7-19 trichobothria on ventral surface.

A single species under this genus occurs in West Bengal.

9. *Scorpiops (Scorpiops) leptochirus* Pocock

1894. *Scorpiops (Scorpiops) leptochirus* Pocock, *Ann. Mag. nat. Hist.*, 12 (6) : 79.

Diagnostic characters : Seven trichobothrial pores on ventral surface of patella ; tail in (females)

less than four times but in (males) four times the length of carapace ; width of manus equal to or a little more than half the length of underhand.

Measurements in mm.: Total length 34, Carapace 4, mesosoma 14, metasoma 12.

Material : 1(M) Singla, Dist. Darjiling ; 5.1913 ; Lord Charmichel (Reg. No. 5190/18).

Distribution : India : West Bengal : Darjiling ; Assam ; Meghalaya. Elsewhere : Bangladesh.

Remarks : This scorpion is usually found in hilly areas under stones, it seems to be so confined to eastern India. This species is reported for the first time from Darjiling district in West Bengal.

Family 4. ISCHNURIDAE

Characters : Carapace flat, movable and immovable fingers of mandible with no teeth on the lower edge ; manus with strong and complete finger keel ; edges of pedipalp fingers dentate, not produced into sharp teeth ; tarsi of legs provided with only one pedal spur ; metasoma strongly depressed.

Genus *Hormurus* Thorell, 1876

Characters : Carapace with median eyes almost in the centre ; three lateral eyes on the margin of carapace ; tarsi of legs provided with four pairs of long bristles and median portion smooth ; movable finger of pedipalp with two parallel rows of teeth ; genital operculum of female not narrowed.

The genus is represented by a single species in West Bengal.

10. *Hormurus nigripes* Pocock

1897. *Hormurus nigripes* Pocock, *J. Bombay nat. Hist. Soc.*, 11 : 117.

Diagnostic characters : Frontal lobes of carapace square ; lower crest on posterior side of patella smooth ; Sterna scarcely punctured ; sides of metasomal segments not granular ; superior keels of metasomal segments not developed ;

Measurements in mm. :

	Total length	Carapace	Mesosoma	Metasoma
Male	38.8	6.8	16	16
Female	32.9	6	12	14.9

Material : 1(M), 1(F), 6 (Juvenile), Circuit house Compound at Medinipur, Dist. Medinipur; 2.6:1971 ; S. Khera & party (Reg. No. 5191/18).

Distribution : India : West Bengal : Medinipur; Madhya Pradesh ; Rajasthan ; Gujarat.

Remarks : This species is a new record from West Bengal.

Family 5. SCORPIONIDAE

Characters : Carapace smooth ; Superciliary crests present or absent ; Cephalothoracic sternum pentagonal, broad ; legs with one pedal spur ; lateral margins of tarsi expanded distally overlapping the base of the claw and producing a very acute angle with the base of the claw lobe ; body and pedipalps not depressed ; fingers of pedipalp with strong triangular teeth ; metasoma powerful ; ventral surface of brachium always with three trichobothria.

Genus: *Heterometrus* Hemprich & Ehrenberg, 1828

Characters : Carapace with a deep notch in the antero median portion ; tarsi of legs with two rows of spines on ventral surface ; a stridulating organ situated between the chela and first leg ; patella with three trichobothria on the ventral portion.

Key to the subgenera of genus *Heterometrus*

1. Lateral margin of carapace continuous, with no incision next to the lateral eyes 2
Lateral margin of carapace with distinct incision next to the lateral eyes
..... *Heterometrus*
2. Superciliary crests granular on anterior and posterior portions *Gigantometrus*
Granular superciliary crest on anterior portion only *Chersonesometrus*

Each of the above first two subgenera is represented by a single species from West Bengal.

11. *Heterometrus* (*Gigantometrus*) *swammerdami* Simon

1872. *Heterometrus swammerdami* Simon, *Rev. et. Mag. Zool.*, 23 (2): 56.

Diagnostic characters : Carapace covered with coarse granules ; in female carapace shorter than the 1st and 2nd metasomal segments; femur of pedipalp coarsely granular below at base ; metasoma long and strong and nearly four and a half times the length of carapace ; dorsal surface of manus covered with large tubercles and its inner edge almost straight, posterior lobe extended far behind the posterior end of the keel of underhand.

Measurement in mm. : Total length 124.7, Carapace 20.9, mesosoma 39, metasoma 64.8.

Material : 1 Female Gangpore, Bengal ; ? A.W.K. Cristin (Rg. no. 1647/17).

Distribution : India : West Bengal : 24 Parganas; Bihar ; Uttar Pradesh ; Maharashtra ; Madhya Pradesh ; Karnataka ; Tamil Nadu. Elsewhere : Sri Lanka.

Remarks : This is the largest scorpion of India and is next to the West African species - *Pandinus imperator* which is the largest species in the world.

12. *Heterometrus (Heterometrus) benglensis* (Koch)

1842. *Buthus bengalensis* C. Koch, *Arachn.*, 9 : 3.

Diagnostic characters : Carapace granular laterally and smooth above, shorter than or equal to 3rd and 4th metasomal segments ; manus narrow, smooth, covered above with reticulation of ridges ; movable finger as long as carapace.

Measurement in mm.: Total Length range from 51.3 - 69, Carapace 6.3 - 7, metasoma 14 - 18, metasoma 28 - 44.

Material : 1 (M), Zoological Garden, Calcutta ; 19.5.1912 ; ? (Reg. No. 1600/17) : 1 (M) Sankari village, Dist. Burddhman ; M.K. Bose (Reg. No. 5187/18).

Distribution : India : West Bengal : Calcutta, Burddhmanan; Meghalaya ; Assam ; Madhya Pradesh; Maharashtra, Uttar Pradesh.

Remarks : This scorpion is of cosmopolitan distribution.

Key to the species of subgenus *Cheronesometrus*

1. Patella longer than femur ; the lobe of manus projects backwards a short distance beyond the posterior end of the keel of the underhand*fulvipes*
Patella as long as femur ; the lobe of manus does not project backwards beyond the posterior end of the keel of the underhand*fastigosus*.

13. *Heterometrus (Cheronesometrus) fulvipes* (Koch)

1838. *Palamnaeus fulvipes* C. Koch, *Arachn.*, 4 : 45.

Diagnostic characters : Carapace longer than 1st and 2nd metasomal segments ; mesosoma finely granular on lateral surfaces but smooth in the middle ; manus granular below, the inner edge convex and

the lobe projects behind the posterior end of the keel of the underhand, upper surface rises vertically from the keel of the under hand and is bordered above by irregular ridges, immovable finger absolutely crested.

Measurements in mm. : Total length 96, carapace 14.5 mesosoma 28, metasoma 48.5.

Material : 1 (F) Gangapore, West Bengal ; ? W.A.K. Cristin (Reg. No. 2086/17).

Distribution : India : West Bengal ; 24 Parganas ; Bihar ; Andhra Pradesh ; Madhya Pradesh ; Maharashtra ; Rajasthan ; Gujarat ; Tamil Nadu.

Remarks : This species is widely distributed in India and is a new record from West Bengal.

14. *Heterometrus (Chersonesometrus) fastigosus* Couzijn

1981. *Heterometrus (Chersonesometrus) fastigosus* Couzijn, *Zool. Verln.*, 184 : 187.

Diagnostic characters : Frontal, lateral and lateroposterior areas of carapace granulated ; the manus hardly dilated in the male, more dilated in the female ; its external surface reticulated ; dorsal granulation coarse on metasomal segments 1 - 4, five and sparse in segment 5.

Measurements in mm. : Total length 106, Carapace 15, mesosoma 26, metasoma 65.

Material : 1(M) Mirjapore, Calcutta, 22.5.1913 ; Mrs. Johnston (Reg. No. 5188/18).

Distribution : India : West Bengal, Calcutta; Assam ; Bihar ; Madhya Pradesh ; Maharashtra ; Uttar Pradesh, Himachal Pradesh.

Remarks : This scorpion is of Cosmopolitan distribution.

ACKNOWLEDGEMENT

The author is thankful to the Director, Zoological Survey of India, Calcutta for providing working facilities and to Dr. S.K. Bhattacharji, Scientist-SF for his encouragement and to Dr. A.K. Ghosh, Scientist-SF for kindly correcting the MS and for suggesting improvement of the same. Thanks are also due to Dr. S.K. Gupta, Scientist -SE and Dr. B.K. Biswas, Scientist-B for their help in various ways.

SUMMARY

A brief account of Scorpions from West Bengal has been given here. A total of 14 species under 8 genera of 5 families have been recorded. 8 of which are reported for the first time from West Bengal.

REFERENCES

- Basu, B.D. 1964. Observations on two new species of *Lychas*. *J. Beng. nat. Hist. Soc.*, **32** : 99-103.
- Couzijn, H.W.C. 1981. Revision of the genus *Heterometrus* Hemprich & Ehrenberg (Scorpionidae, Archnidea). *Zool. Verln.*, (184) : 1-196.
- Henderson, J.R. 1919. Two new scorpions from South India. *Rec. Indian Mus.*, **16** : 378-381.
- Hirst, S. 1915. Description of a new Indian Scorpion. *Ann. Mag. nat. Hist.*, **15** (8) : 224-225.
- Mani, M.S. 1959. On a collection of high altitude scorpions and pseudo-scorpions from north West Himalaya. *Agra. Univ. J. Rs. (Sci.)*, **18** (1) : 11-16.
- Rahimullah, M.H. 1939. A preliminary note on a collection of scorpion from Hyderabad (Deccan) together with some remarks on their venom. *J. Osmania Univ.*, **7** : 29-37.
- Rajtilak, 1970. On an interesting observation on the living habits of *Hormurus nigripes*. *Sci. Cult.*, **36** (3): 174-176.
- Tikader, B.K. 1973. Arachnida of Deccan area. *Bull. natn. Inst. Sci. India, New Delhi*, **45** : 260-276.
- Tikader, B.K. & Bastawade, D.B. 1983. *Fauna of India ; Scorpions.*, **3** : 1-671.

IXODID TICKS (ACARI : IXODIDAE)

A. K. SANYAL AND S. K. DE
*Zoological Survey of India, M-Block, New Alipur
Calcutta*

INTRODUCTION

Ixodid ticks are of great medical and veterinary importance. They surpass all other arthropods in the number and variety of diseases of man and domestic animals. But except a few almost all the states of India have not yet been thoroughly surveyed for ixodid ticks and the consolidated reports on faunal make-up and their prevalence are not available as ready reference.

The present monograph is based on a large series of collection of ixodid ticks made from West Bengal by the authors and the specimens collected by other survey parties of the Zoological Survey of India, which are available in National Zoological Collection. The collection was also enriched by specimens received from the scholars outside this institute. The work also includes the species which have not been studied by the authors but are described or recorded from the state by the earlier workers.

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

- 1) North and South 24-Parganas districts survey - Sri S. K. De and Party (March - April, 1979).
- 2) Darjiling district survey - Dr. A.C. Mishra and party (August - September, 1978).
- 3) Haora district survey - Sri S.K. De (March, 1983).
- 4) Darjiling, Jalpaiguri, Koch Bihar, Maldah, Murshidabad and West Dinajpur districts survey - Dr. A.K. Sanyal and party (November - December, 1983).
- 5) Medinipur district survey - Sri S. K. De and party (December, 1985).
- 6) Darjiling and Birbhum districts survey - Dr. A.K. Sanyal and party (September - October, 1986).
- 7) Bankura, Barddhaman and Purulia districts survey - Dr. A.K. Sanyal and party (September, 1987).

National Zoological Collection

- 1) Darjiling district survey - Dr. P.K. Maiti and party (March, 1973).
- 2) Jalpaiguri district survey - Dr. B.C. Nandi (April - May, 1975).
- 3) Neora Valley (Darjiling district) Biosphere reconcence survey Dr. R.K. Kacker and party (February, 1982).

4. Darjiling and Sikkim Survey - Shri A.R. Bhowmick and party (May, 1970).

Collection received from workers outside Z.S.I.

1. Darjiling district survey Dr. A.K. Basu (1981).
2. Calcutta Zoological Garden Survey - Dr: S. Banerjee (March, 1985).

A complete list of 32 species under 9 genera of ixodid ticks hitherto known from West Bengal have been incorporated in the paper. The first and important references, diagnostic features, distribution and hosts in West Bengal of each species and key to the identification of the genera and species have also been incorporated. The species studied by the present authors are deposited in the National Zoological Collection.

Review of literature on ixodid ticks of West Bengal

The first record of ixodid ticks from West Bengal was done by Rudow (1870). He described the species *Amblyomma bengalense* from *Python* sp. But Neumann (1911) reported the species as doubtful and since then there is no record of the species. Later from early 19th century medical entomologists got interested about tick fauna of Calcutta, Darjiling Himalaya and its neighbouring areas. Warburton (1910) received a lot of tick specimens collected from animals of the Zoological Garden, Calcutta and identified those as *Aponomma gervaisi* and *A. lucasi*. In the same year he recorded *Ixodes acutitarsus* from Darjiling. Neumann (1911) recorded *A. gervaisi* for the second time from the state. In 1913 Warburton recorded two species of the genus *Haemaphysalis* viz., *aborensis* from Darjiling and Jalpaiguri and *aponommoides* from animals of the Veterinary hospital, Belgachia, Calcutta. Nuttall *et al.* (1915) recorded *H. bispinosa* from Calcutta and Darjiling. Later Robinson (1926) recorded four species under the genus *Amblyomma* viz., *helvolum* from Zoological Garden, Calcutta, *javanense* and *supinoi* from Jalpaiguri and *testudinarium* from North 24-Parganas, Jalpaiguri and Darjiling. The next report of ixodid ticks from West Bengal was made by Sri M. Sharif. While working as scientist in the Zoological Survey of India, he availed the chance of identifying huge number of tick collection made by the scientists of this institute. Besides these he received collection from pusa, C.S.T.M. and Muktesar (U.P.). From these collection sharif (1928) described one new species *Hyalomma brevipunctata* from Medinipur and recorded 8 species : *A. lucasi* from Bardhaman, *Dermacentor auratus* from Calcutta, North 24-parganas, *Haemaphysalis birmaniae* and *H. hystricis* from Darjiling, *Ixodes granulatus* from Darjiling, *Nosomma monstrosus* from Medinipur, *Rhipicephalus haemaphysaloides* from South 24-parganas and Darjiling and *R. sanguineus* from Maldah. Sen (1938) published the check-list of Indian ticks.

Later in early sixties scientists at the then Virus Research Centre (VRC), Pune took up projects on ixodid ticks of medical and veterinary importance. They extensively surveyed the tick fauna of Darjiling and Jalpaiguri. The first report of these collection of VRC was known through the works of Dhanda and Rao (1964). They recorded *Boophilus microplus*, *Haemaphysalis bispinosa* and *H. montgomeryi* from Darjiling. Mitchell and Spillett (1968) reported *Rhipicephalus turanicus* from West Bengal and in the next year Dhanda and Rao (1969) mentioned that Hoogstraal collected a good number of specimens of the same species from Calcutta and its surroundings. The second and third new species from the state were described by Hoogstraal and Dhanda (1970) and Dhanda *et al.* (1970). These species are *Haemaphysalis darjeeling*

from Darjiling and *H. ramachandrai* from Jalpaiguri and Darjiling. Hoogstraal *et al.* (1971) recorded *Haemaphysalis aponomoides*, *H. himalaya*, *H. obesa*, *H. ramachandrai* and *H. spinigera* from Jalpaiguri and Darjiling and *H. indica* from Calcutta and Hugli. Geeverghese and Dhanda (1987) reviewed the Indian species of *Hyalomma*. Nandi and De (1984) and Basu *et al.* (1989) recorded *Hyalomma anatolicum anatolicum* from different districts of West Bengal.

The critical assessment of the taxa shows that before the present work was started a total number of 28 species under 9 genera was known from West Bengal. The present work reports 4 species under 3 genera for the first time from West Bengal. Thus at present the total number of 9 genera and 32 species are known from the state, out of 9 genera and 86 species known from India.

MATERIAL AND METHODS

Ixodid ticks live as host on the bodies of domestic and wild animals and in vegetation. For taxonomic studies two methods were mainly employed for collecting ticks.

1. **Hand picking method** : This method consisted of searching for ticks on the bodies of domestic and wild animals. Adults and immature stages were removed by hand using a forcep or a brush and preserved.
2. **Flag-dragging method** : White flags made of lint cloth about one meter square, were dragged on forest vegetation, humus and grassland for collecting questing ticks. Flags were examined at frequent intervals and specimens carefully removed by fine forcep or brush and preserved.

The ticks obtained were preserved in glass vials containing 70% alcohol.

GENERAL MORPHOLOGY AND TERMINOLOGY

The most important external features of ixodid ticks which are of immense taxonomic importance are described here.

Capitulum :

The body of ticks anteriorly terminates in a 'false head' or capitulum (Figs.1,2). It is situated in a depression known as the camerostome. The capitulum is made of the following parts :

1. **Basis capituli** : This is the basal part of the capitulum and is joined on to the body by means of a neck. It may be hexagonal (*Boophilus*) and rectangular (*Hyalomma*). Its dorsal and ventral surfaces have dorsal and ventral ridges respectively. The basis capituli may have variously-shaped prominences or auricles, a horn-like structure or cornua, and lateral saliences (Figs. 3-9).
2. **A pair of palps** : It is sometimes designated as pedipalps. These are located laterally and each consists of 4 articles, 2 of which are sometimes fused. The palps may have projections and saliences besides bristles, hairs and conspicuous spurs.
3. **A pair of chelicerae or mandibles** : This structure projects forward dorsally from the basis capituli, each consisting of a chitinous cylindrical leaf or shaft. The pair of chelicerae are enclosed in a single sheath.

Each shaft is provided with toothed digit consisting of sharp processes called internal and external articles and a dorsal process (Fig. 2).

4. *Hypostome* : This is a spatulate structure lying ventrally in close association to the cheliceral sheath. It is provided on its ventral surface with rows of recurved teeth, the rows terminating distally in a crown or corona of denticles (Figs. 1,10,11).

5. A tongue like process known as 'stylet of Sen' is located between the chelicerae and the hypostome.

Dorsum :

The dorsum (Figs. 10,12) of ixodid ticks presents a number of features of diagnostic importance, though all of them may not occur in any one species of tick.

1. *Scutum or Shield* : It is a chitinous plate and covers almost the entire dorsal surface of the male but only the anterior portion of the dorsal surface of the female. Thus the scutum provides a ready clue of differentiating the two sexes. In some species of *Amblyomma*, it is attractively ornamented with various designs of iridescent colouring and, in such cases, the species is called ornate.

2. *Pseudoscutum* : a large elevated area occupying the anterior part of the scutum. It is occasionally present.

3. *Scapulae* : The antero-lateral angles of the scutum may project on either side like shoulder-blades or scapulae.

4. *Eyes* : All the tick species do not possess eyes. When present, these are 2 small protuberances situated on the anterolateral margins of the scutum.

5. *The dorsal porose areas or foveae* : These are 2 small depressions or pits about the centre of the scutum.

6. *Fields* : The dorsal surface is divided into 4 areas of fields.

7. *Spots and stripes* : These are smaller and longer patches of pigments respectively.

8. *Grooves* : There are long furrows on the dorsum. The important ones are cervical and lateral grooves.

9. *Punctations* : These are small and circular shallow pits on the dorsum.

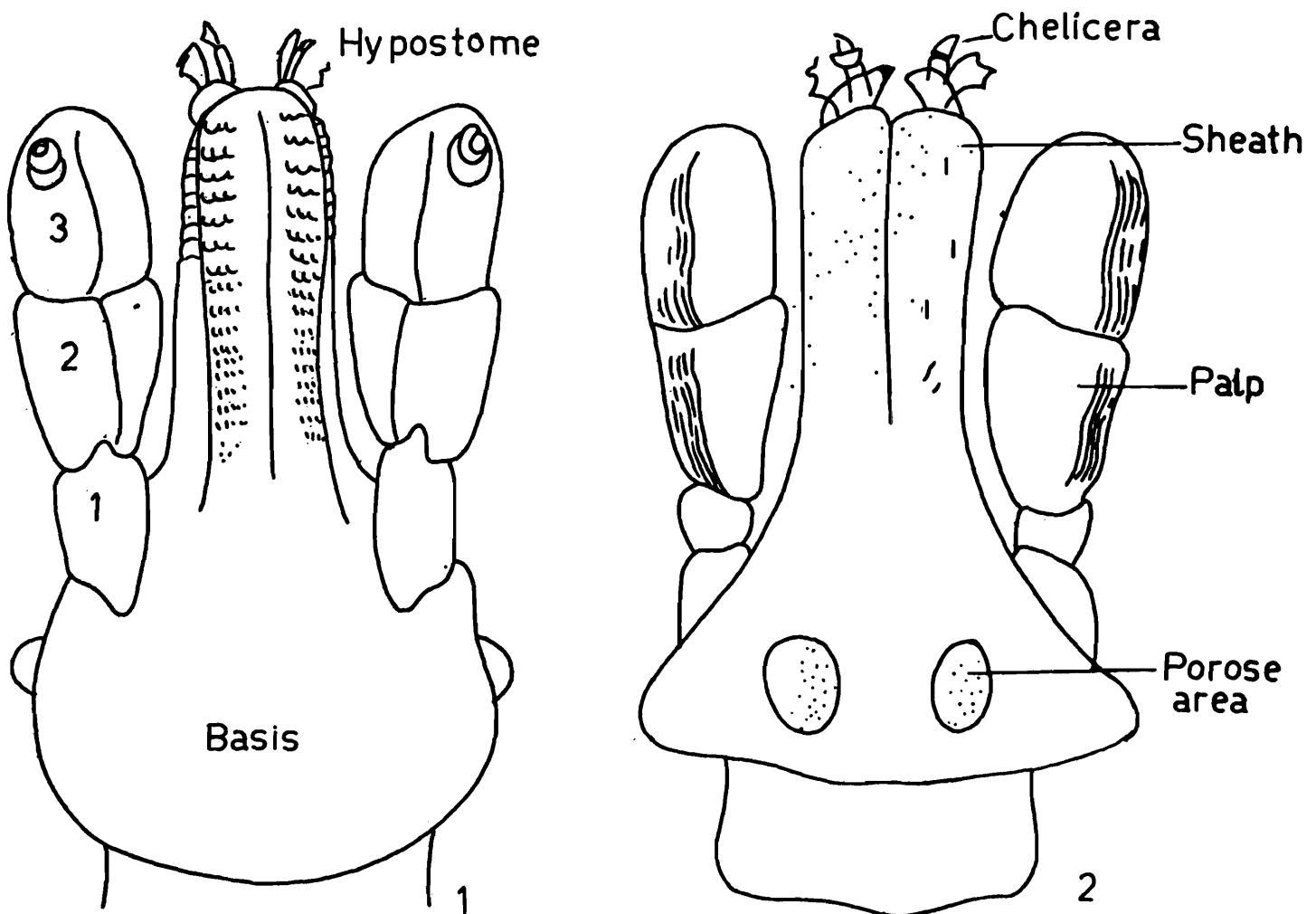
10. *The festoons* : The posterior margin of the dorsum is often adorned with a chain of small chitinous plates or scutes in circumscribed areas or festoons. They are usually 11 in number.

11. *The caudal process* : The pointed posterior margin of the body of the tick is the caudal process. In some species, males have 2 such process.

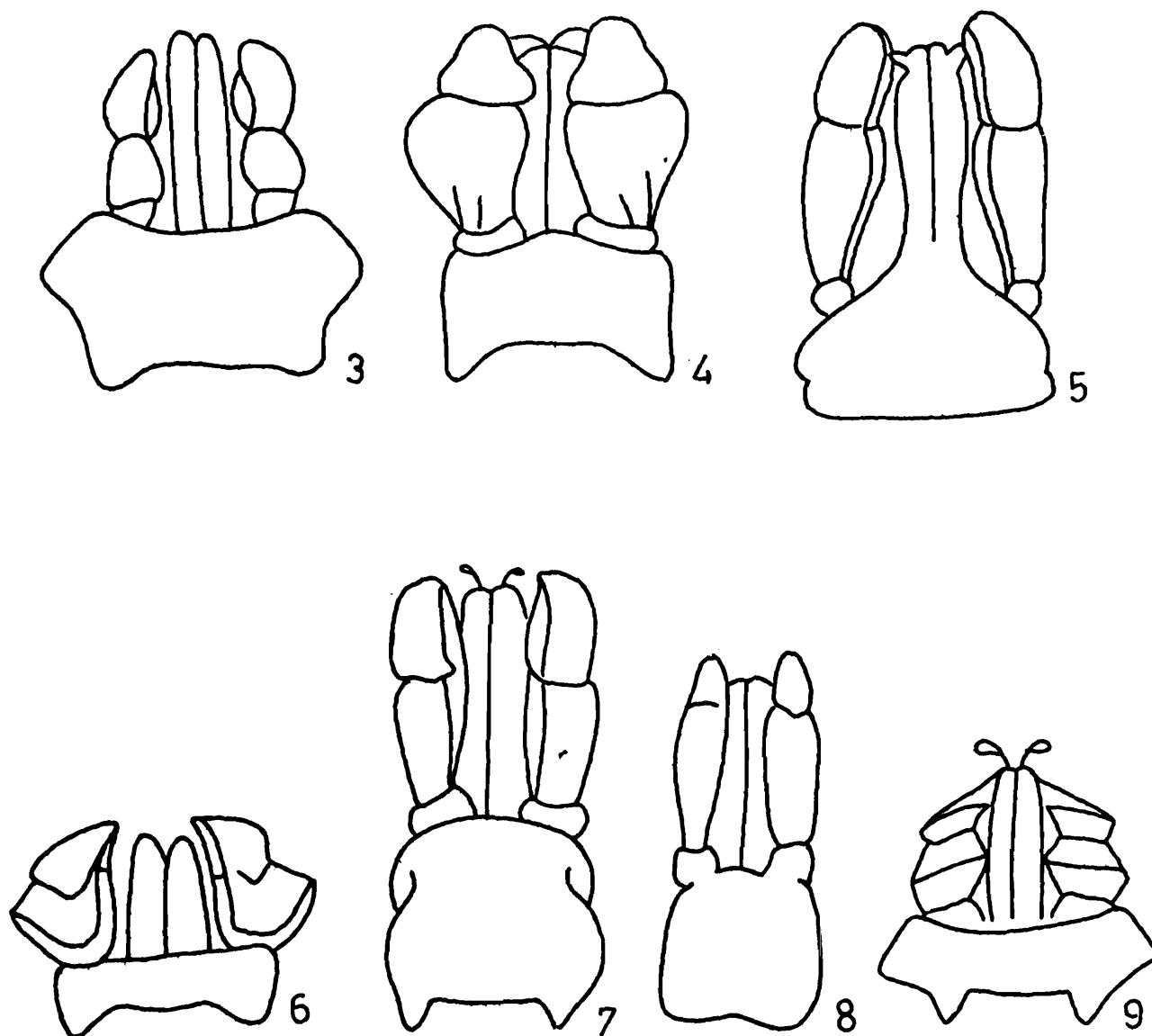
Venter :

The ventral surface (Figs. 11,13) of the body of ticks shows the following structures :

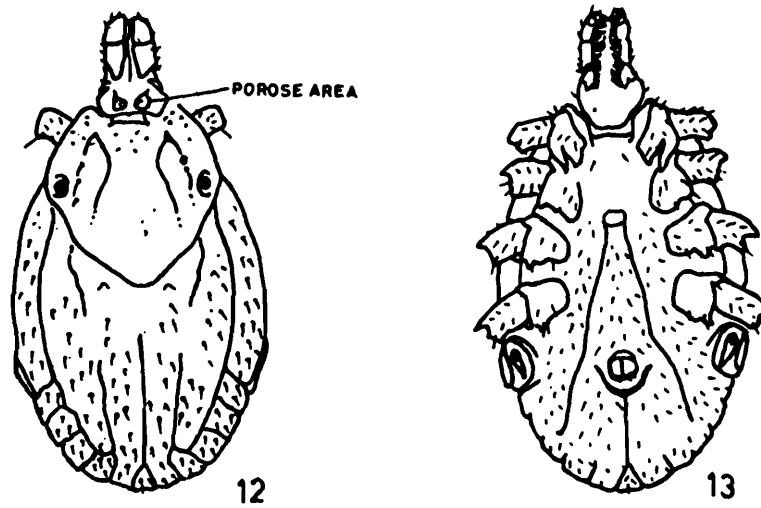
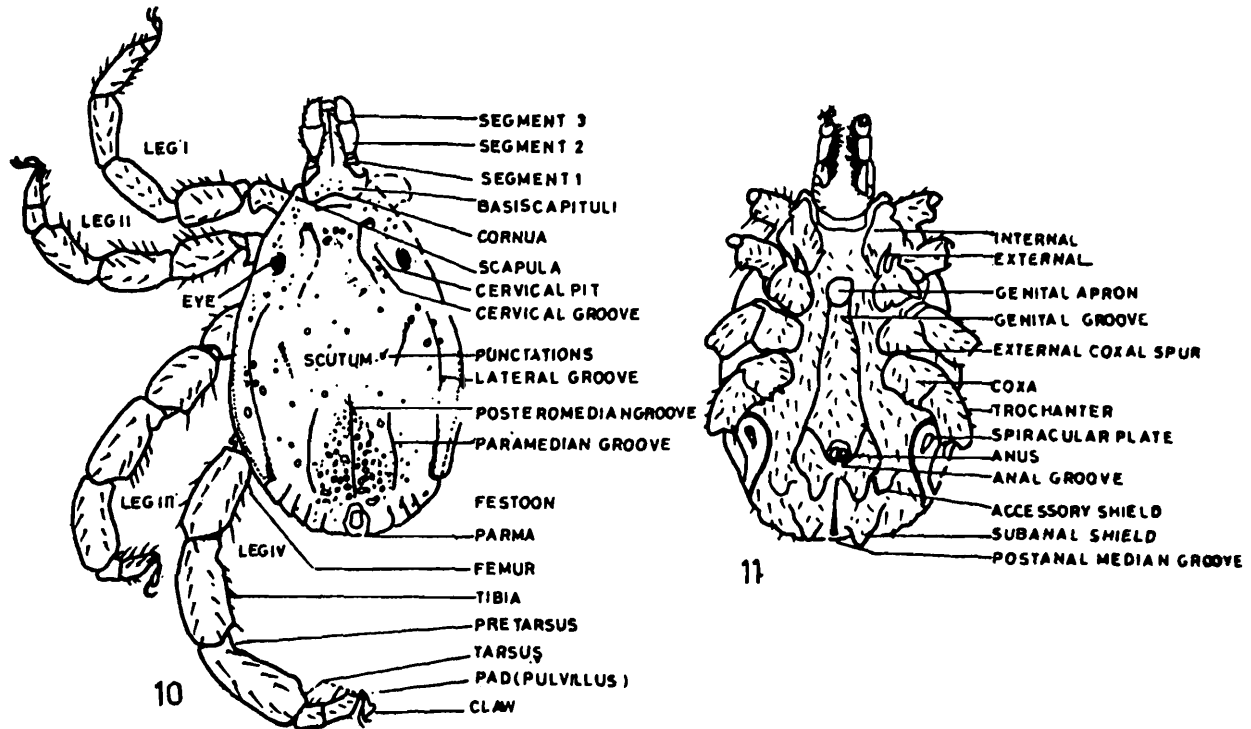
1. *The genital aperture* : This is placed immediately posterior to the basis capituli. A chitinous flap, the post genital plate, encloses the aperture anteriorly and it is bounded posteriorly by a ridge like integument.
2. *The anus* : It is in the posterior part of ventral surface of the body. The anal orifice is enclosed by a small ring or annulus and guarded on each side by a valve.
3. *Grooves* : These are genital, anal and median post-anal grooves.
4. *Shields and plaques* : These are chitinous plates placed near the anus in males of certain species of ticks. The larger of these are called shields and the smaller plaques.
5. *The legs* : Each leg (Fig. 10) is formed of 6 segments viz. coxa, trochanter, femur, tibia, protarsus and tarsus. Each tarsus terminates in a stalk to which are attached a pair of claws and a pad or empodium. The terminal part of each of the first pair of tarsi bears on its dorsal surface a small ellipsoidal vesicle called 'Haller's organs'.



Figs. 1-2 : Capitulum of Ixodid Tick



Figs. 3-9 : Capitulum and basis Capituli of Ixodid tick. 3. *Rhipicephalus*, 4. *Demacentor*, 5. *Ixodes*, 6. *Haemaphysalis*, 7. *Hyalomma*, 8. *Amblyomma*, 9. *Boophilus*



Figs. 10-13 : Morphological features shown in hypothetical male and female Ixodid tick. 10. Male : dorsal view, 11. Male : ventral view, 12. Female : dorsal view, 13. Female : ventral view.

LIST OF TAXA KNOWN FROM WEST BENGAL

Family IXODIDAE

1. Genus *Amblyomma* Koch
 1. *A. helvolum* Koch
 2. *A. javanense* (Supino)
 3. *A. supinoi* Neumann
 4. *A. testudinarium* Koch
2. Genus *Aponomma* Neumann
 5. *A. gervaisi* (Lucas)
 6. *A. lucasi* Warburton
3. Genus *Boophilus* Curtice
 7. *B. microplus* (Canestrini)
4. Genus *Dermacentor* Koch
 8. *D. auratus* Supino
5. Genus *Haemaphysalis* Koch
 9. *H. aborensis* Warburton
 10. *H. aponommoides* Warburton
 11. *H. birmaniae* Supino
 12. *H. bispinosa* Neumann
 13. *H. cornigera shimoga* Trapido and Hoogstraal
 14. *H. darjeeling* Hoogstraal and Dhanda
 15. *H. himalaya* Hoogstraal
 16. *H. hystricis* Supino
 17. *H. indica* Warburton
 18. *H. montgomeryi* Nuttall
 19. *H. obesa* Larrousse
 20. *H. ramachandrai* Dhanda, Hoogstraal and Bhat
 21. *H. spinigera* Neumann
6. Genus *Hyalomma* Koch
 22. *H. anatolicum anatolicum* Koch

23. *H. marginatum isaaci* Sharif

24. *H. brevipunctata* Sharif

25. *H. hussaini* Sharif

7. Genus *Ixodes* Latreille

26. *I. acutitarsus* (Karsch)

27. *I. granulatus* Supino

28. *I. ovatus* Neumann

8. Genus *Nosomma* Schulze

29. *N. monstrosum* (Nuttall & Warburton)

9. Genus *Rhipicephalus* Koch

30. *R. haemaphysaloides* Supino

31. *R. sanguineus* (Latreille)

32. *R. turanicus* Pomerantzev

SYSTEMATIC ACCOUNT

Key to the genera of ixodid ticks from West Bengal

1. Anal groove extending anteriorly around anus; eyes absent*Ixodes* Latreille
- Anal groove extending posteriorly or absent, eyes present or absent2
2. Eyes absent3
- Eyes present.....4
3. Capitulum long, no lateral salience on palpal article II; dorsal retroverted spur absent on trochanter I; coxa I usually bifid*Aponomma* Neumann
- Capitulum short, with lateral salience on palpal article II; blade-like dorsal retroverted spur on trochanter I; coxa I never bifid*Haemaphysalis* Koch
4. Capitulum long with long narrow palps5
- Capitulum short with sort broad palps6
5. Ventral shields present in male; usually inornate; eyes spherical and orbital ...*Hyalomma* Koch

- Ventral shields absent in male; scutum usually ornate; eyes usually flat and non-orbital
.....*Amblyomma* Koch
- 6. Basis-capituli rectangular dorsally, lateral saliences absent; scutum ornate; ventral shields when present six in male7
- Basis-capituli hexagonal dorsally, lateral saliences present; scutum inornate; ventral shields four in male8
- 7. Ventral shields six in male; coxae subequal*Nosomma* Schulze
- Ventral shields absent in male, coxa IV much large than others*Dermacentor* Koch
- 8. Spiracle oval; festoons and groove faint or obsolete; setiferous ventral plate on palpal article I absent*Boophilus* Curtice
- Spiracle sub-triangular or comma-shaped; festoons and anal groove well developed; setiferous ventral plate on palpal article I present*Rhipicephalus* Koch

1. Genus *Amblyomma* Koch

1844. *Amblyomma* Koch, *Arch. Naturgesch*, 10 : 223-231.

Key to the species of *Amblyomma*

MALES

- 1. Coxae I-II each with two sub-equal, short, broad spurs*supinoi* Neumann
- Coxae I with two spurs and coxae II-IV each with one spur2
- 2. Scutum inornate; two short flat sub-equal spur on coxa 1; coxae II-IV each with a broad flat spur; eyes indistinct; hypostome 3/3*javanense* (Supino)
- Scutum ornate; two unequal spurs on coxa 1; coxae II-III each with triangular or round spur; eyes almost distinct; hypostome 3/3 or 4/43
- 3. Scutum deep brown with six pale coloured spots; falciform stripe absent; coxae II and III each with short triangular spur; eyes indistinct; hypostome 3/3*helvolum* Koch
- Scutum yellowish with dark brown ornamentation; falciform stripe present; coxae II and III each with broad round spur; eyes large, flat; hypostome 4/4*testudinarium* Koch

FEMALES

1. Coxae I-III each with two short rounded spurs*supinoi* Neumann
- Coxae I with spurs and coxae II-IV each with one spur.2
2. Scutum inornate; coxa I with two short, flat spurs; coxae II-IV each with a broad salient ridge like spur; hypostome 3/3*javanense* (Supino)
- Scutum ornate; coxa I with broad, short and long spurs; coxae II-IV with triangular or ridge like spur; hypostome 3/3 or 4/43
3. Narrow triangular spur on coxae II and III*helvolum* Koch
- Broad salient ridge like spur on coxae II and III*testudinarium* Koch

1. *Amblyomma helvolum* Koch

1844. *Amblyomma helvolum* Koch, *Arch. Naturgesch*, 10 (1) : 230.
 1926. *Amblyomma helvolum*, Robinson, Cambridge University Press, 216-219.
 1928. *Amblyomma helvolum*, Sharif, *Rec. Indian Mus.*, 30 (3) : 325-326.

Diagnosis : Male - Scutum broad oval, ornamented with six pale spots; punctations numerous; marginal groove absent; eyes indistinct; dentition 3/3; coxa I with two minute spurs, the external spur longer.

Female - Scutum ornamented with six pale spots; eyes pale and flat; dentition 3/3; coxa I with two short unequal spurs; tarsi tapering gradually.

Material examined : Calcutta Dt. : 40 (F), 32 (M), Zoological garden, Calcutta, from *Varanus* sp., 4.III.1985, coll. S. Banerjee; 1 (F), 8 (M), Zoological Garden, Calcutta, from *Naja naja*, 5.III. 1985, coll. S. Banerjee.

Hosts : *Geomyda grandis*, *Varanus* sp., *Naja naja*.

Distribution : India : West Bengal (Calcutta), A&N Islands, Orissa. Elsewhere : Australia, Indonesia, Malaysia, New Guinea, Philippines, Taiwan, Thailand, Singapore, Vietnam.

Remarks : Only one male of *A. helvolum* of *Geomyda grandis* was first recorded from Zoological Garden, Calcutta (Sharif, 1928). The present collection from the same locality is the second record from West Bengal. The ticks live as host of *Varanus* sp. and large snakes.

2. *Amblyomma javanense* (Supino)

1897. *Rhipicephalus javanensis* Supino, *Atti. Soc. Veneto-Trent Sci. nat.*, 3 (1) : 233.

1908. *Aponomma javanense* Cooper and Robinson, *Proc.Camb. Philos. Soc.*, 14 : 464-466.

1968. *Amblyomma javanense* (Supino), Hoogstraal, Santana and Peenen, *Ann. Ent. Soc. Amer.*, 61(3) : 722-729.

Diagnosis : Male - Scutum broad, oval, narrow; anteriorly inornate; punctations fine; marginal groove obsolete; eyes indistinct; dentition 3/3; coxa I with two minute blunt flat spurs.

Female - Scutum cordiform, inornate; punctations numerous; eyes indistinct; dentition 3/3; coxae as in male.

Hosts : *Manis pentadactyla*, *Nicoria tricarinata*.

Distribution : India : West Bengal (Calcutta, Jalpaiguri), Bihar, Gujarat, Karnataka, Maharashtra, Orissa, Uttar Pradesh. Elsewhere : Bangladesh, Burma, China, Indonesia, Malaysia, Pakistan, Philippines, Vietnam.

Remarks : The species was earlier recorded from Zoological Garden, Calcutta (Off *Manis pentadactyla*) (Robinson, 1926) and Baradighi Tea Estate, Jalpaiguri (Off *Nocoria tricarinata*) (Sharif, 1928). The species is recorded here for the first time from Karnataka and Uttar Pradesh.

3. *Amblyomma supinoi* Neumann

1897. *Ixodes testudinis* Supino, *Atti.Soc. Veneto - Trent. Sci. nat.*, 3 (1) : 247.

1899. *Aponomma testudinis* (Supino), Neumann, *Mem. Soc. Zool. France*, 12 : 199-200.

1902. *Amblyomma testudinis* (Supino), Neumann, *Arch. Parasitol.*, 6 : 124.

1905. *Amblyomma supinoi* Neumann, *Arch. Parasitol.*, 9 : 234.

1926. *Amblyomma supinoi*, Robinson, Cambridge University Press, 183.

1928. *Amblyomma supinoi*, Sharif, *Rec. Indian Mus.*, 30 (3) : 325.

Diagnosis : Male - Scutum broadly oval, ornamented with irregular pale stripes over the whole body; punctations fine on the central part of the scutum, coarser in the marginal zone; dentition 3/3.

Female - Scutum cordiform, narrow at the posterior part, ornamented with pale patches on the lateral and median field; punctations both fine and coarse; dentition 3/3.

Host : *Testudo elongata*.

Distribution : India : West Bengal (Jalpaiguri). Elsewhere : Burma.

Remarks : The species has so far been recorded from only one locality in West Bengal (Baradighi, Jalpaiguri).

4. *Amblyomma testudinarium* Koch

1844. *Amblyomma testudinarium* Koch, *Arch. Naturgesch*, 10 (1) : 226.

1926. *Amblyomma testudinarium*, Robinson, *Ticks-Mongr. Ixodoidea*, pt.4 (Cambridge Univ. Press) : 257.

1928. *Amblyomma testudinarium*, Shariff, *Rec. Indian Mus.*, 30(3) : 330.

Diagnosis : Male - Scutum with ornamentation with dark-brown markings on pale ground; falciform stripe large and thick; deep punctations; coxa I with two unequal stout spurs; dentition 4/4.

Female - Scutum triangular with narrow posterior part, ground colour yellowish, punctations numerous; moderately large porose areas; dentition 4/4; coxa I with moderately stout spurs.

Material examined : Jalpaiguri Dt.: 9 (F), 5 (M), Buxa, Jalpaiguri, from Buffalo, 23. XI. 1983, coll. S.K. De.

Hosts : Buffalo, tiger.

Distribution : India : West Bengal (North 24-Parganas, Darjiling, Jalpaiguri), Arunachal Pradesh, Assam, Karnataka, Maharashtra, Orissa, Sikkim. Elsewhere : Bangladesh, Burma, Indonesia, Japan, Malaysia, Phillippines, Sri Lanka.

Remarks : The species was earlier reported from West Bengal by Robinson (1926) and Sharif (1928) from Darjiling from unknown host and Naihati (North 24-Parganas) from Tiger.

2. Genus *Aponomma* Neumann

1831. *Ixodes* (en partim) Muller, *Nova. Acta Physico-medica* XV (part 2), 235.

1899. *Aponomma* Neumann, *Mem. Soc. Zool. France*, XII : 180.

Key to the species of *Aponomma*

MALES

1. Coxa I with two unequal spurs; punctations large; comparatively small portion of the surface of scutum bears brown stripes and spots; size comparatively small*gervaisi* (Lucas)
2. Coxa I with two sub-equal spurs; punctations small; comparatively large portion of the surface of scutum bears brown stripes and spots; size comparatively large*lucasi* Warburton

FEMALES

1. Coxa I with two unequal spurs; posterior angle of scutum rounded; comparatively large punctations*gervaisi* (Lucas)
2. Coxa I with two subequal spurs; posterior angle of scutum truncated; comparatively small punctations*lucasi* Warburton

5. *Aponomma gervaisi* (Lucas)

1847. *Ixodes gervaisi* Lucas, *Ann. Soc. Ent. Fr.*, 5(7) : 259-261 (Abstract).

1899. *Aponomma gervaisi* (Lucas), Neumann, *Mem. Soc. Zool. France*, 12 : 182-185.

1910. *Aponomma gervaisi*, Warburton, *Parasitology*, 3 : 405.
 1911. *Aponomma gervaisi*, Neumann, *Das Tierreich*, 26 : 93.
 1928. *Aponomma gervaisi*, Sharif, *Rec. Indian Mus.*, 30 (3) : 334.

Diagnosis : Male - Scutum broad, ornamented with brown stripes and spots on the metallic green ground; cervical spots well developed; festoons generally metallic green in colour; punctations large and subequal; emargination deep; dentition 4/4.

Female - scutum cordiform with a sinous outline; brown stripes occupy most of the area of scutum; emargination moderately deep; punctation unequal; dentition 4/4.

Hosts : *Naia tripudians*, *Varanus bengalensis*.

Distribution : India : West Bengal (Calcutta), Assam, Maharashtra, Manipur, Orissa, Uttar Pradesh. Elsewhere : Africa, Burma, Indonesia, Nepal, Pakistan, Sri Lanka.

Remarks : Sharif (1928) reported that Neumann (1899) first recorded the species from West Bengal (actual place was not mentioned) and later Warburton (1910) recorded it from the Zoological Garden, Calcutta.

6. *Aponomma lucasi* Warburton

1899. *Aponomma gervaisi* (Lucas), Neumann, *Mem. Soc. Zool. France*, 12 : 182-185.
 1910. *Aponomma gervaisi* var. *lucasi*, Warburton, *Parasitology*, 3 : 406.
 1928. *Aponomma gervaisi* var. *lucasi*, Sharif, *Rec. Indian Mus.*, 30 (3) : 337.
 1950. *Aponomma lucasi* Anastos, *Entomologica Amer.*, 30 (1-4) : 1-144.

Diagnosis : Male - Scutum broad; the stripes and spots on the scutum enlarged, brown area of the scutum increased; punctations small and unequal.

Female - Scutum cordiform; punctation fewer in number; cervical grooves short, convex externally.

Hosts : *Varanus salvator*, *Varanus nebulosus*, *Naia tripudians*, *Python molurus*, *Python reticulatus*, *Zamensis mucosus*, *Bos frontalis*, *Ovis nahura*.

Distribution : India : West Bengal (Calcutta, Bardhaman), A & N Islands, Assam, Bihar, Madhya Pradesh, Orissa, Uttar Pradesh. Elsewhere : Burma, Indonesia, Malaysia, Sri Lanka, Thailand, Vietnam.

Remarks : According to Sharif (1928) the species was recorded earlier from Ranigunj (Bardhaman) and the Zoological Garden, Calcutta.

3. Genus *Boophilus* Curtice

1891. *Boophilus* Curtice, *Journ. Compar. Med. Veter. Arch.*, 12 : 313.

7. *Boophilus microplus* (Canestrini)

1887. *Haemaphysalis micropla* Canestrini, *Atti. Soc. Veneto. trent. Sci. nat.*, 11 : 104.
 1890. *Rhipicephalus micropla* Canestrini, *Padova*, 4 : 493.
 1899. *Rhipicephalus australis* Fuller, *Qd. Agric. J.*, 4 (5) : 389-394.
 1901. *Boophilus australis* Stiles and Hassall, *Bur. Anim. Ind. U.S. Dept. Agric.*, Washington, D.C. Circ. No. 34 : 2-3.
 1928. *Boophilus australis*, Sharif, *Rec. Indian Mus.*, 30 (3) : 284-289.
 1943. *Boophilus microplus*, Fairchild, *Am. J. Trop. Med.*, 23 (6) : 586.
 1950. *Boophilus microplus*, Anastos, *Ent. Amer.*, 30 (1-4) : 71-72.
 1956. *Boophilus microplus*, Hoogstraal, *African Ixodoidea*, 1 : 295-296. 319-320.
 1960. *Boophilus microplus*, Arthur, *Ticks, Mongr. Ixodoidea*, pt.5 (Cambridge Univ. Press) : 207

Diagnosis : Male - Scutum quite hirsute; caudal appendage short, tapering; dentition 4/4; inner margin of basal palpal segment ventrally concave.

Female - Coxa I with deep, inverted 'V'- shaped cleft, inner margin of basal palpal segment ventrally short, deeply concave; dentition 4/4.

Material examined : *Darjiling Dt.* - 4 (F), 2 (M), Bongbasti, Kalimpong, from cattle, 23.VIII.1978, coll. A.K. Sanyal & S.K. De; 27 (F), 5 (M), Sukna forest, from cattle, 27.XI.1983, coll. A.K. Sanyal & S.K. De; 6 (F), 6 (M), Sukna forest, from buffalo, 27.XI.1983, coll. S.K. De. *Jalpaiguri Dt.* 2 (F), 4 (M), Hamiltongunj, from cow, 22.XI.1983, coll. A.K. Sanyal & S.K. De; 10 (F), 9 (M), Rajabhatkhawa, Alipurduar, from calf, 22.XI.1983, coll. A.K. Sanyal & S.K. De; 8 (F), 2 (M), Joyanti, from cow, 23.XI.1983, coll. A.K. Sanyal & S.K. De; 25 (F), 6 (M), Buxa Road, from cow, 23.XI.1983, coll. A.K. Sanyal & S.K. De; 18 (F), 1 (M), Jaigaon, from cattle, 24.XI.1983, coll. A.K. Sanyal & S.K. De. *Kochbihar Dt.* - 60 (F), 6 (M), Boroboalmari, Dinhata, from cow, 20.XI.1983, coll. A.K. Sanyal & S.K. De; 11 (F), 6 (M), Gossainmari sal forest, Paschim Khalisa, Dinhata, from calf, 20.XI.1983, coll. A.K. Sanyal & S.K. De. *West Dinajpur Dt.* - 15 (F), 5 (M), Hemtabad, Raigunj, from cow, 30.XI.1983, coll. A.K. Sanyal & S.K. De. *Murshidabad Dt.* - 7 (F), 2 (M), Lalgola, from cow, 5.XII.1983, coll. A.K. Sanyal & S.K. De; 15 (F), 9 (M), Deswalipara, Lalgola, from cow, 4.XII.1983, coll. A.K. Sanyal & S.K. De. *Medinipur Dt.* - 25 (F), Jhargram, Arjundahar, from cattle, 12.XII.1985, coll. S.K. De; 9 (F), Chilkigarh, Jhargram, from cattle, 15.XII.1985, coll. S.K. De. *Purulia Dt.* - 10 (F), 6 (M), near forest office, Purulia, from calf, 10.IX.1987, coll. A.K. Sanyal & S.K. De; 22 (F), 5 (M), Bansgarh, Balarampur, from cow, 11.IX.1987, coll. A.K. Sanyal & S.K. De; 2 (F), 16 (M), Chutkidihi, Balarampur, from cattle, 11.IX.1987, coll. A.K. Sanyal & S.K. De; 40 (F), 10 (M), Pcdada, Manbazar, from cattle, 13.IX.1987, coll. A.K. Sanyal & S.K. De. *Bankura Dt.* - 40 (F), 5 (M), Hapania, Susunia, from Cattle, 20.IX.1987, coll. A.K. Sanyal & S.K. De. *Birbhum Dt.* - 2 (F), Babubera, Dubrajpur, from cattle, 27.IX.1986, coll. A.K. Sanyal & S.K. De; 2 (F), Bhattacharjee Para, Nanur, from cattle, 29.IX.1986, coll. A.K. Sanyal & S.K. De. *North 24-Parganas Dt.* - 12 (F), 9 (M), Gobardanga, from cattle, 21.III.1978, coll. S.K. De; 26 (F), 16 (M), Naihati, from cattle, 30.IX.1985, coll. A.K. Basu. *Haora Dt.* - 20 (F), 11 (M), Bagnan, from cattle, 2.IV.1985, coll. A.K. Basu; 9 (F), 11 (M), Uluberia, from cattle, 14.VII.1985, coll. A.K. Basu. *Barddhaman Dt.* - 16 (F), 7 (M), Atapur, Raina, from cattle, 22.VII.1985, coll. A.K. Basu. *Nadia Dt.* - 11 (F), 10 (M), Santipur, from cattle, 29.V.1985, coll. A.K. Basu.

Distribution : India : West Bengal (all the districts), Arunachal Pradesh, A & N Islands, Assam, Bihar, Gujarat, Himachal Pradesh, Maharashtra, Madhya Pradesh, Meghalaya, Orissa, Punjab, Rajasthan,

Tamil Nadu, Uttar Pradesh. Elsewhere : Africa, Australia, Burma, Central America, Formosa, Indonesia, Japan, New Guinea, Philippines, South America, Sri Lanka.

Remarks : This species is a common cattle infesting tick.

4. Genus *Dermacentor* Koch

1844. *Dermacentor* Koch, *Arch. Naturgesch.*, 10 (1) : 235.

8. *Dermacentor auratus* Supino

1897. *Dermacentor auratus* Supino, *Att. Soc. Veneto-Trent. Sci. Nat.*, 3 (2) : 235.

1928. *Dermacentor auratus* Sharif, *Rec. Indian Mus.*, 30 (3) : 292.

Diagnosis : Male - Capitulum rectangular, dorsally ornate; palpi large, longer than basis; ventral ridge distinct; dentition 3/3; scutum with variable brown base colour markings in the form of lines; variable brown smaller patches in lateral field; cervical grooves deep, short; all festoons ornate.

Female - Capitulum rectangular, dorsally weakly ornate; palpi longer in comparison to male, palpal article I bears three long curved palpal setae; dentition 3/3; scutum with brown markings arranged as a longitudinal median strip, all markings devoid of punctations; cervical grooves deep; thick white hairs arise from many large punctations; white hairs separating festoons.

Hosts : Deer, Man.

Distribution : India : West Bengal (Calcutta, Darjiling, Jalpaiguri, North 24-Parganas), Andaman Island, Assam, Arunachal Pradesh, Bihar, Karnataka, Orissa, Uttar Pradesh. *Elsewhere* : Burma, Indonesia, Sri Lanka.

Remarks : Sharif ((1928) first recorded the species collected from deer and man from West Bengal.

5. Genus *Haemaphysalis* Koch

1844. *Haemaphysalis* Koch, *Arch. Naturg.*, 10 (1) : 217-239.

Key to the species of *Haemaphysalis*

MALES

1. Palps salient laterally2
- Palps not or minutely salient laterally4
2. Coxa IV without elongated spur*indica* Warburton
- Coxa IV with greatly elongated spur3

3. Coxa IV with single spur*spinigera* Neumann
 - Coxa IV with two spurs*cornigera shimoga* Trapido and Hoogstraal
4. Palpal segment 3 with distinct dorsal spur5
 - Palpal segment 3 without distinct dorsal spur8
5. Palpal segment 2 and 3 of equal length6
 - Palpal segment 2 longer than segment 37
6. Ventral spur of trochanter large; lateral groove shallow; ventral spur on palpal segment 3 large;
 *ramachandrai* Dhanda, Hoogstraal and Bhat
 - Ventral spur of trochanter lacking; lateral groove long; ventral spur on palpal segment 3 small...
*bispinosa* Neumann
7. Lateral groove shallow; ventral spur on trochanter short; hypostome 5/5*obesa* Larrousse
 - Lateral groove obsolete; ventral spur on trochanter pointed; hypostome 4/4*hystricis* Supino
8. Lateral groove shallow9
 - Lateral groove obsolete 11
9. Ventral spur on palpal segment 3 present10
 - Ventral spur on palpal segment 3 absent*aponommoides* Warburton
10. Ventral spur on trochanter small; hypostome 5/5*aborensis* Warburton
 - Ventral spur on trochanter triangular; hypostome 6/6*montgomeryi* Nuttall
11. Palpal segment 2 longer than segment 3; hypostome 5/5*darjeeling* Hoogstraal and Dhanda
 - Palpal segment 2 and 3 equal in length; hypostome 4/4 or 5/512
12. Wide ventral spur on palpal segment 3; hypostome 4/4*birmaniae* Supino
 - Small ventral spur on palpal segment 3; hypostome 5/5*himalaya* Hoogstraal

FEMALES

1. Palps salient laterally2

- Palps minutely or not salient laterally4
2. Palpal segment 3 with dorsal spur3
- Palpal segment 3 without dorsal spur but posterior border may protrude*indica* Warburton
3. Lateral salience of palpal segment 2 with ventral retroverted spur*spinigera* Neumann
- Later salience of palpal segment 2 without such spur..*cornigera shimoga* Trapido and Hoogstraal
4. Palps minutely salient laterally5
- Palps not salient laterally11
5. Trochantal spurs distinct6
- Trochantal spurs feeble or absent7
6. Palpal segment 2 with a retroverted spur*montgomeryi* Nuttall
- Palpal segment 2 without such spur*birmaniae* Supino
7. Hypostome 4/48
- Hypostome 7/7*himalaya* Hoogstraal
8. Palpal segment 3 with dorsal spur9
- Palpal segment 3 without dorsal spur10
9. Lateral grooves long, distinct; spurs on coxae II-IV reduced*bispinosa* Neumann
- Lateral grooves shallow; spurs of coxae II-IV reduced to short rounded ridges
..... *ramachandrai* Dhanda, Hoogstraal and Bhat
10. Length and breadth of palpal segment 2 subequal; palpal segment 3 three-fifth as long as 2; basis capituli dorsally 2.5-2.8 times as broad as long*aborensis* Warburton
- Palpal segment 2 1.2 times as broad as long; palpal segment 3 three-fourth as long as 2; basis capituli dorsally two times as broad as long*darjeeling* Hoogstraal and Dhanda
11. Palpal segment 3 without dorsal spur*apponommoides* Warburton
- Palpal segment 3 with dorsal spur12

12. Palpal segment 3 with short ventral spur; hypostome 5/5*obesa* Larrousse
 - Palpal segment 3 with large ventral spur; hypostome 4/4*hystericis* Supino

9. *Haemaphysalis aborensis* Warburton

1913. *Haemaphysalis aborensis* Warburton, *Parasitology*, 6 : 121-123.

Diagnosis : Male - Palpi compact, palpal segment I with short pedicle; ventral spur broadly triangular; length of coxal spurs subequal; spur I peg like, spur II to IV elongately triangular; dentition 4/4.

Female - Palpi compact, palpal segment I with pedicle relatively elongate; dentition 4/4; posterior margin of scutum rounded; cervical pits narrowly elongate; spur I peg like, spurs II to IV short and triangular.

Hosts : Sweeping vegetation, Barking deer, *Parus monticulus*, *Gallus g. murghi*, *Sus scrofa cristatus*.

Distribution : India : West Bengal (Darjiling, Jalpaiguri), Arunachal Pradesh, Assam, Meghalaya. Elsewhere : Burma, Laos, Nepal, North Vietnam, Thailand.

10. *Haemaphysalis aponommoides* Warburton

1913. *Haemaphysalis aponommoides* Warburton, *Parasitology*, 6 : 128-130.

1962. *Haemaphysalis aponommoides*, Hoogstraal, *J. Parasit.*, 48 : 195-203.

Diagnosis : Male - Punctations numerous; festoons 11 in number; ventrally lacking retrograde spur on segment 3; spiracular plate narrowly elongate; posterior integument forming two leathery pseudoshield pitted by numerous large punctations each bearing a short seta.

Female - Scutum broader than long; palps long and narrow; dentition 3/3; absence of spur or projection on dorso-basal margin of palpal segment 3; spurs on coxae I - IV subequal; spiracular plate short, comma-shaped.

Material examined : Darjiling Dt. - 2 (F), 1 (M), Pankhabari Ridge, Neora valley, from unknown host, 24.XI.1982, coll. R.K. Kacker; 1 (M), around Ghoombhanjan area, from vegetation, 16.XII.1973, coll. P.K. Maity.

Hosts : Vegetation, cattle, man.

Distribution : India : West Bengal (Calcutta, Darjiling), Arunachal Pradesh, Sikkim. Elsewhere : China, Nepal.

Remarks : This species is believed to be the cause of Himalayan hemorrhagic disease infection (Hoogstraal, 1967).

11. *Haemaphysalis birmaniae* Supino

1897. *Haemaphysalis birmaniae* Supino, *Atti. Soc. Ven. - Tent. Sci. Nat. Padova*, 2, 5, 3 (1) : 251.
 1928. *Haemaphysalis birmaniae*, Nuttall and Warburton, *Ticks*, part 3, 415.

Diagnosis : Male - Scutum broadly rounded; cervical pits small; cervical and lateral grooves obsolete; palpi compact, segment 2 longer than segment 3, elongately triangular ventral spur on segment 3; dentition 4/4; coxal spur lanceolate; broadly triangular spur on coxae II and IV.

Female - Scutum as broad as long, margins gradually rounded; cervical grooves short; punctations few, small; palpi as in male except segment 2 which is as long as broad; dentition 4/4.

Hosts : *Muntiacus muntzak vaginalis*, *Capricornis sumatraensis thar*, *Antelope cervicapra*.

Distribution : India : West Bengal (Darjiling), Arunachal Pradesh. Elsewhere : Burma, Nepal.

Remarks : There is no record of the species from domestic goats and sheep and rarely found to attack the cattle.

12. *Haemaphysalis bispinosa* Neumann

1897. *Haemaphysalis bispinosa* Neumann, *Mem. Soc. Zool. France*, 10 : 341.
 1915. *Haemaphysalis bispinosa*, Nuttall & Warburton, *Ticks*, part 3, : 426.
 1928. *Haemaphysalis bispinosa*, Sharif, *Rec. Indian Mus.*, 30 (3) : 255.
 1966. *Haemaphysalis (Kaiseriona) bispinosa*, Hoogstraal and Trapido, *J. Parasit.*, 52 : 1188.

Diagnosis : Male - Scutum elongate-oval in shape; cervical grooves with convergent depressions; lateral grooves long, well marked, ending behind spiracles; festoons are twice as long as broad; palps slightly salient, segment 2 and 3 subequal, segment 3 bluntly conical and bears a prominent dorsal retrograde spur in the mid-dorsal line and a similar but larger ventral spur; dentition 4/4; a moderate sharp spur on coxa I; a very slight protubérance on coxae II and IV.

Female - Scutum sub cordiform, punctations little larger than male; basis capituli broader; cornua short; porose areas oval; palpi as in male.

Material examined : South 24-Parganas Dt. : 45 (F), 55 (M), Baruipur, from cattle, 10.V.1978, coll. S.K. De; 14 (F), 10 (M), Basanti, from cattle, 21.VII.1985, coll. A.K. Basu. North 24-Parganas Dt. - 4 (F), 2(M), Gobardanga, from cattle, 29.VII.1978, coll. S.K. De. Jalpaiguri Dt. - 10 (F), 12 (M), Rajabhtkhawa, Alipurduar, from goat, 22.XI.1983, coll. A.K. Sanyal & S.K. De; 11 (F), 19 (M), Jayanti, from cow, 23.XI.1983, coll. A.K. Sanyal & S.K. De; 5(F), 10(M), Jalpaiguri, from cattle, 7.VII.1985, coll. A.K. Basu; 9 (F), 4 (M), Jalpeswar, from cattle, 11.VII.1985, coll. A.K. Basu. West Dinajpur dist. - 28 (F), 25 (M), Manipara, Raigunj, from cattle, 29.XI.1983, coll. A.K. Sanyal & S.K. De; 2 (F), 2 (M), Subhashgunj, Raigunj, from goat, 29.XI.1983, coll. A.K. Sanyal & S.K. De; 3 (F), 3 (M), Hemtabad, Raigunj, 30.XI.1983, coll. A.K. Sanyal & S.K. De; 6 (F), 9(M), Balurghat, from cattle, 14.I.1985, coll. A.K. Basu. Maldah Dist. - 2 (F), 4(M), Ramkeli, Gour, from sheep, 1.XII.1983, coll. A.K. Sanyal & S.K. De; 10 (F),

4 (M), Adina forest, from cow, 2.XII.1983, coll. A.K. Sanyal & S.K. De; 4 (F), 11 (M), Gour, from cattle, 18.VII.1985, coll. A.K. Sanyal & S. K. De. *Kochbihar dist.* - 2 (F), 4 (M), Jambari, Gossainmari Sal forest, Dinhata, from calf, 20.XI.1983, coll. A.K. Sanyal & S.K. De; 2 (F), 6 (M), Mathabhanga, from buffalo, 14.I.1985, coll. A.K. Basu; 3 (F), 2 (M), Tufangunj, from cattle, 8. VII.1985, coll. A.K. Basu. *Murshidabad dist.* - 2 (F), 10 NN, Deswalipara, Lalgola, from goat, 4.XII.1983, coll. A.K. Sanyal & S.K. De; 9 (F), 7 (M), Kandi, from cattle, 24.III.1985, coll. A.K. Basu. *Haora dist.* - 3 (F), 1 (M), 4 NN, Jagatpur, Purbapara, Uluberia, from goat, 4.III.1983, coll. S.K. De; 21 (F), 17 (M), Udaynarayanpur, from cattle, 10.X.1985, coll. A.K. Basu. *Birbhum dist.* - 39 (F), 25 (M), Tarapith, from cattle, 25.IX.1986, coll. A.K. Sanyal & S.K. De; 21 (F), 2 (M), Rampurhat, from cattle, 2.VII.1985, coll. A.K. Basu. *Darjiling dist.* - 10 (F), 8 (M), Naya Kaman, near F.R.H., Rangpoo, from goat, 16.IX.1986, coll. A.K. Sanyal & S.K. De; 3 (F), 6 (M), ghoom bustee, from cattle, 17.IV.1985, coll. A.K. Basu; 8 (F), 7 (M), Kurseong, from cattle, 18.IV.1985, coll. A.K. Basu; 3 (F), 2 (M), Mirik, from cattle, 19.IV.1985, coll. A.K. Basu. *Medinipur dist.* - 1 (F), 1 (M), Chaulkola, 19 km away from Digha, from goat, 18.XII.1985, coll. S.K. De; 25 (F), 26 (M), Ragpur, from cattle, 14.I.1985, coll. A.K. Basu; 15 (F), 10 (M), Medinipur town, from cattle, 24.III.1985, coll. A.K. Basu. *Nadia dist.* - 8 (F), 2 (M), Krishnagar, from cattle, 17.V.1985, coll. A.K. Basu; 8 (F), 6 (M), Santipur, from cattle, 8.VI.1985, coll. A.K. Basu.

Hosts : Cattle, dog, tiger, vegetation.

Distribution : India : West Bengal (Most of the districts), A & N Islands, Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, Gujarat. Elsewhere : Australia, Burma, Sri Lanka, China, Nepal, New Zealand, Malaysia, Pakistan, Thailand.

13. *Haemaphysalis cornigera shimoga* Trapido and Hoogstraal

1964. *Haemaphysalis cornigera shimoga* Trapido and Hoogstraal, *J. Parasit.*, 50 (2) : 303.

Diagnosis : Male - Basis capituli rectangular; lateral grooves shallow; cervical grooves deep, short; punctations small, numerous, palpi short, widely salient, segment 2 with a prominent ventrolateral spur which is wide, pointed, posteriorly directed; segment 3 dorsally twice as wide as long, basal margin extended laterally to form a wing, widely overlapping apical margin of segment 2; dentition 5/5; coxa 1 with a long triangular spur, coxa 2 with spur bigger than spur 3; coxa 4 with two elongated spurs.

Female - Cervical grooves deep, narrow; punctations small, numerous in lateral fields; palpi widely salient, segment 2 ventrally spurless to the inner margin, lateral profile as in male, segment 3 slightly wider than long with a ventral spur as in male; dentition 4/4; coxa 1 to 3 as in male, coxa 4 with one or two very small spurs, inner spur sometimes absent.

Material examined : Jalpaiguri Dist. - 2 (F), 4 (M), Jaldapara forest, from sambar, 27.V.1975, coll. B.C. Nundy.

Host : Sambar.

Distribution : India : West Bengal (Jalpaiguri), Kerala, Karnataka, Meghalaya. Elsewhere : Sri Lanka.

Remarks : This species is reported here for the first time from West Bengal.

14. *Haemaphysalis darjeeling* Hoogstraal and Dhanda

1970. *Haemaphysalis darjeeling* Hoogstraal and Dhanda, *J. Parasit.*, **56** (1) : 169.

Diagnosis : Male - cervical grooves faint; lateral grooves obsolete; punctations rare, small; palpi moderately salient, segment 2 with posterodorsal margin forming a short broad triangle, posteroventral margin similar, segment 3 with a ventral spur as a broad blade with rounded apex; dentition 5/5; coxa 1 with a long lanceolate spur, 2 to 4 spur broadly triangular.

Female - Cervical grooves shallow; punctations small, distributed in external fields; genital operculum 'U'-shaped; palpal segment 2 with posteroventral margin short, broadly rounded projection; segment 3 with ventral spur slightly narrower and more pointed than in male.

Hosts : *Capricornis sumatraensis*, *Sus scrofa cristatus*, *Muntiacus muntjac vaginalis*.

Distribution : India : West Bengal (Darjiling), Assam, Manipur. Elsewhere : Burma, Thailand, Malaya.

15. *Haemaphysalis himalaya* Hoogstraal

1966. *Haemaphysalis himalaya* Hoogstraal, *J. Parasit.*, **52** : 805-809.

1970. *Haemaphysalis himalaya*, Hoogstraal and El. Kammah, *J. Parasit.*, **56** : 1023-1027.

Diagnosis : Male - Scutum 1.6 times as long as wide; punctations numerous; palpi compact, segment 2 1.5 time as long as wide, segment 3 as long as 2; dentition 5/5; coxa each with a short spur.

Female - Scutum 1.2 times as long as wide; punctations as in male; palpi compact, segment 2 1.6 times as long as wide, segment 3 as in male; dentition 7/7; coxa as in male.

Host : Barking deer.

Distribution : India : West Bengal (Darjiling), Uttar Pradesh. Elsewhere : Nepal.

Remarks : Hoogstraal and El. Kammah (1970) recorded the species from Darjiling (3200 ft. alt.) from Indian muntjac.

16. *Haemaphysalis hystricis* Supino

1897. *Haemaphysalis hystricis* Supino, *Atti. Accad. Sci. Vent. - trent. istr. 2 s. 3* : 230.

1899. *Haemaphysalis hystricis*, Supino, *Atti. Accad. Sci. Vent. - trent. istr. 2. s. 3* : 241.

1915. *Haemaphysalis hystricis*, Nuttall and Warburton, *Ticks*, part 3, 422 - 426.

1928. *Haemaphysalis hystricis*, Sharif, *Rec. Indian Mus.*, **30** (3) : 253-254.

1971. *Haemaphysalis hystricis*, Hoogstraal, Saito, Dhanda and Bhat, *J. Parasit.*, **57** (1) : 182.

Diagnosis : Male - Scutum 1.4 times as long as wide; punctations rare, small, scattered; palpal segment 2 slightly wider than long, 3 with triangular dorsobasal and ventral spur; dentition 4/4.

Female - Scutum 1.1 to 1.3 times as wide as long; punctations as in male; palpal segments are slightly elongated than male.

Host : Vegetation.

Distribution : India : West Bengal (Darjiling, Jalpaiguri), Arunachal Pradesh, Assam. Elsewhere: Burma, Japan, Ryukyu islands, Okinawa islands, Taiwan, Vietnam.

Remarks : The species was first recorded from India by Nuttall and Warburton (1915) from Assam. Later Sharif (1928) recorded the species from Darjiling, Assam and Arunachal Pradesh. Hoogstraal, Trapido and Kohls (1965) remarked that "all" previously published records from China, Sri Lanka, Macao, Celebes, Java, Borneo and the Malay Peninsula are either definitely in error or highly suspect"

17. *Haemaphysalis indica* Warburton

1910. *Haemaphysalis indica* Warburton, *Parasitology*, 3 : 395.

1928. *Haemaphysalis indica*, Sharif *Rec. Indian Mus.*, 30 (3) : 264.

Diagnosis : Male - Scutum 1.5 to 1.7 times as long as broad; posterior margin of basis capituli with short cornua, broadly triangular; palpi broadly salient, segment 2 approximately 2 times as broad as long; coxae each with broadly triangular spur.

Female - The females differ from the male only in sexual characters. Other characters more or less similar to male.

Hosts : Jackle, Bengal fox, domestic dog.

Distribution : India : West Bengal (Calcutta, Hugli), Bihar, Gujarat, Karnataka, Orissa. Elsewhere: Nepal, Pakistan, Sri Lanka.

Remarks : This species is seemed to be widely distributed in low lands of the Indian subcontinent.

18. *Haemaphysalis montgomeryi* Nuttall

1912. *Haemaphysalis montgomeryi* Nuttall, *Parasitology*, 5 : 57.

1915. *Haemaphysalis montgome. yi*, Nuttall and Warburton, *Ticks*, Part 3 : 395.

1928. *Haemaphysalis montgomeryi*, Sharif, *Rec. Indian Mus.*, 30 (3) : 246.

1964. *Haemaphysalis montgomeryi*, Dhanda and Rao, *Ind. Jour. Med. Res.*, 52 (11) : 1151.

Diagnosis : Male scutum elongate; punctations shallow; palpal segment 2 with blade-like dorsobasal spur; dentition 6/6; coxae each with a prominent spur.

Female - Characters almost same as in male except that the palpal segment 2 without blade-like dorso-basal spur.

Host : Goat.

Material examined : Darjiling Dist. - 2 (M), Mirik, from goat, 19.IX.1986, coll. A.K. Sanyal & S.K. De.

Distribution : India : West Bengal (Darjiling), Himachal Pradesh, Jammu and Kashmir, Uttar Pradesh. Elsewhere : Nepal, Pakistan.

19. *Haemaphysalis obesa* Larrousse

1925. *Haemaphysalis obesa* Larrousse, *Ann. Parasit.*, 3 : 302-304.

1966. *Haemaphysalis obesa*, Hoogstraal, Trapido and Kohls, *J. Parasit.*, 52(1) : 169.

1971. *Haemaphysalis obesa*, Hoogstraal, Saito, Dhanda and Bhat, *J. Parasit.*, 57 (1) : 177.

Diagnosis : Male - Scutum bordered laterally with a distinctive strip of soft, peculiarly striated integument; basis capituli converging posteriorly to form cornua; palpal segment 3 with short, wide dorsobasal spur and a large ventral spur; dentition 5/5.

Female - Scutum shield-shaped; punctations and palpi as in male; genital operculum triangular.

Hosts : Cattle, vegetation.

Distribution : India : West Bengal (Jalpaiguri), Meghalaya. Elsewhere : Malaysia, Thailand, Vietnam.

20. *Haemaphysalis ramachandrai* Dhanda, Hoogstraal and Bhat

1970. *Haemaphysalis ramachandrai* Dhanda, Hoogstraal and Bhat, *J. Parasit.*, 56 (4) : 823-831.

1971. *Haemaphysalis ramachandrai*, Hoogstraal, Saito, Dhanda and Bhat, *J. Parasit.*, 57(1) : 182.

Diagnosis : Male - Scutum broadly oval; lateral grooves short; cervical pits small, rounded; cervical grooves short, obscure; punctations small, numerous, basis capituli dorsally 1.5 times as broad as long (including cornua), cornua broadly triangular; palpal segment 2 approximately 1.3 times as broad as long; segment 3 with median dorsal spur and large ventral spur; denition 4/4 or 5/5; coxae each with a triangular spur, extending to anterior margin of coxa II.

Female - Cervical grooves and punctations as in male; basis capitui dorsally 2.2. times as broad as long (including cornua); broadly triangular; palpal segment 3 with dorsal spur smaller than that of male; genital operculum slightly longer.

Hosts : Cattle, vegetation.

Distribution : India : West Bengal (Darjiling, Jalpaiguri), Himachal Pradesh. Elsewhere : Nepal.

21. *Haemaphysalis spinigera* Neumann

1987. *Haemaphysalis spinigera* Neumann, *Mem. Soc. de France*, 10 : 324.
 1915. *Haemaphysalis spinigera*, Nuttall and Warburton, *Tick*, part 3 : 447.
 1928. *Haemaphysalis spinigera*, Sharif, *Rec. Indian Mus.*, 30 (3) : 262.
 1971. *Haemaphysalis spinigera*, Hoogstraal, Saito, Dhanda and Bhat, *J. Parasit.*, 57 (1) : 182.
 1974. *Haemaphysalis spinigera*, Ghalsasi and Dhanda, *Oriental Ins.*, 8 (4) : 505.

Diagnosis : Male - Scutum pyriform; cervical grooves obsolete; basis capituli dorsally rectangular; palpi short, widely salient, as broad as long, segment 2 dorsally 1.5 times as broad as long, postero dorsal margin crenate forming obtuse angle at its juncture, segment 3 with ventral spur; dentition 5/5; spur of coxa 1 long, tapering, sharply pointed, spurs of coxae II and III small, triangular; spur of coxa IV very long, dagger like, sharply pointed.

Female - Scutum subcircular; cervical grooves deep, narrow; punctations moderate, deep; palpi as in male except segment 3 dorsally with a posteriorly directed triangular spur; genital operculum 'U'-shaped; dentition 4/4; coxae 1 with a long bluntly pointed spur, II to IV with small triangular spurs.

Hosts : Cattle, vegetation.

Distribution : India : West Bengal (Darjiling, Jalpaiguri), A. & N. Islands, Andhra Pradesh, Madhya Pradesh, Maharashtra, Karnataka, Kerala, Tamil Nadu, Orissa. Elsewhere : Sri Lanka, Nepal.

6. Genus *Hyalomma* Koch

1984. *Hyalomma* Koch, *Arch.f. Naturgesch*, 10(1) : 220.

Key to the species of *Hyalomma*

MALES

1. Adanal shields broad; subanal shields absent 2
- Adanal shields elongate; subanal shields present 3
2. Punctations large, few; median and paramedian grooves deep; spiracular plates elongate oval ...
..... *hussaini* Sharif
- Punctations small, numerous; median and paramedian grooves indistinct; spiracular plates comma-shaped *brevipunctata* Sharif
3. Lateral grooves long; punctations variable; cervical grooves deep; parma absent; legs with white rings near the joints *marginatum isaaci* Sharif
- Lateral grooves short or absent; punctations few; cervical grooves deep or shallow; parma present; legs without rings *anatolicum anatolicum* Koch

FEMALES

1. Adanal shields broad; subanal shields absent2
- Adanal shields elongate; subanal shields present 3
2. Operculum wide, depressed medio-posteriorly; punctations large; cervical grooves distinct
.....*hussaini* Sharif
- Operculum elongate oval, not depressed medio-posteriorly; punctations few; cervical grooves indistinct*brevipunctata* Sharif
3. Operculum profile depressed posteriorly; scutum with few large punctations; cervical grooves deep; legs with rings*marginatum isaaci* Sharif
- Operculum knob-like; scutal surface with few large punctations; legs usually without rings
.....*anatolicum anatolicum* Koch.

22. *Hyalomma anatolicum anatolicum* Koch

1844. *Hyalomma anatolicum anatolicum* Koch, *Arch. Naturgesch*, 10 (1) : 220.
 1964. *Hyalomma anatolicum anatolicum*, Kaiser and Hoogstraal, *Acarologia*, 6 (2) : 257.
 1971. *Hyalomma anatolicum anatolicum*, Hoogstraal, Saito, Dhanda and Bhat, *J. Parasit.*, 57 (1) 182.
 1884. *Hyalomma anatolicum anatolicum*, Nandi and De, *Bull. zool. Surv. India*, 6 (1-3) : 337.
 1989. *Hyalomma anatolicum anatolicum*, Basu, De and Sanyal, *Environment & Ecology*, 7 (4) : 784.

Diagnosis : Male - Scutum lightly punctated; lateral grooves short but distinct; posteromedian groove not reaching the parma; subanal shields small, situated directly posterior of adanals; basis capituli dorsally with slightly concave posterior margin, never angular; legs without ring.

Female - Scutum longer than wide with narrowly rounded posterior margin; punctations large in scapular areas; operculum short, small.

Material examined : North 24-Parganas dist. - 15 (F), 12 (M), Gobardanga, from cattle, 29.V.1978, coll. S.K. De. South 24-Parganas Dist.- 8 (F), 1(M), Canning, from cattle, 17.VII., 1985, coll. A.K. Basu. Haora dist. - 7(F), 18(M), Amraberia, Uluberia, from cattle, 4.III. 1983, coll. S.K. De; 13(F), 2(M), Mourigram, from cattle, 14.VII. 1985, coll. A.K. Basu. Bankura dist.- 15(F), 35(M), Jairambati, from cattle, 24.IX.1987, coll. A.K. Sanyal & S. K. De; 9(F), 4(M), Bankura, from cattle, 16.I.1985, coll. A.K. Basu; 7(F), 22 (M), Gachhua, Balitha, from cattle, 30. IV.1985, coll. A.K. Basu; 9(F), 28(M), Khiri, from cattle, 30.IV.1985, coll. A.K. Basu; 7(F), 35 (M), Raibaghini, from cattle, 28.X.1985, coll. A.K. Basu. Purulia dist.- 4 (F), 17 (M), Muchikund, Raghunathpur, from cattle, 12. IX. 1982, coll. A.K. Sanyal & S.K. De; 11 (F), Madhupur, from buffalo, 26.III. 1985, coll. A.K. Basu; 6 (F), 8 (M), Purulia, from cattle, 12. VII. 1985, coll. A.K. Basu; 5 (F), 2 (M), Purulia, from buffalo 12. VII. 1985, coll. A.K. Basu. Birbhum dist. - 9 (F), 6 (M), Bhattacharjee para, Nanur, from cattle, 29. IX. 1986, coll. A.K. Sanyal & S.K. De; 5 (F), 7 (M), Manasapalli, Sainthia, from cattle, 26.ix. 1986, coll. A.K. Sanyal & S.K. De; 2 (F), 16 (M),

Rampurhat, from cattle, 2. VI. 1985, coll. A.K. Basu. *Barddhaman dist.* - 51 (F), 31 (M), Asansol Slaughter house, from cattle, - X. 1981, coll. A.K. Basu; 31 (F), 6 (M), Atapur, Raina, from cattle, 29.IV.1985, coll. A.K. Basu. *West Dinajpur Dist.* - 1(F), 3 (M), Hemtabad, Raigunj, from cow, 30. XI. 1983, coll. A.K. Sanyal & S.K.De; 9 (F), 5 (M), Islampur, from cattle, 19.1.1985, coll. A.K. Basu; 7 (F), 30(M), Dalkhola, from cattle, 19.II.1985, coll. A. K. Basu. *Murshidabad dist.* - 5 (F), 3 (M), Lalgola, from cattle, 23. III. 1985, coll. A.K. Basu; 11 (F), 2 (M), Raghunathgunj, from cattle, 17. IX.1985, coll. A.K. Basu. *Hugli Dist.* - 11 (F), Champadanga, from cattle, 14.I.1985, coll. A.K. Basu; 3 (F), Champadanga, from buffalo, 14.I.1985, coll. A.K. Basu. *Darjiling dist.* - 6 (F), 10 (M), Sonada, from cattle, 17.IV. 1985, coll. A.K. Basu; 10 (F), 6 (M), Tungsung Bustee, from cattle, 17.IV.1985, coll. A. K. Basu; 6 (F), 4 (M), Kurseong, from cattle, 18.IV.1985., coll. A.K. Basu; 2 (F), 15 (M), Pulbazar, from cattle, 19.IV.1985, coll. A.K. Basu. *Jalpaiguri dist.* - 16 (F), 3 (M), Alipurduar, from cattle, 24.I.1985, coll. A.K. Basu ; 3 (F), 8 (M), Alipurduar, from cattle, 9. VIII. 1985, coll. A.K. Basu. *Kochbihar dist.* - 6 (F), 14 (M), Dinhata, from cattle, 15.I.1985, coll. A.K. Basu; 11 (F), 4 (M), Mathabhanga, from Buffalo, 8.VII. 1985, coll. A.K. Basu. *Maldah dist.* - 14 (F), 7 (M), Maldah town, from cattle, 17. VII. 1985, coll. A.K. Basu; 7 (F), 2 (M), English bazar, from cattle, 7.I. 1985, coll. A.K. Basu.

Host : Cattle.

Distribution : India : West Bengal (Bankura, Barddhaman, Birbhum, Darjiling, Haora, Hugli, Kochbihar, Medinipur, North 24-Parganas, Puruliya, West Dinajpur), Andhra Pradesh, Assam, Delhi, Gujarat, Haryana, Himachal Pradesh , Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa. Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh. Elsewhere : Afganistan, Border of Mediterranean sea, Canary Islands, East Africa, Pakistan, Portugal, U.S.S.R., West Asia. Southeast Europe.

23. *Hyalomma marginatum isaaci* Sharif

1928. *Hyalomma aegyptium isaaci* Sharif, *Rec. Indian Mus.*, 30 (3) : 307.

1963. *Hyalomma marginatum isaaci*, Kaiser and Hoogstraal, *J. Parasit.*, 49 (1) : 130.

1964. *Hyalomma marginatum isaaci*, Kaiser and Hoogstraal, *Acarologia*, 6 (2) : 276.

Diagnosis : Male - Lateral grooves long, distinct; punctations few, large; cervical grooves rounded and extend to the anterior third of actual length; psteromedian and paramedian grooves extend to the festoons; anal shield large, subanals small, situated on the midaxis of the adanals, spiracular plates pilose with a thick tail; parma absent; legs with sharply defined rings near joints.

Female - Scutum slightly longer than wide; cervical grooves smoothly rounded, extending to and breaking the posterior margin of the scutum; genital operculum profile, slightly bulging; legs with white, narrow, sharply defined rings.

Material examined : *Medinapur dist.* 2 (M), Ghagra, 6 kms north of Belpahari, from cattle, 13.XII. 1985, coll. S.K. De; 1 (M), Sirsi village, 12 kms away from Jhargram, from goat, 14.XII. 1985, coll. S.K. De. *Bankura dist.* - 1 (M), Susunia, Goilagarh, from goat, 20. IX.1987, coll. A.K. Sanyal & S.K. De. *Purulia dist.* - 4 (F), 13 (M), Bagmundi, from goat, 16. IX. 1987, coll. A.K. Sanyal & S.K. De.

Hosts : Cattle, goat.

Distribution : India : West Bengal (Purulia, Bankura, Medinipur), Andhra Pradesh, Arunachal Pradesh, Bihar, Delhi, Gujarat, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh. Elsewhere : Afganistan, Nepal, Pakistan, Sri Lanka, West Asia.

Remarks : The species is recorded here for the first time from West Bengal. Grobov (1946) isolated the Crimean haemorrhagic fever virus from the nymphs of this species.

24. *Hyalomma brevipunctata* Sharif

1928. *Hyalomma hussaini* var. *brevipunctata* Sharif, *Rec. Indian Mus.* 30 (3) : 318.

1963. *Hyalomma brevipunctata*, Kaiser and Hoogstraal, *J. Parasit.*, 49 : 130.

1964. *Hyalomma brevipunctata*, Kaiser and Hoogstraal, *Acarologia*, 6 (2) : 265.

Diagnosis : Male - Punctations few in the central area and lateral grooves deep, distinct, reach the level of the eyes; cervical grooves deep, short pits; basis capituli broader than long with anterior projections; adanal shields broad and subanal shields lacking; spiracular plates comma-shaped.

Female - Punctations fine, numerous in lateral and cervical fields and in the anteromedian field. genital operculum elongate oval; others more or less same as male.

Hosts : Sambar, chita.

Distribution : India : West Bengal (Medinipur), Andhra Pradesh, Bihar, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Orissa, Punjab, Tamil Nadu and Uttar Pradesh. Elsewhere : Pakistan.

25. *Hyalomma hussaini* Sharif

1928. *Hyalomma hussaini* Sharif, *Rec. Indian Mus.*, 30 (3) : 314.

Diagnosis : Male - Punctations rare in central and caudal area, moderate numbers, large in scapular and cervical areas; lateral grooves deep and well developed; cervical grooves shallow, rounded, extended to the scutal midlength; basis capituli broader than long dorsally, lateral projections ventrally; adanal shields broad; subanal shields absent; median and paramedian grooves deep, distinct; spiracular plates elongate oval.

Female - Scutum longer than wide, smooth and glossy; punctations few, large in scapular and cervical areas; cervical grooves smooth, shallow, distinct; genital operculum shield-shaped.

Material examined : North 24-Parganas dist. - 1 (F), 1 (M), Gobardanga, from cattle, 21.II.1978, coll. S.K. De.

Host : Cattle.

Distribution : India : West Bengal (North 24-Parganas), Andhra Pradesh, Bihar, Delhi, Goa, Gujarat, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu. Elsewhere : Burma, Pakistan.

Remarks : The species is reported here for the first time from West Bengal:

7. Genus *Ixodes* Latreille

1795. *Ixodes* Latreille, Mag. Encyl. *J. Sci. Lett. Arts.*, 4 : 15-20.

Key to the species of *Ixodes*

MALES

1. Coxa I with a single short, blunt internal spur*ovatus* Neumann
- Coxa I with two spurs.....2
2. Coxa I with a thick, long external spur*acutitarsus* Karsch
- Coxa I with a blunt, short external spur*granulatus* Supino

FEMALES

1. Coxa I with a single, short internal spur*ovatus* Neumann
- Coxa I with two spurs.....2
2. Coxa I with a thick, long external spur; scutum almost as wide as long*acutitarsus* Karsch
- Coxa I with a blunt, short external spur; scutum longer than wide*granulatus* Supino

26. *Ixodes acutitarsus* (Karsch)

1880. *Haemalastor acutitarsus* Karsch, *Mittcheil. Munchener Entomol. Vereine*, 4 : 142.

1899. *Ixodes laevis* Neumann, *Mem.Soc. Zool. France*, 12 : 148.

1901. *Ixodes acutitarsus*, Neumann, *Mem. Soc. Zool. France*, 14 : 285.

1910. *Ixodes gigas*, Warburton, *Parasitology*, 3 : 397.

1928. *Ixodes acutitarsus*, Sharif, *Rec. Indian Mus.*, 30 (3) : 234.

Diagnosis : Male - Scutum smooth; punctations fine; lateral grooves continuous; capitulum 1.5 mm long; dentition 2/2 rows of ten teeth; coxa 1 with two very long spurs on coxae II-IV short.

Female - Capitulum 1.68 - 1.95 mm long; palps four times as long as broad; article II twice as long as article III; coxa I bidentate, internal spur thick, overlapping coxa II; other characters as in male.

Material examined : Darjiling dist. - 3(F), 1(M), Pankhabari Ridge, Neora Valley, from unknown host, 24 XI. 1982, coll. R.K. Kacker; 1 (M), Tindharia, from human body, 4. V. 1976, coll. A.R. Bhowmick.

Host : Man.

Distribution : India : West Bengal (Darjiling), Arunachal Pradesh, Assam, Sikkim. Elsewhere : Burma, Formosa, Japan, Tibet.

27. *Ixodes granulatus* Supino

1897 *Ixodes granulatus* Supino, *Atti. Soc. Veneto-Trent. Sci. Nat. Padova*, 3 (1) : 230.

1928. *Ixodes granulatus*, Sharif, *Rec. Indian Mus.* 30 (3) : 236.

Diagnosis : Male - Coxa I with two short spurs; cornua very short.

Female - Scutum elongate oval in shape; internal spur on coxa I comparatively short, external spur short but prominent; porose areas large; cornua absent; palps four times as long as broad, articles II and III subequal.

Host : *Epimys rufescens*.

Distribution : India : West Bengal (Darjiling), Arunachal Pradesh, Nagaland, Uttar Pradesh. Elsewhere : Burma, Indonesia, Malaysia.

Remarks : This species is the carrier of the virus causing Langat encephalitis to small ground dwelling and arboreal mammals from southeastern Asia to eastern India (Hoogstraal, 1966).

28. *Ixodes ovatus* Neumann

1899. *Ixodes ovatus* Neumann, *Mem. Soc. Zool. France*, 12 : 116.

Diagnosis : Male - Auriculae absent; dentition 4/4; hypostome not bilobed; palpi pointed apically; coxa I with slight internal spur, III and IV each with internal spur, lacking membranous expansion; syncoxae present on I and II.

Female - Basis capituli with well developed cornua, porose areas round; coxa I with a short, blunt internal spur; spur absent in coxa II.

Material examined : Darjiling dist - 1 (M), Around Ghoombhanjan area, from forest nursery, 16.III.1973, coll. P.K. Maity.

Host : Vegetation.

Distribution : India : West Bengal (Darjiling), Arunachal Pradesh, Sikkim, Uttar Pradesh. Elsewhere : Burma, China, Formosa, Japan, Nepal, Taiwan, Thailand.

Remarks : The species is reported here for the first time from West Bengal.

8. Genus *Nosomma* Schulze

1919. *Nosomma* Schulze, *Sitzungsb. Ges. Naturf. Freunde Berlin*, Jahrg., : 191.

29. *Nosomma monstrosum* (Nuttall & Warburton)

1908. *Hyalomma monstrosum* Nuttall and Warburton, *Proc. Cambridge Phil. Soc.* ,XIV : 414.

1919. *Nosomma monstrosum*, Schulze, *Sitzungsb. Ges. Naturf. Freunde Berlin*, Jahrg. (5) : 191.

1928. *Nosomma monstrosum*, Sharif, *Rec. Indian Mus.*, 30(3) :398.

Diagnosis : Male - Scutum with whitish ornamental secretion; cervical grooves short, deep and slightly convergent depressions; punctations unequal; lateral groove narrow lying with a row of punctations; the subanal shield trilobed, coxae with two unequal spurs; the external one longer than internal. coxae II to IV with two short subequal spurs; palpi one and half times as long as broad, segment 2 twice as long as segment 3 and broader than long, segment 3 with ventral retroverted spur; dentition 3/3.

Female : The ornamentation on legs, palps, base and scutum better developed than that of male; cervical grooves narrow, deep; punctations strongly unequal; spiracle sub-triangular; coxae and dentition as in male.

Host : Sambar.

Distribution : India : West Bengal (Medinipur), Bihar, Maharashtra, Orissa.

9. Genus *Rhipicephalus* Koch

1844. *Rhipicephalus* Koch, *Arch. Naturgesch.*, 10 (1) : 238.

Key to the species of *Rhipicephalus*

MALES

1. Adanal shields sickle-shaped; punctations fine; cervical grooves short converging; comma-shaped*haemaphysal*
- Adanal shields triangular; punctations large; cervical grooves oval or elongated semicircles; spiracle elongated oval or comma-shaped2
2. Internal margin of adanal shields with a small conical spur-like projection; eyes flat; cervical grooves form oval semicircles; spiracle elongated oval*turanicus* Promcrantzev

- Internal margin of adanal shields without conical projection; eyes slightly convex; cervical grooves form elongated semicircles; spiracle comma-shaped*sanguineus* (Latrielle)

FEMALES

1. Punctations few, sparsely scattered, finer ones hardly visible; scutum oval; cervical grooves deep*haemaphysaloides* Supino
- Punctations numerous, close set, irregular, finer ones visible; scutum usually elongated; cervical grooves shallow 2
2. Stigmal plates with short and wide dorsal projection; posterior contour rounded*turanicus* Pomerantzev
- Stigmal plates with narrow dorsal projection; posterior contour slightly convex or almost straight*sanguineus* (Latrielle)

30. *Rhipicephalus haemaphysaloides* Supino

1897. *Rhipicephalus haemaphysaloides* Supino, *Atti. Soc. Veneto-Trent. Sci. Nat.*, 2 s, 3 (1) : 234.
 1928. *Rhipicephalus haemaphysaloides*, Sharif, *Rec. Indian Mus.*, 30 (3) : 280.
 1971. *Rhipicephalus haemaphysaloides*, Hoogstraal, Saito, Dhanda and Bhat, *J. Parasit.*, 57 (1) : 182.

Diagnosis : Male - Cervical grooves short converging pits; lateral grooves narrow, deep; few punctations of larger and smaller types; basis capituli twice as broad as long; palpi longer than broad; adanal shields sickle-shaped; spiracle comma-shaped; dentition 3/3.

Female - Cervical grooves deep shallow; punctations few, large, finer one hardly visible; spiracle subtriangular with a large mecula; cornua short; blunt palpi twice as long as broad.

Hosts : Cattle, goat, *Capricornis sumatraensis*, barking deer, vegetation.

Distribution : India : West Bengal (Darjiling, Jalpaiguri, South 24-Parganas), Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Gujarat, Himachal Pradesh, Orissa, Uttar Pradesh, Karnataka, Kerala, Tamil Nadu. Elsewhere : Burma, China, Indonesia, Sri Lanka, Taiwan, Thailand, Vietnam.

Remarks : Sharif (1938) suspected that this species plays some role in transmission of tick typhus fever in India.

31. *Rhipicephalus sanguineus* (Latrielle)

1806. *Ixodes sanguineus* Latrielle, *Genera Crustaceorum et. Insectorum*, 1 : 157.
 1844. *Rhipicephalus sanguineus*, Koch, *Arch. Naturgesch.*, 10(1):238.
 1897. *Rhipicephalus sanguineus*, Neumann, *Mem.Soc.Zool.France*, 10 : 385.
 1928. *Rhipicephalus sanguineus*, Sharif, *Rec. Indian Mus.*, 30(3) : 275.

Diagnosis : Male - Cervical grooves elongated semicircles, lateral grooves narrow, deep; punctations comparatively numerous, unequal, irregularly arranged; basis capituli 3 times as broad as long; adanal shields triangular with internal margin almost straight; spiracle long, comma-shaped; palpi twice as long as broad with segment 2 and 3 subequal; dentition 3/3.

Female - Scutum sub-hexagonal, cervical grooves deep, punctate cervical fields; punctations as in male, spiracle subtriangular with a postero-dorsal angle.

Material examined : *Medinipur dist.* - 7 (F), 14 (M), Chaulkhola, 19 kms away from Digha, from dog, 18. XII. 1985, coll. S .K. De. *Purulia Dist.*- 1 (M), 2 (F), Pedda, Manbazar, from dog, 13. IX. 1987, coll. A.K. Sanyal & S. K. De.

Hosts : Bullock, dog.

Distribution : India : West Bengal (Calcutta, Medinipur, Purulia), Andhra Pradesh, Assam, Maharashtra, Orissa, Bihar, Gujarat, Haryana, Madhya Pradesh, Tamil Nadu, Jammu and Kashmir, Uttar Pradesh. Elsewhere: Africa, America, Europe, Asia (all continents).

32. *Rhipicephalus turanicus* Pomerantzev

1940. *Rhipicephalus turanicus* Pomerantzev, Matikashvily and Lototzky, *Mag. Parasit.*, Moscow, 7 : 113.

1968. *Rhipicephalus turanicus*, Mitchell and Spillett, *J. Med. Ent.*, 5 (1) : 5.

1969. *Rhipicephalus turanicus*, Dhanda and Rao, *J. Bombay nat. Hist. Soc.*, 66 (1) : 211.

Diagnosis : Male - Cervical grooves small, oval, semicircular; punctations small basic one and large scattered one; adanal shields long and narrow with a small conical spur-like projection on the internal margin; spiracular plate with a definite depression in the posterior third of its dorsal margin, posterior tip bent dorsally.

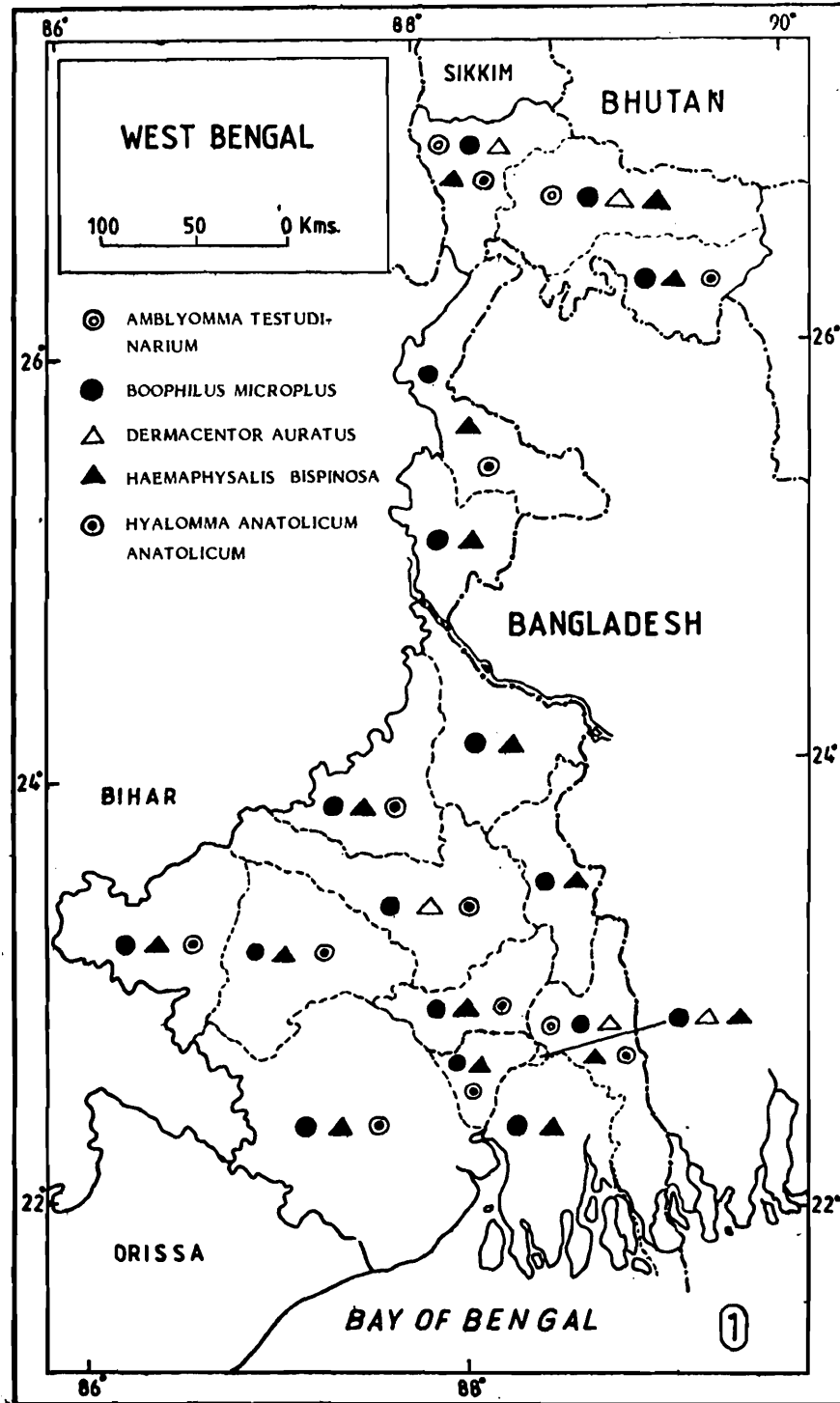
Female - Scutum slightly elongated, posterior margin wavy; punctations large and sparse, small superficial covers evenly the central field of the scutum; lateral grooves distinct; spiracular plate short, oval, wide dorsal projection, rounded posteriorly; long outside spur of coxa I does not reach the tip of the inside coxal spur.

Material examined : *Nadia dist.* - 25 (F), 7 (M), Kalyani, from cattle, 10.VI.1985, coll. A.K. Basu. *Purulia dist.* - 4 (F), 7 (M), Bansgarh, Balarampur, from dog, 11.IX.1987, coll. A.K. Sanyal & S.K. De.

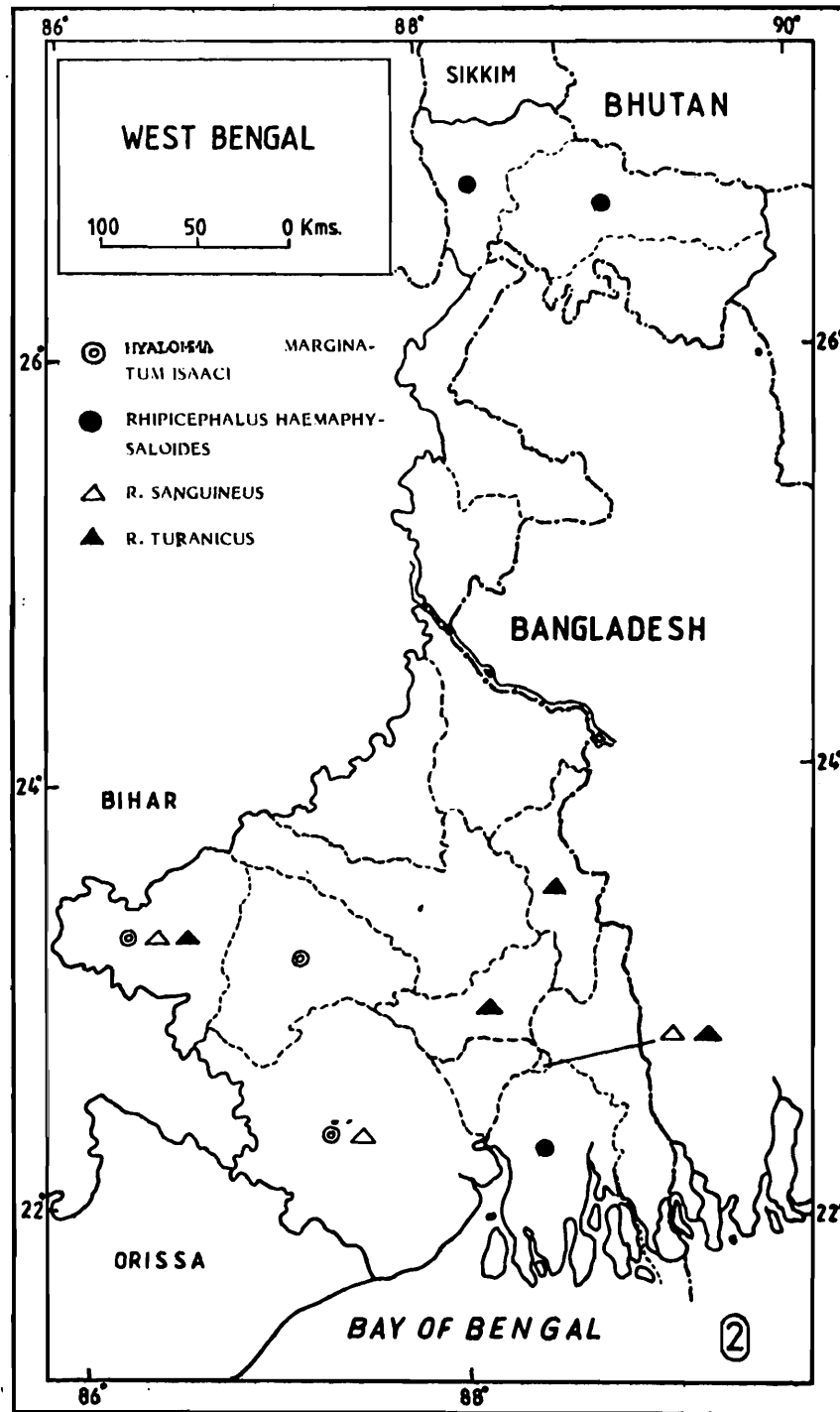
Hosts : Dog, cattle, *Bandicota bengalensis*, *Funumbulus palmarum*, *Rattus rattus*, *Mus musculus*, *Suncus murinus*.

Distribution : India : West Bengal (Calcutta, Hugli, Nadia, Purulia), Andhra Pradesh, Gujarat, Jammu and Kashmir, Madhya Pradesh, Maharashtra, Tamil Nadu. Elsewhere : China, Iran, U.S.S.R., Western Sudan, countries bordering the Mediteranean sea through the near and middle east.

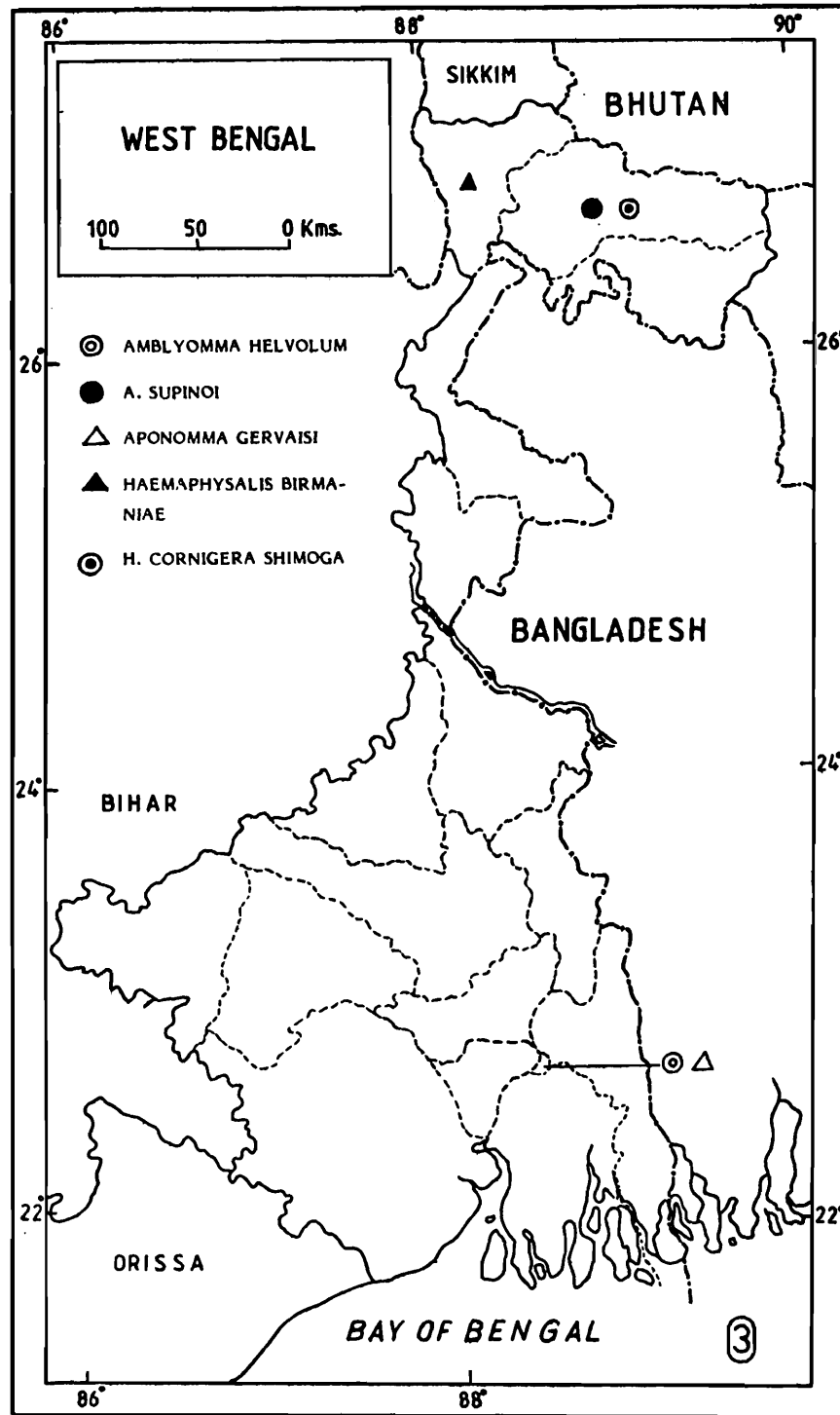
Remarks : Mitchell and Spillett (1968) recorded this species for the first time from West Bengal.



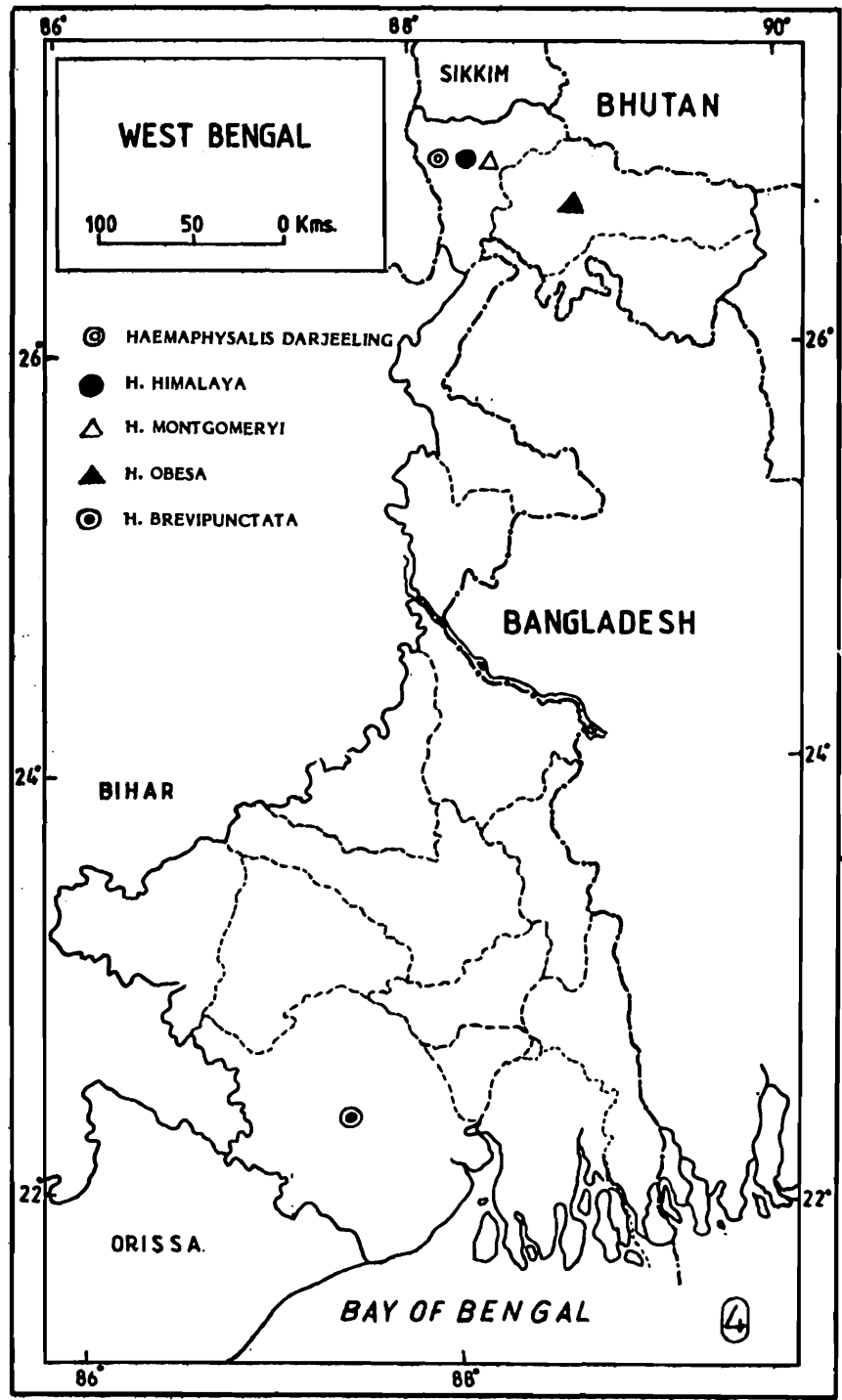
Map 1 : Distribution of abundant species of Ixodid ticks



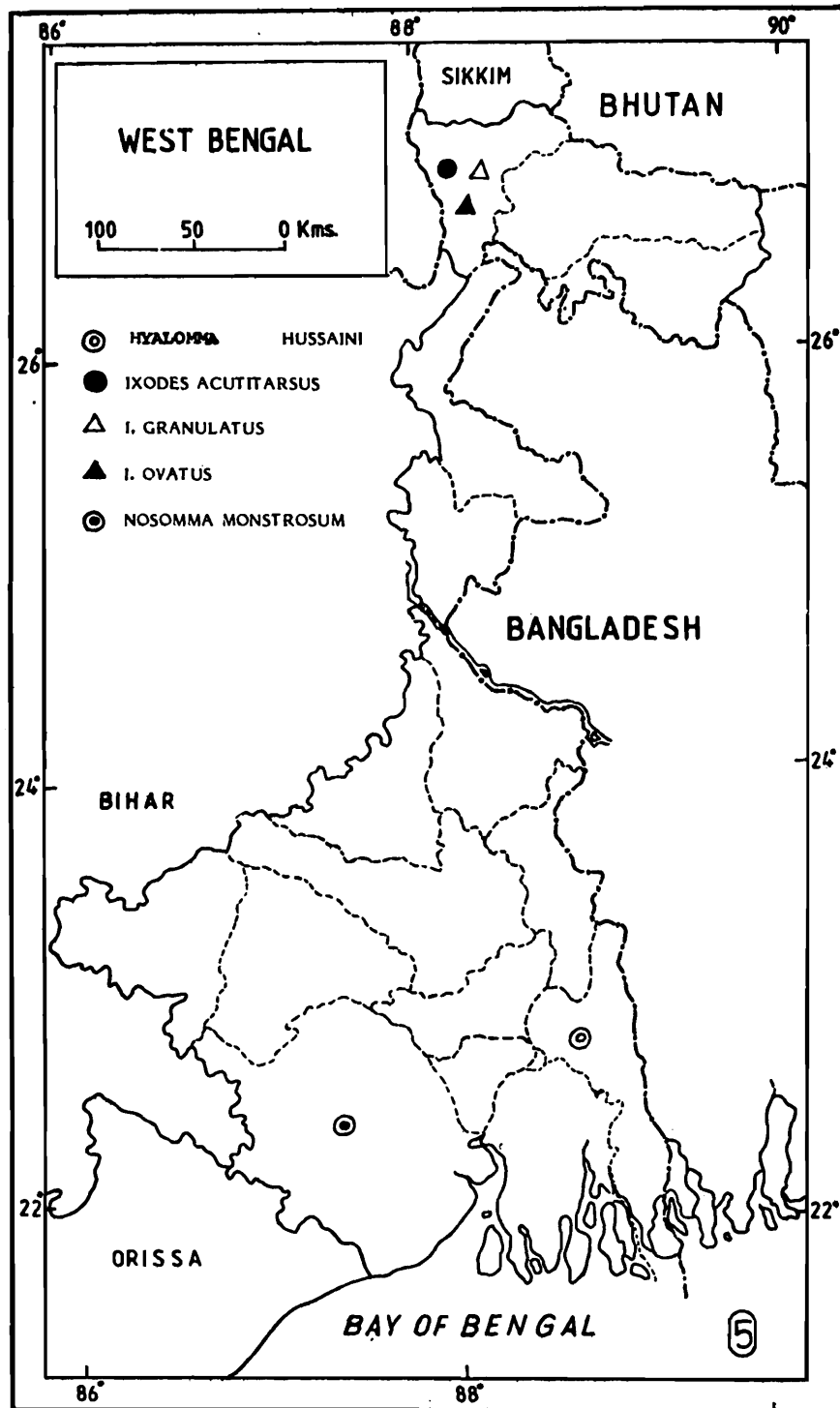
Map 2 : Distribution of abundant species of Ixodid ticks



Map 3 : Distribution of rare species of Ixodid ticks



Map 4 : Distribution of rare species of Ixodid ticks



Map 5 : Distribution of rare species of Ixodid ticks

Table 1. Distribution of Ixodid ticks in different districts of West Bengal

	Bankura	Bardhaman	Birbhum	Calcutta	Darjiling	Haora	Hugli	Jalpaiguri	Koch Bihar	Maldah	Medinipur	Murshidabad	Nadia	North 24-Parganas	Puruliya	South 24-Parganas	W. Dinajpur
Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. <i>Amblyomma helvolum</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
2. <i>A. javanense</i>	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-
3. <i>A. supinoi</i>	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
4. <i>A. testudinarium</i>	-	-	-	-	+	-	-	+	-	-	-	-	-	+	-	-	-
5. <i>Aponomma gervaisi</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
6. <i>A. lucasi</i>	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
7. <i>B. microplus</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
8. <i>Dermacentor auratus</i>	-	-	-	+	+	-	-	+	-	-	-	-	-	+	-	-	-
9. <i>Haemaphysalis aborensis</i>	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
10. <i>H. aponommoides</i>	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
11. <i>H. birmaniae</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
12. <i>H. bispinosa</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
13. <i>H. cornigera shimoga</i>	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
14. <i>H. darjeeling</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
15. <i>H. himalaya</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
16. <i>H. hystricis</i>	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
17. <i>H. indica</i>	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-
18. <i>H. montgomeryi</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
19. <i>H. obesa</i>	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
20. <i>H. ramachandrai</i>	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
21. <i>H. spinigera</i>	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
22. <i>Hyalomma anatolicum anatolicum</i>	+	+	+	-	+	+	+	-	+	-	+	-	-	+	+	-	+
23. <i>H. marginatum isaaci</i>	+	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-
24. <i>H. brevipunctata</i>		-	-	-	-	-	-		-	-	+	-	-	-	-	-	-
25. <i>H. hussaini</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
26. <i>Ixodes acutitarsus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
27. <i>I. granulatus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
28. <i>I. ovatus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
29. <i>Nosomma monstrosum</i>	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
30. <i>Rhipicephalus haemaphysaloides</i>	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	+	-
31. <i>R. sanguineus</i>	-	-	-	+	-	-	-	-	-	-	+	-	-	-	+	-	-
32. <i>R. turanicus</i>	-	-	-	+	-	-	+	-	-	-	-	-	+	-	+	-	-

+ = recorded ; - = not yet recorded

SUMMARY

The paper deals with the ixodid tick fauna of West Bengal. Altogether 32 species under 9 genera hitherto known from West Bengal have been recorded. Of these, 4 species under 3 genera have been reported here for the first time from the state. The first and important references, diagnostic features, distribution and hosts of the tick species in West Bengal and key to the identification of genera and species have also been incorporated.

ACKNOWLEDGEMENTS

The authors are grateful to the Director, Zoological Survey of India, Calcutta for kind encouragement and providing facilities. They also express sincere gratitude to Dr. A.K. Ghosh, Joint Director, Zoological Survey of India for his constant encouragement and valuable suggestion. Thanks are also due to Dr. S. K. Bhattacharyya, Joint Director, Zoological Survey of India for suggestions.

REFERENCES

- Anastos, G. 1950. The scutate ticks, or Ixodidae of Indonesia. *Ent. Amer.*, n.s. 30(1-4) : 1-144.
- Arthur, D.R. 1960. Ticks. A monograph of the Ixodoidea. Part V. On the genera *Dermacentor*, *Anocentor*, *Cosmiomma*, *Boophilus* and *Margaroups*. Cambridge at the University Press. 251 pp.
- Basu, A.K., De, S.K. and Sanyal, A.K. 1989. Incidence of ticks (Acari) associated with cattle and buffalo in West Bengal. *Environment & Ecology*, 7 (4) : 784-786.
- Canestrini, G. 1887. Intorno ad alcuni Acari ed Opiolionidi dell' America. *Atti Soc. Ven.-Trent. Sci, Nat. Padova*, 11 (1) : 104.
- Canestrini, G. 1890. Prospetto dell' acarofauna italiana. pt 4. Famiglie : Tetranychini, Ixodini, Argasini. Padova, 427-540.
- Cooper, W.F. and Robinson, L.E. 1908. On six new species of Ixodidae, including a record species of the new genus *Rhipicentor* N. and W. *Proc. Camb.Phil. Soc.*, 14 (5) : 457-470.
- Curtice, C. 1891. The biology of the cattle tick. *J. Comp. Med. Vet. Arch.*, 12 (7) : 313-319.
- Dhanda, V. and Rao, T.R. 1964. A report on a collection of ixodid tick made in the North East Frontier Agency, India. *Ind. Jour. Med. Res.*, 1139-1153.
- Dhanda, V. and Rao, T.R. 1969. The status of *Rhipicephalus sanguineus* (Latreille, 1801) and *R. turanicus* Pomerantzev, 1940 (Acarina : Ixodidae) in India. *J. Bombay nat. Hist. Soc.*, 66 (1) : 211-214.
- Dhanda, V., Hoogstraal, H. and Bhat, H.R. 1970. *Haemaphysalis (Kaiseriana) rama hundrai* sp.n. (Ixodoidea : Ixodidae) a parasite of man and domestic and wild mammals in northern India and Nepal. *J. Parasit.*, 56 (4) : 823-831.
- Fairchild, G.B. 1943. An annotated list of the blood-sucking insects, ticks and mites known from Panama. *Amer. J. Trop. Med.*, 23 (6) : 569-591.

- Fuller, C. 1899. Notes on the queensland cattle tick and its relationship to the Texas fever tick the blue tick of cape colony (South America). *Qd Agric. J.*, 4, pt. 5 : 389-394.
- Geeverghese, G. and Dhanda, V. 1987. The Indian *Hyalomma* Ticks (Ixodoidea : Ixodidae). I.C.A.R., New Delhi, 119 p.
- Ghalsasi, G.R. and Dhanda, V. 1974. Taxonomy and biology of *Haemaphysalis (Kaiseriana) spinigera* (Acarina : Ixodidae). *Oriental Ins.*, 8 (4) : 505-520.
- Hoogstraal, H. 1956. African Ixodoidea. 1. Tick of the Sudan (with special reference to Equatoria Province and with Preliminary reviews of the genera *Boophilus*, *Margaropus* and *Hyalomma*). Dep. Navy, Bur. Med. Surg. Washington, D.C. 1101 pp.
- Hoogstraal, H. 1962. *Haemaphysalis nepalensis* sp.n. from a Himalayan rodent and man, and description of the male of *H. aponomoides* Warburton (n. comb.) (Ixodoidea, Ixodidae). *J. Parasit.*, 48 (2) : 195-203.
- Hoogstraal, H. 1966. *Haemaphysalis (Herpetobia) himalaya* sp.n. (Ixodoidea, Ixodidae). A parasite of the Himalayan thar (*Artiodactyla*, *Caprinae*) in northwestern India. *J. Parasit.*, 52 (4) : 805-809.
- Hoogstraal, H. 1967. Ticks in relation to human diseases caused by *Rickettsia* species. *Ann. Rev. Ent.*, 12: 377-420.
- Hoogstraal, H. 1970. Identity, distribution, and hosts of *Haemaphysalis (Rhipistoma) indica* Warburton (Resurrected) (Ixodoidea : Ixodidae), a carnivore parasite of the Indian subregion. *J. Parasit.*, 56 (5) : 1013 - 1022.
- Hoogstraal, H. and Dhanda, V. 1970. *Haemaphysalis (H.) darjeeling* sp.n. a member of the *H. (H.) birmaniae* group (Ixodoidea, Ixodidae) parasitizing artiodactyl mammals in Himalayan forests of India, and in Burma and Thailand, *J. Parasit.*, 56 (1) : 169-174.
- Hoogstraal, H. and El Kammah, K.M. 1970. *Haemaphysalis (Herpetobia) himalaya* Hoogstraal (Ixodoidea : Ixodidae), description of immature stages, hosts and distribution. *J. Parasit.*, 56 (5) : 1023-1027.
- Hoogstraal, H. and Mitchell, R.M. 1971. *Haemaphysalis (Alloceraea) aponomoides* Warburton (Ixodoidea : Ixodidae), description of immature stages, hosts, distribution, and ecology in India, Nepal, Sikkim and China. *J. Parasit.*, 57 (3) : 635-645.
- Hoogstraal, H., Saito, Y., Dhanda, V. and Bhat, H.R. 1971. *Haemaphysalis (H.) obesa* Larrousse (Ixodoidea : Ixodidae) from northeast India and southeast Asia : description of immature stages and biological observations. *J. Parasit.*, 57 (1) : 177 - 184.
- Hoogstraal, H., Santana, F.J. and Van Pienen 1968. Ticks (Ixodoidea) of Mt. Sontra, Darang, Republic of Vietnam. *Ann. Ent. Soc. Amer.*, 61 (3) : 722-729.
- Hoogstraal, H. and Trapido, H. 1966. Redescription of the type materials of *Haemaphysalis (Kaiseriana)*

- bispinosa* Neumann (India), *H. (K.) neumanni* Donitz (Japan), *H. (K.) yeni* Toumanoff (Vietnam) (Ixodoidea, Ixodidae). *J. Parasit.*, 52(6) : 1188-1198.
- Hoogstraal, H., Trapido, H. and Kohls, G.M. 1965. Studies on southeast Asian *Haemaphysalis* ticks (Ixodoidea, Ixodidae). The identity, distribution and hosts of *H. (Kaiseriana) hystricis* Supino. *J. Parasit.*, 51 (3) : 467-480.
- Hoogstraal, H., Trapido, H. and Kohls, G.M. 1966. Studies on southeast Asian *Haemaphysalis* ticks (Ixodoidea, Ixodidae). Speciation in the *H. (Kaiseriana) obesa* group : *H. semermis* Neumann, *H. obesa* Larrousse, *H. roubaudi* Toumanoff, *H. montgomeryi* Nuttall and *H. hirsuta* sp.n. *J. Parasit.*, 52 (1) : 169-191.
- Kaiser, M.N. and Hoogstraal, H. 1964. The *Hyalomma* ticks (Ixodoidea, Ixodidae) of Pakistan, India, and Ceylon, with keys to sub-genera and species. *Acarologia*, 6 (2) : 257-286.
- Koch, C.L. 1844. Systematische Übersicht ueber die ordnumns der Zecken. *Arch. naturgesch.*, 10 (1): 217-239.
- Larrousse, F. 1925. Contribution a le'tude des tiques de l'Annam; description de deux especes nouvelles du genre *Haemaphysalis* : *H. obesa* n. sp. et *H. lagrangei* n. sp. *Ann. Parasitol. Humaine et comparee* III, pp. 301-305.
- Latreille, P.A. 1795. Observations sur la varieta des organes de la bouche des tiques etc. *Mag. Encyl. J. Sci. Lett. Arts*, 4 : 15-20.
- Latreille, P.A. 1806. Genera crustaceorum et insectorum secundum ordinem naturalem in familias disposita, iconibus exemplisque plurimis explicata. *Paris et Argentorati*, 1 : 1-302.
- Lucas. H. 1847. *Ixodes gervaisii* et *Ixodes fuscolineatus* nn. spp. *Ann.Soc. Ent.Fr.*, 5 (7) : 259-261 (Abstract).
- Mitchell, C.J. and Spillett, J.J. 1968. Ecological notes on *Rhipicephalus turanicus* Pomerantzev in West Bengal, India (Acarina : Ixodidae). *J. Med. Ent.*, 5 : 5-8.
- Nandi, N.C. and De, S.K. 1984. A case of *Hyalomma* tick infestation in man. *Bull. zool. Surv. India*, 6 (1-3) : 337.
- Neumann, L.G. 1897. Revision de la famille des Ixodides (2e memoire). *Mem. Soc. Zool. Fr.*, 10 : 324-420.
- Neumann, L.G. 1899. Revision de la famille des Ixodides (3e memoire). *Mem. Soc. Zool. Fr.*, 12 : 107-294.
- Neumann, L.G. 1901. Revision de la famille des Ixodides (4e memoire). *Mem. Soc. Zool. Fr.*, 14 : 249-372.
- Neumann, L.G. 1902. Notes sur des Ixodides, 1. *Arch. Parasit.*, 6 : 109-128.
- Neumann, L.G. 1905. Notes sur les Ixodides, 3. *Arch. Parasit.*, 9 : 225-241.

- Neumann, L.G. 1911. Note rectificative a propose de deux especes d'Ixodinae. *Arch. Parasit.*, **14** (3) : 415.
- Nuttall, G.H.F. 1912. Notes on ticks. 2 (1) New species (*Amblyomma*, *Haemaphysalis*). (2) *Ixodes putus*: description of the hitherto unknown larval stage. *Parasitology*, **5** (1) : 50-60.
- Nuttall, G.H.F. and Warburton, C. 1908. On a new genus of the Ixodoidea together with a description of eleven new species of ticks. *Proc. Camb. Phil. Soc.* (1907), **14** (4) : 392-416.
- Nuttall, G.H.F. and Warburton, C. 1911. Ixodidae. Part 2. section I. Classification. Section II. The genus *Ixodes*. In : Nuttall *et al.*, Ticks. A monograph of the Ixodoidea, pp. i - xix, 105-348.
- Nuttall, G.H.F. and Warburton, C. 1915. The genus *Haemaphysalis*. In : Nuttall *et al.*, Ticks. A monograph of the Ixodoidea, part 3. pp. i - xiii, 349-550.
- Robinson, L.E. 1926. The genus *Amblyomma*. Vol.IV in Nuttall *et al.*, Ticks. A monograph of the Ixodoidea, 302 pp.
- Rudow, F. 1870. Einige neue Ixoden. *Z. ges. Naturw.*, **35** n.f. 1: 14-20.
- Schulze, P. 1919. Bestimmungstabelle fur das zeckengenue *Hyalomma* Koch. *Sber.Ges. Naturf. Freunde Berl.*, (5) : 189-196.
- Sen, P. 1938. A check and host list of Ixodidae (ticks) occurring in India. *Indian J. Vet. Sci.*, **8** (2) : 133-147.
- Sharif, M. 1928. A revision of the Indian Ixodidae, with special reference to the collection in the Indian Museum. *Rec. Indian Mus.*, **30** (3): 217-344.
- Stiles, C.W. and Hassall, A. 1901. Notes on parasites - 55-57. 56. *Boophilus australis* present in Cuba, Porto Rico, Venezuela and India. *Bur. Anim. Ind. U.S. Dept. Agric.*, Washington, D.C. Circ. No. 34 : 2-3.
- Supino, F. 1897a. Nuovi *Ixodes* della Birmania. (Nota preventiva). *Atti Soc. Ven.-Trent. Sci. Nat. Padova*, 2.s., **3** (1) : 230-238.
- Supino, F. 1897b. Considerazioni sulla sistematica degli *Ixodes*. *Atti Soc. Ven.-Trent. Sci. Nat. padova*, 2s., **3**(2) : 241-252.
- Trapido, H. and Hoogstraal, H. 1964. *Haemaphysalis cornigera shimoga* subsp.n. from southern India (Ixodoidea, Ixodidae). *J. Parasit.*, **50** (2) : 303-310.

ARACHNIDA : PLANT MITES (ACARI)

S. K. GUPTA

Zoological Survey of India, Calcutta

INTRODUCTION

This project of presenting a detail faunal account of plant mites of West Bengal was undertaken in 1984 and since then a number of both extensive and intensive surveys were conducted by the author during 1985-89 to different districts of West Bengal, viz, Jalpaiguri, Koch Bihar, West Dinajpur, in 1985; Darjiling, Maldah, Murshidabad, Medinipur, Haora, South and North 24-Parganas, in 1986 and Puruliya, Bankura, Birbhum, in 1989 and studied all the materials collected from there. In addition, some materials were also put at the disposal of the author for study from the surveys conducted during 1985-88 by the other scientists of this department. Further, the author also had a project during 1981-82 to study the vegetable mites of West Bengal and that enabled him to collect plant mites from different districts like Hugli, Barddhaman, Nadia, Haora, Bankura, North 24-Parganas, Medinipur and Birbhum. Apart from these, the author studied a good collection of plant mites during 1966-68 from West Bengal which he made while he was associated with this department as a Research Fellow and all these materials mentioned above form the basis of this paper. In addition, the other published informations in this regard from this state are also included to make this faunal account a complete one.

In this account, a total of 193 species belonging to 74 genera under 21 families and 4 orders are dealt with of these, 19 species are described here as new to science, 2 species are being reported here for the first time from India and 33 species and 16 genera are new reports for the state. All the new species are fully described and illustrated while the collection data, diagnosis (wherever required), distribution in India and abroad, host / habitat records for the remaining species and keys to various taxonomic categories are provided. It also includes a brief historical review, general morphological characters and classification upto ordinal levels.

All the types are in the National Collection of the Zoological Survey of India. The measurements given in the text are all in microns. Unless otherwise mentioned, the entire collection was made by the author himself. For Eriophyoid mites, all taxonomic informations available in the literature are included

in order to make this faunal account a complete one so far as the plant mites of West Bengal is concerned.

REVIEW OF PREVIOUS WORKS

The review of the previous work on plant mite fauna of West Bengal is given here family-wise.

TETRANYCHIDAE : The earlier contributions on tetranychids or spider mites of West Bengal are those on tea mites, *Oligonychus coffeae* (Hope, 1915) and on jute (Das, 1948; Tripathi & Bhattacharyya, 1961). Thereafter, some casual reports came on the occurrence of economically important species like *Tetranychus cinnabarinus* (Basu & Pramanik, 1965, 1968, 1969 Somchoudhury *et al.*; 1971; Nath *et al.* 1971, etc.). Basu (1963) was the first to describe 2 new species of this family from West Bengal. The first detail list of tetranychids from West Bengal is that of Gupta (1970) who reported 10 species under 5 genera, among those, 8 were new reports for the state. Subsequently, Gupta (1976) added further by reporting 8 more species, 3 of those were described as new and 3 were new reports for India. Later, Gupta & Gupta (1983) reported 11 species infesting vegetable crops of West Bengal, 3 of those were added for the first time in West Bengal tetranychid fauna. Gupta (1985) in his Handbook on Indian plant mites, listed 15 species known till then from West Bengal. Besides taxonomy, work on biology was conducted by Maity & Chakrabarti (1977) on *Panonychus citri*; on varietal susceptibilities of coconut mite, *Tetranychus fijiensis* by Sarkar & Somchoudhury (1987); on incidence of *Schizotetranychus cajani* on redgram by Pal *et al.* (1987); on varietal susceptibility of paddy mite, *Oligonychus oryzae* by Mukherjee *et al.* (1986) and on seasonal incidence of *T. fijiensis* by Sarkar & Somchoudhury (1986).

TENUIPALPIDAE : Christison (1893) was the first to report the occurrence of *Brevipalpus phoenicis* in Darjeeling and since then nothing was done in this family for the next 77 years. Gupta (1970) reported 3 species, 2 of those were new reports for India while Bancrjee (1971) also reported a species from tea in Darjeeling. Till 1985 only 3 species have been listed from West Bengal (Gupta, 1985).

ERIOPHYOIDEA : The first reports of eriophyoids from West Bengal are of Watt (1988) and Watt & Mann (1903) who recorded the tea pink mite, *Acaphylla theae* from north Bengal. Thereafter, until the beginning of the present decade, no further addition in eriophyoid fauna was made from this state. Later, Chakrabarti in association with his co-workers published a series of papers, (Mondal & Chakrabarti, 1979); Chakrabarti & Mondal, 1979, 1979a, 1980; Chakrabarti & Das, 1982; Chakrabarti & Ghosh, 1981, Chakrabarti *et al.*, 1981; Mondal & Chakrabarti 1981; 1981a, 1982, 1982a; Mondal *et al.*, 1981, 1982, 1982a and Das & Chakrabarti, 1987) on the eriophyoid fauna of West Bengal. The other works are Singh *et al.* (1987) on population development of *Aceria litchii*; Ghosh & Chakrabarti (1987) -on morphology and developmental stages of *Neotegonotus indicus*; Somchoudhury *et al.* (1989) on role of *A. litchii* in association with an alga in causing litchi erineum and Singh *et al.* (1987) on susceptibilities of different varieties of litchi to litchi mite, *A. litchii*. Gupta (1985) summarised the taxonomic informations from West Bengal and listed 55 species known till then.

TARSONEMIDAE : The earliest report of tarsonemid mite from West Bengal is that of Dutt (1958) recording *Polyphagotarsonemus latus* on jute. Later, Das & Raychaudhri (1978) studied varietal susceptibility of jute to this mite. The other works are on histomorphological changes on jute leaves due to the attack of *P. latus* (Das *et al*, 1987) and life history of *P. latus* (Das & Singh, 1988):

ASCIDAE : No work on plant associated Ascidae has so far been done from West Bengal although a few records on soil inhabiting ascids are there.

PHYTOSEIIDAE : Until 1969 nothing about Phytoseiidae mites of West Bengal was known and Gupta (1969) was the first to report a species from this state which was incidentally a new to science. Thereafter, through a series of papers (Gupta, 1969a, 1969b, 1970, 1970a, 1975, 1977; 1980; 1985; 1986; 1989 and Gupta & Gupta, 1983) explored the phytoseiid fauna further and raised the total number of species to 42.

AMEROSEIIDAE : Only one specie, *Neocypholaelaps stridulans*, has so far been recorded in association with oleander plant in West Bengal (Gupta, 1970).

DIGAMASELLIDAE : So far nothing about plant associated digamasellid is known from West Bengal.

STTGMAEIDAE : Although a number of species of stigmatids have been reported from West Bengal but those were mostly from birds' nests and only an undetermined species of *Agistemus* is in record on plant (Gupta, 1970).

BDELLIDAE : Only an undetermined species of Bdellidae is so far known from West Bengal (Gupta, 1970) although there are records which are from other habitats.

ERYTHRAEIDAE : So far nothing from West Bengal is known in this family.

TYDEIDAE : So far no report of plant associated tydeid mites is available from West Bengal.

RAPHIGNATHIDAE : No record is available from West Bengal.

CUNAXIDAE : Only an undet. species of *Cunaxa* has so far been reported associated with plants from West Bengal

ANYSTIDAE : Excepting an undetermined species of *Tencateia* (Raut & Bhattacharyya, 1989) and a new species of *Walzia* (Meyer & Uckermann, 1987), both occurring on betelvine, nothing more in this family is known from West Bengal.

CHEYLETIDAE : Excepting *Cheyletus fortis* and an undetermined species of *Cheyletia* (Gupta, 1970), no other information in this regard is available from West Bengal.

ACARIDAE : Under this family, *Tyrophagus putrescentiae* and an undetermined species of *Acarus* are the only available records from this state (Gupta, 1970; Bhattacharyya & Raut, 1987).

Prasad (1974) in this catalogue of Indian mites listed 42 species under 5 families from West Bengal while Gupta (1985) listed 119 species under 9 families. The total Indian plant mite species as reviewed by different workers from time to time is 65 (Ghai, 1964), 111 (Channa Basavanna, 1971), 308 (Gupta, 1979), 509 (Gupta, 1983) and 557 (Gupta, 1985). As per the latest information available, around 650 species under 140 genera and 18 families are known from India. The present report from West Bengal deals with 193 species under 74 genera and 21 families.

MATERIALS AND METHODS

Collection : Most of the mites were directly collected in the field by examining the leaves and plant parts with the help of a hand lens of 10x magnification and mites were picked up therefrom with a fine sable hair brush moistened with alcohol. In rare cases, the leaves collected in the field were brought to the laboratory either for direct examination under stereobinocular microscope or subjecting those to heat desiccation technique using modified Tullgren's funnel. Most of the plants were got identified by specialists.

Preservation : All the mites were preserved in 70% alcohol.

Mounting : The mites were first mounted in a drop of lactic acid in a slide and a small broken piece of coverslip was put over it and then the slide was gently warmed over an electric bulb (40 w) for a few seconds. This made the specimen clean with stretched appendages enabling to examine the various taxonomic characters present in the specimen. As far as possible attempts were made to identify the specimen in lactic acid mounted medium because it facilitated in giving any desired orientation to the specimen as needed. Wherever necessary, the illustrations were prepared with prism type camera lucida from the lactic acid mounted specimen. After identification, the specimens were returned back in tubes containing 70% alcohol giving labels regarding identification and collection data. In case of new or interesting species, permanent slides were prepared with Heinze's mounting medium (Gupta, 1985).

GENERAL MORPHOLOGICAL CHARACTERS

Since the plant mites involved species belonging to 4 orders, viz, Prostigmata, Mesostigmata, Astigmata and Cryptostigmata and as many as 17 families, it is not possible to discuss the general

morphological characters of all the orders and families separately and hence, a generalised account is given here in brief.

Acari, which belongs to subclass Arachnida, differs from other members of the class by lacking (1) abdominal segmentation and (2) definite body divisions like cephalothorax and abdomen. Contrarily, it possesses gnathosoma (Part of body bearing mouth parts) and idiosoma (rest of the body bearing legs, etc.). The detail structure of gnathosoma and idiosoma is given below in brief : -

Gnathosoma

Gnathosoma (Fig.1) resembles head of other arthropods because it possesses mouthparts like a pair of chelicerae and a pair of pedipalpi (fig.1), though the brain, ocelli and eyes are not located on it. Those are on the propodosomal part of idiosoma. The gnathosomal roof is termed epistome, the lateral walls are made of enlarged palpal coxae while the floor (subcapitulum or basis capituli) represents the coalescence of the ventral portion of palpal coxae. The buccal cavity (Fig.2) lies below the chelicerae and opens into the pharynx. It is bordered ventrally by the hypostome (Fig.2) and dorsally by labrum (fig.2). In Mesostigmata, a pair of horn-like structure called corniculi (Fig.3) is present at the terminus of the hypostome and that is the characteristic feature of the members of this order. Gnathosoma bears a pair each of chelicerae and pedipalpi (Fig. 1). Chelicera is normally 3 segmented (Fig.4) and may be adapted for piercing, chewing, sucking, etc. Normally, the terminal 3rd segment (movable digit) opposes the second segment. The opposed chelae may be edentate (eg. Bdellidae (Fig. 5) and many Mesostigmatids) or variously toothed (Fig. 4) (eg. Phytoseiidae, Ascidae, Eupodidae, Acaridae, Oribatids, etc.) for the purpose of grasping, chewing, etc. Often, in the phytophagous forms, the fixed digits are fused to form stylophore and movable digits develop needle like stylets (Fig. 6, 5a) for piercing plant tissues and sucking the exuding fluid. It may be fully retractile (Fig. 6) (eg. Tetranychidae) or partly retractile (eg. Tarsonemidae, Raphignathidae and Stigmaeidae). In Anystidae, the chelicera is hooked (Fig.7) while Bdellidae has sickle-like chelicera (Fig. 5). In some mesostigmatids, the movable digit of male chelicera is modified for sperm transference (Fig. 8) to the female and is called spermatophoral process (eg. Phytoseiidae, Ascidae).

The palpi are typically simple and sensory appendages with a variety of terminal sensory organs. However, it may be modified for raptorial purpose as in Cunaxidae (Fig. 9 & 10) where the palpi are curved inwards and are armed with strong spines and claws or as in cheyletids, stigmaeids, etc. where the palp tibia and tarsi face each other to form thumb claw complex (Fig. 11) and are provided with specialised claws, setae etc. In cheyletids, palp tibial claw is well developed while palp tarsi possesses combed and sickle shaped setae (Fig. 12). The number of free segments on palpi vary as 2 in Acaridae and some prostigmatids; 4 in eriophyoids, 1-5 in tydeids and 5 in many mesostigmatids, tetranychids, raphignathids, oribatids, etc. In Bdellidae the palp tarsus ends into 2 whip-like setae (Fig. 13) while in anystids, palp tibia possesses 2-3 claws (Fig. 14). All the palp segments bear a definite characteristic pattern of setae and this often helps

in separation of genera, species, etc. In Mesostigmata, palp tarsus always bears forked seta (2-3 forked) (Fig. 15, 16). Palp tibia is significantly reduced in Tarsonemidae.

Idiosoma

It performs the function of that of the abdomen thorax and portions of head of insects. It may be soft (eg. Tetranychidae) or may be protected by shield or shields which may be variously sclerotized. A great diversity exists in idiosomal shape and its ornamentation. Idiosoma may be striated (eg. Tetranychidae, Eupodidae), reticulated into different pattern (eg. Tenuipalpidae), weakly sclerotized (eg. Bdellidae, Raphignathidae, Stigmaeidae, Cheyletidae, etc.). The eriophyoids are elongated (Fig. 17) annulated looking like rings bearing tubercles and microtubercles. Most mesostigmatids and oribatids possess well sclerotized shield(s). Sometimes a longitudinal sclerotized suture called *crista metopica* may be present on propodosoma bearing propodosomal sensillae (eg. Erythraeidae) (Fig. 18). Though idiosoma is unsegmented but sometimes grooves and sutures may be present on it. The idiosoma maybe regionated into propodosoma (fig.1) (from base of gnathosoma upto base of second pair of legs), metapodosoma (Fig.1) (From base of 2nd pair of legs upto base of 4th pair of legs) and opisthosoma (Fig.1) (from base of 4th pair legs upto posterior tip of body). The term podosoma is used to indicate propodosoma and metapodosoma together. The shields plates cover the dorsum of idiosoma and degree of sclerotization of the shields, their shape, size, often vary and so also their nature and pattern of chaetotaxy, setal ontogeny, striation/reticulation/ornamentation, etc. on dorsum and all these form important taxonomic characters. The sclerotization in oribatids is very heavy and the chaetotaxy of dorsum in Erythraeidae often shows hypertrichy.

One or two pairs of eyes (Fig. 18) may be present on idiosoma (eg. Cheyletidae, Eupodidae, Erythraeidae) or eyes may be lacking. In some cases the ocelli (Fig. 19) may be present (eg. Stigmaeidae, Anystidae).

Ventrally, the idiosoma may carry a variety of shields (eg. Mesostigmata) (Fig. 20-23) or may be unsclerotized (eg. some Prostigmata, Astigmata) though the genitoanal openings are normally with surrounding sclerites. In Mesostigmata, an unpaired tritosternum (Fig. 20) with 1-3 lacinae is present anterior of sternal shield. This is followed by shields like sternal shield, metasternal shields, genital shield ventral shield, anal shield, metapodal shield, etc. and their shape, chaetotaxy whether ventral and anal shields fused, etc. serve as important taxonomic characters. In Prostigmata, the setation of ventral surface, striation pattern, etc. are important taxonomic characters (Fig. 24) In males of Mesostigmata (Fig. 22) (eg. Phytoseiidae, Ascidae) or in some, sternitigenital and ventral shields may be fused to form a composite shield called holovenral shield (Fig. 23).

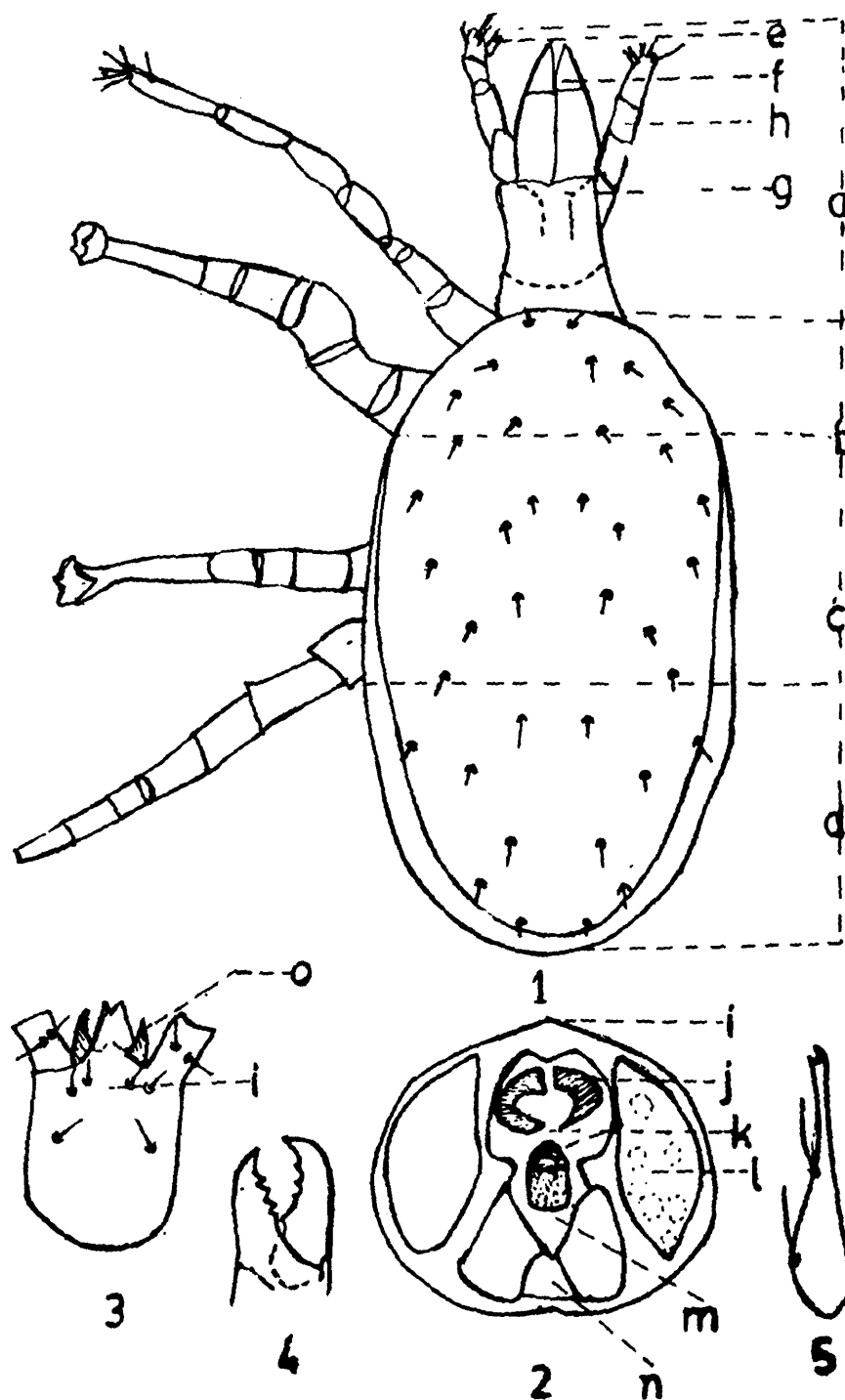


Fig. 1. Acarine body showing different body regions : a - gnathosoma, b- propodosoma, c - metapodosoma, d - opisthosoma, e - forked seta of palp tarsus, f - chelicera. Fig. 2. Transverse section of gnathosoma (After Krantz, 1978) : i - epistome, j- chelicera, k-labrum, l-palp, m-buccal cavity, n- hypostome. Fig. 3. Ventral aspect of gnathosoma in Mesostigmata : i - epistome, o - corniculi. Fig. 4 Chelicera in Mesostigmata (Female). Fig. 5. Chelicera in Bdellidae.

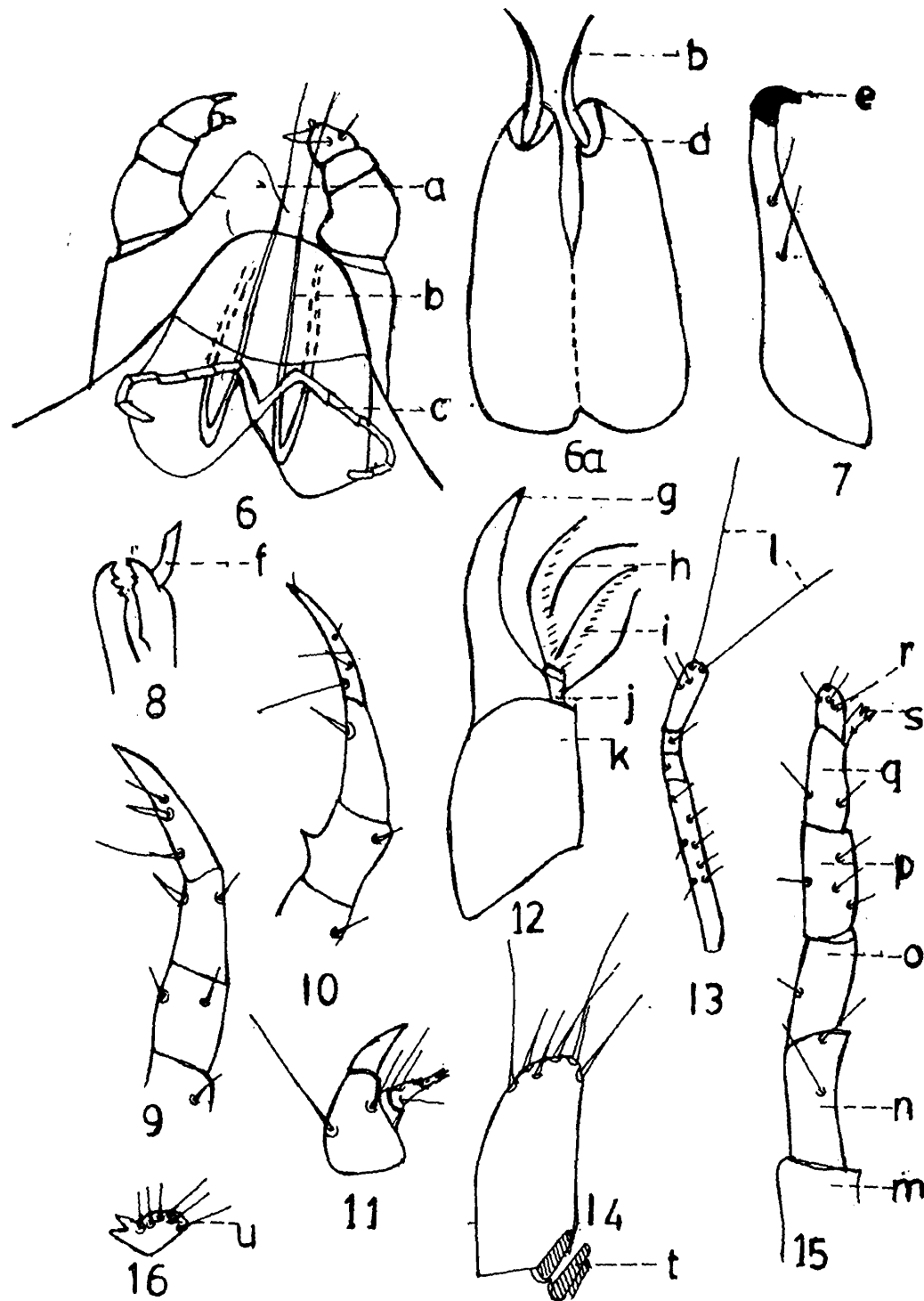


Fig. 6. Gnathosomal part in Tetranychidae : a - rostrum, b - movable digit of chelicera, c - peritreme. Fig. 6a. Chelicera of Ereyneidae : b - movable digit of chelicera, d - fixed digit. Fig. 7. Chelicera in Anystidae: e - hook. Fig. 8. Chelicera in Mesostigmata (male) : f - spermatophoral process. Figs. 9, 10. Palp in Cunaxidae. Fig. 11. Palp in stigmacidae showing thumb claw complex. Fig. 12. Palp in Cheyletidae : g - tibial claw, h - sickle shaped seta, i - comb-like seta, j - palp, tarsus, k - palp tibia. Fig. 13. Palp in Bdellidae: l (F) whip - like seta. Fig. 14. Palp in Anystidae : t - tibial claw. Fig. 15. Palp in Mesostigmata : m - coxa, n - trochanter, o - femur, p - genu, q - tibia, r - tarsus, s - forked seta Fig. 16. Forked tarsal seta in Mesostigmata.

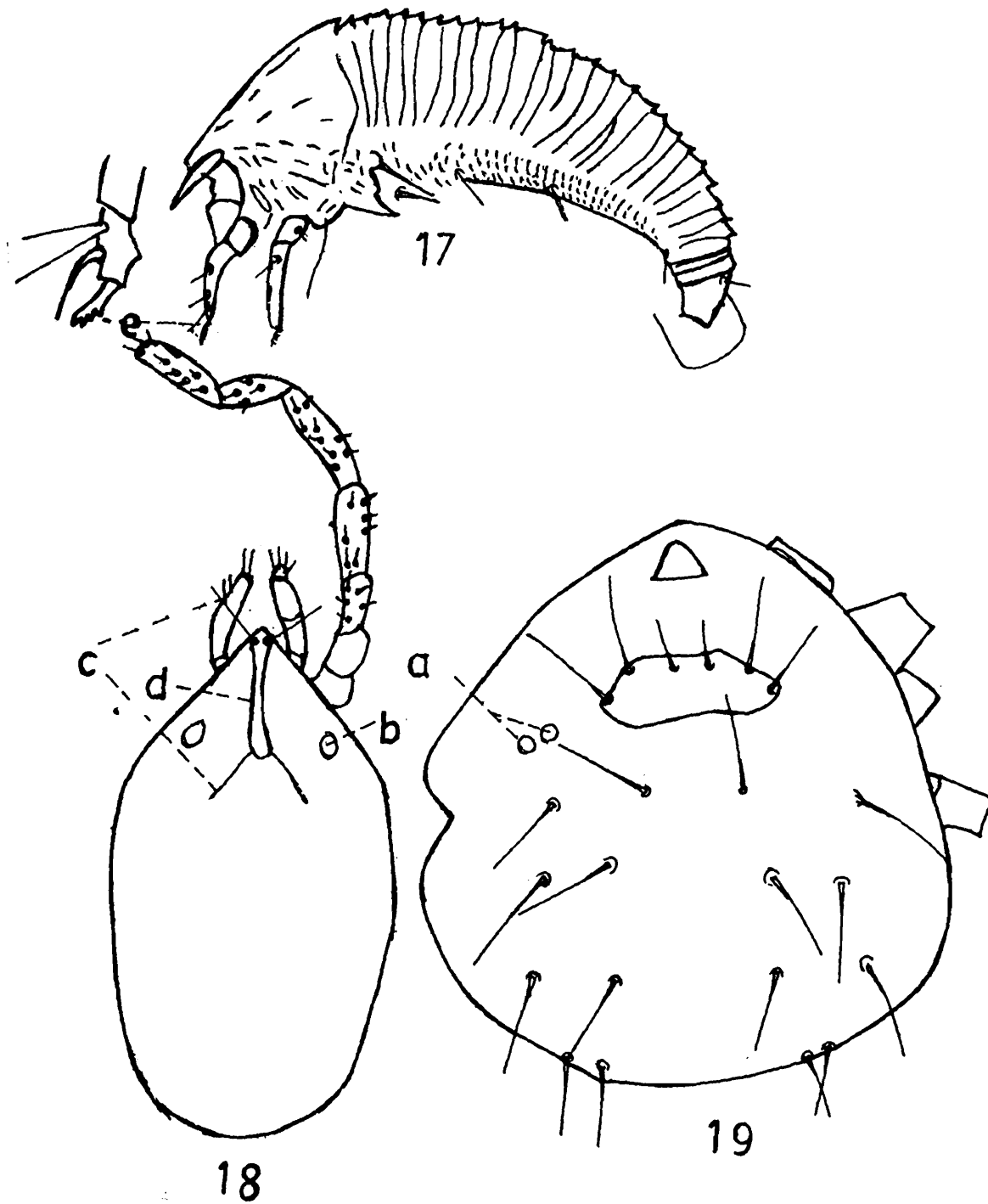


Fig. 17. Body of eriphyid mite showing elongated worm-like body and 2 pairs of legs e-feather claw. **Fig. 18.** Body of erythraeid mite : b - eye, c - sensory setae, d - crista metopica. **Fig. 19.** Body of anysid mite : a - ocelli

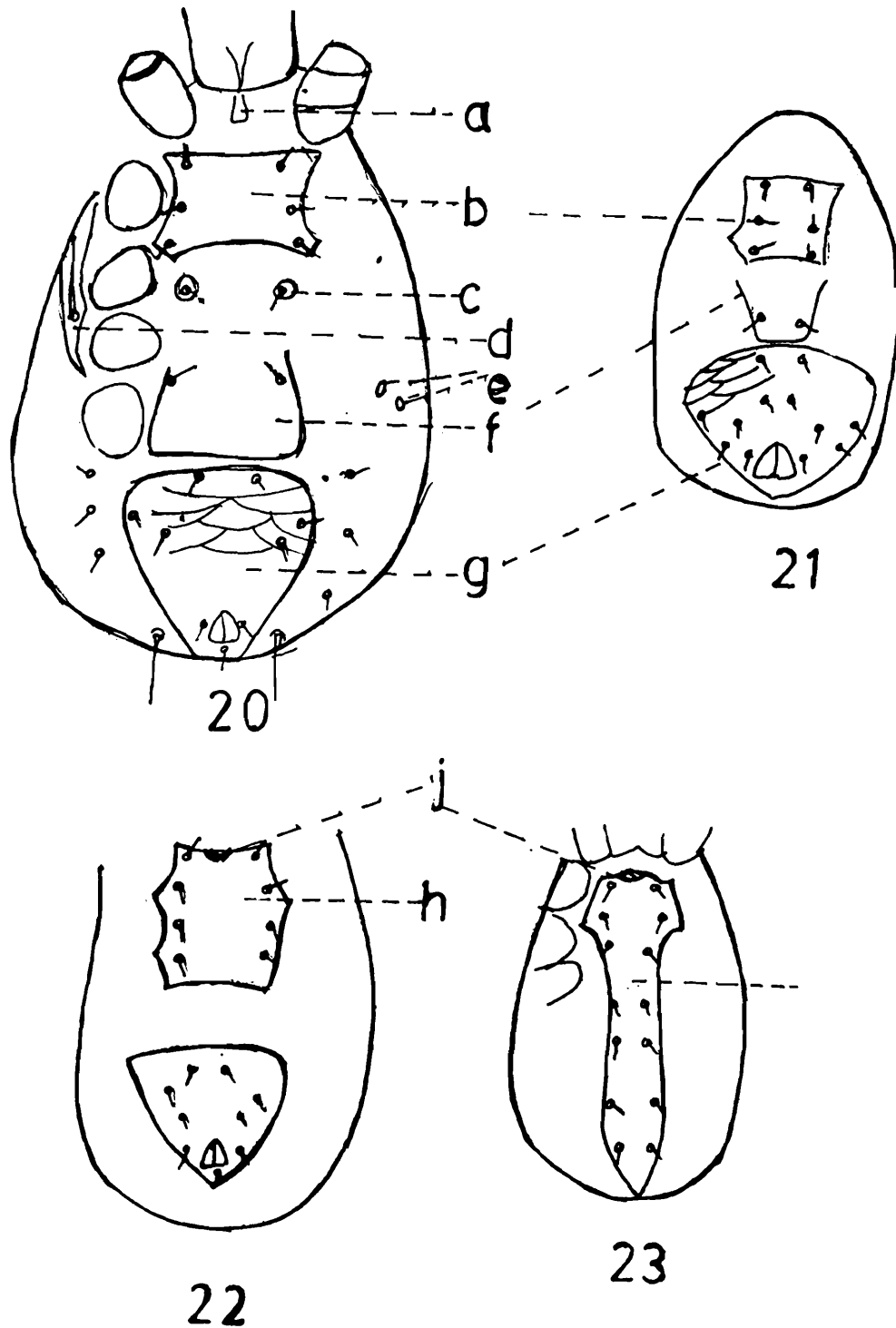


Fig. 20. Ventral aspect of mesostigmatid mite (female) : -a- tritosternum, b - sternal shield, c-metasternal plate, d - peritrematal shield, e - metapodal plates f-genital shield, g - ventrianal shield. Fig. 21. Ventral aspect of ascid mite (female) : f - genital shield, g - ventrianal shield. Fig. 22. Ventral aspect of mesotigmatid mite (male) : h-sternitigenital shield, j- genital opening. Fig. 23. Ventral aspect of mesostigmatid mite (male) : i-holo ventral shield j- genital opening.

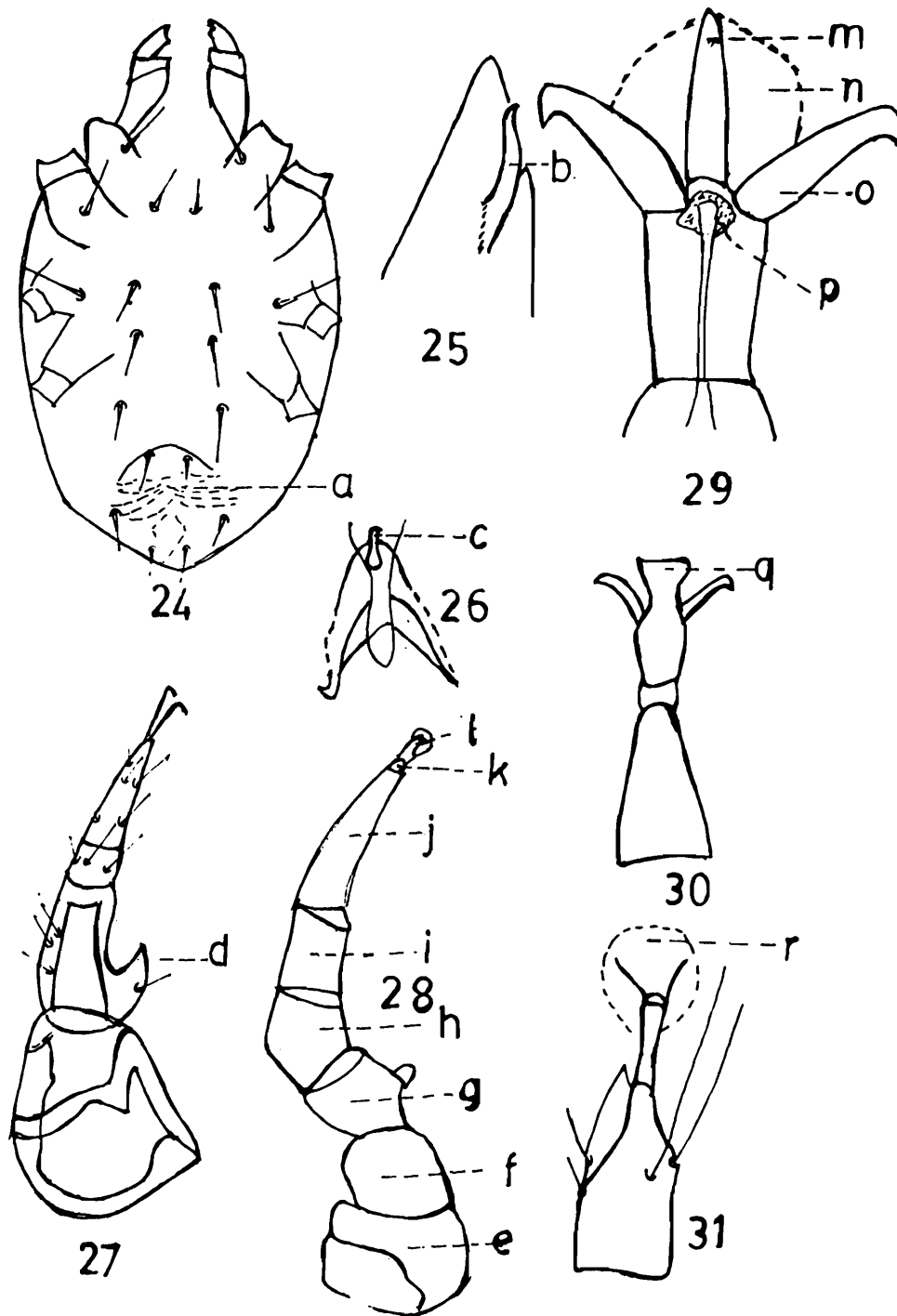
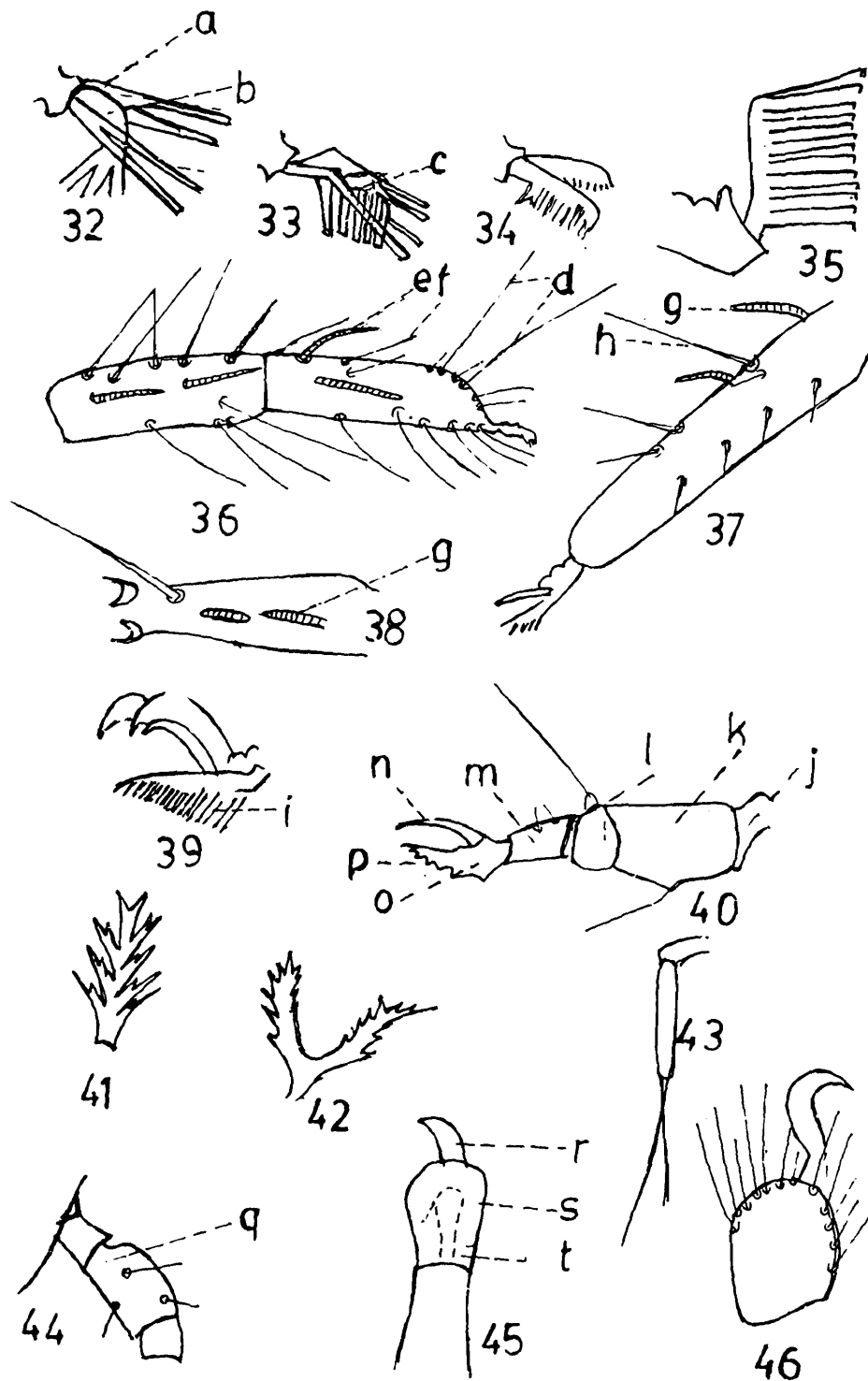


Fig. 24. Ventral aspect of tetranychid mite : a - striation in genital region (female). Fig. 25. Terminal portion of tetranychid mite (male) laterl view : b - aedeagus. Fig. 26. Ventral aspect of acarid mite : c - aedeagus. Fig. 27. leg of mesostigmatid mite : d - spur. Fig. 28 Leg of prostigmatid mite : e - coxa, f - trochanter, g-femur, h-genu, i - tibia, j-tarsus, k-pretarsus, l-claw. Fig. 29. Tarsal appendage of leg (after Krantz, 1978) : m-empodial claw, n - pulvillus, o-claw, p. basilar sclerite. Fig. 30. Tarsus II of Prostigmata: q - pad-like empodium. Fig. 31. Tarsus II of Prostigmata : r - sucker-like empodium



Figs. 32-35. Rayed empodium of Tetranychidae : a - claw remnant, b-empodium, c-empodium with tenent hairs. Figs 36. Tarsus I of Tetranychidae : d - duplex setae, e sensory seta, f-tactile seta. Fig. 37. Tarsus of Raphignathidae : g-solenidion, h-trichoboth. Fig. 38. Tarsus of Anystidae : g - solenidion. Fig. 39. Claw of Anystidae showing brush like empodium. Fig. 40. Leg. of Eriophyidae : j-coxa, k-femur, l-patella, m-tibia, n-claw, o-tarsus, p-feather claw. Figs. 41-42. Feather claw in Eriophyidae. Fig. 43. Leg. IV in Tarsonemidae(Female) showing whip-like setae. Fig. 44. Leg IV of Eupodidae showing bulged femur. Fig. 45. Tarsus I of acraid mite : r-claw, s-pulvillus, t pretarsus Fig. 46. Tarsus II of oribatid mite.

The positions of anus and genital orifices in female are of significant taxonomic importance. It may be transverse (eg. Eriophyoidea and Mesostigmata) or longitudinal (eg. Cheyletidae). In mesostigmatids, the male genital aperture is always anterior (Fig. 22). In some prostigmatids (eg. Tetranychidae), Cryptostigmata and Acaridae, male possesses aedeagal organ for copulation (Fig. 25, 26).

Legs in Acari are normally 4 pairs in nymphs and adults and 3 pairs in larva except in Eriophyoids where only 2 pairs of legs are present in all stages of development (Fig. 17). Legs are usually 7-segmented, (Fig. 27, 28) viz. coxa, trochanter, femur, genu, tibia, tarsus and pre-tarsus. However, the number of segments may increase or decrease due to subdivision or fusion of segments, respectively. The pre-tarsus may be articulated with ambulacrum (consisting of basilar sclerite (Fig. 29), paired claws and median empodium). Empodium may be pad-like (Fig. 30), sucker-like (fig. 31), claw-like, membranous or rayed (Figs. 32-35). All leg segments normally bear setae and tarsi often bear claws. Leg I in many cases act as sensory organ while in others it acts as locomotory organs. Leg setae may be tactile and sensory (Fig. 36) and follow a distinct pattern of arrangement and this leg chaetotaxy serves as important taxonomic tool. Sometimes legs may be armed with spurs (Fig. 27) spines, etc. for doing some specialised functions like clasping during copulation. In some Prostigmata. (eg. Tydeidae, Cheyletidae, Raphignathidae, etc.) tarsi and tibia of legs I and II possess specialised setae, trichoboth, solenidia, etc (Fig. 37, 38). and their shape, size, presence and absence, etc. are important taxonomic characters. In Tetranychidae, tarsus I and II possess specialised setae called duplex setae (Fig. 36). All the tarsi end in 2-3 claws. Mesostigmatids are mostly bi-dactyle with membranous pulvillus (Fig. 29). Claws of many Prostigmata (eg. Tetranychidae, Stigmatidae) may be with tenent hairs (fig. 32-35) while in Anystidae, the tarsal claws may be toothed, combed or brush-like (Fig. 39). In Eriophyidae, the tarsi are with feather claw (Fig. 40-42) which may be simple (Figs. 40-41) or divided (Fig. 42) and this character along with number of rays present in the feather claw are important taxonomic characters. In Tarsonemidae, the 4th legs are often slender and weak (Fig. 43) in female while in Eupodidae the femurs of 4th legs are very much thick for jumping purpose (Fig. 44). In Acaridae, the true tarsal claws are absent but often have a terminal empodial claw (Fig. 45) surrounded basally by a stalked or sessile pulvillus. In Cryptostigmata, the tarsal claw is as figured (Fig. 46).

Stigmata

The location of stigmata is of utmost importance and plays a key role in classification at ordinal levels. In Mesostigmata, one pair of stigmata present lateroventrally between coxae II and IV accompanied with a short or long respiratory tube called peritreme. In Prostigmata, a pair of stigmata is present at the base of gnathosoma or chelicera; in Astigmata, the stigmata are absent and gaseous exchange takes place through cuticle while in Cryptostigmata the peritreme opens through acetabular cavities of legs II and III.

CLASSIFICATION

The plant mites dealt with in this paper belong to 4 orders, viz Prostigmata, Mesostigmata, Astigmata and Cryptostigmata. These orders can be separated with help of the following key (based on Evans & Till, 1979).

Key to the orders of Acari

1. With full coxae to ambulatory appendages; pedipalpal ambulacrum represented by a tined claw

near the inner basal angle of the palp tarsus; stigmata situated lateral to coxae II-IV and typically elongate peritreme, tritosternum present and usually with lacineae Mesostigmata.

Lacking free coxae to ambulatory appendages; pedipalpal ambulacrum completely lost; stigmata never situated lateral to legs II-IV 2

2. Pedipalpi small and comprising of 2 free podomeres and closely pressed to the sides of the hypognathum; comprising of a median (empodial) claw with an associated pulvillus or a sucker like pulvillus situated on an elongated pre-tarsus; stigmata and tracheae never present; idiosoma without trichobothria and never covered dorsally by overlapping sclerites; body never vermiform Astigmata

Pedipalpi usually with 3-5 podomeres and conspicuous, if small, with fewer podomeres, and inconspicuous, then idiosoma either vermiform or with overlapping sclerites dorsally in the female; chelicera chelate or variously modified into piercing stylets or hook-like organs; a respiratory system usually present, idiosoma often with trichobothria 3

3. Gnathosoma with conspicuous rutella, chelicerae typically chelate dentate; one pair of podosomatic trichobothria almost invariably present and comprising of filiform, barbed or clavate pseudostigmatid organs (sensilla), arising from conical depressions, the pseudostigmatid (bothria), pedipalp simple, the tibia never with a distal spur; tracheal system when present opening to the exterior in acetabular cavities of legs II and III or in the form of brachytracheae opening in the legs I and III or the pseudostigmata; often heavily sclerotized in the adult stage and with ridge or wing like expansions of the idiosoma, which is never vermiform Cryptostigmata

Gnathosoma only rarely with rutella; chelicera rarely chelate dentate; podosomatic trichobothria when present usually without conspicuous pseudostigmata; pedipalp variously modified, often with tibia and tarsus forming a thumb-claw complex; trachea when present opening by paired stigmata situated between the chelicerae or on to the dorsal surface of the pseudostigmata and often with associated peritremes; usually weakly sclerotized; never with ridge or wing like expansions of the idiosoma which may be vermiform or covered dorsally by a number of discrete, usually overlapping sclerites Prostigmata

Order PROSTIGMATA

This order includes as many as 14 families which are known to occur on plants in West Bengal and those may be separated with help of the following key :

Key to the families of Prostigmata known to occur on plants in West Bengal

1. Body worm-like or annulate with 2 pairs of legs 2
- Body rounded, not worm-like or annulate, with 4 pairs of legs 3
2. Rostrum of various sizes, usually small in comparison to body size; feather claw small, simple or

- divided; female genital coverflap usually ribbed Eriophyidae
- Rostrum large in comparison to body; feather claw often large, , simple or divided; female genital coverflap smooth, less often ribbed Rhyncaphytoptidae
- 3. Gnathosoma with minute palpi lying closely appressed laterally; chelicera tiny and stylet-like with 4 pairs of legs or less; stigmata of female opening behind gnathosoma or on propodosoma, male without stigmata or tracheal ; empodium usually membranous flap-like organ attached to claws Tarsonemidae
- Gnathosoma usually conspicuous, with large chelicerae; palp usually well developed; rarely without 4 pairs of legs; stigmata opens at base of chelicera; empodium free, pad-like or claw-like arising from tarsus 4
- 4. With palp thumb claw process, in some cases the claw may be small or obsolete, it is replaced by a relatively long seta 9
- 5. Rod-like solenidion on tarsus I usually lying flush with tarsus in a specialised membranous depression (ragidial organs); anteriorly the propodosoma with a tubercle bearing one pair of setae Eupodidae
- Rod-like solenidion on tarsus I erect, arising from a small circular membranous base 6
- 6. Cheliceral bases fused, or if not fused, not capable of lateral scissors-like motion over gnathosoma 7
- Chelicerae free, attached at base and free to move scissors-like laterally across gnathosoma...8
- 7. Propodosoma without obvious pseudostigmata and pseudostigmatid organs Tenuipalpidae
- Propodosoma with one or two pairs of distinct pseudostigmata and pseudostigmatid organs Tydeidae
- 8. With 2 pairs of genital suckers, the relatively long palpi turned inwards, distal segment usually claw-like Cunaxidae
- With 3 pairs of genital suckers, the relatively long palpi elbowed with distal long setae Bdellidae
- 9. Body densely clothed with setae; larvae usually heteromorphic Erythracidae
- Body setae relatively few, arranged in transverse rows; larvae homomorphic 10
- 10. Chelicera free, hinged at base so that they are capable of lateral scissors-like movements in a horizontal direction Anystidae

- Cheliceral bases fused or partly fused with needle-like or hook-like movable chelae 11
11. Cheliceral bases closely fused with gnathosoma and without indication of suture ; peritremes usually M-shaped Cheyletidae
- Cheliceral bases fused with each other but not with gnathosoma, having suture conspicuous; Peritreme usually present on anterior propodosoma 12
12. Chelicerae forming a long whip-like stylet occurring within the body, cheliceral bases fused to form stylophore. Tarsus I and II with duplex setae Tetranychidae
- Movable chelae straight, stiff and relatively short, no stylophore, no duplex setae on tarsus I and II 13
13. Chelicerae from a stylophore, coxae II and III contiguous Raphignathidae
- Chelicerae generally independently movable but may be adnate or stylophore-like in a few genera; coxae II and III not contiguous, legs I and II direct anteriorly while legs III and IV direct posteriorly Stigmaeidae

Order MESOSTIGMATA

The order Mesostigmata is represented on plants in West Bengal by families which can be easily separated with the help of the following key :

1. Tibia I of deutonymph and adult with 3 ventral setae 2
- Tibia I of deutonymph and adult with 2 ventral setae 3
2. Tibia I in deutonymphs and adult with 6 dorsal setae; adults with distinct podonotal and opisthonotal shields Ascidae
- Tibia I in deutonymphs and adults with 5, rarely 4 dorsal setae (Metasternal setae in female situated on sternometasternal shield) usually with 4 oval or comma-shaped refractive nodules; genu IV normally with 4 dorsal setae in deutonymph and adult, palp apotele 2-tined Digamasellidae
3. Sternal setae in the female situated on unsclerotized cuticle or on discrete shields posterior to the sternal shield which bears setae 1 and 2 only; if otherwise, dorsum with numerous star-like tubercles; opisthonotal region without J5 and R setae; corniculi often divided distally into 2 or 3 processes; deutonymphs with entire shield Ameroseiidae
- Sternal setae situated on the sternal shield in the female; dorsum without such tubercles; opisthonotal region with setae J5; corniculi entire 4
4. Holodorsal shield in both sexes marked by hypotracheous, with not more than 2 pairs of setae; setae

- J1 absentPhytoseiidae
- Holodorsal and schizodorsal shield in both sexes with a minimum of 30 pairs of setae, seta J1 present. Ascidae

Order ASTIGMATA

This order is represented on plants in West Bengal by a single family i. e. Acaridae.

Order CRYPTOSTIGMATA

This order is represented on plants in West Bengal by two families, viz. Trhypochthoniidae and Ceratozetidae and these two families can be separated by the following key : -

1. Pteromorphae present; lamellae present; anogenital region brachypyllic type; aggenital setae present Ceratozetidae
- Pteromorphae absent; lamellae absent ; anogenital region macrophylic type, aggenital setae absent Trhypochthoniidae

SYSTEMATIC ACCOUNT

1. Phytophagous mites

Family TETRANYCHIDAE Donnadieu

1875. Tetranychidae Donnadieu, *Faculty des Sciences de Lyon*, p. 9.

Key to the subfamilies, tribes and genera of Tetranychidae known to occur on plants in West Bengal :

1. Empodium with tenent hairs *Subfam.* Bryobiinae, 2
- Empodium without tenent hairs... *Subfam.* Tetranychinae, 3
2. True claws uncinata, or if pad-like, the propodosoma with 4 well developed lobes; empodium pad-like... Bryobiinae
- With 4 pairs of propodosomal setae *Bryobia*
- True claws pad-like, empodium pad-like or uncinata. Petrobiinae
- Claw pad-like, empodium uncinata *Petrobia*
3. Tarsus I dorsally with a single pair of usually associated duplex setae; if 2 pairs of closely associated duplex setae present, then tarsus II still without closely associated duplex setae, empodium claw

- like or rudimentary...Eutetranychini, 4
- Tarsus I dorsally with 2 pairs of closely associated duplex setae; empodium claw like or splits distally5
4. With 2 pairs of anal setae*Eutetranychus*
- With 1 pair of anal setae*Aponychus*
5. With 2 pairs of preanal setae5
- With 1 pair of preanal setae7
6. Empodium claw-like.....*Eotetranychus*
- Empodium splits distally*Schizotetranychus*
7. Empodium claw-like with proximoventral hairs, duplex setae on tarsus I distal and approximate
.....*Oligonychus*
- Empodium splits distally usually into 3 pairs of hairs, duplex setae on tarsus I well developed
.....*Tetranychus*

Genus *Bryobia* Koch

1836. *Bryobia* Koch, *Deutsche Crustacea Myriapoda, Arachnida*, Fasc. 1 : 8.

1. *Bryobia praetiosa* Koch

1836. *Bryobia praetiosa* Koch, *Deutsche Crustacea Myriapoda, Arachnida*, Fasc. 1 : 8.

1968. *Bryobia praetiosa*, Menon & Ghai, *Indian J. Ent.* 30 : 88.

1985. *Bryobia praetiosa*, Gupta, Handbk : *Plant Mites of India* p. 47-48.

Diagnosis : Please refer to Gupta (1985).

Material examined : 4 females, West Bengal, Dist. Darjiling, Kalimpong, ex pear, 20.10.1986.

Distribution : India : West Bengal (Dist. Darjiling), Delhi, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Punjab. Elsewhere : Pakistan, Taiwan, South Africa, Europe, Japan, U.S.A, Australia, New Zealand.

Genus *Aponychus* Rimando

1966. *Aponychus* Rimando, Philip. Agri., 50 : 105.

Earlier, the occurrence of this genus from West Bengal was unknown.

2. *Aponychus corpuzae* Rimando

1966. *Aponychus corpuzae* Rimando, *Philip. Agri.*, 50 : 105.
 1976. *Aponychus corpuzae*, Gupta, *Oriental Ins.* 10 : 332-333.
 1985. *Aponychus corpuzae*, Gupta, *Handbk : Plant Mites of India*, p. 59.

Diagnosis : Please refer to Gupta (1985).

Material examined : 1(F), West Bengal, Dist. South 24-Parganas, Diamond Harbour, ex wood apple, 2.12.1986; 3 (F), Dist. Darjiling, Darjiling town, ex. an undet. plant, 2.11.1986.

Distribution : India : West Bengal (Dists. Darjiling, South 24-Parganas), Andaman & Nicobar IsIs., Assam, Meghalaya, Orissa. Elsewhere : Philippines, Thailand, Japan.

Remarks : This is the first report of the species from West Bengal . No significant damage caused by this species was noticed. Only in a few cases white stipplings were seen at the points of feeding.

Genus *Eutetranychus* Banks

1917. *Neotetranychus (Eutetranychus)* Banks, *Ent. News.*, 28 : 197.
 1950. *Eutetranychus* Banks, Mc Gregor, *Ann. Midl. Nat.* 44 : 187.

Key to the species of *Eutetranychus* known to occur on plants in West Bengal

1. Dorsocentral hysterosomal setae relatively much longer, reaches to the bases of the setae next behind; 3rd pair even going upto the bases of the 4th pairs*maximae*
 Dorsocentral hysterosomal setae very short, not reaching to the bases of setae next behind
*orientalis*

3. *Eutetranychus maximae* Nassar & Ghai

1981. *Eutetranychus maximae* Nassar & Ghai, *Oriental Ins.*, 15 : 339.
 1985. *Eutetranychus maximae*, Gupta, *Handbk : Plant Mites of India*, p. 65.

Diagnosis : Please refer to Gupta (1985).

Material examined : 3 (F), West Bengal, Dist. Birbhum, Suri, ex Sirish, 13.4.1989.

Distribution : India : West-Bengal (Dist. Birbhum), Delhi.

Remarks : This species is reported here for the first time from West Bengal. No significant damage was caused by this mite on its host.

4. *Eutetranychus orientalis* (Klein)

1936. *Anychus orientalis* Klein, *Bull. agric. Res. Stn. Rehovoth*, 21 : 3.
 1940. *Anychus ricini* Rahman & Sapra, *Proc. Indian Acad. Sci.*, II : 184.
 1985. *Eutetranychus orientalis*, Gupta, *Handbk : Plant Mites of India*, p. 66-67.

Diagnosis : Please refer to Gupta (1985).

Material examined : 10 (F), West Bengal, Dist. Medinipur, Jhargram ex *Azadirachta indica*, 9.12.198; 2 (F), Garbeta, ex *Azadirachta indica*, 6.12.1986; 3 (F), Garbeta, ex an undet. plant, 6.12.1986; 3(F), Dist. Bankura, Mukutmanipur, ex citrus, 18.9. 1987; 3 (F), Dist. Birbhum, Suri, ex coconut, 12 .4. 1989; 35 (F), Suri, ex castor, 12.4. 1989; 1 (F), Suri, ex cashewnut, 12 .4 1989; 10 (F), Suri, ex *A. indica*, 12.4.1989; 2 (F), Suri, ex Sirish, 13.4. 1989; 21 (F) Dist. Bankura, Bishnupur, ex *Datura*, 10.4. 1989; 9 (F), 2 (M), Dist. Puruliya, Hura, ex *A indica*, 29.9. 1989; 3 (F), Dist. Bankura, Tantipukur, ex citrus, 5 .4. 1989; 4 (F), Kotalpur, ex *A. indica*, 3 .4. 1989.

Distribution: India : West Bengal (Dists : Bankura, Birbhum, Medinipur, Puruliya, South 24 Parganas), Assam, Delhi, Gujarat, Haryana, Jammu & Kashmir, Karnataka, Punjab, Uttar Pradesh. Elsewhere : Pakistan, Taiwan, Israel, Turkey, Jordan, Iran, Afghanistan, Cyprus, South Africa, East Transvaal, Sudan Egypt.

Remarks : This species was found to cause severe damage specially to citrus as well as to papaya. The infested leaves became fully enveloped by the web formed by this mite where dust particles got adhered and caused retardation of physiological activities of plants. The heavily infested leaves fall off the plants. In some cases thousands of mites were seen on a single leaf. Often white or yellowish stipplings were noticed.

Genus *Petrobia* Murray

1877. *Petrobia* Murray, *Economic Entomology, Aptera, London*, p. 118.

5. *Petrobia harti* (Ewing)

1909. *Neophyllobius harti* Ewing, *Trans. Amer. Ent. Soc.* 35 : 405.
 1970. *Petrobia* sp. Gupta, *Sci. & Cult.*, 36 : 98.
 1985. *Petrobia harti*, Gupta, *Handbk : Plant Mites of India*, p. 55-56.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Darjiling), Assam, Delhi, Jammu & Kashmir, Karnataka, Punjab, Elsewhere : Taiwan, Japan, Middle East, Africa, Australia, Hawaii, South America.

Genus *Eotetranychus* Oudemans

1931. *Eotetranychus* Oudemans, *Ent. Ber. Annst.*, 8(178) : 224.

Key to the species of *Eotetranychus* known to occur on plants in West Bengal

- 1. Distal portion of aedeagus sigmoid *hirsti*
- Distal portion of aedeagus curved, not sigmoid... 2
- 2. Distal portion of aedeagus strongly curved and hook-like... *suginamensis*
- Distal portion of aedeagus, not hooked... *truncatus*

uncatus is not included in the key.

6. *Eotetranychus hirsti* Pritchard & Baker

- 1926. *Tetranychus fici* Hirst, *Proc. zool. Soc. Lond.*, 828.
- 1955. *Eotetranychus hirsti* Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser.*, 2 : 200.
- 1985. *Eotetranychus hirsti*, Gupta, *Handbk : Plant Mites of India*, p. 73-74.

Diagnosis : Please refer to Gupta (1985).

Material examined : 1 (F), West Bengal, Dist. Jalpaiguri, Alipurduar, ex an undet, plant, 12.1.1985;
1 (F), Dist. West Bengal, Dinajpur, Raigunj, Dalkhola, ex. *Ficus*, 21.1.1985.

Distribution : India : West Bengal (Dists. Hugli, Jalpaiguri, Wst Dinajpur), Andhra Pradesh, Bihar, Delhi, Karnataka, Punjab, Tamil Nadu. Elsewhere : Pakistan.

Remarks : This is an important pest of fig in West Bengal and the infestation caused the appearance of yellowish-green stipplings. These mites were also seen on young fruits. The heavily infested plants suffered defoliation.

7. *Eotetrynychus suginamensis* (Yokoyama)

- 1922. *Tetranychus suginamensis* Yokoyama, *Bull. Imp. Ser. Stn. Japan*, 8 : 282.
- 1940. *Tetranychus mori* Rahmān & Sapra, *Proc. Indian Acad. Sci.*, 11B : 184.
- 1955. *Eotetranychus suginamensis*, Pritchard & Baker, *Pacific Coast Ent. Soc. Mem Ser.*, 2 : 200-202.

Diagnosis : Please refer to Gupta (1985).

Material examined : 15 (F), West Bengal, Dist. Darjiling, Kalimpong, ex mulberry, 27.10.1986..

Distribution : India : Wst Bengal (Dist. Darjiling), Delhi, Punjab. Elsewhere : Japan.

Remarks : No damage to the host was seen to be caused by this mite species. It is the first report of the species from West Bengal.

8. *Eotetranychus truncatus* Estebanes & Baker

1966. *Eotetranychus truncatus* Estebanes & Baker, *Ann. Esc. nac. Cieno, Biol. Mex.*, 15: 51.
 1972. *Eotetranychus truncatus*, Gupta & Dhooria, *Curr. Sci.*, 41 :
 1985. *Eotetranychus truncatus*, Gupta, *Handbk : Plant Mites of India*, p. 79-80.

Diagnosis : Please refer to Gupta (1985).

Material examined : 1 (F), West Bengal, Dist. Darjiling, Samsing, ex undet, plant, 22.10.1986.

Distribution : India : West Bengal (Dist. Darjiling), Punjab. Elsewhere : Mexico.

Remarks : It is of no known economic importance. Earlier, this mite was unknown from West Bengal.

9. *Eotetranychus uncatu*s Garman

1952. *Eotetranychus uncatu*s Garman, in Pritchard & Baker, 1952, *Hilgardia*, 21 : 263.
 1985. *Eotetranychus uncatu*s, Gupta, *Handbk : Plant Mites of India* p. 80.

Diagnosis : Please refer to Gupta (1985)

Material examined : 1 (F), West Bengal, Dist. Darjiling, Samsing Tea Estate, ex tea, 23.11.1986.

10. *Eotetranychus* sp.

Material examined : 2 (F), West Bengal, Dist. South 24 Parganas, Bakkhali, ex *Shorea roubsta*, 23.2.1986; 1 (F), Dist. Darjiling, Manebhanjan, ex undet. plant, 31.10.1986; 1 (F), Dist. South 24 Parganas, Canning, ex an ornamental plant, 24.11.1986.

Distribution : India : West Bengal (Bankura, Darjiling, South 24 Parganas).

Remarks : Due to nonavailability of male specimens the specific identity could not be establish.

11. *Panonychus citri* (McGregor)

1916. *Tetranychus citri* McGregor, *Ann. Ent. Soc. Amer.*, 9 : 284.
 1966. *Panonychus citri*, Bindra, *Punjab Hort, J.* 6 : 111.
 1985. *Panonuchus citri*, Gupta, *Handbk : Plant Mites of India*, p. 92-93.

Diagnosis : Please refer to Gupta (1985).

Material examined : 2 (F), West Bengal, Dist. Jalpaiguri, Alipurduar, ex.citrus, 12.1.1985; 1(F), Kalimpong, ex. peach, 28.10.1986 : 12 (F), Dist. Maldah, Pyasabari Sericultural Farm, ex mulberry; 7.11.1986; 1 (F), Dist. Darjiling, Manebhanjan, ex undet. plant, 30.11.1986.

Distribution : India : West Bengal (Dists. Darjiling, Jalpaiguri, Maldah), Andaman & Nicobar Isls., Assam. Jammu & Kashmir, Meghalaya. Elsewhere : Thailand, New Zealand, China, Middle East, Japan, South Africa, U.S.A., Argentina, Bermuda, Cuba,

Remarks : This mite was abundantly seen infesting mulberry specially in Maldah district causing yellowing of leaves and often such leaves got crumpled and fall off. Besides mulberry, it was seen attacking peach and citrus.

12. *Panonychus ulmi** (Koch)

- 1836. *Tetranychus ulmi* Koch, *Deutsche Crustacea, Myriapodua, Arachnida*, 1 : 11.
- 1975. *Panonychus ulmi*, Prasad, *Internant J. Acarol.*, 1 : 22-24.
- 1985. *Panonychus ulmi*, Gupta, *Handbk. Plant Mites of India*, p. 93-94.

Diagnosis : Please refer to Gupta (1985).

Material examined : 8 (F), West Bengal, Dist. Darjiling, Kalimpong, ex peach and apple, 28.10.1986; 1(F), same locality and date, ex beans; 5 (F), Dist. Maldah, Malda Agril. Farm, ex. mango, 5.11.1986.

Distribution : India : West Bengal (Dists. Darjiling, Maldah), Jammu & Kashmir, Himachal Pradesh. Elsewhere : Europe.

Remarks : This mite was hitherto unknown from West Bengal.

Genus *Oligonychus* Berlese

- 1986. *Oligonychus* Berlese, 1886, *Acari dannosi alle Piante Coltivati*, Padova, p. 24.

Key to the species of *Oligonychus* known to occur on plants

- 1. Aedeagus bent ventrad, tarsus I with not more than single tactile seta on venter just distad of duplex setae 2
- Aedeagus bent dorsad, although the distal end may be directed ventrad, tarsus I with 2 tactile setae on venter just distal of duplex setae 5
- 2. Aedeagus gradually narrow distally 3
- 3. Bent portion of aedeagus forming an acute angle with shaft. *mangiferus*
- Bent portion of aedeagus with tip directed ventrad *coffae*
- 4. Aedeagus with bent portion forming a right angle with shaft *punicae*

- Aedeagus with bent portion forming acute angle with shaft*sapienticolus*
- 5. Tarsus I with proximoventral empodial appendages forming a pair of empodial spurs, occur on monocot plants6
- 6. Aedeagus with distal end enlarged*biharensis*
- Aedeagus with distal end not enlarged*oryzae*

13. *Oligonychus biharensis* (Hirst)

1925. *Paratetranychus biharensis* Hirst, *Bull. zool. Soc. Lond.*, p. 69.
 1955. *Oligonychus biharensis*, Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser.*, 2 : 364-365.
 1985. *Oligonychus biharensis*, Gupta, *Handbk. Plant Mites of India*, p. 83-84.

Diagnosis : Please refer to Gupta (1985).

Material examined : 1 (F), West Bengal, Dist. 2 (F), Jalpaiguri twon, ex an undet. plant, 11.1.1985; 2 (F), Dist. Bardhaman, Katwa, ex Akashmani, 26.9.1986; 2 (F), Dist. Birbhum, Ballavpur, ex *Shorea robusta*, 13.4.1989.

Distribution : India : West Bengal (Dists. Birbhum, Bardhaman, Koch Bihar, Medinipur), Andaman & Nicobar Islas.; Bihar, Delhi, Karnataka, Kerala. Elsewhere : Philippines, Thailand, Mauritius, Hawaii, Brazil, Antigua.

Remarks : This is being reported here for the first time from West Bengal. No apparent injury was caused to its host by this mite excepting only in a few cases where reddish patches appeared on *S. robusta*.

14. *Oligonychus coffeae* (Nietner)

1861. *Acarus coffeae*, Nietner, *Observ. Enem. Coffee, Tru, Ceylon*, p. 31.
 1955. *Oligonychus coffeae*, Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser.*, 2 : 315-316.
 1985. *Oligonychus coffeae*, Gupta, *Handbk. Plant Mites of India*, p. 83-84.

Diagnosis : Please refer to Gupta (1985).

Material examined : 10(F), West Bengal, Dist. Darjiling, Samsing Tea Estate, ex. tea. 23.10.1986.

Distribution : India : West Bengal (Dists. Darjiling, Jalpaiguri, Nadia), Assam, Delhi, Tamil Nadu. Elsewhere : Indonesia, Sri Lanka, Taiwan, Japan, U.S.S.R. U.S.A., Australia.

Remarks : It is one of the most serious pests of tea but during the present survey this was not found to be causing any serious damage on tea in Darjiling and Jalpaiguri although it occurred almost in all tea gardens.

15. *Oligonychus indicus* (Hirst)

1923. *Paratetranychus indicus* Hirst, *Proc. zool. Soc. Lond.*, p. 990.
 1955. *Oligonychus indicus*, Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser.*, 2 : 354-355.
 1985. *Oligonychus indicus*, Gupta, *Handbk : Plant Mites of India*, p. 84-86

Diagnosis : Please refer to Gupta (1985).

Material examined : 1 (F), West Bengal, Dist. Jalpaiguri, Alipurduar, Jainti Hills, ex grass, 18. 1. 1985; 1 (F), dist. Bankura, Jairambati, ex banana, 6.4.1989.

Distribution : India : West Bengal (Dists. Bankura, Jalpaiguri, Murshidabad), Andhra Pradesh, Bihar, Delhi, Haryana, Karnataka, Orissa, Punjab, Tamil Nadu. Elsewhere : Pakistan.

Remarks : This mite, which is a serious pest of sugarcane in various parts in India, was found during the present survey to infest banana causing the appearance of whitish patches on leaves and the mite colonies remain covered with thin webs. It also infested grasses in paddy fields causing reddening of leaves.

16. *Oligonychus mangiferus* (Rahman & Sapra)

1940. *Paratetranychus mangiferus* Rahman & Sapra, *Proc. Indian Acad. Sci.*, 11B : 192.
 1955. *Oligonychus mangiferus*, Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser.*, 2 : 330.
 1985. *Oligonychus mangiferus*, Gupta, *Handbk : Plant Mites of India*, p. 87-88.

Diagnosis : Please refer to Gupta (1985).

Material examined : 3 (F), West Bengal, Dist. Jalpaiguri, Alipurduar, ex *Ficus*, 12.1. 1985., 2 (F), Dist. Jalpaiguri, Alipurduar, ex an undet. plant, 13.1. 1985; 7 (F), Dist. Maldah, Malda Agril Farm, ex blackberry, 5. 11. 1986; 3 (F), Dist. South 24 Parganas, Bakkhali, ex palm, 3. 12. 1986; 10 (F), 1 (M), Dist. Medinipur, Jhargram ex undet. Plant. 3. 1. 1986; 1 (F), dist. Darjiling, Chalsa, ex palm, 24. 10. 1986, ex litchi, 11. 12. 1986; 14 (F), Dist. Medinipur, Kanthi, ex miscellaneous plant, 7.12.1986; 1 (F), Dist. Murshidabad, Dalkhola, ex mango, 10.11. 1986; 3 (F), Dist. Barddhaman, Khana, ex mango, 27. 9. 1987; 1 (F), Dist. Bankura, Jairambati, ex mango, 6. 4. 1989; 6 (F), Jairambati, ex litchi, 7. 4. 1989.

Distribution : India : West Bengal (Dists. Bankura, Barddhaman, Darjiling, Jalpaiguri, Maldah, Medinipur, Murshidabad, South 24 Parganas), Bihar, Delhi, Haryana, Himachal Pradesh, Karnataka, Kerala, Orissa, Punjab.

Remarks : It was abundantly seen to infest mango in Maldah and Murshidabad districts and litchi in 24 parganas and Bankura. It occurred on the upper surface of leaves on mango and lower surface on litchi. In both cases the infested leaves turned yellow. Mites in both cases remain more near the midribs than near the margins.

17. *Oligonychus oryzae* (Hirst)

1926. *Paratetranychus oryzae* Hirst, *Proc. zool. soc. Lond.*, p. 830;

1955. *Oligonychus oryzae*, Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser. 2* : 357.
 1985. *Oligonychus oryzae*, Gupta, *Handbk : Plant Mites of India*, p. 88-89.

Diagnosis : Please refer to Gupta (1985).

Material examined : 1 (F), 1 (M), West Bengal , Dist. Darjiling, Chalsa, ex bamboo, 19 .9.1987.

Distribution : India : West Bengal (Dists. Bankura, Darjiling , Nadia), Andaman & Nicobar Isls., Orissa, Punjab, Tamil Nadu.

18. *Oligonychus punicae* (Hirst)

1926. *Paratetranychus punicae* Hirst, 1926. *Proc. zool. Soc. Lond* p. 830.
 1955. *Oligonychus oryzae*, Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser. 2* : 335-336.
 1985. *Oligonychus oryzae*, Gupta, *Handbk: Plant Mites of India*, p. 88-89.

Diagnosis : Please refer to Gupta (1985).

Material examined : 1 ,(F), 1 (M), West Bengal, Dist. Bankura, Jairambati, ex coconut, 6.4. 1989.

Distribution : India : West Bengal (Dist. Bankura), Tamil Nadu. Elsewhere : Central and South America.

Remarks : Earlier, this mite was unknown from West Bengal

19. *Oligonychus sacchari* (McGregor)

1942. *Paratetranychus sacchari* McGregor, *J. Univ. Puerto Rico*, 26 : 91.
 1970. *Oligonychus sacchari*, Gupta, *Oriental Ins.* 10 : 342.
 1985. *Oligonychus sacchari*, Gupta, *Handbk: Plant Mites of India*, p. 90

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Naida). Elsewhere : Puerto Rico.

20. *Oligonychus sapienticolus* Gupta

1976. *Oligonychus sapienticolus* Gupta, *Oriental Ins.* 10 : 342-343.
 1985. *Oligonychus sapienticolus*, Gupta, *Handbk : Plant Mites of India*, p. 90-91.

Distribution : India : West Bengal (Dist. Murshidabad).

Remarks : No damage was seen to be caused by this mite.

21. *Oligonychus* sp.

Material examined : 1 (F), West Bengal , Dist. South 24 Parganas , Sajnakhali, Ex *Phoenix*

paludosa, 28. 10. 1986; 1 (F), Sudhanyakhali, ex banyan, 29. 11. 1986; 1 (F), Kakdwip, ex coconut, 1. 12. 1986; 15, (F), Dist. Bardhaman, Katwa, ex banyan, 26. 9. 1987.

Remarks : Due to nonavailability of male specimens, the specific identity in these cases could not be determined.

Genus *Schizotetranychus* Tragarth

1915. *Schizotetranychus* Tragarth, *Cent. Anst. Fors. Vas. Jordbr Omrad. Scotth*, 54 : 277.

Key to the species of *Schizotetranychus* known to occur on plants in West Bengal

1. Dorsal idiosomal setae longer than the distance between their longitudinal intervals2
 Dorsal idiosomal setae as long as the interval between their longitudinal bases*baltazari*
2. Dorsal idiosomal setae serrate*cajani*
 Dorsal idiosomal setae smooth3
3. Dorsal idiosomal setae minutely pubescent, lanceolate, broad proximally tapering distally
 *andropogoni*
 Dorsal idiosomal setae simple*spireaefolia*

22. *Schizotetranychus andropogoni* (Hirst)

1926. *Tetranychus (Schizotetranychus) andropogoni* Hirst, *Proc. zool. Soc. Lond.*, p. 829.
 1955 *Schizotetranychus andropogoni*, Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser.*, 2 : 248-249.
 1985. *Schizotetranychus andropogoni*, Gupta *Handbk : Plant Mites Mites of India*, P. 96-97.

Diagnosis : Please refer to Gupta (1985).

Material examined: 1 (F), West Bengal , Dist. Murshidabad, Kandi, ex paddy, 11. 11. 1986.

Distribution : India : West Bengal (Dists. Hugli, Murshidabad, North 24 Parganas), Bihar, Delhi, Orissa, Punjab, Tamil Nadu. Elsewhere : Pakistan, Thailand, Mexico.

Remarks : It causes the appearance of whitish spots arranged in linear rows on either side of midrib. Such leaves turn yellow.

23. *Schizotetranychus baltazari* Rimando

1962. *Schizotetranychus baltazari* Rimando, *Philip. Agri.*, 45, 534-535
 1963. *Schizotetranychus baltazari*, Manson, *Acarologia*, 5 : 360-362.
 1985. *Schizotetranychus baltazari*, Gupta, *Handbk : Plant Mites of India*, p. 97-98.

Diagnosis : Please refer to Gupta (1985)

Material examined : 3 (F), West Bengal , Dist. South 24-Parganas, Kakdwip, ex *Azadirachta indica*, 1.12. 1986.

Distribution : India : West Bengal (Dist. South 24 Parganas), Assam, Karnataka. Elsewhere : Burma, Thailand, Taiwan, Hong Kong.

Remarks : Hitherto this species was unknown from West Bengal. It was seen to be of no known economic importance in this state.

24. *Schizotetranychus cajani* Gupta

1976. *Schizotetranychus cajani* Gupta, *Oriental Ins.*, 10: 336-337.

1985. *Schizotetranychus cajani*, Gupta, *Handbk: Plant Mites of India*, p. 98.

Diagnosis : Please refer to Gupta (1985).

Material examined : 1 (F), West Bengal , Dist. West Dinajpur, Dalkhola, ex an undet. plant, 21.1.1985.

Distribution : India : West Bengal (Dists. Murshidabad, Nadia, West Dinajpur).

Remarks : No damage was seen to be caused by this mite during the present survey. However, earlier reports indicate that it attacks pigeonpea.

25. *Schizotetranychus spireaefolia* Garman

1940. *Schizotetranychus spireaefolia* Garman, *Bull. Conn. Agr. Exp. Stn.* 431 : 74.

1974. *Schizotetranychus spireaefolia*, Gupta & Dhoooria, *Proc. Indian Sci. Congr.* 61 : 69.

1985. *Schizotetranychus spireaefolia*, Gupta, *Handbk : Plant Mites of India* , p. 100.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. North 24-Parganas), Punjab. Elsewhere : U.S.A.

26. *Schizotetranychus* sp.

Material examined : 4 (F), West Bengal , Dist. South 24 Parganas , Sajnakhali, Ex black berry, 29. 12. 1986; 4 (F), Bakkhali, ex miscellaneous plant, 3. 12. 1986.

Remarks : Due to nonavailability of sufficient material, the specific identity could not be determined.

Genus *Tetranychus* Dufour

1832. *Tetranychus* Dufour, 1832, *Anns. Sci. Nat.*, 25 : 276.

Key to the species of *Tetranychus* known to occur in West Bengal

1. Proximal duplex setae on tarsus I of female placed distal to tactile seta2
 Proximal duplex setae on tarsus I of female more or less in line with tactile seta *ludeni*
2. Aedeagus with a knob distally3
 Aedeagus very long, slender, tapering distally...*fijiensis*
3. Aedeagus with a tiny knob... *hypogaeae*
 Aedeagus with a distinct knob...4
4. Upper surface of aedeagus knob straight or rounded with some kind of projection5
 Upper surface of aedeagus knob concave with anterior rounded projections berry like
 *neocaledonicus*
5. Aedeagal knob with anterior projection rounded... *cinnabarinus*
 Aedeagus with anterior projection acute... *urticae*

27. *Tetranychus cinnabarinus* (Boisd.)

1867. *Acarus cinnabarinus* Boisd., *Ent. Hort.*, 88.
 1884. *Tetranychus biomaculata* Harvey, *Wood-Mason*, 1884, p. 1-20.
 1931. *Tetranychus telarius* Linnaeus, Cherian, *J. Asiat. Soc. Beng.* 27 : 141-147.
 1985. *Tetranychus cinnabarinus*, Gupta, *Handbk : Plant Mites of India*, p. 106.

Diagnosis : Please refer to Gupta (1985).

Material examined : 2 (F), West Bengal , Dist. West Dinajpur, Raigunj, Dalkhola, ex an undet. Plant, 21. 1. 1985; 3 (F), Dist. Darjiling, Kalimpong, ex peach, 28. 10. 1986; 3 (F), Dist. Maldah, Sericultural Farm, ex mulberry, 7 11. 1986; 3 (F), Dist. Murshidabad, Lalgola, ex brinjal, 10. 11. 1986; 13 (F), 1 (M), Dist. South 24 Parganas, Diamond Harbour, ex castor, 2. 12. 1986; 20 (F), 1 (M), Dist. Medinipur, Garbeta, ex mango, 6. 12. 1986; 8, (F), 1 (M), Dist. Medinipur, Garbeta, ex mango, 6. 12. 1986;; 3 (F), Dist. Puruliya, Manbazar, ex castor, 16.9. 1987; 3 (F), Dist. Bankura, Jairambati, ex guava, 24. 9.1987, 10 (F), 1 (M), Dist. Barddhaman, Khana, ex arum, 27. 9.1987.

Distribution : India : West Bengal (Dists. Bankura, Barddhaman, Maldah, Medinipur, Murshidabad, Puruliya, Sourth 24- Parganas, West Dinajpur), Bihar, Gujarat, Haryana, Karnataka, Kerala, Meghalaya, Orissa, Punjab, Rajasthan, Tamil Nadu. Elsewhere : World wide.

Remarks : It was seen severely infesting brinjal , castor and peach causing enveloping the leaves with webs, crumpling of leaves, yellowing of leaves, etc. Such heavily infested plants suffered defoliation.

28. *Tetranychus fijiensis* Hirst

1924. *Tetranychus fijiensis* Hirst, *Ann. Mag. Nat. Hist.*, (9) 14 :
 1985. *Tetranychus fijiensis*, Gupta, *Handbk : Plant Mites of India*, p. 107-109.

Diagnosis : Please refer to Gupta (1985).

Material examined : 3 (F), 1 (M), West Bengal; Dist. Murshidabad, Kandi, ex citrus, 11. 11. 1986.

Distribution : India : West Bengal (Dist. Murshidabad), Andaman & Nicobar Isl., Assam, Karnataka, Kerala, Tamil Nadu. Elsewhere : Nakuoro Isl., Fiji Isl., Liki Isl., Thailand.

Ramarks : No record of this mite was available from West Bengal earlier. No damage to its host was caused by this mite.

29. *Tetranychus hypogaeae* Gupta

1976. *Tetranychus hypogaeae* Gupta, *Oriental Ins.*, 10 : 347-348.
 1985. *Tetranychus hypogaeae*, Gupta, *Handbk : Plant Mites of India*, p. 112-113.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Murshidabad).

Remarks : This was seen earlier heavily infesting groundnut at Berhampur Agril. Farm causing yellowing and crumpling of leaves. All the infested leaves became enveloped with webs. All such leaves gradually dried down.

30. *Tetranychus ludeni* Zacher

1913. *Tetranychus ludeni* Zacher, *Mitt. Kais. biol. Anst. Land. U. forstw.*, 14 : 40.
 1959. *Tetranychus ludeni*, Puttarudriah & Channa Basavanna, *Proc. 1st. All India Congr. Zoology*, 1 : 530.
 1985. *Tetranychus ludeni*, Gupta, *Handbk : Plant Mites of India*, p. 110-112.

Diagnosis : Please refer to Gupta (1985).

Material examined : 50,(F), 3 (M), West Bengal , Dist. Medinipur, Kanthi, ex beans 8. 11.1986.

Distribution : India : West Bengal (Dist. Medinipur), Delhi, Karnataka. Elsewhere : South Africa, New Zealand, U.S.A., South America.

Remarks : No record of this speices was earlier available from West Bengal. Due to infestations on beans, the leaves turned yellowish, dried up and fall off. The cultivtors reported that the infestations affected the yield.

31. *Tetranychus neocaledonicus* Andre

1933. *Tetranychus neocaledonicus* Andre, *Bull. Mus. Natn. Hist. nat. Paris*, (2) 5: 302.
 1940. *Tetranychus cucurbitae* Rahman & Sapra, *Proc. India Acad. Sci.*, 11B : 179.
 1985. *Tetranychus neocaledonicus*, Gupta, *Handbk : Plant Mites of India* : p, 125-126.

Diagnosis : Please refer to Gupta (1985).

Material examined : 3 (F), West Bengal, Dist. Koch Bihar, Gossanimari, ex and undet. plant, 10.1.1985; 3 (F), Dist. Maldah, Pyasbari Sericultural Farm ex mulberry, 7.11.1986; 1 (F), Dist. Murshidabad, Kamdini, ex. mulberry, 11.11.1986; 15 (F), dist. Puruliya, Balarampur, ex. lady's finger, 11.9.1987; 3 (F), Dist. Bankura, Jairambati, ex brinjal, 6.4.1989; 3 (F), same locality, ex sweet gourd 7.4.1989; 1 (F), Dist. Birbhum, State Agril Farm, ex. *Polyalthia* sp., 12.4.1989.

Distribution : India : West Bengal (Dists. : Bankura, Birbhum, Koch Bihar, Hugli, Maldah, Murshidabad, Puruliya), Assam, Bihar, Delhi, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, Uttar Pradesh. Elsewhere : Africa, Fiji, Bhamas, Hawaii, Venezuela, Puerto Rico, U.S.A.

Remarks : This species severally attacked lady's finger causing crinkling and yellowing of leaves.

32. *Tetranychus urticae* Koch

1836. *Tetranychus urticae* Koch, *Deutsche crustacea Myriapoda Arachnida*, Fasc. 1 : 10.
 1977. *Tetranychus urticae*, Lal & Mukherjee, *Sci. & Cult.*, 43 :
 1985. *Tetranychus urticae*, Gupta, *Handbk. : Plant Mites of India*, p. 115.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Hugli), Uttar Pradesh. Elsewhere : Europe, Japan, U.S.A., South America.

Remarks : During the present investigation, no significant damage caused by this mite was noticed.

33. *Tetranychus* sp.

Material examined : 1 (F), West Bengal, Dist. Darjiling, Samsing, ex undet. plant, 24.10.1986; 8 (F), Kalimpong, ex peach, 27.10.1986; 3 (F), Dist. Maldah, Pyasbari Sericultural Farm, ex mulberry, 7.11.1986; 5 (F), Samsing, ex. tea, 23.11.1986; 6 (F), Dist. South 24-Parganas, Sajnakhali, ex *Cerriops decanda*, 28.11.1986. ex beans, 13.9.1987; 1 (F), Bagmundi, ex custard apple, 16.9.1987; 1 (F), Dist. Bankura, Mukutmanipur, ex custard apple, 16.9.1987; 3 (F), Dist. Bardhaman, Khana, ex bamboo, 27.9.1987.

Remarks : Either due to nonavailability of males or the specimens were in poor conditions the materials could not be identified upto species level.

Family TENUIPALPIDAE Berlese

1913. *Tenuipalpidae* Berlese, *Acarotheca Italica Firenze*, Tipografica di M. M. Ricci p. 17.

Key to the genera of *Tenuipalpidae* known to occur on plants in West Bengal.

1. Hysterosoma with not more than one pair of dorsosublateral setae or without dorsosublaterals...
.....2
Hysterosoma with 2 or more pairs of dorsosublaterals*Raoiella*
2. Hysterosoma normally with penultimate pair of dorsolateral setae flagelliform ... *Tenuipalpus*
Hysterosoma normally with penultimate pair of dorsolateral setae of normal length
.....*Brevipalpus*

Genus *Brevipalpus* Donnadieu

1875. *Brevipalpus* Donnadieu, *Recherches pour servir a l'histoire des Tetranyques*, p. 143-145.

Key to the species of *Brevipalpus* known to occur in West Bengal

1. Hysterosoma with 6 dorsolaterals*essigi*
- Hysterosoma with 5 dorsolaterals2
2. Tarsus II with a single sensory rod3
- Tarsus II with 2 sensory rods*phoenicis*
3. Propodosoma with rather even reticulations mediodorsally*obovatus*
- Propodosoma with longitudinal striae or very slender reticulations mediodorsally*delconi*

34. *Brevipalpus deleoni* Pritchard & Baker

1958. *Brevipalpus deleoni* Pritchard & Baker, *Univ. Calif. pub Ent.* 14 : 234-235.

1970. *Brevipalpus deleoni*, Gupta, *Sci. & Cult.*, 36 : 99.

1985. *Brevipalpus deleoni*, Gupta, *Handbk: Plant Mites of India*, p. 127.

Diagnosis : Please refer to Gupta (1985)

Material examined : 5 (F), West Bengal, Dist Hugli, ex an ornamental plant, 5 8 1989.

Distribution : India : West Bengal (Dists. Hugli, Bankura), Karnataka, Punjab. Elsewhere : USA.

35. *Brevipalpus essigi* Baker

1949. *Brevipalpus essigi* Baker, *Amer. Midl. Nat.* 42 : 367.
 1979. *Brevipalpus essigi*, Gupta & Ghosh, *Rec. Zool. Surv. India*, 77 : 199.
 1985. *Brevipalpus essigi*, Gupta, *Handbk : Plant Mites of India*; p. 128.

Diagnosis : Please refer to Gupta (1985)

Material examined : 1 (F), West Bengal, Dist. Darjiling, Manebhanjan, ex undet. plant, 31. 10. 1986.

Distribution : India : West Bengal (Dist. Darjiling, Bankura), Punjab. Elsewhere : U. S. A.

Remarks : No economic importance of this species was noticed during the present investigation. This forms the first record of the species from West Bengal.

36. *Brevipalpus obovatus* Donnadieu

1875. *Brevipalpus obovatus* Donnadieu, *Recherches pour service Historie des Tetranyques*, p. 116.
 1893. *Brevipalpus obovatus*, Christison, *Darjiling News*, p. 116.
 1985. *Brevipalpus obovatus*, Gupta, *Handbk: Plant Mites of India*, p. 129-130.

Diagnosis : Please refer to Gupta (1985).

Material examined : 1 (F), West Bengal, Dist. Darjiling, samsing, ex tea, 23. 10. 1986; 1 (F), Dist. Murshidabad, Kandi, ex blackberry, 11.11.1986.

Distribution : India : West Bengal (Dists. Darjiling, Jalpaiguri, Murshidabad), Delhi, Himachal Pradesh, Punjab. Elsewhere : Pakistan, Sri Lanka, Egypt, Japan, Iran, Israel, France, Spain, Cyprus, Australia, Canada, U.S.A., Venezuela, Argentina.

Remarks : No damage to its host was seen to be caused by this species.

37. *Brevipalpus phoenicis* (Geij.)

1939. *Brevipalpus phoenicis* Geij., *Meded. Landb. Hooges. Wageningen*, 42 : 230.
 1974. *Brevipalpus phoenicis*, Das, *Two & Bud*, 8 : 3-4.
 1985. *Brevipalpus phoenicis*, Gupta, *Handbk : Plant Mites of India*, p. 130-131.

Diagnosis : Please refer to Gupta (1985).

Material examined : 5 (F), West Bengal, Dist. Koch Bihar, ex *Shorea robusta*, 11.1.1985; 2 (F), Dist. Jalpaiguri, Alipurduar, ex an undet. plant, 13. 1. 1985; 2 (F), Jaldapara Sanctuary ex an undet. Plant, 14.1.1985; 1 (F), Dist. Birbhum, Suri, Agril Farm, ex coconut, 12.4.1989; 1 (F), Ballavpur, ex *S. robusta*, 13.4.1989.

Distribution : India : West Bengal (Dists. Birbhum, Koch Bihar, , Jalpaiguri), Assam, Bihar, Delhi, Himachal Pradesh, Karnataka, Maharashtra, Meghalaya, Orissa, Punjab, Tamil Nadu. Elsewhere : Kenya, Tanganyika, Okinawa Isl., Australia, Holland, Spain, Portugal, Syria, Sicily, Italy, U.S.A. Trinidad, Argentina, Brazil, Venezuela.

Remarks : Gupta (1974) reported this mite causing gall-like swelling on the leaves of sesamum.

Genus *Raoiella* Hirst

1924. *Raoiella* Hirst, *Ann. Mag. Nat. Hist.* (9) 14 (83) : 522.

38. *Raoiella indica* Hirst

1924. *Raoiella indica* Hirst, *Ann. Mag. Nat. Hist.* (9) 14 : 522.

1974. *Raoiella indica*, Prasad, *A catalogue of mites of India*, p. 111-112.

1985. *Raoiella indica*, Gupta, *Handbk : Plant Mites of India*, p. 137.

Diagnosis : Please refer to Gupta (1985).

Material examined : 30 (F), West Bengal, Dist. South 24 Parganas, Sajnakhali, *Dalbergia spinosa*, 28.11.1989; 2 (F), Pancha, ex Akashmani, 30.3.1989; 4 (F), Dist. Bankura, Jairambati, ex coconut, 6.4. 1989; 6 (F), Bishnupur, ex date palm, 10.4. 1989.

Distribution : India : West Bengal (Dists. Bankura, Puruliya, South 24 Parganas), Karnataka, Punjab, Tamil Nadu. Elsewhere : Mauritius

Remarks : This species is recorded here for the first time from West Bengal It causes reddening of leaves of date palm.

Genus *Tenuipalpus* Donnadieu

39. *Tenuipalpus* sp.

1970. *Tenuipalpus* sp. Gupta, *Sci. & Cult.*, 36 : 99.

Distribution : West Bengal (Dist. Darjiling).

Superfamily ERIOPHYOIDEA Nalepa

Key to the families of Eriophyoidea known to occur on plants in West Bengal (After Jeppson *et al.*, 1975)

1. Rostrum of various sizes usually small in comparison to body size, feather claw small, simple or divided. Female genital coverflap usually ribbed. Mostly gall makers or rust mites causing considerable damage... ..ERIOPHYIDAE

Rostrum large in comparison to body, feather claw often large, simple or deeply divided; female genital cover flap smooth, less often ribbed. Mostly vargrants, rarely causing much damage to the plants RHYNCAPHYTOPTIDAE

Family ERIOPHYIDAE Nalepa

1898. Eriophyidae Nalepa, *Das Tierreich*, 4 : 5.

Key to the subfamilies of Eriophyidae known to occur on plants in West Bengal.

1. Tibia reduced or completely fused with tarsi; foretibia never with seta... Nothopodinae

Tibia always amply distinct from tarsi; foretibial nearly always present except in few genera ...
..... 2

2. Female genitalia noticbly projecting from the thanosomal venter appressed to coxae, usually separating coxae more than normal; anterior female internal apodeme bent up and appearing shortened, usually present as heavy transverse line in ventral view; ribs of female coverflap typically in two uneven ranks; fore coxae usually connete at central line; sternal line shortened; coxae specially forecoxae wth curving lines outlining coxal setiferous tubercles Cecidophyinae

Genitalia lying more on level of thanosome venter, not appressed to coxae usually not spread apart; sternal line most often of moderate length; internal anterior female apodeme extending moderate distance forward; coxae often ornamented with granules but curved lines when present weak. Female genital coverflap variously emblished; ribs less often in two ranks; dorsal setae rarely absent from shield 3

3. Body worm-like, thanosomal ring subequal dorsoventrally, at least on anterior half or 2/3; shield typically lacking anterior lobe or with slight projection present over rostrum, then this extension narrow, basally flexible and combined narrow thanosomal rings... Eriophyinae

Body fusiform and fitted for exterior living, shield usually broad based and rigid anterior lobe over rostrum, thanosome typically divided laterally into broad and heavy tergites and narrow and soft sternites; if anterior lobe present or only a slight one, then some form of tergal, dorsal microtubercles, if no dorsoventral contrast present, then broad shield lobe present... Phyllocoptinae

Subfamily NOTHOPODINAE Keifer

1956. Nothopodinae Keifer, *Bull. Calif. Dep. Agr.*, 44 : 163.

Key to the genera of Nothopodinae known to occur on plants in West Bengal :

1. First setiferous coxal tubercle and setae missing, forecoxae either separate or fused along midline
..... *Cosellae*

First setiferous coxal tubercle and seta present; forecoxae weakly divided; dorsal shield tubercle ahead of rear shield margin and directing setae up and centrad; foretibiae completely fused tarsi
 *Colopodacus*

Genus *Colopodacus* Keifer

1960. *Colopodacus* Keifer, *Eriophyid Studies, Calif. Dep. Agr., B-1* : 16.

40. *Colopodacus combretus* Ghosh & Chakrabarti

1982. *Colopodacus combretus* Ghosh & Chakrabarti, *Entomon*, 7 : 435-437.

1985. *Colopodacus combretus*, Gupta, *Handbk : Plant Mites of India*, p. 166.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Bankura).

Genus *Cosella* Newkirk & Keifer

1975. *Cosella* Newkirk & Keifer, *Mites injurious to economic plants*, p. 570.

41. *Cosella ichnocarpasia* Mondal & Chakrabarti

1981. *Cosella ichnocarpasia* Mondal & Chakrabarti, *Oriental Ins.*, 15 : 315-317.

1985. *Cosella ichnocarpasia*, Gupta, *Handbk: Plant Mites of India*, p. 168.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia)

Subfamily CECIDOPHYINAE Keifer

1966. Cecidophyinae Keifer, *Eriophyid Studies*, *Calif. Dep. Agr.*, B-20 : 15.

Key to the genera of Cecidophyinae Known to occur on plants in West Bengal.

1. Dorsal seta absent *Epicecidophyes*
 Dorsal seta present *Gammaphytoptus*

Genus *Epicecidophyes* Mondal & Chakrabarti

1981. *Epicecidophyes* Mondal & Chakrabarti, *Oriental Ins.*, 15 : 315-319.

42. *Epicecidophyes indica* Mondal, Ghosh & Chakrabarti

1982. *Epicecidophyes indica* Mondal, Ghosh & Chakrabarti, *Oriental Ins.*, 16 : 308-309.
 1985. *Epicecidophyes indica*, Gupta, *Handbk : Plant Mites of India*, p. 175-176.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Hugli).

43. *Epicecidophyes clerodendris* Mondal & Chakrabarti

1981. *Epicecidophyes clerodendris* Mondal & Chakrabarti, *Oriental Ins.*, 15 : 318-319.
 1985. *Epicecidophyes clerodendris*, Gupta, *Handbk: Plant Mites of India*, p. 174.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

Genus *Gammaphytoptus* Keifer

1939. *Gammaphytoptus* Keifer, *Bull. Calif. Dep. Agr.*, 27 : 148.

44. *Gammaphytoptus litseasis* Mondal, Ghosh & Chakrabarti

1982. *Gammaphytoptus litseasis* Mondal, Ghosh & Chakrabarti, *Indian J. Acar.*, 6 : 22.
 1985. *Gammaphytoptus litseasis*, Gupta, *Handbk : Plant Mites of India*, p. 176.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Hugli).

Subfamily ERIOPHYINAE Nalepa

1898. Eriophyinae Nalepa, *Das Tierreich*, 4 : 5.

Key to the genera of Eriophyinae Known to occur on plants in West Bengal.

1. Dorsal tubercle more or less ahead of rear shield margin and projecting dorsal setae ahead of some degree or tip; dorsal tubercles which are closed to margin incline ahead, or have longitudinal axes*Phytoptus*
- Dorsal tubercles on or very near shield margin with transverse basal axes, directing setae to rear, usually divergently2
2. Foretibiae setae present*Aceria*

Foretibeae setae absent.....*Acalitus*

Genus *Acalitus* Keifer

1965. *Acalitus* Keifer, *Eriophyid Studies, Calif. Dep. Agr., B-14* : 1-2.

45. *Acalitus hibisci* Mondal & Chakrabarti

1982. *Acalitus hibisci* Mondal & Chakrabarti, *Entomon, 7* : 361-363.

1985. *Acaliytus hibisci*, Gupta, *Handbk : Plant Mites of India*, p. 179.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

Genus *Aceria* Keifer

1944. *Aceria* Keifer, *Bull. Calif. Dep. Agr., 33* : 22.

Key to the species of *Aceria* known to occur on plants in West Bengal

1. Feather claw 7 rayed*pongamiae*
- Feather claw less than 7 rayed2
2. Feather claw 6 rayed3
- Feather claw less than 6 rayed4
3. Female genital coverflap with longitudinal lines in 2 series*mangiferae*
- Female genital coverflap with longitudinal lines in 1 series*erythreensis*
4. Feather claw 5 rayed5
- Feather claw 4 rayed7
5. Female genital seta longer than length of genitalia*infectoriae*
- Female genital seta not longer than genitalia6
6. Median line almost complete with dart shaped mark near rear shielded margin*litchii*
- Median shield on rear margin, without a dart shaped mark...*crotalariae*

7. Genital shield bare with no longitudinal line on mid shield *nerii*
 - Genital shield with one or more longitudinal lines on mid shield...8
 8. Shield sides granulated or microtuberculated *lycopersici*
 - Shield sides not granulated... *cordiae*

46. *Aceria erythrensis* (Chakrabarti & Ghosh)

1981. *Eriophyes erythrensis* Chakrabarti & Ghosh, *Indian J. Acar.*, 5 : 29-31.
 1985. *Aceria erythrensis*, Gupta, *Handbk : Plant Mites of India*, p. 186.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Hugli).

47. *Aceria cordiae* ChannaBasavanna

1966. *Aceria cordiae* ChannaBasavanna, *Univ. Agr. Sci. Bull.*, p. 83-84.
 1985. *Aceria cordiae*, Gupta, *Handbk, Plant Mites of India*, p. 192.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia), Rajasthan, Karnataka.

48. *Aceria crotalariae* ChannaBasavanna

1966. *Aceria crotalariae* ChannaBasavanna, *Univ. Agr. Sci. Bull.*, p. 72-73.
 1985. *Aceria crotalariae*, Gupta, *Handbk : Plant Mites of India*, p. 192-193.

Diagnosis : Please refer to Gupta (1985)

Distribution : India : West Bengal (Dist. North - 24 Parganas), Karnataka, Tamil Nadu.,

49. *Aceria infectoriae* Channa Basavana

1966. *Aceria infectoriae* ChannaBasavanna, *Univ. Agr. Sci. Bull.*, p. 70-71.
 1985. *Acria infectoriae*, Gupta, *Handbk : Plant Mites of India*, p. 195.

Diagnosis : Plese refer to Gupta (1985).

Distribution : India : West Bengal (Dist. North 24-Parganas), Delhi, Tamil Nadu.

50. *Aceria litchii* (Keifer)

1943. *Eriophyes litchii* Keifer, *Bull. Calif. Dep. Agr.*, 32 : 212.
 1966. *Aceria litchii*, Gupta *Handbk : Plant Mites of India*, p. 196-197.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia, South 24-Parganas,) Bihar, Karnataka, Tripura, Elsewhere : Pakistan, Hawaii.

51. *Aceria lycopersici* (Wolff.)

1879. *Phytoptus lycopersici* Wolff., *Monatschr. Gartenb.*, 22 : 424.
 1966. *Aceria lycopersici*, ChannaBasavanna, *Univ. Agr. Sci. Bull.* p. 80-82.
 1985. *Aceria lycopersici*, Gupta, *Handbk : Plant Mites of India*, p. 197-198.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia), Delhi, Punjab, Tamil Nadu.

52. *Aceria mangiferae* Sayed

1946. *Aceria mangiferae* Sayed, *Bull. Soc. fouad ler. Ent. Egypte*, 30 : 7-10.
 1954. *Aceria mangiferae*, Narasimahan, *Curr. Sci.*, 23 : 297-298.
 1985. *Aceria mangiferae*, Gupta, *Handbk : Plant Mites of India*, p. 198-200.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dists, Nadia, Maldah), Bihar, Delhi, Haryana, Karnataka, Punjab, Tamil nadu. Elsewhere : Southern Asia, Egypt, Brazil..

Remarks : This mite was seen to be a serious pest of mango in South 24-Parganas district causing malformation of mango inflorescence.

53. *Aceria nerii* ChannaBasavanna

1966. *Aceria nerii* ChannaBasavanna, *Univ. Agr. Sci. Bull.*, p. 78-79.
 1985. *Aceria nerii*, Gupta, *Handbk : Plant Mites of India*, p. 201.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia), Karnataka, Tamil Nadu.

Remarks : This species is responsible for the formation of pouched galls on tender leaves of *Pongamia glabra*.

54. *Aceria pongamiae* ChannaBasavanna

1966. *Aceria pongamiae* ChannaBasavanna, *Univ. Agril. Sci. Bull.*, P. 57-58.
 1985. *Aceria pongamiae*, Gupta, *Handbk. Plant Mites of India*, P. 201.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia), Karnataka, Tamil Nadu.

Remarks : This species is responsible for the formation of pouched galls on tender leaves of *Pongamia glabra*.

Genus *Phytoptus* Dujardin

1851. *Phytoptus* Dujardin, *Ann. Sci. Nat. Sci. Zool.*, 15 : 166.

55. *Phytoptus terminaliae* ChannaBasavanna

1966. *Phytoptus terminaliae* ChannaBasavanna, *Univ. Agr. Sci. Bull.*, p. 47-48.
 1985. *Phytoptus terminaliae*, Gupta, *Handbk : Plant Mites of India*, p. 217-218.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Bankura), Delhi, Punjab.

Remarks : This mite is known to cause tight rolls of the leaves.

Subfamily PHYLLOCOPTINAE Nalepa

1898. *Phyllocoptinae* Nalepa, *Das Tierreich*, 4 : 45.

Key to the Section of Phyllocoptinae (after Jeppson *et al.* 1975)

1. No prominent dorsal shield setae, dorsal tubercle present or absent, if present, with or without minute seta**Sec. II**
- Dorsal tubercle and prominent shield setae present **2**
2. Tergites laterally extended into lobes or pointed projections, either from each tergite or from part of them or from lateral anterior abdominal expansion...**Sec. III**
3. Dorsal tubercle set more or less ahead of rear shield margin and directing setae ahead, up or diagonally centrad, if these tubercles are near margin, then they are sub-cylindrical and bent furrowed, or their axes longitudinal or diagonal to body...**Sec. IV**

Dorsal tubercles on or very near to rear shield margin, directing setae to rear, usually divergently dorsal tubercles with subcylindrical or with axes at right angles to body... *Sec. V*

Sec. II

Genus *Calacarus* Keifer

1940. *Calacarus* Keifer, *Bull. Calif. Dep. Agr.* 29 : 163.

Key to the species of *Calacarus* known to occur on plants in West Bengal :

1. Feather claw 5 rayed... ..2.
- Feather claw more than 5 rayed3
2. Cover flap with 16-17 scorings arranged in a single row*jasmini*
- Coverflap with discontinous lines or without lines*capscia*
3. Genital ceverflap smooth4
- Genital coverflap with distinct or indistinct lines5
4. Median line absent*microrostrus*
- Median line faint...*swietensis*
5. Median line distinctly present throughout the shield length, cell preent just behind the anterior lobe.*araliae*
- Median line absent or partly present on the shield6
6. Foretibial seta absent, only 2 cells present behind the anterior lobe...*keiferi*
- Foretibial seta present, each apical cell by division form 4 cells...*quisqualis*

56. *Calacarus araliae* Chkrabarti & Mondal

1980. *Calacarus araliae* Chkrabarti & Mondal, *Acarologia*, 21 : 397-399.

1985. *Calacarus araliae*, Gupta, Handbk : *Plant Mites of India*, p. 223.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

57. *Calacarus capsica* Chakrabarti & Mondal

1980. *Calacarus capsica* Chakrabarti & Mondal, *Acarologia*, 21 :
1985. *Calacarus capsica*, Gupta, *Handbk : Plant Mites of India*, p. 224-225.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia), Tamil Nadu.

58. *Calacarus jasmini* Chakrabarti & Mondal

1979. *Calacarus jasmini* Chakrabarti & Mondal, *Indian J. Acar.*, 3 : 71-73.
1985. *Calacarus jasimini*, Gupta, *Handbk : Plant Mites of India* p. 225.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia), Tamil Nadu.

59. *Calacarus keiferi* Chakrabarti & Mondal

1980. *Calacarus Keiferi* Chakrabarti & Mondal, *Acarologia*, 21 : 401-402.
1985. *Calacarus Keiferi*, Gupta, *Handbk : Plant Mites of India* . p. 226.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadai).

60. *Calacarus microstrus* Chakrabarti & Mondal

1981. *Calacarus microstrus* Chakrabarti & Mondal, *Indian J. Acar.* 5 : 27-29.
1985. *Calacars microstrus*. Gupta, *Handbk : Plant Mites of India*, p. 226.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Hugli).

61. *Calacarus swietensis* Chakrabarti & Mondal

1980. *Calacarus swietensis* Chakrabati & Mondal, *Acarologia*, 21 : 404-406.
1985. *Calacarus swietensis*, Gupta, *Handbk : Plant Mites of India* p. 227.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

62. *Calacarus quisqualis* Chakrabarti & Mondal

1980. *Calacarus quisqualis* Chakrabarti & Mondal, *Acarologia*, 21 : 402-404.
 1985. *Calacarus quisqualis*, Gupta, Handbk : *Plant Mites of India* p. 227-228.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia), Tamil Nadu.

Key to the genera of Sec. III known to occur on plants in West Bengal

1. Anterior part of thanosome with broad lateral expansion and bearing 3 lateral lines which are stiff rear of thanosome abruptly narrower*Scolocenus*

Thanosome gradually tapering to telosome, most thanosomeal tergites with lateral lobes, either of even length or alternate length, lobes varying from rounded off to apically sharp; femoral seta present*Tegonotus*

Genus *Scolocenus* Keifer

1962. *Scolocenus* Keifer, *Eriophyid Studies, Calif. Dep. Agr.*, B-8 : 4.

63. *Scolocenus spiniferus* Keifer

1962. *Scolocenus spiniferus* Keifer, *Burr. Ent. Calif. Dep. Agr.*, B-8:3.
 1985. *Scolocenus spiniferus*, Mondal, Ghosh & Chakrabarti, *Oriental Ins.*, 16 : 310.
 1985. *Scolocenus spiniferus*, Gupta, Handbk : *Plant Mites of India*, p. 229.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Hugli). Elsewhere : Philippines.

Genus *Tegonotus* Nalepa

1890. *Tegonotus* Nalepa, *Anz. Akad. Wiss. Wien.*, 27 : 213.

Key to the species of *Tegonotus* known to occur on plants in West Bengal.

1. Feather claw 5 rayed.*bengalensis*
 - Feather claw 6 rayed...2
 2. Two spine-like structures present on anterior shield.....*jambolensis*
 - Such structure absent*mngiferae*

64. *Tegonotus bengalensis* Mondal & Chakrabarti

1890. *Tegonotus bengalensis* Mondal & Chakrabarti, *Oriental Ins.*, 14 : 457-459.
 1985. *Tegonotus bengalensis*, Gupta, *Handbk : Plant Mites of India*, p. 230.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. North 24-Parganas).

65. *Tegonotus jambolensis* Mondal, Ghosh & Chakrabarti

1982. *Tegonotus jambolensis* Mondal, Ghosh & Chakrabarti, *Oriental Ins.*, 16 : 310-312.
 1985. *Tegonotus jambolensis*, Gupta, *Handbk : Plant Mites of India* : p. 231-232.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Bankura).

66. *Tegonotus mangiferae* (Keifer)

1946. *Oxypleurites mangiferae* Keifer, *Bull. Calif. Dep. Agr.*, 35 : 43.
 1982. *Tegonotus mangiferae*, Chakrabarti & Mondal, *Oriental Ins.*, 16 : 524-525.
 1986. *Tegonotus mangiferae*, Gupta, *Handbk : Plant Mites of India*, p. 232.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia). Elsewhere : Hawaii.

Sec. IV

Key to the genera of Sec. IV. known to occur in West Bengal.

1. Dorsal thansome flat or furrowed or with longitudinal trough2
 - Dorsum or thanosome with central ridge...*Caleptrimerus*
 - Dorsum of thanosome evenly arched, somewhat flattened in some genera.....*Phyllocoptes*
2. Trapezodial species, widest across rear of shield, with central hump in start of dorsal longitudinal through on thansome; dorsal tubercle on rear shield margin but with longitudinal axes and directing setae centrad*Indonotalox*
 - Dorsal tubercle set ahead of rear shield margin, no appreciable hump just behind shield, more elongated*Phyllocoptuta*

Genus *Caleptrimerus* Keifer

1936. *Caleptrimerus* Keifer, *Bul. Calif. Dep. Agr.*, 27 : 310.

Key to the species of *Caleptrimerus* known to occur on plants in West Bengal :

1. Female genital coverflap with prominent scorings in 2 series; abdomen with 60-67 sternites'
 *antedesmae*

67. *Caleptrimerus antedesmae* Chakrabarti & Das

1982. *Caleptrimerus antedesmae* Chakrabarti & Das, *Entomon*, 7 : 33-34.

1985. *Caleptrimerus antedesmae*, Gupta, *Handbk : Plant Mites of India*, p. 234.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

68. *Caleptrimerus cordiae* Chakrabarti & Das

1982. *Caleptrimerus cordiae* Chakrabarti & Das, *Entomon*, 7 :

1985. *Caleptrimerus cordiae*, Gupta, *Handbk : Plant Mites of India* p. 235.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Birbhum).

Genus *Indonotalox* Ghosh & Chakrabarti

1982. *Indonotalox* Ghosh & Chakrabarti, *Entomon*, 7 : 437-438.

69. *Indonotalox sudarsani* Ghosh & Chakrabarti

1982. *Indonotalox sudarsani* Ghosh & Chakrabarti, *Entomon*, 7 : 437-438

1985. *Indonotalox sudarsani*, Gupta, *Handbk : Plant Mites of India*, p. 238.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Bankura).

Genus *Phyllocoptes* Nalepa

1889. *Phyllocoptes* Nalepa, *SB Acad. Wiss Wien*, 98:116.

70. *Phyllocoptes salmaliae* Chakrabarti & Mondal

1979. *Phyllocoptes salmaliae* Chakrabarti & Mondal, *Indian J. Acar.* 3 : 73-76.
 1985. *Phyllocoptes salmaliae* Gupta, *Handbk : Plant Mites of India* ,p. 241-242.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

Genus *Phyllocopturta* Keifer

1938. *Phyllocopturta* Keifer, *Bull, Calif. Dep. Agr.*, 27 : 193.

71. *Phyllocopturta oleivora* (Ashmead)

1879. *Typhlodormus oleivorus* Ashmead, *Can. Ent.*, 11:160.
 1966. *Phyllocopturta oleivora* CahannaBasavanna, *Univ. Agr. Sci. Bull.* p. 92.
 1981. *Phyllocopturta oleivora*, Chakrabarti, Ghosh & Mondal, *Oriental Ins.*, 15 : 139-144.
 1985. *Phyllocopturta oleivora*, Gupta, *Handbk : Plant Mites of India*, p. 244.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia), Tamil Nadu. Elsewhere : Mauritius, South Africa, Israel, U.S.A.

Remarks : This is an important pest of citrus causing silvery skin of fruits which later turn reddish brown.

Sec. V.

Key to the genera of Sec. V known to occur on plants in West Bengal :

1. Dorsum evenly arched transversely.....2
- Thanosome with middorsal longitudinal furrow or trough4
- Thanosome with central longitudinal ridge5
2. Thanosome tergites usually broad and abruptly contrasting with narrower telosomal rings
*Anthocopies*
- Thanosomal tergites narrowing to and bending telosomal rings3
3. Anterior shield rather broad and rounded off, with 2-4small spines or spinules projecting forward from under front edge.*Aculus*

- Anterior shield lobe usually more acuminate frequently ending with sharp centre point, never with spinules from under front edge *Aculops*
- 4. Anterior dorsal tergal plate present *Bakeriella*
- Anterior dorsal tergal plate absent *Tetra, Paratetra*
- 5. Lateral ridges present or absent 6
- Lateral ridges absent *Indotegolophus*
- 6. Middorsal ridge shorter than subdorsal ridges and ending in dorsal trough... *Abacarus*
- Middorsal ridge not ending before such lateral or subdorsal ridges as are present 7
- 7. Tergites on reaching of various widths according to spines but all reaching same levels in lateral view... *Tegolophus*
- Deep cleft between shield and thansome, with first tergite projecting up further than those following *Neotegonotus*

Genus *Abacarus* keifer

1944. *Abacarus* Keifer, *Bull. Calif. Dep. Agr.*, 33 : 28.

Key to the species of *Abacarus* known to occur on plants in West Bengal

- 1. Feather claw 5 rayed *arjunalis*
- Feather claw more than 5 rayed *sacchari*

72. *Abacarus arjunalis* Mondal, Ghosh & Chakrabarti

1982. *Abacarus arjunalis* Mondal, Ghosh & Chakrabarti, *Oriental Ins.*, 16 : 305-307.

1985. *Abacarus arjunalis*, Gupta, *Handbk : Plant Mites of India*. p. 248.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Bankura).

73. *Abacarus sacchari* ChannaBasavanna

1966. *Abacarus sacchari* ChannaBasavanna, *Univ. Agr. Sci. Bull.* p. 117-118.

1981. *Abacarus sacchari*, Mondal & Chakrabarti, *Oriental Ins.*, 15 : 313-319.

1985. *Abacarus sacchari*, Gupta, *Handbk : Plant Mites of India* , p. 250 .

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia), Bihar, Delhi, Karnataka, Tamil Nadu.

Genus *Aculops* Keifer

1966. *Aculops* Keifer, *Eriophyid Studies, Calif. Dep. Agr., B-21* : 9.

Key to the species of *Aculus* known to occur on plants in West Bengal

1. Feather claw 6 rayed*abutiloni*
- Feather claw less than 5 rayed2
2. Female genital coverflap with 12-14 lines*excoecaria*
- Female genital coverflap with 7-10 lines*xanthocarpi*

74. *Aculops abutiloni* Mondal & Chakrabarti

1981. *Aculops abutiloni* Mondal & Chakrabarti. *Oriental Ins.* 14 : 453-455.

1985. *Aculops abutiloni*, Gupta, *Handbk : Plant Mites of India*, p. 251.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. South 24-parganas).

75. *Aculops excoecaria* Mondal & Chakrabarti

1982. *Aculops excoecaria* Mondal & Chakrabarti, *Indian J. Acar.*, 6 : 17-19.

1985. *Aculops excoecaria*, Gupta, *Handbk: Plant Mites of India*, p. 252.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. South 24 parganas).

76. *Aculops xanthocarpi* Mondal & Chakrabarti

1982. *Aculops xanthocarpi* Mondal & Chakrabarti, *Indian J. A-car*, 6 : 19-20.

1985. *Aculops xanthocarpi*, Gupta, *Handbk : Plant Mites of India*, p. 254.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

Genus *Aculus* Keifer

1959. *Aculus* Keifer, *Occ. Pap. Calif. Burr. Ent.*, 1 : 5.

77. *Aculus cassiae* Mondal & Chakrabarti

1981. *Aculus cassiae* Mondal & Chakrabarti, *Oriental Ins.*, 14 : 455-457.

1985. *Aculops cassiae*, Gupta, *Handbk : Plant Mites of India*, p. 256.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

Genus *Anthocoptes* Nalepa

1892. *Anthocoptes* Nalepa, *Anz. Akad. Wiss. Wien*, 29 : 16.

Key to the species of *Anthocoptes* known to occur on plants in West Bengal

1. Shield design obsolete *adhatodae*
 Shield design with a number of longitudinal lines..... *glycosmis*

78. *Anthocoptes adhatodae* ChannaBasavanna

1966. *Anthocoptes adhatodae* ChannaBasavanna, *Univ. Agr. Sci. Bull* p. 105.

1982. *Anthocoptes adhatodae*, Mondal & Chakrabarti, *Oriental Ins.* 16 : 305-312.

1985. *Anthocoptes adhatodae*, Gupta, *Handbk : Plant Mites of India* p. 259.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia), Delhi, Tamil Nadu.

79. *Anthocoptes glycosmis* Mondal & Chakrabarti

1981. *Anthocoptes glycosmis* Mondal & Chakrabarti, *Oriental Ins.*, 15 : 313-315.

1985. *Anthocoptes glycosmis*, Gupta, *Handbk : Plant Mites of India* , p. 260.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

Genus *Bakeriella* Chakrabarti & Mondal

1982. *Bakeriella* Chakrabarti & Mondal, *Oriental Ins.*, 16 : 519-521.

80. *Bakeriella ocimis* Chakrabarti & Mondal

1982. *Bakeriella ocimis* Chakrabarti & Mondal, *Oriental Ins.*, 16 : 521-522.
1985. *Bakeriella ocimis*, Gupta, *Handbk : Plant Mites of India*, p. 262.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. South 24-Parganas).

Genus *Indotegolophus* Chakrabarti & Mondal

1980. *Indotegolophus* Chakrabarti & Mondal, *Indian J. Acar.*, 4 : 55-56.

81. *Indotegolophus darjeelingensis* Chakrabarti & Mondal

1980. *Indotegolophus darjeelingensis* Chakrabarti & Mondal, *Indian J. Acar.*, 4 : 56-58.
1985. *Indotegolophus darjeelingensis*, Gupta, *Handbk : Plant Mites of India*, P. 263-264.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Darjiling).

Genus *Neotegonotus* Newkirk & Keifer

1971. *Neotegonotus* Newkirk & Keifer, *Eriophyid studies, U. S. Dep. of Agr.*, C-5 : 8.

82. *Neotegonotus indicus* Mondal & Chakrabarti

1982. *Neotegonotus indicus* Mondal & Chakrabarti, *Entomon*, 7 : 363-364.
1985. *Neotegonotus indicus*, Gupta, *Handbk : Plant Mites of India*, 270,

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

Genus *Paratetra* ChannaBasavanna

1966. *Paratetra* ChannaBasavanna, *Univ. Agr. Sci. Bull.*, p. 92.

83. *Paratetra himalayana* Chakrabarti & Mondal

1980. *Paratetra himalayana* Chakrabarti & Mondal, *Indian J. Acar.*, 4 : 58-60.
1985. *Paratetra himalayana*, Gupta, *Handbk : Plant Mites of India*, p. 271-272.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Darjiling).

Genus *Tegolophus* Keifer1961. *Tegolophus* Keifer, *Eriophyid Studies*, Calif. Dep. Agr., B-2 : 3.Key to the species of *Tegolophus* Known to occur on plants in West Bengal

1. Feather claw 4 rayed2
Feather claw more than 4 rayed7
2. Abdomen with broad smooth tergites and narrow microtuberculate sternites3
Abdomen with narrow microtuberculate tergites and sternites*calotropi*
3. Lateral shield partly or completely with granules in dotted lines4
Lateral shield without any granules or dotted lines6
4. Dorsal tubercle conspicuous extend over tergites, dorsal setae very long (15-33 microns)5
Dorsal tubercle short, not extending over tergites; dorsal setae small (4-6 microns)*ficusi*
5. Median line faint, submedian lines three, claw knobbed*nerii*
Median line prominent on posterior 0.33 portion of shield; submedian line single, semicircular, arched line divide the shield into outer and inner portions*vitexis*
6. Shield with lateral and central disc, scorings on genital coverflap arranged in two ranks; the first ventral seta short (5-10 microns)*indica*
Shield without any disc, scorings on genital coverflap arranged in one rank; shield design with longitudinal lines forming network; median line faint, first ventral seta long (50-57 microns) ...
.....*spondiallus*
7. Shield design simple*kalyanii*
Shield design represents a complicated system of cells*gelonis*

84. *Tegolophus calotropi* Chakrabarti & Mondal1979. *Tegolophus calotropi* Chakrabarti & Mondal. *Oriental Ins.*, 13 : 51-54.1985. *Tegolophus calotropi*, Gupta, *Handbk: Plant Mites of India*, p. 274.*Diagnosis* : Please refer to Gupta (1985).*Distribution* : India : West Bengal (Dist. Nadia).

85. *Tegolophus gelonis* Mondal & Chakrabarti

1982. *Tegolophus gelonis* Mondal & Chakrabarti, *Entomon*, 7 : 364-366.
1985. *Tegolophus gelonis*, Gupta, *Handbk: Plant Mites of India*, p. 274-275.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

86. *Tegolophus ficusi* Mondal & Chakrabarti

1979. *Tegolophus ficusi* Mondal & Chakrabarti, *Entomon*, 4 : 373-376.
1985. *Tegolophus fiscusi*, Gupta, *Handbk : Plant Mites of India*. p. 276.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

87. *Tegolophus indica* Chakrabarti & Mondal

1979. *Tegolophus indica* Chakrabarti & Mondal, *Oriental Ins.*, 13 : 49-51.
1985. *Tegolophus indica*, Gupta, *Handbk : Plant Mites of India*, p. 276-277.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

88. *Tegolophus kalyanii* Chakrabarti, Ghosh & Mondal

1981. *Tegolophus kalyanii* Chakrabarti, Ghosh & Mondal, *Oriental Ins*: 141-143.
1985. *Tegolophus Kalyanii*, Gupta, *Handbk : Plant Mites of India*. p. 277.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

89. *Tegolophus nerii* Mondal & Chakrabarti

1979. *Tegolophus nerii* Mondal & Chakrabarti, *Entomon*, 4 : 376-377.
1985. *Tegolophus nerii*, Gupta, *Handbk : Plant Mites of India*. p. 277.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

90. *Tegolophus spondiallus* Mondal & Chakrabarti

1981. *Tegolophus spondiallus* Mondal & Chakrabarti, *Acarologia*, 23 : 40-42.
 1985. *Tegolophus spondiallus* Mondal & Chakraborty, *Acarologia*, 23 : 40-42.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. South 24-parganas).

91. *Teglophus vitexis* Mondal & Chakrabarti

1981. *Tegolophus vitexis* Mondal & Chakrabarti, *Acarologia*, 23 : 42-44.
 1985. *Tegolophus vitexis*, Gupta, *Handbk : Plant Mites of India*, p. 278.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. North 24-Parganas).

Genus *Tetra* Keifer

1944. *Tetra* Keifer, *Bull. Calif. Dep. Agr.*, 33 : 27.

92. *Tetra lanneansis* Chakrabarti, Ghosh & Mondal

1981. *Tetra lanneansis* Chakrabarti, Ghosh & Mondal, *Oriental Ins.*, 15 : 143-144.
 1985. *Tetra lanneansis*, Gupta, *Handbk : Plant Mites of India*, p. 279.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

Family RHYNCAPHYTOPTIDAE Keifer

1961. *Rhyncaphtoptidae* Keifer, *Eriophyid Studies Calif. Dep. Agr.*, B-4 : 20.

Key to the subfamilies of Rhyncaphtoptidae known to occur on plants in West Bengal :

1. Feather claw simple, i.e. undividedRhyncaphtoptinae
 Feather claw divided, usually deeply soDiptilomiopinae

Subfamily DIPTILOMIOPINAE Newkirk & Keifer

1971. Diptilomiopinae Newkirk & Keifer, *Eriophyid studies U.S. Dep. Agr.*, C-5 : 9.

Key to the genera of Diptilomiopinae known to occur on plants in West Bengal

1. Dorsal seta present*Neorhynacus*
 - Dorsal seta absent2
 2. Patella absent*Diptilomiopus*
 - Patella present*Diptilorhynacus*

Genus *Diptilomiopus* Nalepa

1917. *Diptilomiopus* Nalepa, *Vehr. Ges. Wien.*, 67 : 228.

93. *Diptilomiopus bengalensis* Chakrabarti & Mondal

1979. *Diptilomiopus bengalensis* Chakrabarti & Mondal, *Oriental Ins.*, 13 : 47-49.

1985. *Diptilomiopus bengalensis*, Gupta, *Handbk : Plant Mites of India*, p. 285.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Nadia).

Genus *Diptilorhynacus* Mondal, Ghosh & Chakrabarti

1981. *Diptilorhynacus* Mondal, Ghosh & Chakrabarti, *Oriental Ins.*, 15 : 407-409.

94. *Diptilorhynacus sinusetus* Mondal, Ghosh & Chakrabarti

1981. *Diptilorhynacus sinusetus* Mondal, Ghosh & Chakrabarti, *Oriental Ins.*, 15 : 409-410.

1985. *Diptilorhynacus sinusetus*, Gupta, *Handbk : Plant Mites of India*, p. 287,.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Hugli).

Genus *Neorhynacus* Mohansundaram

1981. *Neorhynacus* Mohansundaram, *Oriental Ins.*, 15 : 53.

95. *Neorhynacus combretis* Ghosh & Chakrabarti

1982. *Neorhynacus combretis* Ghosh & Chakrabarti, *Entomon*, 7 : 438-440.

1985. *Neorhynacus combretis*, Gupta, *Handbk : Plant Mites of India*, p. 289.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Bankura).

Subfamily RHYNCAPHYTOPTINAE Roivainen

1953. Rhyncaphytoptinae Roivainen, *Ann. Ent. Fenica*, **19** : 86.

Genus *Rhyncaphytoptus* Keifer

1939. *Rhyncaphytoptus* Keifer, *Bull. Calif. Dep. Agr.*, **28** : 149.

96. *Rhyncaphytoptus shoreacola* Mondal, Ghosh & Chakrabarti

1981. *Rhyncaphytoptus shoreacola*, Mondal, Ghosh & Chakrabarti, *Oriental Ins.*, **15** : 411-412.

1985. *Rhyncaphytoptus shoreacola*, Gupta, *Handbk : Plant Mites of India*, p. 282-283.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Dist. Bankura).

Family TARSONEMIDAE Kramer

1877. *Tarsonemidae* Kramer *Archiv. fur. naturgesh*, **43** : 215.

Genus *Polyphagotarsonemus* Beer & Nucofera.

1965. *Polyphagotarsonemus* Beer & Nucifora, *Bull. zool. Agr. Bachie*, **2(7)** : 19-43.

97. *Polyphagotarsonemus latus* (Banks)

1904. *Tarsonemus latus* Banks, *Proc. U.S. Nat. Mus.*, **32(1553)** : 615

1958. *Hemitarsonemus latus*, Dutt, *Indian Farm.*, **8** : 10-12.

1985. *Polyphagotarsonemus latus* Gupta, *Handbk : Plant Mites of India*, p. 292-294.

Diagnosis : Please refer to Gupta (1985).

Material examined : 10 (F), West Bengal, Dist. North 24-Parganas, Barrackpur, ex. jute, 16.7.1088.

Distribution : India : West Bengal (Dist. North 24-Parganas), Bihar, Karnataka, Maharashtra, Uttar Pradesh. Elsewhere : Cosmopolitan.

Remarks : This mite was seen causing crinkling of leaves of marigold, capsicum and jute, Infested leaves dry up and fall off.

2. Predatory mites

Family STIGMAEIDAE Oudemans

1931. Stigmaeidae Oudemans, *Ent.Ber.*, 8(179) : 251-263.

Key to the genera of Stigmaeidae known to occur on plants in West Bengal

1. Propodosomal plate carries 3 pairs of setae, dorsum of hysterosoma partly covered by one or more plates, at least 2 of which are paired sclerites, chelicerae not fused

Dorsosublateral seta la borne on median plate which also carries setae a,b,c, and lm
*Agistemus*

- Propodopsomal plate carries 4 pairs of setae, hysterosoma covered by one or more unpaired plates; if 3 pairs of setae occur on propodopsomal plate, then the seta 'he' borne on paired small plates and a single pair of subcapitular seta present, chelicerae sometimes fused ..12 pairs of dorsal setae, suranals included; setae c and lm always borne on small sclerites; 1 or 2 pairs of paragenital setae*Zetzellia*

Genus *Agistemus* Summers

1960. *Agistemus* Summers, *Proc. Ent. soc. Wash.*, 62 : 234.

Key to the species of *Agistemus* Known to occur on plants in West Bengal

1. One pair of paragenital setae*fleschneri*
- Two pairs of paragenital setae2
2. Setae le and e subequal*terminalis*
- Setae le shorter than e3
3. Dorsal setae very slender, with sparsely distributed barbs, not set on tubercles*simplex*
- Dorsal setae relatively stout, obviously barbed, set on tubercles*macrommatus*

98. *Agistemus fleschneri* Summers

1960. *Agistemus flescheri* Summers, *Proc. Ent. Soc. Wash.*, 62 : 237-240.

1971. *Agistemus fleschneri*, Gupta, *Sci. & Cult.*, 37 : 296-299.

1985. *Agistemus fleschneri*, Gupta, *Handbk : Plant Mites of India*, p. 304-305.

Diagnosis : Please refer to Gupta (1985).

Material examined : 1 (F), West Bengal, Dist. Koch Bihar, Chelapather, ex undet. plant, 9.1.1985; 1 (F), Dist. West Dinajpur, Raigunj, ex undet. plant, 20.1.1985; 1 (F), Dist. Maldah, Adina forest, ex *shorea robusta*, 8.11.1986; 1 (F), same locality and habitat, 6.11.1986; 1 (F), Maldah, Ahio, ex brinjal, 8.11.1986; 1 (F), Dist. South 24-Parganas, Kakdwip, ex. ornamental plant, 1.12.1986; 1 (F), Dist. Medinipur, Contai, ex paddy, 7.12.1986.

Distribution : India : West Bengal (Dists. Koch Bihar, Maldah, Medinipur, South 24-Parganas, West Dinajpur), Assam, Punjab. Elsewhere : U.S.A. Mexico, Chile.

Remarks : This species is reported here for the first time from West Bengal. it was seen feeding upon eggs of *Oligonychus biharensis* infesting *Shorea robusta* and adults of *Tetranychus neocaledonicus* infesting brinjal. On many leaves shrivelled bodies of *T. neocaledonicus* were seen probably those were due to sucking of body fluid by this mite.

99. *Agistemus macrommatus* Gonzalez-Rodriguez

1965. *Agistemus macrommatus* Gonzalez-Rodriguez, *Univ. Calif. Pub. Ent.*, 41 : 38-39.

Diagnosis : Post ocular body considerably enlarged displacing postocular seta ce to posterior margin of plate, this seta as long as or slightly shorter than diameter of postocular body. Ratio of setae ae/ae-ae = 1.6; be is equal to distance between be-ce; dorsal setae set on tubercles, measurements of setae ae = 44, be = 70, he = 41, ce = 50, a = 49, e = 49, c = 56, lm = 54, li = 58,

Material examined : 3 (F), West Bengal, Dist. Medinipur, Jhargram, ex coriander, 11.12.1986.

Distribution : India : West Bengal (Dist. Medinipur), Tamil Nadu.

Remarks : This forms the first report of the occurrence of this species from West Bengal.

100. *Agistemus terminalis* (Quayle)

1912. *Caligonus terminalis* Quayle, *Univ. Calif. Agr. Exp. Sgn. Bull.*, No. 234, p. 499.

1946. *Mediolata terminalis*, Nesbitt, *Can. Ent.*, 78 : 15.

1960. *Agistemus terminalis*, Summers, *Proc. Ent. Soc. Wash.*, 62 : 234.

Diagnosis : Dorsal setae minutely barbed, not on tubercles. Ratio ae/ae-ae = 1.0. length of setae: ae = 37, be = 50, ce = 39, he = 43, a = 32, b = 30, c = 37, lm = 37, li = 38, e = 36, le = 20. Paragenital setae: 2 pairs.

Material examined : 1 (F), West Bengal, Dist. Darjiling, Chalsa, ex beans, 24.10.1986.

Distribution : India : West Bengal (Dist. Darjiling). Elsewhere : Japan, Cyprus, U.S.A., Guatemala.

Remarks : Hitherto this species was unknown from West Bengal.

101. *Agistemus* sp. nr. *simplex* Gonzalez-Rodriguez

1965. *Agistemus simplex* Gonzalez-Rodriguez, *Univ. Calif. Pub. Ent.*, 41 : 33-34.

Material examined : 1 nymph, West Bengal, dist. Puruliya, Matha, ex *Azadirachta indica*, 31.3.1989.

Remarks : *Agistemus simplex* was described on the basis of a specimen collected from Mexico. The present material is a nymph and bears similarity with *simplex*, in so far as their setal length and their respective ratios are concerned. However, the specimen being a nymph no conclusive decision regarding its correct identity could be arrived at.

Genus *Zetzellia* Oudemans

1927. *Zetzellia* Oudemans, *Ent. Ber. Amst.* 7 (158) : 263.

102. *Zetzellia languida* Gonzalez-Rodriguez

1965. *Zetzellia languida* Gonzalez - Rodriguez, *Univ. Calif. Pub. Ent.* 41:21.

Diagnosis : Dorsal setae barbed, tip bifid. The setal ratio : $ae/ae=0.7$, $be/be-be = 0.7$, $a/a-a = 0.5$
Measurements of setae : $ae = 16$, $be = 22$, $ce = 20$, $he = 20$, $a = 14$, $b=14$, $c=15$, $la = 17$, $lm=15$, $li = 18$,
 $e = 20$, $le = 20$. Paragenital setae 2 paired, subequal. Postocular body completely circular.

Material examined : 3 (F), West Bengal, Dist. Maldah, Malda Agricultural Farm, ex mango, 5.11.1986.

Distribution : This is the first record of the species from India and incidentally this is the only species of the genus known so far from this country.

Family BDELLIDAE Duges

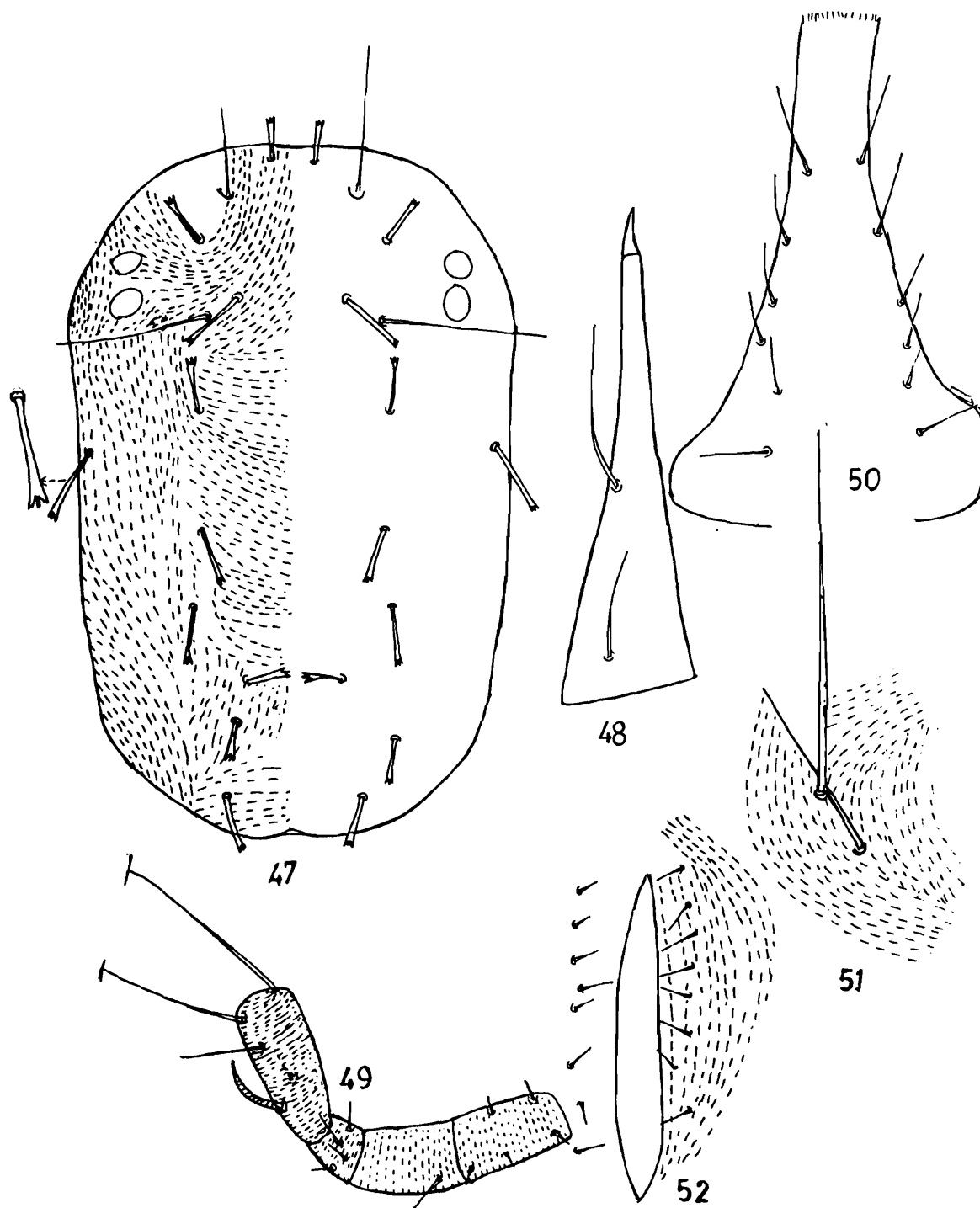
Key to the genera of Bdellidae known to occur on plants from West Bengal

- 1. Tibia I, II and IV and tarsi III and IV with a long sensory seta*Bdellodes*
- Tibia I and IV and tarsi III and IV with a long sensory seta*Bdella*

Genus *Bdella* Latreille

1765. *Bdella* Latreille, *Magasin encyclopedique on journal des lettres et des Arts. Paris*, Vol. 4, p. 18.

This genus was earlier unknown from West Bengal.



Figs. 47-52 : *Bdella maldahaensis* sp. nov. (female) : 47-dorsum, 48-chelicera, 49-palp, 50-hypostome (ventral), 51-sensillum and pseudostigmatid organ, 52-genital region

103. *Bdella maldahaensis* sp. nov.
(Figs. 47-52)

Female : Length of body including gnathosoma 622, width : 306. Gnathosoma 183 long. Plap tibiotarsus - 44 long. with 2 long whip-like setae, dorsal end seta 45 long. ventral end seta 100 long with 1 erect seta and a solenidion; genu - 18 long, with setae, telofemur - 35 long with 1 seta; basifemur - 76 long with 5 setae. Chelicera non-striate, 145 long, base inflated, with 2 pairs of setae. Hypostome ventrally with 6 pairs of setae, base non-striated. Dorsal propodosoma with 5 pairs of setae including 2 pairs of sensory setae; anterior sensilla - 83 long, posterior sensilla - 100 long. distance between anterior sensilla - 90 and that between posterior sensilla - 100. Anterior propodosomal seta - 83 median propodosomal seta - 42 (Tip almost trifurcated) lateral propodosomal seta - 51 long; 1st interphase 78.

Ventrally, region between coxae II-IV longitudinally striated with interruption of transverse striae; 8 pairs of setae in the genital region along with striations as figured. Legs end in a pair of claws, each claw having over 10 rays. Tarsus I = 89 long, tibia I = 49 long, tibia II = 31 long, tarsus II = 68 long, tibia IV = 67 long, tarsus IV = 89 long. Leg III broken. coxa I with 4 setae, II - 4 setae, III - 5 stae, IV - 2 setae. Tarsus I with 7 plumose ventral setae, 5 dorsal setae, 6 lateral setae, 2 blunt sensory setae; tibia I with 3 dorsal, 2 ventral, 3 lateral setae along with 1 tricvoboth. Striation on tarsus II and III not discernible; that on tarsus IV having ventral setae, 5 dorsal setae, 2 lateral setae, 1 trichoboth and 1 peg-like sensory setae; tibia IV with 3 ventral, 4 lateral, 2 dorsal setae.

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Maldah Agricultural Farm ex mango, 5.11.1986.

Remarks : This species is distinguished from *Bdella captiosa* Ateyo (1963) by the characteristic shape of dorsal hysterosomal setae, by leg chaetotaxy and by striation pattern.

Genus *Bdellodes* Oudemans

1937. *Bdellodes* Oudemans, *Kritisch Hist. - Overzicht der Aca-rologie*, 3(c) : 1217.

104. *Bdellodes (Hoploscirus)* sp.

Material examined : 1 (F), West Bengal, Dist. South 24-Parganas, Sajnakhali, ex *Dalbergia-spinosa*, 28.11.1986.

Remarks : The specific identity could not be determined because the specimen was in bad condition.

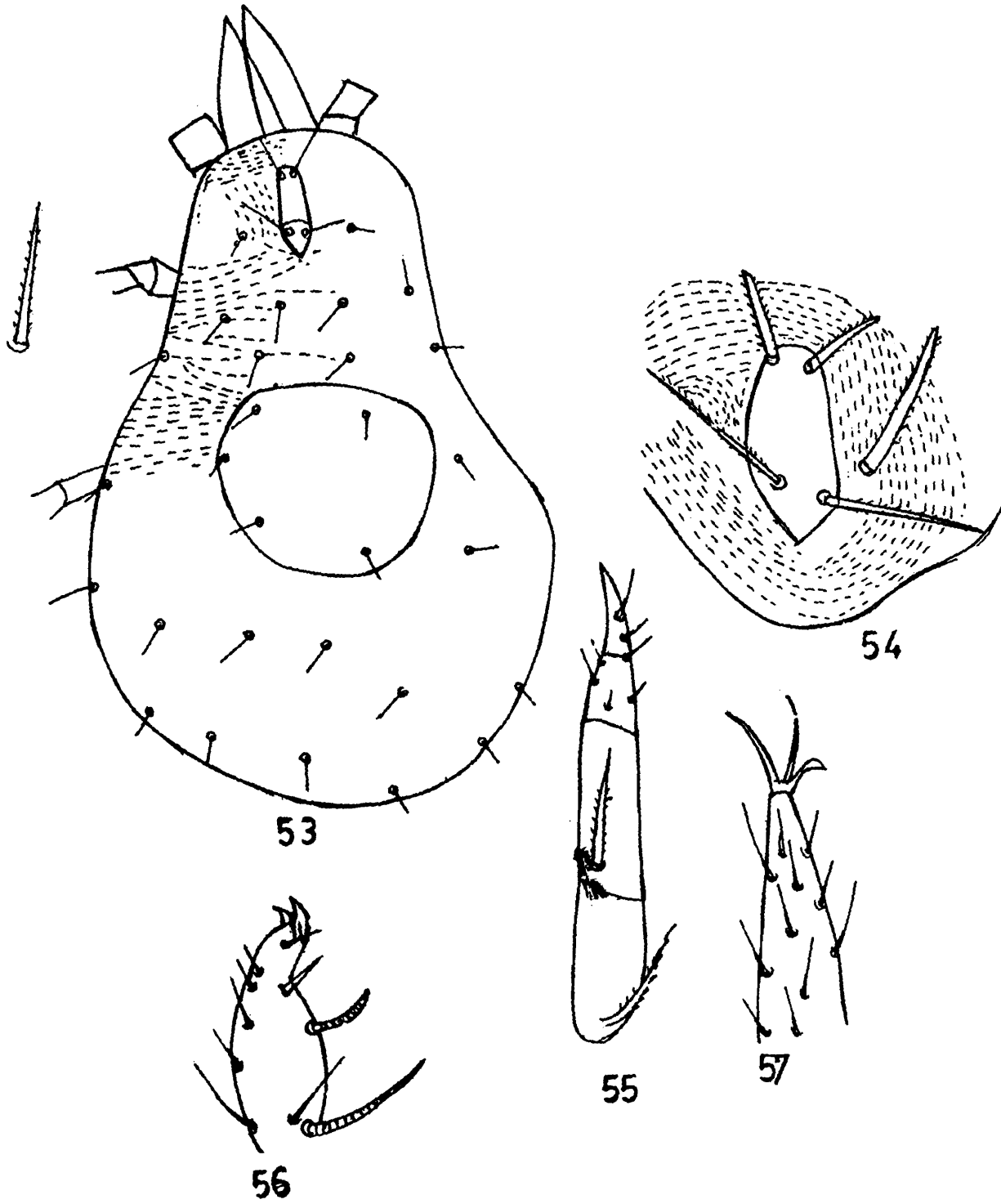
Family ERYTHRAEIDAE Robineau-Desvoidy

1828. *Erythraeidae* Robineau-Desvoidy, *KHOA*, III D : 144.

Genus *Leptus* Latreille

1957. *Leptus* Southcott, *Rec. S. Aust. Mus.*, 13 : 98.

No record of this genus from West Bengal was available earlier.



Figs. 53-57 : *Leptus samsingensis* sp.nov. (female) : 53-dorsum, 54-crista, 55-palp, 56-tarsus I, 57-tarsus III

105. *Leptus samsingensis* sp. nov.
(Figs. 53-57)

Female (nymph) : Body 550 long (from posterior tip of body upto tip of gnathosoma), 270 wide. Dorsal setae 27-30 long, tapering at tip. Crista 47 long, 22 wide; anterior sensory seta on crista pyriform, serrate, 22 long; posterior sensory seta tapering, serrate, 38 long; first pair placed little below anterior margin of crista; posterior pair little above the posterior pointed tip of crista. The posterior of crista pointed. One pair of eyes almost at the base of leg II. Striation pattern on dorsum transverse in the region anterior to crista. Longitudinal lateral to crista and transverse again towards the posterior tip. Legs very long, transversely striated. Tarsus I 53 long, with 3 claws and 3 solenidia, tarsus II 67 long, 15 wide, tarsus III 78 long, 15 wide. Palp as figured. Total length of legs I-III : I = 710, II = 672, III = 627.

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Drjiling, Samsing, ex tea, 22.10.1986.

Remarks : This new species is close to *Leptus poonaensis* Khot (1964) but differs in having lesser number of setae on dorsum as well as it differs in chaetotaxy of crista and in striation pattern around it.

Family TYDEIDAE Kramer

1987. Tydeidae Kramer, Arach.

Key to the genera of Tydeidae known to occur on plants in West Bengal

- 1. Hystersomal setae L2 in normal lateral position2
- Hystersomal setae L2 in dorsal position3
- 2. Striae transverse or reticulate between 2nd pair of hystersomal-dorsocentral setae*Tydeus*
- Striae longitudinal between 2nd pair of hystersomal dorsocentral setae*Paralorryia*
- 3. Femora III and IV with prominent, forked seta.*Parapronematus*
- Femora III and IV without forked seta.*Pronematus*

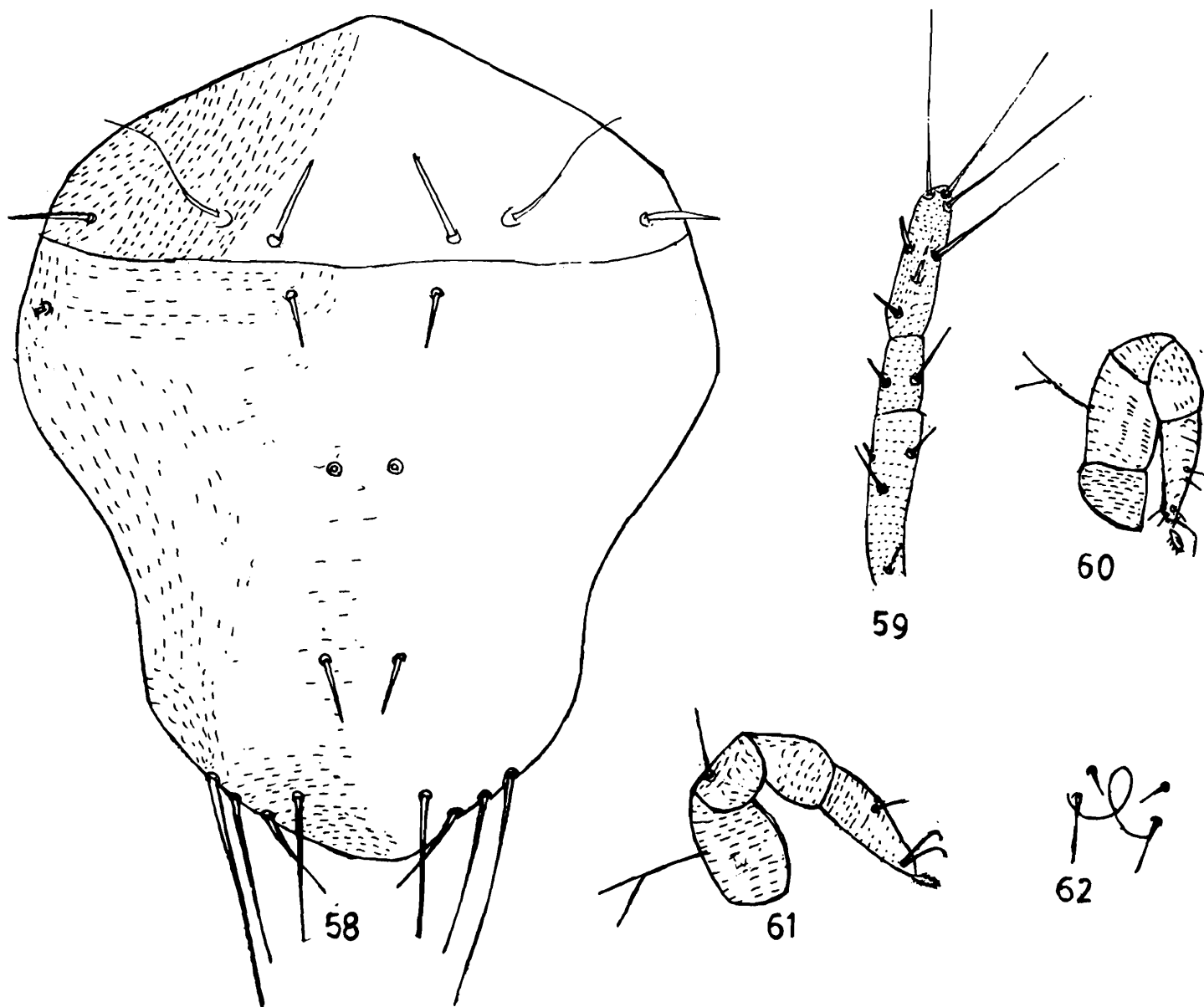
Genus *Parapronematus* Baker

1965. *Parapronematus* Baker, *Advances in Acarology*, p. 115-116.

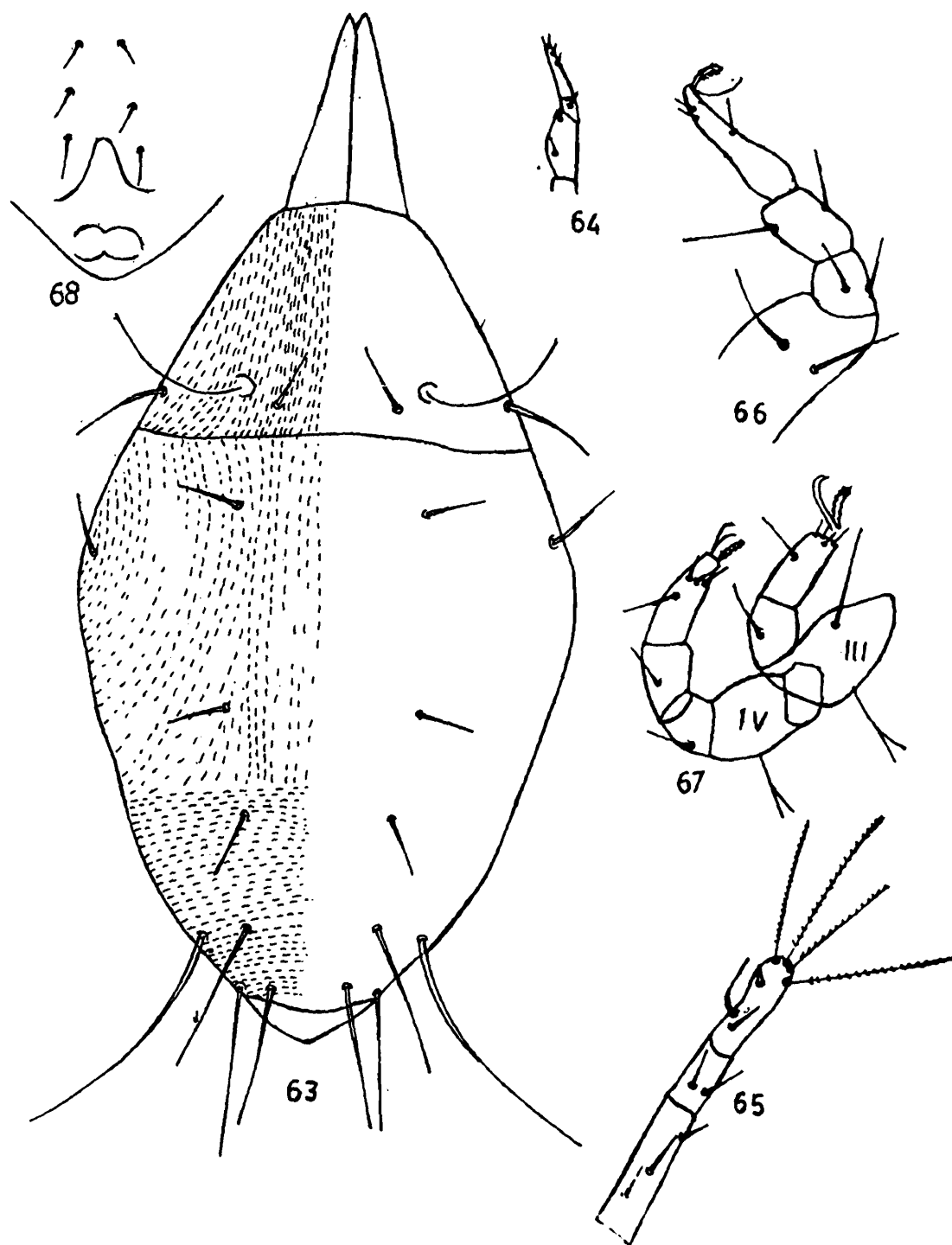
This genus was earlier unrepresented from West Bengal.

Key to the species of *Parapronematus* known to occur on plants in West Bengal

- 1. Solenidion on tarsus I situated almost at the middle of the segment, D4 nearly double the length of D3 *murshidabadensis* sp. nov.
- Solenidion on tarsus I situated posterior to middle of the segment, D4 one and half times of D3 *camelia* sp. nov.



Figs. 58-62 : *Parapronematus camelia* sp.nov. (female) : 58-dorsum, 59-palp, 60-tibia and tarsus of leg III, 61-tibia and tarsus of leg IV, 62-anal region



Figs. 63-68 : *Parapronematus murshidabadensis* sp. nov. (female) : 63-dorsum, 64-palp, 65-tibia and tarsus of leg I, 66-leg II, 67-leg III and IV, 68-genitoanal region

106. *Parapronematus camelia* sp. nov.

(Figs. 58-62)

Female : Gnathosoma visible from above, stylophore cleft present anteriorly. Palpi badly oriented making it impossible to give its details; however, setal formula from distal to basal segments is 4 : 1:2. Striation pattern of propodosoma longitudinal and that of hysterosoma not clearly visible. Seta P2 absent, P1 posteriorly moved, little posterior to base of sensory setae. length of P1 = 25, P3 = 22, S = 31. Hysterosoma with setae D1-D5, L1-L3 measure : D1 = 22, D2-broken, D3 = 22, D4=31, D5 = 36, L1 = 22, L2 = 56, L3 = 23, setae P3, P1, D1, D3, L1 being thick and lanceolate while the other setae being long thin and pointed. Solenidion on tarsus I thick, that on tibia I extremely small, tibia I slender. Chaetotaxy of other legs as figured. Femora III and IV with Y-shaped setae. Body length 224 (from posterior tip of body upto base of gnathosoma) and 145 wide (at the base of L1).

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Darjiling, Samsing Tea Estate, ex tea, 23.10.1986.

Remarks : This new species differs from *Parpronematus acaciae* Baker (1965) in having setae P1, P3, D1, D3, L1 being thick and solenidion on tarsus I placed posteriorly (posterior to half the length of the segment).

107. *Parapronematus murshidabadensis* sp. nov.

(Figs. 63-68)

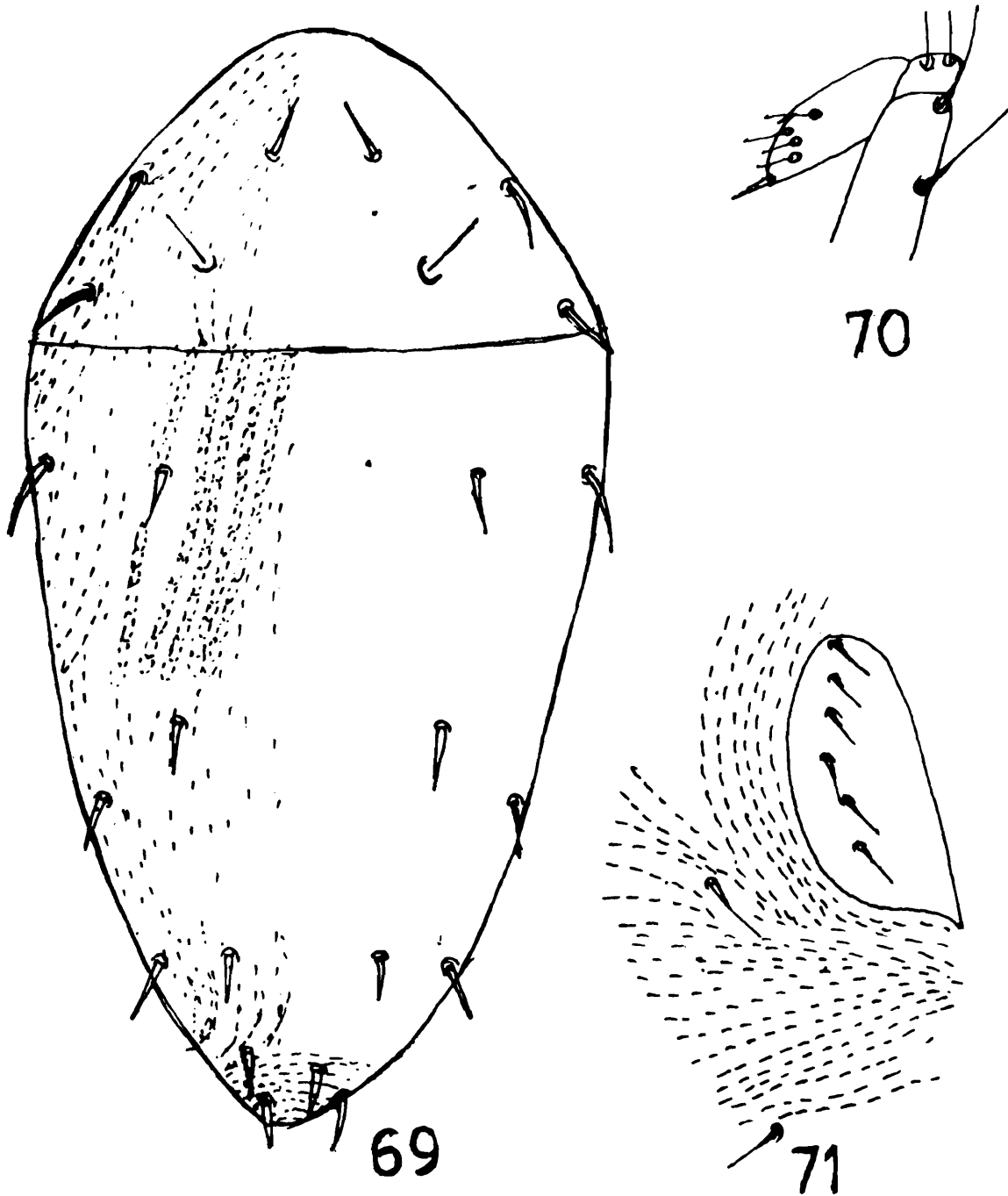
Female : Gnathosoma visible from above ; stylophore cleft anteriorly. Palpal setal formula from distal to basal segments 4 : 1:2; distal palpal segment long and slender; other segments as figured. propodosoma with longitudinal striae, P2 seta absent, P1 seta shifted posteriorly between sensory setae. measurements of propodosomal setae : P1 = 22, P3 = 24, S = 47, all propodosomal setae thick and lanceolate, Hysterosoma with longitudinal striation upto D3 and thereafter it is transverse. Measurements of setae : D1 = 22, D2 = D3 = 21, D4 = 44, D5 = 40, L1 = 24, L2 = 78, L3 = 56. Setae D1-D3, L1 almost of similar nature as those of propodosomal setae but the other hysterosomal setae long, thin and pointed. leg chaetotaxy as figured. solenidion on tarsus I thick, that on tibia I extremely small and blunt. leg setae appear to be serrate and thick. Femur III and IV with serrate Y-shaped seta. length of body 278 (from posterior tip of body upto base of gnathosoma), 168 wide (at the base of L1 setae).

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Murshidabad, Kandi, ex. banyan, 11.11.1986.

Remarks : This new species differs from *Parapronematus camelia* sp. nov. by having setae L3 one and half times of L2 (in *camelia* L2 = 2 items of L3).

Genus *Pronematus* Canestrini1886. *Pronematus* Canestrini, Atti 1st Venet. (6) 4: 698.



Figs. 69-71 : *Paralorriya fodderi* sp. nov. (female) : 69-dorsum, 70-palp, 71-genitoanal region

Remarks : Earlier, this genus was unrepresented from West Bengal.

108. *Pronematus* sp,

Material examined : 2 (F), West Bengal, Dist. South 24-Parganas, Sajnakhali, ex *Rhozpphora apicaelata*, 28.11.1986; 1 (F), same locality and date, ex *Dalbergia spinosa*.

Remarks : The material was in damaged condition and, therefore, the identification upto species level could not be done.

Genus *Paralorryia* Baker

1965. *Paralorryia* Baker, *Advances in Acarology*, p. 104.

Earlier, no record of this genus was available from West Bengal.

109. *Paralorryia fodderi* sp. nov.
(Figs. 69-71)

Female : Dorsum 382 long(from posterior tip of body upto tip of rostrum), 265 wide (maximum width), with 12 pairs of setae of which 4 pairs on propodosoma and 8 pairs on hysterosoma. Among the 4 pairs propodosomal setae, P1-P3 and S almost of similar length measuring 21, 22, 33 and 22, respectively. Out of 8 pairs of hysterosomal setae, 4 pairs on L series. All the setae are of similar length measuring : D1 = 28, D2 = 29, D3 = 29, D4 = 31, L1 = 29, L2 = 28, L3 = 32, L4 = 31, these setae appear to have slightly broadened tip. Striation pattern of dorsum longitudinal on the propodosomal area as well as hysterosomal area; at the posteriormost region of hysterosoma, the striation is rounded or semicircular. The ventral setal pattern is same as that of the genus; 6 pairs of genital and 1 pair of anal setae present. leg chaetotaxy not possible to examine. Empodia with ventral claw.

Male : Unknown.

Holotype (F), India : West Bengal, Dist. South 24-Parganas, Gosaba, ex fodder grass, 25.11.1986.

Remarks : This new species differs from *Paralorryia cumbransis* Baker (1944) in striation pattern of dorsum. It also differs from *Paralorryia berryi* Baker (1968) in shorter propodosomal sensory seta.

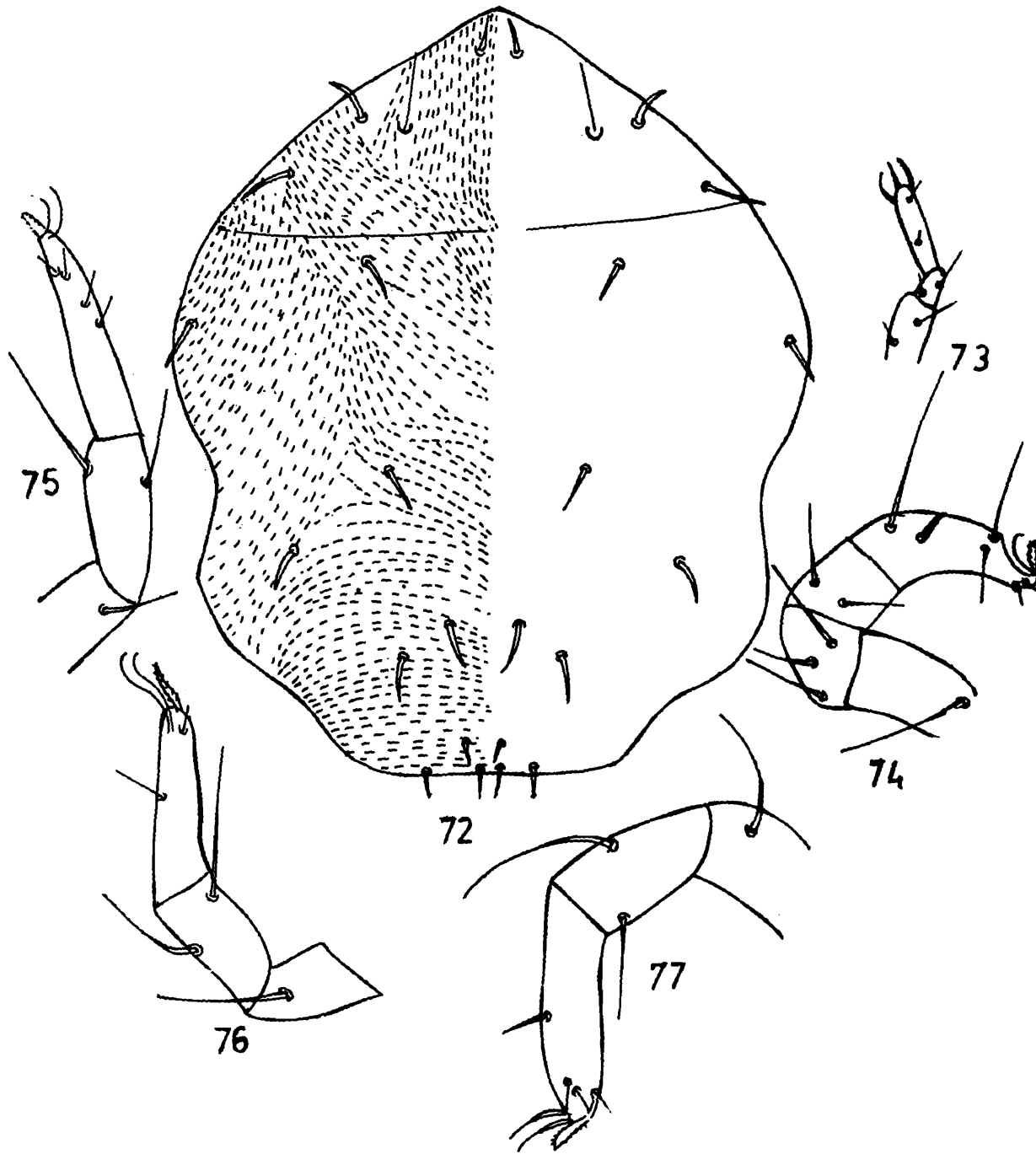
Genus *Tydeus* Koch.

1835. *Tydeus* Koch , CMA, Fasc. 4 t II. 12.

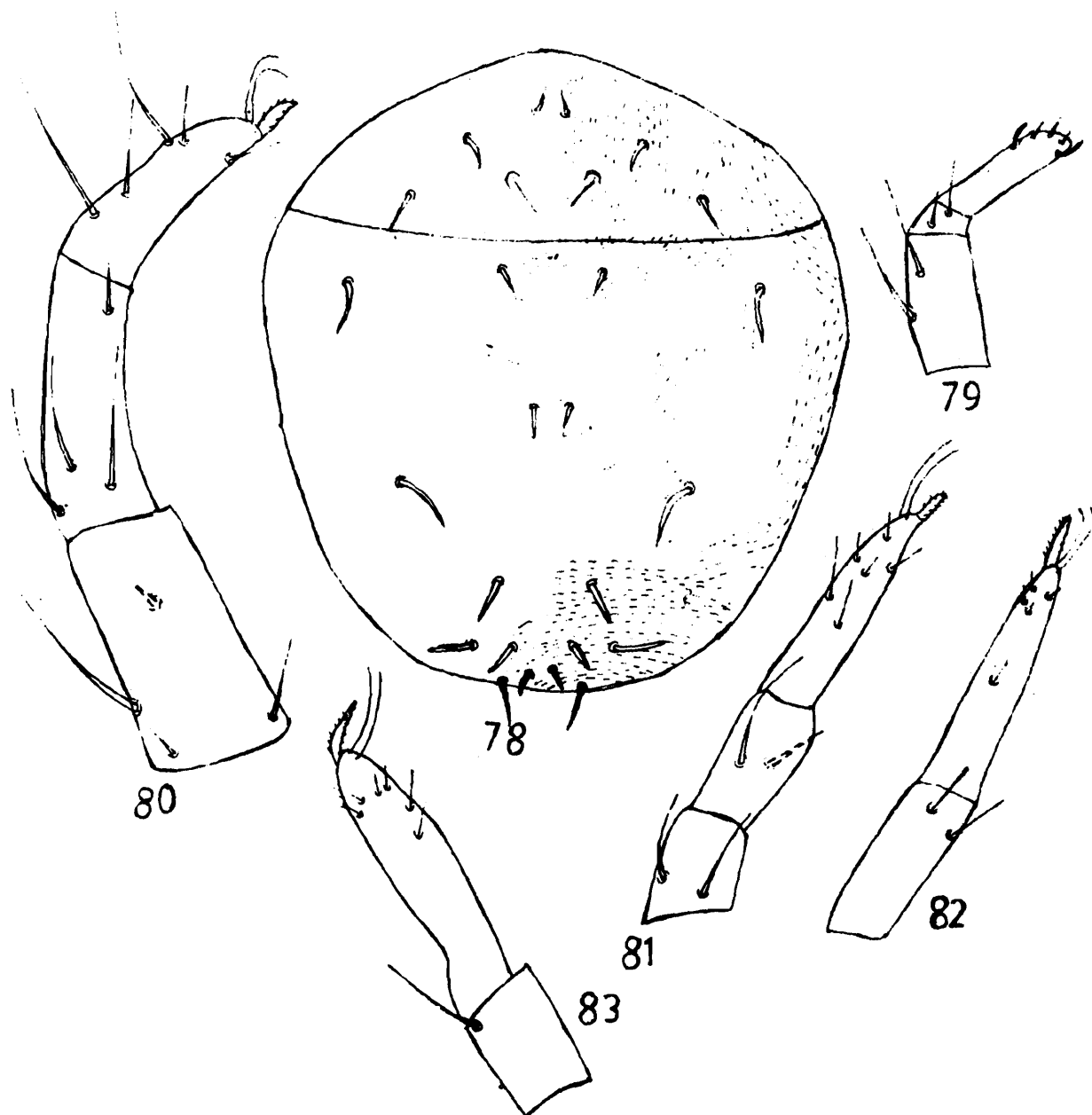
So far this genus remained unrepresented from West Bengal.

Key to the species of *Tydeus* known to occur on plants in West Bengal

1. D3 and D4 of same length2
- D3 much longer (slightly less than double) than D4.....*ornamentalicus* sp. nov.
2. L2 longer than L1*cumini* sp. nov.
- L2 as long as L1*gosabaensis* sp. nov.



Figs. 72-77 : *Tydeus gosabaensis* sp. nov. (female) : 72-dorsum, 73-palp, 74-tibia and tarsus of leg I, 75-tibia and tarsus of leg II, 76-leg III, 77-leg IV.



Figs. 78-83 : *Tydeus gosabaensis* sp. nov. (female) : 78-dorsum, 79-palp, 80-leg I, 81-leg II, 82-tibia and tarsus of leg III, 83-tibia and tarsus of leg IV

110. *Tydeus ornamentalicus* sp. nov.
(Figs. 72-77)

Female : Dorsal body setae simple and thick. Solenidion one and half times as wide as segment, Striae transverse between D3. Propodosoma with 3 pairs of setae in addition to sensory setae : P1-20, P2-24 (curved), P3-31, S-33. Striation on propodosoma longitudinal almost upto little anterior to P3 but transverse between setae. Part of dorsum between D2 and D3 with V-like striation and striation posterior to D3 transverse.

Hysterosoma with 5 pairs of dorsal and 4 pairs of lateral setae measuring : D1-29, D2-33, D3-38, D4-20, D5-22, L1-35, L2-35, L3-40, L4-19. Ventral hysterosomal striae longitudinal anterior to genitoanal region, 6 pairs of genital setae, 1 pair of anal setae and 4 pairs of paragenital setae.

Palp short, 5 setae on tarsus and 2 each on genu and tibia. Chelicera long and needle-like. Stylophore round. Chaetotaxy of genu, tibia and tarsus of legs I-IV as illustrated.

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Darjiling, Sarbari garden, ex an ornamental plant, 2.11.1986. Paratype 1 (F), date same as for holotype.

Remarks : This species is very close to *Tydeus lambi* Baker (1970) and *T. californicus* (Banks, 1904) but it differs from the former in lacking the spatulate dorsal setae and from the latter in leg chaetotaxy and dorsal striation.

This mite was seen in a colony of *Eutranychus orientalis* infesting the ornamental plants, however, no feeding was observed.

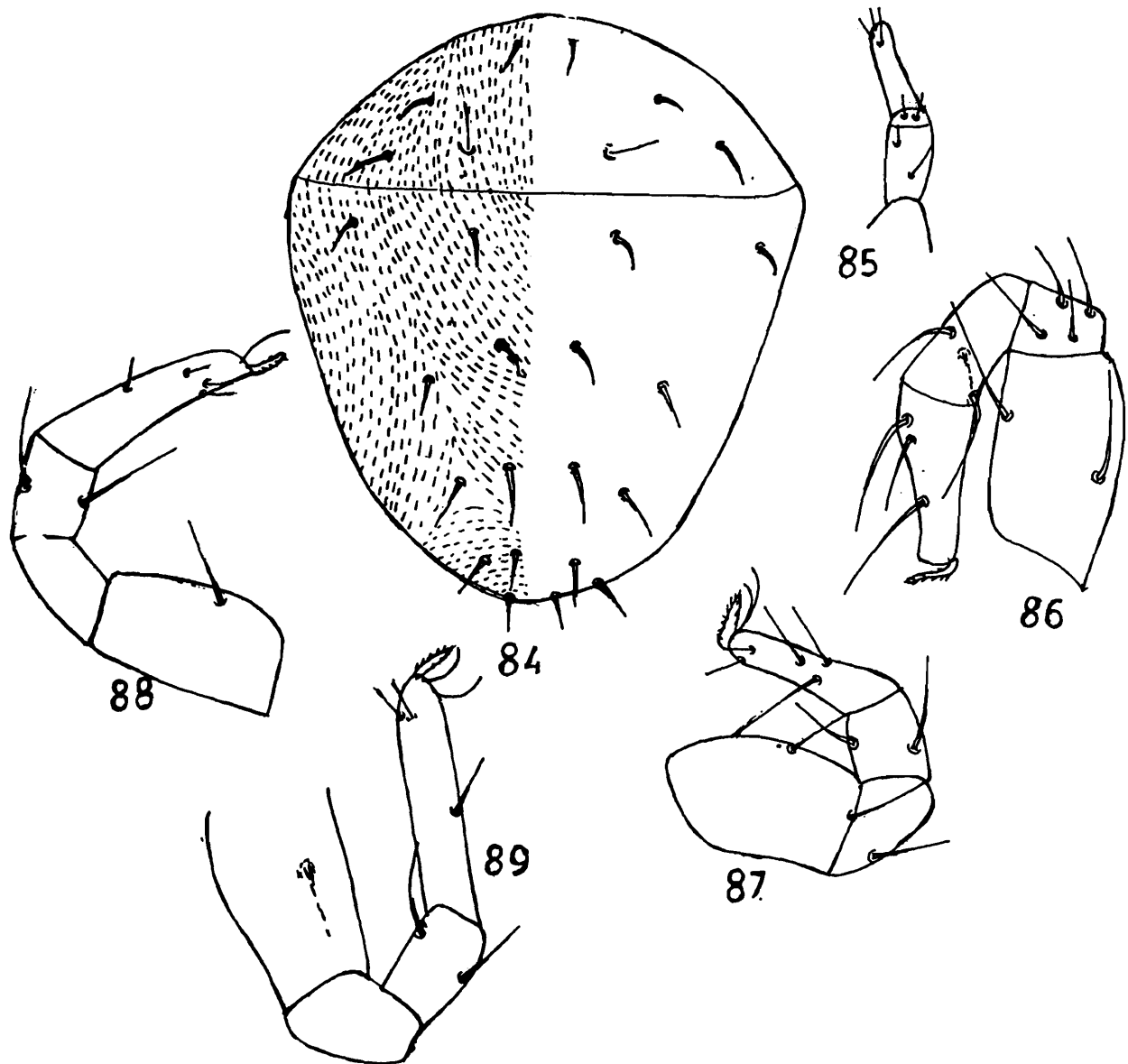
111. *Tydeus gosabaensis* sp. nov.
(Figs. 78-83)

Female : Dorsum 350 long (upto anterior tip of rostrum), 269 wide. Propodosoma with longitudinal striation medially and also between sensory setae, between D1 setae it is transverse, posterior to it is V-shaped., anetior to D3 and beyond that region, it is transverse and near the extreme posterior tip it is rounded. Laterally, the striation is mostly longitudinal. All the dorsal setae mostly thick, pointed at the tip excepting setae D3, D4, D5, L3, L4 which are with spatulate tip. measurements of setae : P1-22, P2-22, P3-26, S1-24 (distance between S setae = 60), D1-20, D2-24, D3-26, D4-26, D5-22, L1-29, L2-29, L3-21, L4-21. Palp with 5 setae on tarsus and 2 each on genu and tibia. Leg chaetotaxy as illustrated.

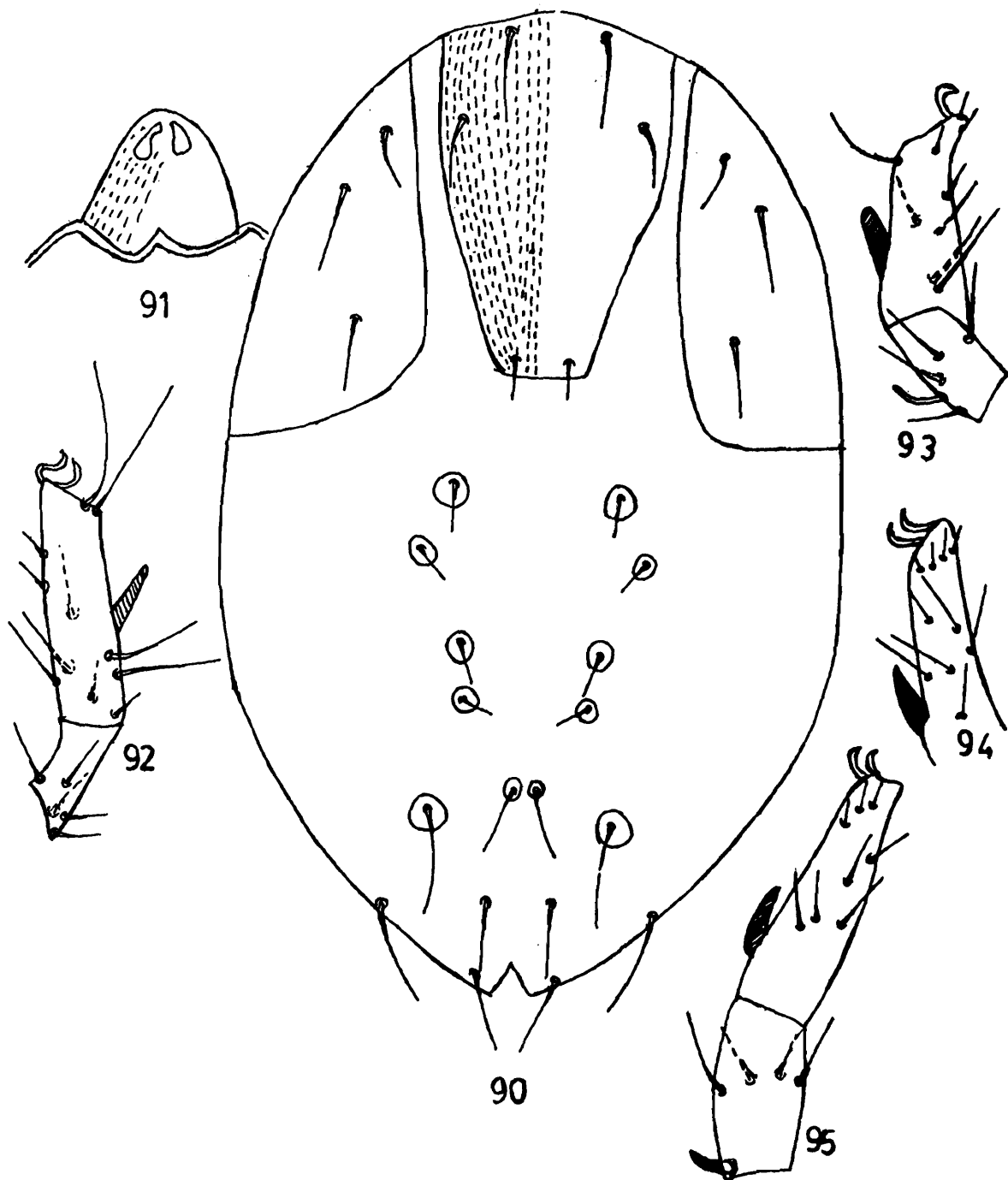
Male : Unknown.

Holotype (F), India : West Bengal, Dist. South 24-Parganas, Gosaba, ex undet, plant, 25.11.1986.

Remarks : This new species resembles *Tydeus mumai* Baker (1970) but is distinguished from it in relative length of sensory setae and in striation pattern of dorsum.



Figs. 84-89 : *Tydeus cumini* sp. nov. (female) : 84-dorsum, 85-palp, 86-leg I, 87-leg II, 88-leg III, 89-leg IV



Figs. 90-95 : *Acheles guajavae* sp. nov. (female) : 90-dorsum, 91-gnathosomal base, 92-tibia and tarsus of leg I, 93-tibia and tarsus of leg II, 94-tarsus of leg III, 95-tibia and tarsus of leg IV

112. *Tydeus cumini* sp. nov.
(Figs. 84-89)

Female : Dorsum 380 long, 280 wide. body striation on the propodosomal region longitudinal and also it is so in between sensory setae; striation more or less oblique and irregular in the lateral propodosomal region; striation in the hystersomal region longitudinal between D1-D2, between D2 it is slightly V-shaped.; longitudinal in the region between L1-L2; posterior to D4 and upto posterior tip of body the striation pattern is transverse. The propodosomal setae 3 pairs in addition to sensory setae measuring P1-22, P2-18, P3-25. Sensory setae - 22, all the prodosomal setae thick. The hysterosomal setae measuring: D1-20; D2-22, D3-27, D4-26, D5-20, L1-20, L2-26, L3-29, L4-22. Leg chaetotaxy specially of tibia and tarsus I-IV as figured. Chaetotaxy of palp as illustrated.

Male : Unknown.

Holotype (F), India : West Bengal, Dist. South 24 Parganas, Gosaba ex blackberry, 25.11.1986.

Remarks : This new species is very close to *Tydeus kochi* Oudemans (1928) but differs chiefly in reticulation pattern of dorsum and the propodosomal sensory setae being shorter. It also differs from *Tydeus gosabaensis* sp. nov. in setation pattern of palp tarsus.

This mite was seen in a colony of *Oligonychius mangiferus* infesting blackbvery, and feeding the adult mite.

Family RAPHIGNATHIDAE Kramer,

113. *Acheles guajavae* sp. nov.
(Figs. 90-95)

Female : Idiosoma 347 long (upto tip of rostrum) and 190 wide. Propodosoma covered with 3 plates, the median plate rounded posteriorly bearing 3 pairs of setae, anterior one being the longest, 29 long and the posterior one being the shortest 13 long. Median plate lightly striated longitudinally. The lateral plates each with 3 pairs of setae all of almost similar length. Striation oblique in between the plates. Hysterosoma without shield with 9 pairs of setae of diverse length, of those, the last two laterals being longest measuring 31 and 24, respectively. The other setae of moderate length. Among the hysterosomal setae, 6 setae, as figured, are on small plates. anterior dorsal setae do not touch the base of setae next in line. A pair of setae present on either side of posterior anal slit.

Leg chaetotaxy in respect of tarsus and tibiae of legs I-IV as illustrated. Each tarsus with a thick process and a pair of claws.

Ventrally, the chaetotaxy not properly discernible.

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Puruliya, ex guava, 10.9.1987.

Remarks : This new species differs from *Acheles aethiopica* Meyer & Ryke (1959) in shape of anteromedian plate which is widely broad in this new species and narrow and tapering in *aethiopica*. It also differs from *Acheles meyeræ* Gupta & Paul (1985) in having anteromedian plate rounded in this species while it is pointed in *meyeræ*. Further, the differences also exists in chaetotaxy of legs and dorsum.

This mite was seen chasing a nymph of *Tetranychus cinnabarinus* occurring on the lower surface of guava leaf.

Family CUNAXIDAE Thor

Key to the genera of Cunaxidae known to occur on plants in West Bengal

1. Tarsi I-IV terminating without large bilobed flanges 2
- Tarsi I-IV terminating with large conspicuous lateral bilobed flanges *Dactyloscirus*
2. Palpus 3-segmented *Neocunaxoides*
- Palpus 5-segmented *Cunaxoides*

Genus *Cunaxa* von Heyde

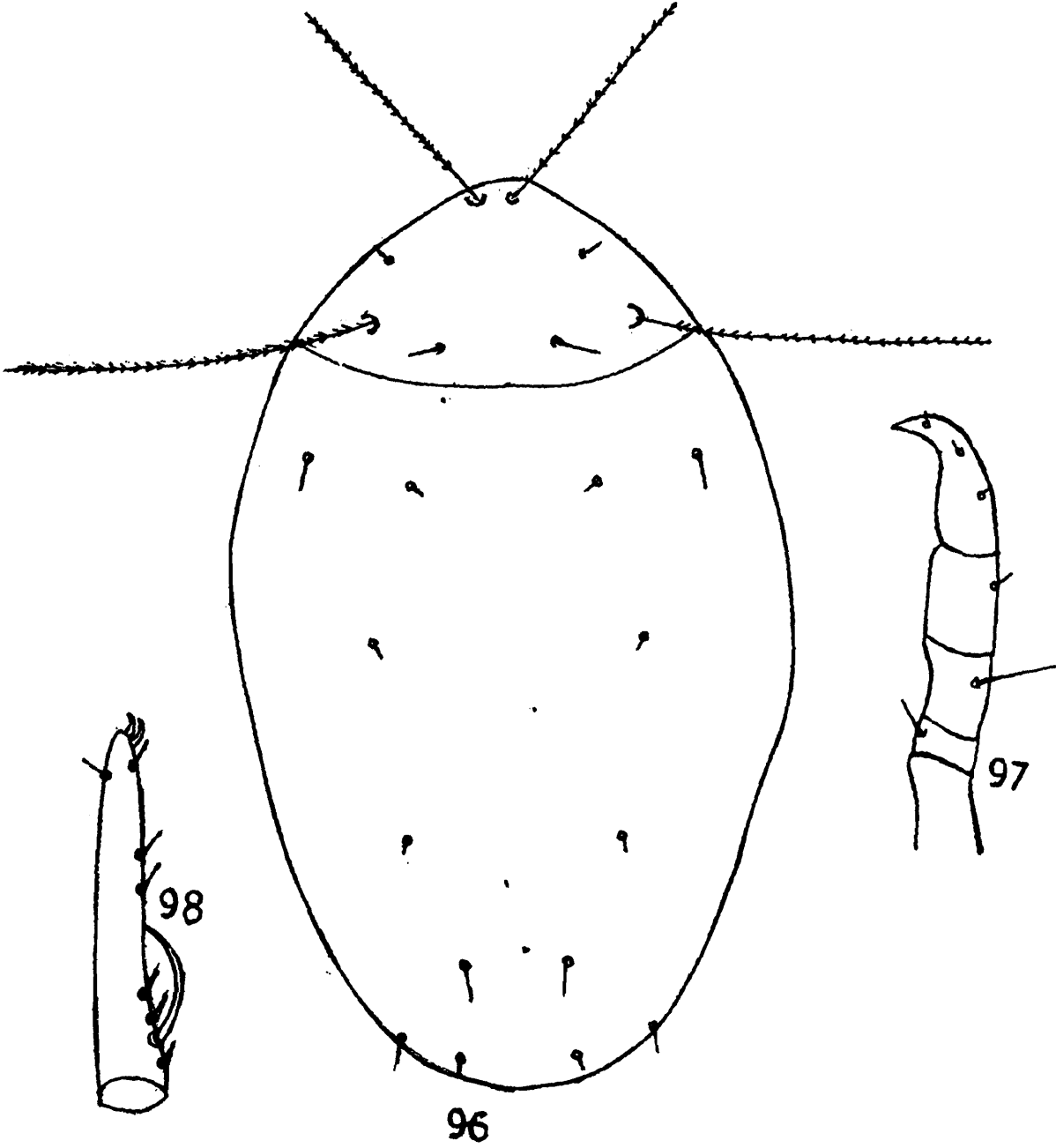
1826. *Cunaxa* von Heyden, *Isis* (Oken) 18 : 609

Key to the species of *Cunaxa* known to occur on plants in West Bengal

1. Propodosoma with anterior pair of sensory setae short, stakly and thick *anacardae*
- Not like above 2
2. Dorsal scutum transversely divided *womersleyi*
- Dorsal; scutum entire 3
3. Palp tarsus with a strong mesal spine on telofemur *setirostris*
- Not like above 4
4. Chelicera longer than tibiotarsus 5
- Chelicera shorter than tibiotarsus *cyndonoe*
5. Telofemur with 2 setae *bambusae*
- Telofemur with 1 seta *mangiferae* sp. nov.

114. *Cunaxa bambusae* Gupta & Ghosh1980. *Cunaxa bambusae* Gupta & Ghosh, *Rec. zool. Surv. India*, 77 : 198-199.1985. *Cunaxa bambusae*, Gupta, *Handbk : Plant Mites of India*, p. 315.*Diagnosis* : Please refer to Gupta (1985).*Material examined* : 2 (F), West Bengal, Dist. Maldah. Agricultural Farm, Maldah, ex litchi, 5.11.1986.*Distribution* : India : West Bengal (Dist.South 24-Parganas, Maldah), Andaman & Nicobar Isls.*Remarks*: This mite occurred within the velvety erineum of litchi and might be predated on *Aceria lithcii*. This species was earlier unknown from West Bengal.115. *Cunaxa cynodona* Gupta & Ghosh1980. *Cunaxa cynodona* Gupta & Ghosh, *Rec. zool. Surv. India*, 77 : 196-198.1985. *Cunaxa cynodona*, Gupta, *Handbk : Plant Mites of India*, p. 316.*Diagnosis* : Please refer to Gupta (1985).*Material examined* : 1 (F), West Bengal, Dist. Maldah, Adina forest, ex Akashmani plant, 6.11.1986.*Distribution* : India : West Bengal (Dist. Maldah), Andaman & Nicobar Isls.*Remarks* : This species is recorded for the first time from West Bengal.116. *Cunaxa mangiferae* sp. nov.
(Figs. 96-98)

Female : Palp 93 long, 5 segmented exceeding length of hypostome. Chaetotaxy of palp : trochanter - nil, basifemur-one innerlateral seta, telofemur one outer lateral seta, genu- one outerlateral seta, tibiotarsus - one outerlateral basally, one outerlateral apically and one mid-dorsally; the latter segment slightly curved inward. Fixed digit of chelicera absent, movable digit vestigial. Gnathosoma subtriangular with 2 pairs of simple setae ventrally. Propodosoma with 2 pairs of sensory setae, both finely branched, anterior one 156 long, posterior one 230 long. among the other 2 pairs, P1-12, P2-22 long. Propodosoma covered with a shield. Hysterosoma without shield, appear to be finely striated but striation pattern not clearly discernible, with 5 pairs of setae, L1-D1-D4- all being minute, L1-slightly longer than D1-D3, D4-22 long. Coxal setal formula not discernible. Setae on leg segments :-



Figs. 96-98 : *Cunaxa magniferae* sp. nov. (female) : 96-dorsum, 97-palp, 98-tarsus I.

	I	II	III	IV
basifemur	1	1	1	2
telofemur	2	2	1	1
genu	2	2	3+1 solenidion	2+1 solenidion
tibia	3 + 1 solenidion	3+2 solenidia	4	3 + 1 trichoboth
tarsus	9+1 trichoboth	7+1 solenidion	5+1 solenidion	5+1 trichoboth

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Murshidabad, Lalgola, ex mango, 10.11.1986.

Remarks : This new species resembles *Cunaxa bambusae* Gupta & Ghosh (1980) so far as dorsal chaetotaxy is concerned but the difference in palp chaetotaxy separates this species from the latter.

This mite was collected from a colony of *Oligonychus mangiferus* and the gut contents indicated that most probably it fed on this mite.

117. *Cunaxa anacardae* sp. nov.
(Figs. 99-100)

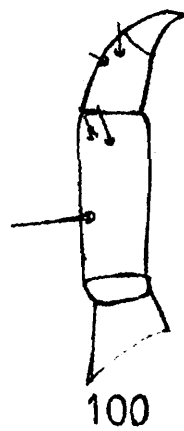
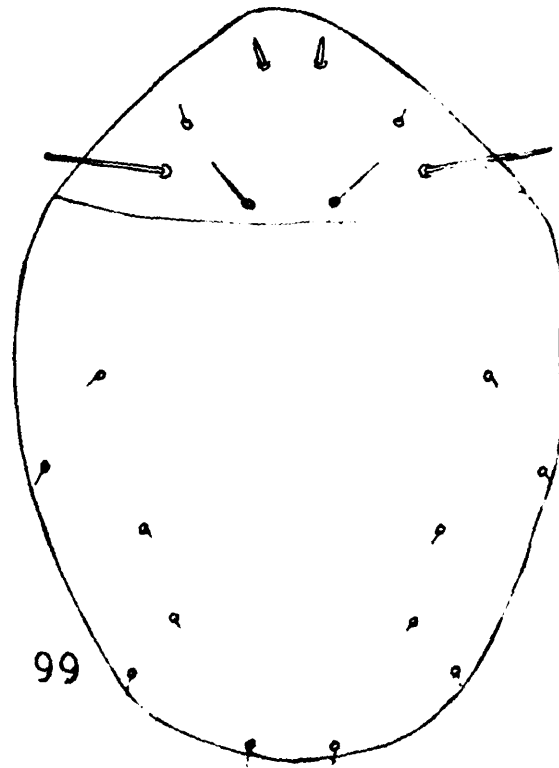
Female : Palpi 5 segmented 78 long, almost as long as hypostome. Chaetotaxy of palp trochanter - nil, basifemur - nil, telofemur - one outerlateral seta, one distal middorsal and one midventral seta; genu - one outer-lateral and one middorsal, tibiotalrusus - setae not discernible. Chelicera attenuate, broader at base, much extending the length of palptibiotalrusus; fixed digit absent, movable digit vestigial, a small seta at the tip of the blade. Gnathosoma subtriangular with 3 pairs of marginal and one pair of ventral setae. Propodosoma with 2 pairs of sensory setae of which the anterior pair short, stalky and thick, while the posterior pair 71 long, also thick at the tip. The other 2 pairs of setae measure 9 (anterior pair) and 26 posterior pair. Hypostome without shield, striation pattern not properly discernible. Hysterosomea with L1 and D1-D4. Coxae I, II and III, IV contiguous. Genital plate with 5 pairs of setae, the distal pair longer than others. Legs II and I directed anteriorly, III and IV directed posteriorly. Chaetotaxy of legs I-IV not properly discernible.

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Murshidabad, ex mango, 10.11.1986.

Remarks : This species is unique in having the anterior pair of sensory setae being stalky and posterior pair of sensory setae also with thick tip and these two characters separate this from all the species of this genus.

This mite was collected from a colony of *Oligonychus mangiferus* infesting mango but it was not seen feeding on this mite.



Figs. 99-100 : *Cunaxa anacardae* sp. nov. (female) : 99-dorsum, 100-palp

118. *Cunaxa setirostris* (Hermann)

1804. *Scirus setirostris* Hermann, *Mem. Aptelologique*, p. 60-62.
 1971. *Cunaxa setirostris*, Singh & Mukherjee, *Oriental Ins.*, 5 : 488.
 1985. *Cunaxa setirostris*, Gupta, *Handbk Plant Mites of India*, p. 316.

Diagnosis : Please refer to Gupta (1985).

Material examined ; 1 (F), West Bengal, Dist. Jalpaiguri, Jainti hills, ex an undet. plant, 18.1.1985; 1 (F), Dist. Maldah, Agricultural farm, Malda, ex mango, 5.11.1986; 1 (F), Adina forest, ex *Shorea robusta*, 6.11.1986; 1 larva, Pyasbari Sericultural farm, ex mulberry, 7.11.1986; 1 (F), Ahio, ex an undet. plant, 8.11.1986; 1 (F), Dist. South 24-Parganas, Gosaba, ex undet. plant, 30.11.1986; 1 (F), Dist. Medinipur Contai, ex paddy, 7.12.1986.

Distribution : India : West Bengal (Jalpaiguri, Maldah, Medinipur, South 24 Parganas).

119. *Cunaxa womersleyi* Baker & Hofmann

1948. *Cunaxa womersleyi* Baker & Hofmann, *An. Escula nac. Cienc. Biol. Mexico*, 5 : 234-235.
 1960. *Cunaxa womersleyi*, Muma, *Ann. Ent. Soc. amer.*, 53:234.

Diagnosis : Dorsal scutum smooth, transversely divided. Palp with a strong mesal spine on both tibia and tarsus and a small spur-like femoral process.

Material examined : 1 (F), West Bengal, Dist. Medinipur, Jhargram, ex miscellaneous plants, 9.12.1986.

Distribution : India : West Bengal (dist. Medinipur). Elsewhere : U.S.A.

Remarks : This mite is recorded for the first time from India.

Genus *Neocunaxoides* Smiley

1975. *Neocunaxoides* Smiley, *Ann. Ent. Soc. Amer.*, 68 : 237.

120. *Neocunaxoides* sp.

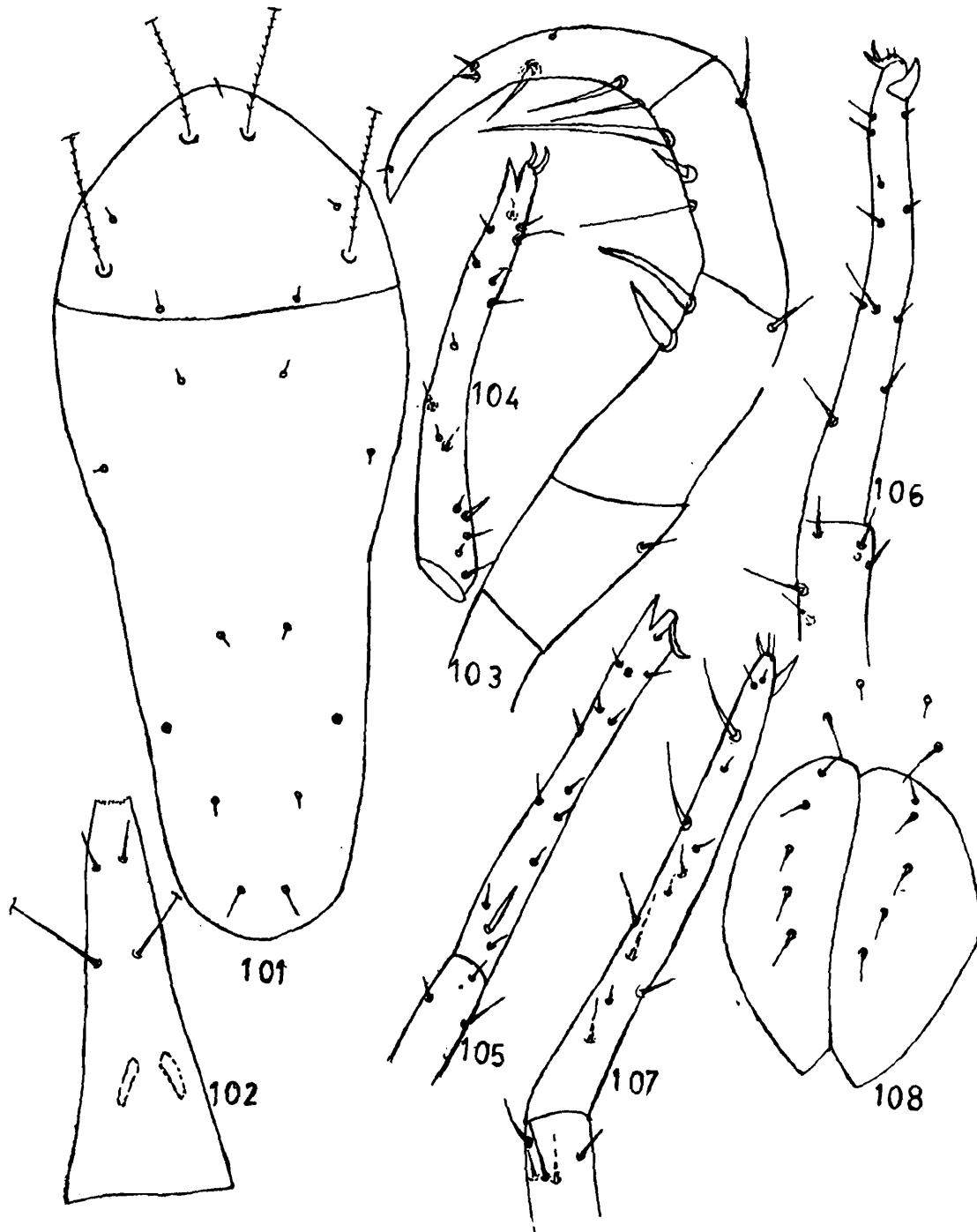
Material examined : 1 (F), West Bengal, Dist. Darjiling, Chalsa, ex beans, 24.10.1986.

Remarks : Because the specimen was in damaged condition, the specific identity was not possible.

Genus *Dactyloscirus* Berlese

1916. *Scirus (Dactyloscirus)* Berlese, *Redia*, 12 : 131.
 1970. *Dactyloscirus* Berlese, Smiley, *Ann. Ent. Soc. Amer.*, 68 : 230.

This genus was earlier unknown from West Bengal.



Figs. 101-108 : *Dactyloscirus bengalensis* sp. nov. (female) : 101-dorsum, 102-hypostome (ventral), 103-palp, 104-tarsus I, 105-tibia and tarsus of leg II, 106-tibia and tarsus of leg III, 107-tibia and tarsus of leg IV, 108-genital region

121. *Dactyloscirus bengalensis* sp. nov.
(Figs. 101-108)

Female : Palp 295 long, much longer than the length of the hypostome. chaetotaxy of palp trochanter-nil, basifemur - 1 outerlateral seta, telofemur-2 inner strong spines the distal one longer, somewhat spatulate, measuring 31 long; proximal one somewhat curved almost upward and 18 long; one outer lateral strong almost look like spine ; genu inner laterally one fine seta-33 long , 1 innerlateral strong spine-20 long, one distally located outerlateral thick seta and from the apical tip of genu a strong, long and somewhat spatulate process appears which reaches upto middle of tibiotarsus. Tibiotarsus with one long seta- midproximodorsally, 1 long innerlateral seta from the base of the segment, a strong seta-16 long, midventrally another seta little below the tip of the tibiotarsal claw; 1 seta ventrolaterally and 1 outer laterally both at middle region; tibiotarsal claw curved inward. Chelicera attenuate, broader dorsally, narrower anteriorly extending upto the distal claw of telofemur, a fine seta placed distally; fixed digit absent; however, in other chelicera, both the digits do not appear to be present. Gnathosoma as figured. Propodosomal shield smooth without reticulate granulate pattern as described by Smiley (1975), with 2 pairs of sensory setae and 2 pairs of other setae. Sensory setae measure, S1-230, S2-270, both ciliated, the other two being small. Hysterosoma appears to be without shield and the striation pattern not clearly discernible, with 6 pairs of setae, viz. 1-L2, D1-D4. Genital plate with 5 pairs of simple setae. legs I, II directed anteriorly, III and IV directed posteriorly. The chaetotaxy of leg segments as follows.

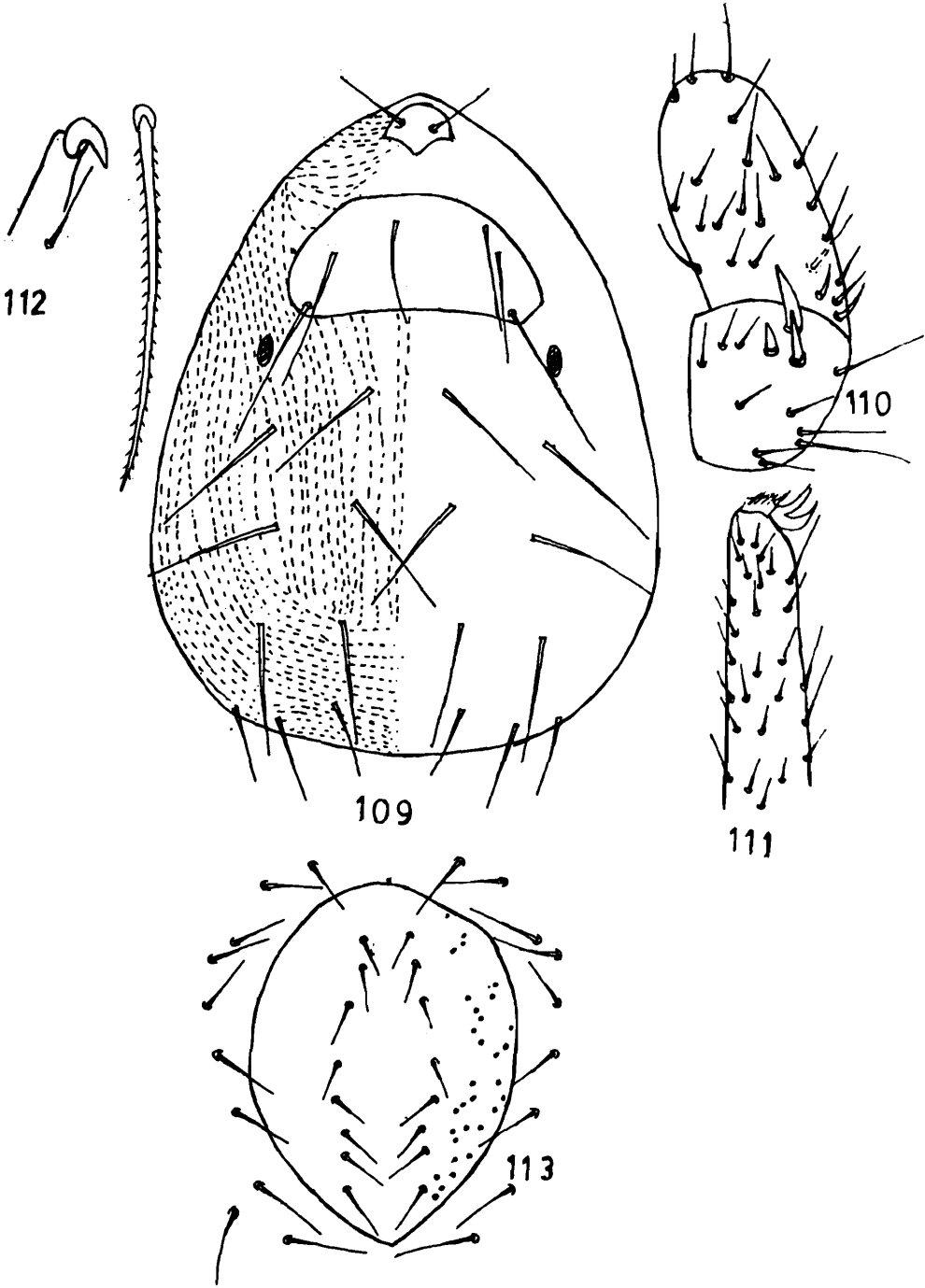
	basifemur	telofemur	genu	libia	tarsus
I	5	4	5+1 solenidion	5+1 solenidion	16+2 solenidia
II	4	4	5	4	14+1 solenidion + 1 trichoboth
III	3 + 1 solenidion	2 + 1 solenidion	7	4 + 1 trichoboth	12
IV	2 + 1 trichoboth	4	5 + 2 solenidia	4 + 1 trichoboth	12

Coxal setal formula for I-IV : 2:2:3:2.

Length of body 535 (from posterior tip upto base of gnathosoma), maximum width 341; gnathosoma - 306 long.

Male : Unknown.

Holotype (F), India : West Bengal Dist Darjiling, Darjiling Botanical Garden, ex Zinia, 30.10.1986.



Figs. 109-113 : *Anystis indica* sp. nov. (female) : 109-dorsum, 110-tibia and tarsus of palp, 111-tarsus I, 112-chelicera, 113-anogenital region

Family EUPODIDAE Koch, 1842

Genus *Eupodes* 1836

So far no record of this genus was available from West Bengal.

122. *Eupodes* sp. nr. *sigmoidensis* Strandtmann & Goff.

Material examined : 1 (F), West Bengal, Dist. Maldah, Agricultural farm, ex mango, 5.11.1986; 1 (F), Dist. Darjiling, Naxalbari, ex an undet. plant, 30.11.1986; 1 (F), Dist. South 24-Parganas, Diamond Harbour, ex banana, 2.12. 1986; 2 (F), Dist. Medinipur, Medinipur town, ex sapota, 5.12.1986.

Remarks : Due to non availability of literature the full specific identity was not possible.

Family ANYSTIDAE Oudemans

1936. Anystidae Oudemans, *Archev. fur. naturgeschichte* N.F. 5 : 364.

1987. Anystidae, Smith-Meyer & Uckermann, *Ent. Mem. Dept. of Agrc. & Water Supply*, No.68, p. 1.

Key to the genera of Anystidae known to occur on plants in West Bengal :

1. Propodosomal shield absent *Walzia*
- Propodosomal shield present 2
2. Dorsum with over 30 setae *Tencateia*
- Dorsum with much less than 30 setae *Anystis*

Genus *Anystis* von Heyden

1826. *Anystis* von Heyden, *ISIS*, 19 : 609.

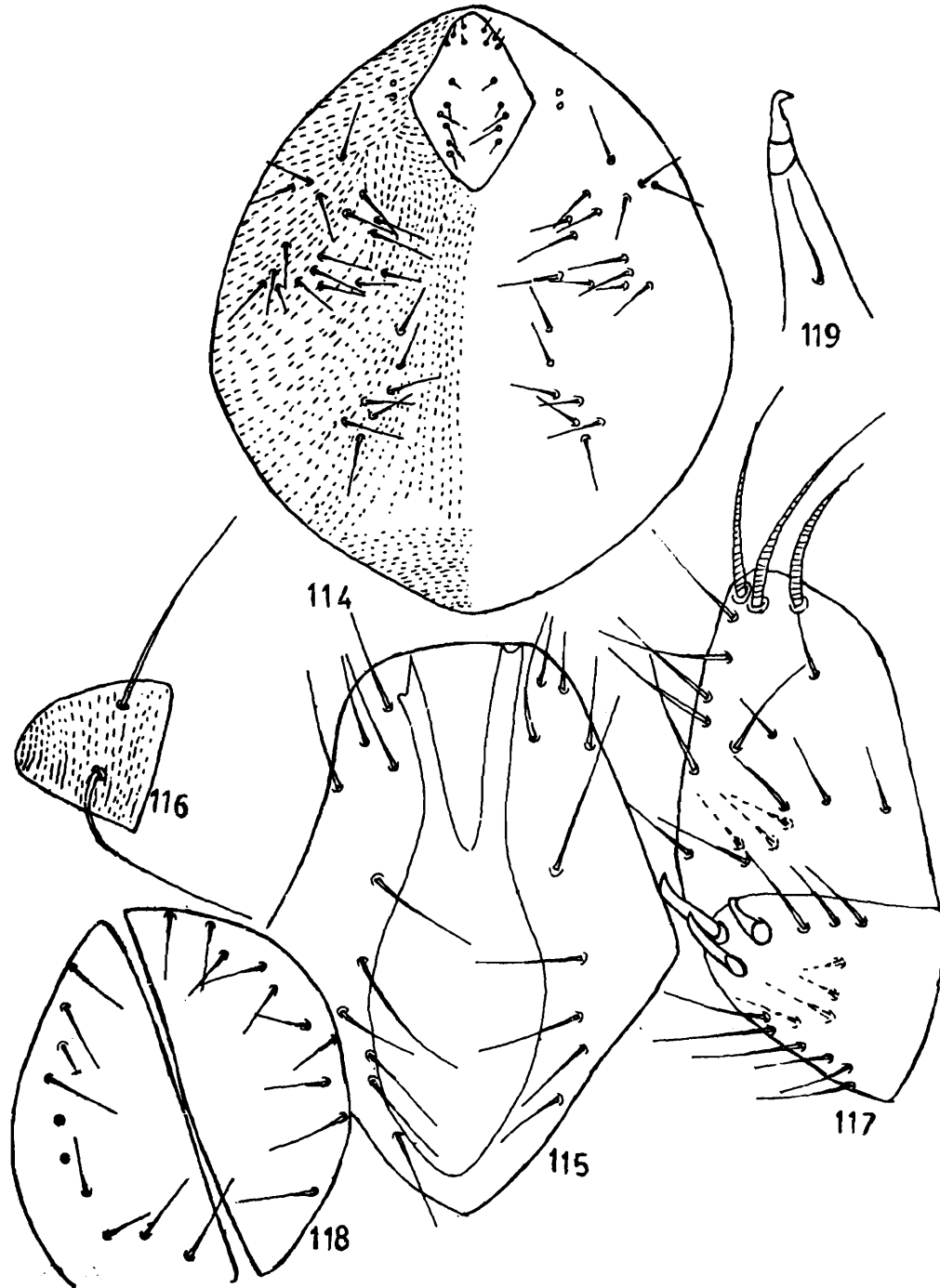
1987. *Anystis*, Smith-Meyer & Uckermann, *Ent. Mem. Dep. Agri. Water Supply Repub. S. Afr.*, No, 68 : 9.

Earlier, no representative of this genus from West Bengal was known.

123. *Anystis indica* sp. nov.
(Figs. 109-113)

Female : Dimension : Length of body 570 long, 448 wide.

Dorsum : Naso with a pair of sensilla. Prodorsal shield smooth, much wider than long with 3 pairs of setae. One pair of eyes are present lateral to prodorsal shield. Nine pairs of setae on rest of the part of the dorsum.



Figs. 114-119 : *Tencateia kanthiensis* sp. nov. (female) : 114-dorsum, 115-prodorsal shield, 116-naso, 117-tibia and tarsus of palp, 118-anogenital region, 119-chelicera

Dorsum striated as figured. All dorsal body setae serrate.

Venter : Anogenital region covered with many setae, all almost of equal length, setae ps 1 - 4 also of equal length. No ventral setae on small platelets.

Gnathosoma : Palp tibia bears three strong claws as figured; other setae as represented. Peritreme not properly discernible. Chelicera as figured.

Legs : All leg segments covered with many setae, all legs terminate in 2 claws; empodium brush-like.

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Medinipur, ex *Tabernaemontana coronaria*, 6.12.1986.

Remarks : This new species is close to *Anystis baccarum* (Linnaeus, 1758) but differs in dorsum having 9 pairs of setae as well as in setation pattern of anogenital region. Further, it also differs from *Anystis salicinus* (Linnaeus, 1758) in having prodorsal shield non-ornamented.

Genus *Tencateia* Oudemans

1936. *Tencateia* Oudemans, *Archiv fur Naturgeschichte*, N.F., 5 : 422.

1987. *Tencateia*, Smith-Meyer & Uckermann, *Entomology Mem. Dept. Agri. Water Supply Repub. S. Afr.*, No. 68: 8

124. *Tencateia kanthiensis* sp. nov. (Figs. 114-119)

Female : Dorsum : Naso transversely striated as figured, with a pair of sensilla. Prodorsal shield with one side having 10 pairs of setae and ther other side with 9 pairs of setae. Two pairs of eyes present. Rest of the dorsum with at least 25 pairs of setae, all appear to be simple, pointed and smooth.

Venter : Setae on the anogenital region as represented.

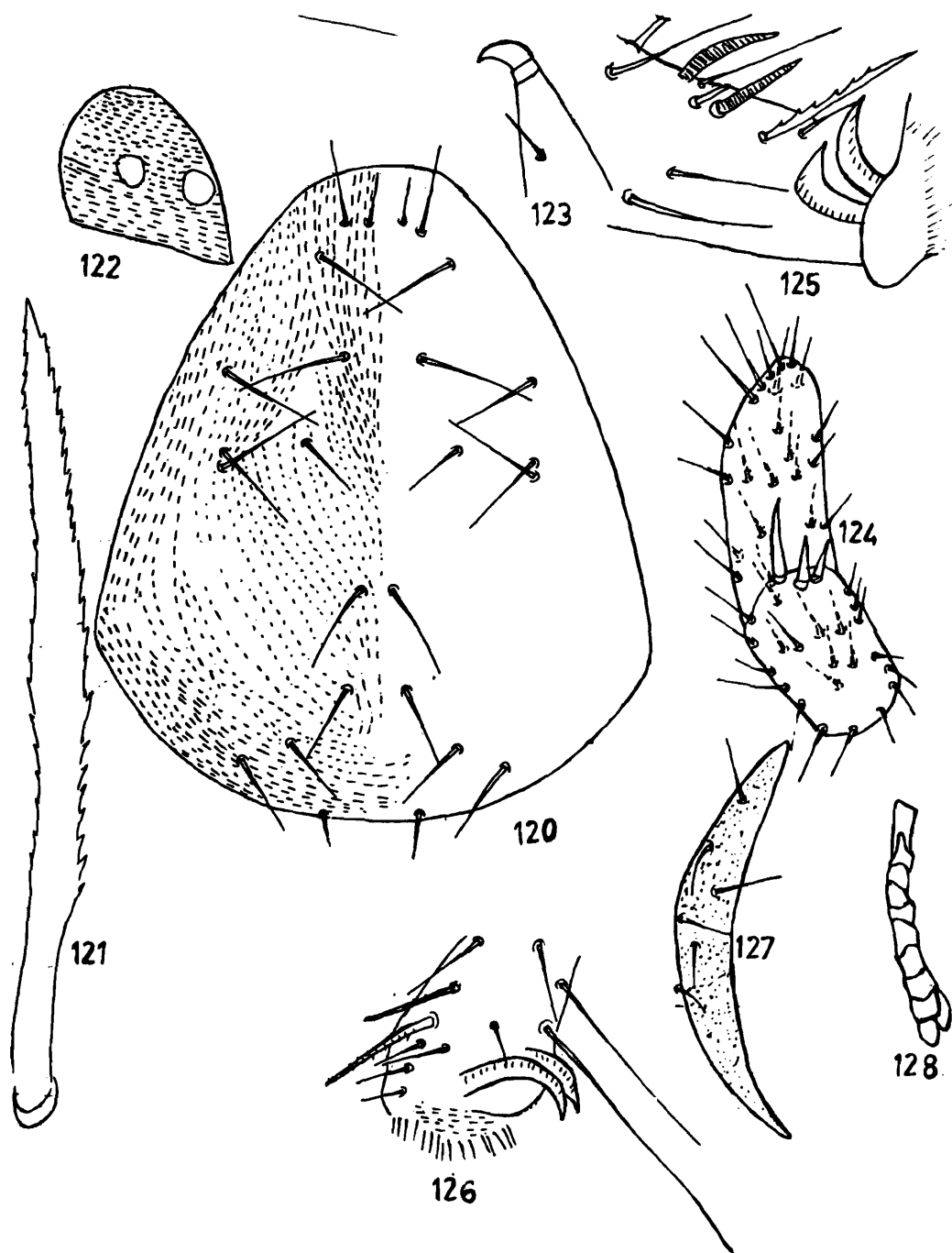
Gnathosoma : Palp tibia with 3 strong spines, the setation on palp tarsus as figured, 3 solenidia present. Peritreme not clearly visible. Chelicera as figured.

Legs : All legs covered with many small setae. \Each leg ends in two claws and empodia brush-like:

Male : Unknown.

Holotype (F), India : West Bengl, Dist. Medinipur, Kanthi ex betelvine, 24.9.1987.

Remarks : This species differs from *Tencateia villosa* Smith-Meyer & Uckermann (1987) but differs in shape of prodorsal shield and in setation of dorsum. From *T. toxipe* Oudemans (1936) as well



Figs. 120-128 : *Walzia darjilingensis* sp. nov. (female) : 120-dorsum, 121-magnified view of dorsal seta, 122-naso, 123-chelicera, 124-tibia and tarsus of palp, 125-tarsus I, 126-tarsus II, 127genital plate, 128-peritreme

as *T. besselingi* Oudemans (1936) this new species differs in setation of dorsum and in striation pattern of anogenital region.

Genus *Walzia* Oudemans

1936. *Walzia* Oudemans, *Archiv. fur naturgeschichte N.F.*, 5 : 419.

1987. *Walzia*, Smith-Meyer & Uckermann, *Entomology Mem. Dept. Agric. Water. Supply Repub. S. Afr.*, No. 68 : 14.

125. *Walzia darjilingensis* sp. nov.
(Figs. 120-128)

Female : length of body 1718 (from posterior tip of body upto tip of gnathosoma), 1015 wide (maximum width). Dorsum without shield, however striation transverse posteriorly and longitudinal anteriorly as figured; lobes not discernible, with 13 pairs of setae, all long, finely serrate, serration more prominent in the posterior setae than on the anterior ones. Naso transversely striated.

Venter : Ventrally the genital plate with 5 pairs of setae. Anogenital setae 1 and 2 not on plates.

Gnathosoma : Palp as figured, palp tibia with 3 strong claws as figured Pertireme and chelicera as figured. Reticulation partly discernible.

Legs. : legs densely covered with pilose setae; tarsus I with two solenidia (one long and one short); tarsus II also with 2 solenidia (one long, one short); tibia I and II also with one long and one short solenidia. Tibia III and IV with 2 solenidia.

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Darjiling, Darjiling Botanical Garden, ex undet, plant, 30.10.1986.

Remarks : This new species is quite close to *Walzia indiana* Smith - Meyer & Uckermann (1987) but differs in having 5 pairs of setae on anal shield (1-2 pairs on indiana) and from *Walzia hammeni* Smith-Meyer & Uckermann (1987), *W. antiguensis* (Stoll, 1886) and *W. australica* (Womersely, 1942) in having the 1st and 2nd anogenital setae not on plates.

This mite was collected from an undet. plant, infested by *Eutetranychus* sp.

Family CHEYLETIDAE Leach

1815. Cheyletidae leach, *Trans. Linn. Soc. Lond.*, 11 : 399.

Key to the genera of Cheyletidae known to occur on plants in West Bengal

1. Leg. I normal with 2 claws*Cheyletus*

Leg I, a sensory organ, without claws*Cheletogenes*

Genus *Cheyletus* Latreille

1796. *Cheyletus* Latreille, *Precis des caracteres generiques des insects. An.*, p. 179.

126. *Cheyletus fortis* Oudemans

1904. *Cheyletus fortis* Oudemans, *Ent. Ber. Nederl. Ver.*, 1 : 161.

1931. *Cheyletus fortis*, Cherian. *J. Asiat. Soc. Beng.*, 27 : 141-147.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (Calcutta). Elsewhere : Burma, Philippines, Formosa, Japan, Australia, New Guinea.

Genus *Cheletogenes* Oudemans

1905. *Cheletogenes* Oudemans, *Ent. Ber. nederl. Ver.*, 1 : 208.

127. *Cheletogenes ornatus* (Canestrini & Fanzago)

1876. *Cheyletus ornatus* Canestrini & Fanzago, *Atti. soc. Vent. Trentina*, p. 106.

1905. *Cheletogenes ornatus*, Oudemans, *Ent. Ber. nederl. Ver.*, 1 (21) : 208.

1960. *Cheletogenes ornatus*, Narayanan, Kaur & Ghai, *Proc. Nat. Inst. Sci.*, 26:390.

1985. *Cheletogenes ornatus*, Gupta, *Handbk: Plant Mites of India*, p. 300.

Diagnosis : Please refer to Gupta (1985).

Material examined : 1 (F), West Bengal, Dist. Medinipur, Kanthi, ex mango, 7.12.1986.

Distribution : India : West Bengal (Dist. Medinipur), Punjab. Outside India : China, Italy, Australia, Hawaii, U.S.A., Galapagos Isl., West Indies.

Remarks : The occurrence of this species was earlier unknown from West Bengal. It was seen amidst *Aceria mangiferae* infesting axillary buds.

Order MESOSTIGMATA

Family PHYTOSEIIDAE Berlese

1952. Phytoseiidae Baker & Wharton, *An introduction to Acarology*, Macmillan Co., New York, p. 87.

1959. Phytoseiidae, Chant, *Can. Ent.*, 91 (Suppl. 12) : 48.

1986. Phytoseiidae, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 31.

1987. Phytoseiidae, Gupta, *Rec. zool. Surv. India Occ. Pap.*, No. 95 : p. 3.

Key to the subfamilies of Phytoseiidae known to occur on plants in West Bengal

1. Prolateral setae 4 pairs, in all 6-9 pairs of lateral setae; preanal setae 3 pairs. Amblyseiinae
 Prolateral setae 5 or more pairs, in all 9-12 pairs of setae, preanal setae 3-4 pairs Phytoseiinae

Subfamily AMBLYSEIINAE Muma

1961. Amblyseiinae Muma, *Bull. Fla. St. Mus.*, 5(7) : 273.
 1963. Amblyseiini, Schuster & Pritchard, *Hilgardia*, 34 : 225.
 1986. Amblyseiinae, Gupta, *Fauna of India (Acari : Mesostigmata)*, Family Phytoseiidae, p.32.
 1987. Amblyseiinae, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, No. 95, p.4

Key to the genera of Amblyseiinae known to occur on plants in West Bengal

1. Ventrianal shield absent or indistinctly demarcated, only preanal setae distinctly present
 *Indoseiulus*
 Ventrianal shield distinctly present2
2. Lateral integument sclerotized so that R_3 and R_1 though on usual lateral position appears to be on lateroventral extension of dorsal shield. *Iphiseius*
 Lateral integument not sclerotized as above3
3. Metapodal plates large, single paired, triangular genital shield very broad and punctate, ventrianal shield massive, genu III with 6 setae... *Paraamblyseius*
 Metapodal plates two paired, slender, elongate and ventrianal shield usually narrow, genu III with 7 setae. *Amblyseius*

Genus *Amblyseius* Berlese

1914. *Amblyseius* Berlese, *Redia*, 10 : 143.
 1986. *Amblyseius*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 33.
 1987. *Amblyseius*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, No. 95, p. 4.

Key to the subgenera of *Amblyseius* known to occur on plants in West Bengal

1. Dorsal shield with 5 pairs of postlateral setae2
 Dorsal shield with less than 5 pairs of postlateral setae *Paraphytoseius*

2. Ventrianal shield massive covering major portion of posteroventral region*Proprioseiopsis*
 Ventrianal shield not like above3
3. Setae Z5, s4, Z4 long and whip-like, longer than distance between their bases; leg IV with macrosetae on genu and erect seta on tarsus*Amblyseius*
 Setae shorter, at most as long as distance between their bases; leg I with no macroseta or only one on genu, no erect seta on tarsus 4
4. Sternal shield distinct and straight on concave posteriorly, ventrianal shield approximately shield-shaped or pentagonal. 5
 Sternal shield indistinct, may be trilobate posteriorly, ventrianal shield elongate, vase-shaped or concave laterally6
5. Z5 and Z4 distinctly serrate, sternal shield as wide as or wider than long; macrosetae present on genu I and also genu II and III*Typhlodromips*
 Z5 and Z4 mostly smooth, sternal shield longer than wide, genu I, II and III without macrosetae 6
6. Peritreme not extends anteriorly upto j3, anterior pair of preanal setae removed from anterior margin of ventrianal shield*Euseius*
 Peritreme extends upto j3, anterior pair of preanal setae adjacent to anterior margin of ventrianal shield*Typhlodromalus*

Subgenus *Amblyseius* Berlese

1914: *Amblyseius* Berlese, *Redia*, 10 : 143.

1986. *Amblyseius*, Gupta *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p.35.

Key to the species of Subgenus *Amblyseius* known to occur on plants in West Bengal

1. Ventrianal shield vase-shaped with lateral margins concave2
 Ventrianal shield pentagonal or squarish 3
2. Cervix of spermatheca elongated and of parallel diameter*largoensis*
 Cervix of spermatheca fundibuliform*herbicolus*

3. Seta Z5 over 200 microns in length.....*channabasavannai*
 Seta Z5 much lesser than 200 microns in length.....4
4. Seta s4 and Z4 of same length*shoreae*
 Seta s4 longer than Z4.....*neorykei*

128. *Amblyseius (Amblyseius) channabasavanni* Gupta & Daniel

1978. *Amblyseius channabasavanni* Gupta & Daniel, *Oriental Ins.*, 12 : 328-329.

1986. *Amblyseius (Amblyseius) channabasavannai*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 41-43.

1987. *Amblyseius (Amblyseius) channabasavannai*, Gupta, *Rec. zool Surv. India Occ. Pap. No. 95*, p. 8.

Diagnosis : Please refer to Gupta (1987).

Material examined : 2 (F), West Bengal, Dist. Koch Bihar, ex undet, plant, 9.1.1985; 1 (F), Dist. Murshidabad, Jiagan, ex mango, 10.11.1986.

Distribution : India : West Bengal (Dists. Jalpaiguri, Koch Bihar, Murshidabad), Kerala, Tamil Nadu.

Remarks : Daniel (1981) reported its biology and predatory importance. No report of this mite was earlier available from West Bengal.

129. *Amblyseius (Amblyseius) herbicolus* (Chant)

1959. *Typhlodromus (Amblyseius) herbicolus* Chant, *Can. Ent.*, 91 : 84-85.

1961. *Amblyseius (Amblyseius) largoensis*, Muma, *Bull. Fla. St. Mus.*, 5(7) : 287 (not *largoensis* Muma, 1955).

1986. *Amblyseius (Amblyseius) herbicolus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 45-47.

1987. *Amblyseius (Amblyseius) herbicolus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, No. 95, p. 9.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal, Dist. Koch Bihar, Chelapather, ex an undet. shrub, 9.1.1985; 3 (F), Dist. Jalpaiguri, Rajhabhatkahwa, ex undet. plant, 16.1.1985; 1 (F), Alipurduar, Jainti Hills, ex guava, 18.1.1985; 7 (F), 1 (M), Dist. Darjiling, Samsing Tea state, ex tea, 22.10.1986; and 23.10.1986; 1 (M), Chalsa, ex beans and mango, 24.10.1986; 7 (F), Khumani, ex an undet. plant, 25.10.1986; 1 (F), Kalimpong, ex an undet. plant, 25.10.1986; 4 (F), Kalimpong, Dolabchand Fruit garden, ex guava, apple, peach and bamboo 28.10.1986; 5 (F), Loyola Botanical Garden, ex an undet. ornamental plant, 30.10.1986; 2 (F), Manebhanjan ex undet, plant, 31.10.1986; 1 (F), Darjiling, ex misc. plant, 2.11.1986; 1 (F), Sukna, ex *Shorea robusta*, 4.11.1986; 1 (F), Dist. Murshidabad, Berhampur, ex mulberry, 10.11.1986; 1 (F), Dist. Puruliya, Jhalda, ex wood apple, 15.9.1987.

Distribution : India : West Bengal (Dists. Darjiling, Koch Bihar, Jalpaiguri, Murshidabad, Puruliya), Arunachal Pradesh, Tripura. Elsewhere : Philippines, Taiwan, Thailand, Japan, Madagascar, U.S.A., South America, Mexico, Brazil, British West Indies.

Remarks : Earlier, no report of this was available from West Bengal. This mite was seen attacking/ chasing both adults and nymphs of *Tetranychus cinnabarinus* and *Tetranychus neocaledonicus*, and feeding the body fluid after holding the prey in between first two pairs of legs. Later, the shrivelled body was discarded after the feeding was over.

130. *Amblyseius (Amblyseius) largoensis* (Muma)

1955. *Amblyseius largoensis* Muma, *Ann. Ent. Soc. Amer.*, 48 : 266.
 1959. *Amblyseius largoensis*, Ehara, *Acarologia*, 1 : 293-294.
 1964. *Amblyseius largoensis*, Rao & Rao, *Comm. Inst. Biol. Contr. Tech. bull.*, 4 : 38-39.
 1986. *Amblyseius (Amblyseius) largoensis*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 51.55.
 1987. *Amblyseius (Amblyseius) largoensis*, Gupta, *Rec. zool. Surv. India. Occ. Pap.*, No. 95, p. 10-11.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal, Dist. Koch Bihar, Gossanimari, ex undet. plant, 10.1.1985; 1 (F), Dist. Jalpaiguri, Alipurduar, ex undet. plant, 12.1.1985; 1 (M), Jaldapara, Sanctuary, ex undet. plant, 14.1.1985; 5 (F), Rajhabhatkhawa, ex undet. plant, 16.1.1985; 2 (F), 1 (M), Jaini Hills, ex undet. plant, 18.1.1985; 2 (F), Dist. West Dinajpur, Raigunj, ex cucurbits, 20.1.1985; 1 (F), Dalkhola, ex mango, 21.1.1985; 1 (M), Dist. Darjiling, Sarbari garden, ex an ornamental plant, 2.11.1986; 2 (F), 2 (M), dist. South 24-Parganas, Sajnakhali, ex *Phoenix paludosa* and *Suaeda nufiflora*, 28.10.1986; 1 (F), Dist. Darjiling, Loyola Botanical Garden, ex undet. plant, 30.10.1986; 2 (F), Kalimpong, ex peach and apple, 28.10.1986; 2 (F), Dist. Maldah, State Agril Farm, ex mango, 4.11.1986; 1 (F), Pyasbari, ex guava, 7.11.1986; 6 (F), Maldah, ex mango, 8.11.1986; 3 (F), Dist. Murshidabad, Kandi, ex custard apple, 1.11.1986; 1 (F), Dist. Darjiling, Samsing Tea Estate, ex tea, 23.11.1986; 1 (F), Dist. South 24-Parganas, Canning Central Soil Salinity Research Centre, ex ornamental plant, 24.11.1986; 2 (F), Gosaba, ex sapota, 25.11.1986; 1 (F), Basanti, ex coconut, 26.11.1986; 2 (F), Dist. South 24-Parganas, Sajnakhali, ex banyan and Gamar, 29.11.1986; 3 (F), Gosaba, ex miscellaneous plant 30.11.1986; 5 (F), Kakdwip, ex coconut and jackfruit, 1.12.1986; 3 (F), Diamond Harbour, ex woodapple, money plant, cotton, 2.12.1986; 4 (F), Bakkhali, ex *Shorea robusta* and mango, 3.12.1986; 7 (F), Dist. Medinipur, ex *S. robusta*, custard apple, 5.12.1986; 6 (F), Garbeta, ex jackfruit and ornamental plant, 6.12.1986; 6 (F), Jhargram, Fekoghat, ex eucalyptus, bamboo and castor, 10.12.1986; 1 (F), Dist. Bankura, Chatna, ex bamboo, 19.8.1987; 2 (F), Dist. Bardhaman, Khana, ex arum, 27.9.1987; 1 (F), Dist. Bankura, ex coconut, 23.3.1988; 1 (F), 1 (F), Dist. Puruliya, Bagmundi, ex bamboo, 27.9.1988.

Distribution : India : West Bengal (Dists. Bankura, Bardhaman, Darjiling Hugli, Jalpaiguri, Koch Bihar, Maldah, Medinipur, Murshidabad, North 24-Parganas, Puruliya, South 24-Parganas), Andaman - Nicobar Isl., Arunachal Pradesh, Assam, Andhra Pradesh, Bihar, Gujarat, Himachal Pradesh, Karnataka, Kerala, Manipur, Meghalaya, Nagaland, Orissa, Pondicherry, Punjab, Tamil Nadu, Tripura, Uttar Pradesh. Elsewhere : Philippines, Taiwan, Thailand, Hong Kong, Israel, Iran, Japan, New Zaland, South Africa, Kenya, U.S.A. Brazil, Costa Rica, Guatemala, Honduras, Jamaica, Mexico, Puerto Rico, Trinidad.

Remarks : This mite was collected from colonies of *Eutetranychus orientalis* and *Oligonychus mangiferus*. It did not favour the former as food but definitely has a preference for the latter because was often seen sucking the egg contents of the latter species.

131. *Amblyseius (Amblyseius) neorykei* Gupta

1977. *Amblyseius neorykei* Gupta, *Entomologists' mon. Mag.*, 112 : 56-57.
 1985. *Amblyseius (Amblyseius) neorykei*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 59-61.
 1987. *Amblyseius (Amblyseius) neorykei*, Gupta, *Rec. zool. Surv. India, Occ. Pap.* 95, p. 12.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal, Dist. Medinipur, Jhargram, ex neem, 10.12.1986.

Distribution : India : West Bengal (Dists. Darjiling, Medinipur), Arunachal Pradesh.

132. *Amblyseius (Amblyseius) shoreae* Gupta

1977. *Amblyseius shoreae* Gupta, *Entomologists' mon. Mag.*, 112 : 57.
 1986. *Amblyseius (Amblyseius) shoreae*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 65-67
 1987. *Amblyseius (Amblyseius) shoreae*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, No. 95, p. 14.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dist. Medinipur).

Subgenus *Euseius* Wainstein

1962. *Amblyseius (Amblyseius) Section Euseius* Wainstein *Acarologia*, 4 : 14.
 1986. *Euseius*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 73.

Key to the species of *Euseius* known to occur on plants in West Bengal.

1. All stae on dorsal shield minute excepting j1 and Z52
- Besides Z5 and j1, some other setae also long4
2. Setae S2 and S5 equal*ovalis*
- Setae S2 and S5 unequal3
3. S4 longer than S2 and S5 which two are equal*rhododendronis*
- S4 and S5 equal and longer than S2.....*sacchari*

4. Setae j_1 , j_3 either equal or j_3 longer than j_1 5
5. Seta j_3 longer than j_1 6
- Seta j_3 and j_1 equal7
6. S2 noticeably longer than Z1*alstoniae*
- S2 and Z1 almost equal*delhiensis*
7. Spermatheca as in figure 129*coccineae*
- Spermatheca as in figure 130*coccosocius*
8. S5 longer than S49
- S5 as long as or shorter than s_4 *bambusae*
9. Spermatheca narrow, elongated10
10. Spermatheca and spermatophoral process as in figs 149 and 150*finlandicus*
- Spermatheca and spermatophoral process as in figs 147 and 148.....*pruni*

133. *Amblyseius (Euseius) alstoniae* Gupta

1975. *Amblyseius alstoniae* Gupta, *Internat. J. Acarology*, 1 (2) : 31-32.

1986. *Amblyseius (Euseius) alstoniae*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 74-76.

1987. *Amblyseius (Euseius) alstoniae*, Gupta *Rec. zool. Surv. India Occ. Pap. No. 95*, p. 21.

Diagnosis : Please refer to Gupta (1987).

Material examined : 2 (F), West Bengal, dist. Darjiling, Kalimpong, ex peach, 28.10.1986 ; 1 (F), Dist. South 24-Parganas, Basanti, ex miscellaneous plant, 25.11.1986; 4 (F), Dist. Medinipur, Jhargram, ex miscellaneous plants, 9.12.1986; 1 (F), Jhargram, Belpahari, ex guava, 11.12.1986; 1 (F), Puruliya Dist. Manbazar, ex beans, 13.4.1987; 4 (F), Bagmundi, ex bitter gourd, 16.4.1987; 4 (F), Dist. Bankura, Bishnupur, ex undet plant, 22.9.1987; 2 (F), 3.4.1989; 1 (M), Dist. Puruliya, Tantipukur, ex sweet gourd, 5.4.1989; 3 (F), Dist. Bankura, Susunia, ex *Terminalia arjuna*, 20.9.1987; 1 (F), Puruliya Dist. Puruliya town, ex Nayantara plant (an ornamental plant) 28.4.1989; 1(F), Pancha, ex date palm., 30.3.1989.

Distribution : India : West Bengal (Dists : Bankura, Darjiling, Medinipur, Puruliya, South 24-Parganas), Bihar, Gujarat, Jammu & Kashmir, Madhya Pradesh, Punjab, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh.

134. *Amblyseius (Euseius) bambusae* Ghai & Menon

1967. *Amblyseius bambusae* Ghai & Menon, *Oriental Ins.*, 1:66-67.
 1986. *Amblyseius (Euseius) bambusae*, Gupta, *Fauna of India (Acari Mesostigmata) Family Phytoseiidae*, p. 76-78.
 1987. *Amblyseius (Euseius) bambusae*, Gupta, *Rec. zool. Surv. India Occ. Pap.*, No. 95, p. 22.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal; Dist. Darjiling, Samsing, ex undet. plant, 22.10.1987.

Distribution : India : West Bengal (Dist. Darjiling), Andhra Pradesh, Karnataka, Kerala Tamil Nadu.

Remarks : This is the first record of this species from West Bengal.

135. *Amblyseius (Euseius) coccineae* Gupta.

1975. *Amblyseius coccineae* Gupta, *Internat. J. Acarol.*, 1 (2) : 33.
 1986. *Amblyseius (Euseius) coccineae*, Gupta *Fauna of India (Acari; Mesostigmata), Family Phytoseiidae*, p. 78-80.
 1987. *Amblyseius (Euseius) coccineae*, Gupta, *Rec. zool. surv. India, Occ. Pap.* No. 95, 22-23.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal : Dist Koch Bihar, Chelapather, ex undet, Plant, 9.1.1985; 3 (F), Dist. Jalpaiguri Alipurduar, ex undet, plant, 13.1.1985; 10. (F), Jainti Hills, ex undet. Plant, 18.1.1985; 1 (F). Dist. West Dinajpur, Raiganj, ex undet plant, 20.1.1985; 1 (F) Dist. South 24-Parganas, Kakdwip, ex jackfruit, 1.12.1986; 4 (F), dist Medinipur, Jhargram, ex *Shorea robusta*, 9.12.1986; 1 (F) Dist. Darjiling, Sukna, ex undet plant, 4.11.1986; 4 (F) Dist. Maldah, Pyasbari, ex mango, 5.11.1986; 4 (F), Adina, ex black berry, 6. 11.1986; 4 (F), Adina forest, ex *Dalbergia sissoo*, 6.11.1986; 2 (F), *Payasbari*, ex mulberry, 7 ..11.1986; 1 (F), Dist. Murshidabad, Lalgola, ex undet. plant, 10-11. 1986; 1 (F), Jiaganj, ex mango, 10.11.1986; 1 (F) Kandi, ex cotton, 11.11.1986; 1 (F), Dist. Darjiling, Samsing, ex tea, 23. 11. 1986; 1 (F), 1 (M), South 24-Parganas, Gosaba, ex jackfruit, 25.11.1986; 1 (F), Basanti, ex. miscellaneous plants, 26.11.1986; 1 (F), Sajnakhali, ex. *Sonnerlia alba*, 28.11.1986; 1 (F), Dist. Puruliya, Hura, ex coconut, 29. 3. 1989; 4 (F), Dist. Bankura, Jaipur forest, ex guava and mango, 4 .4 1989.

Distribution : India, West Bengal (Dists : Bankura, Darjiling, Koch Bihar, Jalpaiguri, Maldah, Medinipur, Murshidabad, Puruliya, South 24-Parganas, West Dinajpur), Andhra Pradesh, Bihar, Gujarat, Jammu & Kashmir, Madhya Pradesh, Meghalaya, Orissa, Pondicherry, Tamil Nadu, Tripura, Uttar Pradesh.

136. *Amblyseius (Euseius) coccosocius* Ghai & Menon

1967. *Amblyseius coccosocius* Ghai & Menon, *Oriental Ins.*, 1 : 67-68.
 1968. *Amblyseius (Euseius) coccosocius*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p 80-83.
 1987. *Amblyseius (Euseius) coccosocius*, Gupta, *Rec. zool. surv. India, Occ. Pap.* No. 95, p. 23.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dist. Maldah), Andhra Pradesh, Karnataka, Kerala, Pondicherry, Punjab, Tamil Nadu.

137. *Amblyseius (Euseius) delhiensis* (Narayanan & Kumar).

1960. *Typhlodronus (Amblyseius) delhiensis* Narayanan & Kaur, *Proc. Indian Acad. Sci.*, 51 : 5-7.
 1986. *Amblyseius (Euseius) delhiensis*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, P-82-84.
 1987. *Amblyseius (Euseius) delhiensis*, Gupta, *Rec. zool. Surv. India*, Occ. Pap. No. 95, 23-24.

Diagnosis : Please refer to Gupta (1987).

Material examined : 3(F), West Bengal, Dist. Medinipur, Jhargram, Belkphari, ex custard apple, 11.12.1986.

Distribution : India : West Bengal (Dist. Medinipur), Delhi, Uttar Pradesh.

138. *Amblyseius (Euseius) finlandicus* (Oudemans).
 (Figs. 149, 150)

1915. *Seiulus finlandicus* Oudemans, *Ent. Ber.*, 4 : 183.
 1958. *Amblyseius finlandicus*, Athias-Henriot, *Bull. Soc. Hist. nat. Afr. Nord.*, 49:34-36.
 1986. *Amblyseius (Euseius) finlandicus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 86-88.
 1987. *Amblyseius (Euseius) finlandicus*, Gupta, *Rec. zool. Surv. India*, Occ. Pap. No. 95 p. 24-25.

Diagnosis : Please refer to Gupta (1987).

Material examined : 2 (F), 1(M), West Bengal, Dist. Murshidabad, Berhampur, ex mulberry, 10.10.1986; 1 (F), Dist. Darjiling, Chalsa, ex mango, 24.10.1986; 5 (F), Dist. Maldah, Adina Forest, ex Akashmani, 6.11.1986; 1 (F), Dist. Darjiling, Naxalbari, ex undet. plant, 6.11.1986; 5 (F) Dist. Maldah, Pyasbari, ex mulberry, guava, *Shorea robusta* and wood apple, 7.11.1986; 10(F), Dist. South 24-Parganas, Gosaba, ex paddy, 25.11.1986; 1 (F), Kakdwip, ex miscellaneous plants, 4.12.1986; 2 (F), Dist. Medinipur, Medinipur town, ex citrus, 5.12.1986; 1 (F), Dist. Medinipur, medinipur town, ex citrus, 5.12.1986; 1 (F), Jhargram, ex undet. plant 11.12.1986; 1(F) Dist. Bankura, Bishnupur, ex date palm, 10.4.1989; 2 (F), Dist. Birbhum, Suri, ex coconut, 12.4.1989.

Distribution : India : West Bengal (Dists : Bankura, Birbhum, Darjiling, Maldah, Medinipur, Murshidabad, South 24-Parganas), Bihar, Himachal Pradesh, Jammu and Kashmir, Karnataka, Punjab, Uttar Pradesh. Elsewhere : Pakistan, Japan, Greece, Italy, Netherlands, Scandinavian countries, USSR, Africa, Mexico, South America, North America.

Remarks : This species is an important predatory mite having significant potentiality to control the

pest mite population. It was seen voraciously feeding on *Raoiella india* infesting date plam in Medinipur, feeding *Oligonychus biharensis*, infesting *Shorea robusta* and eggs of *Panonychus citri*, infesting mulberry. The fully engorged adults looked red.

139. *Amblyseius (Euseius) ovalis* (Evans)

1953. *Typhlodromus ovalis* Ervans, *Ann. Mag. nat. Hist.*, 6:458-461.
 1966. *Amblyseius ovalis*, Corpuz & Rimando, *Philip. Agric.*, 50 : 122-124.
 1986. *Amblyseius (Euseius) Ovalis*, Gupta, *Fauna of India (Acari : Mesoshgmata) Family Phytoseiidae*, p. 92-94.
 1987. *Amblyseius (Euseius) ovalis*, Gupta, *Rec. zool. Surv. India*, Occ. Pap No. 95, p. 27-28.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal., Dist Darjiling, Sukna, ex undet plant, 4.11.1986; 2 (F), Naxalbari; ex undet. plant, 6.11.1986; 4 (F), dist. Murshidabad, Kandi, ex coton, rose, *Glycosmis pentaphylla*, 11.11.1986; 1 (F), Dist. South 24-Parganas, Kakdwip, ex undet. plants 2.12. 1986; 1 (F), Namkhana, ex undet. plant, 3.12.1986; 1 (F), Dist. Medinipur, Medinipur town ex undet, plant, 5.12.1986; 1 (F), Dist. South 24-Parganas, Gosaba, ex jackfruit, 6.12.1986; 2 (F) Dist. Medinipur, Kanthi, ex date palm and guava, 7.12.1986; 2 (F), Jhargram, ex. miscellaneous plants, 9.12.1986; 2 (F), Fekoghat, ex eucalpytus and bamboo, 10.12.1986.

Distribution : India : West Bengal (Dist. Darjiling, Medinipur, Murshidabad, South 24-Parganas), Andaman & Nicobar Isls, Bihar, Gujarat, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Pondicherry, Tamil Nadu, Tripura. Elsewhere : Philippines, Taiwan, Malaya, Indonesia, Japan, Hong Kong, Mauritius, New Zealand, Hawaii, Mexico.

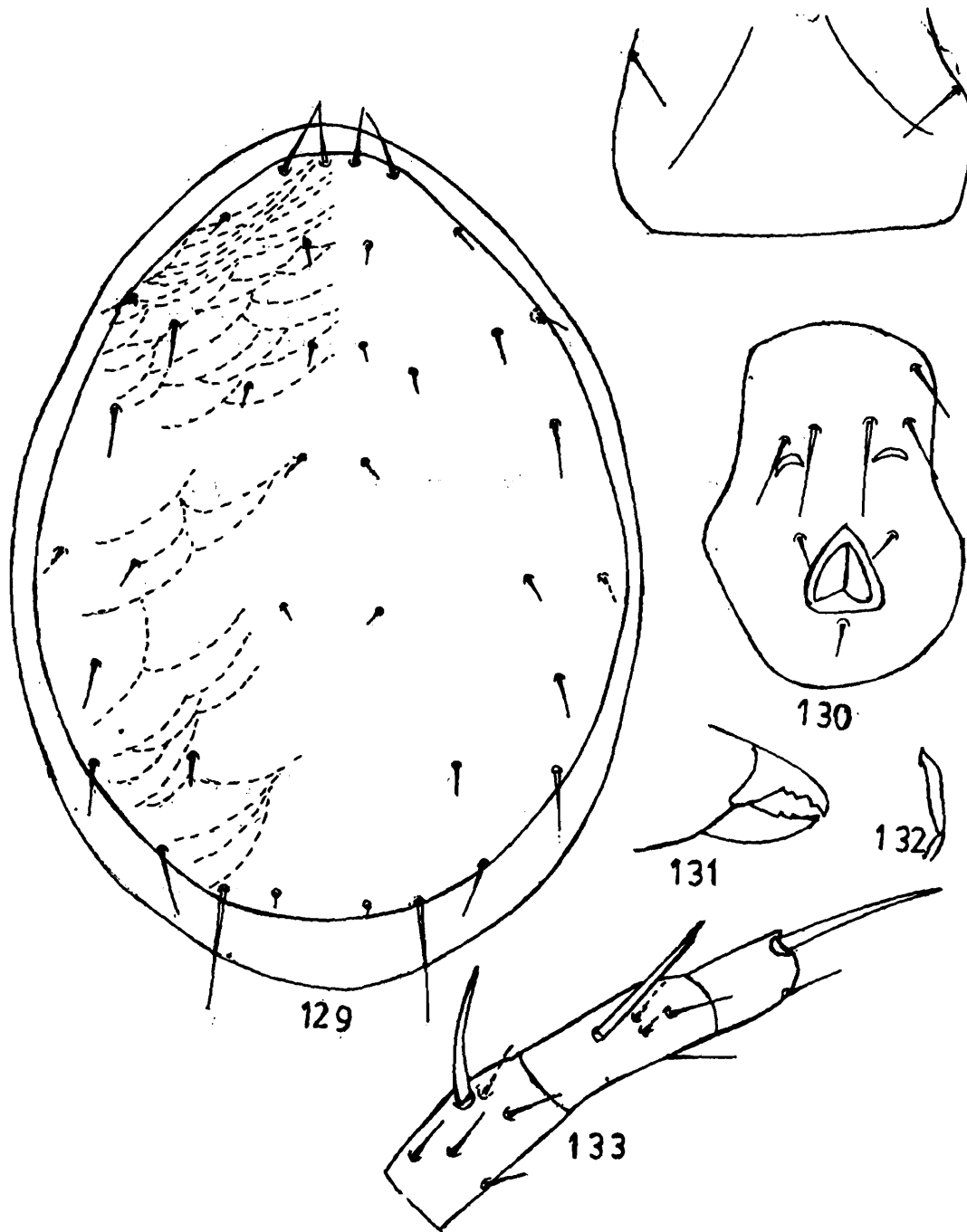
Remarks : This mite though known to be an important predatory mite but in no case during the present study this was seen feeding upon any phytohagous species.

140. *Amblyseius (Euseius) pruni* Gupta.
 (Fig. 147,148)

1970. *Amblyseius sojaensis*, Gupta, *Sci & Cult.*, 31:98.
 1975. *Amblyseius pruni* Gupta, *Internat. J. Acarol.* 1(2):43-44.
 1986. *Amblyseius (Euseius) pruni*, Gupta, *Fauna of India (Acari. Mesostigmata), Family Phytoseiidae*, p. 94-96.
 1987. *Amblyseius (Euseius) pruni*, Gupta, *Rec. zool. Surv. India* Occ. Pap. No. 95, 28-29.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal. Dist. Jalpaiguri, Alipurdwar, ex guava, 12.1.1985; 3 (F), Dist. West Dinajpur, Dalkhola, ex undet. plant, 21.1.1985; 1(F), Dist. Darjiling, Samsing, ex tea, 23.10.1986; 4 (F), Chalsa, ex citrus, 24.10.1986; 3(F), Kalimpong, Agril, Farm, ex sugarcane, 27.10.1986; 2 (F), Kalimpong, ex bamboo, peach, 28.10.1986; 2 (F), dist. Murshidabad, Lalgola, ex undet. plant, 30.10.1986; 4 (F), Kandi, ex *Glycosmis*, 11.11.1986; 3 (F), Dist. south 24-Parganas, Gosaba, ex cotton, 26.11.1986; 1 (F), Dist. Medinipur, Jhargram, ex *Shorea robusta*, 9.12.1986, 4 (M), Dist. Puruliya, Raghunathpur, ex guava, 12.9.1987.



Figs. 129-133 : *Amblyseius (Euseius) ahaiensis* sp. nov. (female) : 129-dorsum, 130-genital and ventrianal shields, 131-chelicera, 132-spermatheca, 133-genu, tibia and basitarsus of leg IV

Distribution : India : West Bengal (Dist. Darjiling, Jalpaiguri, Medinipur, Murshidabad, Puruliya, West Dinajpur), Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Tripura.,

141. *Amblyseius (Euseius) rhododendronis* Gupta

1970. *Amblyseius rhododendronis* Gupta, *Oriental Ins.*, 4 : 187-188.

1986. *Amblyseius (Euseius) rhododendronis*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 96-98.

1987. *Amblyseius (Euseius) rhododendronis*, Gupta, *Rec. zool. Surv. India Occ. Pap. No. 95*, p. 29.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), Dist. Jalpaiguri, Alipurduar Jainti Hills, ex undet. plant, 18.1.1985; 1 (F), Dist. Darjiling, Naxalbari, ex undet. plant, 3.11.1986; 2 (F), Sukna, ex *Shorea robusta* 4.11.1986.

Distribution : India : West Bengal (Dists. Darjiling, Jalpaiguri), Tripura.

142. *Amblyseius (Euseius) sacchari* Ghai & menon

1967. *Amblyseius sacchari* Ghai Menon, *Oriental Ins.*, 1 : 75-76.

1986. *Amblyseius (Euseius) sacchari*, Gupta, *Fauna of India. (Acari : Mesostigmata) Family Phytoseiidae*, p. 98-100.

1987. *Amblyseius (Euseius) Sacchari*, Gupta, *Rec. zool. Surv. India. Occ. pap. No. 95*, p. 29-30.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal : Dist. Darjiling, Darjiling Botanical Garden, ex undet. plant, 30.10.1986; 2 (F) Dist. Murshidabad, Kandi, ex cotton, 11.11.1986.

Distribution : India : West Bengal (Darjiling, Murshidabad), Gujarat, Himachal Pradesh, Karnataka, Punjab.

143. *Amblyseius (Euseius) ahaiensis* sp.
(Figs 129-133)

Female : Dorsal shield 302 long 212 wide, reticulate with 17 pairs of setae j1, j3 and Z5 being slightly longer, all other setae smaller. The measurements of setae : j1-29, j4-9, j6-11, z2-9, S2-16, S4-20, S5-22, Z5-63, z5-9, Z4-12, r3, R1-11 each. Sternal shield not properly discernible, however, 3 pairs of sternal stae distinct. Genital shield as shaped with a pair of setae. Ventrianal shield pitcher-shaped as figured, 76 long, 67 wide, 3, pairs of preanal setae and a pair of preanal pores present, para and postanal setae present as usual. 4 pairs of setae present around ventrianal shield. Fixed digit of chelicera with 3 teeth, movable digit with 2 teeth. Spermatheca as figured. Macrosetae on leg IV : genu -33, tibia-31, basitarsus-44, all with spatulate tip. Leg chaetotactic formula not discernible.

Male : Unknown

Holotype (F), India : West Bengal, Dist. Maldah, Ahaio ex custard apple, 8.11.1986. Paratype 1 (F), data same as for holotype.

Remarks : This new species is very close to *Amblyseius (Euseius) pruni* Gupta (1975) and *A. (E) finlandicus* (Oudemans, 1915) so far as their dorsal chaetotaxy and relative length of setae are concerned but this new species can be easily separated from both of them in the shape and structure of spermatheca.

Subgenus *Neoseiulus* Hughes

1948. *Neoseiulus* Hughes, *The mites associated with stored food products*. Minst. fish. fd. London. H.M Stationery Office, p. 141.
 1986. *Neoseiulus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 100.
 1987. *Neoseiulus*, Gupta, *Rec. zool. Surv. India, Occ. Pap No. 95*, p. 33.

Key to the species, of subgenus *Neoseiulus* known to occur on plants in West Bengal

1. Setae on dorsal shield of same length or uniformly long, none greatly longer than others 2
- Some setae on dorsal shield appreciably long, others being small or very small 3
2. All setae very long except S5 which is minute *longispinosus*
- All setae of uniform length *fallacis*
3. Dorsal shield narrower, much longer than wide 4
- Dorsal shield oval *indicus*
4. Sternal shield with post lateral angulation *paspalivorus*
- Sternal shield without postlateral angulation *aceriae*

144. *Amblyseius (Neoseiulus) aceriae* Gupta

1975. *Amblyseius aceriae* Gupta, *Internat. J. Acarol.*, 1(2) : 30-31.
 1986. *Amblyseius (Neoseiulus) aceriae*, Gupta, *Fauna of India (Acari Mesostigmata) Family Phytoseiidae*, p. 102-103.
 1987. *Amblyseius (Neoseiulus) aceriae*, Gupta, *Rec. zool. Surv. India, Occ. Pap. No. 95*, p./ 34.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dist. Maldah), Gujarat.

145. *Amblyseius (Neoseiulus) indicus* (Narayanan & Kaur)

1960. *Typhlodromous (Amblyseius) indicus*, Nnarayan & Kaur, *Proc. Indian Acad. Sci.* 51 B : 2-5
 1970. *Amblyseius indicus*, Gupta, *Sci & Cult.* 36 : 98.
 1986. *Amblyseius (Neoseiulus) indicus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, P.112-114.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dist. Hugli), New Delhi, Punjab.

146. *Amblyseius (Neoseiulus) fallacis* (Garman)

1948. *Iphidulus fallacis* Garman, *Bull. Conn. Agr. Exp. Sta.* 520:13.
 1958. *Amblyseius fallacis*, Athias - Henriot, *Bull. Soc. Hist. nat. Afr. Nord.*, 49 : 34.
 1970. *Ambluyseius fallacis*, Gupta, *Sci. & Cult.*, 36 : 98.
 1986. *Amblyseius (Neoseiulus) fallacis*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 109-111.
 1987. *Amblysciuis (Neoseiulus) fallacis*, Gupta, *Rec. zool. Surv. India, Occ. Pap.* No. 95, p. 37

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dist. North 24-Parganas), Assam, Bihar, Haryana, Punjab, Tamil Nadu. Elsewhere : Algeria, Australia, North and Central America, Canada, Caribbean, Isls.

Remarks : This mite was seen effectively feeding on eggs of *Schizotetranychus andropogoni* infesting paddy in North 24-Pargana Dist.

147. *Amblyseius (Neoseiulus) longispinosus* (Evans)

1952. *Typhlodromus longispinosus* Evans, *Ann. mag. nat. Hist.*, (12) 5 : 413-416.
 1970. *Amblyseius longispinosus*, Gupta, *Sci & Cult.*, 36 : 98.
 1986. *Amblyseius (Neoseiulus) longispinosus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 116-117.
 1987. *Amblyseius (Neoseiulus) longispinosus*, Gupta, *Rec. zool. Surv. India, Occ. Pap.* No. 95, 39-40.

Diagnosis : Please refer to Gupta (1987).

Material examined: 2 (F), West Bengal, Dist. Puruliya. Manbazar, ex cstor, 16.9.1987 ; 2 (F), Dist. Barddhaman, Khana, ex.bamboo, 27.9.1987.

Distribution : India : West Bengal (Dists. Barddhaman, Calcutta, Puruliya), Andaman and Nicobar Is., Bihar, Orissa, Pondicherry, Tamil Nadu, Uttar Pradesh. Elsewhere : Philippines, Taiwan, Indonesia, Malayasia, Japan, Hong Kong, New Zealand, Jamaica, Hawaii, South America.

148. *Amblyseius (Neoseiulus) paspalivorus* (De Leon)

1957. *Typhlodormus paspalivorus* De leon, *Fla. Ent.*, 40 : 143-144.
 1984. *Amblyseius (Neoseiulus) paspalivorus*, Ghai & Gupta, *Bull. zool. Surv. India*, 6 : 173-174.
 1986. *Amblyseius (Neoseiulus) paspalivorus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 119-120.
 1987. *Amblyseius (Neoseiulus) paspalivorus*, Gupta, *Rec. zool. Surv. India*, Occ. Paper. No. 95, p. 40-41.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal : Dist. South 24-Parganas, Basanti, ex Tulsi, 26.11.1986.

Distribution : India : West Bengal (Dist. Darjiling, South 24-Parganas, Andhra Pradesh, Delhi, Rajasthan. Elsewhere : Philippines, U.S.A., Jamaica.

Subgenus *Paraphytoseius* Swirski & Shechter

1961. *Paraphytoseius* Swirski & Shechter, *Israel J. Agric. Res.*, 11 : 113.
 1986. *Paraphytoseius*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 122.
 1987. *Paraphytoseius*, Gupta, *Rec. zool. Surv. India*, Occ. Pap. No. 95, p. 41.

149. *Amblyseius (Paraphytoseius) multidentatus* (Swirski & Shechter).

1960. *Typhlodromus (Amblyseius) orientalis* Narayanan, Kaur & Ghai, *Proc. Nat. Inst. Sci.*, 26B : 394.
 1961. *Paraphytoseius multidentatus* Swirski & Shechter, *Israel J. Agric. Res.*, 11(2) 114-116.
 1986. *Amblyseius (Paraphytoseius) multidentatus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 123-126.
 1987. *Amblyseius (Paraphytoseius) multidentatus*, Gupta *Rec. zool. Surv. India*, Occ. Pap., No. 95, p. 46-47.

Diagnosis : Please refer to Gupta (1987).

Materials examined : 1 (F), West Bengal : Koch Bihar, Chelapather, ex brinjal, 9.11.1985; 2 (M), 10 Dist. Jalpaiguri, Jaldapara Sanctuary, ex undet. Plant, 14.1.1985. 1(F), Alipurduar, ex brinjal, 15.1.1985; 3 (F), Dist. Darjiling, Naxalbari, ex undet. Plant, 3. 11. 1986; 1 (F), Naxalbari, ex undet, plant, 6.11.1986; 1 (F), Dist. Maldah, Ahio, ex. brinjal, 8.11.1986, 2 (F), Dist. Medinipur, Garbeta, ex Jackfruit, 6.12.1986, 1 (F), Kanthi, ex miscellaneous plant, 7.12.1986; 1 (F), Dist. Bankura, Tantipukur, ex sweet gourd, 5.4. 1989.

Distribution : India : West Bengal (Dists : Bankura, Darjiling, Jalpaiguri, Koch Bihar, Maldah, Medinipur), Andaman and Nicobar Isls., Andhra Pradesh, Assam, Bihar, Karnataka, Maharashtra, Meghalaya, Tripura, Tamil Nadu, Uttar Pradesh. Elsewhere : Pakistan, Thailand, Philippines, Malaya, Nigeria, Madagascar, Hong Kong.

Subgenus *Proprioseiopsis* Muma

1961. *Proprioseiopsis* Muma, *Bull. Fla. St. Mus.*, 5 (7) : 277. (Type only)
 1968. *Proprioseiopsis* Muma & Denmark, *Fla. Ent.* 51 : 231.

150. *Amblyseius (Proprioseiopsis) peltatus* Vander Merwe.

1968. *Amblyseius (Amblyseius) peltatus* Vander Merwe, *Ent. Mem. Dep. Agr. Tech. Serv. Rep. S. Afr.*, **18** : 119.
 1970. *Amblyseius rosellus*, Gupta, *Sci. & Cult.*, **36** : 98.
 1986. *Amblyseius (Proprioseiopsis) peltatus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p 134-136.
 1987. *Amblyseius (Proprioseiopsis) peltatus*, Gupta, *Rec. zool. Surv. India Occ. Pap. No 95*, p 49-50.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dist. Jalpaiguri), outside India Thailand, Madagascar, South Africa.

Subgenus *Typhlodromalus* Muma

1961. *Amblyseius (Typhlodromalus)* Muma, *Bull. Fla. St. Mus.*, **5** (7) : 288.
 1967. *Typhlodromalus*, DeLeon, in *Studies on the fauna of Suriname and other Guyanas*, p. 87.

Key to the species of Subgenus *Typhlodromalus* known to occur on plants in West Bengal

1. Setae j3, z2-z4 and s4 moderately of same length*kalimpongensis*
 Setae j3 and s4 significantly longer than z2 & z4*rosica* sp.n.

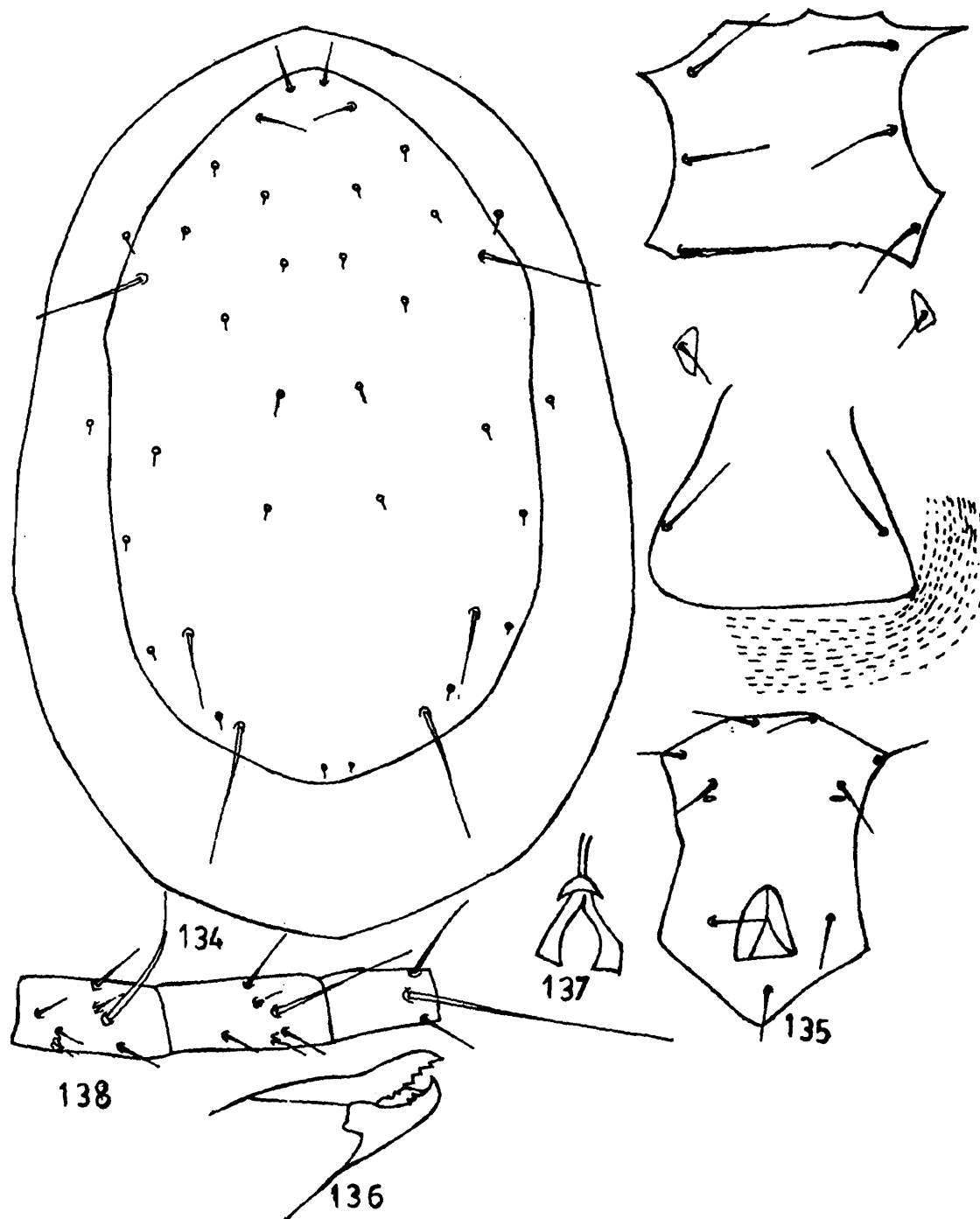
151. *Amblyseius (Typhlodromalus) kalimpongensis* Gupta.

1969. *Amblyseius Kalimpongensis* Gupta, *Bull. Ent. Soc. India*, **10** : 128-129.
 1987. *Amblyseius (Typhlodromalus) kalimpongensis*, Gupta, *Rec. zool. Surv. India*, Oec. Pap No. 95, p. 53-54.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal, Dist. Jalpaiguri, Alipurduar, ex Ficus, 12.1.1985; 2 (F), dist. Medinipur, Jhargram, Belpahari, ex coreander, 11.12.1986; 1 (F), Dist. Birbhum, Suri, ex mango, 12.4.1989; 3 (F), Dist. Puruliya, Punch, ex Datura, 30.3.1989; 5 (F), Matha, ex miscellaneous plant and black berry, 31.3.1989.

Distribution : India, West Bengal (Dists : Birbhum, Darjiling, Jalpaiguri, Medinipur, Puruliya, Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Orissa, Tamil Nadu, Uttar Pradesh).



Figs. 134-138 : *Amblyseius (Typhlodromalus) rosica* sp. nov. (female) : 134-dorsum, 135-ventral plates, 136-chelicera, 137-spermatheca, 138-genu, tibia and basitarsus of leg IV

152. *Amblyseius (Typhlodromalus) rosica* sp. nov.
(Figs. 134-138)

Female : Dorsal shield smooth, non-reticulate, 314 long, 197 wide with 17 pairs of setae, mostly smooth and small excepting j3, s4, Z4, Z5 and j1 which are relatively longer. The measurements of setae : j1-22, j4-9, j6-9, J2-14, J5-8, J3-25, z2-9, z4-9, s4-54, Z1-11, S2-13, S4-9, S5-9, Z5-67, z5-9, Z4-40, r3-13, R1-7. Sternal shield as figured, 67 long 78 wide, with 3 pairs of sternal setae; posterior margin of shield mostly wavy; metasternal plates with setae. Genital shield 73 wide with a pair of setae. Transverse striation present between genital and ventrianal shields and longitudinal striation present lateral to these shields. Ventrianal shield shaped as figured, 94 long, 60 wide, with 3 pairs of setae; metapodal plates 2 paired; both being 14 long; 4 pairs of setae present around ventrianal shield; JV5-38 long. Fixed digit of chelicera multidentate with a *pilus dentilis*; movable digit with 3 sharp teeth. Spermatheca as figured. Macrosetae on genu IV-58, tibia IV-38, basitarsus IV-78, all being pointed. Leg chaetotactic formula : genu II $2 \frac{2}{0} \frac{2}{0} 1$, tibia II $1 \frac{1}{1} \frac{2}{1} 1$, genu III $1 \frac{2}{1} \frac{2}{0} 1$, tibia III $1 \frac{1}{1} \frac{2}{1} 1$

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Darjiling Sarbani Garden, ex rose, 2.11.1986.

Remarks : This new species is close to *Amblyseius (Typhlodromalus) eucalypticus* Gupta (1978) but differs in having Z4 being reasonably longer, almost touching base of S5 (Z4 never touches base of S5 in *eucalypticus*) and also preanal setae being much longer (shorter in *eucalypticus*). Besides, the spermatheca of the two species also differs.

Subgenus *Typhlodromips* De Leon.

1959. *Typhlodromips* DeLeon, *Net. News*, 70 : 133 (in part, not type species).

1965. *Typhlodromips*, DeLeon, *Proc. ent. Soc. Wash.*, 67 (1) : 23

Key to the species of *Typhlodromips* known to occur on plants in West Bengal

1. Besides Z5 and Z4, the other setae being subequal 2
- Besides Z5 and Z4 there are other long setae 5
2. Setae Z4 quite long at least 3 times the length of S4 3
- Setae Z4 not so long 4
3. Cervix of spermatheca saucer shaped *syzygii*
- Cervix of spermatheca elongated, flask-shaped *suknaensis*
4. Spermatheca as in figure 151 *officinaria*

- Spermatheca as in figure 152.....*polyantheae*
- 5. Setae z2 and z4 unequal... ..*potentillae*
- Setae z2 and z4 equal 6
- 6. Spermatheca with bowl shaped cervix, small platelets absent around ventrinal shield ...*sijiensis*
- Spermatheca with flask-shaped cervix, small platelets present around ventrinal shield
.....*crotalariae*

153. *Amblyseius (Typhlodromips) crotalariae* Gupta

- 1977. *Amblyseius crotalariae* Gupta, *Entomologists mon.Mag.*, 112:53-55.
- 1986. *Amblyseius (Typhlodromips) crotalariae*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 162-164.
- 1987. *Amblyseius (Typhlodromips) crotalariae*, Gupta, *Rec. zool. Surv. India, Occ. Pap. No. 95*, 60.

Diagnosis : Please refer to Gupta (1987).

Material examined : 5 (F), West Bengal : Dist. Jalpaiguri, Jaldapara Sanctuary, ex undet. plant, 14.1.1985; 1 (F), Rajabhatkhawa, ex undet. plant, 16.1.1985; 4 (F), dist. Darjiling, Kalimpong Agril. Farm, ex squash, 27.10.1986; 2 (F), Mirik, ex solanaceous plant, 1.11.1986; 12 (F), Dist. Darjiling, Naxalbari, ex undet. plant, 3.11.1986.

Distribution : India : West Bengal (dists. Darjiling, Jalpaiguri), Assam, Tripura.

154. *Amblyseius (Typhlodromips) officinaria* Gupta
(Fig. 151)

- 1975. *Amblyseius (Typhlodromips) officinaria* Gupta, *Internat. J. Acarol.*, 1(2) : 39.
- 1986. *Amblyseius (Typhlodromips) officinaria*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 176-177.
- 1987. *Amblyseius (Typhlodromips) officinaria*, Gupta, *Rec. zool. Surv. India, Occ. Pap. No. 95*, p. 65.

Diagnosis : Please refer to Gupta (1987)

Distribution : India : West Bengal (Dists : Hugli, North 24-Parganas).

155. *Amblyseius (Typhlodromips) polyantheae* Gupta
(Fig. 152)

- 1975. *Amblyseius (Typhlodromips) polyantheae* Gupta, *Internat. J. Acarol.*, 1(2) : 42-43.
- 1986. *Amblyseius (Typhlodromips) polyantheae*, Gupta *Fauna of India, (Acari : Mesostigmata) Family Phytoseiidae*, p. 178.
- 1987. *Amblyseius (Typhlodromips) polyantheae*, Gupta, *Rec. zool. Surv. India, Occ. Pap. No. 95*, p. 65-66.

Diagnosis : Please refer to Gupta (1987).

Material examined : 2 (F), West Bengal, dist. Darjiling, Mancbhanjan, ex undet. plant, 31.10.1986; 3 (F) , Darjiling, Sarbari Garden, ex ornamental plant, 2.11.1986.

Distribution : India : West Bengal (Dists : Darjiling, North 24-Parganas).

156. *Amblyseius (Typhlodromips) potentillae* (Garman)

1958. *Amblyseius potentillae* Garman, *Ann. ent. Soc. Amer.*, 51 : 76-77.

1986. *Amblyseius (Typhlodromips) potentillae*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 180-182.

1987. *Amblyseius (Typhlodromips) potentillae*, Gupta, *Rec. zool. Surv. India*, Occ. Pap. No. 95, p. 66.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dists. Bankura, Calcutta, Haora, Nadia) Jammu & Kashmir. Elsewhere : Greece, Holland, Italy, Netherlands, U.S.A.

157. *Amblyseius (Typhlodromips) suknaensis* Gupta.

1978. *Amblyseius suknaensis* Gupta, *Oriental Ins.*, 4 : 185-186.

1986. *Amblyseius (Typhlodromips) suknaensis*, Gupta, *Rec. zool. Surv. India*, Occ. Pap. No. 95, p. 67.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal, Dist. Koch Bihar, Chelapather, ex undet. plant, 9.1.1985; 1 (F), Dist. Jalpaiguri, Alipurduar, ex undet plnt, 12.1.1985; 1 (F), Dist. Darjiling, Kalimpong, ex undet, plant, 17.10.1986; 2 (F), 1 (M) Dist. Murshidabad, Kandi, ex *Glycosmis* sp., 24.10.1986; 1 (F) Dist. Maldah. Malda town, ex mango, 5.11.1986; 2 (F), Dist. Darjiling, Naxalbari, ex undet, plant, 6.11.1986; 1 (F), Dist. Maldah, Ahio, ex.brinjal, 8.11.1986; 1 (F), Dist. Murshidabad, Baharampur, ex mulberry, 10.11.1986, 1 (F), Kandi, ex palm, 11.11.1986, 1 (F), Dist. South 24 Parganas, Diamond Harbour, ex Siuli, 2.12.1986; 1 (F), Dist. Medinipur, ex bamboo, 5.12.1986; 1 (F), Medinipur, ex. citurs, 6.12.1986; 2 (F), Jhargram, ex cashewnut, 9.12.1986; 1 (F), Jhargram, ex *Azadirachta indica*, 10.12.1986; 1 (F), Dist. Puruliya, Jhalda, ex.wood apple, 15.11.1987.

Distribution : India : West Bengal (Dists : Darjiling, Jalpaiguri, Koch bihar, Maldah, Medinipur, Murshidabad, Puruliya South 24-Parganas), Andaman & Nicobar Is., Assam, Kerala.

158. *Amblyseius (Typhlodromips) sijiensis* Gupta

1986. *Amblyseius (Typhlodromips) sijiensis* Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 183-185.

1987. *Amblyseius (Typhlodromips) sijiensis*, Gupta, *Rec. zool. Surv. India*, Occ. Pap. No. 95, p. 71.

Diagnosis : Please refer to Gupta (1987).

Material examined : 3 (F), West Bengal, Dist. Jalpaiguri, ex undet. plant, 14.1.1985.

Distribution : India : West Bengal (Dist. Jalpaiguri), Arunachal Pradesh.

Remarks : It is the first record of this species from West Bengal.

159. *Amblyseius (Typhlodromips) syzygii* Gupta

1975. *Amblyseius syzygii* Gupta, *Internat. J. Acarol.*, 1 (2) : 44-45.

1986. *Amblyseius (Typhlodromips) syzygii*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 188-190.

1987. *Amblyseius (Typhlodromips) syzygii*, Gupta, *Rec. zool. Surv. India, Occ. Pap. No. 95*, p. 68.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal, Dist. Jalpaiguri, Alipurduar, ex undet, plant, 12.1.1985; 1 (F), Buxa forest, ex.undet, plant, 17.1.1985; 1 (F), Dist. Maldah, Pyasbari, ex mulberry, 7.11.1986; 1 (F), Dist. Murshidabad, Lalgola, ex undet plant, 10.11.1986; 1 (F), Dist. Medinipur, Garbeta, ex miscellaneous plant, 6.12.1986; 1 (F), Jhargram, ex *Shorea robusta*, 9.12.1986. 1 (F), Jhargram, ex *Shorea robusta*, 9.12.1986. 1 (F), Jhargram. *Azadirachta indica*, 10.12.1986.

Distribution : India : West Bengal (Jalpaiguri, Maldah, Medinipur, Murshidabad).

Genus *Indoseiulus* Ehara

1969. *Indoseius* Ghai & Menon, *Oriental Ins.*, 3 : 348.

1982. *Indoseiulus* Ehara, *Appl. ent. Zool.*, 17 : 42-43.

160. *Indoseiulus ricini* (Ghai & Menon)

1969. *Indoseius ricini*, Ghai & Menon, *Oriental Ins.*, 3:348.

1982. *Indoseiulus ricini*, Ehara, *Appl. Ent. Zool.*, 17 : 42-43.

1986. *Indoseiulus ricini*, Gupta, *Fauna of India (Acari. Mesostigmata) Family Phytoseiidae*, p. 195-196.

1987. *Indoseiulus ricini*, Gupta, *Rec. zool. Surv. India Occ. Pap. No. 95*, p. 71-72.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal : Dist. Nadia, Krishnanagar, ex sweet gourd, 3.4.1989.

Distribution : India : West Bengal (Dist. Nadia), Arunachal, Pradesh, Bihar, Delhi, Gujarat, Himachal Pradesh, Tamil Nadu, Uttar Pradesh.

Genus *Iphiseius* Berlese

1916. *Iphiseius* Berlese, *Redia*, 12 : 33.

1921. *Iphiseius*, Berlese, *Redia* 14 : 95.

Remarks : No species of this genus was earlier known from West Bengal.

161. *Iphiseius andamanicus* Gupta

1980. *Iphiseius andamanicus* Gupta *Entomologists, mon Mag.*, 115 : 213-214.

1986. *Iphiseius (Iphiseius) andamanicus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 198-200.

1987. *Iphiseius (Iphiseius) andamanicus*, Gupta, *Rec. zool. Surv. India, Occ. Pap. No. 95*, p. 73.

Diagnosis : Please refer to Gupta (1987)

Material examined : 3 (F), West Bengal, Dist. South 24 Parganas, Sajnakhali, ex *Suaeda nudiflora*, 28.10.1986; 1(F), 1(M), Sudhanyakhali, ex black berry, 29.10.1986.

Distribution : India : West Bengal (Dist. South 24 Parganas), Andaman and Nicobar Isls., Karnataka.

Remarks : Hitherto this species was unknown from West Bengal.

Genus *Paraamblyseius* Muma

1962. *Paraamblyseius* Muma, *Fla. Ent.*, 45 : 8.

Key to the species of *Paraamblyseius* known to occur on plants in West Bengal.

1. Metasternal plate round, J2 longer than Z1, Z4 shorter than the distance between Z4 and Z5 *mumai*
- Metasternal plate kidney shaped, J2 sub- equal to Z1 Z4 reaches base of Z5. *fragariae*

162. *Paraamblyseius fragariae* Gupta

1980. *Paraamblyseius fragariae* Gupta, *Entomologists, mon. Mag.*, 115 : 215-216.

1986. *Paraamblyseius fragariae*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 204-206.

1987. *Paraamblyseius fragariae*, Gupta, *Rec. zool. Surv. India Occ. Pap. No. 95*, p. 74.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dist. Darjiling), Arunachal Pradesh.

163. *Paraamblyseius mumai* Gupta

1980. *Paraamblyseius mumai* Gupta, *Entomologists mon. Mag.*, 116 : 33-34.

1986. *Paraamblyseius mumai*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 206.

1987. *Paraamblyseius mumai*, Gupta, *Rec. zool. Surv. India, Occ. Pap., No. 95*, p. 75.

Diagnosis : Please refer to Gupta (1987).

Material examined : West Bengal : Dist. Darjiling, Khumani, ex undet, plant, 25.10.1986; 1(F), Darjiling Botanical Garden, ex rose, 30.10.1986; 2(F), 1(M), Manebhanjan, ex undet. plant, 30.10.1986; 1 (F), Dist. Murshidabad, Lalgola, ex undet. plant, 10.11.1986.

Distribution : India West Bengal (Dist. : Darjiling, Murshidabad, Meghalaya.

Remarks : No report of occurrence of this species from West Bengal was earlier known.

Subfamily PHYTOSEIINAE Berlese

1916. *Phytoseiinae* Berlese, *Redia*, 112 : 11.

1961. *Phytoseiinae*, Muma, *Bull Fla. St. Mus.* 5 (7) : 292.

Key to the genera of Phytoseiinae known to occur on plants in West Bengal

- 1. Seta r3 on dorsal shield, genu II with 7 setae, genu III with 6 setae *Phytoseius*
- Seta r3 on lateral integument, genu II with 6 setae, gen III with 6 or 7 setae *Thyphlodromus*

Genus *Phytoseius* Ribaga

1904. *Phytoseius* Ribaga, *Riv. Path Veg.*, 10 : 177.

1951. *Phytoseius* Nesbitt, *Zool. Verh.*, 12 : 16.

Key to the subgenera of *Phytoseius*

- 1. Seta R1 present *Pennaseius*
- Seta R1 absent *Phytoseius*

Subgenus *Pennaseius* Pritchard & Baker

1962. *Pennaseius* Pritchard & Baker, *Hilgardia*, 33 : 223.

Key to the species of subgenus *Pennaseius* known to occur on plants in West Bengal

- 1. Dorsal shield notched at the level of r3 *kapuri*
- Dorsal shield not notched at the level or r3 *minutus*

164. *Phytoseius (Pennaseius) kapuri* Gupta

1969. *Phytoseius (Phytoseius) kapuri* Gupta, *Israel J. Agric. Res.*, 19 : 115-117.

1986. *Phytoseius (Pennaseius) kapuri*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 221-223.

1987. *Phytoseius (Pennaseius) kapuri*, Gupta, *Rec. zool. Surv. India. Occ.*, Pap No. 95, 81-82.

Diagnosis : Please refer to gupta (1987).

Material examined : 2 (F), West Bengal : Dist. West Dinajpur, Dalkhola, ex undet. plant, 20.1.1985, 1 (F), Dist. Darjiling, Kalimpong, ex citrus, 27.10.1986; 1 (F), Dist. Murshidabad, Jiyaganj, ex mango, 10.11.1986; 1 (F) 1(M) Dist. South 24 Parganas, ex Tulsi, 26.11.1986; 1 (F), Dist. South 24-Parganas, Gosaba, ex undet plant, 30.11.1986; 4 (F), Dist. Medinipur, Medinipur town, ex *Shorea robusta*, 5.12.1986; 2 (M), same locality, ex sapota, 5.12.1986; 4 (F), same locality, ex Hing, 5.12.1986; 1 (F), Contai, ex paddy, 7.12.1986; 4 (F), Jhagram, ex undet. plant, 11.12.1986; 2 (F), Dist. Bankura, Jairambati, ex sweet gourd, 7.4.1989; 1 (F), Jairambati, ex sweet gourd, 7.4.1989; 1 (F), Bishnupur, ex date palm, 10.4.1989; 1, Dist. Birbhum Suri, ex sirish, 13.4.1989.

Distribution : India : West Bengal (Dist. Bankura, Birbhum, Darjiling, Mednipur, Murshidabad, South 24 Parganas, West Dinajpur), Andaman Isls. Bihar, Gujarat, Jammu and Kashmir, Kerala, Madhya Pradesh, Orissa, Pondicherry, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh.

165. *Phytoseius (Pennaseius) minutus* Narayanan, Kaur & Ghai,

1960. *Phytoseus minutus* Narayanan, Kaur & Ghai, *Proc. nat. Inst. Sci.* 26 B (6) : 391-392.

1986. *Phytoseius (Pennaseius) minutus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 223-225.

1987. *Phytoseius (Pennaseius) minutus*, Gupta, *Rec. zool. sSrv. India, Occ. Pap. No. 95*, p. 82-83.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dist. Haora), Bihar, Delhi, Himachal Pradesh, Puñjab.

Subgenus *Phytoseius* Ribaga

1904. *Phytoseius* Ribaga, *Riv.Path. Veg.*, 10 : 177.

Key to the species of subgenus *Phytoseius* known to occur on plants in West Bengal.

1. Macroseta absent on leg IV *intermedius*
- Macroseta present on leg IV 2
2. Setae s4 and Z4 flat and divided 3
- Setae s4 and Z4 not flat and divided 4
3. Basitarsal macroseta one and half times as long as that on genu *maldahaensis*
- Basitarsal macroseta only slightly longer than that on genu *crinitus*

- 4. Genu IV without macroseta *roseus*
- Genu IV with macroseta 5
- 5. Seta s4 longer than s6 8
- Seta s4 as long as or shorter than s6 6
- 6. Seta j3 only slightly longer than z2 *meyerae*
- Seta j3 much longer than z2 7
- 7. Macroseta on genu IV and basitarsus IV equal *indicus*
- Macroseta on genu IV and basitarsus IV unequal *swirskii*
- 8. Seta z3 shorter than j1 *rachelae*
- Seta z3 longer or long as j1 *macropilis*

166. *Phytoseius (Phytoseius) crinitus* Swirski & Shechter.

- 1961. *Phytoseius (Dubininellus) crinitus* Swirski & Shechter *Israel J. Agric. Res.*, 11 : 102-104.
- 1985. *Phytoseius (Phytoseius) crinitus*, Ray & Gupta, *Rec. zool. surv. India*, 80 : 303-304.
- 1986. *Phytoseius (Phytoseius) crinitus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 232-234.
- 1987. *Phytoseius (Phytoseius) crinitus*, Gupta, *Rec. zool. Surv. India*, Occ. Pap No. 95, p. 87-88.

Diagnosis : Please refer to Gupta (1987)

Material examined : 1 (F), West Bengal,, Dist. Darjiling, Samsing Tea Estate, ex undet. plant, 22.10.1986; Chalsa, ex palm, 24,10.1986; 1 (F), Khumani, ex undet. plant, 25.10.1986.

Distribution : India : West Bengal (Dist. Darjiling), Assam. Elsewhere : Hong Kong, Japan, Madagascar.

Remarks : This forms the first report from West Bengal.

167. *Phytoseius (Phytoseius) indicus* Bhattacharyya

- 1969. *Phytoseius (Dubininellus) indicus* Bhattacharyya, *J. Bom. Nat. Hist. Soc.*, 65 : 679-680.
- 1986. *Phytoseius (Phytoseius) indicus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 234-236.
- 1987. *Phytoseius (Phytoseius) indicus*, Gupta, *Rec. zool. Surv. India*, Occ. Pap. No. 95, p. 92-93.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dists. Haora, South 24-Parganas).

168. *Phytoseius (Phytoseius) intermedius* Evans & Macfarlane

1962. *Phytoseius (Dubininellus) intermedius* Evans & Macfarlane, *Ann. mag. Nat. Hist.*, (13) 4 : 587-588.

1970. *Phytoseius (Dubininellus) intermedius*, Gupta, *Sci. & Cult.*, 36 : 98.

1986. *Phytoseius (Phytoseius) intermedius*, Gupta, *Fauna of India. (Acari : Mesostigmata) Family Phytoseiidae*, p. 236-238.

1987. *Phytoseius (Phytoseius) intermedius*, Gupta, *Rec. zool. Surv. India*, Occ. Pap. No. 95, p. 89.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dist. Darjiling), Andaman Isl., Uttar Pradesh. Elsewhere : Pakistan, Japan, Belgian congo, South Rhodesia, Madagascar.

169. *Phytoseius (Phytoseius) macropilis* (Banks)

1909. *Sejuis macropilis* Banks, *Proc. Ent. Soc. Wsh.*, 11:135.

1960. *Phytoseius macropilis* Narayanan, Kaur & Ghai, *Proc. nat. Inst. Sci.*, 26B (6) 386-387.

1986. *Phytoseius (Phytoseius) macropilis*, Gupta *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 240-242.

1987. *Phytoseius (Phytoseius) macropilis*, Gupta, *Rec. zool. Surv. India*, Occ Pap. No. 95, p. 90-91.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal : Dist. Darjiling, Samsing Tea Estate, ex undet. plant, 22.10.1986.

Distribution : India : West Bengal (Darjiling), Arunachal Pradesh, Delhi, Orissa. Elsewhere : Caribbean isls., Mexico, British West Indis, Panama Canal zone U.S.A., U. S. S. R, U.K., Australia, Canary Isl., New Burnswick.

170. *Phytoseius (Phytoseius) meyeræ* Gupta

1977. *Phytoseius (Dubininellus) meyeræ* Gupta, *Indian J. Acar.*, 2 : 7.

1986. *Phytoseius (Phytoseius) meyeræ*, Gupta, *Fauna of India (Acari : Mesostigmata) Fam. Phytoseiidae*, p. 244,

1987. *Phytoseius (Phytoseius) meyeræ*, Gupta, *Rec. zool. Surv. India*. Occ. Pap. No. 95, p. 91-92.

Diagnosis : Pleaser refer to Gupta (1987).

Material examined : 1 (F), West Bengal, Dist. Darjiling, Kalimpong, ex bamboo, 28.10.1986.

Distribution : India : West Bengal (Dist. Darjiling) Assam, Meghalaya.

Remarks : Earlier, this mite was unknown from West Bengal.

171. *Phytoseius (Phytoseius) rachelae* Swirski & Shechter.

1961. *Phytoseius (Dubininellus) Rachelae* Swirski & Shechter, *Israel J. Agril. Res.*, 11 : 108-109.
 1980. *Phytoseius (Dubiniellus) rachelae*, Gupta, *Bull zool. Surv. India*, 3 : 52.
 1986. *Phytoseius (Phytoseius) rachelae*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 94.
 1987. *Phytoseius (Phytoseius) rachelae*, Gupta, *Rec. zool. Surv. India*, Occ. Pap. No. 95, p. 94.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1(F) , West Bengal : Dist. Darjiling, Samsing , ex undet. plant, 22.10.1986.

Distribution : India : West Bengal (Darjiling), Kerala. Elsewhere : Hong Kong.

Remarks : Earlier no record of this species from West Bengal was available.

172. *Phytoseius (Phytoseius) roseus* Gupta.

1969. *Phytoseius (Dubininellus) roseus* Gupta, *Israel J. Agric. Res.*, 19 : 119-120.
 1986. *Phytoseius (Phytoseius) roseus*, Gupta *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 256-257.
 1987. *Phytoseius (Phytoseius) roseus*, Gupta, *Rec. zool. Surv. India*. Occ. Pap No. 95.p. 96.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal : Dist. Jalpaiguri, Alipurduar, ex undet. plant, 13.1.1985;
 1 (F), Dist. Puruliya, Matha, ex miscellaneous plant, 31.3.1989.

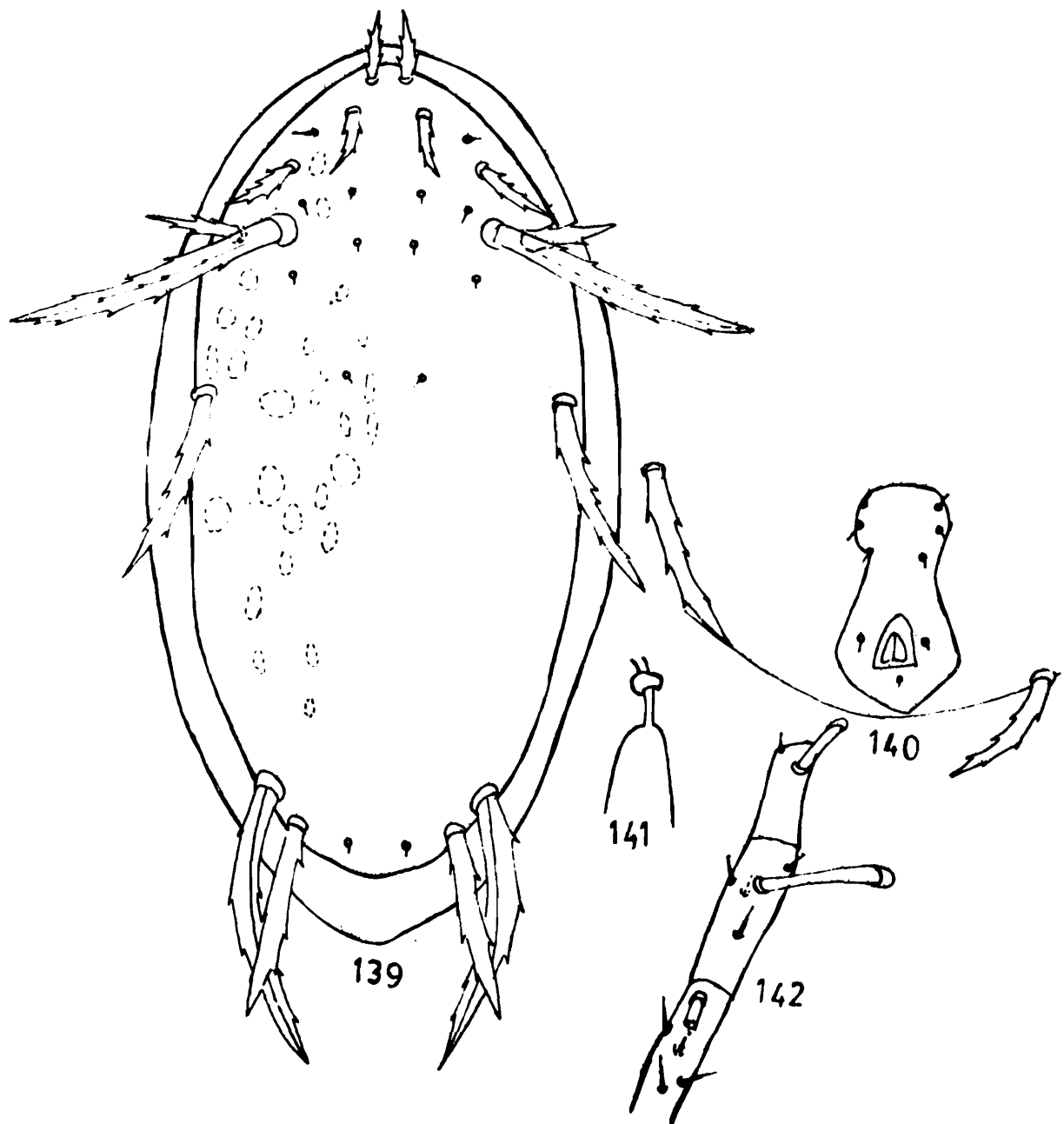
Distribution : India : West Bengal (Dist. Jalpaiguri, Puruliya, Jammu & Kashmir, Gujarat, Punjab, Tamil Nadu, Tripura, Uttar Pradesh. Elsewhere : Pakistan.

173. *Phytoseius (Phytoseius) swirskii* Gupta

1980. *Phytoseius (Dubininellus) swirskii* Gupta, *Entomologists' mon. mag.* 115 : 210-212.
 1986. *Phytoseius (Phytoseius) swirskii*, Gupta, *Fauna of India (Acari Mesostigmata) Family Phytoseiidae*, p. 259-260.
 1987. *Phytoseius (Phytoseius) swirskii*, Gupta, *Rec. zool. Surv. India* Occ. Pap. No. 95 : 97.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Dist. Bardhaman).



Figs. 139-142 : *Phytoseius (Phytoseius) maldahensis* sp. nov. (female) : 139-dorsum, 140-ventrianal shield, 141-spermatheca, 142-genu, tibia and basitarsus of leg IV

174. *Phytoseius (Phytoseius) maldahaensis* sp. nov.
(Figs. 139-142)

Female : Dorsal shield 291 long, 170 wide, rugose, with 15 pairs of setae. Setae, j1, j3 z3, s4, s6, Z5, r3, and Z4 being long, thick and serrate, besides s4 and Z4 also divided longitudinally and flat. Measurements of setae : j1-26, j4, j5, j6-4-5 each, j3-29, z2-13 (appear to be slightly longer than z4), z3-25, z4-12, j1 s4-114 (divided), s6-60, Z5-70, Z5-70, Z5-4, Z4-85, r3-40.

Sternal shield not clearly discernible, however, 3 pairs of sternal setae present. Genital shield with a pair of setae. Ventrianal shield 78 long, 45 wide, pitcher shaped, constricted laterally, with 3 pairs of setae; 3 pairs of setae present around ventrianal shield, JV5-49 long, serrate. Dentition of chelicera not discernible. Spermatheca as figured. Macroseta on leg IV : Genu-15 (extremely small, much smaller than that on basitarsus IV), tibia-51, basitarsus - 24. Leg chaetotactic formula :

Genu II $\begin{matrix} 2 & 2 & 2 & 1 \\ 0 & 0 & & \end{matrix}$ tibia II $\begin{matrix} 1 & 1 & 2 & 1 \\ 1 & 1 & & \end{matrix}$ genu III $\begin{matrix} 1 & 2 & 2 & 1 \\ 0 & 0 & 1 & \end{matrix}$ tibia III $\begin{matrix} 1 & 1 & 2 & 1 \\ 1 & 1 & 0 & \end{matrix}$

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Maldah, Malda Agril. Farm. ex mango. Paratype 1 (F), data same as for holotype.

Remarks : This species is quite close to *Phytoseius (Phytoseius) crinitus* being setae s4 and Z4 flat and divided but differs in having basitarsal macroseta being one and half times as long as that of genual one (in case of *crinitus* the basitarsal macroseta slightly longer, (29) than that of genual one).

Genus *Typhlodromus* Scheuten

1857. *Typhlodromus* Scheuten, *Arach, Naturges*, 23 : 111.

Key to the subgenera of *Typhlodromus* known to occur on plants in West Bengal.

- 1. Ventrianal shield with 3 pairs of preanal setae*Anthoseius*
- Ventrianal shield with 4 pairs of preanal setae 2
- 2. Z5 and Z4 normally serrate and the former usually knobbed*Amblydromella*
- Z5 and Z4 never serrate, Z5 always smooth 3
- 3. Leg IV with macrosetae on genu, tibia and basitarsus of leg IV*Orientiseius*
- leg IV with macroseta on basitarsus IV only*Typhlodromus s.str.*

Subgenus *Amblydromella* Muma1961. *Amblydromella* Muma, *Bull. Fla. St. Mus.*, 5(7) : 294.Key to the species of *Amblydromella* known to occur on plants in West Bengal.

1. Posterior margin of sternal shield deeply pushed inward making two deep lateral clefts
.....*persicus* sp. nov.
- Sternal shield not like above 2
2. Seta Z5 knobbed and serrate 3
- Seta Z5 not knobbed but may be serrate 5
3. Macroseta present only on basitarsus IV 4
- Macroseta present on other leg segments also*darjeelingensis*
4. Z4 almost touches base of Z5*fleschneri*
- Z4 much shorter than the distance between its base and that of Z5
.....*homalii*
5. Setae comparatively longer, Z4 almost touches the base of Z5
.....*gopali*
- Setae comparatively shorter, Z4 never touches upto base of Z5
.....*arunachalensis*

175. *Typhlodromus (Amblydromella) arunachalensis* Gupta1986. *Typhlodromus (Amblydromella) arunachalensis*, Gupta *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 265-267.1987. *Typhlodromus (Amblydromella) arunachalensis*, Gupta, *Rec. zool. Surv. India*, Occ. Pap No. 95, p. 115.*Diagnosis* : Please refer to Gupta (1987).*Material examined* : 5 (F), West Bengal : Dist. Darjiling, Samsing, ex undet. plant, 22.10.1986.*Distribution* : India : West Bengal (Dist. Darjiling), Arunachal Pradesh.*Remarks* : This is the first record of this species from West Bengal.

176. *Typhlodromus (Amblydromella) darjeelingensis* Gupta.

1978. *Typhlodromus eharai* Gupta, *Bull. zool. Surv. India* : 1:54.
 1980. *Typhlodromus eharai*, Gupta, *Entomologists' mon. Mag.*, 115 : 209-210.
 1986. *Typhlodromus (Amblydromella) darjeelingensis*, Gupta, *Fauna of India. (Acari : Mesostigmata) Family Phytoseiidae*, p. 270-272.
 1987. *Typhlodromus (Amblydromella) darjeelingensis*, Gupta, *Rec. zool. Surv. India*, Occ. Pap. No. 95, P. 105-106.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal, Dist. Koch Bihar, ex undet, plant, 9.1.1985; 1(F), Gossanimari, ex undet. plant, 10.1.1985; 2 (F), Dist. jalpaiguri, Alipurduar, ex guava, 12.1.1985; 1(F), Jainti Hills, ex undet. plant, 18.1.1985; 2(F), Dist. Darjiling, Samsing, ex undet. plant, 22.10.1986; 1(F), Darjiling, Botanical Garden ex undet. plant, 30.10.1986; 1(F), Naxalbari, ex undet. plant, 3.11.1986; 1(F), Dist. Malda, Ahio, ex mango, 8.11.1986; 1(F), dist. Murshidabad, Lalgola, ex undet. plant, 10.11.1986; 1(F), dist. Medinipur, Jhargram, ex castor, 7.10.1986.

Distribution : India : West Bengal (Dists. Darjiling, Jalpaiguri, Koch Bihar, Maldah, Medinipur, Murshidabad), Karnataka, Punjab, Tamil Nadu, Tripura, Uttar Pradesh.

177. *Typhlodromus (Amblydromella) fleschneri* Chant

1960. *Typhlodromus (Typhlodromus) fleschneri* Chant, *Can. Ent.*, 92 : 60-62.
 1986. *Typhlodromus (Amblydromella) fleschneri*, *Fauna of India (Acari : Mesostigmata) Fam. Phytoseiidae*, p. 272-274.
 1987. *Typhlodromus (Amblydromella) fleschneri*, Gupta *Rec. zool. Surv. India*, Occ. Pap. No. 95, p. 107.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal, Dist. Bankura, Tantipukur, ex Kapas, 5.4.1989.

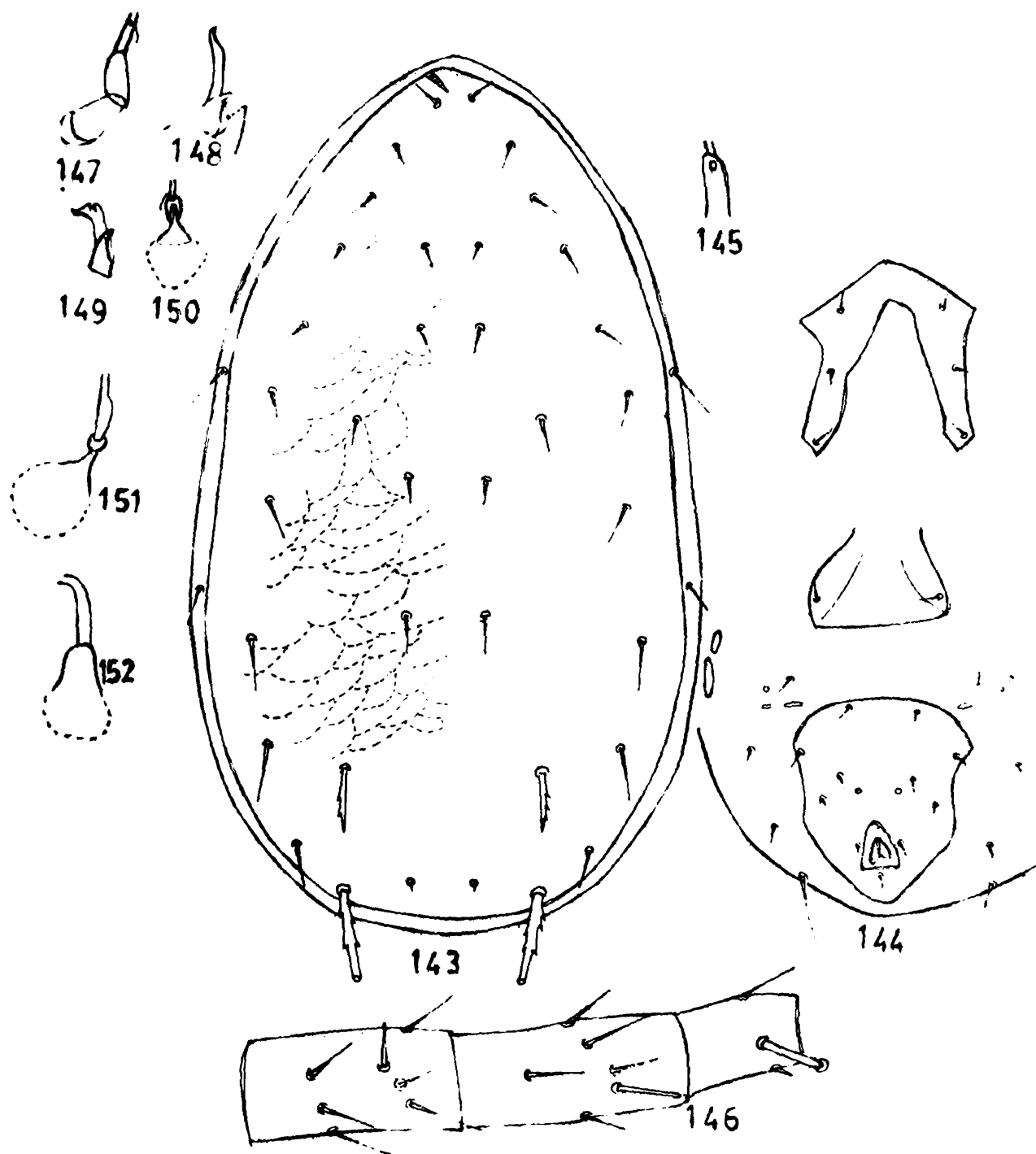
Distribution : West Bengal (Dists. Bankura, North 24-Parganas) Assam, Karnataka, Meghalaya.

178. *Typhlodromus (Amblydromella) homalii* Gupta.

1970. *Typhlodromus homalii* Gupta, *Oriental Ins.*, 4:188-189.
 1986. *Typhlodromus (Amblydromella) homalii*, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 274-276.
 1987. *Typhlodromus (Amblydromella) gopali*, *Rec. zool. Surv. India*, Occ. pap. No. 95, p.108.

Diagnosis : Please refer to Gupta (1987).

Distribution : India West Bengal (Dist. Calcutta), Himachal Pradesh, Punjab, Rajasthan.



Figs. 143-146. *Typhlodormus (Amblydromella) persicus* sp. nov. (female) 143-dorsum 144-ventral plates, 145-spermatheca, 146-genu, tibia and basitarsus of leg IV. Figs. 147-148. *Amblyseius (Euseius) pruni* Gupta : 147 - spermatheca, 148-spermatophoral process, Figs. 149-150. *Amblyseius (E.) finlandicus* (Oud.): 149-Spermatophoral process, 150-Spermatheca. Fig. 151. A. (*Typhlodromips*) *officinaria* Gupta: spermatheca. Fig. 152. A. (*T.*) *polyanthae* Gupta - spermatheca.

179. *Typhlodromus (Amblydromella) persicus* sp. nov.
(fig. 143-146)

Female : Dorsal shield 314 long, 161 wide, well sclerotized, without pores, reticulate, with 18 pairs of setae, Seta J2>j6 = j5>j4, Z5>S5<S4>S5<S4=S2>s6>Z4>Z3, Measurement of setae j1-18, j4-9, j5-11, J6-13, J2-22, J5-8, j3-13, z2-13 z4-18, s4-20, s6-23, S2-26, S4-26, S5-22, Z5-45. (serrate, knobbed, shorter than distance between their base) z5-13, Z4-29 shorter than distance between its base and that of z5, serrate on one side) r3-26, R1-22. Sternal shield very peculiar shaped, as figured, having deep cleft strating from posterior margin reaching as far as the level of 1st pair of sternal setae, with 3 pairs of sternal setae. Genital shield 56 wide with a pair of setae. Ventrianal shield 100 long. 51 wide, shaped as figured with 4 pairs of preanal setae and a pair of round preanal pores; 4 pairs of setae and few platelets present around ventrianal shield; JV5-30 long; 2 pairs of metapodal plates present. Spermatheca as figured. leg IV with macrosetae on genu-12, tibia-17, basitarsus-20. Leg chaetotactic formula :

Genu II $2 \frac{2}{0} \frac{2}{0} 1$ tibia II $1 \frac{1}{2} \frac{2}{1} 1$ genu III $1 \frac{2}{1} \frac{2}{0} 1$ tibia III $1 \frac{1}{1} \frac{2}{1} 1$

Male : Unknown.

Holotype (F), India : West Bengal, Dist. Darjiling, Kalimpong, ex peach 28.10.1988.

Remarks : This new species is very close to *Typhlodromus sonprayagensis* Gupta (1985) but is easily distinguished from it in having deep cleft on sternal shield and tibial macroseta being longer than genual macroseta.

Subgenus *Anthoseius* De Leon

1959. *Anthoseius* .De leon, *Ent. News.* 70 : 257.

180. *Typhlodromus (Anthoseius) majumderi* Gupta

1986. *Typhlodromus (Anthoseius) majumderi* Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 291.

1987. *Typhlodromus (Anthoseius) majumderi*, Gupta, *Rec. zool. Surv. India, Occ. Pap.*, No. 95, p. 119-120.

Diagnosis : Please refer to Gupta (1987).

Distribution : India : West Bengal (Nadia).

Subgenus *Orientiseius* Muma & Denmark.

1961. *Amblydromella* Muma, *Bull, Fla. St. Mus.*, 5 (7):29 (in part)

1968. *Orientiseius* Muma & Denmark, *Fla. Ent.* 51 : 238.

Key to the species of *Orientiseius* known to occur on plants in West Bengal

1. Seta z3 only 2 times as long as z2.....*manipurensis*
 - Seta z3 over 3-4 times as long as z22
2. z2 and z4 equal*pruni*
 - z2 and z4 unequal*hadii*

181. *Typhlodromus (Orientiseius) hadii* Chaudhri

1965. *Typhlodromus hadii* Chaudhri, *Acarologia*, 7 : 632-633.
 1986. *Typhlodromus (Orientiseius) hadii*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 300-302.
 1987. *Typhlodromus (Orientiseius) hadii*, Gupta, *Rec. zool. Surv. India., Occ. paper No.* p. 124.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal, dist. Darjiling, Mirik, ex *Solanum melongena*, 1.11.1986.

Distribution : India : West Bengal (Dist. Darjiling), Manipur.

Remarks : This is the first report of the species from West Bengal.

182. *Typhlodromus (Orientiseius) pruni* Gupta

1970. *Typhlodromus pruni* Gupta, *Oriental Ins.*, 4 :189-190.
 1986. *Typhlodromus (Orientiseius) pruni*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 305-307.
 1987. *Typhlodromus (Orientiseius) pruni*, Gupta, *Rec. zool. Surv. India, Occ. Pap. No.* 95 p. 125-126.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1(F), West Bengal, Dist. Darjiling, ex undet. plant, 22.10.1986; 1(F), 1(M), Chalsa, ex palm, 24.10.1987.

Distribution : India : West Bengal (Dist. Darjiling), Arunachal Pradesh.

Subgenus *Typhlodromus* Scheuten

1957. *Typhlodromus* Scheuten, *Arch. fur, Natureges*, 23:111(in part)
 1961. *Typhlodromus* Muma, *Bull. Fla. St. Mus.* 5 (7):298.

Key to the species of subgenus *Typhlodromus* known to occur in West Bengal

1. Seta S5 very small, nearly half as long as S4, Z4 much shorter than the distance between its base and that of Z5 *communis*
- Seta S5 subequal to S4, Z4 almost touches the base of Z5 *neorhenanus*

183. *Typhlodromus (Typhlodromus) communis* Gupta

1980. *Typhlodromus communis* Gupta, *Entomologists' mon. Mag.*, 115 : 209.
 1986. *Typhlodromus (Typhlodromus) communis*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, p. 316-318.
 1987. *Typhlodromus (Typhlodromus) communis*, Gupta, *Rec. zool. Surv. India. Occ. pap. No. 95*, p. 132-133.

Diagnosis : Please refer to Gupta (1987)

Material examined : 2(F), West Bengal, Dist. Jalpaiguri, Alipurduar, ex undet. plant, 13.1.1985;
 1 (F), Dist. Maldah, State Agril. Farm, ex. mango, 5.11.1986.

Distribution : India : West Bengal (Dist Darjiling, Jalpaiguri, Maldah, Arunachal Pradesh, Karnataka, Tamil Nadu.

184. *Typhlodormus (Typhlodormus) neorhenanus* Gupta

1977. *Typhlodromus neorhenanus* Gupta, *Indian J. Acar.*, 2:4
 1986. *Typhlodormus (Typhlodromus) neorhenanus*, Gupta, *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*, P.320-321.
 1987. *Typhlodromus (Typhlodromus) neorhenanus*, Gupta, *Rec. zool. Surv. India, Occ. pap. No. 95*, 113.

Diagnosis : Please refer to Gupta (1987).

Material examined : 1 (F), West Bengal : Dist. Darjiling, Naxalbari, ex. undet. \plant, 3.11.1986.

Distribution : India : West Bengal (Dist. Darjiling), Meghalaya.

Remarks : This mite was earlier unknown from West Bengal.

Family DIGAMASELLIDAE Evans.

1905. *Digamasellus* Berlese, *Redia*, 2 : 10-32.
 1957. *Digamasellidae* Evans, *J. Linn. soc. Lond (Zool)*, 43:203-205.

Remarks : The representation of this genus from West Bengal was earlier unknown.

185. *Digamasellus* sp.

Material examined : 1 (F), West Bengal, Dist. Darjiling, Samsing, ex undet. plant, 22.10.1986.

Distribution : India : West Bengal (Dist. Darjiling).

Family AMEROSEIIDAE Evans

1963. Ameroseiidae Evans, *Ann. Mag. nat. Hist* (13) 6 : 210.

Key to the genera of Ameroseiidae known to occur on plants in West Bengal

1. Fixed digit of chelicera usually edentate, rarely with 1 weak tooth, corniculi slender, pointed and convergent with 6 pairs of opisthogastric setae; apotele 2 lined. dorsal shield with reticulate pattern, setae may be plumose or leaf shaped- *Neocypholaelaps*
- Fixed digit of chelicera dentate, corniculi strong, forked distally.
Dorsal shield not reticulate, dorsal setae setose *Klemania*

Genus *Neocypholaelaps* Vitzthum

1918. *Cypholaelaps* Berlese *Redia*, 13 : 117.

1941. *Neocypholaelaps* Vitzthum, *Bronn's Tierreich*, 5 : 763.

186. *Neocypholaelaps stridulans* (Evans)

1955. *Indoseius stridulans* Evans, *Bull. Nat. Inst. Sci. India*, 7 : 107-109.

1963. *Neocypholaelaps stridulans*, Evans, *Ann. mag. nat. Hist.*, 13 : 219-221.

1969. *Neocypholaelaps stridulans*, Gupta, *Oriental Ins.*, 3 : 335.

1985. *Neocypholaelaps stridulans*, Gupta *Handbk Plant Mites of India*, p. 327.

Diagnosis : Please refer to Gupta (1985).

Distribution : India : West Bengal (North 24 Parganas), Kerala.

Genus *Klemania* Oudemans

1930. *Klemania* Oudemans, *Ent. Ber.* 8(171) : 48-53.

1976. *Klemania*, Hughes, *The mites of stored food and houses*, p. 336.

187. *Klemania* sp.

1970. *Klemania* sp. Gupta, *Sci. Cult.* 36 : 98.

Distribution : India : West Bengal (Hugli).

Family ASCIDAE Voigts & Oudemans

1979. Ascidae Voigts & Oudemans, in Evans & Till, *Trans. Zool. soc. Lond.*, 135 : 196.

Key to the genera of Ascidae known to occur on plants in West Bengal.

1. Fixed digit of chelicera with membranous lobe in place of *pilus dentilis*, movable digit usually with a ventral mucro, female with anal shield, rarely with ventrianal shield bearing 1 pair of ventral setae

Female with 18-22 pairs of setae in the opisthonotal region of the holodorsal shield, 3-7 pairs of R-setae being located on the lateral margin of the shield *Proctolaelaps*

- Fixed digit of chelicera with a setiform *pilus dentilis*, movable digit without ventral mucro, female typically with ventrianal shield bearing 2-7 pairs of ventral setae; rarely with anal shield, schizodorsal shield with z3, J2 and S1; 10-11 pairs of marginal setae (r-R) on lateral membrane genu I and tibia I with 13 setae *Lasioseius*

Genus *Lasioseius* Berles

1916. *Lasioseius* Berlese, *Redia* 12:34.

1963. *Lasioseius*, Chant, *Can J. Zool.*, 41 : 272.

188. *Lasioseius* sp.

Material examined 1 (F), West Bengal : Dist. Murshidabad, Lalgola, ex *Nerium*, 10.11.1986; 2 (F), Dist. Haora, Botanical Garden, 2.1.1989; 2 (F), Dist. North 24-Parganas, Barrackpur Jute Research Farm, ex jute, 2.7.1989.

Distribution : India : West Bengal (Dists : Haora, Murshidabad, North 24-Parganas).

Genus *Proctolaelaps* Berlese

1923. *Proctolaelaps* Berlese, *Redia*, 15 : 255.

1963. *Proctolaelaps*, Chant, *Can J. Zool.*, 41: 258.

189. *Proctolaelaps* sp.

Material examined : 1 (F), West Bengal : Dist. South 24-Parganas, Sajnakhali, ex *Avicennia alba*, 28.11.1986.

Distribution : India : West Bengal (Dist. South 24 Parganas).

Family ACARIDAE Ewing & Nesbitt

Key to the genera of Acaridae known to occur on plants in West Bengal.

1. On genu 1, sigma 1 is more than 3 times longer than sigma 2,

Claws of female never bifid, femur of male enlarged with ventral conical process*Acarus*

- On genu 1, sigma 1 is less than 3 times length than sigma 2; femur of male not enlarged, without a ventral conical process*Tyrophagus*

Genus *Acarus* Linnaeus, 1758.

190. *Acarus* sp.

Material examined : 1 (F), West Bengal, Dist. Koch Bihar, Chelapather, ex undet. plant, 9.1.1985; 1 nymph, Dist. Darjiling, Chalsa, ex lithci, 14.10.1986; 1 (F), Dist. Maldah, Adina, ex pigeon pea, 6.11.1986.

Distribution : India : West Bengal (Dists. Darjiling, Koch Bihar, Maldah).

Genus *Tyrophagus* Oudemans

1924. *Tyrophagus* Oudemans, *Ent. Ber. Amst.*, 6 : 250.

1976. *Tyrophagus* Hughes, p. 50.

191. *Tyrophagus putrescentiae* (Schrank)

1781. *Acarus putrescentiae* Schrank, *Enum Inst. Aust. India.*, 521.

1924. *Tyrophagus putrescentiae*, Oudemans, 1924, *Ent. Ber.*, 6 : 136-250.

1955. *Tyrophagus putrescentiae*, Pillai, *J. zool. Soc. India*, 7 : 141-144.

1985. *Tyrophagus putrescentiae*, Gupta, *Handbk, Plant Mites of India*, p. 409.

Diagnosis : Please refer to Gupta (1985).

Material examined : 1(F), West Bengal : Dist. Darjiling. Botanical Garden, ex rose, 30.10.1986.

Distribution : India : West Bengal (Dist. Darjiling), Bihar, Uttar Pradesh. Elsewhere : Cosmopolitan.

Order CRYPTOSTIGMATA

Family TRHYPOCHTHONIIDAE Willmann

1931. Trypochthoniidae Willmann, *Tierw. Deutschl.*, 22 : 102.

1986. Trypochthoniidae, Sanyal & Bhaduri, *Rec. zool. Surv. India., Occ. Paper* : No. 83. p.15.

Genus *Archezogetes* Grandjean

1931. *Archezogetes* Grandjean, *Bul. Mem. Hist. Nat Paris*, 3 (2) : 144.
 1986. *Archezogetes*, Sanyal & Bhaduri, *Rec. zool. Surv. India, Occ. Paper*. No. 83 p. 16.

192. *Archezogetes* sp.

Material examined : 1 (F), West Bengal : Dist. Darjiling, Samsing Tea Estate, ex tea, 23.10.1986.

Distribution : India : West Bengal (Dist. Darjiling).

Family CERATOZETIDAE Jackot

1925. Ceratozetidae Jackot, *Amer. Nat. New York*, 59 : 372.

Genus *Uracrobates* Balogh & Mahunka,

1967. *Uracrobates* Balogh & Mahunka, *Acta zool. Acad., Sci. Hung.*, 13-58.

Remarks : This genus was earlier unrepresented from West Bengal.

193. *Uracrobates* sp.

Material examined : 1 (F), West Bengal : Dist. Darjiling, Samşing tea Estate, ex tea, 23.10.1986.

DISTRICT WISE DISTRIBUTION OF PLNT MITES IN WEST BENGAL

BANKURA

Tetranychidae	:	<i>E. orientalis</i> , <i>O. indicus</i> , <i>O. mangiferus</i> <i>O. oryzae</i> , <i>O. punicae</i> , <i>T.cinnabarinus</i> <i>T. neocaledonicus</i> , <i>T. sp.</i>
Tenuipalpidae	:	<i>B. deleari</i> , <i>B.essigi</i> , <i>R.indica</i>
Eriophyidae	:	<i>C. combretus</i> , <i>P. terminaliae</i> , <i>T. jambolensis</i> , <i>Indonotalox sudarsani</i> , <i>A. arajunalis</i> .
Rhyncaphytopidae	:	<i>N. combretis</i> , <i>R. shoreacola</i>
Phytoseiidae	:	<i>A. largoensis</i> , <i>A. alstoniae</i> , <i>A. coccineae</i> , <i>A. finlandicus</i> , <i>A. multidentatus</i> , <i>A. potentillae</i> , <i>P. kapuri</i> , <i>T. fleschneri</i>

BIRBHUM

- Tetranychidae : *E. maximae, E. orientalis, O. biharensis*
T. neocaledonicus.
- Tenuipalpidae : *B. phoenicis*
- Eriophyidae : *C. cordiae*
- Phytoseiidae : *A. finilandicus, A. kalimpongensis,*
P. kapuri

BARDDHAMAN

- Tetranychidae : *O. biharensis, O. mangiferus, O. sp.*
T. cinnabarinus, T. sp.
- Phytoseiidae : *A largoensis, A. longispinosus,*
P. swirskii,

CALCUTTA

- Cheyletidae : *C. fortis*
- Phytoseiidae : *A. longispinosus, A. potentillae, T. homalii,*

DARJILING

- Tetranychidae : *B. praetiosa, A. corpuzae, P. harti,*
E. suginamensis, E. truncatus, E. uncutus,
E. sp., P. citri, P. ulmi, O. coffeae,
O. mangiferus, O. oryzae, T. sp.
- Tenuipalpidae : *B. essigi, B. obovatus, Tenuipalpus sp.*
- Eriophyidae : *I. darjeelingensis, P. himalayana*
- Stigmaeidae : *A. terminalis*
- Erythraeidae : *L. samsingensis*
- Tydeidae : *P. camelia, T. ornamentalicus*
- Cunaxidae : *Neocunaxoides sp. D. bengalensis*

- Anystidae** : *W. darjilingensis*
- Phytoseiidae** : *A. herbicolus, A. largoensis, A. neorykei, A. alstoniae, A. bambusae, A. coccineae, A. finlandicus, A. ovalis, A. pruni, A. rhododendronis, A. sacchari, A. polyanthae, A. suknaensis, P. fragariae, A. paspalivorus, A. multidentatus, A. Kalimpongensis, A. rosica, A. crotalariae, P. macropilis, P. meyeriae, P. p, rachelae, T. arunachalensis, T. darjeelingensis, T. persicus, T. hadii, T. pruni, T. communis, T. neorhenanus.*
- Digamasellidae** : *Digamasellus sp.*
- Acaridae** : *Acarus sp., T. putrescentiae*
- Trhypochthoniidae** : *Archegozetes sp.*
- Ceratozetidae** : *Uracrobates sp.*
- HAORA**
- Phytoseiidae** : *A. potentillae, P. minutus, P. indicus, Lasioseius sp.*
- HUGLI**
- Tetranychidae** : *E. hirsti, S. andropogoni, T. neocaledonicus, T. urticae.*
- Tenuipalpidae** : *B. deleari*
- Eriophyidae** : *E. indica, G. litseasis, A. erythreensis, C. microstrus, S. spiniferus*
- Rhynocaphyptidae** : *D. sinusetus*
- Phytoseiidae** : *A. largoensis, A. indicus, A. officinaria*
- Ameroseidae** : *Klemania sp.*

JALPAIGURI

- Tetranychidae : *E. hirsti*, *P. citri*, *O. coffeae*, *O. indicus*,
O. mangiferus, *O. phoenicis*, *O. obovatus*
- Cunaxidae : *C. setirostris*
- Phytoseiidae : *A. channabasavannai*, *A. herbicolus*,
A. largoensis, *A. coccineae*, *A. pruni*,
A. rhododendronis, *A. multidentatus*,
A. peltatus, *A. kalimpongensis*
A. crotalariae, *A. suknaensis*, *A. sijiensis*,
A. syzygii, *P. roseus*, *T. darjeelingensis*,

KOCH BIHAR

- Tetranychidae : *O. biharensis*, *T. neocaledonicus*
- Tenuipalpidae : *B. phoenicis*
- Stigmaeidae : *A. channabasavannai*, *A. herbicolus*,
- Phytoseiidae : *A. channabasavannai*, *A. herbicolus*,
A. largoensis, *A. coccineae*,
A. multidentatus, *A. suknaensis*,
T. darjeelingensis
- Acaridae : *Acarus* sp.

MALDAH

- Tetranychidae : *P. citri*, *P. ulmi*, *O. mangiferus*,
T. cinnabarinus, *T. neocaledonicus*, *T. sp.*,
- Eriophyidae : *A. mangiferae*
- Stigmaeidae : *A. fleschneri*, *Z. languida*
- Bdellidae : *Bdella maldahaensis*
- Cunaxidae : *C. cynodonae*, *C. setirostris*
- Phytoseiidae : *A. largoensis*, *A. coccineae*, *A. coccosocius*
A. finalandicus, *A. ahaioensis*, *A. aceriae*,

- A. multidentatus, A. suknaensis, A. syzygii*
P.(P.) maldahaensis, T. darjeelingensis,
- Acaridae** : *Acarus* sp.
- MEDINIPUR**
- Tetranychidae** : *E. orientalis, O. biharensis, O. mangiferus*
T.cinnabarinus, T ludeni, T sp.
- Stigmaeidae** : *A. fleschneri, A. macrommatus*
- Cunaxidae** : *C. setirostris, C. womersleyi*
- Eupodidae** : *Eupodes* sp.
- Anystidae** : *Anystis indica, Tencateia kanthiensis*
- Cheyletidae** : *C. ornatus*
- Phytoseiidae** : *A. largoensis, A. neorykei, A. shoreae,*
A. alstoniae, A.coccineae,
A. delhiensis, A. finlandicus,
A. ovalis, A. pruni, A. multidentatus,
A. kalimpongensis, A. suknaensis,
A. syzygii, P. (P.) kapuri,
T. darjeelingensis.
- MURSHIDABAD**
- Tetranychidae** : *O. indicus, O. mangiferus, O. sapienticola,*
S. andropogoni, S. baltazari, T. cinnabarinus,
T. fijiensis, T hypogaeae, T. neocaledoncius
- Tenuipalpidae** : *B. obovatus*
- Tydeidae** : *P. murshidabadensis*
- Cunaxidae** : *C. mangiferae, C. anacardae,*
- Phytoseiidae** : *A. channabasavannai, A. herbicolus,*
A. largoensis, A coccineae, A. finlandicus,
A. ovalis, A. pruni, A. sacchari, A. suknaensis,
A. syzygii, P. mumai, P. kapuri, T. darjeelingensis

- Ascidae : *Lasioseius* sp.
- NADIA
- Tetranychidae : *O. coffeae, O. oryzae, O. sacchari, S. baltazari*
- Eriophyidae : *C. ichnocarpasia, E. clerodendris, A. hibisci, A. cordiae, A. litchii, A. lyopersici, A. mangiferae, A. nerii, A. pongamiae, C. araliae, C. capsica, C. jasmini, C. keiferi, C. sweitensis, C. quisqualis, T. mangiferae, C. antedesmae, P. salmaliae, P. oleivora, A. sacchari, A. xanthocarpi, A. cassiae, A. adhatodae, A. glycosmis, N. indicus, T. calotropi, T. gelonis, T. ficusi, T. indica, T. Kalyanii, T. nerii, T. lanneansis.*
- Rhyncaphytoptidae : *D. bengalensis*
- Phytoseiidae : *A. potentillae, I. ricini, T. majumderi*
- NORTH 24 PARGANAS
- Tetranychidae : *S. andropogoni, S. spireaefolia*
- Eriophyidae : *A. crotalariae, A. infectoriae, T. bengalensis, T. vitexis.*
- Tarsonemidae : *P. latus*
- Phytoseiidae : *A. largoensis, A. fallacis, A. officinaria, A. polyantheae, T. fleschneri*
- Ameroseiidae : *N. stridulans*
- Ascidae : *Lasioseius* sp.
- PURULIYA
- Tetranychidae : *E. orientalis, T. cinnabarinus, T. neocaledonicus*
T. sp.
- Tenuipalpidae : *R. indica*

- Stigmaeidae : *Agistemus sp. nr. simplex*
- Raphignathidae : *A. guajavae*
- Phytoseiidae : *A. herbicolus, A. largoensis, A. alstoniae*
A. coccineae, A. pruni, A. longispinosus,
A. kalimpongensis, A. suknaensis, P. (P.) roseus.

SOUTH 24 PARGANAS

- Tetranychidae : *A. corpuzae, E. orientalis,*
E. sp. O. indicus, O. sp., S. andropogoni
S.sp., T. cinnabarinus, T. sp.
- Tenuipalpidae : *A. litchii, A. abutiloni, A. excoecaria*
B. ocimis, T.spondiallus
- Stigmaeidae : *A. fleschneri*
- Bdellidae : *Bdellodes sp.*
- Tydeidae : *P. sp., P. fodderi, T. gosabaensis,*
T cumini
- Cunaxidae : *C. bambusae, C. setirostris,*
- Phytosciidae : *A. largoensis, A. alstoniae, A. coccineae,*
A. finlandicus, A. ovalis, A. paspalivorus,
A. suknaensis, I. andamanicus,
P. (P..) kapuri, P. (P) indicus,
- Ascidae : *Proctolaelaps sp.*

WEST DINAJPUR

- Tetranychidae : *E. hirsti, S. cajani, T. cinnabarinus*
- Stigmaeidae : *A. fleschneri*
- Phytoseiidae : *A. coccineae, A. pruni, P. (P.) kapuri*

DISTRIBUTION OF PLANT MITE SPECIES IN DIFFERENT DISTRICTS OF WEST BENGAL

	Bankura	Bardhaman	Birbhum	Calcutta	Darjiling	Haora	Hugli	Jalpaiguri	Koch Bihar	Maldah	Medinipur	Murshidabad	Nadia	North 24-Parganas	Puruliya	South 24-Parganas	W. Dinajpur
Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
TETRANYCHIDAE																	
1. <i>Bryobia praetiosa</i>					+												
2. <i>Aponychus corpuzae</i>					+												+
3. <i>Eutetranychus maximae</i>		+															
4. <i>E. orientalis</i>	+	+									+				+	+	
5. <i>Petrobia harti</i>					+												
6. <i>Eotetranychus hirsti</i>							+	+									
7. <i>E. suginamensis</i>					+												
8. <i>E. truncatus</i>					+												
9. <i>E. uncatius</i>					+												
10. <i>E. sp.</i>					+												+
11. <i>Panonychus citri</i>					+			+		+							
12. <i>P. ulmi</i>					+					+							
13. <i>Oligonychus biharensis</i>		+	+					+			+						

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
14. <i>O. coffeae</i>					+			+					+				
15. <i>O. indicus</i>	+							+				+					
16. <i>O. mangiferus</i>	+		+		+			+		+	+	+					+
17. <i>O. oryzae</i>	+				+								+				
18. <i>O. punicae</i>	+																
19. <i>O. sacchari</i>													+				
20. <i>O. sapienticolus</i>												+					
21. <i>O. sp.</i>			+														+
22. <i>Schizotetranychus andropogoni</i>							+					+		+			
23. <i>S. baltazari</i>																	+
24. <i>S. cajani</i>												+	+				+
25. <i>S. spireaefolia</i>														+			
26. <i>S. sp.</i>																	+
27. <i>Tetranychus cinnabarinus</i>	+		+							+	+	+			+	+	+
28. <i>T. fijiensis</i>												+					
29. <i>T. hypogaeae</i>												+					
30. <i>T. ludeni</i>											+						
31. <i>T. neocaledonicus</i>	+	+					+		+	+		+			+		

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
32. <i>T. urticae</i>							+										
33. <i>T. sp.</i>	+		+		+					+	+				+	+	
TENUIPALPIDAE																	
34. <i>Brevipalpus deleoni</i>	+						+										
35. <i>B. essigi</i>	+				+												
36. <i>B. obovatus</i>					+			+				+					
37. <i>B. phoenicis</i>		+						+	+								
38. <i>R. indica</i>	+														+	+	
39. <i>Tenuipalpus sp.</i>					+												
ERIOPHYIDAE																	
40. <i>Colopodacus combretus</i>	+																
41. <i>Cosella ichnocarpasia</i>													+				
42. <i>Epicecidophyes indica</i>							+										
43. <i>E. clerodendris</i>													+				
44. <i>Gammaphytoptus litseasis</i>							+						+				
45. <i>Acalitus hibisci</i>													+				
46. <i>Aceria erythrensis</i>							+										
47. <i>A. cordiae</i>													+				
48.A. <i>crotalariae</i>														+			

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
49. <i>A. infectoriae</i>														+			
50. <i>A. litchii</i>													+			+	
51. <i>A. lycopersici</i>													+				
52. <i>A. mangiferae</i>										+			+				
53. <i>A. nerii</i>													+				
54. <i>A. pongamiae</i>													+				
55. <i>Phytoptus terminaliae</i>	+																
56. <i>Calcarus araliae</i>													+				
57. <i>C. capsica</i>													+				
58. <i>C. jasmini</i>													+				
59. <i>C. keiferi</i>													+				
60. <i>C. microrostrus</i>																	+
61. <i>C. swietenensis</i>													+				
62. <i>C. quisqualis</i>													+				
63. <i>Scolocenus spiniferus</i>																	+
64. <i>Tegonotus bengalensis</i>																	+
65. <i>T. jambolensis</i>	+																
66. <i>T. mangiferae</i>													+				
67. <i>Caleptrimerus antedesmae</i>													+				

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
68. <i>C. cordiae</i>		+															
69. <i>Indonotalox sudarsani</i>	+																
70. <i>Phyllocoptes salmaliae</i>													+				
71. <i>Phyllocoptruta oleivora</i>													+				
72. <i>Abacarus arjunalis</i>	+																
73. <i>A. sacchari</i>													+				
74. <i>Aculops abutiloni</i>																	+
75. <i>A. excoecaria</i>																	+
76. <i>A. xanthocarpi</i>													+				
77. <i>A. cassiae</i>													+				
78. <i>Anthocoptes adhatodae</i>													+				
79. <i>A. glycosmis</i>													+				
80. <i>Bakeriella ocimis</i>																	+
81. <i>Indotegolophus darjeelingensis</i>																	+
82. <i>Neotegonotus indicus</i>													+				
83. <i>Paraphytoptus himalayana</i>																	+
84. <i>Tegolophus calotropi</i>													+				
85. <i>T. gelonis</i>													+				
86. <i>T. ficusi</i>													+				

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
87. <i>T. indica</i>													+				
88. <i>T. kalyanii</i>													+				
89. <i>T. nerii</i>													+				
90. <i>T. spondiallus</i>																+	
91. <i>T. vitexis</i>														+			
92. <i>Tetra lanneansis</i>													+				
RHYNCAPHYTOPTIDAE																	
93. <i>Diptilomiopus bengalensis</i>													+				
94. <i>Diptilorhynacus sinusetus</i>									+								
95. <i>Neorhynacus combretis</i>	+																
96. <i>Rhyncaphytoptus shoreacola</i>	+																
TARSONEMIDAE																	
97. <i>Polyphagotarsonemus latus</i>														+			
STIGMAEIDAE																	
98. <i>Agistemus fleschneri</i>									+	+	+					+	+
99. <i>A. macrommatus</i>											+						
100. <i>A. terminalis</i>					+												
101. <i>A. sp. nr. simplex</i>														+			
102. <i>Zetzellia languida</i>									+								

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
BDELLIDAE																	
103. <i>Bdella maldahaensis</i>										+							
104. <i>Bdellodes (Hoploscirus) sp.</i>																	+
ERYTHRAEIDAE																	
105. <i>Leptus samsingensis</i>					+												
TYPEIDAE																	
106. <i>Parapronematus camelia</i>					+												
107. <i>P. murshidabadensis</i>												+					
108. <i>Pronematus sp.</i>																	+
109. <i>Paralorryia fodderi</i>																	+
110. <i>Tydeus ornamentalicus</i>																	+
111. <i>T. gosabaensis</i>																	+
112. <i>T. cumini</i>																	+
RAPHIGNATHIDAE																	
113. <i>Acheles guajavae</i>																	+
CUNAXIDAE																	
114. <i>Cunaxa bambusae</i>																	+
115. <i>C. cynodonae</i>										+							
116. <i>C. mangiferae</i>													+				

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
117. <i>C. anacardae</i>												+					
118. <i>C. setirostris</i>								+		+	+						+
119. <i>C. womersleyi</i>											+						
120. <i>Neocunaxoides sp.</i>					+												
121. <i>Dactyloscirus bengalensis</i>					+												
EUPODIDAE																	
122. <i>Eupodes sp.</i>												+					
123. <i>Anystis indica</i>												+					
124. <i>Tencateia kanthiensis</i>												+					
125. <i>Walzia darjilingensis</i>					+												
CHEYLETIDAE																	
126. <i>Cheyletus fortis</i>				+													
127. <i>Cheletogenes ornatus</i>												+					
PHYTOSEIIDAE																	
128. <i>A. channabasavannai</i>								+	+			+					
129. <i>A. herbicolus</i>					+			+	+				+	+			
130. <i>A. largoensis</i>	+		+		+		+	+	+	+	+	+		+	+	+	+
131. <i>A. neorykei</i>					+							+					
132. <i>A. shoreae</i>												+					

133.	Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
134.	<i>A. bambusae</i>					+												
135.	<i>A. coccineae</i>	+				+			+	+	+	+	+			+	+	+
136.	<i>A. cocosocius</i>										+							
137.	<i>A. delhiensis</i>											+						
138.	<i>A. finlandicus</i>	+	+			+					+	+	+					
139.	<i>A. ovalis</i>					+						+	+				+	
140.	<i>A. pruni</i>					+			+			+	+			+		+
141.	<i>A. rhododendronis</i>					+			+									
142.	<i>A. sacchari</i>					+							+					
143.	<i>A. ahaioensis</i>										+							
144.	<i>A. aceriae</i>										+							
145.	<i>A. indicus</i>							+										
146.	<i>A. fallacis</i>														+			
147.	<i>A. longispinosus</i>			+	+											+		
148.	<i>A. paspalivorus</i>					+											+	
149.	<i>A. multidentatus</i>	+				+			+	+	+	+						
150.	<i>A. peltatus</i>								+									
151.	<i>A. kalimpongensis</i>					+												

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
152. <i>A. rosica</i>		+			+			+			+				+		
153. <i>A. crotalariae</i>					+			+									
154. <i>A. officinaria</i>							+							+			
155. <i>A. polyantheae</i>					+									+			
156. <i>A. potentillae</i>	+			+		+							+				
157. <i>A. suknaensis</i>					+			+	+	+	+	+			+	+	
158. <i>A. sijiensis</i>								+									
159. <i>A. syzygii</i>								+		+	+	+					
160. <i>Indoseiulus ricini</i>													+				
161. <i>Iphiseius andamanicus</i>																	+
162. <i>Paraamblyseius fragariae</i>					+												
163. <i>P. mumai</i>					+							+					
164. <i>Phytoseius (P) kapuri</i>	+	+			+					+	+				+	+	
165. <i>P. (P) minutus</i>						+											
166. <i>P. (P) crinitus</i>					+												
167. <i>P. (P.) indicus</i>						+											
168. <i>P. (P.) intermedius</i>					+												
169. <i>P. (P.) macropilis</i>					+												
170. <i>P. (P) meyeræ</i>					+												

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
188. <i>Lasioseius sp.</i>						+						+		+			
189. <i>Proctolaelaps sp.</i>																	+
ACARIDAE																	
190. <i>Acarus sp.</i>					+				+	+							
191. <i>Tyrophagus putrescentiae</i>					+												
TRHYPOCHTHONIIDAE																	
192. <i>Archezogetes sp.</i>					+												
CERATUZETIDAE																	
193. <i>Uracrobates sp.</i>					+												

SUMMARY

A total of 193 species belonging to 76 genera, under 27 families and 4 orders known to occur on plants in West Bengal are treated here. This includes descriptions and illustrations of 19 new species while 2 species and 2 genera are reported for the first time from India. It also records 33 species and 16 genera hitherto unknown from India. The new species are fully described and illustrated while pertinent references, collection data and detail distribution in India and abroad are provided for the others. Keys to all taxonomic categories are provided. In addition, family-wise review of work done in West Bengal as well as discussion on general morphological characters, techniques of study and district-wise records of mites are also given.

ACKNOWLEDGEMENTS

The author is thankful to the Director, Zoological Survey of India for the facilities and encouragements. The help received from Dr. Y.N. Gupta, Dr. B.K. Biswas and Mr. B.C. Saha in surveying West Bengal mite fauna is also thankfully acknowledged.

REFERENCES

- Atyeo, W.T. 1963, The Bdellinae (Acarina) of the Australian Realm. *Bull.Univ. NebraskaSt. Mus.*, 4(8):169-210.
- Baker, E.W. 1965. A review of the genera of the family *Tydeidae* (Acarina). *Advances in Acarology*. Cornell Univ. Press, Ithaca, New York, p. 95-133.
- Baker, E.W. 1968. The genus *Paralorryia*. *Ann. Ent. Soc. Amer.*, 61 : 1097-1107.
- Baker, E.W. 1970. the genus *Tydeus* : Subgenera and species groups with descriptions of new species (Acarina : Tydeidae). *Ann. Ent. Soc. Amer.*, 63(1) 165-177.
- Berlese, A. 1916. Centuria Secunda di Acari nuovi. *Redia*, 12:131.
- Banerjee, B. 1971. The scarlet mite of tea in Darjeeling. *Two & Bud.*, 18(1) : 26-28.
- Basu, A.C. & Pramanik, L.M. 1965. Tests of some insecticides against *Tetranychus telarius* (Tetranychidae : Acarina) infesting brinjal in West Bengal. *Beitr. Ent.* 15 : 175-178.
- Basu, A.C. & Pramanik, L.M. 1968. Acaricidal tests of nine pesticides against two spotted spider mite, a serious pest of brinjal (egg plant) in West Bengal. *J. Econ. Ent.*, 61 : 768-770.
- Basu, A.C. & Pramanik, L.M. 1969. Brinjal mite and its control. *Pesticides*, 3 : 19-20.
- Basu, B.D. 1963. Studies on two mites of the family Tetranychidae (Genus : *Tetranychus*). *Proc. zool. soc. India*, 16(2) : 221-224.

- Bhattacharya, S.S. & Raut, S.K. 1987. Ecology of the mite *Acarus* sp. occurring in the betelvine orchard located at Tamluk, West Bengal. *Abstr. First National Seminar in Acarology, Kalyani*, p. 11-12.
- Chakrabarti, S & Mondal, S. 1979. Studies on eriophyid mites (Acarina : Eriophyoidea) of India. Descriptions of three new species from West Bengal. *Oriental Ins.*, 13(1-2) : 47-54.
- Chakrabarti, S. & Mondal, S. 1979 a. Description of two new species of eriophyid mites (Acari : Eriophyidae) from West Bengal. *Indian J. Acar.*, 3:71-76.
- Chakrabarti, S & Mondal, S. 1980. Studies on the Eriophyid mites (Acarina : Eriophyoidea) of India. III Description of five new species of *Calacarus* from West Bengal with key to Indian species. *Acarologia*, 21 (3-4) : 396-407.
- Chakrabarti, S & Mondal, S. 1982. Studies on eriophyid mites (Acarina : Eriophyoidea) of India. VIII. Description of new species of *Caleptrimerus* Keifer from West Bengal and Bihar. *Entomon*, 7(1) : 31-35.
- Chakrabarti, S. & Ghosh, B. 1981. Two new species of eriophyid mites (Acarina : Eriophyoidea) from Hooghly district of West Bengal, India. *Indian J. Acar.*, 5 : 27-36.
- Chakrabarti, S., Ghosh B. & Mondal, S. 1981. New and little known eriophyid mites (Acarina : Eriophyidae) from India. *Oriental Ins.*, 15 (2) : 139-144.
- ChannaBasavana, G.P. 1971. Present status of our knoweldge on Indian plant feeding mites. *Third Internat. Congr. Acarology, Prague*, p. 201-204.
- Christison, G.W. 1893. Darjeeling News. April, 1983.
- Das, B. Chakrabarti, S. 1987. Some problems in the taxonomy of eriophyid mites (Acari : Eriophyoidea) of India. *Abstr. First National Seminar in Acarology, Kalyani* p.2.
- Das, G.M. 1948. Insect and mite pests of jute. *Sci. & Cult.*, 14 : 186-190.
- Das, L.K., Mitra, G. & Raychaudhuri, D.N. 1987. Histomorphological changes of leaves of jute plants due to the attack of yellow mite, *Polyphagotarsonemus latus*. *Env. & Ecol.*, 5(1) : 37-40.
- Das, L.K. & Raychaudhuri, D.N. 1978. Reaction of jute varieties (*Corchorus capsularis*) to the yellow mite, *Polyphagotarsonemus latus* (Acari : Tarsonemidae). *Acar. newsl.*, 4 : 6.
- Das, L.K. & Singh, B. 1988. Life history of yellow mite *Polyphagotarsonemus latus* (Banks) on jute crop. *Ann. agric. Res.*, 9 (1):20-25.
- Dutta, N. 1958. Two arch enemies that bring jute yields down. *Indian Farming*, 8(9) : 10-12.

- Evans, G.O. & Till, W.M. 1979. Mesostigmatic mites of Britain and Ireland (Chelicerata : Acari, Parasitiformes). An introduction to their external morphology and classification. *Trans Zool. soc. Lond.*, **35** : 139-270.
- Ghai, S. 1964. Mites. in : *Entomology in India*. Entomological Society of India, p. 394-396.
- Ghosh, N.K. & Chakrabarti, S. 1987. Morphology of developmental stages in *Neotegonotus indicus* Mondal & Chakrabarti (Acari : Eriophyidae) and its relationship with the host. *Abstr. First National Seminar in Acarology, Kalyani*, p. 14.
- Gupta, S.K. 1969 : Description of new species of *Typhlodromus* Scheuten (Acarina : Phytoseiidae) from India. *Sci. & Cult.*, **35** (6) : 277-278.
- Gupta, S.K. 1969. Three new species of the genus *Amblyseius* Berlese. (Acarina : Phytoseiidae) from West Bengal, India *Bull Ent.*, **10** (2) : 126-129.
- Gupta, S.K. 1969. Three new species of the genus *Phytoseius* (Acarina : Phytoseiidae) from India. *Israel J. agric. Res.*, **19**(3) : 115-120.
- Gupta, S.K. 1970. Some predatory mites of the family Phytoseiidae from West Bengal, India (Acarina : Mesostigmata). *Oriental Ins.*, **4** : 185-191.
- Gupta, S.K. 1970. Preliminary note on plant mites (Acarina) from West Bengal. *Sci. & Cult.*, **36**(2) : 89-90.
- Gupta, S.K. 1975. Mites of the genus *Amblyseius* (Acarina Phytoseiidae) from India with descriptions of eight new species. *Internat. J. Acarol.*, **1**(2) : 26-45.
- Gupta, S.K. 1976. Contribution to our knowledge of tetranychid mites (Acarina) with descriptions of three new species from India *Oriental Ins.*, **10** : 327-331.
- Gupta, S. K. 1977. Descriptions of four new species of *Amblyseius* Berlese (Acarina : Phytoseiidae) from India *Entomologists' mon. Mag.*, **112** : 53-58 (1976)
- Gupta, S. K. 1979. Taxonomy and distribution of plant associated mites (Acari) of India- A review. *Abstr. First All India symp. Acarology*, Bangalore, p. 1.
- Gupta, S. K. 1980. New species of *Iphiseius* Berlese and *Paraamblyseius* Muma from India (Acarina : Phytoseiidae). *Entomologists mon. Mag.*, **115**:- 213-218.
- Gupta, S.K. 1983. Taxonomy and distribution of plant associated mites of India- A review. *Abstr. Second All India Symp. Acarology*, Pune, p 1.
- Gupta, S. K. 1985. *Handbook. Plant Mites of India*. Zoological Survey of India, Calcutta, Pub. 520 pp.

- Gupta, S. K. 1986. *Fauna of India (Acari : Mesostigmata) Family Phytoseiidae*. Zoological Survey of India , Calcutta Pub. 350 pp.
- Gupta, S. K. 1987. A taxonomic review of Oriental Phytoseiidae with keys to genera and species , *Rec. zool. Survey India. Occ pap. No. 95*, 167 pp.
- Gupta, S. K. 1989. Studies on plant mite fauna of West Bengal, *Abstr. 8th All India Congr. Zoology, Warangal*, p. 55-56.
- Gupta, S. K. & Ghosh , S. K. 1980. Some prostigmatid mites (Acarina) from Andaman and Nicobar Islands. *Bull. zool. Surv. India*, 77 : 189-213.
- Gupta, Y. N. & Gupta, S. K. 1989. Mites associated with vegetable crops in West Bengal : *India / Acar.* 10 (1-2) : 61-64.
- Gupta S. K. & Paul K. 1985. Some mites associated with Birds nests in West Bengal, with description of eleven new species. *Bull. zool. Surv. India* 7 (1) : 1 -23.
- Hope, G. D. 1915. Address to Darjeeling planters *Quart J. India Ass.* 1915. P. 100 -108.
- Khot, N. S. 1964 Studies on Indian Erythraeoidea (Acarina). series III Mites of the subfamily Leptinae Southcott. *Acarologia*, 6 : 681-689.
- Linnaeus, C. 1758. *Systema Naturae*, 10th. Edition. L. Salvii, Holmiae.
- Maiti, S.P. & Chakrabarti S. 1977. Biological studies on *Panonychus citri* (Acari : Tetranychidae). *Indian J. Acar.*, 2(2) : 55-59.
- Meyer, M.K.P. & Ryke, P.A.J. 1959. Mites of the superfamily Raphignathoidea (Acarina Prostigmata) associated with South African Plants. *Ann. Mag. nat. Hist.*, (13) 2 : 209-236.
- Mondal, S & Chakrabarti, S. 1979. Studies on eriophyid mites (Acarina : Eriophyoidea of India, description of two new species of *Tegolophus Keifer* from West Bengal. *Entomon*, 4(4) : 373-377.
- Mondal, S & Chakrabarti, S. 1981. Studies on the eriophyid mites (Acarina : Eriophyidae) of India. New genus and new species from West Bengal. *Oriental Ins.*, 15(3) : 313-319.
- Mondal, S & Chakrabarti, S. 1981a. Studies on eriophyid mites (Acarina : Eriophyoidea) of India. New genus and new species from West Bengal. *Oriental Ins.* 14 : 543-549.
- Mondal, S & Chakrabarti, S. 1982. Studies on the eriophyid mites (Acarina : Eriophyoidea) of India, VI News species from West Bengal. *Oriental Ins.*, 14 : 403 409.
- Mondal S & Chakrabarti, S. 1982a. Studies on the eriophyid mites (Acarina : Eriophyoidea) of India. XI Descriptions of three new species from West Bengal. *Entomon*, 7 (3) : 361-366.

- Mondal, S & Chakrabarti, S. 1982b. Studies on the eriophyid mites (Acarina : Eriophyoidea) of India. V. New species of *Tegolophus* Keifer from West Bengal with key to Indian species. *Acarologia*, 23 (1) : 39-44.
- Mondal, S., Ghosh B & Chakrabarti, S. 1982c. A new genus and two new species of Rhyncaphytoptidae (Acarina Eriophyoidea) from West Bengal, India. *Oriental Ins.*, 15(4) : 407-412.
- Mondal, S., Ghosh, B & Chakrabarti, S. 1982d. Three new species of Eriophyid mites (Acari : Eriophyoidea) from West Bengal, India. *Indian J. Acar.*, 6 : 17-23.
- Mondal, S. & Ghosh, B. & Chakrabarti, S. 1982e. Studies on the eriophyid mites (Acarina) : Eriophyoidea of India. XIII. Three new and some little known species from West Bengal. *Oriental Ins.*, 16(3) : 305-312.
- Mukherjee, A.B., Sarkar, P.K., Somchoudhury, A.K., Roy, M. 1986. Relative incidence of *Oligonychus oryzae* on nine varieties of paddy and its control. *Abstr. VII Internat. Congr. Acarology*, p. 25-26.
- Pal, P.K., Sarkar, P.K., Somchoudhury, A.K. & Das, T.K. 1987 Outbreak of *Schizotetranychus cajani* Gupta on red gram and its impact on yeild. First National Seminar in Acarology, Kalyani, p. 35.
- Oudemans, A.C. 1928. Acarologische Aanteekeningen, XCIV. *Ent. Ber.*, 7 : 374-382.
- Oudemans, A.C. 1915. Acarologische Aanteekeningen, LVI, *Ent. Ber.*, 4 : 180-188.
- Oudemans, A.C. 1936. Neues : uber Anystidae (Acari). *Archiv Fur naturgeschichte*, N.F. 5 : 364-556.
- Prasad, V. 1974. *A catalogue of mites of India*. Indira Acarology Pub. House, Ludhiana, 320 pp.
- Raut, S.K. & Bhattacharyya, S.S. 1989. Ecology of predatory mite, *Tencateia* sp. (Prostigmata. Anystidae) in betelvine orchards in West Bengal, India. *Progress in Acarology*, Vol. 2 : 191-194.
- Sarkar, P.K. & Somchoudhury, A.K. 1987. Susceptibility of different varieties of coconut to *Tetranychus fijiensis* Hirst (Acari. Tetranychidae). *Abstr. First National Seminar in Acarology*, Kalyani, p. 25.
- Sarkar, P.K. & Somchoudhury, A.K. 1986. Influence of major abiotic factors on seasonal incidence of *Raoiella indica* and *Tetranychus fijiensis* in coconut. *Abstr. VII Internat. Congr. Acarology, Bangalore*, p. 28-29.
- Singh, P., Somchoudhury, A.K., Mukherjee, A.B. and Sarkar, P.K. 1987. Susceptibility of varieties of litchi to *Aceria litchii* (Keifer : Eriophyoidea). *Abstr. First National Seminar in Acarology, Kalyani*, P. 35-36.
- Somchoudhury, A.K. Singh, P.K. & Mukherjee, A.B. 1989 Interrelationship between *Aceria litchii* an eriophyid mite and *Cephaleuros virescens* a parasitic alga in the formation of erineum like structure on litchi leaf. *Progress in Acarology*, Vol. 2 : pp. 147-152.

Smiley R.L. 1975. A generic revision of the mites of the family Cunaxidae (Acarina). *Ann. Ent. Soc. Amer.*, 68(2) : 227-244.

Smith-Meyer, M.K.P & Uckermann, E.A.1987. A taxonomic study of some Anystidae (Acari : Prostigmata). *Entomology Mem. Dept. Agri. Water Supply, Repub. S. afr.* No. 68, p.36.

ORIBATID MITES : (ACARI)

A. K. SANYAL

*Zoological Survey of India, M-Block, New Alipur
Calcutta*

INTRODUCTION

Oribatid mites are the predominating group among inhabitants of soil litter. These mites are commonly called "beetle" or "moss" mites. They show a high degree of diversity in structure, habit and habitat. They are common inhabitants of soil, litter, compost heaps, lichens, moss, leaf, bark of trees, bird nest and house dust.

Oribatid mites are of considerable importance because of their direct and indirect effect on man and animal. They are known to promote soil fertility through humification of organic matter. Very few oribatids are known to feed on higher plants. These mites are also used as biological control agent. They are also responsible for transmitting various helminth diseases to domestic animals.

Before the present author started the study of oribatid mites in Zoological Survey of India, the survey parties from this institute were reluctant to collect these tiny mites due to lack of expertise. As a result no oribatid specimen collected from West Bengal was available in the National Zoological Collection.

The present work is based on a large series of collection of oribatid mites from West Bengal done by the author and his associates during last ten years and collection received from the workers in Universities. The work also includes the species which have not been studied by the author but were described or recorded from the state through literatures related to taxonomic and ecological studies done by several workers (Sanyal and Bhaduri, 1986, 1988).

A brief account of the surveys undertaken for the study is as follows :

1. South 24-Parganas district survey Dr. A.K. Sanyal during 1976-1978.
2. Calcutta survey - Dr. A.K. Sanyal during 1986-1987.
3. Darjiling, Jalpaiguri, Koch Bihar, Maldah, Murshidabad and West Dinajpur districts survey Dr. A.K. Sanyal and party during November - December, 1983.
4. Medinipur district survey Sri S.K. De and party during December, 1985.
5. Haora district survey Dr. A.K. Sanyal during August, 1985, February and July, 1986, January, 1987 and February, 1988.

6. Nadia district survey - Dr. A.K. Sanyal during January - February, 1986.
7. Hugli district survey - Dr. A.K. Sanyal during June and December, 1986.
8. Darjiling and Birbhum districts survey - Dr. A.K. Sanyal and party during September - October, 1986.
9. Bankura, Bardhaman and Purulia districts survey - Dr. A.K. Sanyal and party during September, 1987.

The dominant trees of the forested areas, from where many of the collection were done, were sal, teak, koyal, sisoo, simul and others. The ground vegetation was also very rich comprising of herbs and shrubs of different families. The trees of the collection sites in the high altitude areas in Darjiling Himalayas were dominated by *Cryptomeria japonica*. The soil surface of most of the sites were covered with litter and humus. The soils of the districts except Bankura, Birbhum and Purulia were alluvial in nature. These three districts showed lateritic soils. The soils of South 24-Parganas district contained high percentage of salt having vegetation of mangrove type.

Review of the literature on oribatid mites of West Bengal

The study of oribatid mites in West Bengal was initiated by Late Professor Dr. D.N. Raychaudhuri and Dr. A.K. Bhaduri at the University of Calcutta. They (1967) made the first report of oribatid mites of six species viz., *Hoplophorella*, *Oppia*, *Basilobelba*, *Xiphobelba*, *Conoppia* and *Lamellobates* from the soils of Calcutta. Further in 1968, Bhaduri and Raychaudhuri recorded seven other species from Calcutta. Later Chakrabarti and Bhaduri (1972) added eleven species to the list of West Bengal fauna from Nadia and North 24-Parganas districts. Subsequently Chakrabarti, Bhaduri and Raychaudhuri (1972, 1973) described one new species *Cosmochthonius bengalensis*, two new subspecies *Malacoangelia remigera indica* and *Eupelops acromis minor* and recorded nine other species from Calcutta, Nadia and North 24-Parganas. In 1974 Bhaduri, Chakrabarti and Raychaudhuri described one more soil oribatid species *Basilobelba indica* from Calcutta. Bhattacharya, Bhaduri and Raychaudhuri (1974) reported three new species and one subspecies *Annectacarus longisetosus*, *Cryptacarus dendrisetosus*, *Papillacarus simplirostratus* and *Haplacarus foliatus bengalensis* from Santiniketan, Birbhum. Bhaduri, Bhattacharya and Chakrabarti (1975) described two new species *Chaunoproctus abalai* and *C. clavisetosus* from Calcutta. Deb and Raychaudhuri (1975) described two new species *Galumna crenata* and *G. parascaber* and recorded *G. flabellifera orientalis* from North 24-Parganas. Chakrabarti, Bhaduri and Raychaudhuri (1977a, 1977b) described from the soils of Nadia and North 24-Parganas three new species viz., *Haplochthonius intermedius*, *Cyrthermannia quadricarinata* and *Nanhermannia himalayensis* and recorded 15 other species. Later Chakrabarti, Mondal and Kundu (1978) described two new species *Pseudotocepheus hammerae* and *P. gobletus* from Darjiling. In the same year they described one new genus *Sigmonothrus* with two new species *ovatus* and *quadristriatus* from the same district. Twelve more species were also recorded by Chakrabarti, Chanda and James (1979) from Darjiling. Bayoumi and Mahunka (1979) of Hungary received a collection of oribatid mites from Dr. W. Wittmer, Natural History Museum, Brasel. From that collection they described one new species *Rhysotritia furcata* from Darjiling.

In subsequent years Chakrabarti, Bhaduri and Kundu (1981), Chakrabarti and Mondal (1981, 1983), Mondal and Chakrabarti (1982), Mondal and Kundu (1983, 1984a, 1984b, 1985, 1986, 1988) and

Mondal (1984a, 1984b, 1985; 1986, 1988) studied the oribatid fauna of Darjiling Himalaya and described 19 new species and reported 38 species of oribatid mites.

Dr. D.K. Choudhuri and his associates of the University of Burdwan initiated the study on ecology of soil microarthropods. In the course of their study, Choudhuri and Banerjee (1975, 1977), Banerjee and Roy (1981) and Ghatak and Roy (1981) recorded many species of oribatid mites from the soils of Bardhaman and Hugli districts.

The oribatid mites of the laterite soils of Birbhum district was studied by Bhattacharya *et al.* (1974), Bhattacharya (1979), Bhattacharya and Banerjee (1979, 1981), Bhattacharya *et al.* (1980a, 1980b, 1981), Bhattacharya and Joy (1980), Bhattacharya and Bhattacharya (1981) and Joy and Bhattacharya (1981). Their studies were mainly related to ecology besides a few works on taxonomic investigations of oribatid mites.

In the later part of seventies, Dr. A.K. Sanyal of the Zoological Survey of India, Calcutta took up the studies on the taxonomy and ecology of soil oribatid mites of West Bengal. He studied the oribatid fauna of saline soils of gangetic delta particularly of South 24-Parganas and gangetic alluvial soils of Hugli districts and described several new species and reported many species from the state (Sanyal, 1981a, 1981b, 1982, 1984; Sanyal and Bhaduri, 1981, 1982, 1983, 1985; Sanyal and Sarkar, 1983 and Sanyal and Sengupta, 1990).

There has also been occasional reviews on the works of Indian oribatid mites which is dominated by the fauna of West Bengal. Most important among these are those by Bhaduri and Raychaudhuri (1978, 1981), Chakrabarti and Bhaduri (1988) and Sanyal and Bhaduri (1988). Sanyal and Bhaduri (1986) published the first Check-list on Indian Oribatei.

MATERIAL AND METHODS

For taxonomic studies of oribatid mites, samples mainly litter, soil and humus from all possible habitats in all the districts of West Bengal were collected. The samples were taken from upper 10 cm of soil profile and kept in polythene bags till those were subjected to the process of extraction. The mites extracted from the samples by using modified Tullgren funnels were collected in glass vials containing 90% alcohol.

The body of oribatid mite is heavily sclerotized and opaque. So that the extracted material were made ready for taxonomic study following the usual procedure of keeping the mite in a solution of 90% alcohol and lactic acid (v/v) as advocated by Balogh (1965). For microscopic observations, Balogh's (1965) method of temporary mounting in lactic acid was followed. After necessary microscopic observations the specimen was transferred in small glass vials containing 90% alcohol. The vials were then properly labelled and stored. The measurements provided in the text were taken with the help of ocular and stage micrometers. The measurements of the specimens have been given in micron (μ). The Keys for identification prepared by Balogh (1972), Balogh and Mahunka (1983), Balogh and Balogh (1988) and Subias and Balogh (1989) have been followed.

GENERAL MORPHOLOGY AND TERMINOLOGY

The oribatid mites show a high degree of diversity in regard to the morphological features. The important features and terms, broadly necessary for understanding these mites and for their identification, are discussed here.

The body size of the oribatids vary from being minute to large. The smaller group may measure between 100-300 μm in length, while a large number of species, are in 300-900 μm size range. Only rarely the oribatids exceed 1000 μm .

With regard to shape, oribatids are generally dorsoventrally flattened (Holonota) but occasionally they may be cylindrical or laterally compressed (Ptyctima).

The body is covered by thin or hard cuticle. The degree of sclerotization and pigmentation varies considerably from one group to other, and so their colour may be opaline white, yellow brown, dark brown or even black in some oribatid groups. However, the most dominant colour is brown.

The body surface of these mites shows various ornamentations, being dotted, pitted, tuberculate, striolate, rugose, polygonal or reticulate in separate cases. In some cases the body surface may be covered by layer of secretion or cerotegument. Some oribatids in their adult stage may carry the larval or nymphal exuviae on their back.

Division of the body: The body of the oribatid is divided into several regions. The borders and names of the divisions are shown in Fig. 1.

Articulation of the body : The body parts are generally immovably articulated, but in some cases movable articulation is also present. There are three main types of articulatory system :

- i) *Dichoid* : The body articulates between legs II and III.
- ii) *Ptychoid* : The body articulates behind legs IV.
- iii) *Holoid* : The body regions rigidly coalesced to form a uniform chitinous sheath.

Morphological features

Body Regions : The body of an oribatid mite is divided into two parts the proterosoma and hysterosoma (Fig.1). Dorsally the proterosoma is covered by the shield called prodorsum and the shield covering hysterosoma is notogaster. On the ventral side there is an uniform shield - the ventral plate. The anterior part of the ventral plate includes the podosoma and is known as the coxosternal or epimeral region. The posterior side of the ventral plate is largely occupied by the genital and the anal openings, and this part is called the anogenital region.

The general morphology shows differences in primitive and higher oribatids (Figs. 2-7).

Prodorsum : It is a triangular area mainly with a frontally pointed rostrum and a pair of decurrent longitudinal lath called lamellae (Fig. 6) originating from the basal part of prodorsum. When the prodorsal lamellae are flat, ribbon-shaped and distal part is free from prodorsal surface, they are termed as true lamellae. But if they appear as simple laths or ridges and without free portion, they are known as costulae (Fig. 8). The free distal epices of lamellae are called cuspides. In some groups the lamellae are connected by thin or wide band, the translamellae (Fig.9). The basal part of prodorsum may bear condyles, in some higher groups the prodorsal margin may have a longitudinal chitinous ridge like tutorium (Fig.6), with a free apex. Other chitinous excrescence, which may be borne by the prodorsum, are general tooth, pedotecta, tubercles, bothridial or other protruberences, condyles, etc. Prodorsum may be smooth or variously ornamented by foveolae, reticulation, punctation, etc.

Prodorsal setae : The prodorsum may bear 4-6 pairs of setae viz., rostral (*ro*), lamellar (*la*), interlamellar (*in*), anterior exobothridial (*exa*), posterior exobothridial (*exp*) and sensillae (*ss*) (Figs. 2,4,6). The sensillus is designed for perception of vibrations and may be variously shaped from species to species being setiform, pectinate, clavate, spatulate, fusiform, lamelliform, caliciform, etc. (Fig. 10). Other prodorsal setae may be simple, rodlike, swordlike, leaflike, spatulate, spoonlike, brushlike, 'T'-shaped, etc. and they may be smooth, rough, ciliate, pectinate, squamose, etc.

The prodorsum is separated from the hysterosoma by dorsosejugal (*dsej*) and sejugal (*sej*) sutures (fig.6). These are continuous lines only exceptionally absent and rarely interrupted. In ptyctima group the prodorsum is called aspis. It can be movably articulated with the hysterosoma or may be like penknife or immovably attached to hysterosoma.

Notogaster : It is a coalesced form of a total of 10 segments but only six segments (that of C, D, E, F, H and Ps) can be traced in the adults. The notogaster may bear chitinous excrescens like spines, condyles, teeth, posteriorly decurrent lamellae or cristae (Fig.8). Also some wing like extensions of notogaster - the pteromorphae - is present in a number of genera (Fig. 6). Depending on the shape, size, movability and articulation, the pteromorpha may be of the following types.

<i>Aptera</i>	:	pteromorpha absent.
<i>Immoptera</i>	:	not movable, without articulation, various shape and size.
<i>Oxyptera</i>	:	immovable, large, anteriorly with a long, acute, spiniform appendage.
<i>Euptera</i>	:	pteromorphae movable, with a hinge, without spiniform appendage.
<i>Umbellata</i>	:	both anterior and posterior margin of pteromorpha arcuate, pteromorphae large, auriculate or umbelliform.

Notogastral setae : The number of notogastral setae is generally constant in oribatids. In the primitive group there are 15-16 setae while in the higher oribatids the number is usually 10. In some cases the number may fluctuate and generally the number ranges between 1-16. In some groups secondary setae other than the above may be observed. This condition being called neotrichy. The position and notation of the notogastral setae are shown in Figs. 2, 4, 6.

Octotaxic organs : The notogastral surface often displays opening of glands (*gla*), stigmata and other sense organ (laryfissure). Also the notogaster bears arae porosae (pore fields), pori (simple pores), sacculi (tiny pockets), etc. There are usually four arae porosae, although the number may vary, and these are designated, from anterior to posterior direction, as *Aa*, *A₁*, *A₂* and *A₃*. More seldom the arae porosae may occur in the line of dorsosejugal suture (*Ad*), lateral of prodorsum (*A₁*) or posterior to anal plate (*App*.) There are a maximum of seven laryfissures indicated as *ia*, *im*, *ip*, *ih*, *ips*, *iad* and *ian* (Figs. 2-7).

Gnathosoma : Gnathosoma is formed of chelicerae, pedipalpi, hypostomal and epistomal structures. The articulation of gnathosoma with the epimeral region is protected by the mentotectum. It also contains unpaired mentum, paired genae and their continuation are in the rutelli (Fig.3). The mentum bears one pair (*h*), the genae one pair of robust (*a*) and two pairs of minute (*m_{1,2}*) setae. In most oribatids the chelicerae are simple and in few cases peloptoid (Figs. 11,12). The chelicerae have two pairs (*cha*, *chb*) of setae, but in peloptoid type only one pair of setae (Figs. 11, 12). The labiogenal articulation varies in groups and the presence or absence of the articulation is sometimes important for the separation of taxa.

Epimeral region : The epimeral or coxisternal region is connected with legs I-III and extends to the genital region, sometimes partially enclosing genital area. The epimeral fields of epimeres (*ep₁-ep₄*) are separated from one another by epimeral furrows and their continuations - that is the apodemes (*ap₁-ap₃*). The sejugal furrow is backed by sejugal apodeme (*ap. sej*), and often connected longitudinally by sternal apodeme (*ap. at.*).

The epimeres bear setae, their number being characteristic to the taxon. The total number of epimeral setae is expressed by a setal formula 3-1-3-3 which means that *ep₁* has 3 setae, *ep₂* has 1 seta, *ep₃* bears 3 setae as also *ep₄* (Figs. 3,7).

Anogenital region : The area of the ventral plate behind the epimeral region is called the anogenital region. This area accomodates the genital and anal openings. According to position of genital (GN) and anal (AN) plates, the region may be of two types :

i) **Macropyline :** Genital and anal plates touch each other, and occupy the entire length of the anogenital region (Fig.3).

ii) **Brachypyline :** Genital and anal plates are separated although the size of the gap may vary in groups, and they are situated on distinct ventral plates (Fig. 7).

On the ventral plate aggenital and adanal regions are also identifiable especially by the presence of characteristic setae.

In Brachypylic - types the aggenital region can be further divided into four subtypes.

- a) *pseudogastric* - genital and anal opening separated by a parabolic line (Fig. 13).
- b) *diagastric* - separating line between genital and anal plates disappears in the middle (Fig. 14).
- c) *schizogastric* - the above separating line straight (Fig. 15).
- d) *hologastric* - ventral plate not divided by a separating line (Fig. 16).

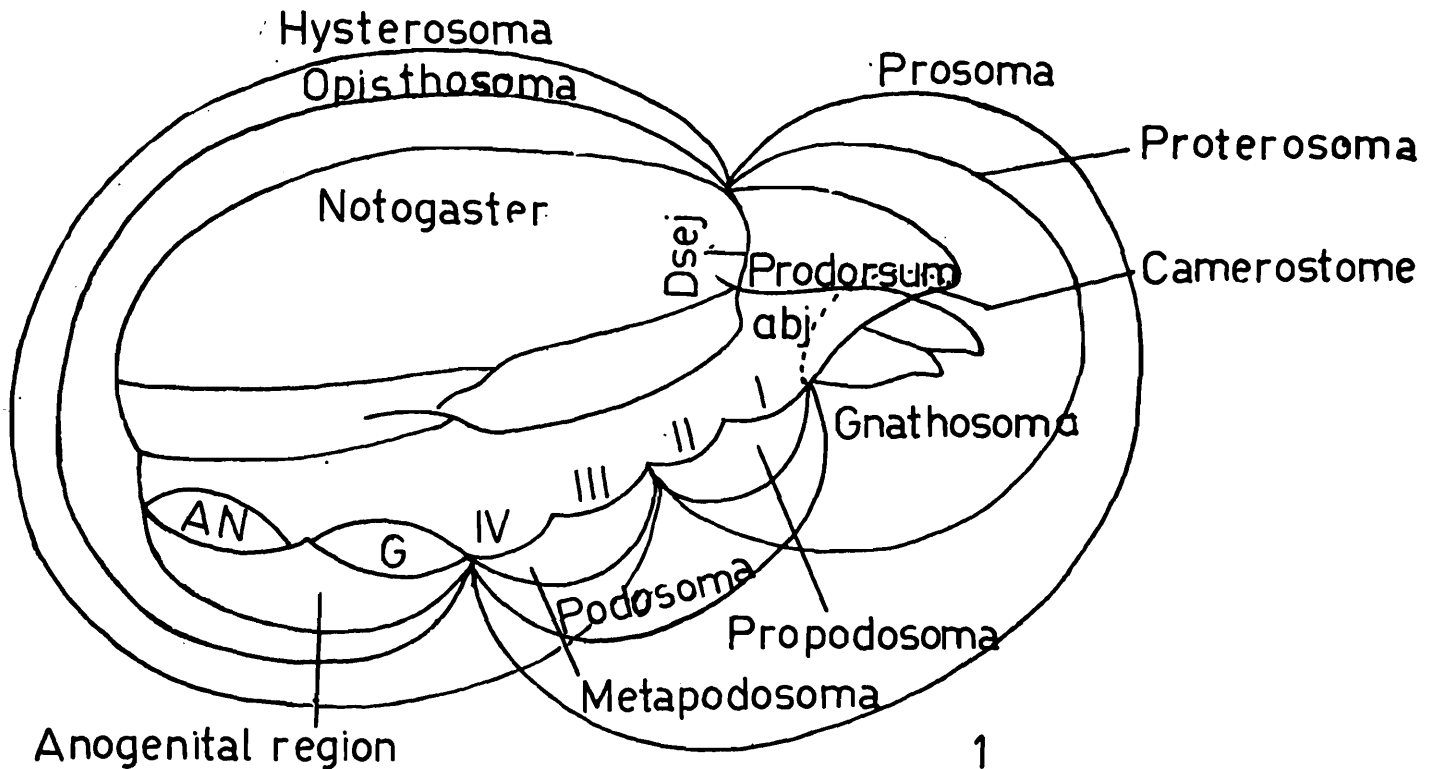
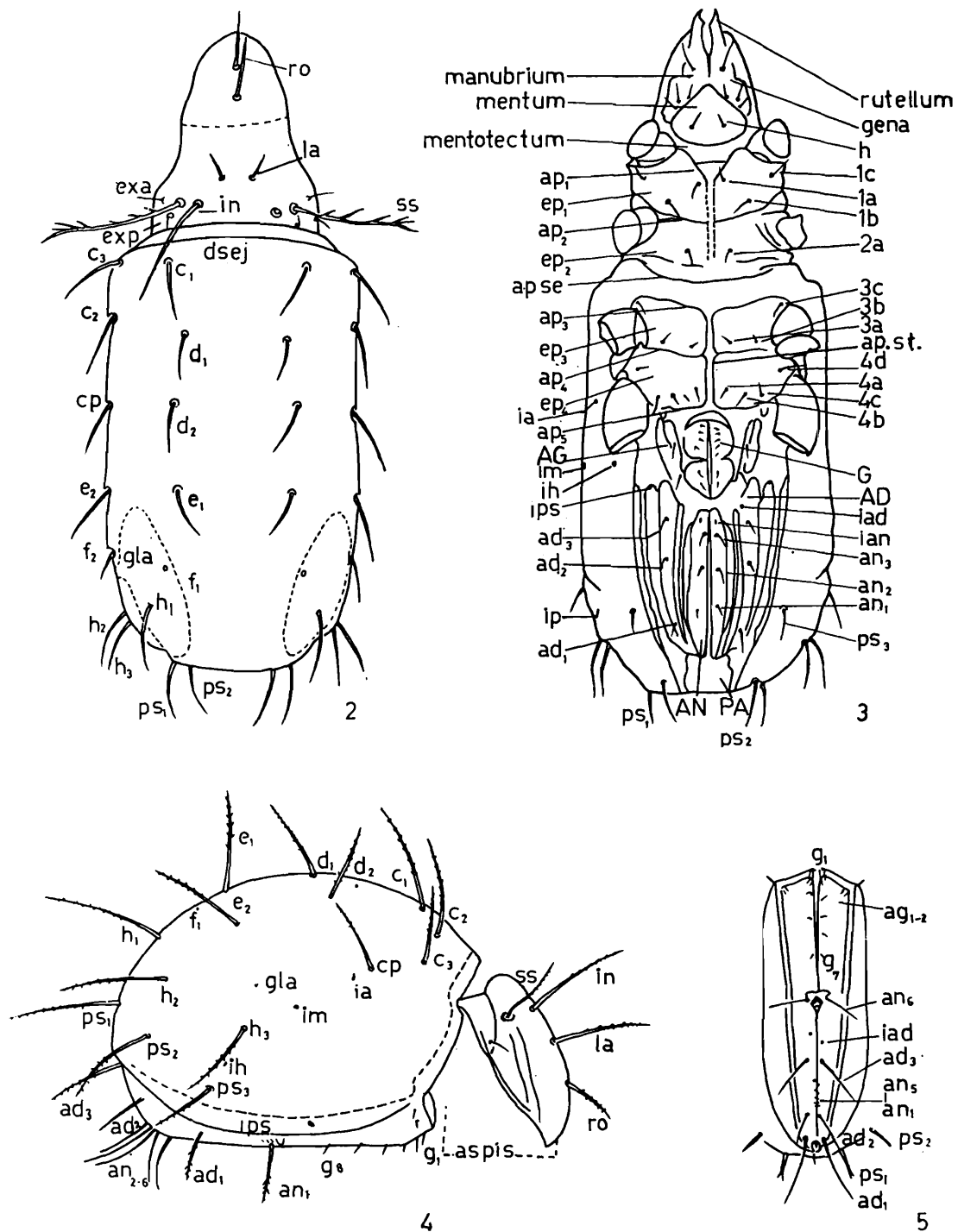


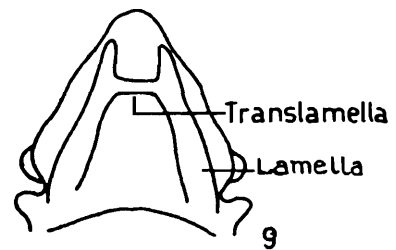
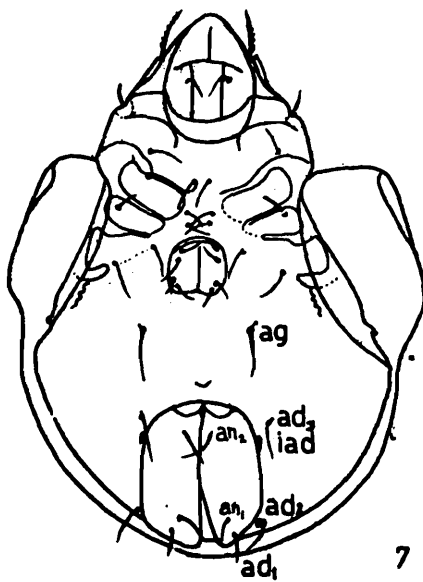
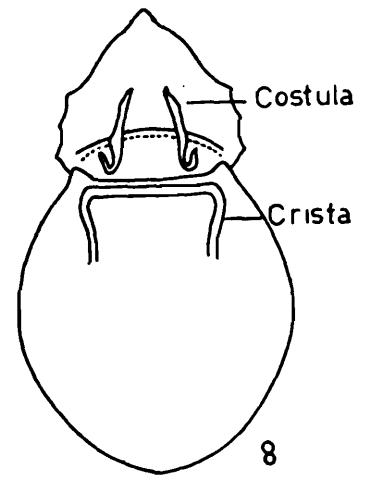
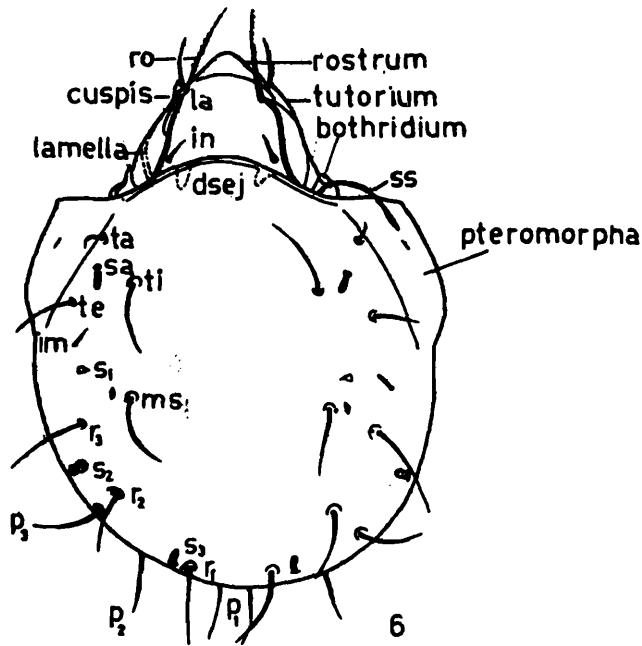
Fig. 1 : 1. Schematic diagram of body regions of the oribatids
 AN = anal plate, G = genital plate, I-IV - acetabula of legs
 I-IV (Modified from Balogh and Mahunka, 1983)

Abbreviations used in Figures

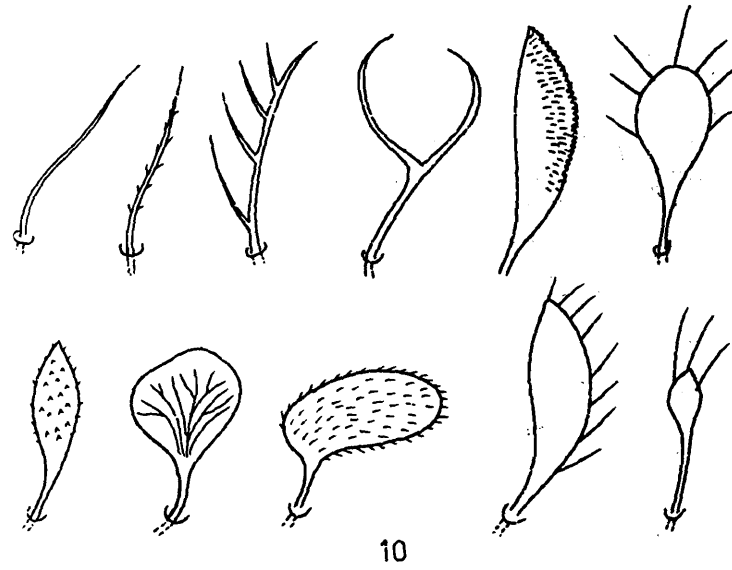
ro = rostral setae, *la* = lamellar seta, *in* = interlamellar seta, *exa* = anterior exobothridial seta, *exp* = posterior exobothridial seta, *ss* = sensillus, *c*₁-*c*₃, *d*₁, *d*₂, *c*₁, *c*₂, *f*₁, *f*₂, *h*₁-*h*₃, *ps*₁, *ps*₂ = notogastral setae, *gla* = oil gland. *G* = genital plate, *AG* = aggenital plate, *AN* = anal plate, *AD* = adanal plate, *PA* = postanal plate, *ap*₁ - *ap*₅ = apodemes, *ap. sei* = sejugal apodeme, *ap. st.* = sternal apodeme, *ep*₁ - *ep*₄ = epimeres, *ia*, *ih*, *im*, *ips*, *iad*, *ian* = lyrifissures, *an*₁ - *an*₃ = anal setae, *ad*₁ - *ad*₃ = adanal setae, *ps*₃ = notogastral seta, *la* - *lc* = setae of epimere 1, *2a*, = seta of epimere 2, *3a*-*3c* = setae of epimere 3, *4a* - *4d* = setae of epimere 4.



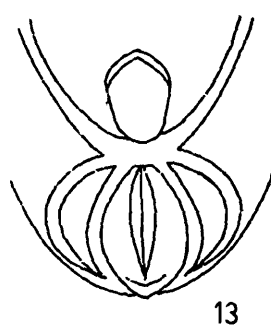
Figs. 2 -3 : Primitive oribatids of the dichoid type. 2. Dorsal view, 3. Ventral View
 Figs. 4 - 5 : Primitive oribatids of ptychoid type. 4. Lateral view : *ex* = exobothridial seta, *g*₁-*g*₈ = genital setae, 5. Anogenital region : *ag*₁ *ag*₂ = aggenital setae



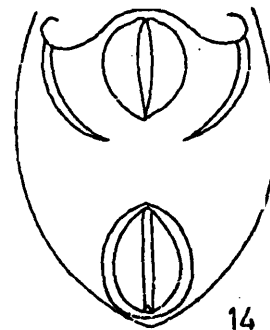
Figs. 6 - 7 : Body of higher oribatids. 6. Dorsal view, 7. Ventral view. Fig. 8 : Castula and crista of higher oribatids. Fig. 9 : Prodorsum showing translamella.



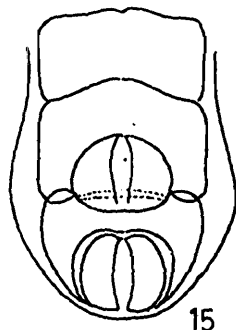
10



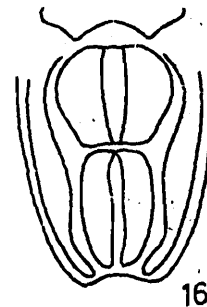
13



14

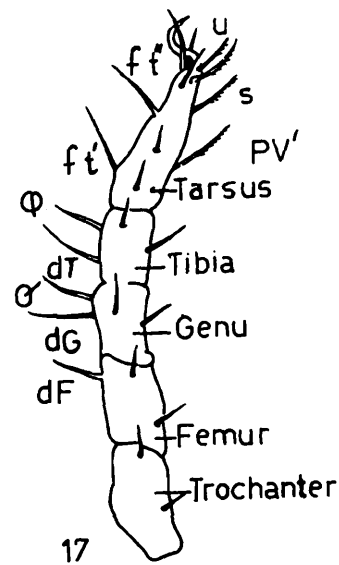
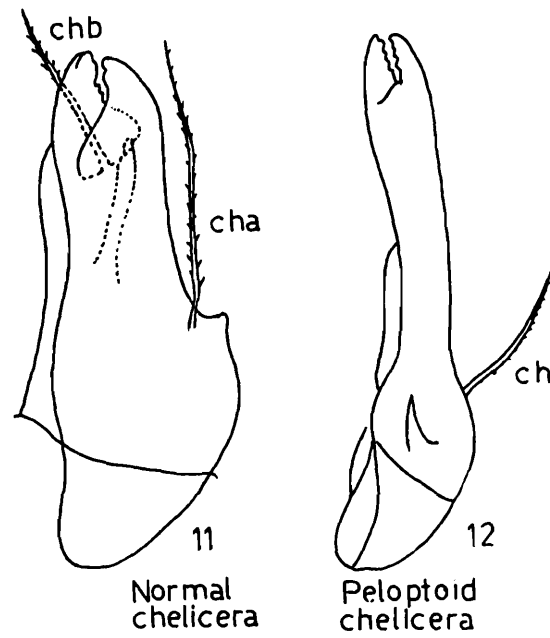


15



16

Fig. 10 : different types of sensillus. Figs. 13 - 16 : Types of anogenital region. 13. pseudogastric, 14. diagastric, 15. schizogastric, 16. hogastric.



Figs. 11-12 : Two main types of chelicera. 11. normal : *cha*, *chh* = cheliceral setae, 12. peloptoid : *ch* = cheliceral seta. **Fig. 17 :** Legs of oribatid (normal setae marked with Latin letters, solenidia marked with Greek letters).

In some oribatids the genital plate itself may be divided by a median suture. The genital and anal fields or in the higher oribatids also the ventral plate, may possess slit-like organ or pore *iad.*

Legs : Legs of oribatids usually consists of 5 free segments - trochanter, femur, genu, tibia and tarsus. In some cases coxae does not fuse to the body surface, in such cases there are six free segments. They articulate into the acetabuli. The tarsus bears one or three claws on a short penducle, and rarely shows two claws. The chaetotaxy of the legs offer good taxonomic characteristics and the setae on the legs can be of four types according to their structure *viz.*, simple setae, acanthoids, solenidia and famulus (Fig. 17).

The larvae have three pairs of legs and no genital opening. The protonymph has four pairs of legs and only one pair of genital papilla. The deutonymph has 10 complete segments of hysterosoma and two pairs of genital paipillae. The tritonymph has three pairs of genital papillae and full complement of epimeral setal formula as in adult.

LIST OF TAXA KNOWN FROM WEST BENGAL

1. Family MESOPLOPHORIDAE
 1. Genus *Apoplophora* Aoki
 1. *A. pantotrema* (Berlese)
 2. Genus *Mesoplophora* Berlese
 2. *Mecoplophora* sp.
2. Family PHTHIRACARIDAE
 3. Genus *Hoplophorella* Berlese
 3. *H. africana* Wallwork
 4. *H. scapellata* Aoki
 5. *H. singularis* Sellnick
 6. *H. sundarbanensis* Sanyal and Bhaduri
 7. *Hoplophorella* sp.
 4. Genus *Hoplophthiracarus* Jacot
 8. *H. bengalensis* sp.nov.
 9. *H. pakistanensis* (Hammer)
 10. *H. punctatus* Mondal and Kundu
 11. *H. tropicus* Mondal and Kundu
 5. Genus *Steganacarus* Ewing
 12. *S. stilifer* Hammer
 13. *S. ventosus* Hammer
3. Family EUPHTHIRACARIDAE

6. Genus *Rhysotritia* Markel and Meyer
 14. *R. ardua* (Koch)
 15. *R. ardua* (Koch) var. *otaheitensis* Hammer
 16. *R. brasiliانا* Mahunka
 17. *R. furcata* Bayoumi and Mahunka
 18. *R. peruensis* (Hammer)
4. Family GEHYPOCHTHONIIDAE
 7. Genus *Gehyochthonius* Jacot
 19. *Gehyochthonius* sp.
5. Family HYPOCHTHONIIDAE
 8. Genus *Eohyochthonius* Jacot
 20. *E. gracilis* Jacot
 21. *E. vilhenarum* (Balogh)
 9. Genus *Hypochothonius* Koch
 22. *Hypochothonius* sp.
 10. Genus *Malacoangelia* Berlese
 23. *M. remigera* Berlese
 24. *M. remigera indica* Chakrabarti, Bhaduri and Raychaudhuri
6. Family COSMOCHTHONIIDAE
 11. Genus *Cosmochthonius* Berlese
 25. *C. bengalensis* Chakrabarti, Bhaduri and Raychaudhuri
 26. *C. lanatus* (Michael)
 27. *Cosmochthonius* sp.
 12. Genus *Phyllozetes* Gordeeva
 28. *P. emmae* (Berlese)
 29. *T heterotrichus* Sanyal and Bhaduri
7. Family HAPLOCHTHONIIDAE
 14. Genus *Haplochthonius* Willmann
 30. *H. clavatus* (Hammer)
 31. *H. intermedius* Chakrabarti, Bhaduri and Raychaudhuri
 32. *H. simplex* Willmann
 33. *Haplochthonius* sp.
8. Family SPHAEROCHTHONIIDAE
 15. Genus *Sphaerochthonius* Berlese

34. *S. bengalensis* Sanyal and Sengupta
35. *Sphaerochthonius* sp.
9. Family BRACHYCHTHONIIDAE
 16. Genus *Brachychthonius* Berlese
 36. *B. cricoides* Weis-Fogh
 37. *Brachychthonius* sp.
10. Family LOHMANIIDAE
 17. Genus *Annectacarus* Grandjean
 38. *A. longisetosus* Bhattacharya, Bhaduri and Raychaudhuri
 39. *Annectacarus* sp.
 18. Genus *Cryptacarus* Grandjean
 40. *C. dendrisetosus* Bhattacharya, Bhaduri and Raychaudhuri
 41. *C. schauenbergi* Mahunka
 42. *C. tuberculatus* Csiszar
 19. Genus *Haplacarus* Wallwork
 43. *H. foliatus* Wallwork
 44. *H. foliatus bengalensis* Bhattacharya, Bhaduri and Raychaudhuri
 20. Genus *Javacarus* Balogh
 45. *J. kuhnelti* Balogh
 21. Genus *Lohmannia* Michael
 46. *L. javana* Balogh
 22. Genus *Millotacarus* Balogh
 47. *M. indicus* sp. nov.
 23. Genus *Papillacarus* Kunst
 48. *P. hirsutus* (Aoki)
 49. *P. simplirostratus* Bhattacharya, Bhaduri and Raychaudhuri
 24. Genus *Paulianacarus* Balogh
 50. *P. foliatus* Mondal and Chakrabarti
11. Family EPILOHMANNIIDAE
 25. Genus *Epilohmannia* Berlese
 51. *E. pallida* Wallwork
 52. *E. pallida indica* Bhattacharya and Banerjee
 53. *E. pallida pacifica* Aoki
12. Family NOTHRIDAE

26. Genus *Nothrus* Koch
 54. *N. biciliatus* Koch
 55. *N. gracilis* Hammer
 56. *N. oblongus* Hammer
13. Family CAMISIIDAE
 27. Genus *Platynothrus* Berlese
 57. *Platynothrus* sp.
 28. Genus *Sigmonothrus* Chakrabarti and Kundu
 58. *S. bistratus* Chakrabarti and Mondal
 59. *S. ovatus* Kundu and Mondal
 60. *S. quadristriatus* Chakrabarti and Kundu
14. Family TRHYPOCHTHONIIDAE
 29. Genus *Allonothrus* Hammen
 61. *A. indicus* Bhaduri and Raychaudhuri
 62. *A. monodactylus* Wallwork
 63. *A. russeolus* Wallwork
 30. Genus *Archegozetes* Grandjean
 64. *A. longisetosus* Aoki
 65. *A. magna* (Sellnick)
 66. *A. magna indicus* Bhaduri and Raychaudhuri
15. Family MALACONOTHRIDAE
 31. Genus *Malaconothrus* Berlese
 67. *M. assamensis* Chakrabarti and Roy Talukdar
 68. *M. geminus* Hammer
 69. *Malaconothrus* sp.
 32. Genus *Trimalconothrus*
 70. *T. cajamarcensis* Hammer
16. Family NANHERMANNIIDAE
 33. Genus *Cyrthermannia* Balogh
 71. *C. vicinicornuta* Aoki
 72. *C. quadricornuta* Chakrabarti and Bhaduri
 34. Genus *Masthermannia* Berlese
 73. *M. mammillaris* Berlese
 35. Genus *Nanhermannia* Berlese

74. *N. himalayensis* Chakrabarti and Raychaudhuri
75. *N. thaiensis* aoki
17. Family HERMANNIIDAE
36. Genus *Phyllhermannia*
76. *P. berlesei* Mondal
18. Family PLASMOBATIDAE
37. Genus *Plasmobates* Grandjean
77. *P. pagoda* Grandjean
19. Family LIODIDAE
38. Genus *Liodes* von Heyden
78. *L. terrestris* Wallwork
20. Family GYMNODAMAEIDAE
39. Genus *Allodamaeus* Banks
79. *A. adpressus* Aoki and Fujikawa
21. Family PLATEREMAEIDAE
40. Genus *Plateremaeus* Berlese
80. *P. rotundatus* Berlese
81. *Plateremaeus* sp.
22. Family BELBIDAE
41. Genus *Metabelba* Grandjean
82. *M. obtusus* Hammer
83. *Metabelba* sp.
23. Family BELBODAMAEIDAE
42. Genus *Damaeobelba* Sellnick
84. *Damaeobelba* sp.
43. Genus *Hungerobelba* Balogh
85. *Hungerobelba* sp.
24. Family CEPHEIDAE
44. Genus *Conoppia* Berlese
86. *Conoppia* sp.
25. Family MICROTEGEIDAE
45. Genus *Microtegeus* Berlese
87. *M. reticulatus* Aoki
26. Family EREMAEOZETIDAE

46. Genus *Eremaezetes* Berlese
 88. *E. himalayensis* sp. nov.
27. Family MICROZETIDAE
 47. Genus *Berlesezetes* Mahunka
 89. *B. auxiliaris* (Berlese)
 90. *B. auxiliaris appalachicola* (Jacot)
 91. *B. peruensis* (Hammer)
28. Family EREMULIDAE
 48. Genus *Eremulus* Berlese
 92. *E. avenifer* Berlese
 93. *E. flagellifer* Berlese
 94. *E. renukae* sp. nov.
29. Family DAMAEOLIDAE
 49. Genus *Fosseremus* Grandjean
 95. *F. quadripertitus* Grandjean
30. Family EREMOBELBIDAE
 50. Genus *Eremobelba* Berlese
 96. *E. himalayensis* Mondal and Kundu
 97. *E. miliae* sp. nov.
31. Family AMERIDAE
 51. Genus *Hymenobelba* Balogh
 98. *H. ypsilon* Balogh
32. Family HETEROBELBIDAE
 52. Genus *Heterobelba* Berlese
 99. *H. rostrata* Mondal and Kundu
 100. *Heterobelba* sp.
33. Family BASIOBELBIDAE
 53. Genus *Basilobelba*
 101. *B. barbata* Mondal and Kundu
 102. *B. indica* Bhaduri and Raychaudhuri
 54. Genus *Xiphobelba* Csiszar
 103. *Xiphobelba* sp.
34. Family EREMAEIDAE
 55. Genus *Eremaeus* Koch

104. *Eremaeus* sp.
56. Genus *Proteremaeus* Piffi
105. *Proteremaeus* sp.
57. Genus *Tricheremaeus* Berlese
106. *Tricheremaeus* sp.
35. Family ZETORCHESTIDAE
58. Genus *Zetorchestes* Berlese
107. *Z. saltator* Oudemans
36. Family METRIOPPIIDAE
59. Genus *Ceratoppia* Berlese
108. *C. bipilis* Hermann
37. Family CARABODIDAE
60. Genus *Carabodes* Koch
109. *C. peniculatus* Aoki
61. Genus *Gibbicepheus* Balogh
110. *Gibbicepheus* sp.
62. Genus *Neocarabodes* Balogh and Mahunka
111. *N. sexpilous* Balogh and Mahunka
38. Family NIPPOBODIDAE
63. Genus *Leobodes* aoki
112. *L. mirabilis* Aoki
39. Family TECTOCEPHEIDAE
64. Genus *Tectocepheus* Berlese
113. *T. sarekensis* Tragardh
114. *T. velatus* (Michael)
115. *Tectocepheus* sp.
40. Family OTOCEPHEIDAE
65. Genus *Dolicheremaeus* Jacot
116. *D. coronarius* Chakrabarti, Bhaduri and Kundu
117. *D. geminus* Mondal and Kundu
118. *D. himalayensis* Chakrabarti, Bhaduri and Kundu
119. *D. nepalensis* Aoki
120. *D. bengalensis* sp. nov.
66. Genus *Pseudotocepheus* Balogh

- 121. *P. gobletus* Chakrabarti and Mondal
- 122. *P. hammerae* Chakrabarti and Kundu
- 123. *P. orientalis* Mondal and Kundu

41. Family OPPIIDAE

- 67. Genus *Ameroppia* Hammer
 - 124. *A. chavinensis* Hammer
- 68. Genus *Brachioppia* Hammer
 - 125. *B. ananthakrishni* Sanyal and Bhaduri
 - 126. *B. cuscensis* Hammer
 - 127. *Brachioppia* sp.
- 69. Genus *Lasiobelba* Aoki
 - 128. *L. suchetae* sp. nov.
- 70. Genus *Lanceoppia* Hammer
 - 129. *Lanceoppia* sp.
- 71. Genus *Multioppia* Hammer
 - 130. *M. radiata* Hammer
 - 131. *M. simplitricha* Sanyal and Bhaduri
 - 132. *M. stellifera* Hammer
 - 133. *Multioppia* sp.
- 72. Genus *Neoppia* Bhattacharya and Banerjee
 - 134. *N. minuta* Bhattacharya and Banerjee
- 73. Genus *Oppia* Koch
 - 135. *O. cryptomeriae* Mondal and Kundu
 - 136. *O. nodosa* Hammer
 - 137. *O. orientalis* Sanyal and Bhaduri
 - 138. *O. ramisetosa* Sanyal and Bhaduri
 - 139. *O. yodai* Aoki
 - 140. *Oppia* sp.
- 74. Genus *Oppiella* Jacot
 - 141. *O. nova* (Oudemans)
- 75. Genus *Paroppia* Hammer
 - 142. *Paroppia* sp.
- 76. Genus *Ramusella* Hammer
 - 143. *Ramusella* sp.

77. Genus *Solenoppia* Hammer
144. *Solenoppia* sp.
78. Genus *Striatoppia* Balogh
145. *S. machadoi* Balogh
146. *S. niliaca* (Popp)
42. Family SUCTOBELBIDAE
79. Genus *Flagrosuctobelba* Hammer
147. *F. flabella* Mondal
80. Genus *Suctobelba* Paoli
148. *S. elegantula* Hammer
149. *S. ponticulus* Hammer
150. *S. subcornigera* Forsslund
151. *S. quadricarina* Hammer
152. *S. variosetosa* Hammer
81. Genus *Suctobelbella* Jacot
153. *S. nodivisa* (Hammer)
154. *Suctobelbella* sp.
82. Genus *Suctobelbila* Jacot
155. *S. dentata* (Hammer)
43. Family BANKSINOMIDAE
83. Genus *Oribella* Berlese
156. *Oribella* sp.
44. Family CYMBAERMEIDAE
84. Genus *Scapheremaeus* Berlese
157. *S. fisheri* Aoki
158. *Scapheremaeus* sp.
45. Family CHAUNOPROCTIDAE
85. Genus *Chaunoproctus* Pearce
159. *C. abalai* Bhaduri, Bhattacharya and Chakrabarti
160. *C. clavisetosus* Bhaduri, Bhattacharya and Chakrabarti
161. *C. minor* (Balogh)
46. Family ORIBATULIDAE
86. Genus *Eporibatula* Sellnick
162. *Eporibatula* sp.

87. Genus *Euscheloribates* Kunst
163. *Euscheloribates* sp.
88. Genus *Hammerabates* Balogh
164. *H. trisetosus* Balogh
89. Genus *Incabates* Hammer
165. *I. nudus* Hammer
90. Genus *Oribatula* Berlese
166. *O. tibialis* (Nicolet)
167. *Oribatula* sp.
91. Genus *Schelorigibates* Berlese
168. *S. albialatus* Hammer
169. *S. bhadurii* sp. nov.
170. *S. curvialatus* Hammer
171. *S. huancayensis* Hammer
172. *S. indicus* sp. nov.
173. *S. natalensis* Pletzen
174. *S. parvus* Pletzen
175. *S. praeincisus* (Berlese)
176. *S. rakhali* sp. nov.
177. *S. rectus* Hammer
178. *S. thermophilus* Hammer
92. Genus *Zygoribatula* Berlese
179. *Z. longiporosa* Hammer
180. *Z. tortilis* Hammer
181. *Zygoribatula* sp.
47. Family HAPLOZETIDAE
93. Genus *Conozetes* Balogh and Mahunka
182. *Conozetes* sp.
94. Genus *Haplozetes* Willmann
183. *Haplozetes* sp.
95. Genus *Lauritzenia* Hammer
184. *L. longipluma* Hammer
96. Genus *Peloribates* Berlese
185. *P. intermedius* Mondal

97. Genus *Phalacrozetes* Aoki
186. *P. sinatus* Aoki
98. Genus *Pilobatella* Balogh and Mahunka
187. *P. berlesi* Bhattacharya and Banerjee
188. *Pilobatella* sp.
99. Genus *Pilobates* Balogh
189. *Pilobates* sp.
100. Genus *Rostrozetes* Sellnick
190. *R. foveolatus* Sellnick
191. *R. punctatus* Karppinen
101. Genus *Setoxylobates* Balogh and Mahunka
192. *S. foveolatus* Balogh and Mahunka
102. Genus *Xylobates* Jacot
193. *X. capucinus* (Berlese)
194. *X. seminudus* Hammer
48. Family CERATOZETIDAE
103. Genus *Allozetes* Berlese
195. *A. translamellatus* Hammer
104. Genus *Ceratozetes* Berlese
196. *C. gracilis* Michael
105. Genus *Hypozetes* Balogh
197. *H. imitator* Balogh
198. *H. laysanensis* Aoki
199. *Hypozetes* sp.
49. Family MYCOBATIDAE
106. Genus *Punctoribates* Berlese
200. *P. longiporosus* Balogh
50. Family MOCHLOZETIDAE
107. Genus *Podoribates* Berlese
201. *Podoribates* sp.
108. Genus *Unguizetes* Sellnick
202. *U. clavatus* Aoki
203. *Unguizetes* sp.
51. Family PELOPIDAE

109. Genus *Eupelops* Ewing204. *E. acromis minor* Chakrabarti, Bhaduri and Raychaudhuri205. *E. longisetosus* Chakrabarti and Mondal

52. Family ORIBATELLIDAE

110. Genus *Lamellobates* Hammer206. *L. angolensis* Balogh207. *L. hauseri* Mahunka208. *L. palustris* Hammer209. *Lamellobates* sp.111. Genus *Paralamellobates* Bhaduri and Raychaudhuri210. *P. bengalensis* Bhaduri and Raychaudhuri211. *Paralamellobates* sp.112. Genus *Oribatella* Banks212. *O. meridionalis* Berlese

53. Family PARAKALUMMIDAE

113. Genus *Protokalumma* Jacot213. *Protokalumma* sp.

54. Family GALUMNIDAE

114. Genus *Galumna* von Heyden214. *G. crenata* Deb and Raychaudhuri215. *G. flabellifera orientalis* Aoki216. *G. parascaber* Deb and Raychaudhuri217. *Galumna* sp.

SYSTEMATIC ACCOUNT

Key to the families of oribatid mites from West Bengal

- 1(6) 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 brachypyline type i.e., genital and anal plates well separated and plates rounded Mesoplophoridae Ewing, 1917
- 3(2) Anogenital region macropyline type i.e., genital and anal plates meeting each other; anal plates not rounded

- 4(5) Anogenital region wide; body not much compressed laterallyPhthiracaridae Perty, 1841
- 5(4) Anogenital region narrow; body considerably compressed laterally
.....Euphthiracaridae Jacot, 1930
- 6(1) Body not ptychoid, propodosoma can not be shut back against the hysterosoma and ventral region; body never laterally compressed
- 7(30) Anogenital region macropyline type
- 8(19) Notogaster with 1-3 transverse sutures
- 9(14) Notogaster with a single transverse suture
- 10(11) Latero-abdominal gland present; transverse suture situated closely behind setae of *d* row
.....Gehypochthoniidae Strenzke, 1963
- 11(10) Latero-abdominal gland absent; transverse suture either with insertion points or setae either of *d* or *e* rows
- 12(13) Notogaster flattened, elongate or pentagonal, without reticulation; transverse suture with insertion points of setae *e*; notogastral setae simple, setiform or lanceolate; cerotegument absent
.....Hypochthoniidae Berlese, 1910
- 13(12) Notogaster rounded, with polygonal reticulation; transverse suture with setae *d* reduced; notogastral setae T-shaped, densely plumose except setae *d*; covered with cerotegument
.....Sphaerochthoniidae Grandjean, 1947
- 14(9) Notogaster with 2-3 transverse sutures
- 15(16) Notogaster with three transverse sutures, notogastral setae e_1 , e_2 , f_1 and f_2 rigid, arise near or on the transverse suturesCosmochthoniidae Grandjean, 1947
- 16(15) Notogaster with 2-3 transverse sutures; notogastral setae not long and rigid, all similar, arise on shields
- 17(18) Notogaster with three transverse sutures; shield NA bearing only setae *c*; peranal plate absent
.....Haplochthoniidae Hammen, 1959
- 18(17) Notogaster with two transverse sutures; shield NA bearing setae *c* and *d* rows; peranal plate presentBrachychthoniidae Thor, 1934
- 19(8) Notogaster without transverse suture
- 20(21) Body dichoid; preanal plate presentLohmaniidae Berlese, 1916

- 21(20) Body holooid; preanal plate absent
- 22(23) Anogenital region not truly macropyline type; genital plates rounded-pentagonal; anal plates elongate-oval; aggenital setae two pairs; adanal setae 3 pairs; notogastral setae 16 pairs, lanceolateHermanniidae Sellnick, 1928
- 23(22) Anogenital region true macropyline type, V-shaped; ventral plate not developed
- 24(25) Bothridium absentMalaconothridae Berlese, 1916
- 25(24) Bothridium present
- 26(27) Aggenital setae presentCamisiidae Oudemans, 1900
- 27(26) Aggenital setae absent
- 28(29) Epimeral neotrichy strong; epimeres II with 3-6 pairs of setaeNothridae Berlese, 1885
- 29(28) Epimeral neotrichy absent; epimeres II with 0 or 1 pair of setae
.....Trhypochthoniidae Willmann, 1931
- 30(7) Anogenital region of brachypyline type
- 31(91) Notogaster pycnonotic i.e., arcae porosae, sacculi or pori absent; usually without pteromorphae
- 32(47) Eight or nine pairs of genital setae present
- 33(36) Anogenital plate either diagastric type (genital and anal plates separated by a medially incomplete curved line) or schizogastric type (genital and anal plates separated by a straight continuous line); hysterosoma without lateral tube
- 34(35) Anogenital region of schizogastric type; notogastral setae 14 pairs; eight pairs of genital setae arranged in two longitudinal rows; anal setae three pairs ..Epilohmanniidae Oudemans, 1923
- 35(34) Anogenital region of diagastric type; notogastral setae 15 pairs; nine pairs of genital setae aligned in a single longitudinal row; anal setae two pairs.....Nanhermanniidae Sellnick, 1928
- 36(33) Ventral plate without transverse suture (hologastric type)
- 37(38) Genital plates with transverse suture; seven pairs of genital setae arranged in one longitudinal row (5+2); notogaster with excentric scalpLiodidae Grandjean, 1954
- 38(37) Genital plates without transverse suture
- 39(42) Hysterosoma with lateral tube with gland opening

- 40(41) Lamellar setae very small, hardly visible; hysterosoma with concentrically arranged scalps; notogaster foveolate; notogastral setae 6 - 8 pairs, minute, hardly visible; seven pairs of genital setae Plasmobatidae Grandjean, 1961
- 41(40) Lamellar setae well developed; hysterosoma without concentrically arranged scalp; notogaster reticulate; 14 pairs of well developed notogastral setae; nine pairs of genital setae
..... Hermanniidae Sellnick, 1928
- 42(39) Hysterosoma without lateral tube with gland opening
- 43(44) Aggenital-adanal notrichy present; preanal plate present; two pairs of anal setae
..... Heterobelbidae Balogh, 1961
- 44(43) No aggenital-adanal notrichy; preanal plate absent; mostly 3-7 pairs of anal setae
- 45(46) Legs thin, filiform, much longer than the body Gymnodamaeidae Grandjean, 1954
- 46(45) Legs thick, never filiform, never much longer than the body .Platcremaeidae Tragardh, 1931
- 47(32) Genital setae numbering 3-6 pairs
- 48(51) Notogaster with ventrally deflected, immovable pteromorphae
- 49(50) Smaller species; lamellae very large; notogaster broad; apodemata IV thickened
..... Microzetidae Grandjean, 1936
- 50(49) Larger species; lamellae broad, parallel, medially connected; apodemata not thickened
..... Eremaozetidae Balogh, 1972
- 51(48) Notogaster without pteromorphae
- 52(62) Prodorsum having lamellae with cuspides
- 53(56) All notogastral setae placed in marginal or postero-marginal position
- 54(55) Lamellae meeting; notogaster with sculpture; dorsal setae short Cephidae Berlese, 1896
- 55(54) Lamellae not meeting; notogaster without sculpture; dorsal setae long
..... Nippobodidae Aoki, 1959
- 56(53) At least one or two pairs of setae in the central part of notogaster
- 57(58) One pair of notogastral setae originate on central part of notogaster, remaining setae submarginal and postero-marginal Microtegidae Balogh, 1972

- 58(57) Two to four pairs of notogastral setae originate on central part of notogaster
- 59(60) Dorsosejugal suture complete; lamellae with short cuspides; translamella often absent
..... Carabodidae Koch, 1836
- 60(59) Dorsosejugal suture absent; lamellar-interlamellar complex H-shaped; notogastral setae hardly
visible Tectocephidae Grandjean, 1958
- 61(60) Dorsosejugal suture incomplete in the middle; lamellar-interlamellar complex not H-shaped;
notogastral setae long Chaunoproctidae Pearce, 1906
- 62(52) Prodorsum without true lamellae; either thin crest-shaped lamellae or thin costulae present or
both lamellae and costulae absent
- 63(74) Ventral neotrichy present, more than four pairs of aggenital + adanal setae
- 64(65) Exuvia or at least tritonymphal exuvia affixed to one tubercle on notogaster
..... Basilobelbidae Balogh, 1961
- 65(64) Exuvia either absent or if present, never affixed by one tubercle to notogaster
- 66(69) Pedotecta II present
- 67(68) Notogaster usually with polygonally arranged granulation; two pairs of anal setae
..... Eremobelbidae Balogh, 1961
- 68(67) Notogaster without polygonal reticulation, 3-5 pairs of anal setae .. Eremaeidae Sellnick, 1928
- 69(66) Pedotecta II absent
- 70(71) Notogaster with four large semicircular depressions Damacolidae Grandjean, 1965
- 71(70) Notogaster without four large depressions
- 72(73) Some of the epimeral and aggenital setae 3 to 6 branched; prodorsum with two distinct,
longitudinal costulae Eremulidae Grandjean, 1966
- 73(72) Epimeral and aggenital setae never 3 to 6 branched; prodorsum with or without longitudinal
ridges Ameridae Grandjean, 1965
- 74(63) Ventral neotrichy absent
- 75(78) Notogaster hemispherical; eleven pairs of notogastral setae, eight pairs in two longitudinal rows
- 76(77) Spinae adnatae present Belbidae Willmann, 1931

- 77(76) Spinae adnatae absentBelbodamaeidae Bulanova - Zachvatkina, 1967
- 78(75) Notogaster more or less oval, notogastral setae never in two longitudinal rows
- 79(80) Rostral setae bifurcate; legs IV longer than I-IIIZetorchestidae Michael, 1898
- 80(79) Rostral setae never bifurcate; legs IV never adapted for jumping
- 81(82) Anterior and central part of notogaster without setae; only 2-4 pairs of postero-marginal setae present; thin lamellae presentMetrioppidae Balogh, 1943
- 82(81) Anterior and central part of notogaster with setae; notogastral setae 10-14 pairs; lamellae absent
- 83(84) Body elongate, mostly at least twice longer than wide; prodorsal and notogastral condyles presentOtocephidae Balogh, 1961
- 84(83) Body not elongate, mostly never twice as long as wide
- 85(86) Chelae attenuating, rudimentarySuctobelbidae Grandjean, 1954
- 86(85) Mandibulae normal
- 87(88) Costulae absent; notogastral setae very small, hardly visible; notogaster with wholly homogenous rugose sculptureCymbaeremeidae Sellnick, 1928
- 88(89) Costulae present or absent; notogastral setae small or large, easily visible; notogaster without rugose sculpture
- 89(90) Costulae strongly converging; anal and genital plates large, meeting each other
.....Banksinomidae Grandjean, 1953
- 90(89) Costulae when present almost parallel; anal and genital plates small, placed far from each other
.....Oppiidae Grandjean, 1954
- 91(31) Notogaster poronotic i.e., areae porosae, sacculi or pori present; pteromorphae usually present
- 92(95) Pteromorphae movable, articulate or semicircular
- 93(94) Prodorsum with true projecting lamellaeParakalummidae Grandjean, 1936
- 94(93) Prodorsum without true projecting lamellae; some chitinous lines present on the prodorsum
.....Galumnidae Jacot, 1925
- 95(92) Pteromorphae movable or not movable but never articulate

- 96(107) Lamellae appearing either as marginally a decurrent narrow lath or wider, when meeting medially connected by a translamella
- 97(102) Pteromorphae without any hinge and fixed
- 98(99) Dorsosejugal suture interrupted mediallyMochlozetidae Grandjean, 1960
- 99(98) Dorsosejugal suture complete
- 100(101) 4 or 5 pairs of genital setaeOribatulidae Thor, 1929
- 101(100) 6 pairs of genital setaeCeratozetidae Jacot, 1925
- 102(97) Pteromorphae with hinge and movable i.e., eupterous type
- 103(104) Notogaster with sacculi or poriHaplozetidae Grandjean, 1936
- 104(103) Notogaster with true areae porosae
- 105(106) Mandibulae peloptoid; interlamellar setae usually very large, leaf-shaped
..... Pelopidae Ewing, 1917
- 106(105) Mandibulae not peloptoid; interlamellar setae usually not leaf-shaped
..... Mycobatidae Grandjean, 1954
- 107(96) Lamellae extremely wide, meeting medially or fusing only basally, covering major portion of prodorsum; cuspides freeOribatellidae Jacot, 1925

1. Family MESOPLOPHORIDAE Ewing, 1917

Key to the genera of Mesoplophoridae

- 1(2) Sensilli and prodorsal setae barbed; ventral setae 7 pairs; anal setae 4 pairs
..... *Apoplophora* Aoki, 1980
- 2(1) Sensilli and prodorsal setae glabrous; ventral setae 10 pairs; anal setae 3 pairs
..... *Mesoplophora* Berlese, 1904

1. Genus *Apoplophora* Aoki

1980. *Apoplophora* Aoki, *Proc. Soc. Syst. Zool.*, No. 18 : 13.

1. *Apoplophora pantotrema* (Berlese)

1913. *Mesoplophora pantotrema* Berlese, *Redia*, 9 : 77.

1980. *Apoplophora remota* Aoki, *Proc. Soc. Syst. Zool.*, No. 18 : 13.
 1983. *Apoplophora remota*, Chakrabarti and Mondal, *Indian J. Acar.*, 8 (1) : 40.
 1984. *Apoplophora pantotrema* Syn. nov. Niedbala, *Bull. Pol. Acad. Sci. (Biol. Sci.)*, 32 (3-4) : 140.

Diagnosis : Prodorsum with fine structure of longitudinal striation; rostral, lamellar and interlamellar setae thick, barbed on one side; sensillus sparsely barbed on one side, slightly swelled near the basal part; genital setae six pairs, simple, minute; anal setae 4 pairs, simple, smooth; ventral plate with seven pairs of setae, anterior most pair fine and shorter, the remaining setae weakly barbed.

Distribution : India : West Bengal (Darjiling), Goa. Elsewhere : Indonesia, Japan, Malaysia, Philippines, Thailand.

2. Genus *Mesoplophora* Berlese

1904. *Mesoplophora* Berlese, *Redia*, 2 : 23.

2. *Mesoplophora* sp.

Remarks : The genus was reported by Bhattacharya (1979), Bhattacharya *et al.* (1981) and Joy and Bhattacharya (1981) from Birbhum district of West Bengal.

2. Family. PHTHIRACARIDAE Perty, 1841

Key to the genera of Phthiracaridae

- 1(2) Inner margin of anoadanal plate with 3-4 pairs of setae placed near each other; notogaster with tubercles and pits*Steganacarus* Ewing, 1917
 2(1) Inner margin of anoadanal plate with 2-3 pairs of setae placed far from each other; normally smooth notogaster
 3(4) Interlamellar setae erect, usually much longer and thicker than lamellar setae; two pairs of anal setae*Hoplophthiracarus* Jacot, 1933
 4(3) Interlamellar setae decumbent and not so different in shape from lamellar setae; three pairs of anal setae*Hoplophorella* Berlese, 1923

Remarks : Niedbala (1986a) has given a fresh interpretation of the phylogeny of Phthiracaroida. Following this concept Niedbala (1986b) further proposed thorough changes in the systematic position of a number of genera and species of Phthiracaridae. But I prefer to follow the previous publications, following Balogh and Balogh (1988) who opined that the system proposed by Niedbala is less suitable for identification.

3. Genus *Hoplophorella* Berlese

1923. *Hoplophorella* Berlese, *Redia*, 25 : 260.

Key to the species of *Hoplophorella*

- 1(4) Notogastral setae and ad_2 spatulate
- 2(3) Interlamellar setae long, spatulate; head of sensillus uneven*scapellata* Aoki, 1965
- 3(2) Interlamellar setae thick but not spatulate; head of sensillus beset with short bristles
.....*africana* Wallwork, 1967
- 4(5) Notogastral setae long, erect, barbed; ad_2 long, fine, smooth
- 5(6) Interlamellar and notogastral setae bottle brush-shaped
.....*sundarbanensis* Sanyal and Bhaduri, 1981
- 6(5) Interlamellar and notogastral setae distally barbed*singularis* Sellnick, 1959

3. *Hoplophorella africana* Wallwork

1967. *Hoplophorella africana* Wallwork, *Rev. Zool. Bot. Afr.*, 75 : 36.
1974. *Hoplophorella africana*, Banerjee, *Acta Arachnol.*, 25 (2) : 69.
1981. *Hoplophorella africana*, Chakrabarti and Mondal, *Sci. & Cult.*, 47 (5) : 182.

Diagnosis : Integument with pock-marks; rostral and interlamellar setae moderately long; lamellar setae very minute and situated in between interlamellar setae; sensillus long, curved in a sigmoid shape with slightly expanded distal region bearing short bristles; notogastral hood absent; notogastral setae fifteen pairs, strong, thick, spatulate; ad_2 longer than the median setae.

Material examined : Medinipur Dt. 2 (F), Egra, 6 kms from Digha, 17.xii.1985, from soil and litter, coll. R.K. Kulin.

Distribution : India : West Bengal (Bardhaman, Darjiling, Medinipur), Assam, Manipur, Orissa, Tripura. Elsewhere : Africa (Tchad).

4. *Hoplophorella scapellata* Aoki

1965. *Hoplophorella scapellata* Aoki, *Nat. Life Southeast Asia*, 4 : 131.
1981. *Hoplophorella scapellata*, Sanyal, *Bull. zool. Surv. India*, 4 (3) : 296.
1981. *Hoplophorella scapellata*, Sanyal and Bhaduri, *Indian J. Acar.*, 6 (1 & 2) : 35.
1983. *Hoplophorella scapellata*, Chakrabarty and Mondal, *Indian J. Acar.*, 8 (1) : 40.

Diagnosis : Integument with small pits; rostral setae well developed, strong; lamellar setae minute, fine; interlamellar setae long, directed upward; sensillus almost equally thick throughout its length except distal half which is hyaline and uneven; notogastral hood absent; notogastral setae fifteen pairs, broad, spatulate; ad_1 similar to notogastral setae; ad_2 minute.

Material examined : *Birbhum Dt.* : 2 (F), Suri Dak Bunglow compound, 28.ix.1986, from soil and litter, coll. A.K. Sanyal. *Hugli Dt.* : 1 (F), Kamarpukur, 24.ix.1987, from humus, coll. A.K. Sanyal. *Medinipur Dt.* : 2 (F), Chaulkhola, 19 kms away from Digha, 18.xii.1985, from humus, coll. S.K. De.

Distribution : India : West Bengal (Birbhum, Darjiling, Hugli, South 24-Parganas), Bihar, Manipur. Elsewhere : Japan, Mauritius Is., Reunion Is., Samoan Is., Thailand, Tonga Tapu Is.

5. *Hoplophorella singularis* Sellnick

1959. *Hoplophorella singularis* Sellnick, *Occas. Pap. Bishop. Mus.*, 22 (9) : 149.

1979. *Hoplophorella singularis*, Chakrabarti, Chanda and James, *Indian J. Acar.*, 7 (2) : 73.

Diagnosis : Integument with shallow pits; aspis truncated behind; no carina; rostral setae bent down, smooth; lamellar setae very short, smooth; interlamellar setae long, distally barbed, directed outward; sensillus projects outwards, thickens gradually to rounded knob-like head; notogastral setae fifteen pairs, moderately long, stout, barbed.

Distribution : India : West Bengal (Darjiling), Manipur. Elsewhere : Flint Island (Southern Polynesia).

6. *Hoplophorella sundarbanensis* Sanyal and Bhaduri

1981. *Hoplophorella sundarbanensis* Sanyal and Bhaduri, *Indian J. Acar.*, 6 : (1 & 2) : 35.

Diagnosis : Integument with rounded pock-marks; rostral setae moderately long, strong, pointed, outwardly directed; lamellar setae very minute; interlamellar setae long, thick, pilose, directed outwards; sensillus moderately long, distal half rounded, smooth; notogastral hood absent; notogastral setae fifteen pairs, strongly thickened, pilose; ad_2 pilose.

Distribution : India : West Bengal (South 24-Parganas).

7. *Hoplophorella* sp.

Remarks : The unidentified species was reported by Bhaduri and Raychaudhuri (1967) from Calcutta, Bhattacharya (1979), Bhattacharya, Joy and Joy (1981) and Joy and Bhattacharya (1981) from Birbhum and Sanyal (1981) and Sanyal and Bhaduri (1982) from South 24-Parganas.

4. Genus *Hoplophthiracarus* Jacot

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

Key to the species of *Hoplophthiracarus*

1(2) Lamellar setae foliate*pakistanensis* (Hammer, 1977)

- 2(1) Lamellar setae not foliate
- 3(4) Aspis foveolated; rostral setae almost bent at right angle; setae ps_2 and ps_3 inserted in deep tubes; claws with two teeth at the inner margin*tropicus* Mondal and Kundu, 1988
- 4(5) Aspis mainly punctate but anterodorsally foveolated; rostral setae more or less erect; setae ps_2 and ps_3 not inserted in deep tubes; claws without any tooth at the inner margin
- 5(6) Notogaster with punctations, lamellar setae almost half the length of interlamellar setae; notogastral setae faintly barbed at distal one third; anal, adanal and genital setae faintly barbed distally
.....*punctatus* Mondal and Kundu 1988
- 6(5) Notogaster with weakly developed foveolation; lamellar setae about one fifth the length of interlamellar setae; notogastral setae distinctly barbed at distal half; anal, adanal and genital setae smooth*bengalensis* sp. nov.

8. *Holophthiracarus bengalensis* sp. nov.

(Figs. 18-20)

Colour light brown; length of the aspis : 332; height of the aspis : 149; length of the notogaster : 548; height of the notogaster : 415.

Aspis longer than broad, flat in the middle, posterior part almost rounded, distinctly punctate, dorsally foveolated; lateral carinae distinct, short; rostral setae (34) smooth, simple, thin, short; lamellar setae (21) smooth, less than one fifth the length of interlamellar setae; interlamellar setae (109) curved, stout, barbed along the apical half; sensillus (63) with slender stalk, anteriorly swollen, smooth.

Notogaster with broad collar, distinctly punctate with round-shaped clusters of punctations; notogastral setae fifteen pairs, blunt at tip, distal half densely barbed, 59-92 long; setae c_1, c_2 antero-dorsal, c_3, cp antero-lateral, d_1, d_2, e_1 mid-dorsal, e_2, h_1 mid-lateral, h_2, f_1 postero-dorsal, h_2 postero-lateral and ps_1, ps_2, ps_3 postero-marginal.

Genital as well as anal plate lightly punctate; anal plate about twice as long as broad; anal setae two pairs, almost equal in length, smooth; adanal setae three pairs, unequal, smooth, tips pointed; $ad_2 > ad_1 > ad_3$, ad_3 postero-marginal, ad_2 in between an_2 and an_1 ; nine pairs of genital setae, inserted on the inner margin, the posterior three setae longer, almost equal to each other, the anterior ones shorter and of variable length.

Legs monodactylous; claws strongly curved.

Holotype : Adult (F), India : West Bengal : Birbhum, Suri, Dak Bunglow campus, 28.ix.1986, from litter and soil, coll. A.K. Sanyal. *Paratypes* : 4 adult (F), data same as for holotype.

Remarks : The species shows closeness to *Holophthiracarus tropicus* Mondal and Kundu, 1988 in the general configuration of the body, nature of sensillus, notogastral setae, genital and anal setae. It can,

however, be distinguished from *tropicus* by the smooth *ro* and *la* and punctuation of the body.

9. *Hoplophthiracarus pakistanensis* (Hammer)

1977. *Hoplophorella pakistanensis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, **21** (4) : 35.
 1984. *Hoplophthiracarus pakistanensis*, Niedbala, *Ann. Zool., Warszawa*, **38** (8) : 177.
 1983. *Hoplophthiracarus pakistanensis*, Chakrabarti and Mondal, *Indian J. Acar.*, **8**(1) : 41.

Diagnosis : Integument fairly foveolated; aspis with well developed keel forming a right angle; rostral setae short, foliate; lamellar setae short, stiff, smooth; interlamellar setae erect and bent forwards, barbed distally; sensillus widens towards the tip, surrounded by a rounded brim; notogastral collar narrow dorsally; notogastral setae fifteen pairs, equally long, erect, stiff, barbed distally; genital setae nine pairs, smooth, minute; anal and adanal setae smooth.

Distribution : India : West Bengal (Darjiling), Himachal Pradesh, Kashmir. Elsewhere : Pakistan.

10. *Hoplophthiracarus punctatus* Mondal and Kundu

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

Diagnosis : Aspis densely punctate with foveolation anterodorsally; rostral setae smooth, simple; 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 punctate; notogastral setae fifteen pairs, stiff, erect, distal one third finely barbed; genital setae nine pairs, apically barbed; anal and adanal setae barbed distally.

Distribution : India : West Bengal (Darjiling).

11. *Hoplophthiracarus tropicus* Mondal and Kundu

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

Diagnosis : Aspis coarsely foveolated; only one third of lateral carinae distinct; rostral setae smooth, short; lamellar setae finely barbed distally; interlamellar setae long, stout, barbed at the distal one third; sensillus slender, distal one third wide, anteriorly with uneven rounded brim; notogaster punctate with irregularly rounded ornamentation; notogastral setae fifteen pairs, erect, stiff, distal one third barbed, tips blunt; genital setae nine pairs, fine, smooth; anal and adanal setae long, smooth.

Distribution : India : West Bengal (Darjiling).

5. Genus *Steganacarus* Ewing

1917. *Steganacarus* Ewing, *Ann. Ent. Soc. Amer.*, **10** : 130.

Key to the species of *Steganacarus*

- 1(2) Aspis densely punctate; prodorsal keel big; sensillus long, stiff, equally thick throughout, pointed at the tip; notogaster foveolate and punctate; notogastral setae stiff, distal third rough or serrated*ventosus* Hammer, 1961
- 2(1) Aspis smooth; prodorsal keel low; sensillus sickle-shaped; notogaster weakly foveolate; notogastral setae thick, pointed*stilifer* Hammer, 1961

12. *Steganacarus stilifer* Hammer

1961. *Steganacarus stilifer* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13 (1) : 132.

1979. *Steganacarus stilifer*, Chakrabarti, Chanda and James, *Acarology News Letter*, 8 : 4.

Diagnosis : Aspis smooth; rostral setae small, directed forward; lamellar setae minute; interlamellar setae stiff, pointed, smooth, as long as rostral setae; sensillus sickle-shaped, anterior border with dense brim of fine bristles; notogaster finely foveolate; notogastral setae smooth, pointed.

Distribution : India : West Bengal (Darjiling). Elsewhere : South America (Peru).

13. *Steganacarus ventosus* Hammer

1961. *Steganacarus ventosus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13 (1) : 132.

1979. *Steganacarus ventosus*, Chakrabarti, Chanda and James, *Acarology News Letter*, 8 : 4.

Diagnosis : Aspis densely punctate; rostral setae thick, stiff, erect or slightly bent forward; lamellar setae very fine, as long as rostral setae; interlamellar setae tiny, stiff, directed forward; sensillus long, equally thick throughout with pointed tip, outer border with fine bristles; notogaster foveolated and punctated; notogastral setae stiff, as long as sensillus.

Distribution : India : West Bengal (Darjiling). Elsewhere : South America (Peru).

3. Family EUPHTHRACARIDAE Jacot, 1930

6. Genus *Rhysotritia* Markel and Meyer

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

Key to the species of *Rhysotritia*

- 1(2) Aspis with two lateral carinae; prodorsal setae erect, distal half finely barbed; lamellar setae shorter than distance between lamellar and rostral setae; notogastral setae short, erect, apically finely barbed*peruensis* (Hammer, 1961)
- 2(1) Aspis with one lateral carina which in some cases bifurcated at the rostral end

- 3(6) Lateral carina simple
- 4(6) Sensillus setiform, only distally ciliate, stalk not thickened, leg I bi- and II-V tridactylous
.....*ardua ardua* (Koch, 1841)
- 5(4) Sensillus dilated distally into a flat head set with coarse bristles on its surface; legs mono-or
tridactylous *ardua otaheitensis* Hammer, 1972
- 6(3) Lateral carina bifurcate at the rostral end
- 7(8) Prodorsal setae fine; sensillus baciliform; notogaster finely foveolated; notogastral setae fine
.....*brasiliana* Mahunka, 1983
- 8(7) Prodorsal setae robust; sensillus dilated distally into flat head beset with barbs; notogaster with
polygonal sculpture; notogastral setae robust*furcata* Bayoumi and Mahunka, 1979

14. *Rhysotritia ardua* (Koch)

1841. *Hoplophora ardua* Koch, *Deutschlands Crustaceen, Myriapoden und Arachniden*, 32 : 615.
1923. *Tritia ardua*, Sellnick, *Acari*, *Blatter fur Milben Kunde*, 3 : 12.
1928. *Oribotritia ardua*, Sellnick, *Tierw. Mitteleur*, 3 (9) : 39.
1930. *Pseudotritia ardua*, Jacot, *Proc. Boston Soc. Nat. Hist.*, 39 : 243.
1959. *Rhysotritia ardua*, Markel and Meyer, *Zool. Anz.*, 163 : 329.

Diagnosis : Anterior part of aspis with minute granules, aspis with single lateral carina on each side; rostral setae weakly barbed; lamellar and interlamellar setae thick, strongly barbed; sensillus thick, pointed, finely barbed; notogaster finely punctate; notogastral setae 14 pairs, strong, apically barbed; genital setae 9 pairs; *an*₇ very minute.

Material examined : *Nadia Dt.* : 1 (F), Krishnanagar, Choudhuripara, 18.i.1986, from litter, coll. A.K. Sanyal. *Birbhum Dt.* : 1 (F), Suri, Dak Bunglow Compound, 28.ix.1986, from soil and litter, coll. A.K. Sanyal. *Barddhaman Dt.* : 2(F), Burdwan University Campus, Golapbagh, 28.ix.1987, from soil and litter, coll. A.K. Sanyal.

Distribution : India : West Bengal (Barddhaman, Birbhum, Nadia), Himachal Pradesh, Orissa, Uttar Pradesh. Elsewhere : Africa (Sahara), Europe (Bulgaria, Germany, Greece, Spain), Indonesia, Japan, Jordan, Midway Is., Nepal, North America, Pacific Is., Pakistan, South America, Tahiti Is.

Remarks : The species is reported here for the first time from West Bengal.

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

1972. *Rhysotritia ardua* (Koch) var. *otaheitensis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 19 (3) : 12.
1981. *Rhysotritia ardua* (Koch) var. *otaheitensis*, Sanyal, *UAS Tech. Series No.* 37 : 109.
1982. *Rhysotritia ardua* (Koch) var. *otaheitensis*, Sanyal, *J. Soil Biol. Ecol.*, 2 (1) : 10.

Material examined : Koch Bihar Dt. : 1 (F), C.T.R.I. campus, Dinhata, 19.xi.1983, from soil and litter, coll. A.K. Sanyal. Jalpaiguri Dt. : 2 (F), Rajabhatkhawa forest, 22.xi.1983, from humus, coll. A.K. Sanyal.

Distribution : India : West Bengal (Jalpaiguri, Koch Bihar, South 24-Parganas). Elsewhere : Tahiti Is.

16. *Rhysotritia brasiliiana* Mahunka

1983. *Rhysotritia brasiliiana* Mahunka, *Folia Entomologica Hungarica*, 44 (2) : 205.

Diagnosis : Rostral and lamellar setae short; interlamellar setae twice as long as other prodorsal setae; sensillus setiform with few spines on its distal end; carina ramified in its distal end; notogastral setae 14 pairs, distally ciliate; genital setae 9 pairs.

Material examined : Darjiling Dt. : 2 (F), Jorebangla, 21.ix.1986, from decomposed litter, coll. A.K. Sanyal.

Distribution : India : West Bengal (Darjiling). Elsewhere : South America (Brazil, Surinam).

Remarks : The species is reported here for the first time from India.

17. *Rhysotritia furcata* Bayoumi and Mahunka

1979. *Rhysotritia furcata* Bayoumi and Mahunka, *Entomologica Basiliensia*, 4 : 20.

Diagnosis : Prodorsum foveolate; rostral, lamellar and interlamellar setae strongly erect, distal halves barbed; sensillus with a flat head beset with coarse barbs; lateral keel bifurcated; notogaster with pits forming polygonal structure; notogastral setae strong, erect, strongly barbed; genital setae 9 pairs.

Distribution : India : West Bengal (Darjiling). Elsewhere : Bhutan, Nepal.

18. *Rhysotritia peruensis* (Hammer)

1961. *Oribotritia peruensis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13 (1) : 133.

1988. *Rhysotritia peruensis*, Perez-Inigo and Baggio, *Acarologia*, 29 (2) : 193.

1973. *Rhysotritia peruensis*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci & Cult.*, 39 (8) : 365.

Diagnosis : Aspis finely pitted, with two lateral carinae; all prodorsal setae erect, distal halves set with fine bristles; sensillus as long as interlamellar setae, head slightly thick with fine bristles; notogastral surface weakly pitted; notogastral setae short, erect, apically finely ciliate; genital setae 9 pairs.

Distribution : India : West Bengal (Calcutta, Nadia). Elsewhere : Europe, Indonesia, North America (Canada), South America (Brazil, Peru), Tahiti Is.

4. Family GEHYPOCHTHONIIDAE Strenzke, 1963

7. Genus *Gehypochthonius* Jacot

1936. *Gehypochthonius* Jacot, *J. Elisha Mitchell Sci. Soc.*, 52 : 22.

19. *Gehypochthonius* sp.

Remarks : The undetermined species under the genus was reported by Bhattacharya (1979) and Bhattacharya, Joy and Joy (1980, 1981) from Birbhum district of West Bengal.

5. Family HYPOCHTHONIIDAE Berlese, 1910

Key to the genera of Hypochthoniidae

- 1(2) Genital plates subdivided by transverse suture *Eohypochthonius* Jacot, 1938
 2(1) Genital plates whole without a transverse suture
 3(4) Shoulder without tubercle; notogastral setae simple *Hypochthonius* Koch, 1836
 4(3) Shoulder with tubercle; notogastral setae phylliform *Malacoangelia* Berlese, 1913

8. Genus *Eohypochthonius* Jacot

1938. *Eohypochthonius* Jacot, *J. Elisha Mitchell Sci. Soc.*, 54 : 133.

Key to the species of *Eohypochthonius*

- 1(2) Sensillus with 10-11 pectinations; notogastral setae setiform; c_2 slightly shorter than c_1
 *gracilis* Jacot, 1938
 2(1) Sensillus with 7 pectinations; notogastral setae spiniform; c_2 slightly longer than c_1
 *vilhenarum* (Balogh, 1958)

20. *Eohypochthonius gracilis* Jacot

1936. *Hypochthonius gracilis* Jacot, *J. Elisha Mitchell Sci. Soc.*, 52 : 251.

1938. *Eohypochthonius gracilis* Jacot, *J. Elisha Mitchell Sci. Soc.*, 54 : 133.

1972. *Eohypochthonius gracilis*, Chakrabarti and Bhaduri, *Sci. & Cult.*, 38 (11) : 499.

1977. *Eohypochthonius gracilis*, Choudhuri and Banerjee, *The University of Burdwan, Publication*, 9.

Diagnosis : Interlamellar setae erect, clavate; sensillus bears 10-11 pectinations; a light undulating ridge on the anterior part of notogaster; notogastral setae twenty four, setiform; c_1 and c_2 represented by alveoli only; c_2 highly shorter than c_1 .

Distribution : India : West Bengal (Bardhaman, North 24-Parganas), Bihar, Orissa. Elsewhere : Africa, Indonesia, Fiji, Malaysia, North America (U.S.A.).

21. *Eohypochthonius vilhenarum* (Balogh)

1958. *Afrohypochthonius vilhenarum* Balogh, *Rev. Zool. Bot. Afr.*, **58** : 4.
 1960. *Eohypochthonius vilhenarum*, Wallwork, *Acarologia*, **11** (3) : 374.
 1979. *Eohypochthonius vilhenarum*, Bhattacharya, *J. Res. Visva-Bharati*, **3** (2) : 21.
 1980. *Eohypochthonius vilhenarum*, Bhattacharya, Joy and Joy, *Tropical Ecology & Development*, 983.
 1981. *Eohypochthonius vilhenarum*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, **1** : 32.

Diagnosis : Lamellar setae inserted on transverse ridge; sensillus bears seven pectinations which becomes progressively shorter distally; notogastral setae long and spiniform.

Distribution : India : West Bengal (Birbhum). Elsewhere : Africa.

9. Genus *Hypochthonius* Koch

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

22. *Hypochthonius* sp.

Remarks : The unidentified species was reported by Bhattacharya (1979) from Birbhum district, West Bengal.

10. Genus *Malacoangelia* Berlese

1913. *Malacoangelia* Berlese, *Redia*, **9** : 101.

Key to the species of *Malacoangelia*

- 1(2) Rostral setae 'T' shaped; 4-6 barbs in the inner margin of the sensillus; tip of the sensillus bifid*remigera* Berlese, 1913
 2(1) Rostral setae club-shaped; 8-barbs in the inner margin of the sensillus; tip of the sensillus without bifurcation*remigera indica* Chakrabarti, Bhaduri and Raychaudhuri, 1972

23. *Malacoangelia remigera* Berlese

1913. *Malacoangelia remigera* Berlese, *Redia*, **9** : 101.
 1972. *Malacoangelia remigera*, Chakrabarti and Bhaduri, *Sci. & Cult.*, **38** (11) : 499.

Diagnosis : Rostral setae 'T'-shaped, lamellar and interlamellar setae phylliform with long pointed tip; sensillus long, setiform, beset with 4-6 barbs inserted in inner side, tip of sensillus bifid; notogastral setae dilated like a blade, setae c_1 and c_2 on intercalary sclerite of the transverse suture, smaller than the remaining notogastral setae; genital setae 10 pairs.

Material examined : Barddhaman Dt. : 1 (F), Katwa, near Rly. Station, 26.ix.1987, from litter, coll. A.K. Sanyal.

Distribution : India : West Bengal (Barddhaman, Calcutta). Elsewhere : Africa, Fiji, Indonesia, Malaysia, Mauritius Is., North America, Reunion Is., Seychelles, South America, Tahiti Is.

24. *Malacoangelia remigera indica* Chakrabarti, Bhaduri and Raychaudhuri

1972. *Malacoangelia remigera indica* Chakrabarti, Bhaduri and Raychaudhuri, *Acta Arachnol.*, 24 (2) : 89.

Diagnosis : Rostral setae club-shaped; 8 barbs in the inner margin of the sensillus, tip of the sensillus not bifid.

Distribution : India : West Bengal (Nadia, North 24-Parganas).

6. Family COSMOCHTHONIIDAE Grandjean, 1947

Key to the genera of Cosmochthoniidae

- 1(2) Notogaster subdivided by 2 transverse sutures into 3 shields; tarsal claw formula 1-1-1-1
 *Trichthonius* Hammer, 1961
- 2(1) Notogaster subdivided by 3 or 4 transverse sutures into 4 or 5 shields; tarsi with two or three claws
- 3(4) Notogaster subdivided by 3 transverse sutures into 4 shields, tarsal claw formula 2-3-3-3
 *Cosmochthonius* Berlese, 1910
- 4(3) Notogaster subdivided by 4 transverse sutures into 5 shields, tarsal claw formula 2-2-2-3
 *Phyllozetes* Gordeeva, 1978

11. Genus *Cosmochthonius* Berlese

1910. *Cosmochthonius* Berlese, *Redia*, 6 (2) : 218.

Key to the species of *Cosmochthonius*

- 1(2) Polygonal reticulation of integument complete; rostral, lamellar and exobothridial setae uniramous; tarsi I-IV bidactylous *bengalensis* Chakrabarti, Bhaduri and Raychaudhuri, 1972
- 2(1) Polygonal reticulation of integument broken; all prodorsal setae biramous; tarsi I bidactylous, II-IV tridactylous *lanatus* (Michael, 1885)

25. *Cosmochthonius bengalensis* Chakrabarti, Bhaduri and Raychaudhuri

1972. *Cosmochthonius bengalensis* Chakrabarti, Bhaduri and Raychaudhuri, *Acta Arachnol.*, 24 (2) : 86.

Diagnosis: Integument with reticulation of polygonal alveoli; rostral and lamellar setae bilaterally feathered; interlamellar setae biramous with branches; exobothridial setae uniramous and bilaterally feathered; sensillus long, club shaped, densely setose at distal end; notogastral setae 14 pairs, finely barbed on both sides, c_1, c_2, f_1, f_2 very long, 4 pairs of plumose setae on the postero-lateral margin; all ventral setae bilaterally feathered; genital setae 10 pairs; legs bidactylous.

Distribution: India : West Bengal (Calcutta, Nadia).

26. *Cosmochthonius lanatus* (Michael)

1885. *Hypochthonius lanatus* Michael, *J. R. Microscop. Soc.*, 5 : 396.
 1988. *Hypochthonius lanatus* Michael, *Ray Society, London*, 541.
 1931. *Cosmochthonius lanatus* (Michael) : Willmann, *Tierwelt Dtl.*, 22 : 101.
 1979. *Cosmochthonius lanatus*, Bhattacharya, *J. Res. Visva-Bharati*, 3 (2) : 21.

Diagnosis: Integument with reticulation of polygonal alveoli forming a broken reticulation pattern; all prodorsal setae branched; sensillus narrow at the base becoming increasingly thickened, apical portion densely setose; notogastral setae 14 pairs, e_1, e_2, f_1, f_2 very long, barbed on both sides, 10 pairs of genital setae; leg I bi- and II-IV tridactylous.

Distribution: India : West Bengal (Birbhum). Elsewhere : Africa, Europe, (Bulgaria, Germany, Greece, U.K.), Nepal.

27. *Cosmochthonius* sp.

Remarks: The *Cosmochthonius* sp. was recorded by Sanyal (1981) and Sanyal and Bhaduri (1982) from South 24-Parganas, West Bengal.

12. Genus *Phyllozetes* Gordeeva

1978. *Phyllozetes* Gordeeva, *Zool. Zh.*, 57 : 1099.

28. *Phyllozetes emmae* (Berlese)

1910. *Cosmochthonius emmae* Berlese, *Redia*, 6(2) : 222.
 1980. *Phyllozetes emmae* (Berlese) : Gordeeva, *Zool. Zh.*, 59 : 849.
 1979. *Phyllozetes emmae*, Bhattacharya, *J. Res. Visva Bharati*, 3 (2) : 21.
 1980. *Phyllozetes emmae*, Bhattacharya and Joy, *Soil Biology Related to land use practice*, 112.
 1981. *Phyllozetes emmae*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 32.

Diagnosis: Hysterosomal shield appear to lack sculpturing; rostral, lamellar and interlamellar setae bifurcate, 'T' - shaped; sensillus long, club-shaped, densely setose at distal end; c_1, c_2, f_1, f_2 very long, leaf-shaped, dense to medium spaced cilia along margin; genital setae 10 pairs; legs I-III bidactylous, IV tridactylous.

Distribution: India : West Bengal (Birbhum). Elsewhere : Asia, Australia, Europe, (Greece),

Indonesia, U.S.S.R.

13. Genus *Trichthonius* Hammer

1961. *Trichthonius* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13 (1) : 15.

29. *Trichthonius heterotrichus* Sanyal and Bhaduri

1983. *Trichthonius heterotrichus* Sanyal and Bhaduri, *Acarologia*, 24 (2) : 219.

Diagnosis : Rostral setae broad, bilaterally feathered; lamellar setae biramous, rami profusely branched on inner side; interlamellar setae thin and strongly feathered on inner side; sensillus gradually become broadened at its densely setose distal end; e_1, e_2, f_1, f_2 very long, leaf-shaped; genital setae 9 pairs; legs monodactylous.

Distribution : India : West Bengal (South 24-Parganas).

7. Family HAPLOCHTHONIIDAE Hammer, 1959

14. Genus *Haplochthonius* Willmann

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

Key to the species of *Haplochthonius*

- 1(2) Rostral and lamellar setae on short apophyses *clavatus* (Hammer, 1958)
 2(1) Rostral and lamellar setae not situated on apophyses
 3(4) Sensillus club shaped *intermedius* Chakrabarti, Bhaduri and Raychaudhuri, 1977
 4(3) Sensillus elliptical *simplex* Willmann, 1930

30. *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 - 344.

1972. *Haplochthonius clavatus*, Chakrabarti and Bhaduri, *Sci. & Cult.*, 38 (11) : 499.

Diagnosis : Rostral and lamellar setae on short apophyses, strong and equally thick throughout, a faint line connects the apophyses; a distinct sharp line between lamellar setae; sensillus long, flat, club-shaped, set with many bristles; 15 pairs of notogastral setae, straight and stiff; genital plates usually large.

Distribution : India : West Bengal (Nadia), Tripura. Elsewhere : South America (Argentina).

31. *Haplochthonius intermedius* Chakrabarti, Bhaduri and Raychaudhuri

1977. *Haplochthonius intermedius* Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43(4) : 178.
 1981. *Haplochthonius intermedius*, Sanyal, *Bull. zool. Surv. India*, 4 (3) : 296.
 1983. *Haplochthonius intermedius*, Sanyal, *Indian J. Acar.*, 8 : 33.

Diagnosis : Rostral setae bilaterally barbed, incurved; lamellar and intermellar setae simple; sensillus narrow, club-shaped, beset with fine bristles; 15 pairs of notogastral setae; *c*, *d* and *e* series of notogastral setae slightly beyond the suture of respective segments.

Distribution : India : West Bengal (Nadia, South 24-Parganas).

32. *Haplochthonius simplex* Willmann

1930. *Haplochthonius simplex* Willmann, *Abh. naturw. Ver. Bremen*, 28 (1) : 2.
 1979. *Haplochthonius simplex*, Bhattacharya, *J. Res. Visva-Bharati*, 3(2) : 21.
 1981. *Haplochthonius simplex*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 32.

Diagnosis : All prodorsal setae short, thin, setiform; rostral and lamellar setae turning towards each other; sensillus elliptical; 15 pairs of notogastral setae, thin and setiform.

Distribution : India : West Bengal (Birbhum). Elsewhere : Africa, Europe (Greece, Netherlands), North America, U.S.S.R.

33. *Haplochthonius* sp.

Remarks : The undetermined sp. under the genus was reported by Sanyal (1981) from South 24-Parganas.

8. Family SPHAEROCHTHONIIDAE Grandjean, 1947

15. Genus *Sphaerochthonius* Berlese

1910. *Sphaerochthonius* Berlese, *Redia*, 6(2) : 223.

34. *Sphaerochthonius bengalensis* Sanyal and Sengupta

1990. *Sphaerochthonius bengalensis* Sanyal and Sengupta, *Acarologia*, 31(3) : 291.

Diagnosis : All prodorsal setae 'T'-shaped, biramous, posterior ramus broad, rami flat, nearly phylliform and densely papillate; sensillus razor blade-shaped, uniramous, inner side papillate; notogastral setae 16 pairs, except *d*₁ and *d*₂ 'T'-shaped, biramous, densely papillate; genital setae 8 pairs, fine, simple; anal setae 12 pairs, minute, simple, adanal setae 4 pairs, biramous, 'T'-shaped, densely papillate.

Distribution : India : West Bengal (Murshidabad).

35. *Sphaerochthonius* sp.

Remarks : The genus represented by unidentified species was first recorded from Birbhum district of West Bengal by Bhattacharya, Joy and Joy (1981).

9. Family BRACHYCHTHONIIDAE Balogh, 1943

16. Genus *Brachychthonius* Berlese

1910. *Brachychthonius* Berlese, *Redia*, 6(2) : 219.

36. *Brachychthonius cricoides* Weis-Fogh

1947-48. *Brachychthonius cricoides* Weis-Fogh, *Natura Jutlandica*, 1 : 220.

1981. *Brachychthonius cricoides*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 32.

1981. *Brachychthonius cricoides*, Joy and Bhattacharya, *UAS Tech. Series No. 37* : 102.

Diagnosis : Propodosoma with distinct sculpture resulting faceted appearance, with lateral and semicircular vertex ridges; all setae minute and simple; sensillus spiciform, covered with short spikes; interlamellar setae situated just behind the pseudostigmata; two pairs of lateral light reflecting plates behind the pseudostigmata, the pair of pores situated laterally on the medial longitudinal ridges between the first and second pair of notogastral setae surrounded by ring.

Distribution : India : West Bengal (Birbhum). Elsewhere : Europe (Germany, Poland, U.K.).

37. *Brachychthonius* sp.

Remarks : Bhattacharya, Bhattacharya and Banerjee (1980) reported one unidentified species under the genus from Birbhum district, West Bengal.

10. Family LOHMANNIIDAE Berlese, 1916

Key to the genera of Lohmanniidae

- 1(6) Genital plates with transverse suture
- 2(5) Anal and adanal plates separated; pygidial neotrichy present or absent
- 3(4) A weak pygidial neotrichy; preanal plate narrow, terminally furcate ..*Papillacarus* Kunst, 1959
- 4(3) Pygidial neotrichy absent; preanal plate not covered*Lohmannia* Michael, 1898
- 5(2) Anal and adanal plates fused; strong pygidial neotrichy*Cryptacarus* Grandjean, 1950

- 6(1) Genital plates without transverse suture
- 7(8) Ano-adanal setae 4 pairs*Javacarus* Balogh, 1961
- 8(7) Ano-adanal setae 5 or 6 pairs
- 9(10) Five pairs of setae in the ano-adanal plates*Haplacarus* Wallwork, 1962
- 10(9) Six pairs of setae in the ano-adanal plates
- 11(12) Preanal plate narrow; slight pygidial neotrichy*Annectacarus* Grandjean, 1950
- 12(11) Preanal plate wide; no pygidial neotrichy
- 13(14) Protruding arcae porosae on prodorsum and notogaster*Paulianacarus* Balogh, 1960
- 14(13) No protruding arcae porosae on prodorsum and notogaster*Millotacarus* Balogh, 1960

17. Genus *Annectacarus* Grandjean

1950. *Annectacarus* Grandjean, *Arch. Zool. exp. gen. Paris*, **87** : 131.

38. *Annectacarus longisetosus* Bhattacharya, Bhaduri and Raychaudhuri

1974. *Annectacarus longisetosus* Bhattacharya, Bhaduri and Raychaudhuri, *Oriental Ins.*, **8** (2) : 281.

1979. *Annectacarus longisetosus*, Bhattacharya, *J. Res. Visva-Bharati*, **3**(2) : 21.

Diagnosis : Rostral tectum entire; rostral setae barbed, inserted on ridge, lamellar and interlamellar setae finely barbed; sensillus pectinate; notogaster with polygonal reticulation; except c_1 , d_1 , e_1 all notogastral setae very long; each genital plate with 7-9 barbed setae.

Distribution : India : West Bengal (Birbhum), Tripura.

39. *Annectacarus* sp.

Remarks : The genus was first reported from Nadia, West Bengal by Chakrabarti and Bhaduri (1972).

18. Genus *Cryptacarus* Grandjean

1950. *Cryptacarus* Grandjean, *Arch. Zool. exp. gen. Paris*, **87** : 138.

Key to the species of *Cryptacarus*

- 1(2) Notogastral setae c_1 , d_1 , e_1 , f_1 short and smooth, setae c_2 , d_2 , h_2 , h_3 short and ciliated*tuberculatus* Csiszar, 1961

- 2(1) Notogastral setae $c_1, c_2, d_1, d_2, e_1, f_1, h_2, h_3$ large and branched
- 3(4) Posterior portion of hysterosoma with distinct tubercles.....
.....*dendrisetosus* Bhattacharya, Bhaduri and Raychaudhuri, 1974
- 4(3) Posterior portion of hysterosoma without tubercles*schaunbergi* Mahunka, 1977

40. *Cryptacarus dendrisetosus* Bhattacharya, Bhaduri and Raychaudhuri

1974. *Cryptacarus dendrisetosus* Bhattacharya, Bhaduri and Raychaudhuri, *Oriental Ins.*, 8(2) : 281.
1979. *Cryptacarus dendrisetosus*, Bhattacharya, *J. Res. Visva Bharati*, 3(2) : 21.
1980. *Cryptacarus dendrisetosus*, Bhattacharya and Joy, *Soil Biology as related to land use practices* (ed. D. L. Dindal), 112.

Diagnosis : Prodorsum with polygonal reticulation, lateral margin of prodorsum with distinct angular projection; all prodorsal setae branched; sensillus pectinate; notogaster with tubercles on the posterior portion; notogastral setae branched, pygidial setae bush-like; genital plates with 4-5 small and barbed setae.

Distribution : India : West Bengal (Birbhum), Tripura.

41. *Cryptacarus schauenbergi* Mahunka

1977. *Cryptacarus schauenbergi* Mahunka, *Ray, Suisse. Zool.*, 84 (1) : 247.
1981. *Cryptacarus schauenbergi*, Bhattacharya and Bhattacharya, *Journal of the IPIIE India*, No. 3 : 53.
1981. *Cryptacarus schauenbergi*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 32.

Diagnosis : All prodorsal setae distinctly barbed; a sharp cuspis before *exa*; base of the sensillus thin, thick in the middle and gradually attenuated apically, with about 40 lateral cilia; notogaster with polygonal reticulation; notogastral and ventral setae barbed; 9 pairs of barbed genital setae.

Distribution : India : West Bengal (Birbhum). Elsewhere : Indonesia, Malaysia, Philippines.

42. *Cryptacarus tuberculatus* Csiszar

1961. *Cryptacarus tuberculatus* Csiszar, *Acta Zool. Acad. Sci. Hung.*, 7 : 346.
1972. *Cryptacarus tuberculatus*, Chakrabarti and Bhaduri, *Sci. & Cult.*, 38 (11) : 499.
1982. *Cryptacarus tuberculatus*, Sanyal, *J. Soil Biol. Ecol.*, 2(1) : 10.

Diagnosis : All prodorsal setae with fine branches on both sides; interlamellar setae short; sensillus slightly incrassate, tip pointed, with 10-13 cilia; notogaster with very fine polygonal reticulation; notogastral setae c_1, d_1, e_1, f_1 short and smooth, setae c_2, d_2, h_2, h_3 ciliated; ventral setae finely barbed.

Distribution : India : West Bengal (North 24-Parganas, South 24-Parganas). Elsewhere : Indonesia.

19. Genus *Haplacarus* Wallwork

1962. *Haplacarus* Wallwork, *Acarologia*, 4 : 465.

Key to the species of *Haplacarus*

- 1(2) All prodorsal setae finely barbed; posterior margin of preanal plate straight
*foliatus* Wallwork, 1962
- 2(1) All prodorsal setae smooth; posterior margin of preanal plate with one excrescence
*foliatus bengalensis* Bhattacharya, Bhaduri and Raychaudhuri, 1974

43. *Haplacarus foliatus* Wallwork

1962. *Haplacarus foliatus* Wallwork, *Acarologia*, 4 : 465.

1983. *Haplacarus foliatus*, Chakrabarti and Mondal, *Indian J. Acar.*, 8(1) : 41.

Diagnosis : Integument bears fine microsculpture of regular punctations; all prodorsal setae foliate with short barbs; sensillus pectinate with 10-12 branches; notogastral setae 10 pairs, markedly foliate, usually smooth; notogaster with 10 transverse bands; adanal setae foliate, thin and transparent; each genital plate with 10 setae.

Material examined : *Haora Dt.* : 2 (F), Amta, 20.x.1985, from humus, coll. A.K. Sanyal.

Distribution : India : West Bengal (Darjiling, Haora), Tripura. Elsewhere : Africa (Ghana), Europe (Spain), Thailand, Philippines.

44. *Haplacarus foliatus bengalensis* Bhattacharya, Bhaduri and Raychaudhuri

1974. *Haplacarus foliatus bengalensis* Bhattacharya, Bhaduri and Raychaudhuri, *Oriental Ins.*, 8(2) : 281.

1979. *Haplacarus foliatus bengalensis*, Bhattacharya, *J. Res. Visva-Bharati*, 3(2) : 21.

Diagnosis : Prodorsal setae smooth; an excrescence in the posterior margin of preanal plate; notogastral setae less foliate; other characters same as *Haplacarus foliatus foliatus* Wallwork, 1962.

Distribution : India : West Bengal (Birbhum).

20. Genus *Javacarus* Balogh

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

45. *Javacarus kuhnelti* Balogh

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

1974. *Javacarus kuhnelti*, Bhattacharya, Bhaduri and Raychaudhuri, *Oriental Ins.*, 8(2) : 286.

1979. *Javacarus kuhnelti*, Bhattacharya, *J. Res. Visva-Bharati*, 3(2) : 21.

Diagnosis : Prodorsum with small spots; rostrum sculptured; prodorsal setae lanceolate; sensillus with 7-10 secondary branches; notogaster with light spots forming a pattern; notogastral setae lanceolate without mid rib; genital setae 10 pairs.

Distribution : India : West Bengal (Birbhum), Tripura. Elsewhere : Fiji, Indonesia, Malaysia, Philippines, Tahiti Is.

21. Genus *Lohmannia* Michael

1898. *Lohmannia* Michael, *Lief.*, 3 : 75.

46. *Lohmannia javana* Balogh

1961. *Lohmannia javana* Balogh, *Acta Zool. Acad. Sci. Hung.*, 7 : 26.

1977. *Lohmannia javana*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43(4) : 179.

Diagnosis : Rostral setae leaf-like; lamellar, interlamellar and anterior exobothridial setae erect; posterior exobothridial setae broad; all prodorsal setae barbed; transverse band between interlamellar setae distinct; eight pairs of notogastral setae erect, acute, serrated; infracapitular setae fine, barbed.

Distribution : India : West Bengal (North 24-Parganas). Elsewhere : Indonesia.

22. Genus *Millotacarus* Balogh

1960. *Millotacarus* Balogh, *Mem. Inst. Sci. Madagascar*, 14A : 12.

47. *Millotacarus indicus* sp. nov. (Figs. 21, 22)

Colour light brown; length of the body : 164; width of the body : 84.

Rostrum rounded, convex; lateral margins of prodorsum with an angular contour; prodorsal surface excepting fossulae vitiformes covered with fine transparent cerotegument, ornamented with a micro-sculpture of granulated papillae; all prodorsal setae foliate, margins rough; rostral, lamellar and posterior exopseudostigmatic setae measure 53-76, interlamellar and anterior exopseudostigmatic setae slightly longer measuring 88-95; sensillus (84) fine, pectinate with 8-9 very fine branches; fossulae vitiformes connecting two interlamellar setae.

Notogastral surface covered with granules and granulated papillae prominent in the postero-lateral margins of the body; notogastral setae 16 pairs, phylliform, length and shapes different, margins rough; setae PS_1 strongly curved inwards, shorter than the others, setae measure 57-114; all transverse bands complete, characteristic shape of chain made of beads.

Infracapitulum with four pairs of setae; ventral surface granulated; apodemes well developed, $ap.3$ and 4 thick; coxisternal setal formula 3-1-3-4, setae thin, minute, smooth; anogenital configuration typical

for the genus; each genital plate with 10 setae comprising 4 antiaxial and 6 paraaxial, setae minute, smooth; adanal-anal setal formula 4-2.

All tarsi monodactyle.

Holotype : Adult (F), India: West Bengal : Jalpaiguri, Rajabhatkhawa forest, from litter and soil, 22.iv.1983, coll. A.K. Sanyal.

Remarks : Only two species viz., *M. granulatus* Balogh, 1960 from Madagascar and *M. orientalis* Mahunka, 1988 from Malaysia are so far known under the genus. The new species is distinguished from the type species by longer lamellar and interlamellar setae, distinct prodorsal transverse band, number and shape of notogastral bands, microsculpture on prodorsal and notogastral surface, number of branches of sensillus and smooth epimeral setae. The present species is also markedly different from the Malaysian species in the shape of notogastral bands.

The genus is reported here for the first time from India.

23. Genus *Papillacarus* Kunst

1959. *Papillacarus* Kunst, *Acta Univ. Carol. Biol.*, 52.

Key to the species of *Papillacarus*

- 1(2) Dorsum with polygonal reticulation; all dorsal and ventral setae branched; 10 pairs of branched genital setae; epimeral setal formula : 7-4-3-4 *hirsutus* (Aoki, 1961)
- 2(1) Dorsum punctate without polygonal reticulation; few dorsal and epimeral setae simple; 9 pairs of simple genital setae; epimeral setal formula : 9-4-3-4
..... *simplirostratus* Bhattacharya, Bhaduri and Raychaudhuri, 1974

48. *Papillacarus hirsutus* (Aoki)

1961. *Cryptacarus hirsutus* Aoki, *Jap. J. Appl. Ent. Zool.*, 5(1) : 64.
1972. *Papillacarus hirsutus*, Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 19(3) : 13.
1974. *Papillacarus hirsutus*, Bhattacharya, Bhaduri and Raychaudhuri, *Oriental Ins.*, 8(2) : 281.
1979. *Papillacarus hirsutus*, Bhattacharya, *J. Res. Visva-Bharati*, 3(2) : 21.
1980. *Papillacarus hirsutus*, Bhattacharya, Joy and Joy, *Tropical Ecology & Development*, 983.

Diagnosis : Apex of rostrum straight; rostral setae small, thin, bent inward, both sides branched; other prodorsal setae like rostral setae; upper half of sensillus pectinate with 13-14 long comb-like setae; notogastral setae with 6-8 branches; genital plate of each side with 10 branched setae; all ventral setae branched; epimeral setal formula 7-4-3-4.

Distribution : India : West Bengal (Birbhum). Elsewhere : Africa (Mauritius), Japan, Philippines, Reunion Is., Tahiti Is., Tonga Tapu Is.

49. *Papillacarus simplirostratus* Bhattacharya, Bhaduri and Raychaudhuri

1974. *Papillacarus simplirostratus* Bhattacharya, Bhaduri and Raychaudhuri, *Oriental Ins.*, 8(2) : 281.
 1979. *Papillacarus simplirostratus*, Bhattacharya, *J. Res. Visva-Bharati* 3(2) : 21.
 1980. *Papillacarus simplirostratus*, Bhattacharya, Joy and Joy, *Tropical Ecology & Development*, 983.
 1981. *Papillacarus simplirostratus*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 32.

Diagnosis : Dorsum with polygonal reticulation and fine punctations; prodorsal setae barbed; sensillus pectinate with fine barbs on outermargin; a transverse band in between interlamellar setae; notogastral setae c_1, d_1, e_1, f_1 smooth; genital plate of each side with 4-5 simple setae; epimeral setal formula 9-4-3-4.

Distribution : India : West Bengal (Birbhum).

24. Genus *Paulianacarus* Balogh

1960. *Paulianacarus* Balogh, *Mem. Inst. Sci. Madagascar*, 14A : 8.

50. *Paulianacarus foliatus* Mondal and Chakrabarti

1982. *Paulianacarus foliatus* Mondal and Chakrabarti, *Indian J. Acar.*, 7(2) : 79.

Diagnosis : Dorsum with protruding ring-shaped structures; prodorsal setae foliate with mid rib, rostral and lamellar setae finely barbed proximally; sensillus pectinate with 8-10 secondary branches; notogastral bands 5; notogastral setae 16 pairs, smooth, foliate; genital setae 10 pairs.

Distribution : India : West Bengal (Darjiling), Tripura.

11. Family EPILOHMANNIIDAE Oudemans, 1923

25. Genus *Epilohmannia* Berlese

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

Key to the species of *Epilohmannia*

- 1(2) 6 pairs of genital setae placed in paraaxial position; notogastral setae 14 pairs; seta *ft* on tarsus IV lacking*pallida pallida* Wallwork, 1962
 2(1) 7 or 8 pairs of genital setae placed both in antiaxial and paraaxial position; notogastral setae 13 or 14 pairs; seta *ft* on tarsus IV present
 3(4) 7 pairs of genital setae; notogastral setae 13 pairs
*pallida indica* Bhattacharya and Banerjee, 1979
 4(3) 7-8 pairs of genital setae; notogastral setae 14 pairs.....*pallida pacifica* Aoki, 1965

51. *Epilohmannia pallida* Wallwork

1962. *Epilohmannia pallida* Wallwork, *Acarologia*, 4(4) : 689.
 1974. *Epilohmannia pallida*, Banerjee, *Acta Arachnol.*, 25(2) : 69.
 1981. *Epilohmannia pallida*, Banerjee and Roy, *Contributions to Acarology in India* (ed. G. P. Channa Basavanna), 30.

Diagnosis : Prodorsal setae minute; interlamellar setae barbed distally; sensillus with fusiform head beset with barbs; notogastral setae 14 pairs, strongly curved, distinctly barbed; genital setae 6 pairs.

Material examined : Haora Dt. : 2 (F), Domjur, 20.xiii.1986, from litter, coll. A.K. Sanyal. Hugli Dt. : 3 (F), Kamarpukur, 24.ix.1987, from litter, coll. A.K. Sanyal.

Distribution : India : West Bengal (Bardhaman, Haora, Hugli), Himachal Pradesh, Tripura. Elsewhere : Africa (Ghana), Indonesia.

52. *Epilohmannia pallida indica* Bhattacharya and Banerjee

1979. *Epilohmannia pallida indica* Bhattacharya and Banerjee, *Indian J. Acar.*, 4(1) : 19.
 1981. *Epilohmannia pallida indica*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 32.

Diagnosis : Rostral setae small, fine, smooth; lamellar and interlamellar setae long, thick, strongly barbed; sensillus slightly fusiform with a distal barbed thickening; notogastral setae 13 pairs, finely barbed; genital setae 7 pairs.

Material examined : Bardhaman Dt : 3 (F), Bardhaman University campus, 13.xii.1986, from litter, coll. P.K. Choudhuri. Haora Dt. : 2 (F), Sibpur, 10.viii.1985, from humus, coll. A.K. Sanyal.

Distribution : India : West Bengal (Bardhaman, Birbhum, Haora).

53. *Epilohmannia pallida pacifica* Aoki

1965. *Epilohmannia pallida pacifica* Aoki, *Pacific Ins.*, 7(2) : 312.
 1979. *Epilohmannia pallida pacifica*, Bhattacharya, *J. Res. Visva-Bharati*, 3(2) : 21.
 1980. *Epilohmannia pallida pacifica*, Bhattacharya, Joy and Joy, *Tropical Ecology & Development*, 983.
 1981. *Epilohmannia pallida pacifica*, Bhattacharya and Bhattacharya, *Journal of the IPHE India*, No.3 : 53.
 1981. *Epilohmannia pallida pacifica*, Joy and Bhattacharya, *UAS Tech. Series No.* 37 : 102.

Diagnosis : Rostral setae very fine, sometimes distal ends bifid; lamellar and interlamellar setae barbed distally; sensillus with swollen fusiform head, barbed; notogastral setae 14 pairs, barbed; genital setae 7 pairs.

Distribution : India : West Bengal (Birbhum), Kerala, Orissa, Tripura. Elsewhere : China, Europe (Bulgaria, Germany), New Zealand, Pakistan, South America (Brazil), Turkey.

12. Family NOTHRIDAE Berlese, 1986

26. Genus *Nothrus* Koch1836. *Nothrus* Koch, *Deutschlands Crustaceen, Myriapoden und Arachniden*, 2 : 17.Key to the species of *Nothrus*

- 1(5) Tarsi with 3 claws; K_1 long or short, equally thick throughout or widely spatulate
- 2(3) K_1 long, almost equally thick throughout*oblongus* Hammer, 1961
- 3(4) K_1 short, widely spatulate*biciliatus* Koch, 1841
- 5(1) Tarsi with 1 claw; K_1 short; clavate*gracilis* Hammer, 1961

54. *Nothrus biciliatus* Koch1841. *Nothrus biciliatus* Koch, *Deutschlands Crustaceen, Myriapoden und Arachniden*, 31-33, 37-39.1981. *Nothrus biciliatus*, Chakrabarti and Mondal, *Sci. & Cult.*, 47 (5) : 182.

Diagnosis : Prodorsum pitted; rostral setae short, fine; lamellar setae on apophyses, bushy, thick; interlamellar setae minute, flat; sensillus long, barbed; notogastral setae thick, clavate; distance between c_1 - c_2 slightly shorter than c_1 - c_1 ; d_1 - d_1 slightly longer than c_1 - c_1 ; epimeral setal formula 6-5-4-4.

Distribution : India : West Bengal (Darjiling), Himachal Pradesh. Elsewhere : Europe (Austria, Czechoslovakia, Denmark, Germany, Hungary, Ireland, Italy, Netherlands), Hong Kong, Japan, New Zealand, North America (Greenland), South America (Brazil).

55. *Nothrus gracilis* Hammer1961. *Nothrus gracilis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 28.1979. *Nothrus gracilis*, Chakrabarti, Chanda and James, *Acarology News Letter*, 8 : 4.

Diagnosis : Hysterosoma with parallel lateral border; rostral setae short, stiff; lamellar setae on apophyses, connected by thin straight line, thick, bushy, tips bent downwards; 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 : Darjiling Dt. : 2 (F), Mirik, 19.xi.1986, from humus, coll. A.K. Sanyal.

Distribution : India : West Bengal (Darjiling). Elsewhere : South America (Peru).

56. *Nothrus oblongus* Hammer1961. *Nothrus oblongus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 27.1979. *Nothrus oblongus*, Chakrabarti, Chanda and James, *Acarology News Letter*, 8 : 4.

Diagnosis : Hysterosoma very long with slightly convex lateral borders, rostral setae short, thick; lamellar setae on short apophyses, thick, bushy; sensillus equally thick throughout with minute scales; transverse pits in the longitudinal grooves between pseudostigmata, broad mesh of punctation around the pit - the whole appear like a honey comb; notogastral setae extremely short, asymmetric, slender, smooth proximally, distally thick, laterally set with scales; PN1 on short apophyses.

Distribution : India : West Bengal (Darjiling). Elsewhere : South America (Peru).

13. Family CAMISIIDAE Oudemans, 1900

Key to the genera of Camisiidae

- 1(2) A sigmoid chitinous ridge at the posteromedian margin of prodorsum; genital setae 14 pairs*Sigmonothrus* Chakrabarti and Kundu, 1978
- 2(1) No sigmoid chitinous ridge at the posteromedian margin of prodorsum; genital setae 13-25 pairs*Platynothrus* Berlese, 1913

27. Genus *Platynothrus* Berlese

1913. *Platynothrus* Berlese, *Redia*, 9 : 99.

57. *Platynothrus* sp.

Remarks : The genus was reported by Gupta and Paul (1989) from the nest of the bird *Lon. i.ira malacca* from Medinipur district.

28. Genus *Sigmonothrus* Chakrabarti and Kundu

1978. *Sigmonothrus* Chakrabarti and Kundu, *Indian J. Acar.*, 3 (2) : 58.

Key to the species of *Sigmonothrus*

- 1(2) Greatly incurved rostral setae; lamellar setae smooth; notogaster with two longitudinal chitinous ridges*bistriatus* Chakrabarti and Mondal, 1978
- 2(1) Straight or slightly incurved rostral setae; lamellar setae barbed; notogaster with four longitudinal chitinous ridges
- 3(4) Lamellar setae pointed; notogaster punctate*quadristriatus* Chakrabarti and Kundu, 1978
- 4(3) Lamellar setae apically curved outwards; translamellar ridge broad; notogastral setae blunt; notogaster with five oval hollows*ovatus* Kundu and Mondal, 1978

58. *Sigmonothrus bistrriatus* Chakrabarti and Mondal

1978. *Sigmonothrus bistrriatus* Chakrabarti and Mondal, *Indian J. Acar.*, 3(2) : 64.

Diagnosis : Body foveolated; rostral setae smooth, incurved; lamellar setae smooth, on apophyses; interlamellar setae simple; sensillus with thin stalk, flat club-shaped head; notogaster with four longitudinal chitinous ridges; notogastral setae simple, $c_3 > c_1 > c_2$; genital setae 14 pairs, simple.

Distribution : India : West Bengal (Darjiling).

59. *Sigmonothrus ovatus* Kundu and Mondal

1978. *Sigmonothrus ovatus* Kundu and Mondal, *Indian J. Acar.*, 3 (2) : 62.

Diagnosis : Body slightly foveolated; rostral setae simple; lamellar setae bilaterally barbed, hook-like anteriorly; interlamellar setae simple; sensillus smaller than interlamellar setae, head with fine bristles; notogaster with four longitudinal chitinous ridges and five oval hollows; notogastral setae simple, apices blunt; genital setae 14 pairs, simple.

Distribution : India : West Bengal (Darjiling).

60. *Sigmonothrus quadristriatus* Chakrabarti and Kundu

1978. *Sigmonothrus quadristriatus* Chakrabarti and Kundu, *Indian J. Acar.*, 3(2) : 59.

Diagnosis : Body slightly foveolated; rostral setae simple; lamellar setae straight, bilaterally barbed; interlamellar setae simple; sensillus shorter than interlamellar setae, feathered, head club-shaped; notogaster punctate, with four longitudinal chitinous ridges; apices of notogastral setae pointed; genital setae 14 pairs, simple.

Distribution : India : West Bengal (Darjiling).

14. Family TRHYPOCHTHONIIDAE Willmann, 1931

Key to the genera of Trhypochthoniidae

- 1(2) Legs monodactylous; seven pairs of genital setae; notogastral setae simple, quadrangular notogaster *Archegozetes* Grandjean, 1931
- 2(1) Legs tridactylous; seven to fourteen pairs of genital setae; notogastral setae flabelliform; pentagonal notogaster *Allonothrus* Van der Hammen, 1953

29. Genus *Allonothrus* Hammen

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

Key to the species of *Allonothrus*

- 1(2) Legs tridactylous; genital setae 13 pairs*russeolus* Wallwork, 1960
- 2(1) Legs monodactylous; genital setae 7 or 10 pairs
- 3(4) Lateral ridges on the prodorsum strongly curved; notogastral setae complete distally; ten pairs of genital setae*indicus* Bhaduri and Raychaudhuri, 1968
- 4(3) Lateral ridges on the prodorsum less curved; notogastral setae incomplete distally; seven pairs of genital setae*monodactylous* Wallwork, 1960

61. *Allonothrus indicus* Bhaduri and Raychaudhuri

1968. *Allonothrus indicus* Bhaduri and Raychaudhuri, *Oriental Ins.*, 2(2) : 195.

Diagnosis : Prodorsum irregularly punctate; strongly curved lateral ridges on prodorsum; rostral setae simple, barbed; lamellar, interlamellar and notogastral setae fan-shaped; sensillus long, narrow, thickened towards the end, distal part with fine setae; setae *la*, *lb*, *lc*, *2a*, *3a*, *3b*, *4a* and *4b* smooth; genital setae 10 pairs, setose.

Material examined : *Nadia Dt.* 1(F), Krishnagar, 15.ii.1985, from litter and soil, coll. A.K. Sanyal. *Medinipur Dt.* : 1 (F) , Jamshedpur, 19.xii.1985, from humus, coll. S.K. De.

Distribution : India : West Bengal (Calcutta, Medinipur, Nadia).

62. *Allonothrus monodactylous* Wallwork

1960. *Allonothrus monodactylous* Wallwork, *Acarologia*, 2(4) : 568.

1968. *Allonothrus monodactylous*, Bhaduri and Raychaudhuri, *Oriental Ins.*, 2(2) : 196.

1974. *Allonothrus monodactylous*, Banerjee, *Acta Arachnol.*, 25(2) : 69.

1977. *Allonothrus monodactylous* , Choudhuri and Banerjee, *The University of Burdwan Publication*, 9.

Diagnosis : Prodorsum finely punctated; rostral setae pointed, barbed; lamellar, interlamellar and notogastral setae fan-shaped; lateral margins of aspis with one tooth; notogaster with light coloured circular or polygonal areolae surrounded by reddish-brown ridges; setae *3b* strongly barbed, longer than *3a*; genital setae 7 pairs, barbed.

Material examined : *Birbhum Dt.* : 2 (F), Nanur, Bhattacharya Para, 29.ix.1968, from litter, coll. A.K. Sanyal.

Distribution : India : West Bengal (Bardhaman, Birbhum, Calcutta), Orissa. Elsewhere : Africa (Ghana).

63. *Allonothrus russeolus* Wallwork

1960. *Allonothrus russeolus* Wallwork, *Acarologia*, 2(4) : 571.
 1968. *Allonothrus russeolus*, Bhaduri and Raychaudhuri, *Oriental Ins.*, 2:197.
 1979. *Allonothrus russeolus*, Bhattacharya, *J. Res. Visva-Bharati*, 3(2) : 21.
 1981. *Allonothrus russeolus*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 32.
 1981. *Allonothrus russeolus*, Chakrabarti and Mondal, *Sci. & Cult.*, 47(5) : 182.
 1981. *Allonothrus russeolus*, Joy and Bhattacharya, *UAS Tech. Series No. 37* : 102.

Diagnosis : Prodorsum with minute punctations; lateral prodorsal ridges strongly curved, central ridges fused anteriorly; rostral setae pointed, brbed; 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 : *Darjiling Dt.* : 18 (F), forest Rest House compound, Rangpoo, 15.ix.1986, from soil and litter, coll. A.K. Sanyal. *Haora Dt.* : 6 (F), Uluberia, 10.ii.1988, from litter, coll. A.K. Sanyal.

Distribution : India : West Bengal (Birbhum, Calcutta, Darjiling, Haora), Assam. Elsewhere : Africa (Ghana), Antilles, Fiji, Oceania.

30. Genus *Archezogetes* Grandjean

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

Key to the species of *Archezogetes*

- 1(2) All setae long; d_1 longer than their mutual distance; setae c_2 and ps_2 about equal in length
 *longisetosus* Aoki, 1965
- 2(1) Prodorsal setae short; notogastral setae short or long; d_1 shorter than their mutual distance; setae c_2 more than twice as long as ps_2 .
- 3(4) Body size big; notogastral setae short *magnas magnas* (Sellnick, 1925)
- 4(3) Body size small; notogastral setae very long... *magnas indicus* Bhaduri and Raychaudhuri, 1968

64. *Archezogetes longisetosus* Aoki

1965. *Archezogetes longisetosus* Aoki, *Nat. Life Southeast Asia*, 4 : 147.
 1979. *Archezogetes longisetosus*, Bhattacharya, *J. Res. Visva-Bharati*, 13(2) : 22.
 1980. *Archezogetes longisetosus*, Bhattacharya, Joy and Joy, *Tropical Ecology & Development*, 983.
 1981. *Archezogetes longisetosus*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 32.
 1981. *Archezogetes longisetosus*, Joy and Bhattacharya, *UAS Tech. Series No. 37* : 102.

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 $1/2$ as long as $4b$; solenidia on palp sharp.

Material examined : Darjiling Dt. : 2 (F), Kalimpong, 13.ix.1986, from humus, coll. A.K. Sanyal; 20 (F), Forest Rest House Campus, Rangpoo, 15.ix.1986, from humus, coll. A.K. Sanyal; 4 (F), Nayakaman, Rangpoo, 16.ix.1986, from litter, coll. A.K. Sanyal; 3 (F), Kirnakhola, Rangpoo, 17.ix.1986, from humus, coll. A.K. Sanyal. *Birbhum dt.* : 200 (F), Suri, Dak Bunglow Compound, 28.ix.1986, from humus, coll. A.K. Sanyal; 5 (F), Nanur, Bhattacharya Para, 29.ix.1986, from humus, coll. A.K. Sanyal. *Hugli dt.* : 2 (F), Arambagh, 10.xii.1986, from litter, coll. A.K. Sanyal. *Medinipur Dt.* : 2 (F), Junput, 19.xii.1985, from humus, coll. S.K. De.

Distribution : India : West Bengal (Darjiling, Birbhum, Hugli, Medinipur), Assam, Kerala, Tripura. Elsewhere : Malaysia, South America, Tahiti Is., Thailand.

65. *Archezogozetes magna* (Sellinck)

1925. *Epilohmannia* (?) *magna* Sellnick, *Supl. Ent. Berlin*, 11 : 87.
 1931. *Archezogozetes magna* (Sellnick) : Grandjean, *Bull. Mus. Hist. Nat.*, 2(3) : 131-144.
 1974. *Archezogozetes magna*, Banerjee, *Acta Arachnol.*, 25(2) : 69.
 1985. *Archezogozetes magna*, Choudhuri and Banerjee, *Oriental Ins.*, (3) : 314.
 1977. *Archezogozetes magna*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43(4) : 179.
 1981. *Archezogozetes magna*, Banerjee and Roy, *Contributions to Acarology in India* (ed. G.P. Channa Basavanna), 30.

Diagnosis : Prodorsum densely punctate; prodorsal and notogastral setae long with fine bristles; sensillus long, fine, sparsely beset with fine bristles; d_1 shorter than their mutual distance; genital setae 7 pairs, $4a$ about $1/3$ as long as $4b$; solenidia on palp blunt.

Material examined : Purulia Dt. : 2 (F), Matha, Forest Rest House Compound, 16.ix.1987, from litter and soil, coll. A.K. Sanyal.

Distribution : India : West Bengal (Bardhaman, North 24-Parganas, Puruliya), Orissa. Elsewhere: Dutch New Guinea, Euc Is., Europe (Germany), Indonesia, South America, Tonga Tapu Is.

66. *Archezogozetes magna indicus* Bhaduri and Raychaudhuri

1968. *Archezogozetes magna indicus* Bhaduri and Raychaudhuri, *Oriental Ins.*, 2(2) : 195.

Diagnosis : Similar in almost all the characters of *A. magna magna* (Sellnick, 1925) except the smaller size and very long notogastral setae.

Distribution : India : West Bengal (Calcutta).

15. Family MALACONOTHRIDAE Berlese, 1916

Key to the genera of Malaconothridae

- 1(2) Legs monodactylous; notogaster largely parallel-sided.....*Malaconothrus* Berlese, 1901
 2(1) Legs tridactylous; notogaster in general widening posteriorad. *Trimalaconothrus* Berlese, 1916

31. Genus *Malaconothrus* Berlese

1904. *Malaconothrus* Berlese, *Redia*, 2 : 24.

Key to the species of *Malaconothrus*

- 1(2) Setae c_1 extended upto the base of setae d_1 ; two indistinct tranverse brown bands divide the notogastral middle field into three parts*assamensis* Chakrabarti and Roy Talukdar, 1979

67. *Malaconothrus assamensis* Chakrabarti and Roy Talukdar

1979. *Malaconothrus assamensis* Chakrabarti and Roy Talukdar, *Sci. & Cult.*, 79.

1979. *Malaconothrus assamensis*, Bhattacharya, *J. Res. Visva-Bharati*, 3(2) : 22.

1980. *Malaconothrus assamensis*, Bhattacharya, Joy and Joy, *Tropical Ecology & Development*, 983.

Diagnosis : Body punctate; prodorsal setae smooth; lamellar setae long, reaching far behind the rostrum anteriorly; notogaster punctate, with two longitudinal ridges which ultimately meet to form a single ridge; notogastral setae 13 pairs, simple; genital setae 5 pairs.

Distribution : India : West Bengal (Birbhum), Assam.

68. *Malaconothrus geminus* Hammer

1972. *Malaconothrus geminus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 19 (3) : 20.

1983. *Malaconothrus geminus*, Chakrabarti and Mondal, *Indian J. Acar.*, 8 (1) : 41.

Diagnosis : Rostral setae very thin, smooth; lamellar setae thicker than rostral setae, smooth; interlamellar setae very fine, flexible, smooth; notogaster with two medial longitudinal ridges, two indistinct brown bands between the longitudinal ridges, notogaster punctate; notogastral setae 13 pairs, smooth; genital setae 4(5) pairs, very long, smooth.

Distribution : India : West Bengal (Darjiling). Elsewhere : Indonesia, Tahiti Is.

69. *Malaconothrus* Sp.

Remarks : Bhattacharya, Joy and Joy (1981) and Joy and Bhattacharya (1981) recorded the unidentified species of the genus from Birbhum district of West Bengal.

32. Genus *Trimalacnothrus* Berlese

1916. *Trimalacnothrus* Berlese, *Redia*, 12 : 336.

70. *Trimalacnothrus cajamarcensis* Hammer

1961. *Trimalacnothrus cajamarcensis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 17.

1973. *Trimalacnothrus cajamarcensis*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 39(8) : 365.

Diagnosis : Prodorsum and notogaster densely punctate; prodorsal and notogastral setae smooth; rostral, lamellar and interlamellar setae as long as their mutual distance; lamellar ridges slightly 'S'-shaped; c_1 - c_1 and d_1 - d_1 with same mutual distance; c_1 - d_1 half as long as d_1 - e_1 ; genital setae 10 pairs.

Distribution : India : West Bengal (Calcutta, Nadia), Himachal Pradesh, Orissa. Elsewhere : South America (Peru).

16. Family NANHERMANNIIDAE Sclnick, 1928

Key to the genera of Nanhermanniidae

- 1(2) Notogastral setae T-shaped, branches distally flagellate; sensillus simple, never pilose; epimeral setal formula 3-1-3-4*Masthermannia* Berlese, 1913
- 2(1) Notogastral setae simple, setiform; sensillus with dilated densely pilose head; epimeral setal formula 3-1-3-3
- 3(4) Notogastral profile even due to absence of tubercles; notogastral setae long, their apices extending beyond insertion points of next pair posteriorad; generally 5 or 6 cornu on the posterior margin of prodorsum*Nanhermannia* Berlese, 1913
- 4(3) Notogastral profile uneven due to presence of tubercles and indentations; notogastral setae short; 2 or 4 cornu on the posterior margin of prodorsum*Cyrthermannia* Balogh, 1958

33. Genus *Cyrthermannia* Balogh

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

Key to the species of *Cyrthermannia*

- 1(2) Lamellar setae placed almost in the middle of rostral and interlamellar setae, two triangular processes on postero-median border of prodorsum; epimeral setae pilose; epimeral setal formula 3-2-3-3*vicinicornuta* Aoki, 1965
- 2(1) Lamellar setae placed much anteriorly; four triangular horn on postero-median border of prodorsum; epimeral setae 1*b* and 3*b* setose, others simple; epimeral setal formula 3-1-3-4*quadricornuta* Chakrabarti and Bhaduri, 1977

71. *Cyrthermannia vicinicornuta* Aoki

1965. *Cyrthermannia vicinicornuta* Aoki, *Nat. Life Southeast Asia*, 4 : 153.
 1972. *Cyrthermannia vicinicornuta*, Chakrabarti and Bhaduri *Sci. & Cult.*, 38(11) : 499.
 1981. *Cyrthermannia vicinicornuta*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 32.
 1981. *Cyrthermannia vicinicornuta*, Joy and Bhattacharya, *UAS Tech. Series No. 37* : 102.

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.

Distribution : India : West Bengal (Birbhum, Nadia). Elsewhere : Thailand.

72. *Cyrthermannia quadricornuta* Chakrabarti and Bhaduri

1977. *Cyrthermannia quadricornuta* Chakrabarti and Bhaduri, *Indian J. Acar.*, 2(2) : 49.

Diagnosis : Prodorsum and notogaster foveolated; prodorsal setae smooth; lamellar setae placed anteriorly behind a short, slightly arched transverse ridge; four triangular horn-like processes present on postero-median border of prodorsum; notogastral setae 14 pairs; simple, lanceolate; epimeral setae simple except 1b and 3b, epimeral setal formula 3-1-3-4; genital setae 7 pairs, simple.

Distribution : India : West Bengal (Nadia, North 24-Parganas).

34. Genus *Masthermannia* Berlese

1913. *Masthermannia* Berlese, *Redia*, 9 : 100.

73. *Masthermannia mammillaris* Berlese

1913. *Masthermannia mammillaris* Berlese, *Redia*, 9 : 100.
 1972. *Masthermannia mammillaris*, Chakrabarti and Bhaduri, *Sci. & Cult.*, 38(11) : 499.
 1977. *Masthermannia mammillaris*, Chakrabarti, Bhaduri and Raychaudhuri, *Indian J. Acar.*, 2(2) : 48.

Diagnosis : Prodorsum finely punctate; laterally a robust lath on each side; sensillus long, hardly discernible, incrassate, setiform, finely feathered; weak prodorsal condyles connected by transverse lath; notogaster foveolated; notogastral profile uneven due to tubercles; notogastral setae with very long branches, all originating from tubercles.

Material examined : Darjiling Dt. : 2 (F), Chitra, 14 kms away from Kalimpong towards Teesta Bazar, 13.ix.1986, from humus, coll. A.K. Sanyal.

Distribution : India : West Bengal (Darjiling, Nadia, North 24-Parganas), Tripura. Elsewhere :

China, Euc Is., Europe (Australia, France, Italy, Yugoslavia), Fiji, Indonesia, North America, Samoa, Tahiti Is.

35. Genus *Nanhermannia* Berlese

1913. *Nanhermannia* Berlese, *Redia*, 9 : 100.

Key to the species of *Nanhermannia*

- 1(2) Lamellar setae much laterally placed; genital setae 7 pairs
*himalayensis* Chakrabarti and Raychaudhuri, 1977
- 2(1) Lamellar setae placed medially; genital setae 9 pairs*thaiensis* Aoki, 1965

74. *Nanhermannia himalayensis* Chakrabarti and Raychaudhuri

1977. *Nanhermannia himalayensis* Chakrabarti and Raychaudhuri, *Indian J. Acar.*, 2(2) : 51.

Diagnosis : Prodorsum crown shaped; rostral setae simple; lamellar setae thick, reaching tip of rostrum; interlamellar setae simple, long; sensillus with dilated club-shaped head beset with bristles; five horn like processes or cornu at posterior extremity of prodorsum; notogastral setae 14 pairs, simple, long, tips slightly curved; *ad*₁ absent; genital setae 7 pairs, simple; epimeral setae *1b* and *3b* setose.

Distribution : India : West Bengal (Darjiling).

75. *Nanhermannia thaiensis* Aoki

1965. *Nanhermannia thaiensis* Aoki, *Nat. Life Southeast Asia*, 4 : 149.

1981. *Nanhermannia thaiensis*, Chakrabarti and Mondal, 47(5) : 182.

Diagnosis : Prodorsum crown-shaped, pitted; rostral and lamellar setae strong, curved ventrally; interlamellar setae long; sensillus elongate, dilated club-shaped head with bristles; posterior margin of prodorsum with cornu; notogastral setae 14 pairs, simple, long, apically curved; *ad*₁ absent; genital setae 9 pairs, simple, epimeral setae *1b* and *3b* setose.

Distribution : India : West Bengal (Darjiling). Elsewhere : Indonesia, Thailand.

17. Family HERMANNIIDAE Sellnick, 1928

36. Genus *Phyllhermannia* Berlese

1916. *Phyllhermannia* Berlese, *Redia*, 12 : 65.

76. *Phyllhermannia berlesi* Mondal

1984. *Phyllhermannia berlesi* Mondal, *Rec. zool. Surv. India*, 8(3 & 4) : 175.

Diagnosis : Prodorsum with an arch between the pseudostigmata; rostral and lamellar setae finely barbed; interlamellar setae distinctly barbed; sensillus rod-shaped, smooth; notogaster coarsely punctate with an anterior undulating transverse ridge; notogastral setae 15 pairs, distinctly barbed bilaterally; each genital plate with 18 smooth setae.

Distribution : India : West Bengal (Darjiling).

18. Family PLASMOBATIDAE Grandjean, 1961

37. Genus *Plasmobates* Grandjean

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

77. *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 : Koch Bihar Dt. : 1 (F), Alipurduar, Rajabhatkhawa forest, 22.xi.1983, from litter and soil, coll. A.K. Sanyal.

Distribution : India : West Bengal (Koch Bihar). Elsewhere : South America (Venezuela).

Remarks : The family Plasmobatidae, the genus *Plasmobates* and the species are reported here for the first time from India.

19. Family LIODIDAE Grandjean, 1954

38. Genus *Liodes* von Heyden

1826. *Liodes von Heyden*, *Isis (Von Oken)*, 18.

78. *Liodes terrestris* Wallwork

1963. *Liodes terrestris* Wallwork, *Acarologia*, 5(1) : 102.

1977. *Liodes terrestris*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43 (4) : 179.

1979. *Liodes terrestris*, Chakrabarti, Chanda and James, *Acarology News Letter*, 8 : 4.

Diagnosis : Prodorsum with transverse ridge; rostral setae slightly curved; lamellar setae absent; interlamellar setae minute; sensillus with expanded distal portion beset with fine barbs; regularly arranged polygonal figures on the anterior portion of notogaster; notogastral setae 4 pairs; genital setae 7 pairs, thin, smooth.

Distribution : India : West Bengal (Darjiling, Nadia). Elsewhere : Africa (Ghana).

20. Family GYMNODAMAEIDAE Grandjean, 1954

39. Genus *Allodamaeus* Banks

1947. *Allodamaeus* Banks, *Psyche, Cambridge, Mass.*, 54(2) : 118.

79. *Allodamaeus adpressus* Aoki and Fujikawa

1971. *Allodamaeus adpressus* Aoki and Fujikawa, *Annot. Zool. Jap.*, 44 : 115.

1982. *Allodamaeus adpressus*, Mondal and Chakrabarti, *Indian J. Acar.*, 7(2) : 82.

Diagnosis : Prodorsum with six transverse or longitudinal ridges; the meral end of the posteriormost ridge on each side bears an insertion for interlamellar setae; sensillus long with barbed head; posterior part of notogaster bears two pairs of setae which are decumbent along the curvature of notogaster, the anterior pair of setae about three times as long as the posterior.

Distribution : India : West Bengal (Darjiling). Elsewhere : Japan.

21. Family PLATEREMAEIDAE Tragardh, 1931

40. Genus *Plateremaeus* Berlese

1908. *Plateremaeus* Berlese, *Redia*, 5(1) : 11.

80. *Plateremaeus rotundatus* Berlese

1913. *Plateremaeus rotundatus* Berlese, *Redia*, 9 : 96.

1977. *Plateremaeus rotundatus*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci & Cult.*, 43(4) : 179.

Diagnosis : Cuticle foveolated; rostral and lamellar setae setiform, long, incurved; interlamellar setae very short, blunt; sensillus black, claviform; notogastral setae marginal; three strong claws in short pedicel.

Distribution : India : West Bengal (North 24-Parganas). Elsewhere : Indonesia.

Remarks : Paschoal (1987) reviewed the family Plateremacidae and opined that due to poor descriptions and incomplete drawings it was difficult to ascertain the position of *P. rotundatus*. He kept the species in the "unplaced Plateremacidae"

81. *Plateremaeus* sp.

Remarks : The unidentified species under the genus was reported by Chakrabarti, Bhaduri and Raychaudhuri (1973) from North 24-Parganas district.

22. Family BELBIDAE Willmann, 1931

41. Genus *Metabelba* Grandjean

1936. *Metabelba* Grandjean, *Ann. Soc. ent. Fr.*, 105 : 67.

82. *Metabelba obtusus* Hammer

1966. *Metabelba obtusus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 15(2) : 45.

1983. *Metabelba obtusus*, Chakrabarti and Mondal, *Indian J. Acar.*, 8(1) : 41.

Diagnosis : Rostral and lamellar setae medially curved; interlamellar setae lash-shaped; posterior border of propodosoma with two triangular tubercles opposite to two similar ones on anterior margin of hysterosoma; notogastral setae 10 pairs, arranged in two longitudinal rows; genital setae 5-6 pairs.

Distribution : India : West Bengal (Darjiling). Elsewhere : New Zealand.

83. *Metabelba* sp.

Remarks : The genus represented by an unidentified species was reported by Chakrabarti and Mondal (1981) from Darjiling, West Bengal

23. Family BELBODAMAEIDAE Bulanova-Zachvatkina, 1967

Key to the Genera of Belbodamaeidae

1(2) Genu IV with 3 setae; anterior 4 notogastral setae very long, spiral ...*Damaebelba* Sellnick, 1928

2(1) Genu IV with 4 setae; all notogastral setae simple, small *Hungarobelba* Balogh, 1943

42. Genus *Damaebelba* Sellnick

1928. *Damaebelba* Sellnick, *Die Tierwelt Mitteleuropas*, 3 (4) : 2.

84. *Damaebelba* sp.

Remarks : The genus was first reported by Bhattacharya (1979) from Birbhum district of West Bengal. Later Bhattacharya, Joy and Joy (1980) and Joy and Bhattacharya (1981) reported the unidentified species from the same district.

43. Genus *Hungarobelba* Balogh

1943. *Hungarobelba* Balogh, *Mat. term Kozl.*, 39 (5) : 40.

85. *Hungarobelba* sp.

Remarks : Bhattacharya (1979) and Bhattacharya, Joy and Joy (1981) recorded the genus from Birbhum, West Bengal.

24. Family CEPHEIDAE Berlese

44. Genus *Conoppia* Berlese

1908. *Conoppia* Berlese, *Redia*, 5 : 7.

86. *Conoppia* sp.

Remarks : Bhaduri and Raychaudhuri (1967) first recorded the genus with an unidentified species from Calcutta. Later Bhattacharya (1974) recorded an unidentified species under this genus from Birbhum, West Bengal.

25. Family MICROTEGEIDAE Balogh, 1972

45. Genus *Microtegeus* Berlese

1917. *Microtegeus* Berlese, *Documents Scientifiques*, 5.

87. *Microtegeus reticulatus* Aoki

1965. *Microtegeus reticulatus* Aoki, *Nat. Life Southeast Asia*, 4 : 156.

1982. *Microtegeus reticulatus*, Mondal and Chakrabarti, *Indian J. Acar.*, 7 : 183.

Diagnosis : The middle and posterior part of prodorsum with reticulation pattern, proximal part with long stria; lamellar setae placed on apophyses; sensillus with fusiform head beset with several strong spines and with rhomboid - shaped hollow area; narrow trapeze like outgrowths on the notogaster; notogastral setae 9 pairs, smooth; genital setae 5 pairs.

Distribution : India : West Bengal (Darjiling). Elsewhere : Indonesia, Thailand.

26. Family EREMAEOZETIDAE Balogh, 1962

46. Genus *Eremaeozetes* Berlese

1913. *Eremaeozetes* Berlese, *Redia*, 9 : 92.

88. *Eremaeozetes himalayensis* sp. nov.
(Figs. 23,24)

Colour dark brown; length of the body : 328; width of the body : 210.

Prodorsum broader than long; lamellae completely fused covering whole surface of prodorsum, rounded anteriorly; lamellae covered with a reticulation, the meshes of which round, longish, short, separated by dark brown areas; mid rib of lamellae extends from tip to dorsosejugal suture; rostral, lamellar and interlamellar setae absent; pseudostigmata situated behind the lamellae; sensillus (63) club - shaped, beset with black scales.

Notogaster with peculiar type of reticulation; medial part of notogaster with three thick dark brown lines having reticulation of different sizes; border of notogaster with dark brown rounds and longish meshes of different sizes, intermittent areas without reticulation; lenticulus oval-shaped; notogastral setae 10 pairs, minute, simple.

Ventral side with dark brown reticulation as on the dorsum; genital setae 6 pairs, very short, simple; aggenital setae minute; adanal and anal setae very short, simple.

Legs monodactyle.

Holotype : Adult (F), India : West Bengal : Darjiling, Samsing phari, 10. ix. 1986, from litter, coll. A. K. Sanyal.

Remarks : The new species can easily be separated from all other known species of *Eremaeozetes* Berlese, 1913 by its characteristic ornamentation of dorsal and ventral surface, shape of lamellae and length of notogastral setae.

The family Eremaeozetidae and the genus *Eremaeozetes* are reported here for the first time from India.

27. Family MICROZETIDAE Grandjean, 1936

47. Genus *Berlesezetes* Mahunka

1980. *Berlesezetes* Mahunka, *Acta Zool. Hung.*, 26 (4) : 397.

Key to the species of *Berlesezetes*

- 1(2) Rostral setae situated on small apophyses, twice to three times as long as their mutual distance, very thin, irregularly curled, directed forward; apophyses on the inner margin of lamellae directed upward*peruensis* (Hammer, 1961)
- 2(1) Rostral setae not situated on apophyses, slightly longer than their mutual distance, not curled, directed outward and inward; apophyses on the inner margin of lamellae directed downward
- 3 (4) Lamellae not reaching the tip of rostrum; apex of cuspis with incision ; lamellar setae extended to tip of cuspis*auxiliaris auxiliaris* (Grandjean, 1936)

- 4 (3) Lamellae reaching the tip of rostrum; apex of cuspis without incision; lamellar setae extending beyond tip of cuspis *auxiliaris appalachicola* (Jacot, 1938)

89. *Berlesezetes auxiliaris* (Grandjean)

1936. *Microzetes auxiliaris* Grandjean, *Bull. Mus. Hist. Nat. Paris*, 8 (2) : 138.
 1972. *Microzetes auxiliaris*, Chakrabarti and Bhaduri, *Sci. & Cult.*, 38 (11) : 500.
 1979. *Microzetes auxiliaris*, Bhattacharya, *J. Res. Visva-Bharati*, 3 (2) : 22.
 1980. *Berlesezetes auxiliaris* (Grandjean) Mahunka, *Acta Zool. Hung.*; 26 (4) : 397.
 1980. *Microzetes auxiliaris*, Bhattacharya and Joy, *Soil Biology as related to Land use practices* (ed. D.L. Dindal), 112.
 1981. *Microzetes auxiliaris*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 32.
 1983. *Microzetes auxiliaris*, Chakrabarti and Mondal, *Indian J. Acar.*, 8 (1) : 40.

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 not extending beyond the tip of cuspis; interlamellar setae very long, stout, extended beyond the tip of rostrum, notogaster granulated.

Distribution : India : West Bengal (Darjiling, Nadia), Orissa, Tripura. Elsewhere : Africa (Mauritius), Indonesia, Japan, Malaysia, North America, Reunion Is, South America, Tonga Tapu Is.

90. *Berlesezetes auxiliaris appalachicola* (Jacot)

1938. *Microzetes auxiliaris appalachicola* Jacot, *Proc. Ent. Soc. Washington*, 40 (1) : 14.
 1977. *Microzetes auxiliaris appalachicola*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43(3) : 179.
 1980. *Berlesezetes auxiliaris appalachicola* (Jacot), Mahunka, *Acta Zool. Hung.*, 26(4) : 397.

Diagnosis : Lamellae long, extending to tip of rostrum; inner edge of lamellar cusp longer than lateral edge; apex of cuspis without incision; lamellar setae long, extending beyond the tip of cuspis; interlamellar setae tapered abruptly near the tip; lamellar apophyses on inner margin of lamellae long.

Distribution : India : West Bengal (Nadia, North 24-Parganas). Elsewhere : North America (U.S.A.).

91. *Berlesezetes peruensis* (Hammer)

1961. *Microzetes peruensis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 134.
 1973. *Microzetes peruensis*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 39(8) : 366.
 1980. *Berlesezetes peruensis* (Hammer), Mahunka, *Acta Zool. Hung.*, 26 (4) : 397.

Diagnosis : Rostral setae 2-3 times as long as their mutual distance, very thin, curled, situated on small apophyses; lamellae connected by faint translamella, lamellar setae thick, spine-like, with 6-8 smooth branches; interlamellar setae long, tentaculate; sensillus long and thread-shaped, set with fine bristles; notogaster with four longitudinal lines, densely punctate.

Distribution : India : West Bengal (Calcutta). Elsewhere : South America (Peru).

28. Family EREMULIDAE Grandjean, 1965

48. Genus *Eremulus* Berlese

1908. *Eremulus* Berlese, *Redia*, 5 : 10.

Key to the species of *Eremulus*

- 1(2) A chitinous undulating band across the anterior part of notogaster*avenifer* Berlese, 1913
- 2(1) No chitinous band across the anterior part of notogaster
- 3(4) Lamellar setae not extending beyond the rostral tip; 10 pairs of notogastral setae; sensillus densely plumose*renukae* sp. nov.
- 4(3) Lamellar setae extending beyond the rostral tip; 11 pairs of notogastral setae; sensillus loosely plumose*flagellifer* Berlese, 1908

92. *Eremulus avenifer* Berlese

1913. *Eremulus avenifer* Berlese, *Redia*, 9 : 96.

1977. *Eremulus avenifer*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43(4) : 179.

1983. *Eremulus avenifer*, Chakrabarti and Mondal, *Indian J. Acar.*, 8 (1) : 40.

Diagnosis : Prodorsum with four longitudinal ridges, inner ridge or lamellae connected at anterior end by translamella; sensillus bristles like with minute setae throughout; two or three rows of many distinct pores arranged transversely on the anterior margin of notogaster; notogastral setae 11 pairs, unilaterally barbed; genital setae 6 pairs.

Material examined : Jalpaiguri Dt. : 1 (F), Rajabhatkhawa forest, Alipurduar, 22.xi.1983, from humus, coll. A.K. Sanyal. Darjiling Dt. : 2 (F), Sukna forest, 27.xi.1983, from decomposed cow dung, coll. A.K. Sanyal.

Distribution : India : West Bengal (Darjiling, Jalpaiguri, North 24-Pargnas), Nagaland. Elsewhere: Indonesia, Japan, Vietnam.

93. *Eremulus flagellifer* Berlese

1908. *Eremulus flagellifer* Berlese, *Redia*, 5 : 10.

1973. *Eremulus flagellifer*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 39(8) : 365.

1979. *Eremulus flagellifer*, Bhattacharya, *J. Res. Visva-Bharati*, 3 (2) : 22.

1981. *Eremulus flagellifer*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 32.

Diagnosis : Four distinct constulae on prodorsum; rostral and lamellar setae long, simple;

interlamellar setae small, simple, originating near each other; notogastral setae 11 pairs, fine, sometimes flagellate apices; genital setae 6 pairs.

Distribution : India : West Bengal (Birbhum, North 24-Parganas). Elsewhere : Africa (Sahara), Europe (Spain), Indonesia, New Zealand, North America (U.S.A.).

94. *Eremulus renukae* sp.nov.
(Figs. 25,26)

Colour yellowish-grey; length of the body : 456; width of the body : 285.

Rostrum rounded; rostral setae (69) long, smooth, bent medially; lamellar setae (31) stiff, smooth, never extends beyond the rostral tip, situated on the top of median costulae; interlamellar setae (31) located close together, in the middle of prodorsum and between the pseudostigmata, slightly longer than their mutual distance, fine, smooth, directed upward; exopseudostigmatic setae short, smooth; sensillus long (137), distal 2/3 part densely set with short spines, tip very thin; median costulae very distinct; many pits on the prodorsum.

Notogaster densely granulate; pits in the belt across the anterior part of the notogaster loosely set; 10 pairs of notogastral setae (31-57), stiff, strong, smooth, distally fine, h_2 very thick and longest; distance $la-la$ same as $Im-Im$.

Ventral side granulated; epimeral setal formula 3 - 1 - 3 3, except $3c$ all setae star - shaped with two or three branches; genital setae 6 pairs, star - shaped; aggenital setae 3 pairs, two branched, other setaceous, minute; adanal and anal setae setaceous, smooth; ad_2 and ad_3 closely placed.

Legs monodactylous.

Holotype : Adult(F), INDIA : West Bengal : Darjiling, Rangpoo forest rest house campus, from soil and litter, 15.ix.1986, coll. A.K. Sanyal. *Paratypes* : 2 adult (F), data same as for holotype.

Remarks : The new species of *Eremulus* resembles *E. flagellifer* Berlese, 1908 in few characters like shape of prodorsal, notogastral and aggenital setae and sensillus but differs from the latter mainly by length of lamellar and interlamellar setae, less flagelliform type of notogastral setae, shape of sensillus and closely placed ad_2 and ad_3 .

29. Family DAMAEOLIDAE Grandjean, 1965

49. Genus *Fosseremus* Grandjean

1954. *Fosseremus* Grandjean, *Bull. Mus. Hist. nat. Paris.*, 26 : 339.

95. *Fosseremus quadripertitus* Grandjean

1965. *Fosseremus quadripertitus* Grandjean, *Acarologia*, 7 : 343.

1979. *Fosseremus quadripertitus*, Bhattacharya, *J. Res. Visva-Bharati*, 3 (2) : 22.

1981. *Fosseremus quadripertitus*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 33.

Diagnosis : Prodorsum humped, without lamellae; convexity in front of interlamellar setae; hump in front of lamellar setae; prodorsal surface smooth, in some cases punctated; rostral and lamellar setae long, robust, smooth, curved inward; interlamellar setae small, truncate; exobothridial setae thread like, fine at the distal end; sensillus claviform with long stalk, curved laterally and posteriorly; hysterosoma lemon-shaped; four extensive depressions on dorsum; polygonal reticulation in depressed areas; space between depressed areas smooth, without reticulation; notogastral setae 11 pairs, long, smooth, covered with cerotegument; depressed areas glabrous; c_1 and c_2 shorter than others; c_1 curved towards prodorsum; ventral plate reticulated; epimeral setal formula 3-1-3-3; genital setae 6 pairs; anal setae 2 pairs; tarsus with one law.

Distribution : India : West Bengal (Birbhum), Uttar Pradesh. Elsewhere : Europe (Italy, Spain), Fiji, Indonesia, Japan, Malaysia, New Zealand, North America, South America, Thailand, Turkey.

30. Family EREMOBELBIDAE Balogh, 1961

50. Genus *Eremobelba* Berlese

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

Key to the species of *Eremobelba*

- 1(2) Rostral and interlamellar setae barbed; sensillus barbed unilaterally; ventral plate with 16-19 setae *himalayensis* Mondal and Kundu, 1984
- 2(1) Rostral and interlamellar setae smooth; sensillus smooth; ventral plate with 14-15 setae *miliae* sp. nov.

96. *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 outer side; 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 penta- or hexaradiate,

Distribution : India : West Bengal (Darjiling).

97. *Eremobelba miliae* sp. nov.

(Figs. 27, 28)

Colour light brown; length of the body : 440; width of the body: 273.

Prodorsum crown-shaped, with granular cerotegument ; rostral tip slightly protruded; rostral setae(38) inserted laterally far behind, extends beyond the tip of rostrum, smooth, curved inwards; lamellar setae (25) smooth, thin, placed on a knob-like lamellar apophyses, almost at the level of insertion of rostral setae, a faint ridge connecting two lamellar apophyses; interlamellar setae (42) situated far behind, smooth thin but stout, tip pointed; a strap-like transverse ridge in front of interlamellar setae continues into the semicircular ridges that surrounds the anterior rim of bothridium; exobothridial setae (34) one pair, smooth, situated anterolateral to the bothridium; bothridium cup-shaped; sensillus 122 long; filiform, smooth, nearly three times longer than interlamellar setae; two irregularly-shaped chitinous bodies present behind the interlamellar setae, dorsosejugal suture straight.

Notogaster almost oval, with two minor latero-anterior projections, covered with granular cerotegument; notogastral setae 11 pairs, 38-89 long, smooth, posterior setae almost flagelliform, distal half not curved, placed on follicles with minute peg-like projections; setae c_1, c_2, da, dm and h_2 centrodorsal, la, lm and h_3 lateral, h_1, p_2 and p_3 posterolateral; mutual distance $c_2-c_2 > c_1-c_1, da - da > c_1-c_1, dm-dm = h_2-h_2$, distance c_2-d_2 more than twice the distance $c_1-c_2, c_2-da = c_2-la = da-dm = la-lm$.

Epimeral plate with cerotegumental granulations; epimera I and II distinct, III and IV fused; epimeral setal formula 3-1-3-3; setae $1b, 3b$ and $4b$ star-shaped.

Ventral side with granulated ceroteguments, 15 aggenital adanal setae on the right half of ventral plate and left half with 14 setae, all setae being simple, smooth, short except the last 3 pairs which are long but not with flagelliform tips; anal setae 2 pairs, simple; adanal fisure iad minute, slit-like, placed closely and latero-medially to the outer margin of each plate; genital setae 6 pairs, simple, anterior 4 setae on each plate more closely set; genital and anal plates closely approximated.

All legs monodactylous with curved claws.

Holotype : Adult (F), India : West Bengal : Jalpaiguri, Rajabhatkhawa, from soil and litter, 22.xi.1983, coll. A.K. Sanyal. *Paratypes* : 2 adult (F), data same as for holotype.

Remarks : The new species resembles *E. himalayensis* Mondal and Kundu, 1984 described from Darjiling, West Bengal, India by cerotegumental granulation and on the nature of lamellar and exobothridial setae, transverse chitinous band on the prodorsum, shape of sensillus and chitinous structures behind the interlamellar setae. But it can be differentiated from the species mentioned above and considered as a new species by the nature of rostral and interlamellar setae, size of interlamellar and notogastral setae, number of aggenital-adanal setae, number of epimeral setae, smooth epimeral setae $4c$, besides a few other characters.

31. Family AMERIDAE Grandjean, 1965

51. Genus *Hymenobelba* Balogh

1962. *Hymenobelba* Balogh, *Ann. Hist. - nat. Mus. Hung.*, 54 : 423.

98. *Hymenobelba ypsilon* Balogh

1962. *Hymenobelba ypsilon* Balogh, *Ann. Hist.-nat. Mus. Hung.*, 54 : 423.

1982. *Hymenobelba ypsilon*, Mondal and Chakrabarti, *Indian J. Acar.*, 7(2) : 83.

Diagnosis : Rostral and lamellar setae small, fine; interlamellar setae very thin, situated apically on two short, parallel, chitinous lines; a 'Y'-shaped chitinous costula in front of interlamellar setae; lamellar setae situated on the apex of costula; sensillus filiform, apically flagelliform, inclinate, notogaster finely punctated; an arched chitinous costula on anterior part of notogaster; genital setae 6 pairs.

Distribution : India : West Bengal (Darjiling). Elsewhere : Madagascar.

32. Family HETEROBELBIDAE Balogh, 1961

52. Genus *Heterobelba* Berlese

1913. *Heterobelba* Berlese, *Redia*, 9 : 97.

99. *Heterobelba rostrata* Mondal and Kundu

1984. *Heterobelba rostrata* Mondal and Kundu, *Bull. zool. Surv. India*, 6(1-3) : 223.

Diagnosis : Rostral setae stout, densely barbed, proximal part smooth; a faint transversely arched ridge behind rostrum; lamellar setae stout, barbed; interlamellar setae very long, barbed; sensillus flagelliform, barbed; notogastral setae 3 pairs at the posterior margin; tritonymphal scalp with polygonal reticulation; setae long, stout, barbed; ventral plate with 8 pairs of barbed setae; genital setae 7 pairs, finely barbed; epimeral setae barbed.

Distribution : India : West Bengal (Darjiling).

100. *Heterobelba* sp.

Remarks : The unidentified species under the genus was reported by Chakrabarti and Mondal (1981) from Darjiling district, West Bengal.

33. Family BASILOBELBIDAE Balogh, 1961

Key to the genera of Basilobelbidae

- 1(2) Mandibles peloptoid, chelae very small; rostrum pointed; aggenital setae 10 pairs; adanal setae 8 pairs *Xiphobelba* Csiszar, 1901
- 2(1) Mandibles normal; rostrum not pointed; aggenital setae 5 pairs; adanal setae 5 pairs
..... *Basilobelba* Balogh, 1958

53. Genus *Basilobelba* Balogh

1953. *Basilobelba* Balogh, *Rev. Zool. Bot. Afr.*, 58 : 9.

Key to the species of *Basilobelba*

- 1(2) Lamellar setae smooth; setae on the tritonymphal scalp barbed; all epimeral setae smooth
*indica* Bhaduri, Chakrabarti and Raychaudhuri, 1974
- 2(1) Lamellar setae barbed at the proximal 1/3rd; setae on the tritonymphal scalp bushy; epimeral setae
 2a unilaterally barbed*barbata* Mondal and Kundu, 1984

101. *Basilobelba barbata* Mondal and Kundu

1984. *Basilobelba barbata* Mondal and Kundu, *Bull. zool. Surv. India*, 6(1-3) : 223.

Diagnosis : Rostral setae smooth, incurved; lamellar setae with long barbs at proximal 1/3rd; interlamellar setae with small unilateral barbs; tritonymphal scalp with polygonal reticulation; arms of the buckle long and broad; tritonymphal scalp with 7 pairs of bushy setae posteromarginally; genital setae 6 pairs, simple.

Distribution : India : West Bengal (Darjiling).

102. *Basilobelba indica* Bhaduri, Chakrabarti and Raychaudhuri

1974. *Basilobelba indica* Bhaduri, Chakrabarti and Raychaudhuri, *Acta Arachnol.*, 25(2) : 86.

1977. *Basilobelba indica*, Choudhuri and Banerjee, *The University of Burdwan Publication*, 27.

Diagnosis : All prodorsal setae thin, smooth; lamellar setae placed on apophyses; sensillus long, flagelliform with two rows of fine barbs; notogastral setae 7 pairs, h_1 and h_2 , very short, smooth; genital setae 6 pairs, simple.

Material examined : *Jalpaiguri Dt.* : 1 (F), Rajabhatkhawa forest, Alipurduar, 22.xi.1983, from decomposed litter, coll. A.K. Sanyal. *Darjiling Dt.* : 2 (F), Panitanki, 23.ix.1986, from soil of tea garden, coll. A. K. Sanyal.

Distribution : India : West Bengal (Bardhaman, Calcutta, Darjiling, Jalpaiguri), Orissa, Tripura.

54. Genus *Xiphobelba* Csiszar.

1961. *Xiphobelba* Csiszar, *Acta Zool. Acad. Sci. Hung.*, 7 : 353.

103. *Xiphobelba* sp.

Remarks : Bhaduri and Raychaudhuri (1967) reported the genus with an unidentified species from

Calcutta.

34. Family EREMAEIDAE Sellnick, 1928

Key to the genera of Eremaeidae

- 1(2) Two pairs of anal setae; three pairs of adanal setae*Proteremaeus* Piffel, 1965
 2(1) More than two pairs of anal setae; more than three pairs of adanal setae
 3(4) 10-11 pairs of short or medium long notogastral setae*Eremaeus* Koch, 1836
 4(3) 14-30 pairs of long, ciliate notogastral setae*Tricheremaeus* Berlese, 1908

55. Genus *Eremaeus* Koch

1836. *Eremaeus* Koch, *Deutschlands Crustaceen, Myriapoden und Arachniden*, 3.

104. *Eremaeus* sp.

Remarks : Bhattacharya (1979) reported the genus from Birbhum district of West Bengal.

56. Genus *Proteremaeus* Piffel

1965. *Proteremaeus* Piffel, *Sber. Ost. Akad. Wiss. Math. nat. Kl. Abt.1*, 174 : 368.

105. *Proteremaeus* sp.

Material examined : Jalpaiguri Dt. : 1 (F), Jayanti forest, Alipurduar, 23.xi.1983, from soil and litter, coll. A.K. Sanyal.

Distribution : India : West Bengal (Jalpaiguri).

Remarks : As the specimen was in bad condition, the specific identification was not possible. The genus is reported here for the first time from India.

57. Genus *Tricheremaeus* Berlese

1908. *Tricheremaeus* Berlese, *Redia*, 5(1) : 11.

106. *Tricheremaeus* sp.

Remarks : The genus is known by an unidentified species from Birbhum district of West Bengal (Bhattacharya, 1979; Bhattacharya, Joy and Joy, 1981).

35. Family ZETORCHESTIDAE Michael, 1898

58. Genus *Zetorchestes* Berlese

1888. *Zetorchestes* Berlese, *Acari, Myriapoda et Scorpiones hucusque in Italia reperta, Padova*.

107. *Zetorchestes saltator* Oudemans

1915. *Zetorchestes saltator* Oudemans, *Ber. Ned. Ent. Ver.*, 4 : 194.

1982. *Zetorchestes saltator*, Mondal and Chakrabarti, *Indian J. Acar.*, 7(2) : 83.

Diagnosis : Body with irregularly scattered granules; rostrum with nasiform apex; rostral setae thick, long, bifurcated distally, placed on two small tubercles; setae phylliform, medium length, directed medially; sensillus long, head flattened in lateral view, distinctly braced; notogastral setae 10 pairs, all notogastral setae phylliform; notogaster postero-medially with high elevation; genital setae 6 pairs.

Material examined : West Dinajpur Dt. : 1 (F), Gosaimari, Jambari, Dinhata, 20.xi.1983, from soil and litter, coll. A.K. Sanyal. Jalpaiguri Dt. : 1 (F), Rajabhatkhawa forest, Alipurduar, 22.xi.1983, from soil and litter, coll. A.K. Sanyal. Darjiling Dt. : 3 (F), east of Sukna forest, 27.xi.1983, from humus, coll. A.K. Sanyal; 1 (F), Chitra, 14 kms away from Kalimpong to Teesta Bazar, 13.ix.1986, from litter, coll. A.K. Sanyal.

Distribution : India : West Bengal (Darjiling, Jalpaiguri, West Dinajpur). Elsewhere : Japan, Sri Lanka.

36. Family METRIOPPIDAE Balogh, 1943

59. Genus *Ceratoppia* Berlese

1908. *Ceratoppia* Berlese, *Redia*, 5(1) 7.

108. *Ceratoppia bipilis* Hermann

1804. *Ceratoppia bipilis* Hermann, *Memore Apterologique*.

1981. *Ceratoppia bipilis*, Chakrabarti and Mondal, *Sci. & Cult.*, 47(5) : 182.

Diagnosis : Rostrum pointed with one incision; 5-6 lateral teeth on each side of rostrum; all prodorsal setae barbed; rostral setae relatively short; lamella almost straight, weakly converging toward the anterior part; lamellar cusp shorter than whole lamella, far below the rostral tip tip of lamellar cusp provided with a distinct outer teeth; lamellar setae as long as rostral setae; interlamellar setae as long as prodorsum; sensillus filiform, finely barbed; two pairs of notogastral setae (p_1 and p_2) situated on the posterior part of notogaster; two pairs of hypostomal setae.

Distribution : India : West Bengal (Darjiling), Himachal Pradesh. Elsewhere : Africa, British Is., Europe (Germany, Spain), Greenland, Japan, North America, Pakistan, Scandinavia, U.S.S.R. (Siberia).

37. Family CARABODIDAE Koch, 1837

Key to the genera of Carabodidae

- 1(2) Six pairs of genital setae; notogaster with large tubercles
*Neocarabodes* Balogh and Mahunka, 1969
- 2(1) Four pairs of genital setae; notogaster with obtuse tubercles or without tubercle
- 3(4) Ten pairs of notogastral setae; notogaster without tubercle*Carabodes* Koch, 1836
- 4(3) Fifteen pairs of notogastral setae; notogaster with obtuse tubercles, crests or elevated median section*Gibbicepheus* Balogh, 1958

60. Genus *Carabodes* Koch

1936. *Carabodes* Koch, *Deutschlands Crustaceen, Myriapoden und Arachniden*, 3.

109. *Carabodes peniculatus* Aoki

1970. *Carabodes peniculatus* Aoki, *Bull. natn. Sci. Mus. Tokyo*, 13(3) : 417.

1977. *Carabodes peniculatus*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43 (4) : 179.

Diagnosis : Rostral setae lanceolate, slender; lamellar setae minutely barbed and strongly curved inward; interlamellar setae club-shaped with distal barbation; sensillus clavate, split distally to produce numerous prickles; notogastral setae 10 pairs, brush like, split distally; genital setae 12 pairs.

Material examined : Medinipur Dt. : 2 (F), Jhargram, 15.xii.1985, from litter, coll. R. K. Kulin.

Distribution : India : West Bengal (Medinipur, North 24-Parganas). Elsewhere : Indonesia, Japan.

61. Genus *Gibbicepheus* Balogh

1958. *Gibbicepheus* Balogh, *Rev. Zool. Bot. Afr.*, 58 : 20.

110. *Gibbicepheus* sp.

Material examined : Darjiling Dt. : 1 (F), East of Sukna forest, 27.xi.1983, from litter and soil, coll. A.K. Sanyal.

Distribution : India : West Bengal (Darjiling).

Remarks : The genus is reported here for the first time from India. As the single specimen was not in good condition, the species identification was not possible.

62. Genus *Neocarabodes* Balogh and Mahunka

1969. *Neocarabodes* Balogh and Mahunka, *Acta Zool. Acad. Sci. Hung.*, 15 : 8.

111. *Neocarabodes sexpilosus* Balogh and Mahunka

1969. *Neocarabodes sexpilosus* Balogh and Mahunka, *Acta Zool. Acad. Sci. Hung.*, 15 : 8.

1982. *Neocarabodes sexpilosus*, Mondal and Chakrabarti, *Indian J. Acar.*, 7 (2) : 83.

Diagnosis : Rostral setae dilated, marginally dentate; sensillus exclinate, apically inclinate, notogastral setae 15 pairs; c_1 and c_2 placed in anterior hollow of notogaster; genital setae 6 pairs.

Distribution : India : West Bengal (Darjiling). Elsewhere : South America (Brazil).

38. Family NIPPOBODIDAE Aoki, 1961

63. Genus *Leobodes* Aoki

1965. *Leobodes* Aoki, *Nat. Life Southeast Asia*, 4 : 166.

112. *Leobodes mirabilis* Aoki

1965. *Leobodes mirabilis* Aoki, *Nat. Life Southeast Asia*, 4 : 167.

1983. *Leobodes mirabilis*, Chakrabarti and Mondal, *Indian J. Acar.*, 8(1) : 41.

Diagnosis : Lamellae narrow, carina 'S' - shaped; rostral and lamellar setae 'S'-shaped; interlamellar setae stout, long; sensillus sickle-shaped; notogaster with one pair strong anterior hump; notogastral setae 9 pairs, long; notogastral surface with one ridge; genital setae 4 pairs.

Distribution : India : West Bengal (Darjiling). Elsewhere : Thailand.

39. Family TECTOCEPHEIDAE Grandjean, 1954

64. Genus *Tectocepheus* Berlese

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

Key to the species of *Tectocepheus*

1(2) Lamellar cusp broad and round; lyrifissure *iad* placed laterally *sarekensis* Tragardh, 1910

2(1) Lamellar cusp narrow and pointed, lyrifissure *iad* placed parallel *velatus* (Michael, 1988).

113. *Tectocepheus sarekensis* Tragardh

1910. *Tectocepheus sarekensis* Tragardh, *Naturw. Unters Sarekgeb in Schw. - Lapland*, 4 : 567.

1979. *Tectocephus sarekensis*, Bhattacharya, *J. Res. Visva-Bharati*, 3 (2) : 22.

1981. *Tectocephus sarekensis*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 33.

Diagnosis : The median and lateral borders of lamella run parallel towards the tip; prodorsum bears indistinct longitudinal furrows behind the translamella; tips of lamellae broad and round; *iad* directed laterally.

Material examined : Darjiling Dt. 1 (F), Chitra, 14 kms away from Kalimpong towards Teesta Bazar, 13.ix.1968, from litter, coll. A.K. Sanyal.

Distribution : India : West Bengal (Birbhum, Darjiling). Elsewhere : Europe (Germany, Spain), Indonesia, New Zealand.

114. *Tectocephus velatus* (Michael)

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

1974. *Tectocephus velatus*, Banerjee, *Acta Arachnol.*, 25(2) : 69.

1979. *Tectocephus velatus*, Chakrabarti, Chanda and James, *Acarology News Letter*, 8 : 4.

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; sensillus 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 : Jalpaiguri Dt. : 1 (F), Rajabhatkhawa forest, Alipurduar, 22.xi.1983, from litter and soil, coll. A.K. Sanyal. West Dinajpur Dt. : 4 (F), Dhangra, Raigunj, 29.xi.1983, from litter, coll. A.K. Sanyal. Murshidabad Dt. : 1 (F), Lalgola town, 4.xii.1983, from litter, coll. A.K. Sanyal. Birbhum Dt. : 1 (F), Bhattacharya para, Nanur, 29.ix. 1986, from litter and soil, coll. A.K. Sanyal. Calcutta : 1 (F), Joka, 12.ix.1987, from soil, coll. A.K. Sanyal. Haora Dt. : 3 (F), Sibpur Botanical Garden, 10.viii.1986, from humus, coll. A.K. Sanyal. Medinipur Dt. : 2 (F), Junput, 19.xii.1985, from litter, coll. R.K. Kulin.

Distribution : India : West Bengal (Bardhaman, Birbhum, Calcutta, Darjiling, Haora, Jalpaiguri, Medinipur, Murshidabad, West Dinajpur), Bihar, Himachal Pradesh, Orissa, Sikkim. Elsewhere : Africa (Sahara), Central Asia, Easter Is., Europe (Bulgaria, Germany), Fiji, Indonesia, Japan, Jordan, New Zealand, North America, Pakistan, South America, Spitsbergen, Tonga Is., Turkey.

115. *Tectocephus* sp.

Remarks : The unidentified species under this genus was recorded from Birbhum, West Bengal by Bhattacharya, Bhattacharya and Banerjee (1980).

40. Family OTOCEPHEIDAE Balogh, 1961

Key to the genera of Otocephidae

- 1(2) Genital setae three pairs*Pseudotocepheus* Balogh, 1961
 2(1) Genital setae four pairs*Dolicheremaeus* Jacot, 1938

65. Genus *Dolicheremaeus* Jacot

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

Key to the species of *Dolicheremaeus*

- 1(4) Interlamellar and notogastral setae simple
 2(3) Median prodorsal condyle present*coronarius* Chakrabarti, Bhaduri and Kundu, 1981
 3(2) Median proddorsal condyle absent*bengalensis* sp.nov.
 4(1) Interlamellar and notogastral setae finely barbed
 5(8) Median prodorsal condyle present, sensillus lanceolate or filiform
 6(7) Median prodorsal condyle semilunar-shaped; sensillus lanceolate
*himalayensis* Chakrabarti, Bhaduri and Kundu, 1981
 7(6) Median prodorsal condyle form a frame like structure; sensillus filiform .*nepalensis* Aoki, 1967
 8(5) Median prodorsal condyle absent; sensillus spoon-shaped*geminus* Mondal and Kundu, 1986

116. *Dolicheremaeus coronarius* Chakrabarti, Bhaduri and Kundu

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

Diagnosis : Rostral setae barbed on outside; lamellar setae unilaterally barbed on outer side; interlamellar setae simple; sensillus lanceolate; *co. pm.* and *co. nm.* overlapping; notogaster with two indistinct, irregular, double line ridges on outer two third portion; notogastral setae 10 pairs, simple, short, all nearly of equal length; genital setae 4 pairs.

Distribution : India : West Bengal (Darjiling).

117. *Dolicheremaeus geminus* Mondal and Kundu

1986. *Dolicheremaeus geminus* Mondal and Kundu, *Rec. zool. Surv. India*, 83 (1 & 2) : 91.

Diagnosis : Rostral and lamellar setae uniseriate; interlamellar setae seriate with blunt tips; sensillus with thin long stalk, spoon-shaped head; median prodorsal condyle absent; lateral notogastral condyles tooth like; notogastral setae 10 pairs, barbed, tips blunt; genital setae 4 pairs.

Distribution : India : West Bengal (Darjiling).

118. *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.

Distribution : India : West Bengal (Darjiling).

119. *Dolicheremaeus nepalensis* Aoki

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

1979. *Dolicheremaeus nepalensis*, Chakrabarti, Chanda and James, *Acarology News Letter*, 8 : 4.

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 structure; *co. nl.* sharply triangular; genital setae 4 pairs.

Distribution : India : West Bengal (Darjiling). Elsewhere : Nepal.

120. *Dolicheremaeus bengalensis* sp. nov.

(Figs. 29, 30)

Colour dark brown; length of the body : 1050; width of the body : 555.

Prodorsum longer than broad, punctate; lateral lamelliform expansion (*spa. l.*) well developed; tectopodia II well developed; lamellae weakly diverging anterior with rough sculpture; rostral setae (135) distinctly barbed, arise from posterolateral margin of rostrum, procumbent, with fine tips, slightly shorter than their mutual distance; lamellar setae (165) similarly barbed, placed a little beyond the tip of the lamellae, procumbent, tips very fine and curved inwards; interlamellar setae (180) simple, stout with pointed tips, converging anteriorad, more than two times as long as their mutual distance; bothridium club-shaped, sensillus lanceolate, with slender long stalk, directed postero-laterad; exobothridial setae one pair, minute, simple; median prodorsal condyles (*co. pm.*) absent; lateral prodorsal condyles (*co. pl.*) well developed, touching the lateral notogastral condyles (*co. nl.*); two longitudinal rows of scaly structures present on the inner postero-median part of prodorsum.

Notogaster relatively large compared with prodorsum, oval, finely punctate throughout, with

irregular foveolation on the postero-lateral margin; distinct, double-lined, irregularly interrupted longitudinal ridges on the notogaster; median notogastral condyles (*co. nm.*) absent; lateral notogastral condyles (*co. nl.*) well developed, broadly rounded; notogastral setae 10 pairs, simple, posterior setae more longer, 180-210 long with fine tips, setae *ta*, *te*, *ms* antero-lateral, *ti*, *r₁*, *r₂* mid-dorsal, *p₁*, *p₂*, *p₃* and *r₃* postero-marginal; distance $te-ti > ta-te$ and $te-ms < ms-r_1$; distance $ta-ta < te-te$ and $ti-ti < ms-ms$, distance $ti-ti > ta-ta$; three pairs of notogastral fissures *ia*, *im* and *ip* present.

Ventral side punctate; each anal plate more than twice as long as broad, with two simple setae (75); adanal setae 3 pairs, 90-135 long, *ad₁* shorter than *ad₂*, and *ad₃*; *iad* small, parallel to the antero-lateral border of anal plates; each genital plate more than twice as long as broad, with four simple setae (45-60); aggenital setae (105) one pair, simple, placed closer to genital than anal plates.

Epimera I and II distinctly separated, III and IV fused, sternal ridge of epimera II distinct; epimeral setae (75-150) simple, setae *4b* longest; epimeral setal formula 3-1-3-3.

Legs monodactylous, all legs with ultimate setae of flagelliform type (L-L-L-L).

Holotype : Adult (F), India : West Bengal : Darjiling, Jorebangla, 21.ix.1986, from decomposed leaves, coll. A.K. Sanyal. *Paratype* : 1 Adult (F), data same as for holotype.

Remarks : The new species resembles many species of the genus *Dolicheremaeus* in the character of prodorsal and notogastral condyles, nature of prodorsal, notogastral and ventral setae, but it is more closer to *D. coronarius* Chakrabarti, Bhaduri and Kundu, 1981 described from Darjiling, West Bengal, India, in the shape of sensillus, simple type of interlamellar, notogastral and ventral setae, double lined longitudinal ridges and position of notogastral setae on the notogaster beside other characters. But it can be differentiated from *coronarius* in the absence of *co. pm.* and *co. nm.*, having longer interlamellar, notogastral and ventral setae and in the possession of flagelliform type of ultimate setae on legs.

66. Genus *Pseudotocepheus* Balogh

1960. *Pseudotocepheus* Balogh, *Mem. Inst. Sci. Madagascar*, 14A : 23.

Key to the species of *Pseudotocepheus*

- 1(2) All prodorsal setae barbed bilaterally; median notogastral condyles represented by minute protuberances; transverse chitinous band between seta *ti*
.....*hammerae* Chakrabarti and Kundu, 1978
- 2(1) Rostral and lamellar setae unilaterally barbed; median notogastral condyles inverted semilunar-shaped; no transverse chitinous band on notogaster
- 3(4) Median prodorsal condyles semilunar-shaped; notogaster with fine crack-lines with cross connections; sensillus lanceolate, proximally sparsely barbed; anal and adanal setae smooth
.....*gobletus* Chakrabarti and Mondal, 1978

- 4(3) Median prodorsal condyles broad and confluent with each other; no crack-lines on notogaster; sensillus nearly clavate; anal and adanal setae unilaterally barbed
*orientalis* Mondal and Kundu, 1983

121. *Pseudotocepheus gobletus* Chakrabarti and Mondal

1978. *Pseudotocepheus gobletus* Chakrabarti and Mondal, *Indian J. Acar.*, 3(1) : 47.

Diagnosis : Rostral and lamellar setae unilaterally barbed; interlamellar setae bilaterally barbed; sensillus lanceolate; median notogastral condyles inverted semilunar-shaped; five undulating irregular crack-like lines and some cross connections on notogaster; notogastral setae 10 pairs, arise from goblet-shaped setal base; genital setae 3 pairs.

Distribution : India : West Bengal (Darjiling).

122. *Pseudotocepheus hammerae* Chakrabarti and Kundu

1978. *Pseudotocepheus hammerae* Chakrabarti and Kundu, *Indian J. Acar.*, 3(1) : 43.

Diagnosis : All prodorsal setae bilaterally barbed; sensillus spindle-shaped; median notogastral condyles represented by minute protuberances, notogastral setae 10 pairs, barbed; genital setae 3 pairs.

Distribution : India : West Bengal (North 24-Parganas).

123. *Pseudotocepheus orientalis* Mondal and Kundu

1983. *Pseudotocepheus orientalis* Mondal and Kundu, *Indian J. Acar.*, 8 (2) : 63.

Diagnosis : Rostral and lamellar setae outwardly barbed; interlamellar setae sparsely barbed bilaterally; sensillus with narrowly clavate head, not barbed; notogastral setae 10 pairs, bilaterally finely barbed, apices pointed; genital setae 3 pairs.

Distribution : India : West Bengal (Darjiling).

41. Family OPPIIDAE Grandjean, 1954

Key to the genera of Oppiidae

- 1(16) Costula and crista absent
- 2(5) 12 pairs of notogastral setae
- 3(4) Sensillus pectinate; distance between genital and anal plates longer than the length of genital plate
*Multioppia* Hammer, 1961

- 4(3) Sensillus not pectinate; distance between genital and anal plates smaller than the length of genital plate *Neoppia* Bhattacharya and Banerjee, 1981
- 5(2) 6-10 pairs of notogastral setae
- 6(7) sensillus pectinate; pori *iad* usually placed obliquely to the anal field *Brachioppia* Hammer, 1961
- 7(6) Sensillus not pectinate; pori *iad* usually placed parallel to the anal field
- 8(9) Interlamellar setae absent *Ameroppia* Hammer, 1961
- 9(8) Interlamellar setae present
- 10(11) Genital setae four pairs; tibia I with long distal process *Paroppia* Hammer, 1968
- 11(10) Genital setae five or six pairs; tibia I without distal process
- 12(15) Genital setae five pairs; sensillus short
- 13(14) Three pairs of posteromarginal setae shorter than other setae *Lasiobelba* Aoki, 1959
- 14(13) Posteromarginal setae usually not shorter than other setae *Oppia* Koch, 1836
- 15(12) Genital setae six pairs; sensillus lanceolate *Lanceoppia* Hammer, 1962
- 16(1) Short costula present; crista present or absent
- 17(20) Crista present
- 18(19) Notogaster with fine parallel or radiating lines *Striatoppia* Balogh, 1958
- 19(18) Notogaster without parallel or radiating lines *Oppiella* Jacot, 1937
- 20(17) Crista absent
- 21(22) Sensillus pectinate; rostral setae proximally plumose, distally smooth *Ramusella* Hammer, 1962
- 22(21) Sensillus not pectinate, rostral setae smooth *Solenoppia* Hammer, 1968

67. Genus *Ameroppia* Hammer

1961. *Ameroppia* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 54.

124. *Ameroppia chavinensis* Hammer

1961. *Ameroppia chavinensis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 59.
 1982. *Ameroppia chavinensis*, Mondal and Chakrabarti, *Indian J. Acar.*, 7(2) : 83.

Diagnosis : Rostral setae densely feathered; lamellar setae thin, as long as their mutual distance; sensillus lanceolate, pointed at the tip, set with small bristles; anterior margin of notogaster with tiny setae.

Distribution : India : West Bengal (Darjiling). Elsewhere : South America (Peru).

68. Genus *Brachioppia* Hammer

1961. *Brachioppia* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 51.

Key to the species of *Brachioppia*

- 1(2) Lamellar setae smooth; genital setae five pairs*ananthakrishni* Sanyal and Bhaduri, 1985
 2(1) Lamellar setae feathered; genital setae six pairs*cuscensis* Hammer, 1961

125. *Brachioppia ananthakrishni* Sanyal and Bhaduri

1985. *Brachioppia ananthakrishni* Sanyal and Bhaduri, *Indian J. Acar.*, 10 (1 & 2) : 15.

Diagnosis : Rostral setae thin, pointed, feathered; lamellar and interlamellar setae thin, smooth; sensillus furnished with six radiating branches; notogastral setae nine pairs, long, thin; genital setae five pairs.

Distribution : India : West Bengal (South 24-Parganas).

126. *Brachioppia cuscensis* Hammer

1961. *Brachioppia cuscensis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 51.
 1977. *Brachioppia cuscensis*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43(4) : 179.

Diagnosis : Rostral setae situated far back on upper side of rostrum, unilaterally feathered; lamellar setae thick, feathered; sensillus with elongate semilunar disc-like head with 4-6 branches; notogaster with 9 pairs of long and smooth setae; one fissure on the shoulder and another in the middle of notogaster; genital setae 6 pairs.

Material examined : *Birbhum Dt.* : 1 (F), Dak Bunglow Campus, Suri, 28.ix.1986, from litter and soil, coll. A.K. Sanyal.

Distribution : India : West Bengal (Birbhum, North 24-Parganas). Elsewhere : South America (Peru).

127. *Brachioppia* sp.

Remarks : The unidentified species of the genus *Brachioppia* were reported from Birbhum district, West Bengal by Bhattacharya (1979), Bhattacharya, Joy and Joy (1980, 1981) and Joy and Bhattacharya, (1981).

69. Genus *Lasiobelba*

1965. *Lasiobelba* Aoki, *Bull. Bio. Geo. Sco. Jap.*, 21(1) : 5.

128. *Lasiobelba suchetae* sp. nov.
(Figs. 31, 32)

Colour light brown; length of the body : 950 ; width of the body : 630.

The rostrum rounded with a small projection; rostral setae (25) rough, inward and downwardly directed; lamellar setae (42) rough, placed on a minute tubercle, extends slightly above the base of rostral setae; interlamellar setae (42) rough, not reaching the base of lamellar setae; sensillus moderately long (59), upper half swelled and granulated, tip ends in a fine part; exobothridial setae small, fine, light spots in front of and between bothridium; tectopodium well developed, prodorsum granulated above tectopodium 1.

Notogaster round, finely pitted; dorsosejugal suture arcuate; notogastral setae nine pairs; setae *te*, *ti*, *ms*, *r*₃ very long, *r*₁ and *r*₂ slightly shorter, setae *p*₁, *p*₂, *p*₃ considerably shorter; all setae finely barbed.

Apodemata 1 and 2 weakly developed, apodemata sejugales well developed, apodemata 3 absent. apodemata 4 extends below the genital field; coxal plate I with 2, coxal plate II with 1, coxal plates III and IV with 5 setae.

Genital plate much smaller than anal plate; genital setae 5 pairs; minute; 1 pair of aggenital, 2 pairs of anal and 3 pairs of adanal setae.

Legs slender with rough long fine setae. All tarsi monodactylous.

Holotype : Adult (F), INDIA : West Bengal : Birbhum, Nanur, Bhattacharya para, 29.ix.1986, from soil and litter, coll. A.K. Sanyal **Paratype :** 1 adult (F), data same as for holotype.

Remarks : The new species of *Lasiobelba* from West Bengal, India closely resembles *L. remota* Aoki, 1959 and *L. insignis* Balogh, 1970 in the shape of prodorsum and notogaster, prodorsal and notogastral setae. But the species strongly differ from *remota* in the length and nature of lamellar and interlamellar setae and shape of sensillus and differing from *insignis* mainly by the shape of sensillus and absence of apodemata 4.

The genus is represented here for the first time from India.

70. Genus *Lanceoppia* Hammer

1982. *Lanceoppia* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13 (2) : 42.

129. *Lanceoppia* sp.

Remarks : Bhattacharya, Joy and Joy (1980) and Joy and Bhattacharya (1981) recorded the genus with unidentified species from Birbhum district, West Bengal.

71. Genus *Multioppia* Hammer

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

Key to the species of *Multioppia*

- 1(2) Prodorsal setae smooth; head of sensillus with 8-10 radiating branches
*simplitricha* Sanyal and Bhaduri, 1985
- 2(1) Rostral and lamellar setae feathered proximally; head of sensillus with 12-16 or 12-15 radiating branches
- 3(4) Sensillus with semilunar head having 12-16 radiating branches*radiata* Hammer, 1961
- 4(3) Sensillus with compressed head having 12-15 radiating branches and look like small star
*stellifera* Hammer, 1961

130. *Multioppia radiata* Hammer

1961. *Multioppia radiata* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13 (1) : 62.

1981. *Multioppia radiata*, Ghatak and Roy, *Contributions to Acarology in India* (ed. G. P. Channa Basavanna), 25.

Diagnosis : Rostral setae unilaterally feathered but distal third smooth; lamellar setae very thin, finely barbed, situated behind a faint transverse line; interlamellar setae erect, short, thin; sensillus with almost semilunar head; its posterior border tiny with smooth 12-16 radiating bristles; notogastral setae 12 pairs, short, thin, all equally long; between epimera I a 'W'-shaped figure; genital setae 5 pairs.

Distribution : India : West Bengal (Hugli). Elsewhere : South America (Peru).

131. *Multioppia simplitricha* Sanyal and Bhaduri

1985. *Multioppia simplitricha* Sanyal and Bhaduri, *Indian J. Acar.*, 10 (1 & 2) : 15.

Diagnosis : All prodorsal setae smooth, thin; sensillus long with swollen head fringed with 8-10 radiating processes; notogastral setae 12 pairs, smooth; genital setae 5 pairs.

Distribution : India : West Bengal (South 24-Parganas).

132. *Multioppia stellifera* Hammer

1961. *Multioppia stellifera* Hammer, *Biol. Skr. Dan. Vid. Selsk.* 13(1) : 63.
 1977. *Multioppia stellifera*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43(4) : 179.
 1979. *Multioppia stellifera*, Bhattacharya, *J. Res. Visva-Bharati*, 3(2) : 22.

Diagnosis : Rostral setae feathered proximally, smooth in distal third; a faint line in front of rostral setae; lamellar setae feathered, much smaller than rostral setae; interlamellar setae erect and short; sensillus with compressed head, broadest at the tip, with 12-15 radiating smooth bristles along its outer border, head looks like small star; notogastral setae 12 pairs, short, thin; genital setae 5 pairs.

Distribution : India : West Bengal (Birbhum, Nadia, North 24-Parganas). Elsewhere : South America (Peru).

133. *Multioppia* sp.

Remarks : Bhattacharya, Joy and Joy (1981) and Joy and Bhattacharya (1981) reported unidentified species of *Multioppia* from Birbhum district of West Bengal.

72. Genus *Neoppia* Bhattacharya and Banerjee

1981. *Neoppia* Bhattacharya and Banerjee, *Mitt. Zool. Mus. Berlin*, 57(1) : 11.

134. *Neoppia minuta* Bhattacharya and Banerjee

1981. *Neoppia minuta* Bhattacharya and Banerjee, *Mitt. Zool. Mus. Berlin*, 57(1) : 11.

Diagnosis : Rostrum with a median hemispheric projection; rostral setae feathered distally; interlamellar setae minute; notogastral setae 12 pairs, simple; distance between genital and anal plates less than the length of the genital plate; genital setae 5 pairs.

Distribution : India : West Bengal (Birbhum)

73. Genus *Oppia* Koch

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

Key to the species of *Oppia*

- 1(4) Prodorsal setae smooth
 2(3) Prodorsal and notogastral setae bifurcated; genital setae five pairs
*ramisetosa* Sanyal and Bhaduri, 1985

- 3(2) Prodorsal and notogastral setae normal; genital setae six pairs
 *cryptomeriae* Mondal and Kundu, 1985
- 4(1) Prodorsal setae finely barbed
- 5(6) Interlamellar setae longer than rostral and lamellar setae; *ta* minutely barbed
 *orientalis* Sanyal and Bhaduri, 1985
- 6(5) Interlamellar setae not much longer than the other prodorsal setae; *ta* smooth
- 7(8) Interlamellar setae directed backward; sensillus spindle-shaped beset with fine setae; pointed protrusion behind bothridium
 *yodai* Aoki, 1965
- 8(7) Interlamellar setae directed forward; sensillus spear-shaped with serrated borders; no pointed protrusion behind bothridium
 *nodosa* Hammer, 1958

135. *Oppia cryptomeriae* Mondal and Kundu

1985. *Oppia cryptomeriae* Mondal and Kundu, *Bull. zool. Surv. India*, 7 (2-3) : 305.

Diagnosis : Prodorsal setae smooth; interlamellar setae extremely long; sensillus with club-shaped head beset with two distal threads, posterior one very long; notogastral setae 10 pairs, smooth, tips pointed; genital setae 6 pairs.

Distribution : India : West Bengal (Darjiling).

136. *Oppia nodosa* Hammer

1958. *Oppia nodosa* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 10(1) : 54.

1979. *Oppia nodosa*, Bhattacharya, *J. Res. Visva-Bharati*, 3(2) : 22.

1980. *Oppia nodosa*, Bhattacharya and Joy, *Soil Biology as related to land use practices* (ed. D. L. Dindal), 112.

1981. *Oppia nodosa*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 33.

Diagnosis : Prodorsal setae straight, finely feathered; interlamellar setae directed forward; lamellar setae twice as long as their mutual distance; two rows of light areas between interlamellar setae; sensillus thin, spear-shaped, borders slightly serrated; notogastral setae 10 pairs, slightly serrated, long; genital setae 5 pairs.

Distribution : India : West Bengal (Birbhum). Elsewhere : South America (Argentina).

137. *Oppia orientalis* Sanyal and Bhaduri

1985. *Oppia orientalis* Sanyal and Bhaduri, *Indian J. Acar.*, 10 (1 & 2) : 15.

Diagnosis : All prodorsal setae serrated; rostral and lamellar setae small; interlamellar setae long;

sensillus lanceolate; notogaster foveolated; 11 pairs of notogastral setae, spine-like, *ta* finely barbed; anal setae smooth.

Distribution : India : West Bengal (South 24-Parganas).

138. *Oppia ramisetosa* Sanyal and Bhaduri

1985. *Oppia ramisetosa* Sanyal and Bhaduri, *Indian J. Acar.*, 10 (1 & 2) : 15.

Diagnosis : All prodorsal and notogastral setae bifurcated, smooth; sensillus moderately long, head swollen, hairy; notogastral setae 8 pairs.

Distribution : India : West Bengal (South 24-Parganas).

139. *Oppia yodai* Aoki

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

1974. *Oppia yodai*, Banerjee, *Acta Arachnol.*, 25(2) : 69.

1977. *Oppia yodai*, Chakrabarti, Bhaduri and Raychoudhuri, *Sci & Cult.*, 43(4) : 180.

1981. *Oppia yodai*, Sanyal, *Bull. zool. Surv. India*, 4(3) : 296.

Diagnosis : Prodorsal setae finely feathered; lamellar setae twice as long as their mutual distance; interlamellar setae directed backwards; sensillus spindle-shaped, beset with fine bristles; one pointed protrusion behind the bothridium; notogastral setae 10 pairs, finely serrated; genital setae 5 pairs.

Material examined : *Darjiling Dt.* : 3 (F), East of Sukna forest, 27.xi.1983, from litter and soil, coll. A.K. Sanyal; 1 (F), Mirik, 19.ix.1986, from humus, coll. A.K. Sanyal; 1 (F), Botanical garden, Darjiling, 21.xii.1985, from litter and soil, coll. A.K. Sanyal; 1 (F), Jorebangla, 21.ix.1986, from litter and soil, coll. A.K. Sanyal. *Medinipur Dt.* : 2 (F), Belpahari, 13.xii.1985, from humus, coll. S.K. De; 1 (F), Jitusol, 14.xii.1985, from litter, coll. S.K. De; 2 (F), Nandigram, 21.xii.1985, from litter, coll. S.K. De. *Birbhum Dt.* : 18 (F), Sadar Hospital Campus, Suri, 28.ix.1986, from soil, coll. A.K. Sanyal; 4 (F), Dak Bunglow campus, Suri, 28.ix.1986, from humus, coll. A.K. Sanyal; 1 (F), Santiniketan, 29.ix.1986, from litter in bamboo forest, coll. A.K. Sanyal. *Haora Dt.* : 1 (F), Botanical garden, Sibpur, 5.i.1987, from litter, coll. A.K. Sanyal; 2 (F), Uluberia, 6.i.1987, from litter, coll. A.K. Sanyal. *Hugli Dt.* : 2 (F), Arambagh, 10.xii.1986, from humus, coll. A.K. Sanyal. *Nadia Dt.* : 2 (F), Krishnanagar, Chowdhuripara, 10.ii.1986, from litter, coll. A.K. Sanyal.

140. *Oppia* sp.

Remarks : The unidentified species under the genus *Oppia* were reported from Birbhum (Bhattacharya *et al.*, 1980, 1981 and Joy and Bhattacharya, 1981), Calcutta (Bhaduri and Raychaudhuri, 1967) and South 24-Parganas (Sanyal and Bhaduri, 1982).

74. Genus *Oppiella* Jacot

1937. *Oppiella* Jacot, *J. N. Y. ent. Soc.*, 45 : 356.

141. *Oppiella nova* (Oudemans)1902. *Oppiella nova* (Oudemans), *Ent. Ber.*, 1 : 36.1983. *Oppiella nova*, Chakrabarti and Mondal, *Indian J. Acar.*, 8(1) : 41.

Diagnosis : Rostrum with a 'Λ'- shaped slit, all prodorsal setae smooth; a thin transverse line below the rostral setae; lamellar setae thin, originating from the tip of short costulae; interlamellar setae directed posteromedially; sensillus fusiform with 7-8 radiating branches; notogastral setae 10 pairs, smooth; genital setae 6 pairs.

Distribution : India : West Bengal (Darjiling). Elsewhere : Africa (Mauritius, Sahara), Canary Is., Chile, Central Asia, Easter Is., Europe (Germany), Fiji, Indonesia, Japan, New Zealand, North America, Pacific Is., Pakistan, Patagonia, Reunion Is., Samoa, South America, Thailand, Tonga Tapu Is.

75. Genus *Paroppia* Hammer1968. *Paroppia* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 16(2) : 19.142. *Paroppia* sp.

Remarks : The unidentified species were reported by Bhattacharya and Joy (1980) and Bhattacharya, Joy and Joy (1981) from Birbhum district, West Bengal.

76. Genus *Ramusella* Hammer1962. *Ramusella* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(2) : 50.143. *Ramusella* sp.

Remarks : The genus *Ramusella* is known from West Bengal by unidentified species reported from Birbhum district by Bhattacharya, Joy and Joy (1980), Bhattacharya and Bhattacharya (1981) and Joy and Bhattacharya (1981).

77. Genus *Solenoppia* Hammer1958. *Solenoppia* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 16(2) : 20.144. *Solenoppia* sp.

Remarks : Bhattacharya, Joy and Joy (1981) recorded the genus with an unidentified species from Birbhum district, West Bengal.

78. Genus *Striatoppia* Balogh1958. *Striatoppia* Balogh, *Rev. Zool. Bot. Afr.*, 58 (1-2) : 16.

Key to the species of *Striatoppia*

- 1(2) Rostral setae smooth; interlamellar setae minute*machadoi* Balogh, 1958
 2(1) Rostral setae feathered; interlamellar setae leaf-shaped*niliaca* (Popp, 1960)

145. *Striatoppia machadoi* Balogh

1958. *Striatoppia machadoi* Balogh, *Rev. Zool. Bot. Afr.*, 58(1-2) : 16.

1973. *Striatoppia machadoi*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 39(8) : 365.

Diagnosis : Rostral setae smooth, acute; lamellar setae foliate; interlamellar setae minute; notogastral setae 9 pairs, setae on anterior portion plumose, setae on middle portion foliate.

Material examined : *Nadia Dt.* : 1 (F), Choudhuri Para, Krishnanagar, 12.x.1985, from litter and soil, coll. A.K. Sanyal.

Distribution : India : West Bengal (Calcutta, Nadia). Elsewhere : Africa, North America.

146. *Striatoppia niliaca* (Popp)

1960. *Striatoppia niliaca* (Popp), *Bull. Soc. ent. Egypte*, 44 : 215.

1973. *Striatoppia niliaca*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 39 (8) : 365.

Diagnosis : Rostral setae feathered; lamellar and interlamellar setae leaf-shaped; several irregular chitinised spots near lamellar base; sensillus directed outwards and then turn back inwards, head pointed with 4 setae; *c*, feathered, other notogastral setae leaf-shaped; genital setae 7 pairs, simple.

Distribution : India : West Bengal (Calcutta). Elsewhere : Africa (Egypt).

42. Family SUCTOBELBIDAE Grandjean, 1954

Key to the genera of Suctobelbidae

- 1(2) Sensillus flagellate, set with cilia*Flagrosuctobelba* Hammer, 1979
 2(1) Sensillus not flagellate
 3(6) Dorsosejugal suture with chitinous teeth; notogaster with crista
 4(5) Dorsosejugal suture with an unpaired tubercle medially; notogaster with tubercles; notogastral setae minute*Suctobelbila* Jacot, 1937
 5(4) Dorsosejugal suture without an unpaired tubercle; notogaster without tubercles; notogastral setae longer*Suctobelbella* Jacot, 1937

6(3) Dorsosejugal suture without chitinous teeth; notogaster without crista ...*Suctobelba* Paoli, 1908

79. Genus *Flagrosuctobelba* Hammer

1979. *Flagrosuctobelba* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 22 (9) : 37.

147. *Flagrosuctobelba flabella* Mondal

1984. *Flagrosuctobelba flabella* Mondal, *Rec. zool. Surv. India*, 81(3 & 4) : 153.

Diagnosis : Rostrum with four lateral teeth on each side; rostral setae bushy and knob-like at the middle; lamellar setae discernible by follicles only; interlamellar setae not discernible; lamellar knob connected with the interpseudostigmatic ridges by a thin ridge; sensillus flagellate, distal three-fourth moderately incrassate; notogaster with four teeth; notogastral setae 9 pairs, *ti, te, ms, r₁, r₂, r₃*, fan shaped; genital setae 6 pairs.

Distribution : India : West Bengal (Darjiling).

80. Genus *Suctobelba* Paoli

1908. *Suctobelba* Paoli, *Redia*, 5(1) : 72.

Key to the species of *Suctobelba*

- 1(4) Rostrum with four lateral teeth
- 2(3) Sensillus with flat disc-shaped head; notogastral setae both thin, short and spoon-shaped.....
.....*variosetosa* Hammer, 1961
- 3(2) Sensillus club-shaped; notogastral setae thin, smooth*subcornigera* Forsslund, 1941
- 4(1) Rostrum with three lateral teeth
- 5(6) Behind the anterior border of notogaster an 'H'-shaped figure like a bridge between the median notogastral teeth; posterior notogastral setae feathered*ponticulus* Hammer, 1971
- 6(5) 'H'-shaped bridge between the median notogastral teeth absent; notogastral setae smooth
- 7(8) 1-3 small tubercles in front of lamellar knob; sensillus long with slender sickle-shaped head
.....*elegantula* Hammer, 1958
- 8(7) 6-7 small tubercles in front of lamellar knob, sensillus with long flat semilunar head
.....*quadricarina* Hammer, 1958

148. *Suctobelba elegantula* Hammer

1958. *Suctobelba elegantula* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 19(1) : 48.
 1979. *Suctobelba elegantula*, Bhattacharya, *J. Res. Visva-Bharati* 3(2) : 22.
 1973. *Suctobelba elegantula*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 39(8) : 366.

Diagnosis : Prodorsum with three different sized rostral teeth; lamellar lobe triangular, 1-3 tubercles in front of the lamellar lobe, lamellae indistinct; interpseudostigmatic ridges well developed; sensillus long, head slender, sickle-shaped, ends in a thin thread, densely set with bristles; notogaster with four teeth; notogastral setae thick, smooth.

Distribution : India : West Bengal (Birbhum, Calcutta). Elsewhere : South America (Argentina, Peru).

149. *Suctobelba ponticulus* Hammer

1971. *Suctobelba ponticulus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 16(6) : 19.
 1977. *Suctobelba ponticulus*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43(4) : 180.

Diagnosis : Prodorsum with two equally long rostral teeth; lamellar lobe round and closed; a small ridge in front of lamellar lobe; lamellae well developed; sensillus with long, flat, slender head, tapers towards the tip, whole length beset with short bristles; notogastral setae variable in shape and size.

Distribution : India : West Bengal (Calcutta, Nadia). Elsewhere : Fiji.

150. *Suctobelba subcornigera* Forsslund

1941. *Suctobelba subcornigera* Forsslund, *Zool. Bidr. Uppsala*, 20 : 292.
 1981. *Suctobelba subcornigera*, Chakrabarti and Mondal, *Sci. & Cult.*, 47(5) : 182.

Diagnosis : Rostrum with four teeth, teeth 1-3 very broad, teeth 4 small; centre of propodosoma with 5-10 tubercles; sensillus club-shaped, long, slender, pointed with fine setae on the outside; notogastral setae thin, smooth.

Distribution : India : West Bengal (Darjiling). Elsewhere : Europe (Bulgaria, Sweden), New Zealand, Pakistan, Spitsbergen.

151. *Suctobelba quadricarina* Hammer

1958. *Suctobelba quadricarina* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 10(1) : 43.
 1977. *Suctobelba quadricarina*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43(4) : 180.

Diagnosis : prodorsum with three unequal rostral teeth; lamellar knob closed; 6-7 small tubercles in front of lamellar knob; sensillus with long, flat, semilunar-shaped head, distal part drawn out into a long seta, outer margin beset with strong setae; notogaster with four teeth; notogastral setae thin, short, smooth.

Material examined : Haora Dt. : 1 (F), Amta, 10.x.1985, from litter and soil, coll. A.K. Sanyal.

Distribution : India : West Bengal (Haora, North 24-Parganas). Elsewhere : South America (Argentina, Peru).

152. *Suctobelba variosetosa* Hammer

1961. *Suctobelba variosetosa* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 51.

1977. *Suctobelba variosetosa*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43(4) : 180.

Diagnosis : Prodorsum with four unequal rostral teeth; lamellar knob closed; sensillus with flat, disc-shaped, obliquely cut off, rounded head set with short thick, bristles; notogaster with two teeth; few notogastral setae thin, short and few spoon-shaped beset with bristles.

Distribution : India : West Bengal (North 24-Parganas). Elsewhere : Fiji, South America (Peru).

81. Genus *Suctobelbella* Jacot

1937. *Suctobelbella* Jacot, *J. N. Y. ent. Soc.*, 45 : 361.

153. *Suctobelbella nondivisa* (Hammer)

1966. *Suctobelbella nondivisa* (Hammer), *Biol. Skr. Dan. Vid. Selsk.*, 15(2) : 54.

1982. *Suctobelbella nondivisa*, Mondal and Chakrabarti, *Indian J. Acar.*, 7(2) : 79.

Diagnosis : A small pointed apical tooth behind rostral setae and behind the tooth a broad lobe directed outwards, posterior to the lobe a very long pointed tooth; lamellar setae extremely long; sensillus clavate in dorsal view; notogastral setae very long, tip extremely thin, curved into a hook.

Distribution : India : West Bengal (Darjiling). Elsewhere : New Zealand.

154. *Suctobelbella* sp.

Remarks : Bhattacharya, Joy and Joy (1981) recorded one unidentified species of *Suctobelbella* from Birbhum, West Bengal.

82. Genus *Suctobelbilla* Jacot

1937. *Suctobelbilla* Jacot, *J. N. Y. ent. Soc.*, 45 : 361.

155. *Suctobelbilla dentata* (Hammer)

1961. *Rhynchobella dentata* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 46.

1966. *Suctobelbilla dentata* (Hammer), *Biol. Skr. Dan. Vid. Selsk.*, 15(2) : 57.

1973. *Suctobelbilla dentata*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 39(8) : 366.

Diagnosis : Propodosoma with three short rostral teeth on lateral borders, in front of which the border serrated; prodorsal setae smooth; interlamellar setae hardly discernible, situated on a small tubercle; sensillus with clavate head; tips pointed, beset with minute setae; notogastral setae 10 pairs, thin, smooth.

Distribution : India : West Bengal (Calcutta). Elsewhere : Fiji, New Zealand, Pakistan, South America (Peru).

43. Family BANKSINOMIDAE Kunst, 1971

83. Genus *Oribella* Berlese

1908. *Oribella* Berlese, *Redia*, 5 : 9.

156. *Oribella* sp.

Remarks : The only genus *Oribella* under the family was reported by an unidentified species from Birbhum, West Bengal by Bhattacharya, Bhattacharya and Banerjee (1980).

44. Family CYMBAERMEIDAE Sellnick, 1928

84. Genus *Scapheremaeus* Berlese

1910. *Scapheremaeus* Berlese, *Redia*, 6 : 226.

157. *Scapheremaeus fisheri* Aoki

1966. *Scapheremaeus fisheri* Aoki, *Pacific Ins.*, 8(3) : 772.

1972. *Scapheremaeus fisheri*, Chakrabarti and Bhaduri, *Sci. & Cult.*, 38(11) : 500.

Diagnosis : Prodorsum with longitudinal ridges, distinct granulation and twig-like sculpture; rostral setae glabrous; lamellar cusps prominently projecting forward; sensillus with strong swollen black head with inconspicuous barbations; notogastral setae extremely minute.

Distribution : India : West Bengal (Nadia). Elsewhere : Midway Islands.

158. *Scapheremaeus* sp.

Remarks : The unidentified species under this genus was reported from Birbhum, West Bengal by Bhattacharya and Bhattacharya (1981) and Bhattacharya, Joy and Joy (1981).

45. Family CHAUNOPROCTIDAE Balogh, 1961

85. Genus *Chaunoproctus* Pearce

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

Key to the species of *Chaunoproctus*

- 1(2) Rostral setae situated on apophyses; interlamellar and notogastral setae club-shaped
 *clavisetosa* Bhaduri, Bhattacharya and Chakrabarti, 1975
- 2(1) Rostral setae not situated on apophyses; interlamellar and notogastral setae almost uniformly thick
 throughout their length
- 3(4) Thick and setose ta , p_2 and p_3 *abalai* Bhaduri, Bhattacharya and Chakrabarti, 1975
- 4(3) Thin and smooth ta , p_2 and p_3 *minor* (Balogh, 1958)

159. *Chaunoproctus abalai* Bhaduri, Bhattacharya and Chakrabarti

1975. *Chaunoproctus abalai* Bhaduri, Bhattacharya and Chakrabarti, *Mitt. Zool. Mus. Berlin*, 5(1) : 59.

1977. *Chaunoproctus abalai*, Choudhuri and Banerjee, *The University of Burdwan Publication*, 9.

1983. *Chaunoproctus abalai*, Chakrabarti and Mondal, *Indian J. acar.*, 8(1) : 40.

Diagnosis : Prodorsal setae minutely barbed; sensillus short with round head; notogastral setae 10 pairs, setose, genital plates round with 6 pairs of setae.

Material examined : Darjiling Dt. : 1 (F), Panitanki, 23.ix.1986, from humus, coll. A.K. Sanyal. Barddhaman Dt. : 1 (F), Katwa, near railway station, 26.ix.1987, from litter and soil, coll. A.K. Sanyal. Bankura Dt. : 1 (F), Rajdarbar, Bishnupur, 22.ix.1987, from litter and soil, coll. A.K. Sanyal. Hugli Dt. : 1 (F), Arambagh, 10.xii.1986, from litter, coll. A.K. Sanyal. Medinipur Dt. : 2 (F), Junput, 19.xii, 1985, from humus, coll. R. K. Kulin.

Distribution : India : West Bengal (Bankura, Barddhaman, Calcutta, Darjiling).

160. *Chaunoproctus clavisetosus* Bhaduri, Bhattacharya and Chakrabarti

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

1979. *Chaunoproctus clavisetosus*, Bhattacharya, *J. Res. Visva-Bharati*, 3(2) : 22.

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.

Distribution : India : West Bengal (Birbhum, Calcutta).

161. *Chaunoproctus minor* (Balogh)

1958. *Caloppia minor* Balogh, *Rev. Zool. Bot. Afr.*, 58(1-4) : 11.

Diagnosis : Prodorsal setae barbed; lamellar setae longer than rostral setae; sensillus with clavate granulated head; all prodorsal setae except *ta*, *p*₂ and *p*₃ long and barbed.

Material examined : *Jalpaiguri Dt.* : 2(F), Rajabhatkhawa forest, Alipurduar, 22.xi.1983, from litter, coll. A.K. Sanyal; 1 (F), Joyanti forest, Alipurduar, 23.xi.1983, from humus, coll. A.K. Sanyal. *Murshidabad Dt.* : 1 (F), Lalgola, 4.xii.1983, from litter and soil, coll. A.K. Sanyal.

Distribution : India : West Bengal (Jalpaiguri, Murshidabad). Elsewhere : Africa (Angola).

Remarks : The species is reported here for the first time from India.

46. Family ORIBATULIDAE Thor, 1929

Key to the Indian genera of Oribatulidae

- 1(6) 12-14 pairs of notogastral setae; 4 pairs of genital setae; legs tridactylous
- 2(3) Translamella present, lamellae ribbon-shaped *Zygoribatula* Berlese, 1916
- 3(2) Translamella absent; lamellae thin or ribbon -shaped
- 4(5) Dorsosejugal suture interrupted medially *Eporibatula* Sellnick, 1928
- 5(4) Dorsosejugal suture whole *Oribatula* Berlese, 1896
- 6(1) 10 pairs of notogastral setae; 3-5 pairs of genital setae; legs mono- or tridactylous, rarely bidactylous
- 7(10) 3 pairs of genital setae
- 8(9) Legs monodactylous *Euscheloribates* Kunst, 1958
- 9(8) Legs tridactylous *Hammerabates* Balogh, 1970
- 10(7) 4-5 pairs of genital setae
- 11(12) 4 pairs of genital setae; area porosae generally reduced to sacculi ... *Schelorbates* Berlese, 1908
- 12(11) 4 or 5 pairs of genital setae; area porosae absent *Incabates* Hammer, 1961

86. Genus *Eporibatula* Sellnick

1928. *Eporibatula* Sellnick, *Tierwelt Mitteleurop*, 3 : 17.

162. *Eporibatula* sp.

Remarks : The genus was reported from Birbhum district by Bhattacharya (1979), Bhattacharya and Joy (1980), Bhattacharya, Joy and Joy (1980) and Joy and Bhattacharya (1981).

87. Genus *Euscheloribates* Kunst

1958. *Euscheloribates* Kunst, *Acta Soc. Ent. Cech.*, 55 : 67.

163. *Euscheloribates* sp.

Remarks : Sanyal (1981) reported the genus with an unidentified species from South 24-Parganas.

88. Genus *Hammerabates* Balogh

1970. *Hammerabates* Balogh, *Acta Zool. Acad. Sci. Hung.*, 16(3-4) : 312.

164. *Hammerabates trisetosus* Balogh

1970. *Hammerabates trisetosus* Balogh, *Acta Zool. Acad. Sci. Hung.*, 16 (3-4) : 312.

Diagnosis : Prodorsal setae setiform; sensillus spherical on a short pedicel; dorsosejugal suture trapezoidal; ten pairs of notogastral setae, minute; 3 pairs of genital setae.

Material examined : West Dinajpur Dt. : 1 (F), Dhangra, Raigunj, 29.xi.1983, from litter and soil, coll. A.K. Sanyal.

Distribution : India : West Bengal (West Dinajpur). Elsewhere : New Guinea.

Remarks : The genus and the species are reported here for the first time from India.

89. Genus *Incabates* Hammer

1961. *Incabates* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 108.

165. *Incabates nudus* Hammer

1961. *Incabates nudus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 108.

Diagnosis : Rostral setae thin, unilaterally feathered; lamellae slightly tapering towards tip; lamellar setae situated on the tip of lamellae, thin, finely feathered; a chitinous band continuous between tip of lamella and rostrum; interlamellar setae thin, finely feathered; sensillus with thin stalk, head round disc-shaped and set with fine bristles; no areae porosae; pteromorphae separated from hysterosoma by a distinct furrow; genital setae 4 pairs.

Material examined : Calcutta Dt. : 1 (F), Joka, 30.x.1984, from soil, coll. A.K. Sanyal.

Distribution : India : West Bengal (Calcutta). Elsewhere : South America (Peru).

Remarks : The genus and the species are reported here for the first time from India.

90. Genus *Oribatula* Berlese

1896. *Oribatula* Berlese, *Acari Myriapoda et Scorpiones hucusque in Italia reperta*, 79.

166. *Oribatula tibialis* (Nicolet)

1855. *Notaspis tibialis* Nicolet, *Arch. Mus. Hist. Nat.*, 7 : 420.

1928. *Oribatula tibialis*, Sellnick, P. Bromer, *Ehrmann and Ulmer's Dic Tierw. Mitteleur.*, 3 : 1-42.

1980. *Oribatula tibialis*, Bhattacharya, Joy and Joy, *Tropical Ecology & Development*, 983.

Distribution : India : West Bengal (Birbhum), Sikkim. Elsewhere : Canary Is., Europe (Bulgaria, France, Germany, Spain).

167. *Oribatula* sp.

Remarks : Bhattacharya, Joy and Joy (1981) and Joy and Bhattacharya (1981) reported an unidentified species of *Oribatula* from Birbhum.

91. Genus *Scheloribates* Berlese

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

Key to the species of *Scheloribates*

- 1(4) All tarsi monodactylous; apodemata III and IV meet each other and abutting anterior rim of genital capsule
- 2(3) Notogaster longer than broad, sensillus long and lanceolate, the head reaching the lateral margin of the pteromorph; all prodorsal setae minutely barbed; *la* never extends beyond the tip of rostrum, 5 pairs of genital setae *natalensis* Pletzen, 1963
- 3(2) Notogaster as long as broad, sensillus small with club-shaped head which never reaches the lateral margin of pteromorph; all prodorsal setae smooth; *la* extends beyond the tip of rostrum; 4 pairs of genital setae *rakhali* sp. nov.
- 4(1) All tarsi tridactylous; apodemata III and IV never meet each other
- 5(10) Hysterosoma as broad as long

- 6(7) Rostral and interlamellar setae as long as their mutual distance; sensillus with lanceolate heads with pointed tips*rectus* Hammer, 1958
- 7(6) Rostral and interlamellar setae one and a half times longer than their mutual distance; sensillus not with lanceolate head
- 8(9) Lamellar setae thinner than rostral setae; sensillus with short stalk and disc-shaped head, directed forward*albialatus* Hammer, 1961
- 9(8) Lamellar setae as thick as rostral setae; sensillus with long slender stalk and spear-shaped head, directed outwards and backwards*huancayensis* Hammer, 1961
- 10(5) Hysterosoma longer than broad
- 11(18) Sensillus club-shaped
- 12(17) Lamellar and interlamellar setae almost equal in length
- 13(14) Prodorsal setae smooth*indicus* sp. nov.
- 14(13) Prodorsal setae barbed
- 15(16) Lamellae keel-like; notogastral setae represented by chitinous pores*curvialatus* Hammer, 1961
- 16(15) Lamellae not keel-shaped; notogastral setae minute*praeincisus* (Berlese, 1910)
- 17(12) Lamellar and interlamellar setae not equal in length; lamellar setae much smaller than interlamellar setae*bhadurii* sp. nov.
- 18(11) Sensillus not club-shaped
- 19(20) Sensillus with clavate head; rostral setae on apophyses*parvus* Pletzen, 1963
- 20(19) Sensillus with lanceolate head; rostral setae not on apophyses*thermophilus* Hammer, 1961

168. *Scheloribates albialatus* Hammer

1961. *Scheloribates albialatus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 94.
1975. *Scheloribates albialatus*, Choudhuri and Banerjee, *Oriental Ins.*, 9(3) : 314.
1979. *Scheloribates albialatus*, Bhattacharya, *J. Res. Visva-Bharati*, 3(2) : 22.
1980. *Scheloribates albialatus*, Bhattacharya and Joy, *Soil Biology as related to Land use practices* (ed. D. L. Dindal), 112.
1980. *Scheloribates albialatus*, Bhattacharya, Joy and Joy, *Tropical Ecology & Development*, 983.
1981. *Scheloribates albialatus*, Ghatak and Roy, *Contributions to Acarology in India* (ed. G. P. Channa Basavanna), 25.

1981. *Scheloribates albialatus*, Banerjee and Roy, *Contributions to Acarology in India* (ed. G. P. Channa Basavanna), 29.
1981. *Scheloribates albialatus*, Joy and Bhattacharya, *Progress in Soil Biology and Ecology in India* (ed. G. K. . Veeresh), *UAS Tech. Series No. 37* : 102.
1983. *Scheloribates albialatus*, Chakrabarti and Mondal, *Indian J. Acar.*, 8(1) : 40.
1985. *Scheloribates albialatus*, Gupta and Paul, *Bull. zool. Surv. India*, 7(1) : 3.
1989. *Scheloribates albialatus*, Gupta and Paul, *Progress in Acarology*, 2 : 320.

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 : Koch Bihar Dt. : 3 (F), Dinhata, Gosanimari, 20.xi.1983, from soil, coll. A.K. Sanyal. Jalpaiguri Dt. : 8 (F), Alipurduar, Rajabhatkhawa forest, 22.xi.1983, from decomposed litter, coll. A.K. Sanyal; 1 (F), Alipurduar, Netaji Road, 25.xi.1983, from soil, coll. A.K. Sanyal. West Dinajpur Dt. : 10 (F), Raigunj, Dhangra, 29.xi.1983, from soil, coll. A.K. Sanyal. Murshidabad Dt. : 1 (F), Lalbag, 5.xii.1983, from soil, coll. A.K. Sanyal. South 24-Parganas Dt. : 1 (F), Joka, 27.vii.1984, from soil, coll. A.K. Sanyal. Medinipur Dt. : 4 (F), Chandipur, 65 kms from Digha, 18.xii.1985, from decomposed litter, coll. R. K. Kulin. Haora Dt. : 2 (F), Amta, 12.ii.1986, from litter and soil, coll. A.K. Sanyal. Nadia Dt. : 5 (F), Choudhuripara, Krishnanagar, 20.v.1986, from decomposed litter, coll. A.K. Sanyal. Darjiling Dt. : 1 (F), Kalimpong, Kumani (east of Samsing forest rest house), 11.ix.1986, from humus, coll. A.K. Sanyal; 2 (F), Kalimpong, Kuapani, 12.ix.1986, from humus, coll. A.K. Sanyal; 2 (F), Kalimpong, Nayakaman (1-1/2 km east of Rangpoo forest rest house), 16.ix.1986, from humus, coll. A.K. Sanyal; 1 (F), Jorebangla, 21.ix.1986, from decomposed litter, coll. A.K. Sanyal; 1 (F), Botanical garden compound, 21.ix.1986, from decomposed litter, coll. A.K. Sanyal, 1(F), Panitanki, 23.ix.1986, from soil, coll. A.K. Sanyal. Purulia Dt. : 1(F), Irrigation bungalow campus, 10.ix.1987, from soil, coll. A.K. Sanyal; 4 (F), Raghunathpur, Nandwara, 12.ix.1987, from soil, coll. A.K. Sanyal ; 3 (F), Jhalda, Mayasaravar, 15.ix.1987, from humus, coll. A.K. Sanyal. Bankura Dt. : 3(F), Bankura town, Nutanchati, 20.ix.1987, from decomposed litter, coll. A.K. Sanyal; 2 (F), Bishnupur, Raj Darbar, 22.ix.1987, from soil, coll. A.K. Sanyal. Hugli Dt. : 2 (F), Jairambati, 24.ix.1987, from decomposed litter, coll. A.K. Sanyal. Barddhaman Dt. : 1 (F), Katwa (near Railway station), 26.ix.1987, from soil, coll. A.K. Sanyal ; 7(F), Khana, Shoregarhpar; 27.ix.1987, from decomposed banana plant, coll. A.K. Sanyal.

Distribution : India : West Bengal (Bankura, Barddhaman, Birbhum, Darjiling, Haora, Hugli, Jalpaiguri, Koch Bihar, Medinipur, Murshidabad, Nadia, Purulia, South 24-Parganas, West Dinajpur). Elsewhere : South America (Peru).

169. *Scheloribates bhadurii* sp. nov.
(Figs. 33-34)

Colour dark brown; length of the body : 330-414; width of the body : 284-342.

Anterior margin of rostrum conical; rostral setae (51-58) straight, bilaterally barbed, mounted on lateral apophyses at a mutual distance of 50-57, distal two third projecting beyond rostral tip; bilaterally barbed lamellar setae (80-95) placed on tips of lamellae and extend beyond tip of the rostrum; lamellae ribbon-like, slightly separated from lateral margins of propodosoma, extending over half the length of

latter; interlamellar setae long (90-153), thin, pointed and also bilaterally barbed, about twice as long as their mutual distance; pseudostigmata placed distinctly anterior to dorsosejugal suture and on the posterolateral sides of prodorsum; sensillus outwardly directed with short peduncle bearing smooth and club-shaped head.

Longer than the maximum width across the pteromorph; pteromorph immovably hinged, slightly concave at anterior margin with decurved lateral outline; notogaster excluding pteromorphs almost ovoid in outline; setae 10 pairs, placed posteromarginally and anteriorly, smooth, thin and small; chitinous pores on notogaster are small.

Ventral setae smooth and minute; genital setae 4 pairs; anal field large, little wider than long, setae 2 pairs; distance between *ag* greater than the width of genital plates; distance between anal and genital plates corresponds to mutual distance between the sensillus.

Sternal plate faintly marked; epimeral setae minute; apodema III and IV do not meet in front of the genital plates.

All tarsi tridactylous.

Holotype : Adult (F), INDIA: West Bengal : South 24-Parganas, Namkhana, 27.ii.1977, from soil, coll. A.K. Sanyal. *Paratypes* : 22 adult (F), South 24-Parganas, Namkhana, 26.i.1977 - 24.xii.1978, from litter and soil, coll. A.K. Sanyal; 17 adult (F), South 24-Parganas, Sagar Island, 30.i.1977- 17.xii.1978, from litter and soil, coll. A. K. Sanyal.

Remarks : The new species agrees in several respects with *Scheloribates minutus* Pletzen, 1965 such as the body measurements, form of the pteromorph, notogaster much longer than broad, long and barbed rostral, lamellar and interlamellar setae and number of genital setae, but differs markedly from the latter species by the presence of moderately arched dorsosejugal suture, narrowly clavate pseudostigmatic organ, in the general facies of notogaster, absence of sternum and in having tridactylous tarsi.

170. *Scheloribates curvialatus* Hammer

1961. *Scheloribates curvialatus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 21(4) : 35.

1983. *Scheloribates curvialatus*, Chakrabarti and Mondal, *Indian J. Acar.*, 8(1) : 42.

Diagnosis : Prodorsal setae feathered; lamellar setae very thick, long, situated on a tooth; sensillus evenly thicker towards the tip like rounded club, set with fine scales; notogastral setae not discernible; genital setae 4 pairs.

Distribution : India : West Bengal (Darjiling). Elsewhere : South America (Peru).

171. *Scheloribates huancayensis* Hammer

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

1981. *Scheloribates huancayensis*, Chakrabarti and Mondal, *Sci. & Cult.*, 47(5) : 183.

Diagnosis : Prodorsal setae long, distinctly feathered, about one and half times longer than their mutual distance; sensillus very slender, with narrowly spear-shaped head, pointed at the tip, set with short bristles in four longitudinal rows; notogastral setae absent, instead chitinous pores present.

Material examined : *Darjiling Dt.* : 2 (F), Kalimpong, Teesta Bazar, 13.ix.1986, from decomposed litter and soil, coll. A.K. Sanyal; 1 (F), Kalimpong, Rangpoo forest rest house campus, 15.ix.1986, from litter and soil, coll. A.K. Sanyal. *Birbhum Dt.* : 50 (F), Nanur, Bhattacharya Para, 29.ix.1986, from decomposed litter, coll. A.K. Sanyal.

Distribution : India : West Bengal (Birbhum, Darjiling), Assam. Elsewhere : South America (Peru).

172. *Schelorbates indicus* sp. nov.
(Figs. 35-36)

Colour yellowish brown; length of the body : 414-536; width of the body : 258-346.

Prodorsum wider than long, rostrum rounded; rostral setae (45-52) thin, smooth, curved inward, placed on lateral margin of rostrum; lamellar setae thin, smooth with pointed tips, longer than their mutual distance, more or less straight and extends beyond the tip of rostrum, no translamella; interlamellar setae (54-68) also thin, smooth like *ro* and *la*, slightly shorter than their mutual distance with their tips reaching base of lamellar setae; lamella ribbon-like, slightly constricted near base, separated from lateral margin of prodorsum; pseudostigmatic organ with club-shaped head, directed outward and forward.

Pteromorph immovably hinged, anterior margin straight and with striations, lateral margin slightly decurved; 10 pairs of notogastral setae placed anteriorly and postero-marginally, smooth, minute; chitinous pores on notogaster small.

Faint pock marks on ventral surface; genital plate slightly longer than broad, genital setae 4 pairs; anal plate longer than genital plate, broader than long, 2 pairs of setae; distance between *ag* slightly longer than the width of genital plates.

Sternal plate distinct; epimeral setae minute; apodemata III and IV not meeting in front of the outer rim of the genital plates.

All tarsi tridactylous.

Holotype : Adult (F), India : West Bengal : South 24-Parganas, Namkhana, 6.xi.1977, from litter and soil, coll. A.K. Sanyal. **Paratypes :** 3 adult (F), data same as for holotype.

Remarks : The Indian species agrees with *Schelorbates albialatus* described by Hammer (1961) from Peru in having forwardly directed pseudostigmatic organ, by the presence of thin almost smooth *la* and *in* and tridactylous legs. But the new species can be separated from the Peruvian species by the presence of smooth *ro*, form of lamella and pteromorph, distinctly visible notogastral setae and having apodemata III and IV not meeting each other in front of the genital field.

173. *Scheloribates natalensis* Pletzen

1963. *Scheloribates natalensis* Pletzen, *Acarologia*, 5(4) : 700.
 1982. *Scheloribates natalensis*, Sanyal, *J. Soil Biol. Ecol.*, 2(1) : 10.
 1983. *Scheloribates natalensis*, Sanyal and Sarkar, *Indian J. Acar.*, 8(1) : 33.

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*, very small; genital setae 5 pairs; monodactylous tarsi.

Material examined : Koch Bihar Dt. : 1 (F), Dinhata, Boro Boalmari, 20.xi.1983, from decomposed litter, coll. A.K. Sanyal; 2 (F), Dinhata, Jambari, 20.xi.1983, from decomposed litter, coll. A.K. Sanyal. Jalpaiguri Dt. : 4(F), Alipurduar, Rajabhathkawa forest, 22.xi.1983, from decomposed litter, coll. A.K. Sanyal. Maldah Dt. : 2 (F), Gaur, Ramkeli, 1.xii.1983, from soil, coll. A.K. Sanyal. Medinipur Dt. : 5 (F), Chilkigarh, 13 kms from Jhargram, 15.xii.1985, from decomposed litter, coll. R.K. Kulin. Hugli Dt. : 6 (F), Arambagh, 22.vi.1986, from litter, coll. A.K. Sanyal. Haora Dt. : 4 (F), Amta, 10.vii.1986, from litter and soil, coll. A.K. Sanyal.

Distribution : India : West Bengal (Haora, Hugli, Jalpaiguri, Koch Bihar, Maldah, Medinipur, South 24-Parganas). Elsewhere : South Africa (Durban).

174. *Scheloribates parvus* Pletzen

1963. *Scheloribates parvus* Pletzen, *Acarologia*, 5(4) : 701.
 1979. *Scheloribates parvus*, Chakrabarti and Roy Talukdar, *Sci. & Cult.*, 45(2) : 81.

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

Material examined : South 24-Parganas Dt. : 4(F), Joka, from soil, coll. A.K. Sanyal. Koch Bihar Dt. : 5 (F), Dinhata, C.T.R.I. campus, 19.xi.1983, from soil, coll. A.K. Sanyal. Jalpaiguri Dt. : 4 (F), Alipurduar, Rajabhathkawa forest, 22.xi.1983, from decomposed litter, coll. A.K. Sanyal; 4(F), Kalchini, 22.xi.1983, from soil, coll. A.K. Sanyal. Darjiling Dt. : 8 (F), east of Sukna forest, 27.xi.1983, from decomposed litter, coll. A.K. Sanyal. West Dinajpur Dt. : 4 (F), Raigunj, Subhasgunj, 29.xi.1983, from soil, coll. A.K. Sanyal. Maldah Dt. 2 (F), Gour, Ramkeli, 1.xii.1983, from soil, coll. A.K. Sanyal. Murshidabad Dt. : 1 (F), Lalbag, 5.xii.1983, from soil, coll. A.K. Sanyal. Haora Dt. : 3(F), Uluberia, 10.vii.1986, from litter, coll. A.K. Sanyal.

Distribution : India : West Bengal (Darjiling, Haora, Jalpaiguri, Maldah, Murshidabad, South 24-Parganas, West Dinajpur), Assam. Elsewhere : South Africa (Winburg and Rustenburg).

Remarks : The species is reported here for the first time from West Bengal.

175. *Scheloribates praeincisus* (Berlese)

1910. *Protoribates (Protoribates) praeincisus* Berlese, *Redia*, 6 : 384.
 1925. *Protoribates (Scheloribates) praeincisus*, Sellnick, *Supplementa Entomologica*, No.11 : 82.
 1981. *Scheloribates praeincisus*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 33.

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

Material examined : *Darjiling Dt.* : 2 (F), east of Sukna forest, 27.xi.1983, from decomposed litter and soil, coll. A.K. Sanyal. *Maldah Dt.* : 8 (F), Adina forest, 2.xii.1983, from litter and soil, coll. A.K. Sanyal.

Distribution : India : West Bengal (Birbhum, Darjiling, Maldah), Tripura. Elsewhere : Easter Is., Fiji, Indonesia, Polynesia, Samoa, South Africa, Tonga Tapu Is.

176. *Scheloribates rakhali* sp. nov.
(Figs. 37-38)

Colour light brown; length of the body : 426-524; width of the body : 300-391.

Prodorsum wider than long; rostrum pointed, rostral setae closely situated near the tip of rostrum, smooth, slightly curved inward; lamellar setae (64-71) thin, smooth, situated on tip of lamellae, extend beyond the tip of rostrum, as long as their distance; interlamellar setae (92-154) thin, longer than other prodorsal setae, reach upto the tip of rostrum, about one and half times longer than their mutual distance; pseudostigmatic organ with small club-shaped head, directed outward and backward.

Almost circular excluding pteromorphae, broader than long across pteromorphae, dorsosejugal suture arched; pteromrpha large with shoulder or extreme point rounded, lateral margin decurved; shoulder of pteromorphae with very indistinct white radiating lines; chitinous pores on notogaster distinct; notogastral setae very minute (all notogastral setae well discernible as in figure).

Ventral setae minute; genital plates as long as broad, genital setae 4 pairs; anal plate broader than long, with 2 pairs of setae; distance between *ag* as long as width of anal plates.

Sternal plate ill-developed; apodemata III and IV meeting each other and abutting the anterior rim of the genital field; apodematal region alveolated.

All tarsi with one strong claw.

Holotype : Adult (F), INDIA : West Bengal : South 24-Parganas, Frazergunj, 27.ii.1977, from litter and soil, coll. A.K. Sanyal. **Paratypes** : 20 adult (F), Frazergunj, 26.i.1977 - 24.ii.1978, from litter and soil, coll. A.K. Sanyal; 15 adult (F), Sagar Island, 30.i.1977 - 17.xi.1978, from litter and soil, coll. A.K. Sanyal; 10 adult (F), Kakdeep, 20.i.1977 - 17.xii.1978, from litter and soil, coll. A.K. Sanyal.

Remarks : The present species agrees with *Scheloribates latus* Hammer, 1958 in the shape of notogaster and pteromorph, in the presence of distinct chitinous pores on notogaster and in having monodactylous tarsi. It, however, differs from the South American species in the absence of minute tooth on the lateral border of pseudostigmatic cup and in having small club - shaped pseudostigmatic organ.

177. *Scheloribates rectus* Hammer

1958. *Scheloribates rectus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 10(1) : 77.
 1979. *Scheloribates rectus*, Chakrabarti, Chanda and James, *Acarology Newsletter*, 8 : 4.
 1981. *Scheloribates rectus*, Chakrabarti and Mondal, *Sci. & Cult.*, 47(5) : 183.

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.

Distribution : India : West Bengal (Darjiling), Tripura. Elsewhere : South Africa, South America (Argentina).

178. *Scheloribates thermophilus* Hammer

1961. *Scheloribates thermophilus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13(1) : 95.
 1974. *Scheloribates thermophilus* Banerjee, *Acta Arachnol.*, 26 (1) : 48.
 1977. *Scheloribates thermophilus*, Choudhuri and Banerjee, *The University of Burdwan Publication*, 9.

Diagnosis : All prodorsal setae barbed; rostral setae about twice as long as their mutual distance; lamellar setae thick, unusually short, slightly longer than their mutual distance; interlamellar setae thick; sensillus slender with lanceolate head; notogastral setae minute; all tarsi tridactylous.

Material examined : South 24-Parganas Dt. : 2 (F), Joka, 27 vii. 1984 & 29. vii. 1986, from soil, coll. A. K. Sanyal.

Distribution : India : West Bengal (Bardhaman, South 24-Parganas). Elsewhere : Fiji, South America (Peru).

92. Genus *Zygoribatula* Berlese

1917. *Zygoribatula* Berlese, *Documents Scientifiques*, 5.

Key to the species of *Zygoribatula*

- 1(2) Rostrum with a median pointed tooth; notogastral setae 11 pairs; areae porosae large
 *longiporosa* Hammer, 1953
- 2(1) Rostrum without median tooth; notogastral setae 14 pairs; areae porosae small
 *torilis* Hammer, 1977

179. *Zygoribatula longiporosa* Hammer

1953. *Zygoribatula longiporosa* Hammer, *Australian Journal of Zoology*, 1 (2) : 236.

1980. *Zygoribatula longiporosa*, Bhattacharya, Bhattacharya and Banerjee, *News Letter, Soil Biology and Ecology*, 1 (2) : 17.

Diagnosis : Rostrum with a median tooth; prodorsal setae rough, erect, anteriorly directed; sensillus with setose club-shaped head; notogaster with 11 pairs of short, stiff, rough setae ; areae porosae adalaris and mesonotica elongate, narrow.

Distribution : India : West Bengal (Birbhum). Elsewhere : Australia.

180. *Zygoribatula tortilis* Hammer

1977. *Zygoribatula tortilis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 21(4) : 35.

1983. *Zygoribatula tortilis*, Chakrabarti and Mondal, *Indian J. Acar.*, 8(1) : 42.

Diagnosis : Rostral setae located near the sides of rostrum; lamella together with translamella form an edged arch; lamellar and interlamellar setae strongly barbed; sensillus broad, flat, club-shaped with minute bristles; notogastral setae 14 pairs, thick, stiff with barbed spine.

Distribution : India : West Bengal (Darjiling), Himachal Pradesh. Elsewhere : Pakistan.

181. *Zygoribatula* sp.

Remarks : The unidentified species of *Zygoribatula* was reported by Gupta and Paul (1989) from the nest of the bird *Passer inornata* from Medinipur district.

47. Family HAPLOZETIDAE Grandjean, 1936

Key to the genera of Haplozetidae

- 1(14) Legs monodactyloous
- 2(3) Notogastral setae absent; translamella present ; genital setae 5 pairs
 *Conozetes* Balogh and Mahunka, 1969
- 3(2) 10-14 pairs of notogastral setae; translamella absent or represented by a faint line between lamella;
 genital setae 4-6 pairs
- 4(9) 14 pairs of notogastral setae
- 5(6) 5 pairs of genital setae *Setoxylobates* Balogh and Mahunka, 1967

- 6(5) 6 pairs of genital setae
- 7(8) Dorsosejugal suture with three arches; 1 pair of aggenital setae *Rostrzetes* Sellnick, 1925
- 8(7) Dorsosejugal suture with a single arc; 3 pairs of aggenital setae *Pilobates* Balogh, 1960
- 9(4) 10 pairs of of notogastral setae
- 10(11) 6 pairs of genital setae; 3 pairs of aggenital setae *Pilobatella* Balogh and Mahunka, 1967
- 11(10) 4 or 4-6 pairs of genital setae; 1 pair of aggenital setae
- 12(13) 4 pairs of genital setae; chitinous pores or slits replace the areae porosae; sensillus setiform, pilose
..... *Lauritzenia* Hammer, 1958
- 13(12) 4-6 pairs of genital setae; sensillus not pilose *Xylobates* Jacot, 1929
- 14(1) Legs tridactylous
- 15(16) Interlamellar setae present; 14 pairs of notogastral setae *Peloribates* Berlese, 1908
- 16(15) Interlamellar setae present or absent; 0 or 10 pairs of notogastral setae
- 17(18) Interlamellar and notogastral setae absent *Phalacrozetes* Aoki, 1965
- 18(17) Interlamellar setae present; 10 pairs of notogastral setae *Haplozetes* Willmann, 1935

93. Genus *Conozetes* Balogh and Mahunka

1969. *Conozetes* Balogh and Mahunka, *Acta Zool. Acad. Sci. Hung.*, **15** : 18.

182. *Conozetes* sp.

Material examined : Jalpaiguri Dt. : 1 (F), Buxa Road, Alipurduar, 23. xi. 1983, from humus, coll. A. K. Sanyal.

Remarks : The genus is recorded here for the first time from India.

94. Genus *Haplozetes* Willmann

1935. *Haplozetes* Willmann, *Zool. Jahrb., Syst.*, **66** : 333.

183. *Haplozetes* sp.

Material examined : Jalpaiguri Dt. : 2 (F), Rajabhatkhawa forest, Alipurduar, 22.xi. 1983, from

litter and soil, coll. A.K. Sanyal. *Darjiling Dt.* : 1 (F), east of sukna forest, 27. xi. 1983, from litter, coll. A.K. Sanyal. *West Dinajpur Dt.* : 2 (F), Hemtabad, Raigunj, 30. xi. 1983, from soil, coll. A. K. Sanyal. *Purulia Dt.* : 10 (F), Mayasaravar, Jhalda, 15.ix. 1987, from litter and soil, coll. A. K. Sanyal.

Distribution : India : West Bengal (Darjiling, Jalpaiguri, Purulia, South 24-Parganas, West Dinajpur).

Remarks : Due to lack of literature identification upto species level was not possible. The genus was first reported from India by Sanyal (1981) from South 24-parganas, West Bengal.

95. Genus *Lauritzenia* Hammer

1958. *Lauritzenia* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 10(1) : 83.

184. *Lauritzenia longipluma* Hammer

1958. *Lauritzenia longipluma* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 10(1) : 83.

Diagnosis : Rostral setae short, thin; lamellae broad, long; lamellar setae situated on the tip of lamellae, rough; interlamellar setae short, thick, feathered, directed upwards and inwards; sensillus very long, consisting a thin thread, unilaterally feathered in its proximal half, distally set with stronger and longer hairs, at the tip little thick; instead of areae porosae very long and narrow slits present; integument dotted with small oblong light punctures.

Material examined : *South 24-Parganas Dt.* : 10 (F), Frazergunj, 30. vi. 1977-16. viii. 1978, from litter and soil, coll. A.K. Sanyal. *Murshidabad.* : 1 (F), Lalbagh, 5. xii. 1983, from litter, coll. A. K. Sanyal.

Distribution : India : West Bengal (Murshidabad, South 24-Parganas). Elsewhere : South America (Argentina, Peru).

Remarks : The genus and the species are reported here for the first time from India.

96. Genus *Peloribates* Berlese

1908. *Peloribates* Berlese, *Redia*, 5 : 3.

185. *Peloribates intermedius* Mondal

1984. *Peloribates intermedius* Mondal, *Rec. zool. Surv. India*, 81(3-4) : 153.

Diagnosis : Rostral and lamellar setae unilaterally barbed outward; interlamellar setae short, beset with minute bristles; sensillus with club-shaped head set with pseudoscales; notogastral setae 14 pairs, short, stiff, setose; genital setae 5 pairs.

Material examined : *Jalpaiguri Dt.* : 2 (F), Jaigaon, 24. xi. 1983, from litter and soil, coll. A. K.

Sanyal. *Murshidabad Dt.* : 2 (F), Lalgola, 4. xii. 1983, from litter, coll. A.K. Sanyal; 1(F), Lalbagh, 5. xii. 1983, from litter, coll. A. K. Sanyal. *Purulia Dt.* : 1 (F), Irrigation bungalow campus, Purulia town, 10. ix. 1987, from litter, coll. A. K. sanyal; 1(F), near forest rest house, Matha, 16. ix. 1987, from humus, coll. A.K. Sanyal. *Bankura Dt.* : 2 (F), Mukutmonipur, 18. ix. 1987, from litter, coll. A. K. Sanyal.

Distribution : India : West Bengal (Bankura, , Darjiling, Jalpaiguri, Murshidabad, Purulia).

97. Genus *Phalacrozetes* Aoki

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

186. *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*, distinct; genital setae 5 pairs.

Material examined : *Calcutta Dt.* : 1 (F), Joka, 9. iv. 1986, from soil, coll. A.K. Sanyal. *Darjiling Dt.* : 5 (F), Panitanki, 23. ix. 1986, from litter and soil, coll. A. K. Sanyal. *Birbhum Dt.* : 3(F), Dakbunglow compound, Suri, 28. ix. 1986, from litter and soil, coll. A. K. Sanyal. *Barddhaman Dt.* : 2 (F), Burdwan University campus, Golapbagh, 13. xi. 1986, from farm soil, coll. P. K. Chowdhuri.

Distribution : India : West Bengal (Barddhaman, Birbhum, Calcutta, Darjiling). Elsewhere : Thailand.

Remarks : The genus and the species are recorded here for the first time from India.

98. Genus *Pilobatella* Balogh and Mahunka

1967. *Pilobatella* Balogh and Mahunka, *Opusc. zool. Bpest.* 7 : 40.

187. *Pilobatella berlesi* Bhattacharya and Banerjee

1979. *Pilobatella berlesi* Bhattacharya and Banerjee, *Indian J. Acar.*, 4(1) : 21.

1981. *Pilobatella berlesi*, Bhattacharya, Joy and Joy, *J. Soil Biol. Ecol.*, 1 : 33.

Diagnosis : Prodorsal setae finely barbed; sensillus long, reclinate arcuate, finely barbed; notogastral setae 10 pairs, thin, simple; genital setae 6 pairs.

Material examined : *Bankura Dt.* : 1(F), Nutanchati, Bankura town, 20. ix. 1987, from litter and soil, coll. A. K. Sanyal.

Distribution : India : West Bengal (Bankura, Birbhum), Tripura.

188. *Pilobatella* sp.

Remarks : One unidentified species under the genus was reported by Bhattacharya and Joy (1980) from Birbhum district.

99. Genus *Pilobates* Balogh

1960. *Pilobates* Balogh, *Publ. Cult. Co. Diam. Ang. Lisboa*, 51 : 98.

189. *Pilobates* sp.

Remarks : Bhattacharya (1979) recorded one unidentified species from Birbhum district.

100. 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

190. *Rostrozetes foveolatus* Sellnick

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

1972. *Rostrozetes foveolatus*, Chakrabarti and Bhaduri, *Sci. & Cult.*, 38(11) : 500 .

1983. *Rostrozetes foveolatus*, Chakrabarti and Mondal, *Indian J. Acar.*, 8(1) : 40.

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 *t₁-ms* and *ms-h*, almost same; genital setae 5 pairs, minute, fine.

Material examined : *Darjiling Dt.* : 2 (F), east of Sukna forest, 27. xi. 1983, from humus, coll. A. K. Sanyal; 2 (F), Kuapani, Kalimpong, 12. ix. 1986, from humus, coll. A. K. Sanyal; 10 (F), Chitra, 14 kms away from Kalimpong towards Teesta Bazar, 13. ix. 1986, from litter, coll. A. K. Sanyal; 1 (F), Lcbong, 20. ix. 1986, from humus, coll. A. K. Sanyal. *Barddhaman Dt.* : 1 (F), Khana (near Railway station), 27. ix. 1987, from litter and soil, coll. A. K. Sanyal.

Distribution : India : West Bengal (Barddhaman, Darjiling, North 24-Parganas), Bihar, Tripura. **Elsewhere**: Africa (Mauritius, Seychelles), Europe (Greece, Spain), Fiji, Indonesia, Japan, New Zealand, North America, Samoa, South America, Tahiti Is., Tonga Tapu Is.

191. *Rostrozetes punctatus* Karppinen

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

Diagnosis : Body punctated; rostral and lamellar setae ciliated; head of sensillus thickened and ciliated; interlamellar setae curved sharply medially; 10 pairs of notogastral setae, minute.

Material examined : *Darjiling Dt.* : 4 (F), east of Sukna forest, 27. xi. 1983, from humus, coll. A. K. Sanyal.

Distribution : India : West Bengal (Darjiling). Elsewhere : Africa (Guinea, Nimba).

Remarks : The species is reported here for the first time from India.

101. Genus *Setoxylobates* Balogh and Mahunka

1967. *Setoxylobates* Balogh and Mahunka, *Acta Zool. Acad. Sci. Hung.*, 23(1-2) : 59.

192. *Setoxylobates foveolates* Balogh and Mahunka

1967. *Setoxylobates foveolatus* Balogh and Mahunka, *Acta Zool. Acad. Sci. Hung.*, 23(1-2) : 59.

Diagnosis : Body foveolated; the whole rostral and interlamellar setae and apical half of lamellar setae weakly barbed; sensillus reclinate, apically fusiform, unilaterally barbed; 4 pairs of areae porosae; notogastral setae 14 pairs, minute; pteromorphae movable; genital setae 5 pairs; epimeral setal formula 3-1-2-2.

Material examined : *Murshidabad Dt.* : 1 (F), Lalgola, 4. xii. 1983, from litter and soil, coll. A. K. Sanyal. *Darjiling Dt.* : 2 (F), Chitra, 14 kms away from Kalimpong towards Teesta Bazar, 13. ix. 1986, from humus, coll. A. K. Sanyal. *Birbhum Dt.* : 2 (F), Babubera, Dububera, Dubrajpur, 28. ix. 1986, from litter and soil, coll. A. K. Sanyal.

Distribution : India : West Bengal (Birbhum, Darjiling, Murshidabad), Tripura. Elsewhere : Vietnam.

Remarks : The genus and the species are recorded here for the first time from Indian subcontinent.

102. Genus *Xylobates* Jacot

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

Key to the species of *Xylobates*

1(2) Rostral and lamellar setae smooth*capucinus* (Balogh, 1908)

2(1) Rostral and lamellar setae barbed*seminudus* Hammer, 1971

193. *Xylobates capucinus* (Berlese)

1908. *Protoribates capucinus* Berlese, *Redia*, 5 : 2.

1983. *Protoribates capucinus*, Chakrabarti and Mondal, *Indian J. Acar.*, 8(1) : 42.

1989. *Xylobates capucinus*, Norton and Kethley, *Redia*, 62(2) 428.

Diagnosis : Rostral setae small , fine, smooth; lamella broad in the middle, tip pointed; lamellar setae smaller than rostral setae, smooth; interlamellar setae long, fine, barbed unilaterally; sensillus with long stalk, head swollen , barbed outwardly; notogastral setae 11 pairs, minute.

Distribution : India : West Bengal (Darjiling). Elsewhere : Africa (Sahara), Europe (Bulgaria, Italy, Spain), Indonesia, New Zealand, North America, Pakistan, Samoa, South America, Tonga Tapu Is., Turkey, U.S.S. R.

194. *Xylobates seminudus* Hammer

1971. *Xylobates seminudus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 16(6) : 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 : *Calcutta Dt.* : 1 (F), Joka, 16. xi. 1983, from soil, coll. A. K. Sanyal. *Murshidabad Dt.* : 1 (F), Lalgola, 4. xii. 1983, from litter, coll. A.K. Sanyal; 3 (F), Lalgola, 5. xii. 1983, from litter, coll. A. K. Sanyal. *Darjiling Dt.* : 6 (F), Teesta Bazar, 13. ix. 1986, from litter and soil, coll. A. K. Sanyal; 2 (F), Kirna Khola, Rangpoo, 17. ix. 1986, from humus, coll. A. K. Sanyal. *Purulia Dt.* : 1 (F), Magikund, Nandwara, Raghunathpur, 12. ix. 1987, from litter, coll. A. K. Sanyal; 10(F), Mayasaravar, Jhalda, 15. ix. 1987, from humus, coll. A. K. Sanyal; 3 (F), Matha, 16. ix. 1987, from humus, coll. A. K. Sanyal; 2 (F), Mukutmonipur, 18. ix. 1987, from soil, coll. A. K. Sanyal; *Bankura Dt.* : 6 (F), Jairambati, 24. ix. 1987, from litter, coll. A. K. Sanyal. *Barddhaman Dt.* : 2 (F), Katwa (near Railway station), from litter, coll. A. K. Sanyal; 2 (F), Burdwan University campus, Golapbagh, 28. ix. 1987, from litter, coll. A. K. Sanyal; 5 (F), Ramnabagan, Golapbagh, 28. ix. 1987, from humus, coll. A. K. Sanyal.

Distribution : India : West Bengal (Bankura, Barddhaman, Calcutta, Darjiling, Murshidabad, Purulia). Elsewhere : Fiji, Tahiti Is., Tonga Tapu Is.

Remarks : The species is recorded here for the first time from India.

48. Family CERATOZETIDAE Jacot, 1925

Key to the genera of Ceratozetidae

1(2) Dorsosejugal suture absent; sensillus rod-shaped*Allozetes* Berlese, 1914

- 2(1) Dorsosejugal suture present; sensillus lanceolate or club - shaped
- 3(4) Sensillus setiform, lanceolate, or slightly fusiform; legs monodactyle.....
 *Ceratozetes* Berlese, 1908
- 4(3) Sensillus fusiform or club-shaped; legs tridactyle *Hypozetes* Balogh, 1959

103. Genus *Allozetes* Berlese

1913. *Allozetes* Berlese, *Redia*, 9 : 88.

195. *Allozetes translamellatus* Hammer

1973. *Allozetes translamellatus* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 20(3) : 31.

Diagnosis : Rostral and lamellar setae barbed; interlamellar setae absent; lamella broad, connected by straight and narrow translamella, anterior border of translamella with triangular teeth; sensillus rod-shaped, barbed; ten pairs of strong notogastral setae; notogaster lightly reticulated; 6 pairs of genital setae.

Material examined : *Purulia Dt.* : 1 (F), Mayasaravar, Jhalda, 15. ix. 1987, from humus, coll. A. K. Sanyal.

Distribution : India : West Bengal (Purulia). *Elsewhere* : Indonesia, Samoa (Upolu Island).

Remarks : The genus and the species are reported here from India for the first time.

104. Genus *Ceratozetes* Berlese

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

196. *Ceratozetes gracilis* Michael

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

1982. *Ceratozetes gracilis*, Mondal and Chakrabarti, *Indian J. Acar.* 7(2) : 84.

Diagnosis : Rostral setae long, stout, unilaterally finely barbed; lamellae long, inclining, broadest of 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 : *Koch Bihar Dt.* : 6 (F), Netaji Road, Alipurduar, 25. xi. 1983, from litter and soil, coll. A. K. Sanyal.

Distribution : India : West Bengal (Darjiling , Koch Bihar). *Elsewhere* : Chile , Europe (Bulgaria),

Indonesia, Japan, New Zealand, North America, Pakistan, South America, U.S.S.R.

105. Genus *Hypozetes* Balogh

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

Key to the species of *Hypozetes*

- 1(2) Sacculi *Sa* located closer to *ti* than *te*; posterior two setae on genital plate arranged obliquely
.....*imitator* Balogh, 1959
- 2(1) Sacculi *Sa* located almost mid-distance between *ti* and *te*; posterior two setae on genital plate arranged longitudinally*laysanensis* Aoki, 1964

197. *Hypozetes imitator* Balogh

1959. *Hypozetes imitator* Balogh, *Acta Zool. Acad. Sci. Hung.*, 5 : 16.

1973. *Hypozetes imitator*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 39(8) : 366.

Diagnosis : Prodorsal setae long, stout, pilose; sensillus with fusiform head, finely barbed; notogastral setae 10 pairs; *p*₁, *p*₂, *p*₃ minute; *t*₁ anteriorly placed; *ms* posteriorly placed; median notogastral setae long; genital setae 6 pairs.

Material examined : Jalpaiguri Dt. : 1 (F), Hamiltongunj, 22. xi. 1983, from litter and soil, coll. A. K. Sanyal.

Distribution : India : West Bengal (Calcutta, Jalpaiguri). Elsewhere : Africa (Uganda).

198. *Hypozetes laysanensis* Aoki

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

1980. *Hypozetes laysanensis*, Bhattacharya, Bhattacharya and Banerjee, *News Letter, Soil Biology and Ecology*, 1(2) : 17.

1981. *Hypozetes laysanensis*, Bhattacharya and Bhattacharya, *Journal of the IPHE India*, No. 3 : 53.

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 : Calcutta Dt.: 1 (F), Joka, 21. vii. 1984, from soil, coll. A. K. Sanyal; 1 (F), Joka, 30.x. 1984, from soil, coll. A. K. Sanyal.

Distribution : India : West Bengal (Birbhum, Calcutta). Elsewhere : Hawaiian Island.

199. *Hypozetes* sp.

Remarks : Bhattacharya and Bhattacharya (1981) recorded one unidentified species under the genus from Birbhum district.

49. Family MYCOBATIDAE Grandjean, 1954

106. Genus *Punctoribates* Berlese

1908. *Punctoribates* Berlese, *Redia*, 5(1) : 6.

200. *Punctoribates longiporosus* Balogh

1963. *Punctoribates longiporosus* Balogh, *Publ. Cult. Co. Diam. Ang., Lisboa*, No.68 : 41.

Material examined : Murshidabad Dt. : 1 (F), Lalbagh, 5.xii.1983, from litter, coll. A. K. Sanyal.

Distribution : India : West Bengal (Murshidabad). Elsewhere : Africa (Angola).

Remarks : The genus and the species are reported here for the first time from India.

50. Family MOCHLOZETIDAE Grandjean, 1960

Key to the genera of Mochlozetidae

- 1(2) Translamella ribbon - shaped; cuspis projecting from the line of translamella
*Podoribates* Berlese, 1908
- 2(1) Translamella linear; cuspis not projecting from line of tanslamella*Unguizetes* Sellnick, 1925

107. Genus *Podoribates* Berlese

1908. *Podoribates* Berlese, *Redia*, 5 : 3.

201. *Podoribates* sp.

Remarks : The genus is known only from Calcutta by an unidentified species (Chakrabarti *et* 1973).

108. Genus *Unguizetes* Sellnick

1925. *Unguizetes* Sellnick, *Treubia*, 6 : 473.

202. *Unguizetes clavatus* Aoki

1967. *Unguizetes clavatus* Aoki, *Nat. Life Southeast Asia*, 5 : 195.

1977. *Unguizetes clavatus*, Chakrabarti, Bhaduri and Raychaudhuri, *Sci. & Cult.*, 43(4) : 180.

Diagnosis : Lateral side of rostrum with crest; translamella carries a projection in the middle and one crest behind; prodorsal setae rough; sensillus clavate-shaped with few fine bristles on the head; 4 pairs of areae porosae - Aa , A_1 , A_2 , A_3 ; A_2 placed in the middle of A_1 and A_3 ; notogastral setae represented by 7 pairs of alveoli; genital setae 6 pairs.

Material examined : Darjiling Dt. : 4 (F), Samsing forest rest house campus, Kalimpong, 10. ix. 1986, from leaves of ornamental plant, coll. A. K. Sanyal; 2 (F), Kimakhola, Rangpoo, Kalimpong, 17. ix. 1986, from litter and soil, coll. A. K. Sanyal.

Distribution : India : West Bengal (Darjiling, North 24-Parganas). Elsewhere : Japan, Thailand.

203. *Unguizetes* sp.

Remarks : Chakrabarti *et al.*, 1973 reported unidentified species under the genus from Nadia and North 24-Parganas districts of West Bengal

51. Family PELOPIDAE Ewing, 1917

109. Genus *Eupelops* Ewing

1917. *Eupelops* Ewing, *Ann. Ent. Soc. Amer.*, 10 : 126.

Key to the species of *Eupelops*

- 1(2) Interspace between lamellar cusps wider posteriorly; sensillus lanceolate; notogastral setae with thick distal part; lenticulus large...*acromis minor* Chakrabarti, Bhaduri and Raychaudhuri, 1973
- 2(1) Interspace between lamellar cusps not wider posteriorly; sensillus with club-shaped head; notogastral setae long, equally thick throughout; lenticulus small
.....*longisetosus* Chakrabarti and Mondal, 1981

204. *Eupelops acromis minor* Chakrabarti, Bhaduri and Raychaudhuri

1973. *Eupelops acromis minor* Chakrabarti, Bhaduri and Raychaudhuri, *Sci & Cult.*, 39(8) : 365.

Diagnosis : Lamellar cusp 'U' - shaped; interspace between lamellar cusps wider posteriorly; lamellar setae finely barbed; interlamellar setae phylliform; head of sensillus lanceolate, beset with fine setae; notogastral setae 10 pairs, distally thick, tip pointed, finely barbed; lenticulus large; genital setae 6 pairs.

Distribution : India : West Bengal (Nadia).

205. *Eupelops longisetosus* Chakrabarti and Mondal

1981. *Eupelops longisetosus* Chakrabarti and Mondal, *Sci. & Cult.*, 47(5) : 181.

Diagnosis : Lamellar setae finely barbed bilaterally; interlamellar setae phylliform; interspace between lamellar cusps 'U' - shaped; sensillus with club-shaped head, beset with fine setae; notogastral setae 10 pairs, long, equally thick throughout, bilaterally feathered; lenticulus small; genital setae 6 pairs.

Distribution : India : West Bengal (Darjiling).

52. Family ORIBATELLIDAE Jacot, 1925

Key to the genera of Oribatellidae

- 1(2) Areae porosae present; all notogastral setae arranged marginally *Oribatella* Banks, 1895
- 2(1) Areae porosae absent; notogastral setae arranged both marginally and centrally
- 3(4) Interlamellar area large; lamellae with free tips; one pair of anal and one pair of adanal setae ...
..... *Paralamellobates* Bhaduri and Raychaudhuri, 1968
- 4(3) Interlamellar area small; lamellae without free tips; two pairs of anal and 2 pairs of adanal setae
..... *Lamellobates* Hammer, 1968

110. 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
- 3(4) Sensillus with long stalk, club-shaped, head beset with fine setae *palustris* Hammer, 1958
- 4(3) Sensillus with short stalk, head flattened without setae *angolensis* Balogh, 1958

206. *Lamellobates angolensis* Balogh

1958. *Lamellobates angolensis* Balogh, *Rev. Zool. Bot. Afr.*, 58(1-3) : 28.

1968. *Lamellobates angolensis*, Bhaduri and Raychaudhuri, *Oriental Ins.*, 2(2) : 197.

Diagnosis : Inner cuspides of lamellae rounded, outer lamellar cuspides pointed; all prodorsal setae barbed; sensillus with narrow stalk, head of sensillus flattened, directed upward; 9 pairs of notogastral setae, minute; 6 pairs of genital setae.

Distribution : India : West Bengal (Calcutta). Elsewhere : Africa (Angola).

207. *Lamellobates hauseri* Mahunka

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

1981. *Lamellobates hauseri*, Bhattacharya, Joy and Joy, *UAS Tech. Series No. 37* : 102.

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 : *Darjiling Dt.* : 1 (F), east of Sukna forest, 27. xi. 1983, from litter and soil, coll. A. K. Sanyal. *West Dinajpur Dt.* : 2 (F), Subhasgunj, Raigunj, 29. xi. 1983, from litter, coll. A. K. Sanyal. *Maldah Dt.* : 6 (F), Adina forest, 2. xii. 1983, from humus, coll. A. K. Sanyal. *Murshidabad Dt.* : 8 (F), Lalgola, 4. xiii. 1983, from litter and soil, coll. A. K. Sanyal. *Purulia Dt.* : 1 (F), Matha, near forest rest house, 16(F), Rajdarbar, Bishnupur town, 22. ix. 1987, from decomposed banana plant, coll. A. K. Sanyal.

Distribution : India : West Bengal (Bankura, Birbhum, Darjiling, Maldah, Murshidabad, Purulia, West Dinajpur). Elsewhere : Indonesia, Vietnam.

208. *Lamellobates palustris* Hammer

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

1968. *Lamellobates palustris*, Bhaduri and Raychaudhuri, *Oriental Ins.* 2(2) : 197.

1975. *Lamellobates palustris*, Choudhuri and Banerjee, *Oriental Ins.*, 9(3) : 314.

1981a. *Lamellobates palustris*, Sanyal, *UAS Tech. Series No. 37* : 109.

1981b. *Lamellobates palustris*, Sanyal, *Bull. zool. Surv. India*, 4(3) : 296.

1982. *Lamellobates palustris*, Sanyal and Bhaduri, *Proc. Symp. Ecol. Anim. Popul. zool. Surv. India*, pt. 3 : 120.

1983. *Lamellobates palustris*, Sanyal and Sarkar, *Indian J. Acar.* 8(1) : 33.

1983. *Lamellobates palustris*, Chakrabarti and Mondal, *Indian J. Acar.*, 8(1) : 40.

Diagnosis : Inner cuspides of lamellae 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 : Calcutta Dt. : 2 (F), Joka, 30. x. 1984, from soil, coll. A. K. Sanyal.

Distribution : India : West Bengal (Bardhaman, Calcutta, Darjiling, South 24-Parganas), Bihar, Tripura. Elsewhere : Fiji, Indonesia, New Zealand, Pakistan, Seychelles, South America (Argentina), Thailand, Tonga Tapu Is.

209. *Lamellobates* sp.

Remarks : The unidentified species under the genus was reported by Bhaduri and Raychaudhuri (1967) and Banerjee (1974) from Calcutta and Barddhaman districts respectively

111. Genus *Paralamellobates* Bhaduri and Raychaudhuri

1968. *Paralamellobates* Bhaduri and Raychaudhuri, *Oriental Ins.*, 2(2) : 197.

210. *Paralamellobates bengalensis* Bhaduri and Raychaudhuri

1968. *Paralamellobates bengalensis* Bhaduri and Raychaudhuri, *Oriental Ins.*, 2(2) : 197.

1979. *Paralamellobates bengalensis*, Bhattacharya, *J. Res. Visva-Bharati*, 9(2) : 22.

1980. *Paralamellobates bengalensis*, Bhattacharya, Joy and Joy, *Tropical Ecology & Development*. 983

1981. *Paralamellobates bengalensis*, Joy and Bhattacharya, *UAS Tech. Series No. 37* : 102.

Diagnosis : The lamellar cuspis, prodorsal and notogastral setae and sensillus similar to *L. palustris*. The main diagnostic feature of *P. bengalensis* is presence of one pair of anal setae.

Material examined : West Dinajpur Dt. : 4 (F), Subhasgunj, Raigunj, 29. xi. 1983, from litter, coll. A. K. Sanyal. Murshidabad Dt. : 1 (F), Lalgola, from litter, coll. A. K. Sanyal; 1 (F), Lalbagh, from litter, coll. A. K. Sanyal. Calcutta Dt. : 1 (F), Joka, from soil, coll. A. K. Sanyal. Darjiling Dt. : 7 (F), Chitra, Kalimpong, from leaves of wild plant, coll. A. K. Sanyal.

Distribution : India : West Bengal (Birbhum, Calcutta, Darjiling, Murshidabad, West Dinajpur), Kerala, Sikkim.

211. *Paralamellobates* sp.

Remarks : Bhattacharya, Bhattacharya and Banerjee (1980) reported an unidentified species from Birbhum district.

112. Genus *Oribatella* Banks

1895. *Oribatella* Banks, *Trans. Amer. Ent. Soc.*, 22 : 4.

212. *Oribatella meridionalis* Berlese

1908. *Oribatella meridionalis* Berlese, *Redia*, 5(1) : 5

1983. *Oribatella meridionalis*, Chakrabarti and Mondal, *Indian J. Acar.*, 8(1) : 42.

Diagnosis : Lateral lamellar tip with two small teeth on outer border; interspace between two lamellar tips broadly rounded; rostral setae long, curved inward; lamellar setae thick beset with coarse spines; interlamellar setae finely barbed; sensillus claviform; notogastral setae thin, smooth.

Distribution : India : West Bengal (Darjiling), Himachal Pradesh, Jammu and Kashmir. Elsewhere: Canary Is., Pakistan, Portici.

53. Family PARAKALUMMIDAE Grandjean, 1936

113. Genus *Protokalumma* Jacot

1929. *Protokalumma* Jacot, *Bull. Mus. Cimp. Zool. , Harvard*, 69(1) : 5.

213. *Protokalumma* sp.

Remarks : The undetermined species of the genus *Protokalumma* was reported by Gupta and Paul (1985,1989) from the nest of the bird *Streptopelia chinensis* from Medinipur.

54. Family GALUMNIDAE Jacot, 1925

114. Genus *Galumna* von Heyden

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

Key to the species of *Galumna*

- 1(2) Prodorsal setae well developed, sensillus filamentous; sacculae present
.....*parascaber* Deb and Raychaudhuri, 1975
- 2(1) Prodorsal setae represented by pits; sensillus club-shaped or otherwise; areae porosae present
- 3(4) Sensillus with club-shaped head; *im* curved and directed antero-posteriorly; a crenate line runs across the hypostome; *gen₁* and *gen₂*; placed on the anterior border of genital plate
.....*crenata* Deb and Raychaudhuri, 1975
- 4(3) Sensillus with long broad head, *im* straight and placed obliquely, no crenate line; *gen₁* - *gen₂* placed on the anterior border of left part of genital plates*flabellifera orientalis* Aoki, 1965

214. *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* guttiform, 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 : West Dinajpur Dt. : 8 (F), Jambari, Goswami para, Dinhata, 20. xi. 1983, from litter and soil, coll. A. K. Sanyal; 1 (F), Dhangra, Raigunj, 29. xi. 1983, from litter, coll. A. K. Sanyal.

Murshidabad Dt. : 8 (F), Lalgola, 4. xii. 1983, from litter, coll. A. K. Sanyal. *Calcutta Dt.* : 1 (F), Joka, 30. x. 1984, from litter and soil, coll. A. K. Sanyal. *Birbhum Dt.* : 4 (F), Sadar Hospital campus, Suri, 28. ix. 1986, from soil, coll. A. K. Sanyal; 10 (F), Bhattacharyapara, Nanur, 29. ix. 1986, from decomposed neem leaves, coll. A. K. Sanyal. *Purulia Dt.* : 11 (F), Nandwara, Raghunathpur, 12. ix. 1987, from litter and soil, coll. A. K. Sanyal. *Bankura Dt.* : 3 (F), Nutanchati, Bankura town, 20. ix. 1987, from litter and soil, coll. A. K. Sanyal; 9 (F), Rajdarbar, Bishnupur town, 22. ix. 1987, from decomposed banana plant, coll. A. K. Sanyal. *Barddhaman Dt.* : 1 (F), Katwa, near railway station, 26. ix. 1987, from litter and soil, coll. A. K. Sanyal; 1 (F), Khana, near railway station, 27. ix. 1987, from litter and soil, coll. A. K. Sanyal.

Distribution : India : West Bengal (Bankura, Barddhaman, Birbhum, Calcutta, Murshidabad, North 24-Parganas, Purulia, South 24 Parganas, West Dinajpur).

215. *Galumna flabellifera orientalis* Aoki

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

1975. *Galumna flabellifera orientalis*, Deb and Raychaudhuri, *Annot. Zool. Japan*, 48(3) : 170.

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; *gen₁*-*gen₃* placed on the anterior border of left genital plate; *gen₂* in right genital plate not placed on the anterior border.

Material examined : *Maldah Dt.* : 2 (F), Adina forest, 2. xii. 1983, from litter and soil, coll. A. K. Sanyal. *Darjiling Dt.* : 2 (F), Teesta Bazar, Kalimpong, 13. ix. 1986, from litter and soil, coll. A. K. Sanyal; 1 (F), Kirnakhola, Rangpoo, 17. ix. 1986, from litter, coll. A. K. Sanyal. *Birbhum Dt.* : 2 (F), Bhattacharya para, Nanur, 29. ix. 1986, from decomposed neem leaves, coll. A. K. Sanyal; 2 (F), Anandakanan Ashram, Dubrajpur, 27. ix. 1986, from litter and soil, coll. A. K. Sanyal; 4 (F), Dak Bungalow campus, Suri, 28. ix. 1986, from litter, coll. A. K. Sanyal. *Purulia Dt.* : 6 (F), Irrigation Bungalow campus, Purulia town, 10. ix. 1987, from litter and soil, coll. A. K. Sanyal; 3 (F), Mayasaravar, Jhalda, 15. ix. 1987, from humus, coll. A. K. Sanyal. *Bankura Dt.* : 1 (F), Nutanchati, Bankura town 20. ix. 1987, from soil, coll. A. K. Sanyal. *Barddhaman Dt.* : 5 (F), Katwa, near railway station, 26. iv. 1987, from litter, coll. A. K. Sanyal; 20 (F), Ramnabagan, Golapbagh, 28. ix. 1987, from humus, coll. A. K. Sanyal.

Distribution : India : West Bengal (Bankura, Barddhaman, Calcutta, Darjiling, North 24-Parganas, Purulia, Maldah), Kerala. Elsewhere : Thailand.

216. *Galumna parascaber* Deb and Raychaudhuri

1975. *Galumna parascaber* Deb and Raychaudhuri, *Annot. Zool. Japan*, 48 : 169.

Diagnosis : Rostral and lamellar setae unilaterally feathered; interlamellar setae long, thin, glabrous; sensillus filamentous, head spear-shaped; notogaster with chitinous tubercles; saccular instead of areae porosae; genital setae 6 pairs.

Distribution : India : West Bengal (South 24-Parganas).

217. *Galumna* sp.

Remarks: The unidentified species of *Galumna* was reported in several publications by Bhattacharya (1979), Bhattacharya and Joy (1980), Bhattacharya, Joy and Joy (1980), Bhattacharya and Bhattacharya (1981), Bhattacharya, Joy and Joy (1981) and Joy and Bhattacharya (1981) from Birbhum, West Bengal

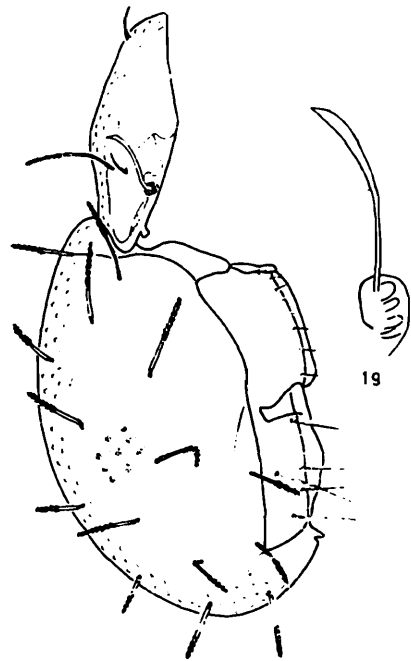
DISCUSSION

The assessment of the taxa shows that before the present work was started a total of 174 species, 101 genera and 52 families were known from West Bengal. The present work includes description of ten species as new to science. It also records 16 species, 13 genera and 2 families (Plasmobatidae and Eremaozetidae) for the first time from India and three species viz., *Rhysotritia ardua*, *R. brasiliana* and *Scheloribates parvus* from West Bengal. Thus at present a total number of 193 oribatid species (excluding the unidentified species of the genera which include one or more species from the state) under 114 genera and 54 families are known from West Bengal (Table 1). So the number of oribatid species in India now stands to 290 under 177 genera and 66 families.

An analysis of the species reported in the present account shows that 59 species have so far been described as new from West Bengal. Of these, distribution of 53 species are still restricted to the state and only one species *Rhysotritia furcata* described from Darjiling is known from Bhutan and Nepal. It is also noted that three new genera viz., *Sigmonothrus*, *Neoppia* and *Paralamellobates* have been described from the state, of which *Sigmonothrus* is still restricted in the state.

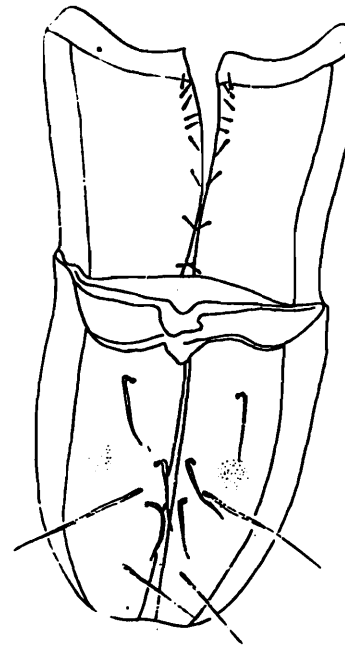
The distribution of oribatid families, genera and species in different states indicates that nearly 60% of the Indian oribatid fauna are known from West Bengal. This may be due to the fact that the states except West Bengal have been little explored.

The study of distribution of oribatid genera, so far known from West Bengal, according to soil types points out that 59 genera are found to occur in alluvial soil, 58 genera in lateritic soil, 56 genera in the Himalayan soil and 12 genera are known from saline soil. It is also seen that out of 114 oribatid genera, 23 (20.18%) are found only in lateritic soil, 22 (19.30%) are restricted to the Himalayan soil, 11 (9.65%) do not occur outside alluvial soil and only 2 (1.78%) genera are known to occur strictly in saline soil. Apart from this, 39 genera are found to live in different soil types. Among these, 14 genera occur in the Himalayan, alluvial and lateritic soils; 4 genera share lateritic, alluvial and saline soils; 3 are known both from the Himalayan and lateritic soils, 8 genera occur in both alluvial and lateritic soils, 9 share the Himalayan and alluvial soils and only one genus occur both in alluvial and saline soils. The analysis also reveals that only 5 genera (4.38%) viz., *Hoplophorella*, *Oppia*, *Scheloribates*, *Lamellobates* and *Galumna* occur in all the four major soil types in West Bengal. Thus, the results indicate that the oribatid mites have a wide range of tolerance to varying soil types and the microclimates associated therein.

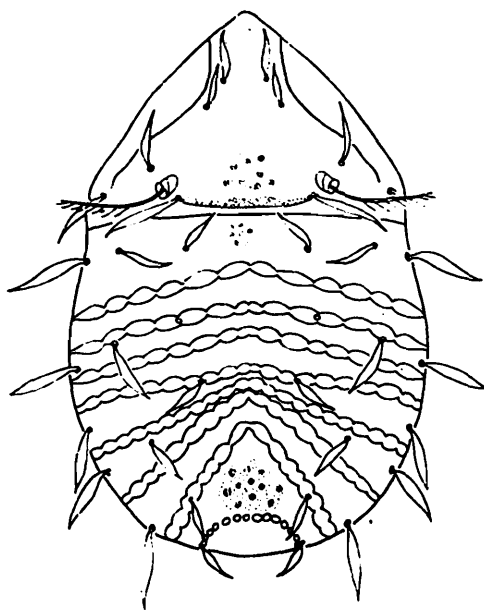


19

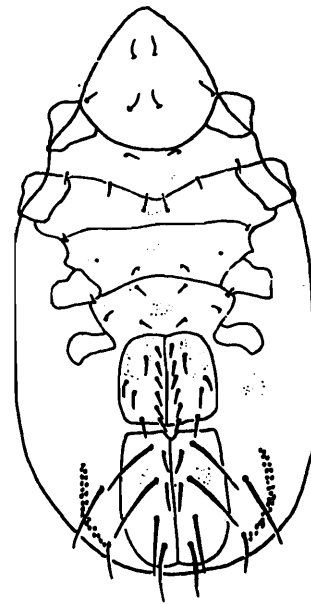
18



20



21



22

Figs. 18-19 : *Hoplophthiracarus bengalensis* sp. nov. : 18. lateral view, 19. sensillus. Fig. 20 : *Hoplophthiracarus bengalensis* sp. nov. : genital region. Fig. 21 : *Millotacarus indicus* sp. nov. : dorsal view. Fig. 22 : *Millotacarus indicus* sp. nov. : ventral view.

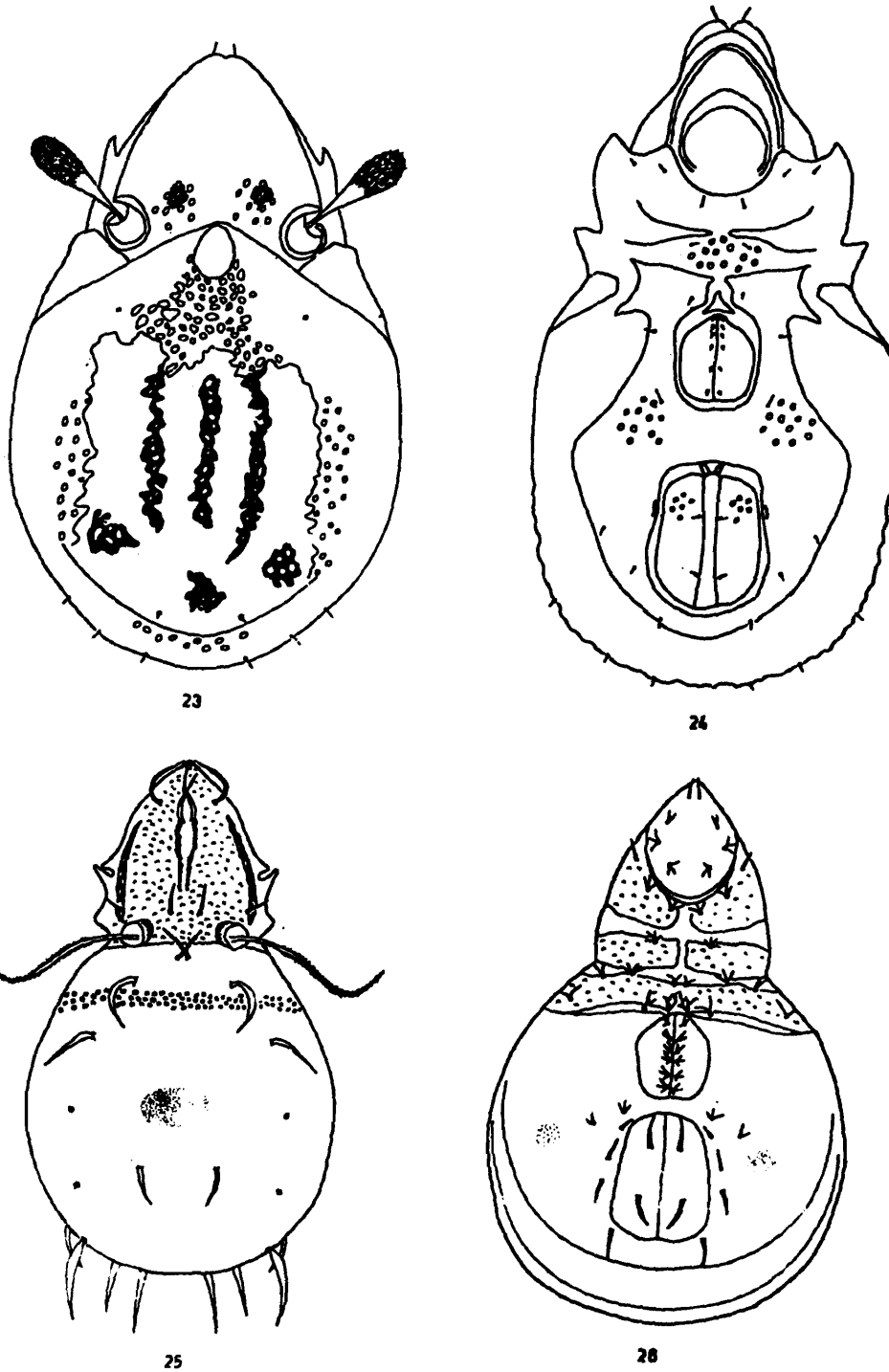


Fig. 23 : *Eremaeozetes himalayensis* sp. nov. : dorsal view. **Fig. 24 :** *Eremaeozetes himalayensis* sp. nov. : ventral view. **Fig. 25 :** *Eremulus renukai* sp. nov. : dorsal view. **Fig. 26 :** *Eremulus renukai* sp. nov. : ventral view.

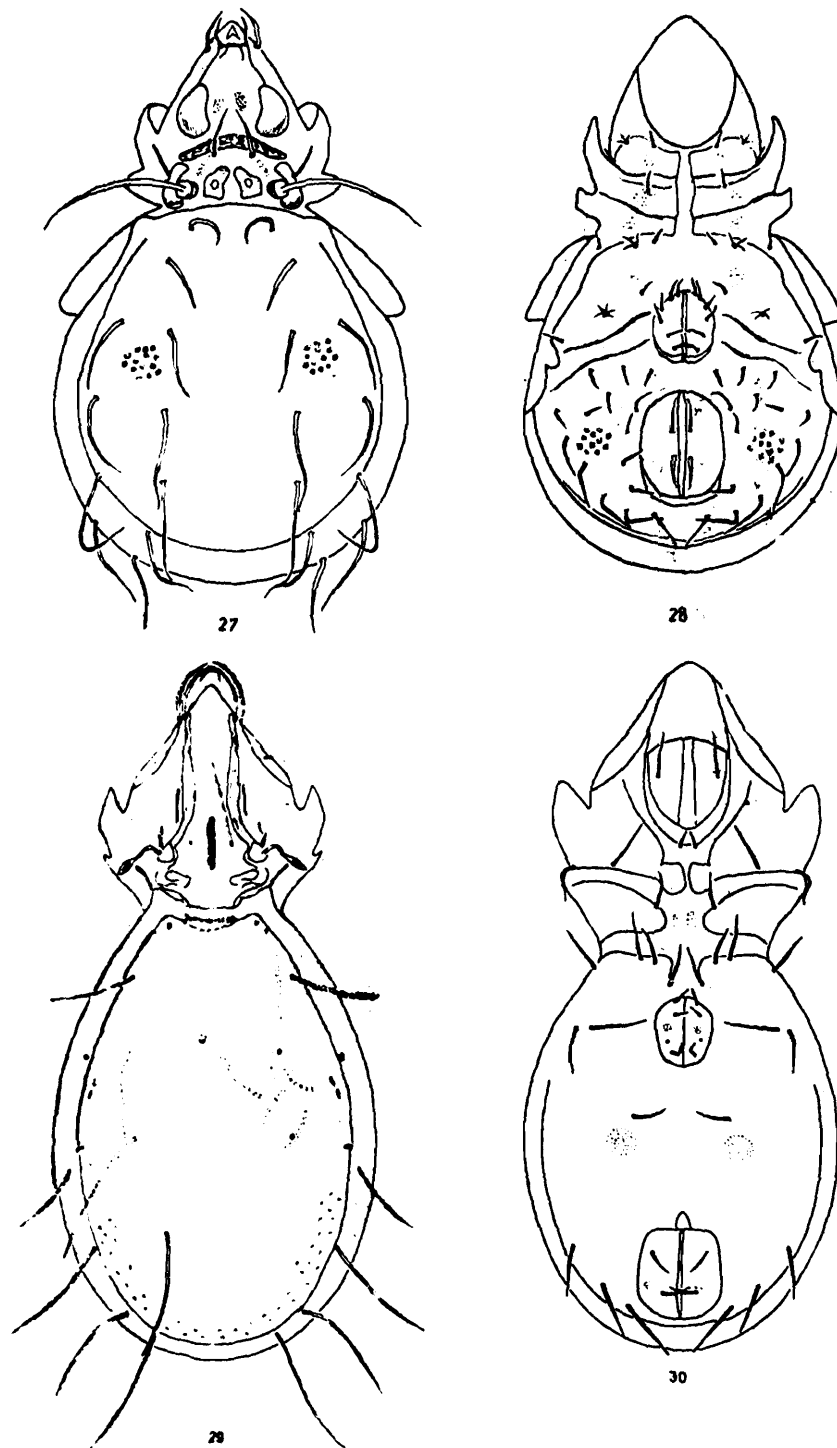


Fig. 27 : *Eremobelba milii* sp. nov. : dorsal view. Fig. 28 : *Eremobelba milii* sp. nov. : ventral view. Fig. 29 : *Dolicheremaeus bengalensis* sp. nov. : dorsal view. Fig. 30 : *Dolicheremaeus bengalensis* sp. nov. : ventral view.

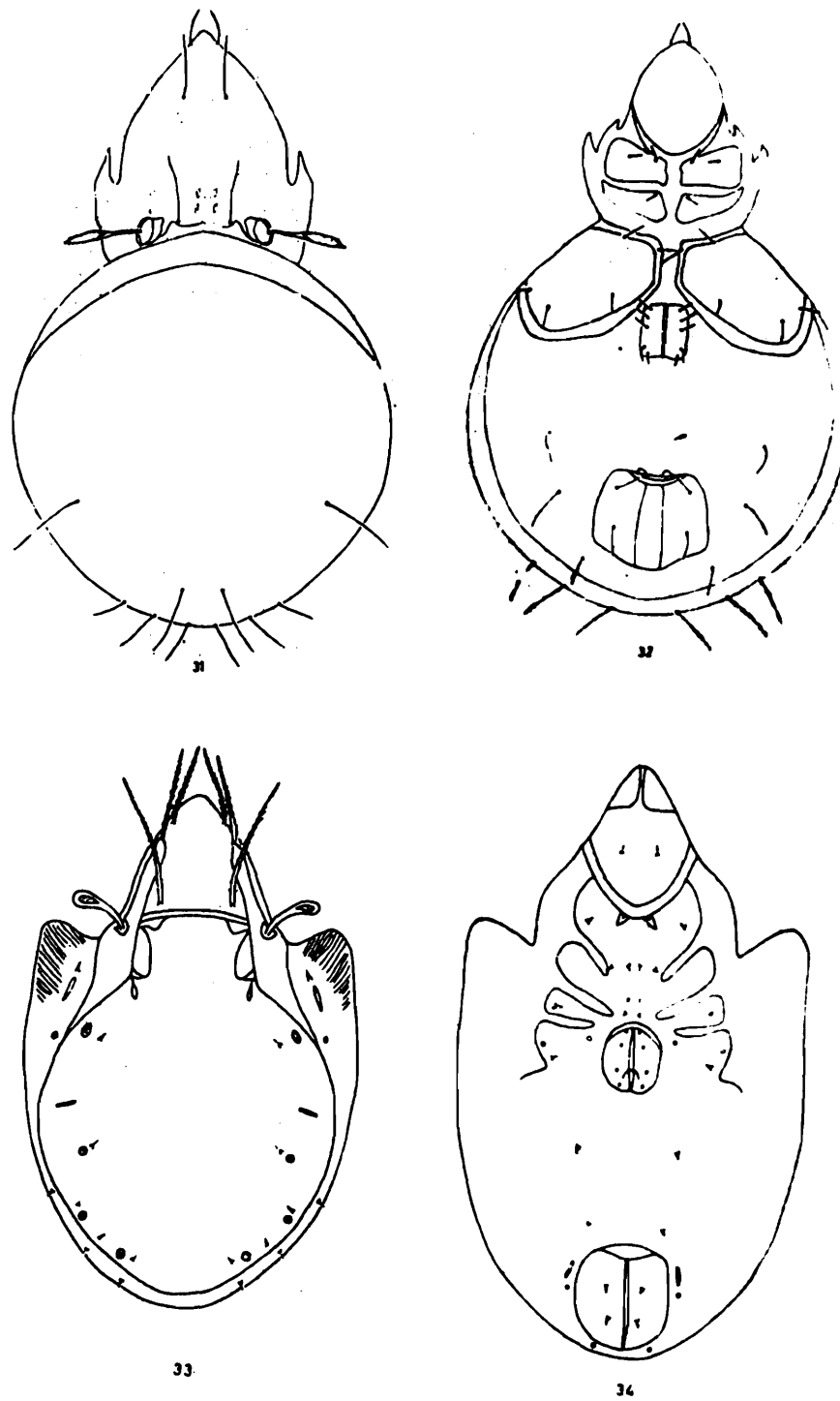


Fig. 31 : *Lasiobelba suchetai* sp. nov. : dorsal view. Fig. 32 : *Lasiobelba suchetai* sp. nov. : ventral view.
Fig. 33 : *Scheloribates bhadurii* sp. nov. : dorsal view. Fig. 34 : *Scheloribates bhadurii* sp. nov. : ventral view.

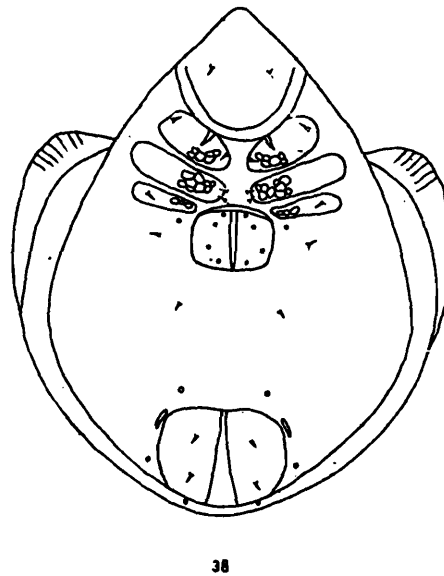
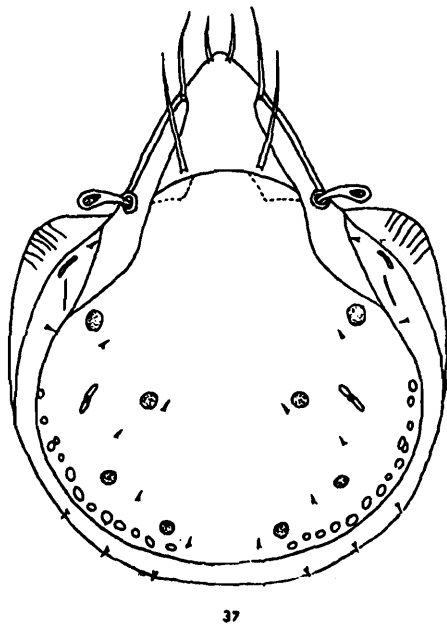
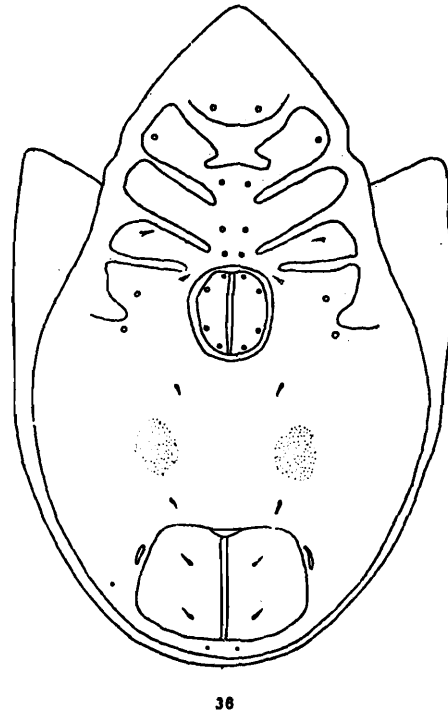
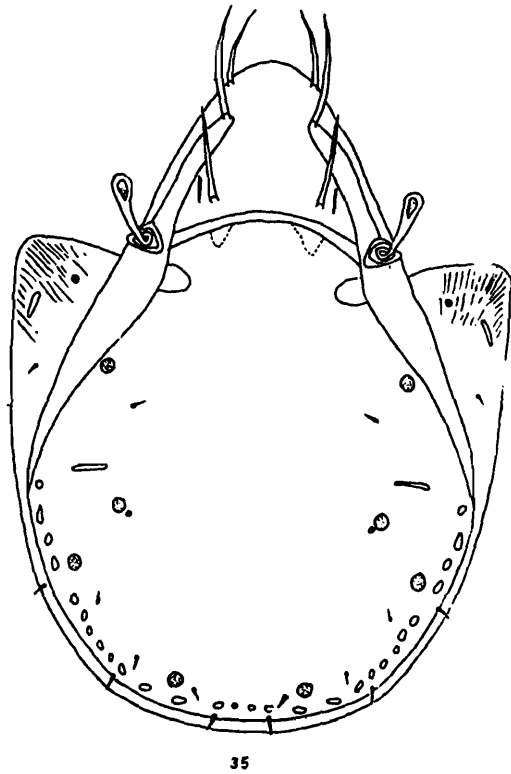
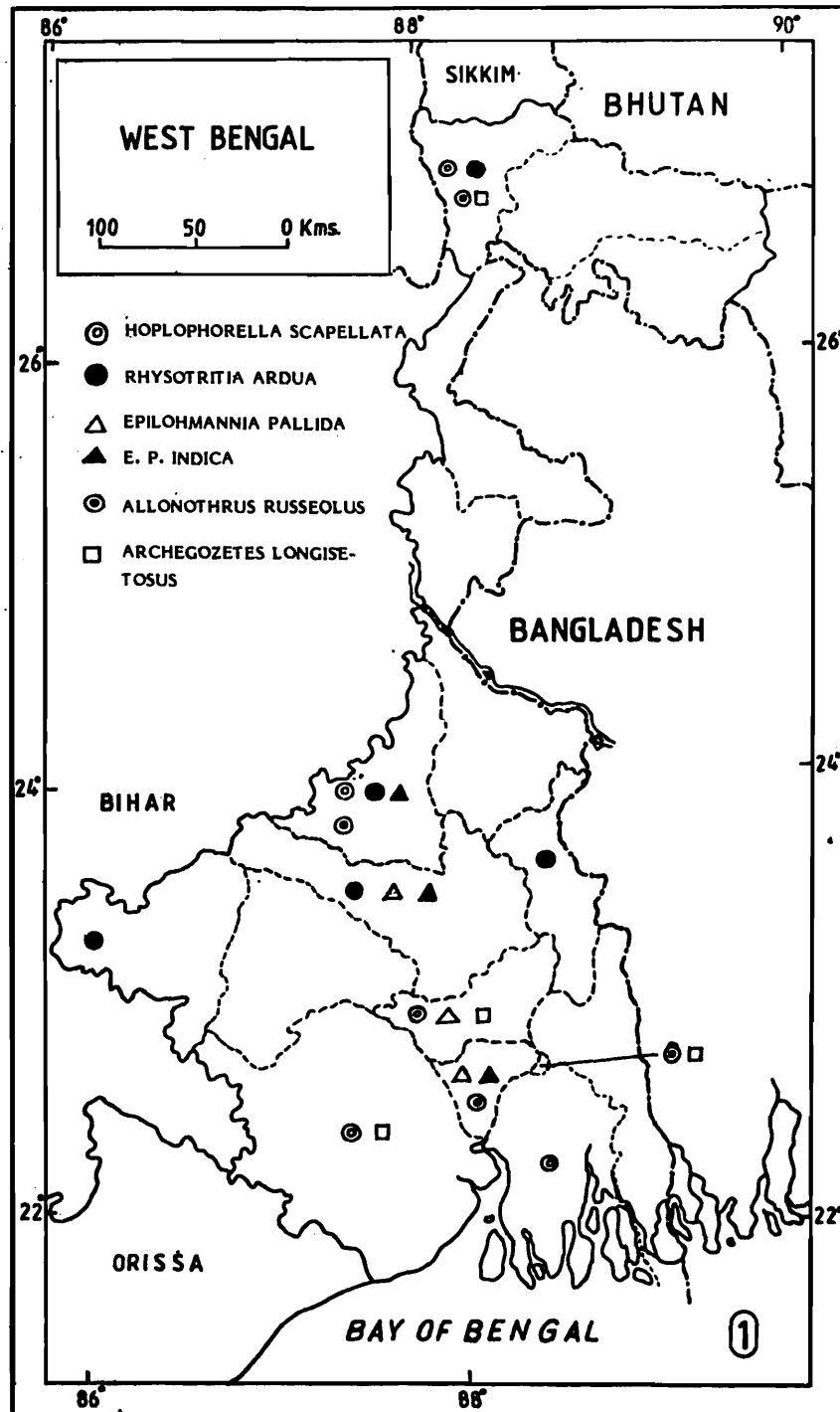
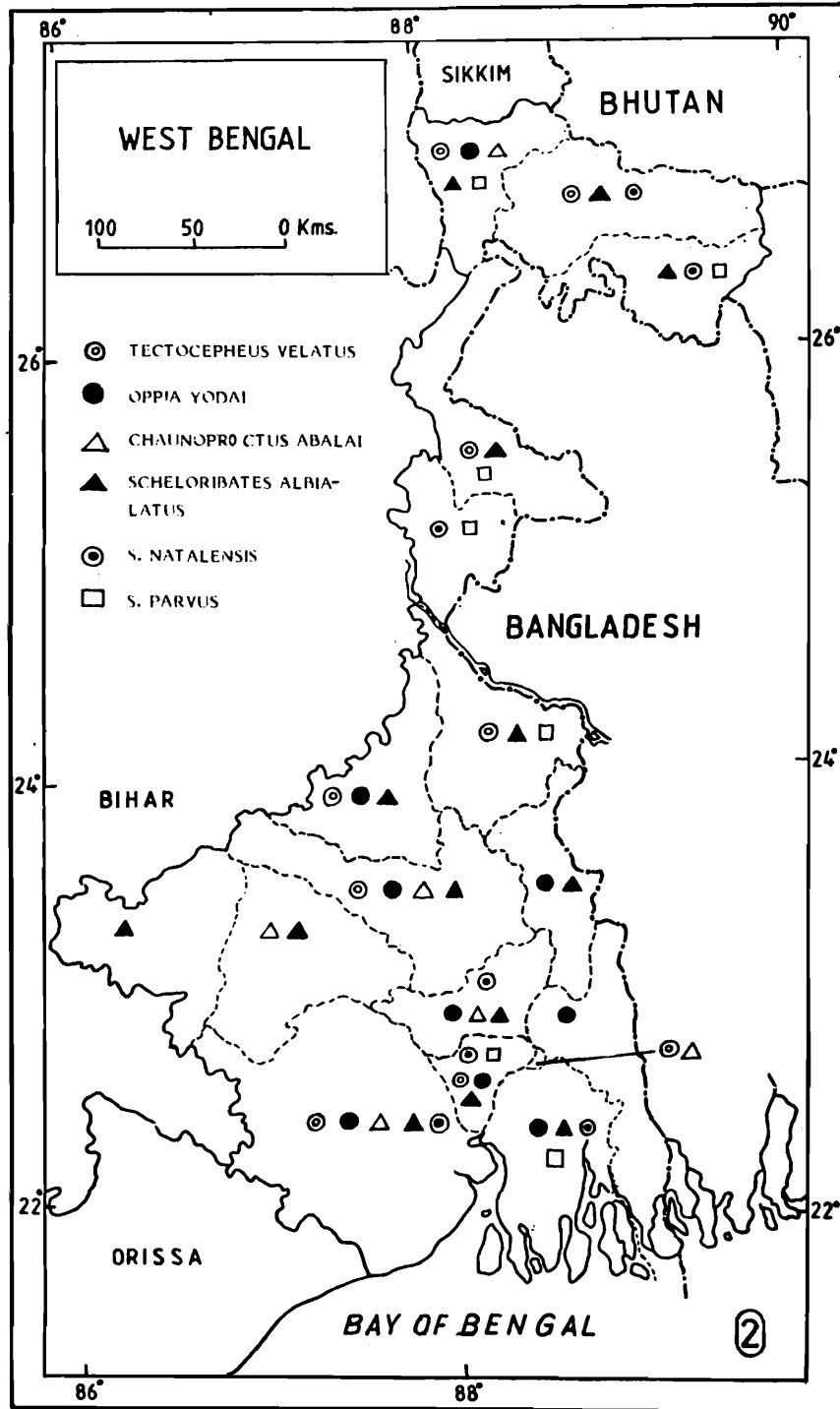


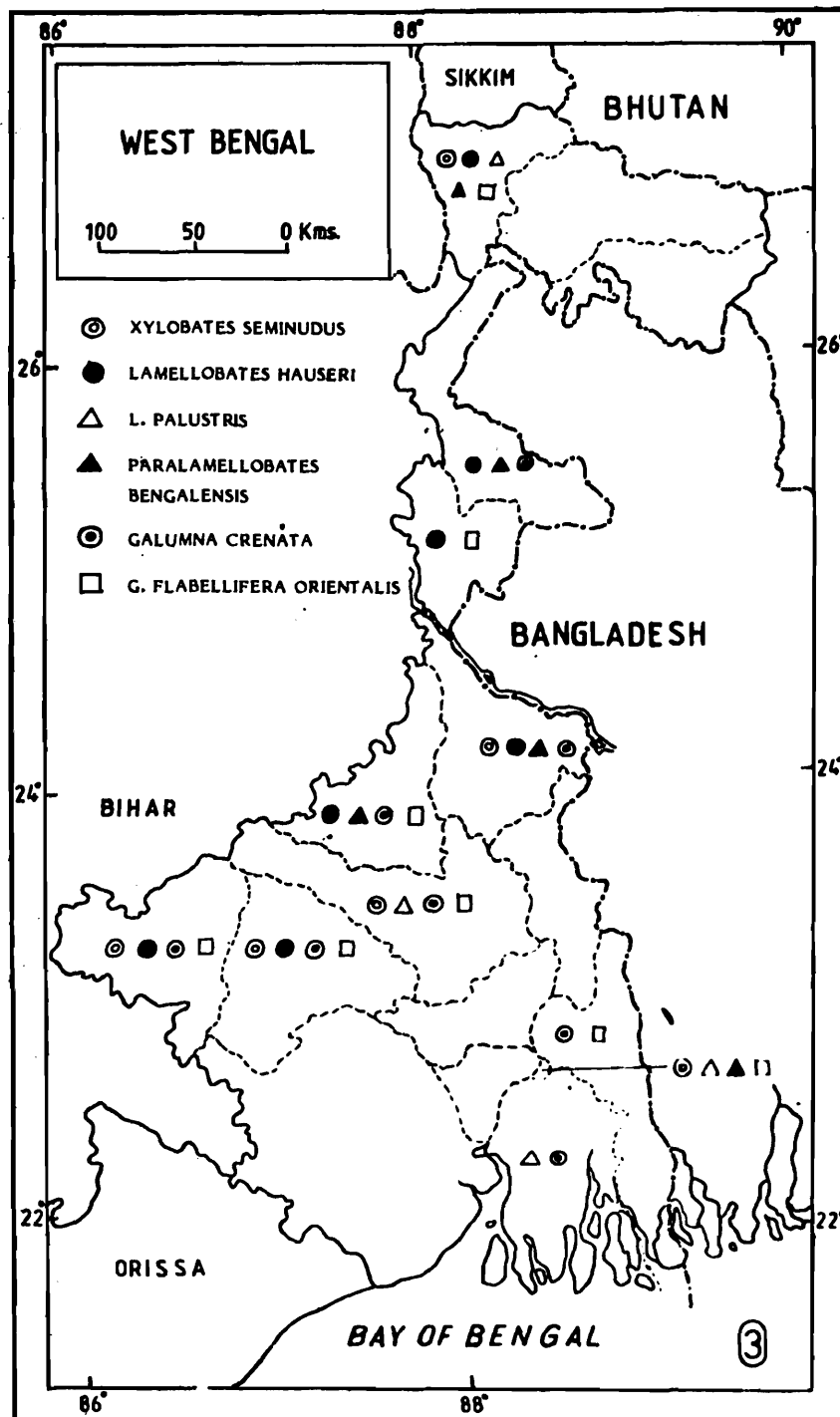
Fig. 35 : *Scheloribates indicus* sp. nov. : dorsal view. Fig. 36 : *Scheloribates indicus* sp. nov. : ventral view.
 Fig. 37 : *Scheloribates rakhali* sp. nov. : dorsal view. Fig. 38 : *Scheloribates rakhali* sp. nov. : ventral view.



Map 1 : Distribution of abundant species of Oribatid mites in West Bengal



Map 2 : Distribution of abundant species of Oribatid mite in West Bengal



Map 3 : Distribution of abundant species of Oribatid mite in West Bengal

Table 1. Distribution of oribatid species in different districts of West Bengal

Name of the Species	Bankura	Bardhaman	Birbhum	Calcutta	Darjiling	Haora	Hugli	Jalpaiguri	Koch Bihar	Maldah	Medinipur	Murshidabad	Nadia	North 24-Parganas	Puruliya	South 24-Parganas	W. Dinajpur
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Apoplophora pantotrema</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Mesoplophora</i> sp.	-		+		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hoplophorella africana</i>	-	+	-	-	+	-		-	-	-	+	-	-	-	-	-	-
<i>H. scapellata</i>	-		+	-	+		+	-	-	-	+	-	-	-	-	+	-
<i>H. singularis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>H.sundarbanensis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>Hoplophorella</i> sp.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hoplophthiracarus bengalensis</i>	-		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>H. pakistanensis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>H. punctatus</i>	-	-	-		+	-	-	-	-	-	-	-	-	-	-	-	-
<i>H.tropicus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Steganacarus stilifer</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. ventosus</i>	-				+	-	-	-	-	-	-	-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Rhysotritia ardua</i>	-	+	+	-	+	-	-	-	-	-	-	-	+	-	+	-	-
<i>R. ardua var. otaheitensis</i>	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
<i>R. brasiliana</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>R. furcata</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>R. peruensis</i>	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Gehyochthonius sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>L. hyochthonius gracilis</i>	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>L. vi. henarum</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hypochothonius sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Malacoangelia remigera</i>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. r. indica</i>	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-
<i>Cosmochthonius bengalensis</i>	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>C. lanatus</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cosmochthonius sp.</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Phyllozetes emmae</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Trichthonius heterotrichus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>Haplochthonius clavatus</i>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>H. intermedius</i>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>H. simplex</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Sphaerochthonius bengalensis</i>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
<i>Sphaerochthonius sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Brachychthonius cricoides</i>	-		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Annectacarus longisetosus</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Annectacarus sp.</i>	-		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Cryptacarus dendrisetosus</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. schauenbergi</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. tuberculatus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-
<i>Haplacarus foliatus</i>		-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
<i>H. f. bengalensis</i>	-		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Javacarus kuhnelti</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Lohmannia javana</i>		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Millotacarus indicus</i>			-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>Papillacarus hirsutus</i>		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. simplirostratus</i>			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paulianacarus foliatus</i>	-	-	-		+		-	-	-	-	-	-	-	-	-	-	-
<i>Epilohmannia pallida</i>	-	+	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-
<i>E. p. indica</i>	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>E. p. pacifica</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Nothrus biciliatus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>N. gracilis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>N. oblongus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Platynothrus sp.</i>	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
<i>Sigmonothrus bistriatus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. ovatus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. quadristriatus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Allobothrus indicus</i>	-	-	-	+	-	-	-	-	-	-	+	-	+	-	-	-	-
<i>A. monodactylus</i>	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>A. russeolus</i>	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
<i>Archeozetes longisetosus</i>	-	-	-	+	+	-	+	-	-	-	+	-	-	-	-	-	-
<i>A. magna</i>	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
<i>A. m. indicus</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Malaconothrus assamensis</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. geminus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Trimalaconothrus cajamarcensis</i>	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Cythermannia vicinicornuta</i>	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>C. quadricornuta</i>	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Masthermannia mammillaris</i>	-	-	-	-	+	-	-	-	-	-	-	-	+	+	-	-	-
<i>Nanhermannia himalayensis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>N. thaiensis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Phyllermannia berlesi</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Plasmobates pagoda</i>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
<i>Liodes terrestris</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-
<i>Allodamaeus adpressus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Plateremaeus rotundatus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Metabelba obtusus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Damaeobelba sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hungerobelba sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Conoppia sp.</i>	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Microtegeus reticulatus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eremaeozetes himalayensis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Berlesezetes auxiliaris</i>	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-
<i>B. a. appalachicola</i>	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-
<i>B. Peruensis</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eremulus avenifer</i>	-	-	-	-	+	-	-	+	-	-	-	-	-	+	-	-	-
<i>E. flagellifer</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>E. renukae</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Fosseremus quadripertitus</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eremobelba himalayensis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>E. miliae</i>	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>Hymenobelba ypsilon</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Heterobelba rostrata</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Basilobelba barbata</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>B. indica</i>	-	+	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-
<i>Xiphobelba sp.</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eremaeus sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Proteremaeus sp.</i>	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>Tricheremaeus sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Zetorchestes saltator</i>	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	+
<i>Ceratoppia bipilis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Carabodes peniculatus</i>	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
<i>Gibbicepheus sp.</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Neocarabodes sexpilosus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Leobodes mirabilis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tectocephus sarekensis</i>	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>T. velatus</i>	-	+	+	+	+	+	-	+	-	-	+	+	-	-	-	-	+
<i>Dolicheremaeus coronarius</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>D. geminus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>D. himalayensis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>D. nepalensis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>D. bengalensis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Pseudotocepheus gobletus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. hammerae</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>P. orientalis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Ameroppia chavenensis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Brachioppia ananthakrishni</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>B. cuscensis</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Lasiobelba suchetae</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Lanceoppia sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Multioppia radiata</i>	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>M. simplitricha</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>M. stellifera</i>	-	-	+	-	-	-	-	-	-	-	-	-	+	+	-	-	-
<i>Neoppia minuta</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Oppia cryptomeriae</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>O. nodosa</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>O. orientalis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>O. ramisetosa</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>O. yodai</i>	-	+	+	-	+	+	+	-	-	-	+	-	+	+	-	+	-
<i>Oppia sp.</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Oppiella nova</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paroppia sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Ramusella sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Solenoppia sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Striatoppia machadoi</i>	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>S. niliaca</i>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Flagrosuctobelba flabella</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Suctobelba elegantula</i>	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. ponticulus</i>	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>S. subcornigera</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. quadricarina</i>	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-
<i>S. variosetosa</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>suctobelbella nondivisa</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Suctobelbella sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Suctobelbila dentata</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Oribella sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Scapheremaeus fisheri</i>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Scapheremaeus sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Chaunoproctus abalai</i>	+	+	-	+	+	-	+	-	-	-	+	-	-	-	-	-	-
<i>C. clavisetosus</i>	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. minor</i>	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-
<i>Eporibatula sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Euscheloribates sp.</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>Hammerabates trisetosus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
<i>Incabates nudus</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Oribatula tibialis</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Scheloribates albialatus</i>	+	+	+	-	+	+	+	+	+	-	+	+	+	-	+	+	+
<i>S. bhadurii</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>S. curvialatus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. huancayensis</i>	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. indicus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>S. natalensis</i>	-	-	-	-	-	+	+	+	+	+	+	-	-	-	-	+	-
<i>S. parvus</i>	-	-	-	-	+	+	-	+	-	+	-	+	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>S. praeincisus</i>	-	-	+	-	+	-	-	-	-	+	-	-	-	-	-	-	-
<i>S. rakhali</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>S. rectus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. thermophilus</i>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>Zygoribatula longiporosa</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Z. tortilis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Zygoribatula sp.</i>	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
<i>Conozetes sp.</i>	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>Haplozetes sp.</i>	-	-	-	-	+	-	-	+	-	-	-	-	-	-	+	+	+
<i>Lauritzenia longipluma</i>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-
<i>Peloribates intermedius</i>	+	-	-	-	+	-	-	+	-	-	-	+	-	-	+	-	-
<i>Phalacrozetes sinatus</i>	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Pilobatella berlesi</i>	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Pilobates sp.</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Rostrozetes foveolatus</i>	-	+	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-
<i>R. punctatus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Setoxylobates foveolatus</i>	-	-	+	-	+	-	-	-	-	-	-	+	-	-	-	-	-
<i>Xylobates capucinus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>X. seminudus</i>	+	+	-	+	+	-	-	-	-	-	-	+	-	-	+	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Allozetes translamellatus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>Ceratozetes gracilis</i>	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-
<i>Hypozetes imitator</i>	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>H. laysanensis</i>	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Punctoribates longiporosus</i>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
<i>Podoribates sp.</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Unguizetes clavatus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-
<i>Eupelops acromis minor</i>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>E. longisetosus</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Lamellobates angolensis</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>L. hauseri</i>	+	-	+	-	+	-	-	-	-	-	+	-	+	-	+	-	+
<i>L. palustris</i>	-	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paralamellobates bengalensis</i>	-	-	+	+	+	-	-	-	-	-	-	+	-	-	-	-	+
<i>Oribatella meridionalis</i>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Protokalumma sp.</i>	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
<i>Galumna crenata</i>	+	+	+	-	-	-	-	-	-	-	-	+	-	+	+	+	+
<i>G. flabellifera orientalis</i>	+	+	+	+	+	-	-	-	-	+	-	-	-	+	+	-	-
<i>G. parascaber</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-

+ = recorded

- = not yet recorded

SUMMARY

The paper deals with the oribatid fauna collected from all the seventeen districts of West Bengal. Altogether 193 oribatid species pertaining to 114 genera and 54 families have been recorded. Before undertaking the present work a total of 174 species under 101 genera and 52 families were known from the state. The work includes description and diagrams of ten species as new to science. It also records 16 species, 13 genera and 2 families for the first time from India and three species as the first record from West Bengal. Key to identification of the families, genera and species dealt in the monograph and diagnostic features of the species described from the state have also been incorporated.

ACKNOWLEDGEMENTS

The author wishes to express his gratefulness to Prof. M. S. Jairajpuri, Director, Zoological Survey of India, for kind encouragement and providing laboratory facilities. A sense of indebtedness is extended to Dr. A. K. Ghosh, Jt. Director, Z. S. I., for his assiduous guidance and constant supervision throughout the course of this investigation. He is also extremely grateful to Dr. S. K. Bhattacharyya, Jt. Director, Z. S. I. and Dr. S. K. Gupta, ex. Dy. Director, Z. S. I. for their sincere help, inspiration and valuable suggestions. A deep sense of gratitude is expressed to Dr. Jun-ichi Aoki, Japan, Dr. S. Mahunka, Hungary, Dr. Engelbrecht, South Africa, Dr. Carlos Perez-Inigo, Spain, Dr. Roy A. Norton, U.S.A., Dr. David C. Lee, Australia and Dr. T. Bhattacharya, Tripura University, India, for helping with reprints of several papers needed for this work. Thanks are also due to Sri D. Sengupta, Darjeeling Govt. College, for assistance and valuable suggestions.

REFERENCES

- Balogh, J. 1965. A synopsis of the world oribatid (Acari) genera. *Acta Zool. Acad. Sci. Hung.*, **11** (1-2): 5-99.
- Balogh, J. 1972. The oribatid genera of the World. Akademiai Kiado, Budapest, Hungary, 188 pp.
- Balogh, J. and Balogh, P. 1988. Oribatid mites of the Neotropical region 1. Elsevier, Amsterdam, 335 pp.
- Balogh, J. and Mahunka, S. 1983. Primitive oribatids of the palaeartic region. Elsevier, Amsterdam, 372 pp.
- Bhaduri, A. K. and Raychaudhuri, D. N. 1978. Distribution of oribatid mites (Acari) in India. *Soil Biology and Ecology in India* (Eds. Edwards & Veeresh), *UAS Tech. Series No. 22* : 113-117.
- Bhaduri, A. K. and Raychaudhuri, D. N. 1981. Taxonomy and distribution of oribatid mites (Acari) in India. *Insecta Matsumurana*, New Series **23** : 21-39.
- Chakrabarti, D. K. and Bhaduri, A. K. 1988. A comparative account of the taxonomy and biogeography of the oribatid fauna (Acari) of the gangetic West Bengal and the north eastern Himalaya, India. *Progress in Acarology* (eds. G. P. ChannaBasavanna and C. A. Viraktamath), **1** : 309-316.
- Niedbala, W. 1986a. Systeme Des Phthiracaroides (Oribatida, Euptyctima). *Acarologia*, **27**(1) : 61-84.
- Niedbala, W. 1986b. Catalogue des Phthiracaroides (Acari), Clef pour la determination des especes et description d'especes nouvelles. *Ann. Zool.*, **40**(4) : 309-370.

- Norton, A. Roy and Kethley, B. John 1989. Berlese's North American oribatid mites; historical notes, recombinations, synonymies and type designations. *Redia*, 62(2) : 421-499.
- Paschoal, Adilson D. 1987. A revision of the Plateremaeidae (Acari : Oribatei). *Revista brasileira de Zoologia, S. Paulo*, 3 (6) : 327 - 356.
- Sanyal, A. K. and Bhaduri, A. K. 1986. Check list of oribatid mites (Acari) of India. *Rec. zool. Surv. India, Occ. Paper No. 83*, 79 pp.
- Sanyal, A. K. and Bhaduri, A. K. 1988. The present state of knowledge of oribatid (Acari) taxonomy in India. *Progress in Acarology* (eds. G. P. ChannaBasavanna and C.A. Viraktamath), 1 : 295-300.
- Subias, L. S. and Balogh, P. 1989. Identification keys to the genera of Oppiidae Grandjean, 1951 (Acari: Oribatei). *Acta Zoologica Hungarica*, 35(3-4) : 355-412.

ARANEAE : SPIDERS

BIJAN BISWAS AND KAJAL BISWAS
Zoological Survey of India, Calcutta

INTRODUCTION

The fauna of West Bengal represents 20 families, and the materials collected from various districts of West Bengal. Among these families some members like Gnaphosidae and Clubionidae are nocturnal spending the day light hours in the sac-like nest and at night they forge out in quest of food. Some members like Araneidae, Theridiidae, Tetragnathidae construct a retreat at a distance from the snares while others remain at the centre of the orb-web in upside down position and wait quietly for their prey. Some other members like Thomisidae and Salticidae are potential predator of all kinds of insects. Another interesting groups such as Ctenizidae, Theraphosidae are ground dwelling. They do not spin but they dig tunnel. The door of which provided by hinge-like structure, hence they are called the trap-door spiders.

The first record of these 20 families made in India by Simon (1812), Pocock (1903), Thorell (1813), Blackwall (1803). Most recently Tikader the pioneer worker extensively worked on these families.

All though a good amount of knowledge is available in these families but the literatures are all scattered and no consulted account is so far available. Still there so many families are present in which no keys is available really. There are several districts in this state where the spiders fauna practically untouched.

Therefore, the present work was taken up to give an up-to-date information of these families in the light of modern taxonomic concept.

Altogether, 213 species, belonging to 70 genera under 20 families are dealt here, of these 11 species in 8 genera under 6 families are described here as new to science while 39 species in 25 genera under 10 families are recorded here for the first time from West Bengal. Among the remaining 202 species in 62 genera under 14 families are provided with the basis of authentically identified specimens or on the basis of examination and identification of freshly collected materials. Keys to all the taxonomic categories are provided. Distributional data of all the species both in India and abroad is given. The generic concept of all the families are followed. All the relevant literatures pertaining to these families are reviewed under history.

Being the first comprehensive account of these families, the present work prove quite useful to the future worker intending to work in these group.

GENERAL TAXONOMIC CHARACTERS OF SPIDERS

The body of the spider is divisible into a distinctive cephalothorax and abdomen, jointed together

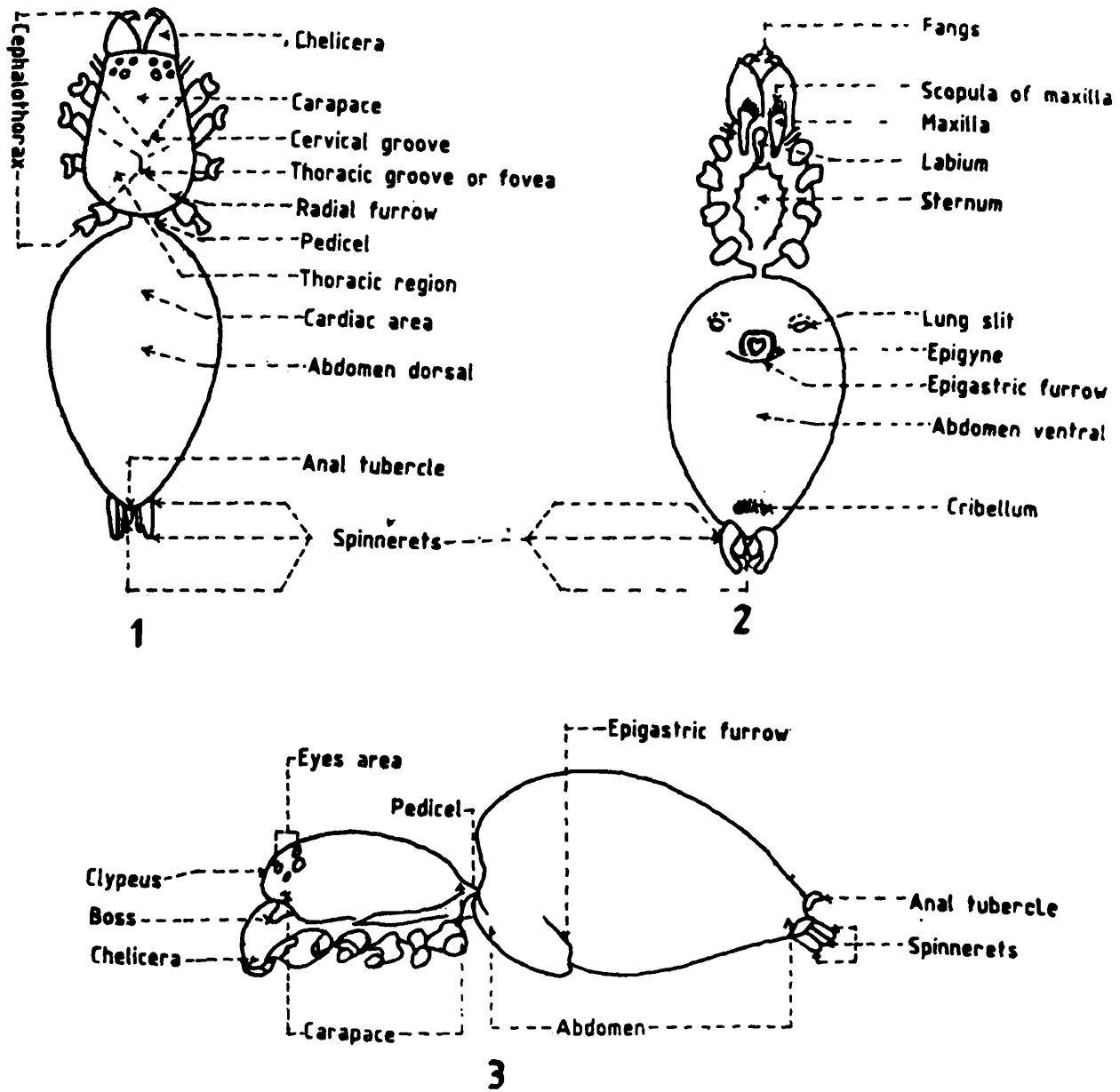
by a narrow pedicel. The cephalothorax is covered dorsally by a hard sclerotic shield, the carapace, and ventrally by the sternum as in text-figs. 1 & 2. The anterior margin of sternum articulates movably with labium. With few exceptions there is a deep transverse groove, forming a kind of hinge, between the sternum and the labium. The legs are articulated in the pleural membrane between the lateral edges of the carapace and sternum. On the cephalic region are present six to eight simple eyes. The eyes generally of two kinds, viz., black or diurnal and white or nocturnal eyes., when only one type is present, the condition is described as homogeneous, in contrast to the heterogeneous, when both types are present. The eyes are usually arranged in a double row, viz., the anterior row and the posterior row. Each row usually contains four eyes. The eye row is described as recurved when the concavity of the curved is directed backward, and as procurved when the concavity is turned forward as in text-fig. 9. According to their position, the eyes are described as the anterior medians, the posterior medians, the anterior laterals and the posterior laterals. The cephalic area, occupied by the eyes is known as ocular area. The area margined by the four median eyes is termed ocular quad. The area between the anterior row of eyes and the base of chelicerae is the clypeus. The space between the anterior median eyes and the margin of clypeus represents the width of clypeus. There is often a depression in the middle of the thorax, called thoracic groove or fovea as in text-fig.1.

The chelicerae are the first pair of appendages of the cephalothorax. Each chelicera bears a curved fang at its apex. The inner surface of chelicera may be finely denticulate and may also have groove, into which the fang can be closed when not in use. This groove may also be armed with tooth on each side; the outer row of teeth is described as promargin and the inner row as retromargin. There are sometimes long stout hair on the promargin to constitute the so called fang-scopulae, as in text-fig.5.

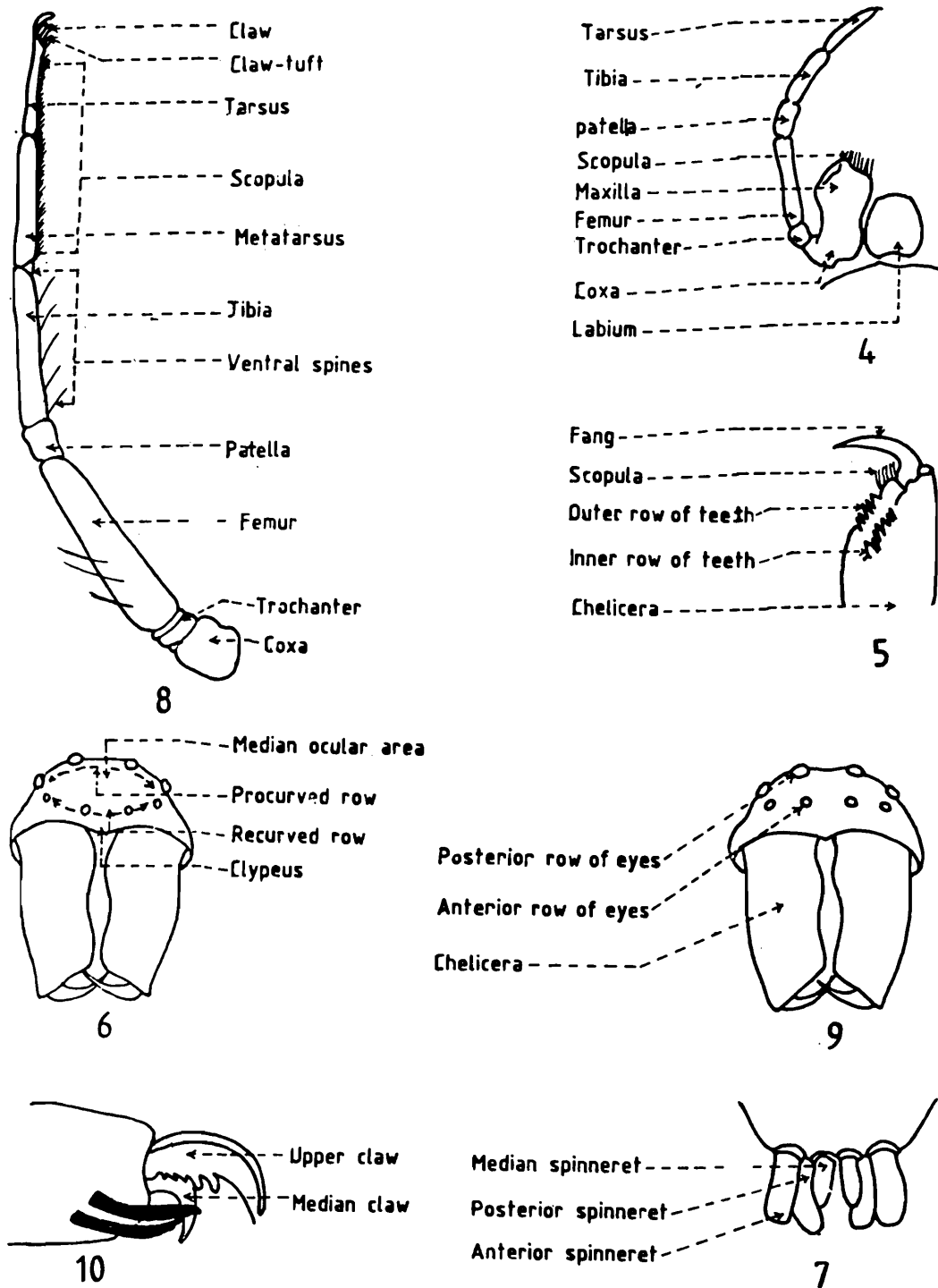
The pedipals are the second pair of appendages. The palp proper is composed of six segments, viz., coxa, trochanter, femur, patella, tibia and tarsus as in text-fig.4. In females the tarsus is simple and may or may not have a single claw. In nature males the tarsus of palp is modified to carry a more or less complicated copulatory organ. Generally the tibia, sometimes also the patella constitute apophyses (which may be of different shapes in different species) which are of important taxonomic value. In many spiders the tarsus has a bowl-shaped cavity on its ventral surface and is called cymbium.

In many groups mature males are provided with an appendage, the paracymbium. The structure of mature male palp is very important for generic or specific identification of spiders. The complicated palpal organ has many parts, but that is a matter beyond the scope of this paper. There are four pairs of legs designated I, II, III and IV respectively. Each leg is composed of seven segments, viz., coxa, trochanter, femur, patella, tibia, metatarsus and tarsus in text-fig.8. The legs are variously clothed with spines, spinules, bristles and hair of various types. The tarsus ends are provided with two or three claws. A characteristic tuft of hair called claw-tuft is sometimes found just above the claw. In the Gnaphosidae there are dense rows of hair called leg-scopulae below the metatarsi and tarsi as in text-fig. 8 Spines on the dorsal sides of legs are distinguished as dorsal spines and those on the ventral side as ventral spines, as in text fig. 8.

The abdomen is produced posteriorly into a conical anal tubercle and bears three pairs of spinnerets ventrally, viz. the first or the anterior pairs the second or the median and third or the posterior pair of spinnerets as in text-fig. 7. In a number of families there is present in front of the anterior (ventral spinnerets a seive-like plate, called the cribellum. The special type of silk emitted from this organ is combed by the



Figs. 1-3 : 1. Dorsal view of a typical spider showing different parts. 2. Ventral view of a typical spider showing different parts. 3. Lateral view of a typical spider showing different parts.



Figs. 4-10 : 4. Labium, maxillae and pedipalp of female showing different parts. 5. Inner view of chelicera showing different parts. 6. Face, front view of a typical spider. 7. Ventral view, part of abdomen showing spinnerets. 8. Lateral view of a leg showing different segments. 9. Face, front view of a typical spider showing arrangement of eyes. 10. Distal end of tarsus showing claws.

calamistrum borne on metatarsus IV. In many families of spiders which do not possess the cribellum a conical appendage called the colulus, lies between the bases of the anterior spinnerets.

The ventral surface of abdomen is provided with one or two pairs of lung-books, followed by one or two paired spiracles. The female genital opening is the vulva or epigyne, with a transverse fold, known as epigastric furrow as in text-fig.2.

The tarsi of spider are often armed with hair of the type known as tenent hair, i.e. hair dilated at their tips. Araneidae (Argiopidae) and Gnaphosidae have very fine hair called as pubescence. Sometimes the hair are modified as spiny-hair or mousy hair.

Key for identifying the common Indian Spiders upto Family

1. Chelicerae paraxial, i.e. projecting forward and fang articulated with chelicerae in a vertical plane and movable in a plane more or less parallel to the median plane of the body; fang closing backward. With two pairs of book lungs Suborder Orthognatha - 2

Chelicerae diaxial, i.e. projecting downward and fang articulated with chelicerae in a horizontal plane and movable in a more or less transverse plane. Commonly with one pair of book lungs Suborder Labidognatha - 7
2. Abdomen with one to nine sclerotized tergites. Furrow of cheliceral fang indistinct. Anal tubercle not immediately behind spinnerets, but separated from the spinnerets by considerable distance The atypical tarantulas - 3

Abdomen without sclerotized tergites. Anal tubercle immediately behind the four spinnerets. Furrow of cheliceral fang distinct The typical tarantulas 4.
3. Abdomen furnished with nine distinct tergites. Maxillae normal. Eight spinnerets situated in the lower middle of abdomen Liphistiidae**

Abdomen not furnished with distinct tergites. Maxillae strongly developed and labium fused with sternum. Six spinnerets, situated in the lower end of abdomen Atypidae
4. Tarsi with a small median claw and two large lateral claws, and without claw tufts.....5
5. Tarsi with only two claws and with claw tufts Theraphosidae*

Chelicerae with a rastellum. Posterior spinnerets short or moderately long, anterior spinnerets close together at base6

Chelicerae without rastellum. Posterior spinnerets very long, anterior spinnerets separately by at least their length Dipluridae
6. Head region much higher than the thoracic region. Tarsi without unguis tufts Ctenizidae

- Head region not much higher than the thoracic region. Tarsi with distinct unguual tufts.....
 Barychelidae
7. With a cribellum in front of spinnerets and a calamistrum on metatarsus IV, varying from just a few bristles to a row along the entire length of the metatarsus Section Cribeliate - 8
- Without a cribellum and calamistrum. Section Ecribeliate
8. With two pairs of lungs Hypochiliidae**
- With only one pair of lungs 9
9. Anal tubercle large and prominent, two segmented with a fringe of long hair. Posterior median eyes triangular or irregular in shape. Small spiders 2 to 2.50 mm. Long with carapace sub-circular.....
 Oecobiidae*
- Anal tubercle of the usual type, without a conspicuous fringe of hair. Posterior median eyes circular
 10
10. Head region large, rounded, high, posterior lateral eyes remote from the rest..... Eresidae
- Head low, narrowed, posterior lateral eyes very rarely remote from the others..... 11
11. Tarsi furnished with unguual tufts and an inferior claw Psecridae
- Tarsi without unguual tufts and inferior claw 12
12. Chelicerae fused together at the base. Labium fused to the sternum. Tracheal spiracle considerably in advance of the spinnerets. Calamistrum short Filistatidae
- Chelicerae not fused at the base. Labium free. Tracheal spiracle in the usual position close to the spinnerets Calamistrum much longer 13
13. Tarsi with a dorsal row of trichobothria. Eight eyes, all light in colour, homogeneous.....
 Amaurobiidae
- Tarsi without trichobothria. Eight eyes, either all dark or heterogeneou 14
14. Eyes eight, homogenous, dark, both rows recurved, Metatarsus IV compressed and concave above
 Uloboridae*
- Eyes eight, heterogeneous, the anterior medians alone dark, Metatarsus IV of the usual shape.....
 Dictynidae

15. **Tibia and metatarsus I and II with a prolateral row of long spines at the intervals between which is a row of much shorter spines, curved near their ends and increasing in length distally Mimetidae**
 16
- Tibia and metatarsus I and II without prolateral row of spines..... 16**
16. **Sternum much wider than long, the posterior coxae widely separated Platoridae**
Sternum not wider than long, posterior coxae not widely separated..... 17
17. **Posterior spinnerets absent or much shorter than the anteriorZodariidae***
Posterior spinnerets present, not shorter than anterior 18
18. **Posterior spinnerets enormously long, usually longer than the abdomen..... Hersilidae***
Posterior spinnerets shorter and thick 19
19. **Anal tubercle very large, fringed with long hair, ocular group compact..... Urocteidae**
Anal tubercle small, not fringed, ocular group not compact..... 20
20. **Tarsi long and flexible. Labium broader than long, legs very long and slenderPholcidae***
Tarsi of the usual type. Labium longer than wide, legs not very long..... 21
21. **With less than eight eyes 22**
With eight eyes 25
22. **Eyes six in three groups 23**
Eyes six in one group 24
23. **Carapace round, high behind. Sternum round behindScytodidae***
Carapace flat and depressed. Sternum pointed behind Loxoscelidae
24. **Very small spiders, to 13 mm. long. Eyes six, medium eyes larger than the laterals. Labium not jointed with sternum. Epigastric furrow at the normal region Oonopidae**
Small but larger than oonopids. Eyes two, four, six or eight, almost equal in size.
Labium jointed with sternum Epigastric furrow far behind the normal region Caponiidae**

25. Anterior row with six eyesSelenopidae
- Anterior row with four or two eyes26
26. Tarsi with two claws, with claw tufts.....27
- Tarsi with three claws, without claw tufts37
27. Tarsal claws without teethHomalonychidae**
- Tarsal claws with usual teeth28
28. Eyes in three or four rows29
29. Eyes in four rows, the front eyes very largeLyssomanidae*
- Eyes in three rows30
30. Front row of eyes more or less vertical face; median eyes enormously large, second row of two eyes very small, often minute, third row of two eyes of medium size Salticidae*
- Front row of eyes not vertical, and eyes of this row smaller than those of the second, eyes of third row as large as second row 31
31. First row of two eyes, second row with four and third row with two. Anterior laterals much closer to the posterior laterals than to the anterior medians. Retromargin of cheliceral fang furrow with at least three teeth Ctenidae
- First row with four eyes, second and third row each with two. Anterior laterals much closer to anterior medians than to the posterior laterals. Retromargin of cheliceral fang furrow with two teethZoride**
32. Tracheal spiracle in advance of the spinnerets at least one-third of the distance between the lateral and epigastric furrow Anyphaenidae
- Tracheal spiracle in the usual place just in front of spinnerets..... 33
33. Legs, at least I and II laterigrade, carb-like34
- Legs usually prograde type36
34. Colulus absent. Retromargin of cheliceral fang furrow armed with teeth.....35
- Colulus present. Retromargin of cheliceral fang furrow smooth Thomisidae*

35. Cephalothorax as long as wide. Posterior row of eyes recurved, anterior row straight or procurved, lateral eyes larger. Apex of metatarsus without a soft trilobate membrane..... Heteropodidae*
- Cephalothorax as long as wide or slightly longer than wide, Posterior row of eyes straight or slightly procurved, anterior row usually straight and subequal, lateral not larger than medians. Apex of metatarsus with a soft trilobate membrane Sparassidae
36. Anterior spinnerets conical, contiguous. Maxillae without a transverse or oblique depression. Eyes homogeneous or almost so (with few exception) Clubionidae*
- Anterior spinnerets cylindrical, and separated by a distance about equal to the diameter of one. Maxillae with an oblique depression. Eyes distinctly heterogeneous, the anteriomedians dark; the posterior medians often oblique, oval, or triangular Gnaphosidae*
37. The six spinnerets in a more or less transverse row. Tracheal spiracle removed from the spinnerets at least one third of the distance to epigastric furrow Hahaniidae
- The six spinnerets not in a transverse row, but of the usual arrangement. Tracheal spiracle in the usual place in front of the spinnerets 38
38. Eyes group hexagonal, the posterior row procurved, and anterior row recurved, with clypeus high. Abdomen pointed behind the legs with very conspicuous spines Oxyopidae*
- Eyes group not forming a hexagon, and clypeus much lower. Abdomen not pointed and legs without conspicuous spines 39
39. Tarsus IV, usually provided with a ventral row of 6 to 10 serrated bristles, forming a comb, for at least one sixth its length from the distal end; this may be poorly developed in males Theridiidae*
- Tarsus IV not provided with comb of serrated bristles 40
40. Tarsi with trichobothria 41
- Tarsi without trichobothria 43
41. Tarsi with single row of trichobothria. Trochanters not notched (most species living in sheet webs with a funnel, over which they run rapidly in an upright position Agelenidae
42. Tarsi with numerous trichobothria, but irregularly distributed. All trochanters with a curved notch 42
42. Posterior row of eyes so strongly recurved that it may be considered to form two rows. Median claw

smooth or with a single tooth. Anterior piece of lorum rounded behind and fitting into a notch of the posterior piece. Egg sac carried attached to spinnerets and young carried on mother's back .
Lycosidae

Posterior row of eyes not forming two distinct rows, but only slightly recurved. Anterior piece of lorum with a notch into which the posterior piece fits. Egg sac held under cephalothorax. Young not carried by motherPisauridae*

43. Clypeus, in most, lower than the height of the median ocular area. Eyes homogeneous (most are orb-weavers) 44

Clypeus usually as high as or more commonly higher than, height of the median ocular area. Eyes heterogeneous (the majority are not orb-weavers) 45

44. Epigastric furrow between lung slits procurved. No boss on chelicerae. In most cases the chelicerae are large and powerful Tetragnathidae*

Epigastric furrow nearly straight. Boss present on chelicerae though rudimentary in some cases. (True orb-weavers). Chelicerae not very large Araneidae*

45. Tibia of male pedipalp without apophyses (though the tibia may be dilated distally). Palp of female in most species with a claw at the end of the tarsus. Tibia IV in most species with two dorsal spines, or if only one spine is present then there is one short spine or metatarsi I and III Linyphiidae

Tibiae of male pedipalp in most species with at least one apophysis. Palp of female without a claw at end of tarsus. Tibia IV with a single dorsal spine or bristle, and with the metatarsi spineless ...
 Erigonidae

Note : Those families names marked by a single asterisk are dealt with in this paper (W.B.) others being known from India but those marked by double asterisk have so far been not recorded from India. They are included in the key just to satisfy the couplet characters.

MATERIAL AND METHODS

The collection of spiders is very easy as they are available in variety of habitats. One of the oldest methods for getting spiders in large numbers is by using a sweep net through tall grass and weeds and picking out the spiders from among the insects and by dropping the debris gathered with them. An effective method is to hold an inverted umbrella underneath the flowering shoots or bushes and to shake thoroughly the plants, then spiders along with a variety of insects, mites, etc., fall in the inverted umbrella. After removing the leaves etc., from the umbrella, the spiders can be transferred into collecting tubes containing rectified spirit or 70% alcohol with the help of a fine brush. It is found that the rectified spirit is the best preservative. It is very essential to see that only a small number of specimens of spiders are kept in a single tube, otherwise spider specimens may be deformed or damaged due to the pressure of too many specimens.

If the specimens are to be preserved permanently, the bottles should be provided with rubber stoppers as to prevent the evaporation of alcohol which is the preservative used for. In some of the larger collections the specimens are put in small corked tubes and these are stored in larger bottles filled with alcohol and tightly closed.

The larger bodied theraphosid spiders generally live in burrows and are best collected by keeping an empty tube against the burrow and allowing the spider to crawl into the tube. The spider is then put in a cyanide bottle for killing. Later it is transferred to a tube containing 75% alcohol or rectified spirit.

The smaller spiders, especially those belonging to the families Oonopidae, Tetrablemmidae and Oecobiidae, which live under bark of trees, corner of wall and detris, need careful search to locate them. A brush dipped in alcohol should be used to transfer the small spiders from under the bark to the tubes containing alcohol. In all cases, too many specimens should not be put in one bottle and as far as possible the specimens should be arranged in their normal body form before preservation.

Spiders can be arranged in a petri dish or cavity block filled in alcohol for studies under the binocular microscope. The female epigynum and male padipalps are very important organs for systematic studies. The internal genitalia of female are very important characters and for the study of internal genitalia it is required to dissect under binocular microscope with the help of very sharp scalpels or pointed tipped razor blade. After dissecting of the epigynum it should be cleared and studied in clove oil. After the studies are over, the dissected epigynum should be kept permanently in micro-vial corked with tissue paper along with the same example in a larger tube preserved with the rectified spirit or 75% alcohol. The male padipalp is also to be kept in the same way along with male specimen. Each such tube of spider example must be properly labelled with collection data.

After the specimens are identified the members of each species are transferred to a smaller vial with a label bearing name and sex.

LIST OF TAXA KNOWN FROM WEST BENGAL

- Family I. THERAPHOSIDAE
 Genus 1. *Phlogoides* Pocock
 1. *P. himalayensis* Tikader
- Family II. OECOBIIDAE
 Genus 2. *Oecobius* Lucas
 2. *O. putus* Cambridge
- Family III. ERESIDAE
 Genus 3. *Stegodyphus* Simon
 3. *S. sarasinorum* Karsch
- Family IV. ULOBORIDAE
 Genus 4. *Uloborus* Latreille

4. *U. danolius* Tikader
 5. *U. krishnae* Tikader
- Family V. ZODARIIDAE
- Genus 5. *Lutica* Marx
 6. *L. bengalensis* Tikader & Patel
- Genus 6. *Storena* Walckenaer
 7. *S. debasrae* sp. nov.
- Family VI. HERSILIDAE
- Genus 7. *Hersilia* Audouin
 8. *H. savignyi* Lucas
- Family VII. PHOLCIDAE
- Genus 8. *Artema* Walckenaer
 9. *A. attenta* Walckenaer
- Genus 9. *Crossopriza* Simon
 10. *C. lyoni* (Blackwall)
- Family VIII. SCYTODIIDAE
- Genus 10. *Scytodes* Latreille
 11. *S. propinqua* Stoliczka
 12. *S. thoracica* (Latreille)
- Family IX. LYSSOMANIDAE
- Genus 11. *Lyssomanes* Hentz
 13. *L. andamanensis* Tikader
 14. *L. bengalensis* Tikader & Biswas
 15. *L. chilapataensis* sp. nov.
 16. *L. santinagarensis* sp. nov.
- Family X. SALTICIDAE
- Genus 12. *Euophnys* Koch
 17. *E. chiriatapuensis* Tikader
- Genus 13. *Marpissa* Koch
 18. *M. anusuae* Tikader & Biswas
 19. *M. arambagensis* sp. nov.
 20. *M. bengalensis* Tikader
 21. *M. calcuttaensis* Tikader
 22. *M. decorata* Tikader

23. *M. dhakuriensis* Tikader
 24. *M. edenae* sp. nov.
 25. *M. kalighatensis* sp. nov.
 26. *M. nutanae* Biswas & Biswas
 27. *M. prathamae* Biswas & Biswas
 28. *M. tigrina* Tikader
 29. *M. tikaderi* Biswas
- Genus 14. *Myrmarachne* Mac Leav
 30. *M. bengalensis* Tikader
 31. *M. calcuttaensis* Biswas
 32. *M. maratha* Tikader
 33. *M. orientalis* Tikader
 34. *M. plataleoides* (Cambridge)
- Genus 15. *Phidippus* Koch
 35. *P. bengalensis* Tikader
 36. *P. indicus* Tikader
 37. *P. pateli* Tikader
- Genus 16. *Plexippus* Koch
 38. *P. paykullii* (Audouin)
- Genus 17. *Rhene* Thorell
 39. *R. decoratus* Tikader
 40. *R. danieli* Tikader
 41. *R. indicus* Tikader
 42. *R. khandalensis* Tikader
 43. *R. pantharae* sp. nov.
- Genus 18. *Salticus* Latreille
 44. *S. ranjitus* Tikader
- Genus 19. *Zygoballus* Peckham
 45. *Z. narmadaensis* Tikader
- Family XI. THOMISIDAE
 Subfamily MISUMENINAE
- Genus 20. *Amyciaea* Simon
 46. *A. forticeps* (Cambridge)
- Genus 21. *Bomis* Koch

47. *B. bengalensis* Tikader
 48. *B. calcuttaensis* Biswas & Majumder
- Genus 22. *Camaricus* Thorell
 49. *C. formosus* Thorell
- Genus 23. *Diaea* Thorell
 50. *D. bengalensis* Biswas & Majumder
- Genus 24. *Oxyptila* Simon
 51. *O. manii* Tikader
 52. *O. reena* Basu
- Genus 25. *Synaema* Simon
 53. *S. brunettii* Tikader
 54. *S. decorata* Tikader
- Genus 26. *Thomisus* Walckenaer
 55. *T. beautifularis* Basu
 56. *T. bulani* Tikader
 57. *T. cherapunjeus* Tikader
 58. *T. dhakuriensis* Tikader
 59. *T. elongatus* Stoliczka
 60. *T. katrajhat* Tikader
 61. *T. memae* Sen & Basu
 62. *T. projectus* Tikader
 63. *T. pugilis* Stoliczka
 64. *T. sorajai* Basu
- Genus 27. *Xysticus* Koch
 65. *X. bengalensis* Tikader & Biswas
 66. *X. himalayensis* Tikader & Biswas
 67. *X. hindusthanicus* Basu
 68. *X. kali* Tikader & Biswas
 69. *X. minutus* Tikader
- Subfamily PHILODOROMINAE
- Genus 28. *Philodromus* Walckenaer
 70. *P. assamensis* Tikader
 71. *P. malinae* Tikader
- Genus 29. *Tibellus* Simon

72. *T. elongatus* Tikader

Family XII. HETEROPODIDAE

Genus 30. *Heteropoda* Latreille

73. *H. leprosa* Simon

74. *H. prompta* O. P. Cambridge

75. *H. sexpunctata* Simon

Family XIII. CLUBIONIDAE

Genus 31. *Clubiona* Latreille

76. *C. analis* Thorell

77. *C. bengalensis* Biswas

78. *C. boxaensis* sp. nov.

79. *C. drassodes* Cambridge

80. *C. filicata* Cambridge

81. *C. ludhianaensis* Tikader

82. *C. pogonias* Simon

83. *C. shillongensis* Majumder & Tikader

Genus 32. *Cheiracanthium* Koch

84. *C. himalayensis* Gravely

85. *C. melanostoma* (Thorell)

86. *C. murina* Thorell

87. *C. mysorensis* Majumder & Tikader

88. *C. indicum* Cambridge

89. *C. insigne* Cambridge

90. *C. pauriensis* Majumder & Tikader

91. *C. trivialis* (Thorell)

Genus 33. *Simalio* Simon

92. *S. biswasi* Majumder & Tikader

Subfamily CORINNINAE

Genus 34. *Oedignatha* Thorell

93. *O. scrobiculata* Thorell

94. *O. carli* Reimoser

Subfamily MICARIINAE

Genus 35. *Castianeira* Keyserling

95. *C. albopicta* Gravely

96. *C. bengalensis* Biswas
 97. *C. himalayensis* Gravely
 98. *C. indica* Tikader
 99. *C. tinae* Patel & Patel
 100. *C. quadrimaculata* Reimoser
 101. *C. zetes* Simon
- Genus 36. *Sphingius* Thorell
 102. *S. caniceps* Simon
 103. *S. paltaensis* sp. nov.
- Family XIV. GNAPHOSIDAE
- Genus 37. *Drassodes* Westring
 104. *D. malodes* Tikader
 105. *D. oppenheimeri* Tikader
- Genus 38. *Haplodrassus* Chamberlin
 106. *H. dumdumensis* Tikader
- Genus 39. *Herpyllus* Hentz
 107. *H. calcuttaensis* Biswas
- Genus 40. *Megaamymecion* Reuss
 108. *M. kajalae* sp. nov.
- Genus 41. *Poecilochroa* Westring
 109. *P. barmani* Tikader
- Genus 42. *Scopodes* Chamberlin
 110. *S. kuljitae* Tikader
- Genus 43. *Scotophaeus* Simon
 111. *S. domesticus* Tikader
- Family XV. OXYOPIDAE
- Genus 44. *Oxyopes* Latreille
 112. *O. birmanicus* Thorell
 113. *O. javanus* Thorell
 114. *O. ratnae* Tikader
 115. *O. sakuntalae* Tikader
 116. *O. shweta* Tikader
 117. *O. sikkimensis* Tikader
 118. *O. sitae* Tikader

- Genus 45. *Peucetia* Thorell
 119. *P. latikae* Tikader
 120. *P. viridana* Stoliczka
- Family XVI. THERIDIIDAE
- Genus 46. *Achaearanea* Strand
 121. *A. durgae* Tikader
- Genus 47. *Theridion* Walckenaer
 122. *T. indica* Tikader
- Family XVII. LYCOSIDAE
- Genus 48. *Arctosa* Koch
 123. *A. himalayensis* Tikader & Malhotra
 124. *A. indicus* Tikader & Malhotra
- Genus 49. *Hippasa* Simon
 125. *H. greenalliae* (Blackwall)
 126. *H. holmerae* Thorell
 127. *H. madhuae* Tikader & Malhotra
 128. *H. partitia* (Cambridge)
- Genus 50. *Lycosa* Latreille
 129. *L. arambagensis* sp. nov.
 130. *L. carmichaeli* Gravely
 131. *L. choudhury* Tikader & Malhotra
 132. *L. himalayensis* Gravely
 133. *L. kempi* Gravely
 134. *L. mackenziei* Gravely
 135. *L. shillongensis* Tikader & Malhotra
- Genus 51. *Pardosa* Koch
 136. *P. annandalei* (Gravely)
 137. *P. atropalpis* Gravely
 138. *P. birmanica* Simon
 139. *P. burasantiensis* Tikader & Malhotra
 140. *P. heterophthalmus* (Simon)
 141. *P. leucopalpis* Gravely
 142. *P. mukundi* Tikader & Malhotra
 143. *P. oakleyi* Gravely

144. *P. shyamae* (Tikader)
 145. *P. sumatrana* (Thorell)
 146. *P. sutherlandi* (Gravely)
- Genus 52. *Venonia* Thorell
 147. *V. himalayensis* Gravely
- Family XVIII. PISAURIDAE
- Genus 53. *Pisaura* Simon
 148. *P. gitae* Tikader
- Family XIX. TETRAGNATHIDAE
- Genus 54. *Eucta* Simon
 149. *E. javanas* Thorell
- Genus 55. *Tetragnatha* Latreille
 150. *T. andamanensis* Tikader
 151. *T. mandibulata* Walckenaer
- Family XX. ARANEIDAE
- Genus 56. *Araneus* Clerck
 152. *A. bituberculata* (Walckenaer)
 153. *A. dehaanii* (Doleschall)
 154. *A. excelsus* (Simon)
 155. *A. himalayensis* Tikader
 156. *A. mitifica* (Simon)
- Genus 57. *Argiope* Audouin
 157. *A. aemula* (Walckenaer)
 158. *A. anasuja* Thorell
 159. *A. arcuata* Simon
 160. *A. catenulata* (Doleschall)
 161. *A. kalimpongensis* Sinha
 162. *A. lalita* Sherriffs
 163. *A. pulchella* Thorell
 164. *A. shillongensis* Sinha
- Genus 58. *Chorizopes* O. P. Cambridge
 165. *C. bengalensis* Tikader
- Genus 59. *Cyclasa* Menge
 166. *C. bifida* (Doleschall)

167. *C. confraga* (Thorell)
168. *C. hexatuberculata* Tikader
169. *C. insulana* (Costa)
170. *C. simoni* Tikader
171. *C. spirifera* Simon
- Genus 60. *Cyrtarachne* Thorell**
172. *C. bengalensis* Tikader
173. *C. gravelyi* Tikader
174. *C. inequalis* Thorell
175. *C. raniceps* Pocock
- Genus 61. *Cryptophora* Simon**
176. *C. cicatrosa* (Stoliczka)
177. *C. citricola* (Forsk.)
178. *C. feae* (Thorell)
179. *C. moluccensis* (Doleschall)
- Genus 62. *Gea* C. L. Koch**
180. *G. corbetti* Tikader
- Genus 63. *Larinia* Simon**
181. *L. chloris* (Audouin)
182. *L. jaysankari* Biswas
183. *L. phthisica* (L. Koch)
- Genus 64. *Parawixia* F.O.P. Cambridge**
184. *P. dehaanii* (Doleschall)
- Genus 65. *Singa* Koch**
185. *S. chota* Tikader
- Genus 66. *Zygeilla* F.O.P. Cambridge**
186. *Z. indica* Tikader & Bal
187. *Z. melanocrania* (Thorell)
- Genus 67. *Neoscona* Simon**
188. *N. bengalensis* Tikader & Bal
189. *N. excelsus* (Simon)
190. *N. laglaizei* (Simon)
191. *N. mukerjei* Tikader
192. *N. nautica* (L. Koch)

193. *N. pavid*a (Simon)
 194. *N. poonaensis* Tikader & Bal
 195. *N. rumpfi* (Thorell)
 196. *N. theis* (Walckenaer)

Subfamily GASTARACANTHINAE

- Genus 68. *Gasteracantha* Sundevall**
 197. *G. brevispina* (Doleschall)
 198. *G. diadesma* Thorell
 199. *G. hasselti* C. L. Koch
 200. *G. mammosa* C. L. Koch
 201. *G. kuhlii* C. L. Koch
 202. *G. unguifera* Simon

Subfamily MEDTINAE

- Genus 69. *Leucauge* White**
 203. *L. bengalensis* Gravely
 204. *L. celebesiana* (Walckenaer)
 205. *L. culta* (O. P. Cambridge)
 206. *L. decorata* (Blackwall)
 207. *L. tessellata* (Thorell)
 208. *L. ventralis* (Thorell)

Subfamily NEPHILINAE

- Genus 70. *Nephila* Leach**
 209. *N. clavata* L. Koch
 210. *N. kuhlii* Doleschall
 211. *N. maculata* (Fabricius)
 212. *N. malabarensis* (Walckenaer)
 213. *N. robusta* Tikader

Family THERAPHOSIDAE

Genus 1. *Phlogoides* Pocock 1899

1899. *Phlogoides* Pocock, *Jour. Bombay nat. Hist. Soc.*, 12 : 784,

Diagnosis : Thoracic fovea deep, strongly procurved. Eyes of anterior line slightly procurved. Legs long, weakly spined, strongly scopulate, at least in male; claws unarmed . Sternum with posterior sigilla

very large and remote from the margin. First leg without tibial spur in male.

Type-species : *Phlogoides validus* Pocock

Distribution : India : West Bengal (Darjiling); Western India; Eastern Himalayas.

1. *Phlogoides himalayensis* Tikader

1976. *Phlogoides himalayensis* Tikader, *J. Bombay nat. Hist. Soc.*, 74 : 306.

Diagnosis : Anterior row of eyes slightly procurved. Middle of the cephalothorax provided transverse deep procurved fovea. Eyes situated in a group on a slightly elevated tubercle. Ocular tubercle situated near the edge of clypeus. Two pairs of spinnerets, anterior pairs small and posterior pair long with three segments, posterior segment longer than others.

Material examined ; 1 (M), Birch Hill (Type-locality), Darjiling, Eastern Himalayas, West Bengal, 22.iv. 1974. coll. Bijan Biswas.

Distribution : India : West Bengal (Darjiling).

Family OECOBIIDAE

Genus 2. *Oecobius* Lucas 1845

1845. *Oecobius* Lucas, *Expl. Aig. Ar.*, : 101.

1962. *Oecobius* : Tikader, *J. Bombay nat. Hist. Soc.*, 59(2) : 683.

Diagnosis : Cephalothorax is convex and moderately elevated. The legs are proportionately long. The metatarsus and tarsus together of each of the legs for exceeding the carapace in length. Median ocular quadrangle longer than broad.

Type - species : *Oecobius domesticus* Lucas

Distribution : India, Japan, Middle East, North America.

2. *Oecobius putus* Cambridge 1876

1876. *Oecobius putus* Cambridge, *Proc. zool. Soc.*, : 544.

1981. *Oecobius putus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 12.

Diagnosis : Cephalothorax wider than long, depressed on the centre but cephalic region slightly high. Eyes unequal in size and dissimilar in form. Both row of eyes procurved, but anterior row more procurved than posterior row.

Material examined : 1(F), 1 (M), Bardhaman, West Bengal, 2. vi. 1986, coll. A.K. Hazra; 1 (F),

Darjiling, West Bengal, 31.v. 1975, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Bardhaman, Darjiling); Maharashtra; Tamil Nadu. Elsewhere : Ethiopia, Egypt.

Family ERESIDAE

Genus 3. *Stegodyphus* Simon 1873

1873. *Stegodyphus* Simon, *Ann. Soc. Ent. Fr.*, 3(5) : 336.
 1900. *Stegodyphus* : Pocock, *Fauna of Brit. India, Arach.*, : 208.

Diagnosis : Cephalic region large, rounded, high. Posterior lateral eyes remote from other eyes. Anterior lateral eyes situated at the edge of clypeus; leg strong, stout and spiny. Abdomen oval; anterior spinnerets thick. This species of the genus occur on bushes or branches of trees. Where they spin either large sheet-like webs, accompanied by a tubular retreat, or a large saccular nest, in which many individuals live, gregariously habits among spiders.

Type-species : *Stegodyphus lineatus* Latreille

Distribution : India, Asia, Africa, Arabia.

3. *Stegodyphus sarasinorum* Karsch

1892. *Stegodyphus sarasinorum* Karsch, *Ent. Z. Berlin*, 36 : 275.
 1981. *Stegodyphus sarasinorum* : Tikader & Biswas, *Rec. zool. surv. India, occ. pap.* No. 30(1) : 14.

Diagnosis : This spider is gregarious in its habits. It spin a labyrinthine tube, which ends blindly a one end and the other end expands into a broad sheet, which however is smaller than that spun by the genus *Hippasa*.

This species does not sting the prey to death, but feeds on the captive alive, all members of the colony showing the same victim. Spiderlings hatch in the most of October and November and feed on their parents, hibernating in web tubes in winter.

Material examined : 18 (F), Kachuberia, Dist. South 24-Parganas, West Bengal, 20. iii. 1984, coll. B.K. Biswas & party; 19 (F), Gangasagar, Dist. South 24-Parganas, West Bengal, 20.iii. 1984, coll. B.K. Biswas & party; 6 (F), Chittaranjan, Dist. Bardhaman, West Bengal, 23.ii. 1986, coll. B.K. Biswas & party; 10 (F), Medinipur, near Kasai river, Dist. Medinipur, West Bengal, 24.xi. 1988, coll. Bijan Biswas; 10 (F), Kharagpur, Dist. Medinipur, West Bengal, 22.xi. 1988, coll. B.K. Biswas & party; 8 (F), Panskura, Dist. Medinipur, West Bengal, 23.xi, 1988, coll. B.K. Biswas & party, 5 (F), Pias Bari, Dist. Maldah, West Bengal, 4.xi. 1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Bardhaman, Maldah, Medinipur, South 24-Parganas); Maharashtra; Orissa; Punjab, Tamil Nadu.

Family ULOBORIDAE

Genus 4. *Uloborus* Latreille 1806

1806. *Uloborus* Latreille, *Gen. Crust. Ins. etc.*, 1 : 109.

Diagnosis : Anal tubercle prominent in the female, diminished in male. Legs I pair much longer and stronger than the rest. Male tibiae of I with six to seven dorsal spines, almost in the form of teeth.

Type-species : *Uloborus walckenaerius* Latreille

Distribution : Cosmopolitan except Australia.

Key to the species of the genus *Uloborus* Latreille

1. Cephalothorax provided with two longitudinal deep brown patches; eyes black in colour
.....*danolius*
- Cephalothorax not provided with two deep brown patches; eyes pearly white in colour 2
2. Abdomen provided with a white patch mid-dorsally; clothed with fine pubescence*krishnae*

4. *Uloborus danolius* Tikader

1969. *Uloborus danolius* Tikader, *Proc. Indian Acad. Sci.*, 70 : 128.

1981. *Uloborus danolius* : Tikader & Biswas, *Rec. zool. surv. India, occ. pap.* No. 30(1) : 15.

Material examined : 2 (F), Gosava, Dist. South 24-Parganas, West Bengal, 26.iii.1984, coll. Bijan Biswas; 2 (F), Basanti, Dist. South 24-Parganas, West Bengal, 25.iii.1984, coll. B.K. Biswas & party; 3 (F), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.v.1984, coll. B.K. Biswas & party; 2 (F), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii.1984, coll. B.K. Biswas & party; 6 (F), 2(M), Bamangola, Dist. Maldah, West Bengal 7.xi.1988, coll. Bijan Biswas; 4 (F), Kolaghat, Dist. Medinipur, West Bengal, 19.xi.1988, coll. B.K. Biswas & party; 4 (F), Ghatal, Dist. Medinipur West Bengal, 26.xi.1988, coll. B.K. Biswas & party; 4 + Datan, Dist. Medinipur, West Bengal, 27.xi.1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Maldah, Medinipur, North & South 24-Parganas); Maharashtra.

5. *Uloborus krishnae* Tikader

1970. *Uloborus krishnae* Tikader, *Rec. zool. Surv. India*, 64(1-4) : 5.

Material examined : 1 (F), Mahadebpur (Gour), Dist. Maldah, West Bengal, 3.xi.1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dist. Maldah) (New record); Sikkim.

Key to the genera of the family Zodariidae

1. Possession of only two spinnerets, the under pair; the other four are aborted with tuft of hair
.....*Lutica* Marx
- Not possession of two spinnerets, are not hair.....2
2. Great length of the fore spinnerets, and the shortness of the other; with three tarsal claws
.....*Storena* Walck.

Family ZODARIIDAE

Genus 5. *Lutica* Marx 1891

1891. *Lutica* Marx, G. "A contributon to the knowledge of North American Spiders" Washington, D.C. *Proc. Ent. Soc.*, 2 : 28-37.
1976. *Lutica* : Tikader & Malhotra, *J. Bombay nat. Hist. Soc.*, 72(3) : 794.

Type-species : *Lutica maculata* Marx

Distribution : India, America, Burma, North America.

6. *Lutica bengalensis* Tikader & Patel

1975. *Lutica bengalensis* Tikader & Patel, *Bull. Arch. Soc., London*, 3 (5) : 137.

Diagnosis : Cephalothorax longer than wide, cephalic region slightly higher with rounded margin and provided with light brown patches. Anterior row of eyes are strongly procurved. Abdomen globular, slightly pointed behind, strongly overlapping cephalothorax in front. The anterior pair of spinnerets are conspicuously long and other two pairs not developed.

Material examined : 2 (F), Bhawanipur, Calcutta, West Bengal, 4.v. 1974, coll. B.Goswami.

Distribution : India : West Bengal (Dist. Calcutta).

Genus 6. *Storena* Walckenaer 1805

1805. *Storena* Walckenaer, C.A. *Tableandes Araneides on Characters essentielsdes Paris*, : 1 - 88.

Type-species : *Storena cyanea* Walckenaer

Distribution : India, Australia, New Zealand, Syria, Lebanon, Morocco, Singapore, Java, Sumatra, Phlippine, New Guinea.

7. *Storena debasrae* sp. nov.
(Figs. 11 - 13)

General : Cephalothorax deep brown, abdomen light brown, legs light brown in colour. Total length 6.60 mm. Carapace 2.80 mm. long, 2.40 mm. wider; abdomen 3.80mm. long 3.00 mm. wide.

Cephalothorax : Longer than wide not narrower in front, almost parallel, anterior end smooth and rounded practically without hair except for a few spine on the cephalic region. Cephalothorax with fovea at the posterior end of the cephalic region. Eyes are pearly white arranged in two rows, both the rows are procurved. Anterior median eyes larger than the posterior medians; both the lateral anterior and posterior eyes are nearly contiguous. Ocular quadrate longer than wide. Legs are long and strongly clothed with hair and spines. Legs formula is 4312. Sternum heart-shaped and pointed behind, clothed with hair and spines. Labium and maxillae are small, longer than wide. Chelicerae are small, anterior and posterior margin provided with two teeth.

Abdomen : Longer than wide and pointed behind, clothed with fine hair. Dorsal side of the abdomen provided with a number of white patches. Besides these, at the postero-dorsal end provided with whitish transverse bands. Ventralside of the abdomen provided with two longitudinal deep brown markings. The anterior spinnerets comparatively longer than the other pairs. Epigyne more or less rounded with copulatory opening. Epigyne and internal genitalia as in text figs. 12-13.

Holotype : Female in spirit, deposited at Zoological Survey of India, Calcutta, Regd. No. 5411/18.

Type-locality : Palta, Santinagar, Dist. North 24-Parganas, West Bengal, India, 25.xii.1986, coll. Bijan Biswas.

This species is similar to *Storena indica* Tikader & Patel but differs from this on the following characters : (i) anterior end of the cephalothorax more or less parallel where as in *S. indica* anterior end narrower and not parallel. ii) Cephalothorax provided with inconspicuous fovea, present at the posterior end of the cephalic region, where as in *S. indica* prominent fovea present at the middle of the cephalic region. ii) Epigyne and internal genitalia are also structurally different.

Family HERSILIDAE

Genus 7. *Hersilia* Audouin 1826

1826. *Hersilia* Audouin, *Descr. Egypta Arachn.*, : 114.

1977. *Hersilia* : Tikader, *Rec. zool. Surv. India*, 72 (1-4) : 184.

Diagnosis : Ocular quadrangle parallel sided ; head flat, angular laterally; clypeus usually very high, prominent, protarsi of I and II and IV legs are bi-segmented.

Type-species : *Hersilia caudata* Audouin

Distribution : Africa, Madagascar, Oriental region.

8. *Hersilia savignyi* Lucas

1836. *Hersilia savignyi* Lucas, *Mag. zool.*, 8 : 10.

1981. *Hersilia savignyi* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 47.

Diagnosis : Colour varying from quite pale to nearly black on the upper side, generally banded; abdomen with a black rim, transverse stripe, and a median longitudinal black bar in front, legs and palpi banded.

Material examined : 4 (F), Gosava, Dist. South 24-Parganas, West Bengal, 26.iii. 1984, coll. B.K. Biswas & party; 4 (F), Bongaon, Dist. North 24-Parganas, West Bengal, 31.iii. 1984, coll. B.K. Biswas & party; 1 (F), Raigange, Dist. West Dinajpur, West Bengal 20.i. 1985, coll. Bijan Biswas; 1 (F), Jalpaiguri, Dist. Jalpaiguri, West Bengal, 24.i. 1985, coll. Bijan Biswas; 2 (F), Ranaghat, Dist. Nadia, West Bengal, 16.ii. 1986, coll. B.K. Biswas & party; 2 (F), Chandur forest, Arambagh, Dist. Hugli, West Bengal, 26.ii. 1986, coll. B.K. Biswas & party; 5 (F), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. B.K. Biswas & party; 2 (F), Dhulion, Dist. Murshidabad, West Bengal, 12.xi. 1988, coll. B.K. Biswas & party; 2 (F), Kolaghat, Dist. Medinipur, West Bengal, 19.xi. 1988, coll. B.K. Biswas & party; 2 (F), Datan, Dist. Medinipur, West Bengal, 27.xi. 1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (dists. Calcutta, Hugli, Jalpaiguri, Maldah, Medinipur, Murshidabad, Nadia, West Dinajpur, North & South 24-Parganas); Assam, Maharashtra, Tamil Nadu; Uttar Pradesh. Elsewhere : Burma; Sri Lanka.

Key to the genera of the family Pholcidae

1. Chelicera provided with an additional tooth; sternum broader than long *Artema*
Chelicera not provided with an additional tooth; sternum not broader..... 2
2. Abdomen slightly ovate; abruptly declined posteriorly, raised much above the spinnerets.....
..... *Crossopriza*

Family PHOLCIDAE

Genus 8. *Artema* Walckenaer 1837

1837. *Artema* Walckenaer, *Ins. Apteres*, 1 : 656.

1935. *Artema* : Dyal, *Bull. zool. Punjab Univ.*, 1 : 170

Type - species : *Artema mauricia* Walckenaer

Distribution : India, Africa, Asia, Middle East, North America.

9. *Artema attenta* Walckenaer

1837. *Artema attenta* Walckenaer, *Ins. Apterres.*, 1 : 656.

1981. *Artema attenta* : Tikader & Biswas, *Rec.. Zool. Surv. India, occ. pap.* No. 30(1) : 18.

Material examined : 2 (F), Ranaghat, Dist. Nadia, West Bengal, 16.ii. 1986, coll. B.K. Biswas & party; 2 (F), Dhulion, Dist. Murshidabad, West Bengal, 12.xi. 1988, coll. B.K. Biswas & party; 2 (F) Lalbagh, Dist. Murshidabad, West Bengal, 13.xi. 1988, coll. B.K. Biswas & party; 2 (F) Lalgola, Dist. Murshidabad, West Bengal, 17.xi. 1988 coll. B.K. Biswas & party; 2 (F) Datan, Dist. Medinipur, West Bengal, 24.xi. 1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dist. Calcutta, Maldah Murshidabad, Medinipur, Nadia); Maharashtra; Punjab, Tamil Nadu; Burma.

Genus 9. *Crossopriza* Simon 1893

1893. *Crossopriza* Simon, *Hist. Nat. Arign.*, 1 : 476.

1935. *Crossopriza* : Dyal, *Bull. zool. Punjab Univ.*, 1 : 168.

Type-species : *Crossopriza pristina* Simon

Distribution : India, Arabia, Egypt.

10. *Crossopriza lyoni* (Blackwall)

1867. *Pholcus lyoni* Blackwall, *Ann. Mag. Nat. Hist.*, 19(3) : 302.

1981. *Crossopriza lyoni* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 18.

Material examined : 3 (F), Namkhana, Dist. South 24-Parganas, West Bengal, 21.iii.1984, coll. B. K. Biswas & party; 6 (F) Gangasagar, Dist. south 24-Parganas, West Bengal, 20.iii. 1984, coll. Bijan Biswas; 6 (F), 2 (M), Patharpratima, Dist. South 24-Parganas, West Bengal, 22.iii. 1984, coll. B.K. Biswas & party; 6 (F), 4 (M), Gosava, Dist. South 24-Parganas, West Bengal, 26. iii. 1984, coll. B.K. Biswas & party; 4 (F), 4 (M), Basanti, Dist. South 24-Parganas, West Bengal, 25.iii. 1984, coll. B.K. Biswas & party; 10 (F), 2 (M), Nilgange Dist. North 24-Parganas, West Bengal, 27.iii. 1984, coll. B.K. Biswas & Party; 3 (F), 3 (M), Ranaghat, Dist. Nadia, West Bengal coll. B.K. Biswas & party; 4 (F), Gajal, Dist. Maldah, West Bengal 1. xi. 1988, coll. B.K. Biswas & party; 10 (F), Bamangola, Dist. Maldah, West Bengal, 5.xi. 1988, coll. Bijan Biswas; 5 (F), 1 (M), Habibpur, Dist. Maldah, West Bengal, 6.xi. 1988, coll. B.K. Biswas & party ; 4 (F), Dhulion, dist. Murshidabad, West Bengal, 12.xi.1988, coll. B.K. Biswas & party; 1 (F), Lalgola, Dist. Murshidabad, West Bengal, 17.xi.1988, coll. B.K. Biswas & party; 4 (F) Kolaghat, Dist. Medinipur, West Bengal, 19.xi.1988, coll. B.K. Biswas & party; 5 (F), Jhargram, Dist. Medinipur, West Bengal, 27.xi.1988, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Maldah, Medinipur, Nadia, North & South 24-Parganas); Punjab; Rajasthan; Tamil Nadu; Uttar Pradesh. Elsewhere : Burma.

Family SCYTODIIDAE

Genus 10. *Scytodes* Latreille 1804

1804. *Scytodes* Latreille, *Nouv. Dict. etc.*, 24 : 134.

1935. *Scytodes* Dyal, *Bull. zool. Punjab Univ.* 1 : 153.

Diagnosis : Cephalothorax high and subglobose behind and slopes forward. Eyes six nocturnal arranged in three groups of two each. Anterior row of eyes strongly recurved.

Type-species : *Scytodes thoracica* Latreille

Distribution : India, Africa, America, Europe.

Key to the species of the genus *Scytodes* Latreille

1. Abdomen yellowish white; four narrow transverse black bands on the dorsum *propinqua*
 Abdomen not yellowish white; no transverse black bands on the dorsum. 2
2. Cephalothorax has only a few black longitudinal streaks *thoracica*

11. *Scytodes propinqua* Stoliczka

1869. *Scytodes propinqua* Stoliczka, *J. Asiat. Soc. Bengal*, 38 : 232.

1981. *Scytodes propinqua* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 16.

Material examined : 5 (F), Palta, Dist. North 24 Parganas, West Bengal, 10.ii. 1984, coll. Bijan Biswas; 2 (F), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. B.K. Biswas & party; 2 (F), Kakdwip, Dist. South 24 Parganas, West Bengal, 23.iii. 1984, coll. B.K. Biswas & party; 2 (F), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1. iv. 1984, coll. B.K. Biswas & party;

Distribution : India : West Bengal (Dists. Calcutta, South & North 24-Parganas); Punjab.

12. *Scytodes thoracica* (Latreille)

1804. *Aranea thoracica* Latreille, *Hist. Nat. Inscie, Paris*, 7 : 249.

1981. *Scytodes thoracica* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 17.

Material examined : 2 (F), Palta, Dist North 24-Parganas, West Bengal, 5.iii. 1985, coll. Bijan Biswas; 2 (F), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, North 24-Parganas). Elsewhere : Africa, America, Australia, Europe.

Family LYSSOMANIDAE

Genus 11. *Lyssomanes* Hentz 18441944. *Lyssomanes* Hentz, *J. Bost. Soc. Nat. Hist.*, 11 : 48.1967. *Lyssomanes* : Tikader, *Proc. Indian Acad. Sci.*, 66(4) : 120.

Diagnosis : Cephalothorax moderately high, longer than wide, Eyes are in four transverse rows of two each. Eyes of first row is close to each other and two to three times as large as those of second row. Second row is situated just behind the first row. The third of eyes are very small. Fourth row of eyes are as large as those of the second row. Quadrangle formed by second and fourth rows as wide as long.

Type-species : *Lyssomanes viridis* (Walck.)

Distribution : India, North America.

Key to the species of the genus *Lyssomanes* Hentz

1. Cephalothorax provided with a conspicuous white light patch from anterior eyes to base of cephalothorax *andamanensis*
- Cephalothorax not provided with a conspicuous white light patch..... 2
2. Chelicerae moderately strong and retromargin of fang furrow provided with three small equal teeth *bengalensis*
- Chelicerae not strong and not provided with three small equal teeth.....3
3. Abdomen provided with chalk-white spots at the middle line *chilapataensis*
- Abdomen not provided with such types of spots at the middle line..... 4
4. Femora of I leg provided with four pairs of long ventral spines; dorsum of abdomen with nine bigger and smaller greenish patches *santinagarensis*

13. *Lyssomanes andamanensis* Tikader1977. *Lyssomanes andamanensis* Tikader, *Rec. zool. Surv. India*, 72 : 205.1981. *Lyssomanes andamanensis* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 109.

Material examined : 1 (M), Palta, Dist. North 24-Parganas, West Bengal, 31.viii. 1986, coll. Bijan Biswas; 5 (M), Jalpaiguri, Dist. Jalpaiguri, West Bengal, 24.i.1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Jalpaiguri, North 24-Parganas); Andaman Islands.

14. *Lyssomanes begalensis* Tikader & Biswas

1978. *Lyssomanes begalensis* Tikader & Biswas, *Proc. Indian Acad. Sci.* 87(9) : 259.

1981. *Lyssomanes begalensis* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pp.* No. 30(1) : 107.

Material examined : 1 (F), Barasat, Dist. North 24-Parganas West Bengal, 30.iii. 1984, coll. B.K. Biswas & party; 10 (F) 5 (M), Palta, Dist. North 24-Parganas, West Bengal, 2.ix. 1986, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. North & South 24-Parganas).

15. *Lyssomanes chilapataensis* sp. nov.

(Figs. 14-16)

General : Cephalothorax, abdomen and legs are pale yellow in colour. Total length 6.40 mm Carapace 2.70 mm. long, 1.70 mm. wide; abdomen 3.70 mm. long, 1.50 mm. wide.

Cephalothorax : Longer than wide slightly narrowing in front, cephalic region high, thoracic region slopping behind. Middle of thoracic region provided with a fine fovea. Eyes are in four rows and anterior median largest and white. Bases of rest of the eyes provided with conspicuous black patches. Anterior lateral eyes (Second row) with prominent stalk. Posterior median eyes are smaller than the others and situated on a stalk. Posterior lateral eyes are of medium size and situated with a wide tubercle. Ocular quad slightly longer than wide. Sternum almost round. Labium slightly longer than wide. Maxillae broader in front and provided with inconspicuous scopulae. Chelicerae moderately strong and retromargin of fang furrow provided with one tooth inner and two teeth outer margin. Legs are long and slender, clothed with hair and spines, Femora of I leg provided with four pair of ventral spines. Tarsi provided with well developed black claw tufts.

Abdomen : Long, slender with pubescence. Chalk-white spots present at the mid-dorsal Ventral side pale. Epigyne and internal genitalia as in text figs. 15-16.

Holotype : Female in spirit, deposited at Zoological Survey of India, Calcutta, Regd. No. 5407/18.

Type-locality : Chilapata forest, Dist. Koch Bihar, West Bengal, India, 9.i. 1985, coll. Bijan Biswas.

This species resembles *Lyssomanes begalensis* Tikader & Biswas but can be separated as follows: (1) Chelicerae provided with one tooth inner and two teeth with outer margin but in *L. begalensis* with three teeth. (2) Dorsum provided with chalk-white spots at the mid-dorsal line but in *L. begalensis* light brown patch present at the mid-dorsal line (3) Epigyne and internal genitalia are also structurally different.

16. *Lyssomanes santinagarensis* sp. nov.

(Figs. 17-19)

General : Cephalothorax, abdomen and legs are pale cream colour. Total length 5.50 mm Carapace 2.20 mm. long, 1.70 mm. wide; abdomen 3.30mm. long, 2.00 mm. wide.

Cephalothorax : Longer than wide, slightly narrowing in front, cephalic region high. thoracic region is slopping behind. Middle of thoracic region provided with a fine fovea. Eyes are in four rows and anterior median is largest and white. Bases of rest of the eyes provided with conspicuous black patches. Anterior lateral eyes with prominent stalk. Posterior median eyes are of medium size and situated with a wide tubercle. Oculr quad slightly longer than wide. Sternum almost round. Labium slightly longer than wide. Maxillae broader in front and provided with inconspicuous scopulae. Chelicerae moderately strong and retromargin of fang furrow, provided with three teeth inner and two teeth with outer margin. Legs are long and slender, clothed with hair and spines. Femora of I leg provided with four pairs of long ventral spines. Tarsi provided with well developed black claw fufts.

Abdomen : Long slender with pubescence. There are nine bigger and smaller greenish patches present on the dorsum. Ventral side pale. Epigyne and internal genitalia as in figs. 18-19.

Holotype : Female in spirit depsited at Zoological Survey of India, Calcutta, Regd. No. 5410/18.

Type-locality : Santinagar, Palta, Dist. North 24-Parganas, West Bengal, India, 31.viii.1986 coll. Bijan Biswas.

This species resembles with *Lyssomanes begalensis* Tikader & Biswas but can be separated as follows : (1) Chelicerae provided with three teeth with the inner and two teeth with the outer margin but *L. begalensis* with three teeth. (2) Dorsum of abdomen provided with nine irregular different sizes of greenish patches but In *L. bengalensis* with light brown patch present at the posterior part of mid-dorsal line. (3) Epigyne and internal genitalia are also structurally different.

Family SALTICIDAE

Key to genera of the family Salticidae

1. Labium semicircular in shape *Euophrys*
 Labium not semicircular 2
2. Cephalothorax rectangular in shape not pointed behind..... *Marpissa*
 Cephalothorax elongated and pointed behind 3
3. Chelicera robust and prominent; nearly as long as cephalothorax..... *Myrmarachne*
 Chelicera not robust and prominent; not longer as cephalothorax..... 4
4. Eyes are small in proportion to the spiders *Phidippus*
 Eyes are not small in proportion to the spiders 5
5. Labium little longer than wide; coxae of the I leg separated by less than the width of the labium.....
 *Plexippus*

- Labium not longer than wide; coxae of the I leg not separated by less than the width of the labium.
.....6
6. Small beetle-like spider; sternum nearly oval in shape..... *Rhene*
Not beetle - like spider; sternum not oval in shape..... 7
7. The ocular trapezium is about one third broader than long *Salticus*
The ocular trapezium is not about one third broader than long..... 8
8. The first legs are heaviest than the rest..... *Zygoballus*

Genus 12. *Euophrys* Koch 1834

1834. *Euophrys* Koch, *Schaefer*, 8 : 123.

1981. *Euophrys* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 101.

Type-species : *Euophrys frontalis* Walckenaer

Distribution : Cosmopolitan.

17. *Euophrys chiriatapuensis* Tikader

1977. *Euophrys chiriatapuensis* Tikader, *Rec. zool. Surv. India*, 72 : 206.

Material examined : 1 (F), Basirhat, Dist. North 24-Parganas, West Bengal, 28.iii. 1984, coll. B.K. Biswas & party; 1 (F) 1 (M), Petropole, Dist. North 24-Parganas, West Bengal, 2.iv. 1984, coll. B.K. Biswas & party. 1 (F), Barasat Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. B.K. Biswas & party; 2 (F), Bongaon, Dist. North 24-Parganas, West Bengal, 31.iii. 1984, coll. B.K. Biswas & party; 2 (F) 1 (M), Chilapata forest, Dist. Koch Bihar, West Bengal, 9.i. 1985, coll. Bijan Biswas; 1 (F), Subhasini Tea Estate, Dist. Jalpaiguri, West Bengal, 13.i. 1985, coll. Bijan Biswas; 1 (F), Jaintia forest, Dist. Jalpaiguri, West Bengal, 18.. 1985, coll. Bijan Biswas; 1 (F), 1 (M), Santipur, Dist. Nadia, West Bengal, 17.ii. 1986, coll. B.K. Biswas & party; 2 (F), 2 (M), Krishnagar, Dist. Nadia, West Bengal, 18.ii. coll. B.K. Biswas & party; 2 (F) Mahadebpur (Gour), Dist. Maldah, West Bengal, 3.xi. 1988, coll. B.K. Biswas & party; 3 (F), Pias Bari, Dist. Maldah, West Bengal, 4.xi. 1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Jalpaiguri, Koch Bihar, Maldah, Nadia, North 24-Parganas. Elsewhere : South Andaman.

Genus 13. *Marpissa* Koch 1845

1845. *Marpissa* Koch, *Die. Arachn.*, 13 : 56.

1981. *Marpissa* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pp.* No. 30(1) ; 93.

Type-species : *Maripissa muscosa* Clerck

Distribution : Cosmopolitan.

Key to the species of the genus *Marpissa* Koch

1. Cephalothorax provided with squire-shaped patches; vulva with conspicuous plate-like structure *anusuae*
 Cephalothorax not provided with squire-shaped patches; vulva without plate-like structure.....2
2. The legs of I and II more robust than that of III and IV *arambagensis*
 The legs of I & II not so robust than that of III and IV 3
3. Dorsum of the abdomen provided with a longitudinal whitish band *bengalensis*
 Dorsum of the abdomen not provided with a longitudinal whitish band.....4
4. Cephalothorax light brown in colour, and rectangular in shape *calcuttaensis*
 Cephalothorax not light in colour and not rectangular in shape..... 5
5. Tibia and metatarsi of I and II legs provided with three and two pairs of ventral spines
 *decorata*
 Tibia and metatarsi of I and II legs not provided with such type of spines.....6
 Ocular region more dark than the rest portion of the cephalothorax *dhakuriensis*
 Ocular region not so dark than the rest portion of the cephalothorax.....7
7. Ventral side of the abdomen provided with chalk white spots *edenae*
 Ventral side of the abdomen not provided with chalk-white spots8
8. Abdomen provided with two pairs of sigillae *kalighatensis*
 Abdomen not provided with two pairs of sigillae9
9. Posterior part of the dorsum provided with four transverse white patches *nutanur*
 Posterior part of the abdomen not provided with four transverse white patches 10
10. Labium longer than wide, maxillae broad in front provided with scopulae *prathamae*

- Labium not longer than wide, maxillae not broad and without scopulae 11
11. Ocular area encircled by 'U' shaped red brown broad marking which extend up to the base of thorax *tigrina*
- Ocular area not encircled by "U" shaped red brown broad marking..... 12
12. Sternum elliptical in shape and clothed with fine hair and spines.....*tikaderi*

18. *Marpissa anusuae* Tikader & Biswas

1981. *Marpissa anusuae* Tikader & Biswas, *Rec. zol. Surv. India, occ. pap.* No. 30(1) : 97.

Distribution : India : West Bengal (Dist. Calcutta).

19. *Maripisa arambagensis* sp. nov.
(Figs. 20-22)

General : Cephalothorax abdomen and legs are reddish brown in colour. Total length 6.70 mm. Carapace 2.60 mm. long, 2.40 mm. wide; Abdomen 3.80 mm. long, 2.40 mm. wide.

Cephalothorax : Longer than wide, cephalic region flat, middle of cephalothorax provided with a small fovea. Eyes are transparent and anterior median eyes nearly four times larger than lateral eyes. Anterior row of eyes are recurved. Middle row of eyes are small and situated nearly equidistant from anterior lateral eyes. Anterior lateral eyes slightly larger than posterior lateral eyes. Cephalothorax clothed with blackish-brown spine-like hair. Chelicerae provided with one tooth on inner and two teeth on outer margin. Sternum oval, narrow in front, clothed with spine-like hair. Legs are strong and stout, clothed with hair and spines. Legs formula is 4312. Tibiae and metatarsi of I and II provided with three and two pairs of ventral spines respectively.

Abdomen : Longer than wide, narrowing in behind. Anterior part of the dorsum covered with thick brown spine like hair and provided with transverse white band and three white spots. Epigyne and internal genitalia as in figs. 21-22.

Holotype : Female in spirit, Allotype one male deposited at Zoological Survey of India, Calcutta, Regd. Nos. 5376/18, 5384/18.

Type-locality : Chandur forest, Arambagh, Dist. Hugli, West Bengal, India, 26.ii. 1986, coll. Bijan Biswas.

This species resembles *Marpissa kalighatensis* (In press) but it is separated as follows (1) Cephalic region covered with blackish-brown thick spine-like hair but in *M. kalighatensis* covered with whitish thick spine like hair. (2) There is a white transverse band and three whitish spots on the dorsum of abdomen but in *M. kalighatensis* there is no such band and spots. (3) Epigyne and internal genitalia are also structurally different.

20. *Marpissa bengalensis* Tikader

1974. *Marpissa bengalensis* Tikader, *Proc. Indian Acad. Sci.*, 79(5) : 212.
 1981. *Marpissa bengalensis* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 95.

Distribution : India : West Bengal (Dist. Calcutta).

21. *Marpissa calcuttaensis* Tikader

1974. *Marpissa calcuttaensis* Tikader, *Proc. Indian Acad. Sci.*, 79(5) : 210.
 1981. *Marpissa calcuttaensis* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 96.

Distribution : India : West Bengal (Dists. Calcutta, Haora, South 24-Parganas).

22. *Marpissa decorata* Tikader

1974. *Marpissa decorata* Tikader, *Proc. Indian Acad. Sci.*, 79 (5) : 206.
 1981. *Marpissa decorata* : Tikader & Biswas, *Rec. zool. surv. India, occ. pap.* No. 30(1) : 94.

Distribution : India : West Bengal (Dists. Calcutta, Haora).

23. *Marpissa dhakuriensis* Tikader

1974. *Marpissa dhkuriensis* Tikader, *Proc. Indian Acad. Sci.* 79(5) : 207
 1981. *Marpissa dhakuriensis* : Tikader & Biswas, *Rec. zool. surv. India, occ. pap.* No. 30(1) : 94.

Distribution : India : West Bengal (Dist. Calcutta).

24. *Marpissa endenae* sp. nov.
(Figs. 23-25)

General : Cephalothorax, abdomen and legs are light brown to deep brown in colour. Total length 6.80 mm. Carapace 2.40 mm. Log, 1.50 mm. wide; abdomen 4.10 mm. long, 2.60 mm. wide.

Cephalothorax : Longer than wide, cephalic region flat, middle of cephalothorax provided with a small fovea. Eyes are transparent and anterior median eyes are nearly four times larger than lateral eyes. Anterior row of eyes are recurved. Middle row of eyes are small and situated nearly equidistant from anterior lateral eyes. Anterior-lateral eyes are slightly larger than posterior lateral eyes. Cephalothorax clothed with brown and white spine-like hair. Chelicerae provided with one tooth on inner and two teeth on outer margin. Sternum oval, narrowing in front, clothed with fine hair. Legs are strong, stout and clothed with hair and spines. Legs formula is 4312. Tibiae and metatarsi of I and II provided with four and two pairs of ventral spines respectively.

Abdomen : Longer than wide, narrowing in behind, greyish cream in colour. Dorsum provided with few white and brown patches and covered with whitish fine hair. Posterior part of dorsum, there are three

reddish-brown and two white spots. Ventral side covered with chalk-white spots. Epigyne and internal genitalia as in figs. 24-25.

Holotype : Female in spirit, paratype one female deposited at Zoological Survey of India, Calcutta, Regd. Nos. 5385-86/18.

Type-locality : Eden garden, Calcutta, West Bengal, India, 15.vii. 1985, coll. Kajal Biswas.

This species resembles *Marpissa arambagensis* (In press) but separated as follows : (1) Tibiae and metatarsi of I and II provided with four and two pairs of ventral spines but in *M. arambagensis* with three and two ventral spines. (2) Dorsum of the abdomen provided with three reddish-brown and two white spots but in *M. arambagensis* with one transverse white band and three white spots. (3) Epigyne and internal genitalia are also structurally different.

25. *Marpissa kalighatensis* sp. nov.
(Figs. 26-28)

General : Cephalothorax, abdomen and legs are reddish brown in colour. Total length 7.80 mm. Carapace 2.80 mm. long, 2.20 mm. wide; abdomen 4.60 mm. long, 3.20 mm. wide.

Cephalothorax : Longer than wide, cephalic region flat, middle of cephalothorax provided with a small fovea. Eyes are transparent and anterior median eyes nearly four times larger than lateral eyes. Anterior row of eyes are recurved. Middle row of eyes are small and situated nearly equidistant from anterior lateral eyes. Anterior lateral eyes slightly larger than posterior lateral eyes. Cephalothorax clothed with thick white and few spine-like hair. Chelicerae provided with one tooth on inner and two teeth on outer margin. Sternum oval, narrowing in front, clothed with spine-like hair. Legs are strong and stout, clothed with hair and spines, Legs formula is 4312. Tibiae and metatarsi of I and II provided with three and two pairs of ventral spines respectively.

Abdomen : Longer than wide, narrowing in behind, clothed with brown and black hair. Dorsum provided with two pairs of sigilla and covered with white dots. Ventral side pale in colour and covered with white dots. Epigyne and internal genitalia as in figs. 27-28

Holotype : Female in spirit, paratype deposited to Zoological Survey of India, Calcutta, Regd. Nos. 5374-75/18.

Type-locality : New Alipore, Zoological Survey of India Building, Calcutta, West Bengal, India, 5.x.1988, coll. Kajal Biswas.

This species resembles *Marpissa nutanae* Biswas & Biswas but it is separated as follows : (1) Chelicerae with two teeth on the outer margin but in *M. nutanae* with one tooth on the outer margin (2) Dorsum of the abdomen provided with two pairs of sigilla but in *M. nutanae* provided with three pairs (3) Epigyne and internal genitalia are also structurally different.

26. *Marpissa nutanae* Biswas & Biswas

1984. *Marpissa nutanae* Biswas & Biswas, *Bull. zool. Surv. India*, 6(1-3) : 131.

Distribution : India : West Bengal (Dist. Calcutta).

27. *Marpissa prathamae* Biswas & Biswas

1984. *Marpissa prathamae* Biswas & Biswas, *Bull. zool. Surv. India*, 6(1-3) : 129.

Material examined : 1 (F), Kamarpukur, Dist. Hugli, West Bengal, 27. ii. 1986, coll. B.K. Biswas & party; 1(F), Arambagh, Dist. Hugli, West Bengal, 26.ii. 1986, coll. Bijan Biswas; 2(F), Chandur forest, Arambagh, Dist. Hugli, West Bengal, 26.ii. 1986, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists : Calcutta, Hugli, South 24-Parganas).

28. *Marpissa tigrina* Tikader

1965. *Marpissa tigrina* Tikader, *Sci. & Cult.*, 31(5) : 262

1981. *Marpissa tigrina* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 97.

Distribution : India : West Bengal (Dist. Calcutta); Maharashtra; Punjab.

29. *Marpissa tikaderi* Biswas

1984. *Marpissa tikaderi* Biswas, *Bull. zool. Surv. India*, 6(1-3) : 125.

Distribution : India : West Bengal (Dist. Calcutta).

Genus 14. *Myrmarachne* Mac Leay 1839

1839. *Myrmarachne* Mac Leay, *Ann. Mag. Nat. Hist.*, 2 : 10.

1981. *Myrmarachne* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 104.

Type-species : *Myrmarachne melanocephalus* Mac Leay

Distribution : Oriental and sub-tropical regions of the world.

Key to the species of the genus *Myrmarachne* Mac Leay

1. Small constriction present between cephalic and thoracic junction and the anterior part of the cephalic region convex *bengalensis*
- Deep constriction present between cephalic and thoracic junction and the anterior part of the cephalic region is blunted.....2

2. Ocular trapezium wider than long and wider in front than behind*calcuttaensis*
 Ocular trapezium longer than wide and not wider in front than behind.....3
3. Abdomen without constriction at the middle and provided with transverse dark and pale patches
*maratha*
 Abdomen with constriction at the middle and not provided with transverse pale patches.....4
4. Typical ant-like spider*orientalis*
 Not ant-like spider.....5
5. Chelicera robust and dumb-bell-shaped as long as cephalothorax*plataleoides*

30. *Myrmarachne bengalensis* Tikader

1973. *Myrmarachne bengalensis* Tikader, *Proc. Indian Acad. Sci.*, 78(2) : 65.

1981. *Myrmarachne bengalensis* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 106.

Distribution : India : West Bengal : (Dist. Calcutta.).

31. *Myrmarachne calcuttaensis* Biswas

1984. *Myrmarachne calcuttaensis* Biswas, *Bul. zool. Surv. India*, 6(1-3) : 126 - 127.

Distribution : India : West Bengal (Dist. Calcutta).

32. *Myrmarachne maratha* Tikader

1973. *Myrmarachne maratha* Tikader, *Proc. Indian Acad. Sci.* 78 (2) : 59.

1981. *Myrmarachne maratha* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 105.

Distribution : India. : West Bengal (Dist. Calcutta); Maharashtra.

33. *Myrmarachne orientalis* Tikader

1973. *Myrmarachne orientalis* Tikader, *Proc. Indian Acad. Sci.*, 78(2) : 60.

1981. *Myrmarachne orientalis* Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 105.

Material examined : 2 (M), Basanti, Dist. South 24-Parganas, West Bengal, 25.iii. 1984, coll. B.K. Biswas & party; 2 (M), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. Bijan Biswas; 1 (M), Raigange, Dist. West Dinajpur, West Bengal, 20.i.1985, coll. Bijan Biswas; 1 (M), Botanical Garden, Sibpur, Dist. Haora, West Bengal, 5.ix. 1986, coll. B.K. Biswas & party; 1 (M), Adina deer park, Dist. Maldah, West Bengal, 7.xi. 1988, coll. B.K. Biswas & party; 1 (M), Medinipur, Dist. Medinipur, West

Bengal, 24.xi. 1988, coll. Bijan Biswas; 2 (M), Singla Bazar, Dist. Darjiling, West Bengal 15.vi. 1979, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Darjiling, Haora, Maldah, Medinipur, West Dinajpur, North & South 24-Parganas).

34. *Myrmarachne plataleoides* (Cambridge)

1869. *Salticus plataleoides* Cambridge, *Ann. Mag. Nat. Hist.*, 3(4) : 68.

1973. *Myrmarachne plataleoides* : Tikader, *Proc. India. Acad. Sci.* 78(2) : 60.

Material examined : 1 (M), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.iv. 1984, coll. Bijan Biswas; 1 (M), Chilapata forest, Dist. Jalpaiguri, West Bengal, 9.i. 1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Jalpaiguri, North 24-Parganas); Bihar; Maharashtra; Tamil Nadu.

Genus 15. *Phidippus* Koch 1846

1846. *Phidippus* Koch, *Die. Arachn.*, 73 : 125.

1981. *Phidippus* : Tikader, & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 90.

Type-species : *Phidippus variegatus* (Lucas)

Distribution : All tropical and sub-tropical countries of the world.

Key to the species of the genus *Phidippus* Koch

1. Middle of the abdomen provided with two sigillae which are encircled by 'v' shaped brown or black marking *bengalensis*
- Middle of the abdomen not provided with two sigillae and without 'v' shaped brown black marking 2
2. Cephalothorax brownish red in colour and pointed behind..... *indicus*
- Cephalothorax pale orange in colour and not pointed behind..... 3
3. Legs I and II more robust than III and IV, Tibiae and metatarsi I and II provided with four and two pairs of ventral spines *pateli*

35. *Phidippus bengalensis* Tikader

1976. *Phidippus bengalensis* Tikader, *Entomon*, 2 (1) : 97.

1981. *Phidippus bengalensis* : Tikader & Biswas, *Rec. zool. surv. India, occ. pap.* No. 30(1) : 92.

Material examined : 1 (M), Santipur, Dist. Nadia, West Bengal, 15.ii. 1986, coll. Bijan Biswas, 1 (M), Botanical Garden, Sibpre, Dist. Haora, 5.ix. 1986, coll. B.K. Biswas & party; 1 (F), Panskura, Dist. Medinipur, West Bengal, 23.xi. 1988, coll. B.K. Biswas & party; 1 (F), 1 (M), Belpahari, Dist. Medinipur, West Bengal, 21.xi.1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Haora, Medinipur Nadia); Maharashtra: Karnataka; Punjab.

36. *Phidippus indicus* Tikader

1974. *Phidippus indicus* Tikader, *Proc. Indian Acad. Sci.*, 79(3) : 122.

1981. *Phidippus indicus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 92.

Material examined : 1(M), Gangasagar, Dist. South 24-Parganas, West Bengal, 20.iii. 1984, coll. B.K. Biswas & party; 1 (F), Patharpratima, Dist. South 24-Parganas, West Bengal, 22.iii. 1984, coll. Bijan Biswas; 5(F), Bongaon, Dist. North 24-Parganas, West Bengal, 31.iii.1984, coll. Bijan Biswas; 1 (F), Raigange, Dist. West Dinajpur, West Bengal, 20.i. 1985, coll. Bijan Biswas; 1(F) Buxa forest, Dist. Jalpaiguri, West Bengal, 17.i. 1985, coll. Bijan Biswas; 1(F) Kalyani, Dist. Nadia, West Bengal, 15.ii. 1986, col. Kajal Biswas; 1(F), 3 (M), Pias Bari, dist. Maldah West Bengal, 13.xi. 1988, coll. B.K. Biswas & party; 1 (F) Botanical Garden, Sibpre, West Bengal, 6.ix. 1986, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Hugli, Haora, Jalpaiguri, Maldah, Murshidabad, Nadia, West Dinajpur, North & South 24-Parganas); Gujarat.

37. *Phidippus pateli* Tikader

1974. *Phidippus pateli* Tikader, *Proc. India Acad. Sci.*, 79(3) : 124.

1981. *Phidippus pateli* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 91.

Material examined ; 1 (F), Gosava, Dist. South 24-Parganas, West Bengal, 26.iii. 1984, coll. Bijan Biswas; 1 (M), Petrapole, Dist. North 24-Parganas, West Bengal 2.iv. 1984, coll. B.K. Biswas & party; 2 (M), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. Bijan Biswas; 1 (F), Chilapata forest, Dist. Jalpaiguri, West Bengal, 9.i. 1985, coll. Bijan Biswas; 1 (F), Gossanimari forest Dist. Koch Bihar, West Bengal, 10.i. 1985, coll. Bijan Biswas; 2 (F), 1 (M), Jaldapara Sanctuary, Dist. Jalpaiguri, West Bengal, 14.i. 1985, coll. Bijan Biswas; 6 (F), 3 (M), Kalyani, Dist. Nadia, West Bengal, 15.ii. 1986, coll. B.K. Biswas & party; 3 (F), Lalbagh, Dist. Murshidabad, West Bengal, 15.xi. 1988, coll. B.K. Biswas & party; 3 (F), Sagardighi, Dist. Murshidabad, West Bengal, 16.xi. 1988, coll. Bijan Biswas; 2 (F), Kolaghat, Dist. Medinipur, West Bengal, 19.xi. 1988. coll. B.K. Biswas & party; 1 (F), Mahadebpur, (Gour), Dist. Maldah, West Bengal, 3.xi. 1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Koch Bihar, Jalpaiguri, Maldah, Medinipur, Murshidabad, Nadia, North & South 24-Parganas); Gujarat, Maharashtra.

Genus 16. *Plexippus* Koch 1846

1846. *Plexippus* Koch, *Die Aruchn.*, 13 : 107

1967. *Plexippus* : Tikader, *Proc. Indian Acad. Sci.*, 66 (4) : 118.

Diagnosis : Cephalothorax long and rather high, slightly convex, a little dilated behind dorsal eyes, with sides nearly vertical and parallel in front, rounded behind; cephalic part inclined; thoracic falling gradually from a little way behind dorsal eyes to near the posterior border, then dropping abruptly. Eye region occupying but little more than 1/3 of cephalothorax, 1/4 wider than long, a little wider in front than behind. Front eyes in a curved row, the middle less than twice as larger as lateral. Second row a little nearer to the lateral than the dorsal. Third row slightly narrower than the cephalothorax. Chelicerae with two teeth on the upper and one on the lower margin. Sternum rather long, rounded behind, constriction in front, not truncated.

Type-species : *Plexippus paykullii* (Audouin)

Distribution : Cosmopolitan.

38. *Plexippus paykullii* (Aud.)

1825. *Attus paykullii* Aud., *Descr. Egypte, 2nd Ed.*, 22 : 172.

1981. *Plexippus paykullii* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 101.

Diagnosis : Cephalothorax dark brown or black, legs olive brown, abdomen deep brown. Cephalothorax longer than wide, convex clothed with fine grey black hair. Cephalic region flat and metallic black. Anterior row of eyes recurved and anterior middle eyes very large and milky white, anterior lateral eyes pearly-white and smaller than middle eyes by about half. Middle row of eyes very small and situated equidistant from anterior and posterior rows of eyes; posterior row of eyes median size and pearly white. A pale longitudinal patch on the middle of thorax and centre provided with fovea. Sternum oval and narrowed in front, clothed with hair. Abdomen longer than wide, narrowing posteriorly. Mid-dorsal with a longitudinal light patch extending from base to near end of abdomen.

Material examined : 2 (F), 3 (M), Namkhana, Dist. South 24-Parganas, West Bengal, 21.iii. 1984, coll. B.K. Biswas & party; 1 (F), 1 (M), Gosava Dist. South 24-Parganas, West Bengal, 26.iii.1984, coll. Bijan Biswas; 1 (M), Basanti, Dist. South 24-Parganas, West Bengal, 25.iii. 1984, coll. B.K. Biswas & party; 1 (F), 1 (M), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.iv. 1984, coll. B.K. Biswas & party; 1 (M), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. Bijan Biswas; 4 (F), Jaldapara Sanctuary, Dist. Jalpaiguri, West Bengal, 24.i. 1985, coll. Bijan Biswas; 1 (F), 1 (M), Asansol, Dist. Bardhaman, West Bengal, 21.ii. 1986, coll. Kajal Biswas; 1 (F), Botanical Garden, Sibpore, Dist. Haora, West Bengal 5.ix. 1986, coll. B.K. Biswas & party 1 (F), 1 (M), Adina deer park, Dist. Maldah, West Bengal, 7.xi. 1988, coll. B.K. Biswas & party; 2 (F), 1 (M), Lalbagh, Dist. Murshidabad, West Bengal, 13.xi. 1988, coll. Bijan Biswas; 2 (F), 1 (M), Sargar dighi, Dist. Murshidabad, West Bengal, 16.xi. 1988, coll. B.K. Biswas & party; 2 (F), 1 (M), Panskura, Dist. Medinipur, West Bengal, 23. xi. coll. B.K. Biswas & party; 2 (F), Medinipur, Dist. Medinipur, West Bengal, 24.xi. 1988, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Bardhaman, Haora, Jalpaiguri, Maldah, Medinipur, North and South 24-Parganas. Elsewhere : Africa, Burma, Europe, Sri Lanka, and in all of the warmer regions of the world.

Genus 17. *Rhene* Thorell 1869

1869. *Rhene* Thorell, *Nat. Act. reg. Soc. Sci.*, 7(3) : 37.
1973. *Rhene* : Tikader, *Proc. Indian Acad. Sci.*, 78(2) : 68

Type-species : *Rhene flavigera* Koch

Distribution : Cosmopolitan.

Key to the species of the genus *Rhene* Koch

1. Middle of the abdomen provided with two pairs of sigilla and the posterior half provided with some deep brown dots and transverse bars*decoratus*
Middle of the abdomen not provided with two pairs of sigilla and the posterior half not provided with some deep brown dots and transverse bars 2
2. Cephalothorax provided with a broad longitudinal deep brown patch extending from anterior eyes to base of the cephalothorax.....*danieli*
Cephalothorax not provided with a broad longitudinal deep brown patch3
3. Male palp elongated in shape and the chelicera not so strong in comparison to the cephalothoracic region*indicus*
Male palp not elongated and the chelicera is strong 4
4. Epigynal plate is rounded provided with two tube-like structure, crosswise each other
.....*khandalensis*
Epigynal plate is not rounded and not provided with two tube-like structure5
5. Dorsum of the abdomen provided with number of reddish brown patches and look like a panther
.....*pantharae*

39. *Rhene decoratus* Tikader

1977. *Rhene decoratus* Tikader, *Proc. Indian Acad. Sci.*, 85(5) : 276.
1981. *Rhene decoratus* : Tikader & Biswas, *Rec. zool. surv. India, occ. pap.* No. 30(1) : 104.

Material examined : 1 (F), Asansol, Dist. Bardhaman, West Bengal, 21.ii. 1986, coll. B.K. Biswas

& party.

Distribution : India : West Bengal (Dist. Calcutta, Bardhaman); Maharashtra.

40. *Rhene danieli* Tikader

1973. *Rhene danieli* Tikader, *Proc. Indian Acad. Sci.*, 78 (2) : 68.

1981. *Rhene danieli* : Tikader & Biswas *Rec. zool. Surv. India, occ pap.* 30(1) : 103.

Distribution : India : West Bengal (Dist. Calcutta); Maharashtra.

42. *Rhene khandalaensis* Tikader

1977. *Rhene khandalaensis* Tikader, *Proc. Indian Acad. Sci.*, 85 (5) : 274.

Material examined : 1 (F), Kalyani, Dist. Nadia, West Bengal, 15.ii. 1986, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dist. Nadia) (New record); Maharashtra.

43. *Rhene pantharae* sp. nov.
(Figs. 29-31)

General : Cephalothorax and legs deep brown, abdomen light brown in colour. Total length 6.30mm, Carapace 2.60mm. long, 2.20 mm. wide; abdomen 3.70 mm. long, 2.70 mm. wide.

Cephalothorax : Wider than long, clothed with thick mouse hair and prominent lance-shaped fovea present at the posterior part of the cephalic region. Anterior and posterior end slightly narrower than middle. Eyes are black, except anterior eyes which are pearly white. Anterior row slightly recurved. Anterior and posterior lateral eyes are nearly same size; second pair of eyes small and situated more closer to the anterior lateral than to the posterior eyes. Base of the eyes encircled by black patches. Posterior eyes situated far behind the anterior group of eyes. Sternum nearly oval, narrow in front, clothed with fine hair. First pair of legs conspicuously stout and dorsal side of the femur bulging prominently. Tibiae and metatarsi I provided with two pairs of ventral spines.

Abdomen : Short, longer than wide, clothed with fine hair. Dorsum without sigilla and provided with number of redishbrown patches which seems to be a panther-like. Ventral side uniformly light colour. Epigynal plate not rounded, generally elongated in shape; provided with two copulatory opening.

Holotype : Female in spirit, deposited at Zoological Survey of India, Calcutta, Regd. No. 5369/18.

Type-locality : Ranaghat, Dist. Nadia, West Bengal, India, 16.ii. 1986, coll. Kajal Biswas.

This species is similar to *Rhene khandalaensis* Tikader but differs from this on the following characters : (i) Cephalothorax provided with prominent lance-shaped fovea situated at the posterior part

of the cephalic region where as in *R. Khandalaensis* there is no such type of fovea present. (ii) Dorsum provided with number of redish-brown patches which scatteredly distributed whereas in *R. khandalaensis* there is no such type of patches present. (iii) Epigyne and internal genitalia are also structurally different.

Genus 18. *Salticus* Latreille 1804

1804. *Salticus* Latreille, *Nouv., Dict. H.N.*, 24 : 135.

Type-species : *Salticus scenicus* Clerck

Distribution : Cosmopolitan except Australia.

44. *Salticus ranjitus* Tikader

1967. *Salticus ranjitus* Tikader, *Proc. Indian Acad, Sci.* 66(4) : 117.

Diagnosis : Cephalothorax longer than wide, somewhat rectangular, clothed with fine black hair; cephalic and anterior thoracic regions high and flat, posterior thoracic region abruptly bent behind. Eyes pearly white; anterior row slightly recurved, and anterior median eyes larger than laterals by more than four times. Middle row of eyes very small and situated nearly equidistant from anterior and posterior rows. Chelicerae provided with one large tooth on inner and two smaller teeth on outer margin. Sternum oval, black clothed with hair. Abdomen nearly egg-shaped, dorsum provided with irregular minute white dots; posterior end with transverse conspicuous white band.

Material examined : 11 (F), 4 (M), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. Bijan Biswas; 2 (F), 1 (M), Basirhat, Dist. North 24-Parganas, West Bengal, 28.iii.1984, coll. B.K. Biswas & party; 2 (F) 1 (M), Baikunthapore, Dist. North 24-Parganas, West Bengal, 29.iii. 1984, coll. B.K. Biswas & party; 3 (F), 1 (M), Bongaon, Dist. North 24-Parganas, West Bengal, 31.iii. 1984, coll. B.K. Biswas & party; 2(F), 1 (M), Chilapata forest, Dist. Jalpaiguri, West Bengal, 9.i. 1985, coll. Bijan Biswas; 2 (F), 1 (M), Gossanimari forest, Dist. Koch Bihar, West Bengal, 10.i. 1985, coll. Bijan Biswas; 2 (F), 1 (M), Jaldapara sanctuary, Dist. Jalpaiguri, West Bengal, 14.i. 1985, coll. Bijan Biswas; 4 (F), 1 (M), Rajabhatkhawa, Dist. Jalpaiguri, West Bengal, 16.i. 1985, coll. Bijan Biswas; 2 (F), 1 (M), Boxa forest, Dist. Jalpaiguri, West Bengal, 17.i. 1985, coll. Bijan Biswas, 1 (F), 1 (M), Joygaon, Dist. Koch Bihar, West Bengal, 12.i. 1985, coll. Bijan Biswas; 2 (F), Kalyani, Dist. Nadia, West Bengal, 15.ii. 1986, coll. B.K. Biswas & party 2 (F), 2 (M), Ranaghat, Dist. Nadia, West Bengal, 16.ii. 1985, coll. B.K. Biswas & party; 2(F), Durgapore, Dist. Barddhaman, West Bengal, 24.ii. 1986, coll. B.K. Biswas & party; 3 (F), 2 (M), Botanical Garden, Sibpore, Dist. Haora, West Bengal, 5.ix. 1986, coll. B.K. Biswas & party; 2 (F), Mahadebpur (Gour) Dist. Maldah, West Bengal, 3.xi. 1988, coll. B.K. Biswas & party; 6(F), Lalbagh, Dist. Murshidabad, West Bengal, 13.xi. 1988, coll. Bijan Biswas; 4 (F), Domkol, Dist. Murshidabad, West Bengal, 15.xi. 1988, coll. B.K. Biswas & party; 4 (F), Chandrakona, road, Dist. Medinipur, West Bengal, 25.xi. 1988, coll. B.K. Biswas & party; 3 (F), Barakar, Dist. Barddhaman, West Bengal, 22.ii. 1986, coll. B.K. Biswas & party.

Distribution : India : West Bengal, (Dists. Calcutta, Barddhaman, Koch Bihar, Haora, Jalpaiguri, Maldah, Murshidabad, Nadia, South & North 24-Parganas); Maharashtra, Punjab, West Sikkim.

Genus 19. *Zygoballus* Peckham 1885

1885. *Zygoballus* Peckham, *Proc. Nat. Hist. Soc. Wis.*, 1 : 82.

Type-species : *Zygoballus rufipes* Peckham

Distribution : India, America.

45. *Zygoballus narmadaensis* Tikader

1975. *Zygoballus narmadaensis* Tikader, *Proc. Indian Acad. Sci.*, 81(4) : 151.

Diagnosis: Cephalothorax, abdomen are deep brown, legs brownish-green in colour. Cephalothorax high and flat on the top, a little longer than wide, and behind with a very steep thoracic declivity over which the abdomen projects, clothed with mixture of grey and black hair. Posterior portion of cephalothorax slightly narrow than the anterior. Eyes of anterior row close together in a slightly recurved row, all eyes are pearly-white. Sternum oval, narrow in front clothed with fine pubescence. Chelicerae short, light brown, with a single tooth on inner margin. Legs are strong and stout, clothed with hair and spines. Abdomen is longer than wide, narrowing behind, with fine grey and black hair. Dorsum provided with two pairs of sigilla.

Materials examined : 1 (F), Barti-bill, Dist. North 24-Pargnas , West Bengal, 23.viii. 1988, coll. S. Bhuinya; 1 (F), Suri, Dist. Birbhum, West Bengal, 6.x. 1987, coll. M. Prasad; 1 (F), Kamarpukur, Dist. Hugli, West Bengal, 27.ii. 1986, coll. Kajal Biswas.

Distribution : India : West Bengal (New record) (Dists. Birbhum, Hugli, North 24-Parganas); Madhya Pradesh.

Family THOMISIDAE

Subfamily MISUMENINAE

In this sub-family the tarsi of the 1st and second pairs of legs are not furnished with scopulae in either sex. I and II legs much longer than III and IV, the hair of the body are filiform or rod-shaped or erect; and the upper margin of the furrow of the chelicerae is not provided with tooth. This sub-family includes the major species of carb spiders.

Key to the genera of the subfamily Misumeninae

- 1. Ant like spider *Amyciaea*
- Not ant like spider 2
- 2. Cephalothorax wider than long *Bomis*

- Cephalothorx not wider than long.....3
3. Cephalic region as wider as thoracic region*Camarius*
 Cephalic region narrower than thoracic region.....4
4. Body covered with conspicuous spines*Diaea*
 Body not covered with conspicuous spines5
5. Body clothed with some cleavate setae*Oxyptila*
 Body not clothed with some cleavate setae6
6. Tarsal claws of I leg with 6-12 teeth*Synema*
 Tarsal claws of I leg without 6-12 teeth7
7. Abdomen widened and truncated behind*Thomisus*
 Abdomen not widened and not truncated behind8
8. Anterior median eyes closer to the lateral eyes than to each other*Xysticus*

Genus 20. *Amyciaea* Simon 1885.

1885. *Amyciaea* Simon, *Bull. Soc. zool. Fr.*, 10 : 447.
 1963. *Amyciaea* : Tikader, *J. Univ. Poona, Sci. Tech.*, 24:52.
 1890. *Amyciaea* : Tikader, *Fauna of India Spider : Araneae* 1(1) : 108-109.

Type-species : *Amyciaea forticeps* (Cambridge)

Distribution : Cosmopolitan except Australia.

46. *Amyciaea forticeps* (Cambridge)

1873. *Amycle forticeps* Cambridge, *Proc. zool. Soc., London*, 1873 : 122.
 1980. *Amyciaea forticeps* : Tikader, *Fauna of India, Spiders : Araneae*1(1) : 169-170.

Diagnosis : Cephalothorax as long as wide, redish brown in colour. Cephalic Region is high and sloping in front, clothed with hair. Eyes are rounded, ringed with brown tubercles; both rows recurved but posterior row strongly recurved, lateral eyes conspicuously larger than medians; ocular quad slightly longer than wide; space of the anterior median eyes a little smaller than that of posterior. Legs are not very strong, like ants redish brown in colour. Abdomen is more or less elliptical, narrowed in front, a V-shaped dark brown margin on the anterior half of abdomen. Apparently the spider looks like a red ant.

Material examined: 1 (F), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1 . vi. 1984, coll. B.K. Biswas & party; 6(F), 2 (M), Rajabhatkhawa Dist. Jalpaiguri, West Bengal, 16.i. 1985, coll. Bijan Biswas; 2 (F), 1 (m), Boxa forest, Dist. Jalpaiguri, West Bengal, 17.i. 1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Jalpaiguri, North & South 24-Parganas) (New record) Maharashtra.

Genus 21. *Bomis* Koch 1873

1873. *Bomis* Koch, *Ar. Austr.*, 10 : 528.

1981. *Bomis* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 82.

Type-species : *Bomis larvata* Koch

Distribution : India , North Hollandia.

Key to the species of the genus *Bomis* Koch

1. Abdomen nearly rectangular, provided with white pattern of closely set minute tubercles.....
*bengalensis*
- Abdomen not rectangular or not provided with white pattern of closely set tubercles.....2
2. Abdomen nearly semicircular in shape, clothed with characteristic white spine-like tubercles decorated on the whole area of the dorsum*calcuttaensis*

47. *Bomis bengalensis* Tikader

1962. *Bomis bengalensis* Tikader, *J. Linn. Soc.*, 44(300) : 580.

1980. *Bomis bengalensis* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) : 140-141.

1981. *Bomis bengalensis* : Tikader & Biswas, *Rec. zool. Surv. India occ. pap.* No. 30(1) 82-83.

Distribution : India : West Bengal (Dist. Calcutta).

48. *Bomis calcuttaensis* Biswas & Majumder

1981. *Bomis calcuttaensis* Biswas & Majumder, *Bull. zool. Surv. India* 4 (3) : 273.

Distribution : India : West Bengal (Dist. Calcutta).

Genus 22. *Camaricus* Thorell 1887

1887. *Camaricus* Thorell, *Ann. Mus. Civ. Gen.*, : 261.

1977. *Camaricus* : Tikader, *Rec. zool. Surv. India*, 72 (1-4) : 192.

1980. *Camaricus* : Tikader, *Fauna of India, Spiders : Araneae*, 1(1) : 174.

1981. *Camaricus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 83.

Type-species : *Camaricus maugei* (Walck.)

Distribution : India, Tropical Africa and Malayasia.

49. *Camaricus formosus* Thorell

1980. *Camaricus formosus* : Tikader, *Fauna of India Spiders ; Araneae*, 1(1) : 175-176.
 1981. *Camaricus formosus* : Tikader and Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 83-84.

Diagnosis : Cephalothorax red, legs light greenish, abdomen dark brown in colour. Cephalothorax is high clothed with black hair. Centre of cephalothorax provided with deep brown patch but in male no such patch. Posterior row of eyes situated adjacent to lateral eyes. Legs are robust, clothed with hair and spines and ornamented with black patches. Tibia and metatarsi of I and II provided with three pairs of ventral spines. Chelicerae is moderate, dark brown in colour. Sternum heart-shaped, pointed behind, clothed with fine hair. Abdomen longer than wide, widest behind the middle, clothed with black hair.

Material examined : 9(F), 3 (M), Basirhat, Dist. North 24-Parganas, West Bengal, 28.iii. 1984, coll. B.K. Biswas & party; 8(F), Baikunthapur, Dist. North 24-Parganas, West Bengal, 29.ii. 1984, coll. B.K. Biswas & party; 5 (F), Rajabhatkhawa, Dist. Jalpaiguri, West Bengal, 16.i.1985, coll. Bijan Biswas; 7(F), 2 (M), Plassey, Dist. Nadia, West Bengal, 19.ii. 1986, col. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Jalpaiguri, Nadia, North 24-Parganas); Karnataka; Maharashtra; Andaman Island.

Genus 23. *Diaea* Thorell 1869

1869. *Diaea* Thorell, *Eur. Spid. Etc.*, : 184.
 1935. *Diaea* : Dyal, *Bull. Dep. zool. Punjab Univ.*, 1 : 199.
 1966. *Diaea* : Tikader, *Proc. Indian Acad. Sci.* 64(1) : 59.
 1980. *Diaea* : Tikader, *Fauna of India, Spiders : Araneae*, 1(1) : 105.

Type-species : *Diaea dorsata* (Fabricus)

Distribution : Cosmopolitan except Australia

50. *Diaea bengalensis* Biswas & Majumder

1981. *Diaea bengalensis* Biswas & Majumder, *Bull. zool. Surv. India*, 4(3) : 271-273.

Diagnosis : Cephalothorax and abdomen are light to deep brown, legs light brown in colour. Cephalothorax is longer than wide, convex narrowing in front, clothed with hair, lateral two sides provided with conspicuous longitudinal light brown patches extending from base of lateral eyes to near the base of thorax, mid-dorsally with a longitudinal light brown broad patch extending from ocular area to base of thorax. Eyes are black, lateral eyes situated on shallow tubercles, ocular quad wider than long and narrowing in front. Clypeus moderate sternum is heart-shaped, clothed with hair, leg I & II conspicuously

long clothed with hair and spines, II pair of legs darker than I pair, metatarsi of I and II pair of legs provided with four pairs of ventral spines. III & IV pairs of legs comparatively very short and without ventral spines. Abdomen is oval and broader behind, clothed with spine like hair, spines arranged in longitudinal rows. On dorsum there present two longitudinal white patches on the anterolateral sides. Three pairs of sigillae are present on the dorsum.

Material examined : 4 (F) Rajabhatkhawa, Dist. Jalpaiguri, West Bengal, 16.i. 1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Jalpaiguri).

Genus 24. *Oxyptila* Simon 1864

1864. *Oxyptila* Simon, *Hist. Nat. Ar.*, 1 : 439.

1960. *Oxyptila* : Tikader, *Proc. zool. Soc. Calcutta*, 13(2) : 115.

1980. *Oxyptila* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) : 79-80.

Type-species : *Oxyptila brevipes* (Hahn.)

Distribution : All tropical and sub-tropical countries and North temperate region of the world.

Key to the species of the genus *Oxyptila* Simon

1. Abdomen uniform light brown *manii*
- Abdomen not uniform light brown 2
2. Abdomen with two dark grey transverse bands *reenae*

51. *Oxyptila manii* Tikader

1960. *Oxyptila manii* Tikader, *Proc. zool. Calcutta*, 13(2) : 115.

1980. *Oxyptila manni* : Tikader, *Fauna of India, Spiders : Araneae*, 1(1) : 82-83.

Distribution : India : West Bengal (Dist. North 24-Pargnas)

52. *Oxyptila reena* Basu

1964. *Oxyptila reena* Basu, *Sci. & Culture, Calcutta*, 30 : 154.

Distribution : India : West Bengal (Dist. Hugli).

Genus 25. *Synaema* Simon 1864

1864. *Synaema* Simon, *Hist. Nat. Ar.*, 1 : 70.

1940. *Synaema* : Comstock, *The Spider Book*, New York : 553.
 1962. *Synaema* : Tikader, *J. Linn. Soc. London*, 44(300) : 578.
 1980. *Synaema* : Tikader, *Fauna of India, Spiders : Araneae*, 1(1) : 134.

Type-species : *Synaema globosum* (Fabr.)

Distribution : Cosmopolitan except Australia.

Key to the species of the genus *Synaema* Simon

1. Tibia of I and II legs with two pairs of ventral spines *brunettii*
 Tibia of I and II legs with more than two pairs of ventral spines. 2
2. Tibiae of I & II legs with four pairs of ventral spines *decorata*

53. *Synaema brunettii* Tikader

1962. *Synaema brunettii* Tikader, *J. Linn. Soc., London*, 44 (300) : 578.
 1980. *Synaema brunettii* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) : 134-136.

Distribution : India : West Bengal (Dist. Darjiling).

54. *Synaema decorata* Tikader

1960. *Synaema decorata* Tikader *J. Bombay Nat. Hist. Soc.*, 57(1) : 174.
 1980. *Synaema decorata* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) : 136-137.
 1981. *Synaema decorata* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 81-82.

Distribution : India : West Bengal (Dist. Calcutta); Karnataka; Maharashtra.

Genus 26. *Thomisus* Walckenaer 1805

1805. *Thomisus* Walckenaer, *Tabl. Aron.*, : 28.
 1935. *Thomisus* : Dyal, *Bull. Dept. zool. Punjab Univ.*, 1 : 200.
 1962. *Thomisus* : Tikader, *J. Linn. Soc.*, 44(300) : 569.
 1980. *Thomisus* : Tikader, *Fauna of India, Spiders ; Araneae*, 1 (1) : 30.
 1981. *Thomisus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 75.

Key to the species of the genus *Thomisus* Walckenaer

1. Broadest end of the abdomen without transverse marking..... *beutifularis*
 Broadest end of the abdomen with transverse marking 2
2. Abdomen with a three pairs of longitudinally arranged reddish brown spots. *bulani*

- Abdomen without three pairs of longitudinally arranged spots 3
3. Cephalothorax with lateral longitudinally deep brown bands..... *cherapunjeus*
Cephalothorax without lateral longitudinal deep brown bands 4
4. Abdomen with paired elliptical black spots *dhakuriensis*
Abdomen without paired elliptical black spots 5
5. The genital opening very small furnished on each side by minute tubercle..... *elongatus*
The genital opening not very small furnished on each side by minute tubercle..... 6
6. Abdomen basally with a triangular black marking *katrajghatus*
Abdomen without triangular black marking 7
7. Abdomen with three paired irregular-shaped black patches *memae*
Abdomen without three irregular-shaped black patches. 8
8. Broadest portion of the abdomen tuberculated laterally and black spot present on the tubercle.....
..... *projectus*
Broadest portion of the abdomen not tuberculated laterally, black spot not present on tubercle..... 9
9. Abdomen with a pair of shoulder tubercle, each with a black spots situated inwardly in the middle
..... *pugilis*
Abdomen without a pair of shoulder tubercle and black spots 10
10. Abdomen with a transverse black band *sorajaii*

55. *Thomisus beutifularis* Basu

1963. *Thomisus beutifularis* Basu, *J. Asiat. Soc. Bengal*, 5(1-2) : 23.
1980. *Thomisus beutifularis* : Tikader, *Fauna of India, Spiders : Araneae*, 1(1) : 52-54.

Distribution : India : West Bengal (Dist. Calcutta).

56. *Thomisus bulani* Tikader

1970. *Thomisus bulani* Tikader, *J. Bombay nat. Hist. Soc.*, 59(1) : 198.
1980. *Thomisus bulani* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) : 50-51.

1981. *Thomisus bulani* : Tikader & Biswas, *Rec. zool. India occ. pap.* No. 30(1) : 77-78.

Distribution : India : West Bengal (Dist. Calcutta).

57. *Thomisus cherapunjeus* Tikader

1966. *Thomisus cherapunjeus* Tikader, *Proc. Indian Acad. Sci.*, 64(1) : 54.
 1980. *Thomisus cherapunjeus* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) : 54.
 1981. *Thomisus cherapunjeus* : Tikader & Biswas, *Rec. zol. Surv. India, occ. pap.* No. 30(1) : 78.

Distribution : India : West Bengal (Dist. Calcutta); Meghalaya.

58. *Thomisus dhakuriensis* Tikader

1960. *Thomisus dhakuriensis* Tikader, *J. Bombay nat. Hist. Soc.*, 57 : 180.
 1971. *Thomisus dhakuriensis* : Tikader, *Mem. zool. Surv. India*, 15(3) : 18.
 1981. *Thomisus dhakuriensis* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 76.

Distribution : India : West Bengal (Dist. Calcutta).

59. *Thomisus elongatus* Stoliczka

1869. *Thomisus (Xysticus) (Sic) elongatus* Stoliczka, *J. Asiat. Soc. Bengal*, 38 : 227.
 1971. *Thomisus elongatus* : Tikader, *Mem. zool. Surv. India*, 15(3) : 25.
 1980. *Thomisus elongatus* : Tikader, *Fauna of India, Spiders : Araneae*, 1(1) : 56-58.
 1981. *Thomisus elongatus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 79.

Material examined : 1 (F), Villadih village, Dist. Puruliya, West Bengal, 18.ix. 1987, coll. M. Prasad.

Distribution : India : West Bengal (Dists. Calcutta, Puruliya).

60. *Thomisus katrajghatus* Tikader

1963. *Thomisus katrajghatus* Tikader, *Proc. Indian Acad. Sci.*, 58(5) : 259.
 1971. *Thomisus katrajghatus* : Tikader, *Mem. zool. Surv. India*, 15(3) : 17.
 1981. *Thomisus katrajghatus* : Tikader & Biswas, *Rec. Zool. Surv. India, occ. pap.* No. 30(1) : 74-75.

Material examined : 4(F), Barasat, Dist. North 24-Parganas, West Bengal 30.iii. 1984, coll. Bijan Biswas; 1 (F), Basirhat, Dist. North 24-Parganas, 28.iii. 1984, coll. Bijan Biswas & party; 3(F), Baikunthapur, Dist. North 24-Parganas, 28.iii. 1984, coll. Bijan Biswas; 1 (F), Petrapole, Dist. North 24-Parganas, West Bengal, 2.iv. 1984, coll. Bijan Biswas & party; 6(F) Bongaon, Dist. North 24-Parganas, West Bengal, 31.iii. 1984, coll. Bijan Biswas; 1 (F) Jaldapara Sanctuary, Dist. Jalpaiguri, West Bengal, 14.1.1985, coll. Bijan Biswas; 3(F), Ranaghat, Dist. Nadia, West Bengal 16.ii. 1986, coll. Bijan Biswas & party; 1(F), Tarakeswar, Dist. Hugli, West Bengal, 28.ii.1986, coll. Bijan Biswas & party; 1 (F) Kalyani, Dist. Nadia, West Bengal, 15.ii. 1986, coll. Bijan Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Hugli, Jalpaiguri, Nadia, North 24-Parganas); Maharashtra.

61. *Thomisus memae* Sen & Basu

1963. *Thomisus memae* Sen & Basu, *Sci. & Culture, Calcutta*, 29(19) : 515.
 1980. *Thomisus memae* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) 43-44.

Distribution : India : West Bengal (Dist. Calcutta).

62. *Thomisus projectus* Tikader

1960. *Thomisus projectus* Tikader, *J. Bombay nat. Hist. Soc.*, 57 : 182.
 1981. *Thomisus projectus* : Tikader & Biswas *Rec. zool. Surv. India, occ. pap.* No. 30(1) 75-76.

Distribution : India : West Bengal (Dist. Calcutta).

63. *Thomisus pugilis* Stoliczka

1969. *Thomisus (Xysticus) (Sic) pugilis* Stoliczka, *J. Asiat. Soc., Bengal*, 38 : 225.
 1971. *Thomisus pugilis* : Tikader, *Mem. zool. Surv. India*, 15(3) : 21.
 1980. *Thomisus pugilis* : Tikader, *Fauna of India, Spiders : Araneae*, 1(2) : 48-49.

Distribution : India : West Bengal (Dist. Calcutta); Punjab, Tamil Nadu.

64. *Thomisus sorajaii* Basu

1963. *Thomisus sorajaii* Basu, *Sci. & Culture, Calcutta*, 29(1) : 666.
 1980. *Thomisus sorajaii* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) : 46-48.

Distribution : India : West Bengal (Dist. Calcutta).

Genus 27. *Xysticus* Koch 1853

1853. *Xysticus* Koch, *H. Schaeff. Deutschl. Ins.*, : 35.
 1892. *Xysticus* : Simon, *Hist. Nat. Araignees*, 1(4) : 1035.
 1962. *Xysticus* : Tikader, *J. Linn. Soc.*, 44(300) : 576.
 1971. *Xysticus* : Tikader, *Mem. zool. Surv. India*, 15(3) : 44-53.
 1981. *Xysticus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 80.

Type-species : *Xysticus cristatus* Clerck

Distribution : Cosmopolitan except Australia.

Key to the species of the genus *Xysticus* Koch

1. Abdomen broader behind *bengalensis*
Abdomen not broader behind 2
2. Cephalothorax wider in front and pale green in colour *himalayaensis*
Cephalothorax not wider in front & not brown in colour 3
3. Allatum with longitudinal broad dark brown patches *hindusthanicus*
Allatum without longitudinal broad dark brown patches..... 4
4. Abdomen with more than one transverse lines *kali*
Abdomen with single transverse lines..... 5
5. Tibia I & II with two pairs of ventral spines *minutus*

65. *Xysticus bengalensis* Tikader & Biswas

1974. *Xysticus bengalensis* Tikader & Biswas, *Proc. Indian Acad. Sci.*, 80(6) : 262-263.
1980. *Xysticus bengalensis* : Tikader, *Fauna of India, Spiders : Araneae*, 1(1) : 127-129.

Distribution : India : West Bengal (Dist. Darjiling).

66. *Xysticus himalayensis* Tikader & Biswas

1974. *Xysticus himalayensis* Tikader & Biswas, *Proc. Indian Acad. Sci.* 80(6) : 265.
1980. *Xysticus himalayensis* : Tikader, *Fauna of India Spiders : Araneae*, 1(1) : 129-130.

Distribution : India : West Bengal (Dist. Darjiling).

67. *Xysticus hindusthanicus* Basu

1963. *Xysticus hindusthanicus* Basu, *J. Asiat. Soc., Bengal*, 5(1-2):23.
1980. *Systicus hindusthanicus* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) : 111-112.

Distribution : India : West Bengal (Dist. Calcutta).

68. *Xysticus kali* Tikader & Biswas

1974. *Xysticus kali* Tikader & Biswas, *Proc. Indian Acad. Sci.*, 80(6) : 265.
1980. *Xysticus Kali* : Tikader, *Fauna of India, Spiders : Araneae*, 1(1) : 130.

Distribution : India : West Bengal (Dist. Darjiling).

69. *Xysticus minutus* Tikader

1960. *Xysticus minutus* Tikader, *J. Bombay nat. Hist. Soc.*, 57(1) : 173.
 1980. *Xysticus minutus* : Tikader, *Fauna of India, Spiders : Araneae*, 1(1) : 120-127.
 1981. *Xysticus minutus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 80.

Material examined: 1, (F), Basirhat, Dist. : North 24-Parganas, West Bengal, 28.iii. 1984, coll. B.K. Biswas & party; 1(F), Barasat, Dist. North 24-Parganas, 30.iii. 1984, coll. Bijan Biswas & party : 1 (F), Botanical Garden, Dist. Haora, 5.xi. 1986, coll. Bijan Biswas; 1(F), Chandrakona Road, Dist. Medinipur, West Bengal, 25.xi. 1986, coll. Bijan Biswas & party; 1(F), Ranaghat Dist. Nadia, West Bengal, 16.ii. 1986. coll. Bijan Biswas & party.

Distribution : India : West Bengal (Dist. Calcutta, Howrah, Medinipur); Poona, Shillong, Gujarat.

1974. *Xysticus kali* Tikader & Biswas, *Proc Indian Acad. Sci.*, 80(6) : 265-266.
 1980. *Xysticus kali* : Tikader, *Fauna of India, Spiders; Anamal* 1 : 130-131.

Subfamily PHILODROMINAE

In this sub-family the tarsi of the 1st and second pair of legs furnished with scopulae. Legs are approximately equal in length except Ebo. The upper margin of the furrow of the Chelicerae armed with one or two teeth. These spiders are very active and pursue their prey with great rapidly. Most of the species live in plants, when at rest, the body is closely applied to the supporting objects with the legs stretched out separately or in parts.

Key to the genera of the subfamily Philodrominae

1. Anterior lateral eyes nearer to the anterior median eyes than to the posterior median eyes **Philodromus**
- Anterior lateral eyes not nearer to the anterior median eyes than to posterior median eyes.....2
2. Cephalothorax much longer than wide; posterior lateral eyes comparatively removed behind **Tibellus**

Genus 28. *Philodromus* Walckenaer 1825

1825. *Philodromus* Walckenaer, *Ent. Fr. Ar.*, : 86.
 1892. *Philodromus* : Simon, *Hist. Nat. Araign.*, 1 : 1063.
 1966. *Philodromus* : Tikader, *Proc. Linn. Soc.*, 177(1) : 35.
 1980. *Philodromus* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) : 181.
 1981. *Philodromus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 86.

Type-species : *Philodromus aurcolus* Clerck

Distribution : Cosmopolitan.

Key to the species of the genus *Philodromus*

1. Abdomen high, provided with lateral brown patches *assamensis*
 Abdomen not high and not provided with lateral brown patches..... 2
2. Base of the tibiae and metatarsi of all legs provided with conspicuous black patches. ... *maliniae*

70. *Philodromus assamensis* Tikader

1962. *Philodromus assamensis* Tikader, *J. Linn. Soc., London*, 44 (300) : 581.
 1980. *Philodromus assamensis* : Tikader, *Fauna of India, Spiders : Araneae* 1 (1) : 185-186.
 1981. *Philodromus assamensis* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) 86-87.

Distribution : India : West Bengal (Dist. Calcutta); Shillong; Assam.

71. *Philodromus maliniae* Tikader

1966. *Philodromus maliniae* Tikader, *Proc. Linn. Soc., London*, 177 (1) : 39-40.
 1980. *Philodromus maliniae* : Tikader, *Fauna of India, Spiders : Araneae* , 1 (1) 202-204.
 1981. *Philodromus maliniae* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap* No. 30(1) : 27.

Distribution : India : West Bengal (Dist. Calcutta); Maharashtra.

Genus 29. *Tibellus* Simon 1875

1875. *Tibellus* Simon, *Ar. Fr.*, 2 : 307.
 1962. *Tibellus* : Tikader, *J. Univ. Poona Sci. & Tech.*, 22 : 133.
 1980. *Tibellus* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) : 213.

Type-species : *Tibellus elongatus* Walckenaer

Distribution : Cosmopolitan except Australia.

72. *Tibellus elongatus* Tikader

1960. *Tibellus elongatus* Tikader, *J. Bombay nat. Hist. Soc.*, 57(1) : 176-177.
 1980. *Tibellus elongatus* : Tikader, *Fauna of India, Spiders : Araneae*, 1 (1) : 217-218.
 1981. *Tibellus elongatus* : Tikader & Biswas, *Rec. Zool. Surv. India, occ. pap* No. 30(1) : 88-89.

Diagnosis : Cephalothorax pale, greenish, eyes black, legs pale green in colour. Cephalothorax longer than wide, sparsely spined, sides about 1/4 portion which dark brown pigmented patches; clypeus medium, margin of clypeus with eight spines directed forward. Anterior row of eyes form a wide hexagonal area, posterior lateral eyes remote from other eyes and the longest. Legs are long, spined bearing numerous

black pigmented dots, tibia I and II provided with three pairs of ventral spines in the apical with three fourth portion. Abdomen long cylindrical spined, narrower behind, very slightly overlapping the posterior region of cephalothorax, with a long median black pigmented line from the median lines to the lateral margin. These four pairs almost parallel with each other.

Material examined: 1 (F), Basirhat, Dist. North 24-Parganas, West Bengal, 30. iii. 1984, coll. Bijan Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, North 24-Parganas); Maharashtra.

Family HETEROPODIDAE

Genus 30. *Heteropoda* Latreille 1804

1804. *Heteropoda* Latreille, *Nouv. Diet.d' Hist. Nat.*, 34 : 135.

1977. *Heteropoda* : Tikader, *Rec. zool. surv. India*, 72 : 189.

Diagnosis : Carapace nearly as wide as long, moderate or very high posteriorly, its upper surface nearly flat; head lightly depressed in front; eyes of posterior line recurved, the laterals larger and prominent; eyes of anterior line straight or procurved, laterals larger than medians; quadrangle longer than wide, narrow in front. Maxillae not crested. Vulva consisting of pair of lobes, usually separated by a median skeletal piece, nearly in contact.

Type-species : *Heteropoda venatoria* Linn.

Distribution : From India eastward to Australia.

Key to the species of the genus *Heteropoda* Latreille

1. Carapace not strongly elevated behind.....*leprosa*
Carapace strongly elevated behind..... 2
2. Abdomen black, with yellow border below.....*prompta*
Abdomen not darker beneath than at sides..... 3
3. Median sclerite of vulva hammer-shaped*sexpunctata*

73. *Heteropoda leprosa* Simon

1884. *Heteropoda leprosa* Simon, *Ann. Mus. Genova*, 20 : 336.

1931. *Heteropoda leprosa* : Gravely, *Rec. Indian Mus.*, 33(3) : 252.

Material examined : 1 (F), Rajabhatkhawa, Dist. Jalpaiguri, West Bengal, 16.i. 1985, coll. Bijan

Biswas.

Distribution : India : West Bengal (Dists. Darjiling, Jalpaiguri); Assam; Himachal Pradesh; Tamil Nadu; Nicobars; Uttar Pradesh. Elsewhere : Sri Lanka; Burma.

74. *Heteropoda prompta* O.P. Cambridge

1885. *Heteropoda prompta* O.P. Cambridge, *Araneiden, Second Yarkand Exd.*, : 71.

1931. *Heteropoda prompta* : Gravely, *Rec. Indian, Mus.*, 33(3) : 256.

Material examined : 1 (F), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Darjiling, North 24-Parganas); Andaman Islands; Himachal Pradesh; Uttar Pradesh.

75. *Heteropoda sexpunctata* Simon

1885. *Heteropoda sexpunctata* Simon, *Bull. soc. zool. Fr.*, : 14.

1931. *Heteropoda sexpunctata* : Gravely, *Rec. Indian Mus.*, 33(3) : 250.

Material examined : 1(F), Dist. South 24-Parganas, West Bengal, 25.iii. 1984, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Birbhum, Hugli, South 24-Parganas); Bihar; Karnataka; Orissa; Tamil Nadu; Uttar Pradesh.

Family CLUBIONIDAE

Key to the Subfamilies of the family Clubionidae

1. Labium usually much longer than broad exceeding half the length of the endites. The 1st tibia never provided with a series of moveable spines ***Clubioninae***

Labium not or scarcely longer than broad, more or less half as long as endites, the 1st tibia often provided with a series of moveable spines 2

2. The apex of the endites rounded, never angulate outside and not depressed at the middle, sternum distinctly margined; the tarsi of the anterior legs are not usually long..... ***Corinninae***

The apex of the endites sub-angulate forming an angle outside and slightly depressed at the middle; the tarsi of the anterior legs usually long ***Micarrinae***

Subfamily CLUBIONINAE

Key to the genera of the Subfamily Clubioninae

1. Cephalothorax with fovea. Anterior legs shorter than posterior legs; lateral eyes both anterior and posterior not close to each other ***Clubiona***

- Cephalothorx without fovea if present very inconspicuous. Anterior legs longer than posterior legs. Lateral eyes both anterior and posterior very close to each other. 2
2. Retrolateral apophysis of the male palp with single hooked structure and the cymbium with long spur at its base *Cheiracanthium*
- Retrolateral apophysis of the male palp with double hooked structure and its cymbium without spur at its base 3
3. Very smaller in size. The posterior median eyes widely separated and longer than all other eyes.....
..... *Simalio*

Genus 31. *Clubiona* Latreille 1804.

1804. *Clubiona* Latreille, *Nouv. Diet. Hist. Nat.*, 24 : 134.
 1976. *Clubiona* : Tikader, *J. Bombay nat. Hist. Soc.* 73(1) : 176.
 1981. *Clubiona* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 68.
 1984. *Clubiona* : Biswas, *Bull. zool. Surv. India*, 6 (1-3) : 119.

Type-species : *Clubion pallidula* Clerck

Distribution : All tropical countries of the world.

Key to the species of the genus *Clubiona* Latreille

1. Cleft of vulva with longitudinal marking; no "V" shaped structure present in front. *analisa*
- Cleft of the vulva with transverse marking, more or less "V" shaped structure present in front..... 2
2. Legs pale yellow, tarsi legs scopulated femer iv curved dorsally..... *bengalensis*
- Legs reddish brown, tarsi more scopulated femur iv curved ventrally..... 3
3. Male palp very short and rounded *boxaensis*
- Male palp not very short and longer 4
4. Abdomen spindle-shaped, the posterior half with 'V' shaped brownish ornamentation..... *drassodes*
- Abdomen oval in shape, posterior half without 'V' shaped ornamentation..... 5
5. Eyes of the anterior median pearly white in colour and slightly smaller than anterior..... *filicata*
- Eyes of the anterior median blackish in colour, slightly longer than the anterior laterals..... 6

6. Fovea present at the middle of the carapace, lateral striae present, encircling the median fovea.....
 *ludhianaensis*
- Fovea absent at the middle of the carapace, lateral striae absent..... 7
7. Tarsi usually long with short claws *pogonias*
- Tarsi usually short with long claws 8
8. Labium yellowish in colour, broader anterior end, provided with 6 long black spines..... *shillongensis*

76. *Clubiona analis* Thorell

1895. *Clubiona analis* Thorell, *Spider of Burma*, : 42.

1981. *Clubiona analis* : Tikader & Biswas, *Rec. zool. Surv. occ. pap.* No. 30(1) : 68.

Material examined : 1 (F), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. North 24-Parganas). Elsewhere : Burma.

77. *Clubiona bengalensis* Biswas

1984. *Clubiona bengalensis* Biswas, *Bull. zool. Surv. India*, 6(1-3) : 119.

Distribution : India : West Bengal (Dist. : Calcutta), (Type locality); Assam.

78. *Clubiona boxaensis* sp. nov. (Figs. 32-35.)

General : Cephalothorax and legs deep brown, abdomen greyish in colour Total length 4.60mm. Carapace 1.80 mm. long, 1.60 mm. wide; abdomen 2.80mm. long, 1.80 mm. wide.

Cephalothorax : Longer than wide, broad at the middle clothed with fine hair. Conspicuous fovea situated just below the median half of the cephalothorax. Eyes more or less same size, anterior row slightly recurved, posterior usually longer than the anterior row, narrow anteriorly and broad posteriorly. Chelicerae moderately strong, longer than wide inner margin provided with 2 similar teeth and outer margin provided with 3 dissimilar teeth. Maxilla longer than broad scopulated anteriorly. Labum longer than broad, more or less parallel. Sternum oval clothed with fine hair pointed behind. Legs long and strong, tarsi more scopulated, femur IV curved ventrally. Male palp very short and rounded, without apophysis.

Abdomen : Longer than wide, clothed with fine hair. Dorsum provided with deep brown patches at the middle. Ventral side lighter than dorsum. Epygne more or less elongated with conspicuous copulatory opening.

Holotype : Female in spirit, Paratype three females, Allotype two male deposited at Zoological Survey of India, Calcutta, Regd. Nos. 5403-5405/18.

Type-locality : Boxa forest, Dist. Jalpaiguri, West Bengal, India, 17.i. 1985, coll. Bijan Biswas.

This species resembles to *Clubiona bengalensis* Biswas but differs from that due to the following particulars (1) The legs redish brown and the tarsi more scopulated where as in *C. bengalensis* the legs pale yellow in colour and the tarsi not scopulated (2) The femur IV curved ventrally where as in *C. bengalensis* the femur IV not curved ventrally (3) Epigyne is structurally different.

79. *Clubiona drassodes* Cambridge

1874. *Clubiona drassodes* Cambridge, *Proc. zool. Soc., London*, : 414.

1931. *Clubiona drassodes* : Gravely, *Rec. Indian Mus.*, 33(3) : 262.

Material examined : 1 (F), Barddhaman Agricultural farm, Dist. Barddhaman, West Bengal, 12.i. 1982, coll. S.C. Majumder; 1(M), B. Garden, Dist. Haora, West Bengal, 3.iii. 1982 coll. S.C. Majumder.

Distribution : India : West Bengal (Dists. Barddhaman, Haora); Dehra Dun (U.P.); Saran (Bihar); Belgaon.

80. *Clubiona filicata* Cambridge

1874. *Clubiona filicata* Cambridge, *Proc. zool. Soc. London*, : 413.

1981. *Clubiona filicata* Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 69.

Material examined : 3 (F), Gopalpur, Dist. North 24-Parganas, West Bengal, 3.iv. 1984, coll. B.K. Biswas & party; 1 (M), Basanti, Dist. South 24-Parganas, West Bengal 25.iii. 1984, coll. B.K. Biswas & party 1 (F), Petrapole, Dist. North 24-Parganas, West Bengal, 2.iv. 1984, coll. B.K. Biswas & party; 1 (M), Arambagh, Dist. Hugli, West Bengal, 26.ii. 1986, coll. B.K. Biswas & party, 1 (M), Durgapur, Dist. Barddhaman, West Bengal, 24.ii. 1986, coll. B.K. Biswas & party; 1 (F), Chandur forest, Arambagh, Dist. Hugli, West Bengal, 26. ii. 1986, coll. B.K. Biswas & party, 1 (F), Asansol, Dist. Barddhaman, West Bengal, 22.ii. 1986, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Barddhaman, Hugli, North & South 24-Parganas); Tamil Nadu.

81. *Clubiona ludhianaensis* Tikader

1976. *Clubiona ludhianaensis* Tikader, *J. Bombay nat. Hist. Soc.*, 73(1) : 177-178.

Material examined : 1 (F), Chandur forest, Arambagh, Dist. Hugli, West Bengal, 26.ii. 1986, coll. B.K. Biswas & party; 1 (F), Barti Bill, Dist. North 24-Parganas, West Bengal, 23. viii. 1988, coll. S. Bhuinya; 1 (M), Santiniketan, Dist. Birbhum, West Bengal, 2.v. 1988, coll. N.K. Sukul.

Distribution : India : West Bengal, (Dists. Birbhum, Hugli, North 24-Parganas (New record); Punjab.

82. *Clubiona pogonias* Simon

1906. *Clubiona pogonias* Simon, *Ann. Soc. Ent. Er.*, 76 : 312.

Material examined : 3 (F), Darjiling, Eastern Himalaya, West Bengal, India, Reg. No. 23617 Paris.

Distribution : India : West Bengal (Dist. Darjiling).

83. *Clubiona shillongensis* Majumder & Tikader,

1991. *Clubiona shillongensis* Majumder & Tikader, *Rec. zool. Surv. India., occ. pap.* No. 102 : 39-41.

Material examined : 1 (F), Darjiling, Dist. Darjiling, West Bengal, 1.iv. 1974 coll. P.K. Maity.

Distribution : India : West Bengal (Dist. Darjiling) (New record); Meghalaya; Tamil Nadu.

Genus 32. *Cheiracanthum* Koch, C.L.

1939. *Cheiracanthum* Koch, *C.L. Die. Arach. Sechster Band.*, : 9.

1981. *Cheiracanthum* : Tikader & Biswas, *Rec. zool. surv. India, occ. pap.* No. 30(1) : 69.

Type-species : *Cheiracanthum punctorium* Villers 1957

Distribution : All tropical parts of the world.

Key to the species of the genus *Cheiracanthum* Koch

1. Vulva with large cavity without dark spot, copulatory opening situated on either side of the cavity..... *himalayensis*
- Vulva without a large cavity with dark spot, copulatory opening situated between the dark spot..... 2
2. Tibia of the male palpus with short retrolateral apophysis, slightly sinous at its tip..... *melanostoma*
- Tibia of the male palpus with long and slender retrolateral apophysis, none sinous at its tip..... 3
3. Lateral eyes both anterior and posterior slightly separated from each other..... *murina*
- Lateral eyes both anterior and posterior very close to each other. 4
4. Maxillary lobe angulated distally at its inward side, scopulated by tuft of long hair..... *mysorensis*

- Maxillary lobe not angulated distally at its inward side and not scopulated.....5
5. Cymbium with long stout spur at its base, extending almost at the middle of the tibia.....*indicum*
Cymbium with rudimentary spur, not extending to the middle of the tibia.....6
6. Tegular apophysis of the palpal organ enormously developed..... *insigne*
Tegular apophysis of the palpal organ not enormously developed..... 7
7. Chelicerae more or less parallel, inner and outer margin provided with 4 and 5 teeth.....*pauriensis*
Chelicerae narrower anteriorly, inner and outer margin provided with two teeth on each.....8
8. Genital bulb or male palpus broad anteriorly, membrane of the palpal organ well developed
..... *trivialis*

84. *Cheiracanthium himalayensis* Gravely

1931. *Cheiracanthium himalayensis* Gravely, *Rec. Indian, Mus.*, 33(3) : 264.

Material examined : 1(F), Kalimpong, Dist. Darjiling, West Bengal, 30.x. 1917 coll. Sutherland; 1 (M), Kalimpong, Dist. Darjiling, West Bengal, 1914, coll. Sutherland; 1 (F), Tindharia, Dist. : Darjiling, West Bengal, October, 1915, coll. R. Drake.

Distribution : India : West Bengal (Dist. Darjiling); Gujarat; Maharashtra; Meghalaya.

85. *Cheiracanthium melanostoma* (Thorell)

1985. *Eutitha melanostoma* Thorell, *Spiders of Burma*, : 44.

1981. *Cheiracanthium melanostoma* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 71.

Material examined : 2 (M), Nilganga, Dist. North 24-Parganas, West Bengal, 27.iii. 1984, coll. B.K. Biswas & party 1 (M), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.iv. 1984, coll. B.K. Biswas & party; 1 (F), 2 (M), Gangasagar, Dist. South 24-Parganas, West Bengal, 20.iii. 1984, coll. B.K. Biswas & party; 2 (F), 1 (M), Patharpratima, Dist. South 24-Parganas, 22.iii. 1984, coll. B.K. Biswas & party; 3 (F), Gosava, Dist. South 24-Parganas; West Bengal, 26.iii. 1984, coll. B.K. Biswas & party 1 (F) Gopalpur, Dist. North 24-Parganas, West Bengal, 3.iv. 1984. coll. B.K. Biswas & party; 2 (M), Kalyani, Dist. Nadia, West Bengal, 15.ii. 1986, coll. B.K. Biswas & party; 1 (F), Ghatal, Dist. Medinipur, West Bengal, 27.xi. 1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Medinipur, Nadia, North & South 24-Parganas).
Elsewhere : Burma; Sri Lanka.

86. *Cheiracanthium murina* Thorell

1895. *Cheiracanthium murina* Thorell, *Spider of Burma*, : 406.
 1931. *Cheiracanthium murina* : Gravely, *Rec. Indian Mus.*, 33(3) : 263.

Material examined : 5 (F), Kalimpong, Dist. : Darjiling, West Bengal, 1930, coll. Sutherland.

Distribution : India : West Bengal, (Dist. Darjiling); Maharashtra. Elsewhere : Burma.

87. *Cheiracanthium mysorensis* Majumder & Tikader

1991. *Cheiracanthium mysorensis* Majumder & Tikader, *Rec. zool. Surv. India, occ. pap.* No. 102:79-81.

Material examined : 1 (F) Bagna Bandh, Sunderband, Dist. South 24-Parganas, West Bengal, 12.ix. 1983. coll. A.K. Hazra.

Distribution : India : West Bengal (Dist. South 24-Parganas) (New record); Gujarat, Karnataka, Mysore, Madhya Pradesh.

88. *Cheiracanthium indicum* Cambridge

1874. *Cheiracanthium indicum* Cambridge, *Proc. zool. Soc., London*, : 411.
 1931. *Cheiracanthium indicum*; Grovel, *Rec. Indian Mus.*, 33 (3) : 265.

Material examined : 1 (M) Kalimpong, Dist. Darjiling, West Bengal, 1931, coll. Sutherland; 1(M) Kalimpong, Dist. Darjiling, West Bengal, 31.1.1982, coll. P.K. Maity.

Distribution : India : West Bengal (Dist. Darjiling); Gujarat, Maharashtra, Sikkim, Shillong.

89. *Cheiracanthium insigne* Cambridge

1874. *Cheiracanthium insigne* Cambridge, *Proc. zool. Soc. London* : 408.
 1931. *Cheiracanthium insigne* : Gravely, *Rec. Indian Mus.*, 33(3) : 266.
 1981. *Cheiracanthium insigne* : Tikader & Biswas, *Rec. zool. Surv. India. occ. pap.* No. 30(1) : 70.

Material examined : 1 (M), Jaintia Hill, Dist. Jalpaiguri, West Bengal, 18.i. 1985, coll. Bijan Biswas; 1 (M), Sibpur, Dist. Howrah, West Bengal; 2.iii. 1981 coll. S.C. Majumder; 1 (M), Zoo-Garden; Calcutta, West Bengal, 24.ii. 1982, coll. Bijan Biswas; 1 (M), Palta, Dist. North 24-Parganas, West Bengal, 2.viii. 1978, coll. : Bijan Biswas; 1 (M), Ironside Road, Calcutta, West Bengal, 1.vi. 1981, coll. B.K. Tikader.

Distribution : India : West Bengal (Dists. Calcutta, Haora, Jalpaiguri, North 24-Parganas); Assam, Bihar, Maharashtra, Tamil Nadu. Elsewhere : Sri Lanka.

90. *Cheiracanthium pauriensis* Majumder & Tikader

1991. *Cheiracanthium pauriensis* Majumder & Tikader, *Rec. zool. Surv. India, occ. pp.* No. 102:75-77.

Material examined : 1 (F), Richmond Hills, Dist. Darjiling, West Bengal, 14.iv. 1975, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. Darjiling); Uttar Pradesh.

91. *Cheiracanthium trivialis* (Thorell)

1895. *Eutitha trivialis* Thorell, *Spider of Burma*, : 49.

1981. *Cheiracanthium trivialis* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 71.

Material examined : 1 (F), Jaldapara Sanctuary, Dist. Jalpaiguri, West Bengal, 14.i. 1985, coll. Bijan Biswas; 1 (F) Zoo Garden, Calcutta, West Bengal., 7.v. 1982, coll. Bijan Biswas; 1 (F), Gamatia, Dist. Birbhum, West Bengal, 1914, coll. Sutherland; 2 (F), 1 (M), Klimpong, Dist. Darjiling, West Bengal 1931, coll. Sutherland; 3(F), B. Garden, Dist. : Haora, West Bengal, 2.iv. 1982, coll. S.C. Majumder; 1 (F), Chittaranjan, Dist. Bardhaman, West Bengal, 23.ii. 1986, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Birbhum, Darjiling, Haora); Madhya Pradesh; Maharashtra, Tamil Nadu.

Genus 33. *Simalio* Simon

1897. *Simalio* Simon, *Hist. Nat. des Aragin.*, 2(1) : 77.

1906. *Simalio* : Simon, *Am. Soc. ent. Fr.*, 75 : 299.

Type-species : *Simalio petilus* Simon 1897

Distribution : India, Sri Lanka, Luzon, Mexico, Philippine, Trinidad.

92. *Simalio biswasi* Majumder & Tikader

1991. *Simalio biswasi* Majumder & Tikader, *Rec. zool. Surv. India, occ. pap.* No. 102:97-99.

Diagnosis : Cephalic:horax and legs yellowish brown; abdomen pale yellow in colour. Small longer than wide, narrow anteriorly and broad posteriorly, covered with thinly pubescence; provided with inconspicuous fovea situated just below the median half of the cephalothorax. Clypeus narrow. Eyes in two rows, anterior row slightly recurved, medians smaller than the laterals and close to each other than the laterals. The posterior row usually longer than the anterior row. Ocular quadrate wider than long, narrow anteriorly and broad posteriorly. Chelicerae moderate strong, pale yellow in colour, inner margin provided with two teeth and outer margin with three teeth. Sternum oval in shape, reddish brown in colour, pointed behind covered by fine silky hair. Legs relatively short and strong. Legs formula is 4123. Tibia and metatarsi of I and II provided with two pairs of ventral spines respectively. The male specimen have less

flattened abdomen than the female. Abdomen longer than wide oval in shape, broader posteriorly and narrow anteriorly. Dorsum without ornamentation covered with fine silky hair, provided anteriorly with a cluster of semierrect setae.

Material examined : 3 (F), Zoo Garden, Calcutta, West Bengal, 4.iii. 1983, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. Calcutta); (New record); Karnataka.

Subfamily CORINNINAE

Genus 34. *Oedignatha* Thorell

1881. *Oedignatha* Thorell, *Ann. Mus. Civ. Star. Nat. Genova*, 18 : 209.

1931. *Oedignatha* : Gravely, *Rec. Indian Mus.*, 33(3) : 264.

1934. *Oedignatha* : Reimoser, *Proc. zool. Soc. London*, (1) : 15.

Diagnosis : Cephalothorax oblonged, not narrow in front, sufficiently high with a very short central fovea. The cephalic shield coming up to the posterior median eyes. The frontal row slightly recurved and the posterior row longer than the anterior row, slightly procurved. The ocular quadrate almost square. Chelicerae twice longer than its breadth inner margin provided with 5 to 9 teeth, outer margin with 3 teeth. Sternum oval in shape. Abdomen oblonged covered with sclerotized dorsal shield ornamented by whitish spot, sometimes dorsum provided by dorsal scutum.

The spiders of this genus are found in high altitude and low hilly region of foliage leaves.

Type-species : *Oedignatha scrobiculata* Thorell.

Distribution : India, Sri Lanka, Java, China.

Key to the species of the genus *Oedignatha* Thorell

1. Abdominal shield provided with 6 whitish patches on either side of the mid-dorsal line.....
.....*scrobiculata*
- Abdominal shield not provided with 6 whitish patch on either side of the mid dorsal line..... 2
2. Chelicerae brownish red in colour*carli*

93. *Oedignatha scrobiculata* Thorell

1887. *Oedignatha scrobiculata* Thorell, *Ann. Mus. Civ. Nat. Geneva*, 18 : 209.

1978. *Oedignatha scrobiculata* : Saaristo, *Ann. zool. Fenn.*, 15(2) : 99.

Material examined : 5(F), Serampore, Dist. Hugli, West Bengal, October 1918, coll. Mrs. Dake; 1 (F) Birbhum, West Bengal, 25 iv. 1910, coll. F.H. Gravely; 1 (F), Tollygunge, Calcutta, West Bengal,

15.iv. 1917, coll. F.H. Gravely; 1 (M), Darjiling Zoo., Dist. Darjiling, West Bengal, 1.vii. 1974, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Birbhum, Darjiling, Hugli); Bihar, Kerala.

94. *Oedignatha carli* Reimoser

1934. *Oedignatha carli* Reimoser, *Rev. Suisse. Zool.*, 41(32) : 492.

Distribution : India : West Bengal (Dist. Darjiling) : Bihar, S. India.

Subfamily MICARIINAE

Key to the genera of the subfamily Micariinae

1. Cephalothorax with median furrow. The posterior row of eyes are slightly procurved, the posterior lateral eyes not far from the posterior median.....*Castianeira*
- Cephalothorax without median furrow. The posterior row of eyes strongly recurved the posterior lateral eyes far from the posterior median.....2
2. Abdomen provided with ventral shield*sphingius*

Genus 35. *Castianeira* Keyserling 1879

1879. *Castianeira* Keyserling, *Verh. zool. Bot. Ges. Wien*, 29 : 335.

1931. *Castianeira* : Gravely, *Rec. Indian Mus.*, 33(3) : 272.

Type-species : *Castianeira rubicunda* Keyserling

Distribution : Cosmopolitan except Australia.

Key to the species of the genus *Castianeira* Keyserling

1. Labium whitish in colour not broader than long and not scopulated anteriorly.....*albopicta*
- Labium reddish brown in colour longer than broad, scopulated anteriorly 2
2. The anterior row of eyes slightly recurved the anterior medians not widely separated and not closer to anterior laterals *bengalensis*
- The anterior row of eyes more or less straight and anterior medians separated and close to anterior laterals 3

3. Legs without longitudinal markings or white band, posterior tibia not dark and without conspicuous band at the apex *himalayensis*
 Legs with strong longitudinal markings, posterior tibia dark with conspicuous band at the apex....4
4. Anterior median eyes much larger than the anterior laterals; chelicerae enormous size; inner margin with 6 teeth *indica*
 Posterior median eyes much larger than posterior laterals, chelicerae moderate size, inner margin with 2 teeth 5
5. Dorsum provided with three transverse whitish band with well marked dark plate anteriorly... *tiniae*
 Dorsum not provided with whitish transverse bands and no dark plate anteriorly.....6
6. The anterior row of eyes straight, the anterior medians widely separated and closer to anterior laterals *quadrimaculata*
7. Eyes approximately uniform size, lines almost parallel, slightly convergent distally, anterior coxa very dark, almost black the remaining coxa paler..... *zetes*

95. *Castianeira albopicta* Gravely

1931. *Castianeira albopicta* Gravely, *Rec. Indian Mus.*, 33 (3) : 275.
 1981. *Castianeira albopicta* : Tikader, *Bull. zool. Surv. India*, 4(3) : 263.

Material examined : 1 (F), Pashok, Dist. Darjiling, West Bengal, 25.v. 1916, coll. F.H. Gravely.

Distribution : India : West Bengal (Dist. Darjiling); Bihar; Gujarat.

96. *Castianeira bengalensis* Biswas

1984. *Castianeira bengalensis* Biswas, *Bull. zool. Surv. India*, 6(1-3) : 120.

Material examined : 3 (F), Zoo-Garden, Alipore, Calcutta, West Bengal, 12.iii. 1984, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. Calcutta.)

97. *Gastianeira himalayensis* Gravely

1931. *Gastianeira himalayensis* Gravely, *Rec. India Mus.*, 33(3) : 275.
 1981. *Castianeira himalayensis* : Tikader & Biswas, *Rec. zool. Surv. India.*, *occ. pap.* No. 30(1) : 72.

Material examined : 2 (F), Eden Garden, Calcutta, West Bengal, 18.x. 1975, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. Calcutta).

98. *Castianeira indica* Tikader

1981. *Castianeira indica* Tikader, *Bull. zool. Surv. India*, 4 (3) : 260.

Material examined : 2 (F), 1 (M), Darjiling Zoo Garden, Dist. Darjiling, West Bengal, 7.iv. 1974, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. Darjiling) (New record); Maharashtra.

99. *Castianeira tinae* Patel & Patel

1974. *Castianeira tinae* Patel & Patel, *Proc. Indian Acad. Sci.*, 78(1) : 6.

Material examined : 1 (F), Palta, Dist. North 24-Parganas, West Bengal, 1 vii. 1974, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. North 24-Parganas); (New record); Gujarat.

100. *Castianeira quadrimaculata* Reimoser

1934. *Castianeira quadrimaculata* Reimoser, *Rec. Suisse zool.*, 41(32) : 490.

Material examined : 1 (M), Palta, Dist. North 24-Parganas, West Bengal, 29.x. 1980. coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. North 24-Parganas) (New record); Tamil Nadu.

101. *Cstianeira zetes* Simon

1987. *Castianeira zetes* Simon, *Bull. Mus. Hist. Nat. Paris*, 3(7) : 294.

1981. *Castianeira zetes* : Tikader & Biswas, *Rec. zool. Surv. India occ. pap.* No. 30(3) : 73.

Material examined : 1 (M), Kalimpong, Dist. Darjiling, West Bengal, 1930. coll. : Sutherland.

Distribution : India : West Bengal (Dist. Darjiling) (New record).

36. Genus *Sphingius* Thorell

1890. *Sphingius* Thorell, *Ann. Mus. Civ. Stor. nat. Genova*, 30 : 285.

1903. *Sphingius* : Simon, *Ann. Soc. ent, Belgique*, 47 : 33.

1931. *Sphingius* : Gravely, *Rec. Indian Mus.*, 33 : 269.

Type-species : *Sphingius thecatus* Thorell

Distribution : India, Malaya, Sri Lanka, Burma, Anam.

Key to the species of the genera *Sphingius* Thorell

1. Vulva confined to posterior half of genital segment; abdomen normally with whitish patches
..... **caniceps**
- Vulva not confined to posterior half of genital segment, extending from end to end of the genital segment, abdomen without white plate 2
2. Dorsum not provided with a number of white patches **paltaensis**

102. *Sphingius caniceps* Simon

1906. *Sphingius caniceps* Simon *Ann. Soc. ent. Fr.*, 75 : 301.
1931. *Sphingius caniceps* : Gravely, *Rec. Indian Mus.*, 33(3) : 271.

Material examined : Few females were collected from Indian Museum compound, Calcutta, West Bengal, 1930, coll : F.H. Gravely.

Distribution : India : West Bengal (Dist. Calcutta) (New record); Orissa; Tamil Nadu.

103. *Sphingius paltaensis* sp. nov.
(Figs. 36-38)

General : Cephalothorax greenish brown, legs uniformly light coloured, abdomen somewhat darker than carapace. Total length 7.90 mm. Carapace 3.30 mm. long. 2.50 mm. wide; abdomen 4.20 mm. long, 2.50 mm. wide.

Cephalothorax : Longer than wide, narrow anteriorly and broad posteriorly covered with fine pubescence. Cephalic-shield prominent without central fovea at the middle. Eyes in two parallel series anterior and posterior, more or less same size. Ocular quadrate approximately square. Chelicerae strong and stout, longer than broad, inner and outer margin provided with two teeth. Maxillae and libium more longer than wide. Sternum heart-shaped covered with fine pubescence. Legs long partly black and partly compressed. The tibiae and metatarsi of all legs provided with a number of long spine-like hair.

Abdomen : Longer than wide, more or less oval in shape; abdominal shield prominent with golden pile. Two pair of sigillae present on the dorsum. Abdomen without white patches. Epigyne with elongated plate, provided with copulatory opening.

Holotype : Female in spirit, deposited at Zoological Survey of India, Calcutta, Regd. No. 5046/18.

Type locality : Palta, Santinagar, Dist. North 24-Parganas, West Bengal, India, 8.xii.1986, coll. Bijan Biswas.

This species resembles to *Sphingius caniceps* Simon but differs from that due to the following particulars: i) The anterior and posterior rows of eyes more or less in parallel series where as in *S. caniceps* anterior and posterior rows are not in parallel series. ii) The dorsum not provided with white patches where as in *S. caniceps* provided with white patches. iii) Epigyne and internal genitalia are also structurally different.

Family GNAPHOSIDAE

Key to the genera of the family Gnaphosidae

1. Eyes rows widely separated; posterior median eyes much nearer to each other than to the laterals *Drassodes*
 Eyes rows close together; posterior median eyes otherwise 2
2. Upper margin of furrow of chelicera with three teeth, the lower margin with two, all well developed. Posterior median eyes larger and oblique, typically close together but well separated from the laterals *Haplodrassus*
 Upper margin of furrow of chelicera provided with four to six teeth, the lower with two to three small teeth or nodules. Posterior medians are different 3
3. Lower margin of furrow of chelicera with one tooth or nodule; anterior median eyes usually larger than the laterals *Herpyllus*
 Lower margin of furrow of chelicera with many teeth; anterior median eyes not larger than laterals 4
4. Inner margin of furrow of chelicera without teeth; bulb of palpus of male simple, with no true apophysis *Megamyrmecon*
 Inner margin of furrow of chelicera with teeth, bulb of palpus of male not simple, with true apophysis 5
5. Tibia III with no median dorsal spines; carapace with a distinct median furrow. *Poecilochroa*
 Tibia III with median dorsal spines, carapace without median furrow 6
6. Chelicerae provided with one tooth of inner margin, bulb of palpus of male with a stout median apophysis *Scopodes*
 Chelicerae not provided with teeth of inner margin; bulb of palpus of male without stout median apophysis 7
7. Eyes of posterior row nearly equal in size and equidistant from each other *Scotophaeus*

Genus 37. *Drassodes* Westring 1851

1851. *Drassodes* Westring, *Goteborgs. K. Vetensk. O. Vitterh Samh. Mandl.*, 2 : 25.
 1977. *Drassodes* : Tikader, *Rec. zool. Surv. India*, 72 (1-4) : 186.

Type species : *Drassodes lapidosus* (Walck.)

Distribution : Oriental, sub-tropical and temperate regions of the world.

Key to species of the genus *Drassodes* Westring

1. Antero-lateral portion of abdomen slightly angular; maxilla touching with labium*malodes*
 Antero-lateral portion of abdomen roundish; maxilla not touching with labium..... 2
2. Abdomen oval, antero-lateral portion angular; labium semi-circular, not provided with any notch
*oppenheimeri*

104. *Drassodes malodes* Tikader

1962. *Drassodes malodes* Tikader, *Proc. All India Cong. zool.*, : 572.
 1982. *Drassodes* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (2) : 397.

Distribution : India : West Bengal (Dist. Calcutta) (Type-locality).

105. *Drassodes oppenheimeri* Tikader

1973. *Drassodes oppenheimeri* Tikader, *Proc. Indian Acad. Sci.*, 77 (5) : 186.
 1982. *Drassodes oppenheimeri* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (2) : 400.

Distribution : India : West Bengal (Dist. Hugli); Madhya Pradesh; Maharashtra.

Genus 38. *Haplodrassus* Chamberlin 1922

1922. *Haplodrassus* Chamberlin, *Proc. biol. Soc. Wash.*, 35 : 161.
 1975. *Haplodrassus* : Platnick & Shadab, *Am. Mus. Novit.*, 2583 : 5.

Type-species : *Haplodrassus hiemalis* (Emerton).

Distribution : India, America, New York.

106. *Haplodrassus dumdumensis* Tikader

1982. *Haplodrassus dumdumensis* Tikader, *Fauna of India, Spiders : Aranea*, 2 (2) : 468.

Diagnosis : Cephalothorx and legs light brownish in colour. Cephalothorax longer than wide,

narrow in front, clothed with pubescence, posterior middle provided with a conspicuous fovea. Cephalic region slightly high. Eyes pearly white except anterior median, posterior row of eyes slightly longer than the anterior row. Anterior row procurved, medians slightly larger than the laterals and closer to laterals than to each other. Chelicerae moderately strong, inner margin provided with three teeth but outer margin there is no teeth. Sternum heart-shaped, pointed behind, clothed with fine hair. Abdomen longer than wide, narrowing anteriorly, covered with pubescence and provided with light brownish dots. Anterior part of the dorsum provided with long hair which is overlapping the posterior extremity of the cephalothorax. Spinnerets cylindrical and posterior pair longer than other.

Distribution : India : West Bengal (Dist. Calcutta) (Type-locality).

Genus 39. *Herpyllus* Hentz 1832

1832. *Herpyllus* Hentz, *Silliman Soum. Sci. a Arts.*, 21 : 102.

1940. *Herpyllus* : Comstock, *The spider Book, New York*, : 332.

Type-species : *Herpyllus ecclesiasticus* Hentz

Distribution : India, North America.

107. *Herpyllus calcuttaensis* Biswas

1984. *Herpyllus calcuttaensis* Biswas, *Bull. zool. Surv. India*, 6(1-3) : 123.

Diagnosis : Cephalothorax and legs reddish brown, abdomen black-velvate in colour covered with mousy hair. Cephalothorax longer than wide, oval slightly narrowing in front, slightly convex, clothed with pubescence and some long hair, posterior middle provided with a conspicuous short fovea. Eyes pearly white, separated, posterior row slightly longer than the anterior row. Anterior row of eyes nearly straight, laterals larger than the medians and close to adjacent than to each other. Median ocular quadrangle longer than wide and wider behind than in front. Chelicerae moderate, vertical inner margin provided with one small tooth and outer margin with three teeth. Sternum deep brown nearly elliptical, clothed with fine and long hair. Legs formula is 4123. Abdomen longer than wide, widest behind the middle clothed with black-velvately mousy hair. Dorsum provided with three pairs of sigilla.

Distribution : India : West Bengal (Dist. Calcutta) (Type-locality).

Genus 40. *Megamyrmecon* Reuss 1834

1834. *Megamyrmecon* Reuss, *Zool. Miscell. Mus. Ar.*, 217.

1982. *Megamyrmecon* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (2) : 371.

Type-species : *Megamyrmecon caudatum* Reuss

Distribution : India, America, Africa.

108. *Megamyrmecon kajalae* sp. nov.
(Figs. 39-41)

General : Cephalothorax, abdomen and legs are deep brownish in colour. Total length 9.60 mm. Carapace 3.80 mm. long, 3.10 mm., wide; abdomen 5.80 mm. long, 3.50 mm. wide.

Cephalothorax : Longer than wide, convex narrow in front, clothed with fine hair. Prominent fovea present at the middle of the cephalic region. Eyes of the anterior row procurved, anterior median rounded, black and larger than the lateral, elliptical in shape. Posterior row of eyes slightly longer than the anterior row, strongly procurved, more or less equal and equidistance from each other, posterior medians silvery white, elliptical in shape. Ocular quadrate more or less square in shape. Sternum oval in shape pointed behind. Labium longer than wide. Maxillae longer than wide, anterior end provided with spiny hair. Chelicera vertical, inner and outer margin provided with no and two teeth. Legs relatively strong, clothed with spiny hair.

Abdomen : More or less elliptical in shape and narrower behind. Ventral side lighter than the dorsal. Dorsum provided with one longitudinal and two lateral patches. Anterior spinnerets small, posterior spinnerets longer than anterior. Epigynal plate elongated provided with two copulatory openings.

Holotype : Female in spirit, paratype one female, deposited at Zoological Survey of India, Calcutta, Redg. Nos. 5408-9/18.

Type-locality : Palta, Santinagar, Dist. North 24-Parganas, West Bengal, India, 11.viii. 1987, coll. Bijan Biswas.

This species is similar to *Megamyrmecon ashae* Tikader and Gajbe but differs from this on the following characters : (i) Dorsum provided with one longitudinal and two lateral patches where as in *M. ashae* there is no such longitudinal patches present. (ii) Anterior spinnerets is very short in comparison to the other where as in *M. ashae* anterior spinnerets is larger than the other spinnerets. (iii) Epigyne and internal genitalia are also structurally different.

Genus 41. *Poecilochora* Westring 1874

1874. *Poecilochora* Westring, *Gotebrogs, k. Vetensk-O. Vitterh Samh. Handl.*, 14 : 45.

1940. *Poecilochora* : Comstock, *The Spider Book, New York*, : 329.

Type-species : *Poecilochora variana* (Koch C..)

Distribution : Cosmopolitan except Australia.

109. *Poecilochora barmani* Tikader

1982. *Poecilochora barmani* Tikader, *Fauna of India, Spiders : Araneae*, 2(2) :451.

Diagnosis : Cephalothorax deep-brown, legs brown, abdomen black in colour. Cephalothorax

longer than wide, narrow in front, slightly convex, posterior middle of cephalothorax provided with an inconspicuous short fovea, clothed with pubescence. Eyes pearly white except anterior medians, posterior row of eyes are close together in a straight line, medians slightly larger than the laterals. Posterior row of eyes recurved, medians oval and slightly closer to adjacent laterals than to each other. Sternum deep brown, oval pointed behind and clothed with hair. Chelicerae moderately strong and the margins of the furrow without tooth. Abdomen longer than wide nearly elliptical clothed with hair and provided with three pairs of sigilla on the dorsum. Dorsum of abdomen provided with a transverse white band just behind the third pairs of sigilla. Spinnerets prominent, anterior spinnerets larger than other.

Material examined : 1(F), Gangasagar, Dist. South 24-Parganas, West Bengal, 20.iii. 1984, coll. B.K. Biswas & party; 1(F), Bakkhali, Dist. South 24-Parganas, West Bengal, 21.iii. 1984, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dist. South 24-Parganas) (New record); Meghalaya.

Genus 42. *Scopodes* Chamberlin 1922

1922. *Scopodes* Chamberlin, *Proc. biol. soc. Wash.*, 35 : 156.

1940. *Scopodes* : Comstock, *The spider Book, New York*, : 328.

Type-species : *Scopodes catharius* Chamberlin

Distribution : India, North America.

110. *Scopodes kuljitae* Tikader

1982. *Scopodes kuljitae* Tikader, *Fauna of India, Spiders : Araneae*, 2(2) : 367.

Diagnosis : Cephalothorax and legs light reddish-green, abdomen light brownish-green. Cephalothorax longer than wide, convex, much narrower in front, cephalic region slightly high, clothed with pubescence and some spine like hair at the posterior end. Posterior middle of cephalothorax provided with a conspicuous fovea. Anterior row of eyes slightly procurved, medians circular, black, larger than the laterals and closer to adjacent laterals than to each other. Posterior row of eyes as long as anterior row, strongly procurved and semicircular. Posterior medians silvery white, elliptical in shape, same size to the adjacent laterals. Clypeus narrow. Sternum oval, pointed, clothed with fine hair. Chelicerae vertical, small, inner margin provided with one minute tooth and outer margin with one larger tooth. Abdomen longer than wide, nearly elliptical, narrowing posteriorly, clothed with fine hair. Dorsum anteriorly provided with a deep brown mid-dorsal deep brown patch and posteriorly 'v'-shaped deep brown patch. Spinnerets are very prominent.

Material examined : 1 (F), Gangasagr, Dist. South 24-Parganas, West Bengal, 20. iii. 1984, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. South 24-Parganas) (New record); Maharashtra; Karnataka.

Genus 43. *Scotophaeus* Simon 1893

1893. *Scotophaeus* Simon, *Hist. Nat. Araign.*, 1(2) : 371.
 1966. *Scotophaeus* : Tikader, *Rec. Indian Mus.*, 59(4) : 440.

Type-species : *Scotophaeus quadripunctatus* Latreille

Distribution : Oriental and Temperate regions of the world.

111. *Scotophaeus domesticus* Tikader

1962. *Scotophaeus domesticus* Tikader, *Proc. All India Cong. Zoology*, : 570.
 1982. *Scotophaeus domesticus* : Tikader, *Fauna of India, Spiders : Araneae*, 2(2) : 378.

Diagnosis : Cephalothorax and legs are light brown in colour. Cephalothorax narrowing in front, clothed with hair, a fovea on the thorax. Eyes unequal and not equidistant; anterior row slightly procurved, anterior medians larger than the laterals and dark in colour, posterior row longer and strongly procurved, posterior median eyes irregular in shape and silvery white in colour. Sternum is oval. Abdomen light brown to grey, nearly oval, densely clothed with fine pubescence.

Distribution : India : West Bengal (Dist. Calcutta).

Family OXYOPIDAE

Key to the genera of the family Oxyopidae

1. Posterior row of eyes strongly procurved and equidistant from each other.....*Oxyopes*
 Posterior row of eyes not strongly procurved and equidistant from each other..... 2
2. Cephalothorax not high, male palp with paracymbial process*Peucetia*

Genus 44. *Oxyopes* Latreille 1804

1804. *Oxyopes* Latreille, *Hist. Nat. Arach, France*, 14(7) : 144.
 1900. *Oxyopes* : Pocock, *Fauna Brit. India, Arach.*, : 255.

Type-species : *Oxyopes heterophthalmus* Latreille

Distribution : Cosmopolitan.

Key to the species of the genus *Oxyopes* Latreille

1. Cephalic region slightly high; provided with conspicuous fovea..... ..*birmanicus*
 Cephalic region high; and with distinct fovea2

2. Cephalothorax vaguely blotched with alternate lighten dark olive patches rayed out fovea.
 *javanus*
 Cephalothorax not blotched with alternate lighten dark olive patches rayed out fovea.....3
3. Upper side of the femora of all legs provided with a longitudinal black line.....*ratnae*
 Upper side of the femora of all legs not provided with a longitudinal black line..... .4
4. Abdomen broad at the middle not provided with patches at the middle *sakuntalae*
 Abdomen not broad at the middle and provided with patches at the middle..... 5
5. Cephalothorax narrow in front *shweta*
 Cephalothorax not narrow in front 6
6. Abdomen provided with irregular dirty white and deep brown bars..... *sikkimensis*
 Abdomen not provided with irregular dirty white and deep brown bars 7
7. Lower side of femora of legs provided with two conspicuous black lines..... *sitae*

112. *Oxyopes birmanicus* Thorell

1887. *Oxyopes birmanicus* Thorell, *Premo Sang. Sui. Rag. Birl.*, : 325.
 1981. *Oxyopes birmanicus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 61.

Distribution : India : West Bengal (Dist. Calcutta). Elsewhere : Burma.

113. *Oxyopes javanus* Thorell

1891. *Oxyopes javanus* Thorell, *Rag. Indo. Malesi.*, : 195.
 1981. *Oxyopes javanus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 62.

Material examined : 2 (F), Jalpaiguri, Dist. Jalpaiguri, West Bengal, 24.i.1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Jalpaiguri, Noth 24-Parganas).

114. *Oxyopes ratnae* Tikader

1970. *Oxyopes ratnae* Tikader, *Rec. zool. Surv. India*, 64 : 70.
 1981. *Oxyopes ratnae* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 63.

Material examined : 2(F)2(M), Kakdwip, Dist. South 24-Parganas, West Bengal, 23.iii. 1984, coll.

B.K. Biswas & party; 2 (F), Namkhana, Dist. South 24-Parganas, West Bengal, 21.iii. 1984, coll. B.K. Biswas & party; 2 (F), 1(M), Gosava, Dist. South 24 Parganas, West Bengal, 26.iii. 1984, coll. Bijan Biswas; 4 (F), 2(M), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. B.K. Biswas & party; 2 (F), Petrapole, Dist. North 24-Parganas, West Bengal, 2.iv. 1984, coll. Bijan Biswas; 3 (F), 1(M), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.iv. 1984, coll. B.K. Biswas & party; 4(F), 1(M), Tarakeshwar, Dist. Hugli, West Bengal, 28.ii.1986, coll. Kajal Biswas; 1 (F), Mahadebpur, (Gour), Dist. Maldah, West Bengal, 3.xi. 1988, coll. B.K. Biswas & party; 1 (F), Pias Bari, Dist. Maldah, West Bengal, 4.xi. 1988, coll. Bijan Biswas; 4(F), Berhampore, Dist. Murshidabad, West Bengal, 10.xi. 1988, coll. B.K. Biswas & party; 2 (F), Kandhi, Dist. Murshidabad, West Bengal, 11.xi. 1988, coll. B.K. Biswas & party; 6(F), Raghunathpange, Dist. Murshidabad, West Bengal, 14.xi. 1988, coll. B.K. Biswas & party; 4(F), Domkal, Dist. Murshidabad, West Bengal, 15.xi. 1988, coll. B.K. Biswas & party; 6(F), Sagardighi, Dist. Murshidabad, West Bengal, 16.xi. 1988, coll. B. K. Biswas & party; 4 (F), Kolaghat, Dist. Medinipur, West Bengal, 19.xi. 1988, coll. B.K. Biswas & party; 2 (F), Jhargram, Dist. Medinipur, West Bengal, 20.xi. 1988, coll. B.K. Biswas & party; 2 (F), Panskura, Dist. Medinipur, West Bengal, 23.xi. 1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Hugli, Maldah, Medinipur, Murshidabad, North & South 24-Parganas); Sikkim.

115. *Oxyopes sakuntalae* Tikader

1970. *Oxyopes sakuntalae* Tikader, *Rec. zool. Surv. India*, 64 (1-4) : 73.

Distribution : India : West Bengal (Dist. Darjiling).

116. *Oxyopes shweta* Tikader

1970. *Oxyopes shweta* Tikader, *Rec. zool. Surv. India*, 64 (1-4) : 78.

1981. *Oxyopes shweta* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 61.

Material examined : 1 (F), Jalpaiguri, Dist., Jalpaiguri, West Bengal, 24.i.1985, coll. Bijan Biswas; 7(F), 3(M), Chandur forest, Arambagh, Dist. Hugli, West Bengal, 26.ii.1986, coll. Kajal Biswas.

Distribution : India : West Bengal (Dist. Calcutta, Hugli, Jalpaiguri, North 24-Parganas); West Sikkim.

117. *Oxyopes sikkimensis* Tikader

1970. *Oxyopes sikkimensis* Tikader, *Rec. zool. Surv. India*, 64 (1-4) : 76.

Material examined : 1 (F), Rajabhatkawa, Dist. Jalpaiguri, West Bengal, 16.i.1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Jalpaiguri); Sikkim.

118. *Oxyopes sitae* Tikader1970. *Oxyopes sitae* Tikader, *Rec. zool. surv. India*, 64(1-4) : 74.*Material examined* ; 1 (F), Buxa forest, Dist. Jalpaiguri, West Bengal, 17.i.1985, coll. Bijan Biswas.*Distribution* : India : West Bengal (Dist. Jalpaiguri) (New record); Sikkim.Genus 45. *Peucetia* Thorell 18691869. *Peucetia* Thorell, *On European Spiders Uppsala*, 7 : 196.1970. *Peucetia* : Tikader, *Rec. zool. Surv. India*, 64 (1-4) : 79.*Type-species* : *Peucetia viridis* Blackwall*Distribution* : Cosmopolitan except Australia.Key to the species of the genus *Peucetia* Thorell

1. Clypeus long and provided with four black lines extending from ocular area to near the base of fang of chelicerae *latikae*
- Clypeus not provided with four black lines extending from ocular area to near the base of fang of chelicerae 2
2. Abdomen provided with a longitudinal deep brown line with lateral branches on mid dorsally.....
..... *viridana*

119. *Peuceita latikae* Tikader1970. *Peucetia latikae* Tikader, *Rec. zool. Surv. India*, 64(1-4) : 80.*Material examined* : 1 (F), Kachuberia, Gangasagar, Dist. South 24-Parganas, West Bengal, 20.iii. 1984. coll. B.K. Biswas & party ; 2 (F), 1(M), Krishnagar, Dist. Nadia, West Bengal, 18.ii. 1986, coll. Kajal Biswas; 1 (M), Kamarpukur, Arambagh, Dist. Hugli, West Bengal, 27.ii. 1986, coll. Kajal Biswas.*Distribution* : India : West Bengal (Dists. Hugli, Nadia, South 24-Parganas), New record; Sikkim.120. *Peucetia viridana* Stoliczka1869. *Peucetia viridana* Stoliczka, *J. Asia. Soc. Bengal*, 38 : 220.1981. *Peucetia viridana* ; Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 65.*Material examined* : 1 (F), Medinipur, Dist. Medinipur, West Bengal, 24.xi. 1988, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Medinipur); Orissa, Pondichery; Tamil Nadu, Sri Lanka.

Family THERIDIIDAE

Key to the genera of the family Theridiidae

1. The median apophysis of the palp broadly attached to the tegulum; the radix absent.....
.....*Achaearana*
- The median apophysis of the palp not attached to the tegulum; the radix usually present.....2
2. Chelicerae usually weak; lower margin of furrow of the chelicerae with a very small tooth.....
.....*Theridion*

Genus 46. *Achaearana* Strand 1929

1929. *Achaearana* Strand, *Acta. Univ. Latviensis*, 20 : 11.

Type-species : *Achaearana trapezoidalis* (Taczanouski)

Distribution : Cosmopolitan.

121. *Achaearana durgae* Tikader

1970. *Achaearana durgae* Tikader, *Rec. zool. Surv. India*, 64 : (1-4) : 17.

Diagnosis : Cephalothorax and abdomen greenish-brown, legs light green. Cephalothorax slightly longer than wide, convex, narrowing in front; clothed with fine hair. Clypeus round and deep groove under eyes. Legs robust. clothed with thick hair. Tarsi of IV pair of legs with distinct comb-like setae. Abdomen globular, slightly overlapping the posterior region of cephalothorax in front. Spinners behind the middle of the abdomen with an elevated knob. Abdomen provided with irregular white patches.

Material examined : 1 (M), Chandur forest, Arambagh, Dist. Hugli, West Bengal, 26.ii. 1986, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dist. Hugli) (New record); Sikkim.

Genus 47. *Theridion* Walckenaer 1805

1805. *Theridion* Walckenaer, *Table. Aranides*, : 72.

Type-species : *Theridion lunatum* Clerck

Distribution : Cosmopolitan.

122. *Theridion indica* Tikader

1977. *Theridion indica* Tikader, *Rec. zool. surv. India*, 72 : 168.

Diagnosis : Cephalothorax and legs light green, abdomen brownish white with black and white patches. Cephalothorax slightly longer than wide. Legs stout and strong clothed with hair. Tarsi of IV pair of legs with distinct comb-like setae. Abdomen globular in shape. Dorsal and lateral side of abdomen beautifully coloured with regular and mixture of chalk-white and brownish green patches.

Material examined : 1 (F), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1. iv. 1984, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dist. North 24-Parganas), (New record); Andaman and Nicobar Island.

Family LYCOSIDAE

Key to the genera of the family Lycosidae

1. Tarsus I provided with dorso-basal bristle which is much longer than the hair and trichobothria.....*Arctosa*
.....2
- Tarsus I not provided with dorso-basal bristle 2
2. Posterior spinnerets distinctly longer than the anterior spinnerets.*Hippasa*
Posterior spinnerets not distinctly longer than the anterior spinnerets 3
3. The labium is longer than wide and the basal excavation is prominent*Lycosa*
The labium is not longer than wide and the basal excavation is not prominent.4
4. Cephalic region not much elevated from the thoracic region*Pardosa*
Cephalic region much elevated from the thoracic region 5
5. Anterior row of eyes strongly procurved and the anterior median eyes smaller than the anterior laterals*Venonia*

Genus 48. *Arctosa* Koch

1847. *Arctosa* Koch, *Die Arachniden*, 14 (3) : 94.

1951. *Arctosa* : Locket & Millidge, *British Spiders*, 1 : 283.

1972. *Arctosa* : Kaston, *How to know the spiders*, : 198.

Type species : *Arctosa cinerea* (Fabricius)

Distribution : Cosmopolitan except Australia.

Key to the species of the genus *Arctosa* Koch

1. Abdomen provided mid-dorsally with longitudinal lens shaped marking *himalayensis*
 Abdomen not provided mid-dorsally with longitudinal lens shaped marking..... 2
2. Ventral side of femora of all legs provided with greenish brown broad transverse bands at the middle and at the distal extremity *indicus*

123. *Arctosa himalayensis* Tikader & Malhotra

1980. *Arctosa himalayensis* Tikader & Malhotra, *Fauna of India, Spiders : Aracnae*, 1(2) : 369.

1981. *Arctosa himalayensis* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 59.

Distribution : India : West Bengal (Dist. Calcutta); Uttar Pradesh.

124. *Arctosa indicus* Tikader & Malhotra

1980. *Arctosa indicus* Tikader & Malhotra, *Fauna of India, Spiders : Arameae* 1(2) : 371.

1981. *Arctosa indicus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 58.

Distribution : India : West Bengal (Dist. Calcutta); Maharashtra.

Genus 49. *Hippasa* Simon 1885

1885. *Hippasa* Simon *Bull. Soc. zool. Fr.*, 10 : 31.

1980. *Hippasa* : Tikader & Malhotra : *Fauna of India, Spiders : Araneae*, 1 (2) : 272.

Type species : *Hippasa agelenoides* (Simon)

Distribution : Cosmopolitan except Australia..

Key to the species of the genus *Hippasa* Simon

1. Chitinous plate covering the pit of vulva bifurcated posteriorly, producing a pair of large elevated triangular plate *greenalliae*
 Chitinous plate covering the pit of vulva not bifurcated posteriorly, producing a pair of large elevated triangular plate 2
2. Plate of vulva produced into a tongue-like process very much drawn out posteriorly ... *holmerae*

- Plate of vulva not produced into a tongue-like process very much drawn out posteriorly.....3
3. Cephalothorax and legs light brown in colour and abdomen not oval in shape*madhuae*
Cephalothorax and legs not light brown in colour abdomen oval in shape4
4. Ventral side of the abdomen provided with three longitudinal dark bands extending from the epigastric fold to the base of spinnerets*partita*

125. *Hippasa greenalliae* (Blackwall)

1867. *Lycosa greenalliae* Blackwall, *Ann. Mag. Nat. Hist.*, 19 (3) : 387.

1980. *Hippasa greenalliae* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 277.

Material examined : 2(F), Barti bill, Dist. North 24-Parganas, West Bengal, 2.xi.1987, coll. T. Sengupta.

Distribution : India : West Bengal (Dist. North 24-Parganas) (New record).

126. *Hippasa holmerae* Thorell

1895. *Hippasa holmerae* Thorell, *Spiders of Burma* : 218

1981. *Hippasa holmerae* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap* No. 30(1) : 49.

Distribution : India : West Bengal (Dists. Calcutta, Darjiling); Manipur; Uttar Pradesh. Elsewhere: Burma, Singapore, West China.

127. *Hippasa madhuae* Tikader & Malhotra

1980. *Hippasa madhuae* Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 298.

Material examined : 2 (F), Kamarpukur, Dist. Hugli, West Bengal, 27.ii. 1986. coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dist. Hugli) (New record); Maharashtra.

128. *Hippasa partitza* (Cambridge)

1876. *Trochosa partitza* Cambridge, *Proc. Zool. Soc.*, : 541.

1980. *Hippasa partitza* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 291.

Material examined : 1 (F), Petrapole, Dist. North 24-Parganas, West Bngal, 2 .iv. 1984, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dist. North 24-Parganas) (New record).

Genus 50. *Lycosa* Latreille 1804

1804. *Lycosa* Latreille, *Nouv. Dist. d'Hist. Nat.*, 24 : 135.
 1970. *Lycosa* : Tikader, *Rec. zool. Surv. India*, 64 (1-4) : 63.
 1980. *Lycosa* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 377.

Type-species : *Lycosa tarantula* Ross

Distribution : Cosmopolitan.

Key to the species of the genus *Lycosa* Latreille

1. Anterior part of the dorsum provided with longitudinal dark brown patches. *arambagensis*
 Anterior part of the dorsum not provided with longitudinal dark brown patches..... 2
2. Coxa of all legs pale ventrally and extremities of ventral side of IV tibia without any band
 *carmichaeli*
 Coxa of all legs not pale ventrally and extremities of ventral side of IV tibia provided with band..3
3. Carapace uniform and deep brown maxillae much broader at the distal end *choudhuryi*
 Carapace not uniform and deep brown, maxillae not much broader at the distal end.....4
4. Carapace provided with a median broad, pale band extending from base of 2nd row of eyes to the base of cephalothorax *himalayensis*
 Carapace not provided with a median broad pale band extending from base of 2nd row of eyes to the base of cephalothorax 5
5. Carapace reddish brown in colour and the femora of legs provided with light green patches
 *kempi*
 Carapace not reddish brown in colour and the femora of all legs not provided with light green patches6
6. Labium and chelicerae yellowish brown and the ventral side of abdomen chalk white in colour.....
 *mackenziei*
 Labium and chelicera not yellowish brown and the ventral side of abdomen not chalk white in colour 7
7. Sternum and coxa dark brown and the ventral side of tibia III & IV leg not provided with broad black band at the extremities
 *shillongensis*

129. *Lycosa arambagensis* sp. nov.
(Figs. 42-44).

General : Cephalothorax and legs brownish red; abdomen light brown in colour. Total length 5.80mm. Carapace 2.80 mm. long, 2.40 mm. wide; abdomen 3.30 mm. long, 1.90mm. wide.

Cephalothorax : Longer than wide, clothed with fine hair. Distinct fovea present just below the centre of the carapace. Number of blackish lateral lines extending from the fovea. Anterior row of eyes straight and shorter than the second row anterior median eyes slightly larger than the anterior laterals. Eyes of the second row larger than the others. Base of the second and third row of eyes provided with conspicuous black patch. Space enclosed between posterior eyes longer than wide and slightly narrow in front. Sternum nearly oval, pointed behind clothed with fine hair. Labium wider than long. Distal end of maxillae not wider. Legs long and strong, clothed with hair and spines.

Abdomen : Longer than wide, nearly oval, broader behind the middle clothed with hair. Anterior end of the dorsum provided with longitudinal deep brown patches. Ventral side pale. Epigyne and internal genitalia as in text figs. 43-44.

Holotype : Female in spirit, deposited at Zoological Survey of India, Calcutta, Regd. No. 5402/18.

Type-locality : Chandur forest, Arambagh, Dist. Hugli, West Bengal, India, 26.iv. 1986, coll. Bijan Biswas.

This species resembles *Lycosa bistrriata* Gravely but can be separated as follows ; (1) Labium wider than long, whereas in *Lycosa bistrriata* labium slightly longer than broad. (2) Distal end of maxillae not wider whereas in *L. bistrriata* broader. (3) Epigyne and internal genitalia are also structurally different.

130. *Lycosa carmichaeli* Gravely

1924. *Lycosa carmichaeli* Gravely, *Rec. Indian Mus.*, 26 : 604.

1980. *Lycosa carmichaeli* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae* 1(2) : 407.

Distribution : India : West Bengal (Dist. Darjiling).

131. *Lycosa choudhuryi* Tikader & Malhotra

1980. *Lycosa choudhuryi* Tikader & Malhotra, *Fauna of India, Spiders : Araneae* 1(2) : 390.

Material examined : 1 (F), Sibgunga, Dist. South 24-Parganas, West Bengal, 2.iv. 1989. coll. B.P. Halder.

Distribution : India : West Bengal (Dist. South 24-Parganas).

132. *Lycosa himalayensis* Gravely

1924. *Lycosa himalayensis* Gravely, *Rec. Indian Mus.*, 26 : 603.

1980. *Lycosa himalayensis* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae* 1(2) : 382.

Material examined : 2 (F), Bankura, Dist. Bankura, West Bengal, 22.ix. 1987, coll. M. Prasad.

Distribution : India : West Bengal (Dists. Bankura, Darjiling, North 24-Parganas).

133. *Lycosa kempi* Gravely

1924. *Lycosa kempi* Gravely, *Rec. Indian Mus.*, 26 : 602.

1980. *Lycosa kmpi* : Tikader & Malhotra, *Fauna of India, Spiders : Aranee*, 1(2) : 389.

Distribution : India ; West Bengal (Dists : Calcutta, Darjiling); Assam; Bhutan; Sikkim; Pakistan.

134. *Lycosa mackenziei* Gravely

1924. *Lycosa mackenziei* Gravely, *Rec. Indian Mus.*, 26 : 606.

1980. *Lycosa mackenziei* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 419.

Distribution : India : West Bengal (District : Calcutta); Bihar; Karnataka; Punjab. Elsewhere : Pakistan.

135. *Lycosa shillongensis* Tikader & Malhotra

1980. *Lycosa shillongensis* Tikader & Malhotra, *Fauna of India, Spiders : Aranee*, 1(2) : 403.

Material examined : 3(F), Ranigheel. Calcutta, West Bengal, 6.v. 1987, coll. T. Sengupta.

Distribution : India : West Bengal (Dist. Calcutta) (New record); Meghalaya.

Genus 51. *Pardosa* Koch 1848

1848. *Pardosa* Koch, *Die. Arachnide*, 14 : 100.

1980. *Pardosa* : Tikader & Malhora, *Fauna of India, Spiders : Araneae*, 1(2) : 315.

Type-species : *Pardosa striatipes* Koch

Distribution : Cosmopolitan except Australia.

Key to the species of the genus *Pardosa* Koch

1. Ocular area black and hairy and maxillae provided with inconspicuous scopulae *annandalei*
 Ocular area not black and hairy and maxillae provided with distinct scopulae..... 2
2. Dorsal side of abdomen pale with few small dark brown spots *atropalpis*
 Dorsal side of abdomen dark and without dark brown spots 3

3. No longitudinal black streak present on the dorsal side of patella; chelicerae uniform in colour.....
.....*birmanica*
- Longitudinal black streak present on the dorsal side of patella; chelicerae not uniform in colour
.....4
4. Anterior row of eyes slightly recurved and femora of all legs with greenish brown transverse
patches.....*burasantiensis*
- Anterior row of eyes more or less straight and femora of all legs without greenish brown transverse
patches.5
5. Abdomen ventrally provided with two lateral irregular brown patches on the side of spinnerets.....
.....*heterophthalmus*
- Abdomen ventrally not provided with two lateral irregular brown patches on the side of spinnerets
.....6
6. Legs without greenish-brown patches and chelicera not strong*leucopalpis*
- Legs with greenish brown patches and chelicera strong7
7. Abdomen mid-dorsally provided with a broad longitudinal; pale band light brown irregular
patches; sublateral sides with black patches with pale spots.....*mukundi*
- Abdomen with no such patches dorsally8
8. Abdomen oval in shape; anterior mid-dorsally provided with lance-shaped marking*oakleyi*
- Abdomen not oval in shape; anterior mid-dorsally not provided with lance-shaped marking.....9
9. Abdomen ventrally provided with sub-lateral longitudinal irregular greenish-brown patch.....
.....*shyamae*
- Abdomen without sub-lateral longitudinal irregular greenish brown patch..... 10
10. Maxillae provided with conspicuous scopulae; ocular area without black hairy*sumatrana*
- Maxillae without conspicuous scopulae; ocular area not black hairy 11
11. Cephalothorax dorsally without median longitudinal broad pale band.*sutherlandi*

136. *Pardosa annandalei* (Gravely)1924. *Lycosa annandalei* Gravely, *Rec. Indian Mus.*, 26 : 606.1980. *Pardosa annandalei* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 351.

Distribution : India : West Bengal (Dists. Calcutta, Birbhum, Barddhaman, Darjiling, Hugli, Jalpaiguri); Assam; Andhra Pradesh; Bihar; Gujarat, Madhya Pradesh; Maharashtra; Karnataka; Kerala; Tamil Nadu.

137. *Pardosa atropalpis* Gravely

1924. *Pardosa atropalpis* Gravely, *Rec. Indian Mus.*, 26 : 610.

1980. *Pardosa atropalpis* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 325.

Material examined : 1(F), 1 (M), Arambagh, Dist. Hugli, West Bengal, 26.ii.1986, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Barddhaman, Hugli); Bihar; Andhra Pradesh; Orissa; Karnataka; Tamil Nadu.

138. *Pardosa birmanica* Simon

1884. *Pardosa birmanica* Simon, *Ann. Mus. civ. stor. nat. Genova*, 20 : 333.

1980. *Pardosa birmanica* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 329.

Material examined : 4(F), 3(M), Kamarpukur, Dist. Hugli, West Bengal, 27. ii. 1986, coll B.K. Biswas & party; 2 (F), 1(M), Hura, Dist. Puruliya, West Bengal 12.ix.1987, coll. M. Prasad; 1(F), Manbazar, Dist. Puruliya, West Bengal, 13.ix. 1987, coll. M. Prasad; 2(F), Habibpur, Dist. Maldah, West Bengal, 6.xi. 1988, coll. B.K. Biswas & party, 1 (F), Ranijhcel, Bantala, Dist. Calcutta, West Bengal, 6.v. 1987, coll. T. Sengupta.

Distribution : India : West Bengal (Dists. Calcutta, Birbhum, Barddhaman, Darjiling, Murshidabad); Bihar, Andhra Pradesh; Gujarat; Himachal Pradesh, Karnataka; Maharashtra; Madhya Pradesh; Meghalaya; Orissa; Punjab; Rajasthan; Tamil Nadu; Uttar Pradesh. Elsewhere : Burma, Java, Pakistan.

139. *Pardosa burasantiensis* Tikader & Malhotra

1976. *Pardosa burasantiensis* Tikader & Malhotra, *Proc. Indian Acad. Sci.*, 83(3) : 130.

1981 *Pardosa burasantiensis* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 55.

Distribution : India : West Bengal (Dists. : Calcutta, Hugli).

140. *Pardosa heterophthalmus* (Simon)

1898. *Acroniops heterophthalmus* Simon, *Hist. nat. des Araignees*, 2 : 362.

1980. *Pardosa heterophthalmus* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 345.

Material examined : 1 (F), Nardwara, Dist. Puruliya, West Bengal, 15.ix. 1987, coll. M. Prasad.

Distribution : India : West Bengal (Dist. Puruliya), (New record); Tamil Nadu. Elsewhere : Java.

141. *Pardosa leucopalpis* Gravely

1924. *Pardosa leucopalpis* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 349.

Distribution : India : West Bengal (Dist. Calcutta).

142. *Pardosa mukundi* Tikader & Malhotra

1980. *Pardosa mukundi* Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 326.

Material examined : 1 (F), Tarapith, Dist. Birbhum, West Bengal, 7.x.1987, coll. M. Prasad.

Distribution : India : West Bengal (Dist. Birbhum) (New record); Maharashtra.

143. *Pardosa oakleyi* Gravely

1924. *Pardosa oakleyi* Gravely, *Rec. Indian Mus.*, 26 : 610.

1981. *Pardosa oakleyi* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 57.

Material examined : 3(F), Chittaranjan, Dist. Bardhaman, West Bengal, 23.ii. 1986, coll. B.K. Biswas & party; 1 (F), Barakar, Dist. Bardhaman, West Bengal, 22.ii. 1986, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. Bardhaman); Bihar; Karnataka; Punjab; Tamil Nadu. Elsewhere : Pakistan.

144. *Pardosa shyamae* (Tikader)

1970. *Lycosa shyamae* Tikader, *Rec. zool. Surv. India*, 64(1-4) : 67.

1980. *Pardosa shyamae* : Tikader & Malhotra, *Fauna of India, Spiders ; Araneae*, 1(2) : 343.

Distribution : India : West Bengal (Dist. Darjiling).

145. *Pardosa sumatrana* (Thorell)

1890. *Lycosa sumatrana* Thorell, *Ann. Mus. Stor. nat. Genova*, 30:136.

1981. *Pardosa sumatrana* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 56.

Material examined : 12(F) Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.iv.1984, coll. B. K. Biswas & party; 11(F), Petrapole, Dist. North 24-Parganas, West Bengal, 2.iv.1984, coll. B. K. Biswas & party; 2(F), Kamarpukur, Dist. Hugli, West Bengal, 27.ii.1986, coll. B. K. Biswas & party; 1(F), Tarakeswar, Dist. Hugli, West Bengal, 28.ii.1986, coll. B. K. Biswas & party; 1(F) Durgapur, Dist. Bardhaman, West Bengal, 24.ii.1986, coll. B. K. Biswas & party; 1(F), Ranighecl, Bantala, Calcutta, West Bengal, 17.vii.1987, coll. M. De.

Distribution : India : West Bengal (Dists. Calcutta, Birbhum, Darjiling, Bardhaman, Hugli, North

24-Parganas); Andhra Pradesh; Arunachal Pradesh; Bihar; Gujarat; Himachal Pradesh; Karnataka; Kerala; Madhya Pradesh; Maharashtra; Meghalaya; Tamil Nadu. Elsewhere : Bangladesh, Sri Lanka, Sumatra.

146. *Pardosa sutherlandi* (Gravely)

1924. *Lycosa sutherlandi* Gravely, *Rec. Indian Mus.*, 26 : 606.

1980. *Pardosa sutherlandi* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae*, 1(2) : 347.

Distribution : India : West Bengal (Dist. Darjiling)

Genus 52. *Venonia* Thorell 1894

1894. *Venonia* Thorell, *Bull. Soc. Ent. Ital.*, 26 : 332.

Type species : *Venonia coruscans* Thorell

Distribution : India, New Holland, Singapore.

147. *Venonia himalayensis* Gravely

1924. *Venonia himalayensis* Gravely, *Rec. Indian Mus.*, 26 : 608.

1980. *Venonia himalayensis* : Tikader & Malhotra, *Fauna of India, Spiders : Araneae* 1(2) : 434.

Diagnosis : Cephalothorax longer than wide, clothed with fine hair; middle of the cephalothorax provided with conspicuous fovea. Anterior row of eyes strongly procurved, anterior median smaller than the laterals. Ocular quad are wider than long. Labium as long as wide. Chelicerae moderately strong. Legs long clothed with hair. Male and female almost same size.

Abdomen longer than wide, oval in shape. Dorsum provided with three longitudinal rows of oblique stripes.

Distribution : India : West Bengal (Dist. Darjiling)

Family PISAURIDAE

Genus 53. *Pisaura* Simon 1885

1885. *Pisaura* Simon, *Ann. Soc. Ent., France* : 254.

1970. *Pisaura* : Tikader, *Rec. zool. Surv. India*, 64 (1-4) : 59.

Diagnosis : The median ocular area a little longer than wide, lower margin of the furrow of the chelicerae armed with three teeth. Abdomen tapering behind and covered with a dense pubescence.

Type-species : *Pisaura mirabilis* (Clerck)

Distribution : Cosmopolitan except Australia.

148. *Pisaura gitae* Tikader

1970. *Pisaura gitae* Tikader, *Rec. zool. Surv. India*, 64 (1-4) : 59.

Diagnosis : Cephalothorax and abdomen light to deep brown, legs green in colour. Cephalothorax longer than wide, convex, cephalic region slightly high, clothed with thick fine hair, middle and lateral margins provided with longitudinal brown patches. Eyes of anterior row slightly short, recurved and almost similar in size. Posterior row of eyes more recurved than anterior row and nearly equal in size and base of each eye encircled with black patch. Ocular quad longer than wide and narrowing in front. The lower margin of furrow of the chelicerae armed with three teeth. Sternum heart-shaped, pointed behind, clothed with hair. Abdomen longer than wide, clothed with thick hair. Anterior half of abdomen with two longitudinal white lines and both lateral margins provided with broad longitudinal white lines extending from base to end of abdomen.

Material examined : 1(F), Barti Bill, Dist. North 24-Parganas, West Bengal, 23.viii. 1988, coll. S. Bhuinya.

Distribution : India : West Bengal (Dist. North 24-Parganas); Sikkim.

Key to the genera of the family Tetragnathidae Menge

1. Spinnerets present beyond the tail *Eucta*
 Spinnerets not present beyond the tail 2
2. Abdomen long and narrow and bears the spinnerets near its end..... *Tetragnatha*

Genus 54. *Eucta* Simon 1881

1881. *Eucta* Simon, *Ar. Fr.*, 5 : 5.

1972. *Eucta* : Tikader, *Rec. zool. Surv. India*, 64(1-4) : 37.

Type-species : *Eucta gallica* Simon

Distribution : India, Europe, Japan, Malaysia.

149. *Eucta javanas* Thorell

1895. *Eucta javanas* Thorell, *Spiders of Burma* : 146.

1981. *Eucta javanas* : Tikader & Biswas, *Rec. zool. Surv. India*, *occ. pap.* No. 30(1) : 46.

Distribution : India : West Bengal (Dists. Calcutta, Birbhum, Darjiling); Bihar; Karnataka; Orissa; Tamil Nadu.

Genus 55. *Tetragnatha* Latreille 18041804. *Tetragnatha* Latreille, *Neuv. Diet. d'Hist. Nat.*, 24 : 135.1977. *Tetragnatha* : Tikader, *Rec. zool. Surv. India*, 72 : 275.*Type-species* : *Tetragnatha extens* Linn.*Distribution* : Tropical countries of the world.Key to the species of the genus *Tetragnatha* Latreille

1. Fang slender and unarmed; Abdomen decorated with minute silvery white dots...*andamanensis*
Fang slightly geniculata, armed; abdomen not decorated with minute silvery white dots.....2
2. Chelicerae very long, with three large spines close together at the commencement of the ventral row*mandibulata*

150. *Tetragnatha andamanensis* Tikader1977. *Tetragnatha andamanensis* Tikader, *Rec. zool. Surv. India*, 72 : 175.

Material examined : 2(F), 1 (M), Kakdwip, Dist. South 24-Parganas, West Bengal, 23.iii. 1984, coll. B.K. Biswas & party; 1(M), Gopalpur, Dist. North 24-Parganas, West Bengal, 3.iv. 1984, coll. B.K. Biswas & party; 4 (M), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. B.K. Biswas & party; 1 (F), Basirhat, Dist. North 24-Parganas, West Bengal, 28.iii. 1984, coll. B.K. Biswas & party; 3 (M), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.iv. 1984, coll. B.K. Biswas & party; 3 (M), Gangasagar, Dist. South 24-Parganas, West Bengal, 20.iii. 1984, coll. B.K. Biswas & party; 6(F), 2 (M), Gossanimari forest, Dist. Koch Bihar, West Bengal, 10.i. 1985, coll. Bijan Biswas; 5 (F), 1 (M), Raigange, Dist. West Dinajpur, West Bengal, 20.i. 1985, coll. Bijan Biswas; 1 (F), 1 (M), Jalpaiguri, Dist. Jalpaiguri, West Bengal, 24.i. 1985, coll. Bijan Biswas; 1 (M), Asansol, Dist. Barddhaman, West Bengal, coll. B.K. Biswas & party; 2 (F), Mahadebpur, (Gour), Dist. Maldah, West Bengal, 3.xi. 1988, coll. B.K. Biswas & party; 3 (F), Berhampur, Dist. Murshidabad, West Bengal, 10.xi. 1988, coll. B.K. Biswas & party; 2 (M), Medinipur, Dist. Medinipur, West Bengal, 24.xi. 1988, coll. B.K. Biswas & party 4 (F), 1 (M), Tarapith, Dist. Birbhum, West Bengal, 6.x. 1987, coll. M. Prasad; 1(M), Pedda, Manbazar, Dist. Puruliya, West Bengal, 13.ix. 1987, coll. M. Prasad; 3 (F), 2 (M), Baribill, Dist. North 24-Parganas, West Bengal, 2.xi. 1987, coll. M.De.

Distribution : India : West Bengal (Dists. Bankura, Birbhum, Barddhaman, Koch Bihar, Jalpaiguri, Maldah, Medinipur, Murshidabad, Puruliya, North 24-Parganas and South 24-Parganas (New record); Andaman Island.

151. *Tetragnatha mandibulata* Walckeneer1837. *Tetragnatha mandibulata* Walckeneer, *Ins. Apt.*, 2 : 211.

Material examined : 13 (F), Raigange, Dist. West Dinajpur, West Bengal, 20.i. 1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Darjiling, West Dinajpur); Assam; Bihar; Karnataka; Orissa; Tamil Nadu. Elsewhere : Sri Lanka.

Family ARANEIDAE

Key to the Subfamilies of the family Araneidae

1. Posterior row of eyes nearly straight or recurved; lateral eyes subequal.....Subfamily Araneinae
 Posterior row of eyes not straight or recurved; lateral eyes not sub-equal 2
2. Spinnerets situated on an elevated circular space surrounded by a thick flange in the form of a ring; abdomen hard flattened dorsally and provided with conical humps and spines.....
 Subfamily Gasteracanthinae
 Spinnerets not surrounded by thick flange in the form of a ring; abdomen not hard and not provided with conical humps and spines 3
3. Epigastric plates with transverse furrow; chelicerae with rudimentary boss.....Sub-family Metinae
 Epigastric plates not provided with transverse furrow; chelicerae usually having well developed boss 4
4. Libium longer than wide; abdomen two and one-half to three times as long as wide; tarsus iv not provided with sustentaculum Sub family Nephilinae

Subfamily ARANEINAE

Key to the genera of the Subfamily Araneinae

1. Thoracic groove transverse; epigyne with distinct scape, offer wrinkled, not provided with any lateral lobes*Araneus*
 Thoracic groove not transverse, epigyne without scape, and with lateral lobes 2
2. Eyes of anterior row not evenly spaced or medians closer to each other than to laterals
*Argiope*
 Eyes of anterior row evenly spaced or median not closer to each other than laterals.....3
3. Carapace strongly convex, anteriorly roundish; cephalic region strongly elevated than thoracic region; abdomen provided with a few tubercles.*Chorizopes*

- Carapace may or may not convex on anteriorly; cephalic region not elevated than thoracic region; abdomen may or may not with tubercles4
4. Posterior median eyes very close, nearly touching; carapace provided with a U shaped junction between cephalic and thoracic region *Cyclosa*
- Posterior median eyes not very close; carapace not having any U shaped junction between cephalic and thoracic region 5
5. Integument of abdomen leathery; dorsum of abdomen strongly convex; epigyne provided with short blunt scape *Cyrtarachne*
- Integument of abdomen not leathery, provided with numerous tubercle; dorsum of abdomen not strongly convex, epigyne with no scape.....6
6. Carapace flat with distinct thoracic furrow; abdomen anteriorly very high one provided with atleast one pair of shoulder humps *Cyrtophora*
- Carapace not flat, thoracic furrow may or may not distinct; abdomen anteriorly not high and shoulder humps may or may not present 7
7. Eyes of anterior row evenly spaced , or median closer to lateral than to each other.....*Gea*
- Eyes of the median row not evenly spaced, median closer to lateral than to each other.....8
8. Abdomen a little pointed midlongitudinally over the carapace and no caudal projection; (Ventral side of abdomen with a white median longitudinal band framed by black) *Larinia*
- Ventral side of the abdomen not provided with median longitudinal band which frame by black...9
9. Carapace with cephalic region bulging behind the ocular area, also provided with granules; anterior row of eyes procurved; epigyne with short beak like scape *Parawixia*
- Carapace with cephalic region not bulging and no granules, anterior row of eyes recurved; epigyne may or may not provided with scape; when present, not beak-like 10
10. Abdomen as high behind its middle as at its base, and elliptical in outline or broader behind the middle; small species with short legs *Singa*
- Abdomen highest toward its base, and usually broadest near the base..... 11
11. Cephalic region brownish black than light coloured thoracic region and provided with very few hair; dorsum of abdomen with distinct folium *Zygeilla*

- Dorsum of the abdomen not provided with distinct folium 12
12. Thoracic groove longitudinal epigyne with unwrinkled scape and provided with one or two pairs of lateral lobes *Neoscona*

Genus 56. *Araneus* Clerck 1757

1757. *Araneus* Clerck, *Argn. Suec.*, : 15.
 1981. *Araneus* : Tikader & Biswas, *Rec. zool. Surv. India. occ. pap.* No. 30(1) : 19.
 1982. *Araneus* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 219.

Type-specimens : *Araneus angulatus* Clerck

Distribution : Cosmopolitan.

Key to the species of the genus *Araneus* Clerck

1. Epigyne with short, thick, unwrinkled scape; carapace less hairy..... *bituberculata*
 Epigyne long, thin, wrinkled scape; carapace hairy 2
2. Cephalic region much elevated in the middle, forming a ridge just behind the ocular area.....
 *dehaanii*
 Cephalic region not elevated in the middle, and not forming ridge just behind the ocular area.....3
3. Thoracic region provided with an inconspicuous transverse groove..... *excelsus*
 Thoracic region not provided with a inconspicuous transverse groove 4
4. Abdomen elongated and triangular in shape provided with a pair of shoulder hump
 *himalayensis*
 Abdomen not elongated and triangular in shape and not provided with a pair of said hump.....5
5. Maxillae square in shape and labium wider than long *mitifica*

152. *Araneus bituberculata* (Walckenaer)

1802. *Aranea bituberculata* Walckenaer, *Faun. Pair*, 2 : 191.
 1929. *Aranea bituberculata* : Simon, *Arachn. de France*, 6(3) : 699.
 1982. *Araneus bituberculata* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 231.

Distribution : India : West Bengal (Dist. Calcutta); Himachal Pradesh, Manale.

153. *Araneus dehaanii* (Doleschall)

1859. *Epeira dehaanii* Doleschall, *Verh. Nat. vereen Nederland, Indie*, 5(5) : 33.
 1981. *Araneus dehaanii* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 21.

Distribution : India West Bengal (Dists. Calcutta, North 24-Parganas); Karnataka; Sikkim. Elsewhere : Burma; Indo and Austro-Malaysia, Java, Sumatra, Japan.

154. *Araneus excelsus* (Simon)

1889. *Glytogona excelsus* Simon, *J. Asiat. Soc. Bengal*, 58 : 337.
 1981. *Araneus excelsus* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 20.

Distribution : India : West Bengal (Dist. North 24 Parganas); Berkuda Islands; Chotonagpur; Gujarat; Maharashtra. Elsewhere : Pakistan.

155. *Araneus himalayensis* Tikader

1975. *Araneus haimalayensis* Tikader, *Proc. Indian Acad. Sci.*, 81 (4) : 146.

Distribution : India : West Bengal (Dist. Darjiling).

156. *Araneus mitifica* (Simon)

1886. *Epeira mitifica* Simon, *Act. Soc. Linon. Bordeaux*, 40 : 150.
 1906. *Araneus mitifica* : Bosenberg & Strand, *Abh. senckenb naturforsch. Ges.*, 39(1-2) : 22.
 1982. *Araneus mitifica* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 233.

Material examined : 5 (F), Subhasini Tea Estate, Nilpara, Dist. Jalpaiguri, West Bengal, 13.i.1985, coll. Bijan Biswas; 1 (F) Raigange, Dist. West Dinajpur, West Bengal, 14.i. 1985, coll. Bijan Biswas; 2 (M), Santipur, Dist. Nadia, West Bengal, 17.ii. 1986, coll. B.K. Biswas & party; 2 (F), Kalyani Dist. Nadia, West Bengal, 15.ii. 1986, coll. B.K. Biswas & party; 1(F) 1 (M), Plassey, Dist. Nadia, 19.ii. 1986, coll. B.K. Biswas.

Distribution : India : West Bengal (Dists. Jalpaiguri, Nadia); Maharashtra; Karnataka. Elsewhere: Pakistan, Burma.

Genus 57. *Argiope* Audouin 1826

1826. *Argiope* Audouin, in Savigny, *Descriptions de l' Egypte*, 1(4) : 121.
 1982. *Argiope* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 111.

Type-species : *Argiope lobata* (Thorell)

Distribution : Tropical and temperate countries of the world.

Key to the species of the genus *Argiope* Audouin

1. Abdomen broadly oval and conspicuously truncated anteriorly; dorsum provided with black transverse stripes and forming a net work on the posterior half *aemula*
 Abdomen elongated oval with no truncation anteriorly, dorsum with no net work of black stripes....
2
2. Anterior edge of the epigyne provided with a broad and conspicuous lip; median epigynal septum abruptly wide posteriorly *anasuja*
 Anterior edge of the epigyne provided with very thin and inconspicuous lip; median epigynal septum gradually wider posteriorly3
3. Three pairs of conspicuous lateral lobes on the abdomen; epigyne not provided with any rim and median epigynal septum rather thin *arcuata*
 There is no lateral lobes on the abdomen; epigyne provided with rim and median thick epigynal septum4
4. Abdomen anteriorly blunt; dorsum with a median longitudinal portion clothed with silky pubescence and some yellowish patches *catenulata*
 Abdomen not blunt anteriorly, dorsum not provided with median longitudinal portion and not clothed with silky pubescence5
5. Abdomen broadest at the middle; median epigynal septum very broad *kalimpongensis*
 Abdomen broadest, more posteriorly than middle; median epigynal septum not broad.....6
6. Chelicerae small and weak, brownish, provided with rudimentary boss..... *lalita*
 Chelicerae strong and moderate yellowish in colour, provided with well developed boss.....7
7. Maxillae roundish in shape, dark brown at the proximal part. *pulchella*
 Maxillae not roundish in shape, not dark brown at the proximal part8
8. Cephalothorax and legs light brownish yellow in colour *shillongensis*

157. *Argiope aemula* (Walckenaer)

1841. *Epeira aemula* Walckenaer, *Hist. Nat. Ins. Apt.*, 2 : 118.
 1970. *Argiope aemula* : Tikader, *Rec. zool. Surv. India*, 64(1-4) : 29.
 1982. *Argiope aemula* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 119.

Distribution : India : West Bengal (Dist. Darjiling); Andaman Nicobar Islands; Gujarat; Maharashtra; Tamil Nadu. Elsewhere : Sri Lanka; Burma; Indo and Austro-Malaysia.

158. *Argiope anasuja* Thorell

1887. *Argiope anasuja* Thorell, *Annali. Mus. civ. Genova*, 25 : 162.

1982. *Argiope anasuja* : Tikader, *Fauna of India, Spiders : Aranaea*, 2 (1) : 127.

Material examined : 2 (F), Gosanimari forest, Dist. Koch Bihar, West Bengal, 10.i.1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Koch Bihar); Bihar; Karnataka; Maharashtra; Orissa; Tamil Nadu. Elsewhere : Sri Lanka; Pakistan.

159. *Argiope arcuata* Simon

1884. *Argiope arcuata* Simon, *Annali, Mus civ. Genova*, 25 : 160.

1982. *Argiope arcuata* : Tikader, *Fauna of India, Spiders : Aranee*, 2(1) : 115.

Material examined : 1 (F), Santipur, Dist Nadia, West Bengal, 17.ii.1986, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dist. Nadia) (New Record); Bihar; Karnataka; Maharashtra; Madhya Pradesh; Rajasthan; Tamil Nadu. Elsewhere : Burma.

160. *Argiope catenulata* (doleschall)

1859. *Epeira catenulata* Doleschall, *Act. Soc. Ind. Neerl.*, 5 : 30.

1981. *Argiope catenulata* : Tikader & Biswas, *Rec. zool. Surv. India.occ. pap.* No. 30(1) : 35.

1982. *Argiope catenulata* : Tikader, *Fauna of India, Spiders : Aranaea*, 2 (1) : 121.

Material examined : 1 (F), Kachuberia, Dist. South 24-Parganas, West Bengal, 20.iii.1984, coll. B.K. Biswas & party; 2 (F), Patharpratima, Dist. south 24-Parganas, West Bengal, 22.ii. 1984, coll. B.K. Biswas & party; 3 (F), Gosava, Dist. South 24-Parganas, West Bengal, 26.iii.1984, coll. Bijan Biswas; 2 (F), Basanti, Dist. South 24-Parganas, West Bengal, 25.iii. 1984, B.K. Biswas & party; 1 (F), Baikuntha pur, Dist. North 24-Parganas, West Bengal, 29.iii.1984, coll. B.K. Biswas & party ; 2 (F), Nilgange, Dist. North 24-Parganas, West Bengal, 27.iii.1984, coll. B.K. Biswas & party; 5 (F), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. B.K. Biswas & party; 1 (F), Ranaghat, Dist. Nadia, West Bengal. 16.ii.1986, coll. Kajal Biswas; 1 (F), Chilapata forest, Dist. Koch Bihar, West Bengal, 9.i.1985, coll. Bijan Biswas; 3 (f), Kamarpukur, Dist. Hugli, West Bengal 27.ii.1986, coll. Kajal Biswas.

Distribution : India : West Bengal (Dists. Hugli, Koch Bihar, North & South 24-Parganas); Andaman and Nicobar Islands. Elsewhere : Burma; Sri Lanka, Indo and Austro-Malaysia.

161. *Argiope kalimpongensis* Sinha

1951. *Argiope kaimpongensis* Sinha, *Rec. Indian Mus.*, 49 : 77.
 1982. *Argiope kalimpongensis* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 125.

Distribution : India : West Bengal (Dist. Darjiling); Assam; Sikkim.

162. *Argiope lalita* Sherriffs

1928. *Argiope lalita* Sherriffs, *Ann. Mag. nat. Hist.*, (10) 2 (8) : 186.
 1982. *Argiope lalita* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 113.

Distribution : India : West Bengal (Dist. Calcutta); Karnataka.

163. *Argiope pulchella* Thorell

1881. *Argiope pulchella* Thorell, *Annali. Mus. civ. Genova*, 18 : 74.
 1982. *Argiope pulchella* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 129.

Material examined : 1 (F), Jalpaiguri, Dist. Jalpaiguri, West Bengal, 24.i.1983, coll. Bijan Biswas; 2(F), Santipur, Dist. Nadia, West Bengal, 17.ii.1986, coll. Kajal Biswas; 1 (F), Joypur, Dist. Bankura, West Bengal, 28.ix.1987, coll. M. Prasad; 1(F), Gajal, Dist. Maldah, West Bengal, 1.xi.1988, coll. B. K. Biswas & party; 1(F), Gour, Dist. Maldah, West Bengal, 3.xi.1988, coll. Bijan Biswas; 1(F) Habibpur, Dist. Maldah, West Bengal, 6.xi.1988, coll. B. K. Biswas & party; 1(F) Kandhi, Dist. Murshidabad, West Bengal, 11.xi.1988, coll. Bijan Biswas; 2 (F) Lalbagh, Dist. Murshidabad, West Bengal, 13.xi.1988, coll. B. K. Biswas & party; 2 (F) Kolaghat, Dist. Medinipur, West Bengal, 19.xi.1988, coll. B. K. Biswas & party; 1 (F), Jhargram, Dist. Medinipur, West Bengal, 20.xi.1988, coll. B. K. Biswas & party; 1 (F), Belpahari, Dist. Medinipur, West Bengal, 21.xi.1988, coll. B. K. Biswas & party.

Distribution : India : West Bengal (Dists. Bankura, Jalpaiguri, Maldah, Murshidabad, Medinipur, Nadia, North 24-Parganas, Darjiling); Assam; Maharashtra; Orissa; Tamil Nadu. Elsewhere : Burma; Malaya Peninsula.

Genus 58. *Chorizopes* O.P. Cambridge 1890

1890. *Chorizopes* Cambridge, *Proc. zool. Soc. Londer*, : 737.
 1895. *Chorizopes* : Simon, *Hist. Nat. Araign.*, 1 (4) : 922.
 1982. *Chorizopes* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 157.

Distribution : India, Burma, Japan.

164. *Argiope shillongensis* Sinha

1951. *Argiope shillongensis* Sinha, *Rec. Indian Mus.*, 49 : 75.
 1982. *Argiope shillongensis* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 117.

Distribution : India : West Bengal (Dist. North 24-Parganas); Meghalaya.

165. *Chorizopes bengalensis* Tikader

1975. *Chorizopes bengalensis* Tikader, *Proc. Indian Acad. Sci.*, **81**(4) : 14.

Diagnosis : Cephalothorax longer than wide, clothed with fine black and grey pubescence, wide and high in front, convex and descending steeply behind the cephalic region. Eyes pearly white, lateral eyes nearly contiguous, small and far away from the middle eyes. Ocular quad slightly wider in front than behind. Legs strong clothed with hair, provided with transverse brown bands. Sternum triangular, pointed behind, deep brown and clothed with fine hair. Abdomen longer than wide, clothed with fine pubescence.

Dorsum with three obtused or blunt tubercles arranged in a linear order. Posterior end provided with three tubercles arranged vertically. Dorsum ornamented with admixture of chalk white and brown spots.

Distribution : India : West Bengal (Darjiling).

Genus 59. *Cyclosa* Menge 1866

1866. *Cyclosa* Menge, *Schrift, Nat. Ges. Danzig* (N.F.) **1** : 73.

1977. *Cyclosa* : Levi, *Bull. Mus. comp. Zool. Harv.*, **148** (3) : 73.

1982. *Cyclosa* : Tikader, *Fauna of India, Spiders : Araneae*, **2**(1) : 183.

Type-species : *Cyclosa conica* (Pallas).

Distribution : Cosmopolitan.

Key to the species of the genus *Cyclosa* Menge

1. Abdomen having no paired tubercles : long blunt caudal tubercle.....*bifida*
Abdomen having paired tubercles; median caudal tubercle may or may not present.....2
2. Caudal tubercle not bifurcated, one pair less distinct tubercle at the posterior part of abdomen; base of epigyne small and less prominent.....*confraga*
3. Two pairs of distinct tubercles; scape of the epigyne with no contraction; narrow tip of the scape slightly bent*hexatuberculata*
Abdomen with no paired tubercles anteriorly on the dorsum; scape of the epigyne long and thick; tip of the scape narrow4
4. Caudal tubercle short and blunt; bent tip of the scape rather long*insulana*
Caudal tubercle long and pointed; bent tip of the scape very short5

5. Abdomen having one antero-median hump on the dorsum*Simoni*
 Abdomen without any antero-median hump on the dorsum6
6. One pair of distinct tubercles of the base of the caudal tubercle; scape of the epigyne with contraction; narrow tip of the scape bent nearly at right angle to the base..... *spirifera*

166. *Cyclosa bifida* (Doleschall)

1859. *Epeira bifida* Doleschall, *Act. Soc. India Neent.*, 5 : 38.
 1895. *Cyclosa bifida* : Simon, *Hist. Nat. Araig*, 1(9) : 779.
 1982. *Cyclosa bifida* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 185.

Material examined : 1 (F), Subhasini Tea Estate, Dist. Jalpaiguri, West Bengal, 13.i. 1985, coll. Bijan Biswas; 1(F), Jaldapara Sanctuary, Dist. Jalpaiguri, West Bengal, 19.i.1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. Jalpaiguri), (New Record); Sikkim; Meghalaya. Elsewhere: Sri Lanka, New Gunca, Malaysia.

167. *Cyclosa confraga* (Thorell)

1892. *Epeira confraga* Thorell, *Bull. Soc. ent. Ital.*, 24 : 239.
 1909. *Cyclosa confraga* : Simon, *Bull. Scient. Fr. Belg.*, 42 : 104.
 1982. *Cyclosa confraga* : Tikader, *Fauna of India, Spiders : Ananeae*, 2 (1) : 193.

Material examined : 1 (F), Ranaghat, Dist. Nadia, West Bengal, 16.ii.1986, coll. B.K. Biswas & party.

Distribution : India : West Bengal, (Dist. Nadia), (New Record); Assam; Gujarat; Maharashtra; Karnataka; Sikkim. Elsewhere : Burma, Malaysia.

168. *Cyclosa hexatuberculata* Tikader

1982. *Cyclosa hexatuberculata* Tikader, *Fauna of India, Spiders : Ananeae*, 2(1) : 197.

Material examined : 1 (F), Jalpaiguri, Dist. Jalpaiguri, West Bengal, 24.i.1985, coll. Bijan Biswas; 2 (f), Kandhi, Dist. Murshidabad, West Bengal, 11.xi. 1988, coll. B.k. Biswas & party; 1 (M), Chilapata forest, Dist. Koch Bihar, West Bengal, 1.i.1985 coll. B.K. Biswas; 2 (F), Mahadebpur, (Gour), Dist. Maldah, West Bengal, 3.xi.1988, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Koch Bihar, Jalpaiguri, Maldah) (New Record).

169. *Cyclosa insulana* (Costa)

1934. *Epeira insulana* Costa, *Ann. Zoob.* : 65.
 1892. *Cyclosa insulana* : Thorell, *Ann. Mag. nat. Hist.*, 9(6) : 232.
 1982. *Cyclosa insulana* : Tikader, *Fauna of India, Spiders : Ananee*, 2(1) : 201.

Distribution : India: West Bengal (Dist. Darjiling); Meghalaya; Sikkim.

170. *Cyclosa simoni* Tikader

1982. *Cyclosa simoni* Tikader, *Fauna of India, Spider : Ananeae*, 2 (1) : 203.

Material examined : 1 (F), Subhasini Tea Estate, Dist. Jalpaiguri, West Bengal, 13.i. 1985, coll. Bijan Biswas; 1 (F) Jaintia forest, Dist. Jalpaiguri, West Bengal, 18.i.1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. Jalpaiguri), (New Record); Sikkim.

171. *Cyclosa spirifera* Simon

1889. *Cyclosa spirifera* Simon, *J. Asiat. soc. Beng.*, 58:337.

1982. *Cyclosa spirifera* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 195.

Material examined : 1 (F), Subhasini Tea Estate, Dist. Jalpaiguri, West Bengal, 13.i. 1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. Jalpaiguri), (New Record).

60. Genus *Cyrtarachne* Thorell 1868

1868. *Cyrtarachne* Thorell, *Eug. Resa. Arachn.*, : 10.

1960. *Cyrtarachne* : Tikader, *J. Bombay nat. Hist. Soc.*, 57 (3) : 547.

Type-species : *Cyrtarachne qrubei* (Keyserling)

Distribution : Asia, Africa and Australia.

Key to the species of the genus *Cyrtarachne* Thorell

1. Abdomen not provided with any large, lateral tubercles; epigynal scape with broad rim
..... *bengalensis*
- Abdomen provided with large lateral tubercles, epigynal scape without broad rim.....2
2. Dorsum provided with large sigilla each surrounded by black patches; epigynal scape absent.....
..... *gravelyi*
- Dorsum provided with large sigilla, but not surrounded by black patches; indistinct epigynal scape
with thick rim 3
3. Abdomen with large, smooth convex indistinct prominences having chocolate coloured patches;
scope broad and blunt *inequalis*

Abdomen with large smooth, convex indistinct prominences having greenish patches; scope thin and narrow 4

4. Dorsum of abdomen having a pair of smooth lateral prominences, provided with olive green and yellowish patches *reniceps*

172. *Cyrtarachne bengalensis* Tikader

1960. *Cyrtarachne bengalensis* Tikader, *J. Bombay nat. Hist. Soc.*, 57 (3) : 558.
1982. *Cyrtarachne bengalensis* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 147.

Distribution : India : West Bengal (Dist. Haora).

173. *Cyrtarachne gravelyi* Tikader

1960. *Cyrtarachne gravelyi* Tikader, *J. Bombay nat. Hist. Soc.*, 57(3) : 553.
1982. *Cyrtarachne gravelyi* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 147.

Distribution : India : West Bengal (Dist. Darjiling).

174. *Cyrtarachne inequalis* Thorell

1895. *Cyrtarachne inequalis* Thorell, *Spiders of Burma*, : 201.
1982. *Cyrtarachne inequalis* : Tikader, *Fauna of India, Spiders : Aranae*, 2(1) : 143.

Distribution : India : West Bengal (Dist. Haora), Madhya Pradesh, Burma.

175. *Cyrtarachne raniceps* Pocock

1900. *Cyrtarachne raniceps* Pocock, *Fauna Brit. India, Arachen.*, : 229.
1982. *Cyrtarachne raniceps* : Tikader, *Fauna of India , Spiders : Aranea*, 2 (1) : 145.

Distribution : India : West Bengal (Dist. Haora); Chikmangalur, Karnataka, Sri Lanka.

Genus 61. *Cyrtophora* Simon 1864

1864. *Cyrtophora* Simon, *Hist. Nat. des Araign*; 1 : 261.
1962. *Cyrtophora* : Tikader, *J. Linn. Soc.*, 44 (300) : 561.

Type-species : *Cyrtophora citricola* (Forsk.)

Distribution : Tropical and sub-tropical countries of the world.

Key to the species of the genus *Cyrtophora* Simon

1. Abdomen provided with two pairs of humps and one median caudal hump are not high up anteriorly; epigyne provided with a broad rim.....*cicatrosa*
 2. Abdomen provided with three pairs of humps, of which caudal pair bifurcate the abdomen posteriorly; epigyne provided with a narrow rim*citricola*
 3. Abdomen elongated; carapace not having blackish patches; epigyne provided with a distinct median septum*feae*
- Abdomen oval; dorsum decorated with numerous small white spots and no black patches; carapace uniformly blackish*moluccensis*

176. *Cyrtophora cicatrosa* (Stoliczka)

1869. *Epeira (Nephila) cicatrosa* Stoliczka, *J. Asiat. Soc. Beng.*, 33 : 242.

1982. *Cyrtophora cicatrosa* : Tikader, *Fauna of India, Spiders : Araneae* 2(1) : 178.

Material examined : 2 (F), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.iv. 1984, coll. B.K. Biswas & party; 3 (F), Kachuberia, Dist. South 24-Parganas, West Bengal) 20.iii. 1984, coll. B.K. Biswas & party; 1 (F), Namkhana, Dist. South 24-Parganas, West Bengal, 21.iii.1984, coll. B.K. Biswas; 5 (F), Kakdwip, Dist. South 24-Parganas, West Bengal, 23.iii. 1984; coll. B.K. Biswas; 3(F), Patharpratima, Dist. South 24-Parganas, West Bengal, 22.iii. 1984, coll. B.K. Biswas; 13 (F) Gosava, Dist. South 24-Parganas, West Bengal, 26. iii. 1984, coll. Dr. B.K. Biswas; 5(F), Basanti, Dist. South 24-Parganas, West Bengal, 25.iii.1984, coll. B. K. Biswas; 4 (F), Nilgange, Dist. North 24-Parganas, West Bengal, 27.iii. 1984, coll. B.K. Biswas; 4 (F), Gossanimari forest., Dist. Koch Bihar, West Bengal, 10.i.1985, coll. Bijan Biswas; 7(F), Subhasini Tea Estate, Dist. Jalpaiguri, West Bengal, 13.i.1985, coll. Bijan Biswas; 2 (F), Jaintia forest, Dist. Jalpaiguri, West Bengal, 18.i.1985, coll. Bijan Biswas; 4 (F), Domkol, Dist. West Dinajpur, West Bengal, 21.i.1985, coll. Bijan Biswas; 3(F), Jaygaon, Dist. Koch Bihar, West Bengal. 18.i.1985, coll. Bijan Biswas; 3 (F), Jalpaiguri, West Bengal, 24.i. 1985, coll. Bijan Biswas; 4 (F), Kamarpukur, Dist. Hugli, West Bengal, 27.i. 1986, coll. B.K. Biswas & party; 7(F), Chittaranjan, Dist. Barddhaman, West Bengal, 23.ii. 1986, coll. B.K. Biswas; 5 (F), Tarkeswar, Dist. Hugli, West Bengal, 28.i. 1986, coll. B.K. Biswas, 3 (F), Durgapur, Dist. Barddhaman, West Bengal, 24.ii.1986, coll. Bijan Biswas; 4 (F), Arambagh, Dist. Hugli, West Bengal, 26.ii.1986, coll. Bijan Biswas; 7(F), Asansol, Dist. Barddhaman, West Bengal, 21.ii.1986, coll. Bijan Biswas; 2 (F), Plassey, Dist. Nadia, West Bengal, 19.ii.1986, coll. B.K. Biswas & party; 4 (F), Krishnagar, Dist. Nadia, West Bengal, 18.ii. 1986, coll. Bijan Biswas; 4 (F), Gajal, Dist. Maldah, West Bengal, 1.xi. 1988, coll. Bijan Biswas; 4 (F), Pias Bari, Dist. Maldah, West Bengal, 4. xi. 1988, coll. B.K. Biswas; 2 (F), Habibpur, Dist. Maldah West Bengal, 6.xi. 1988, coll. Bijan Biswas, 6 (F) Adina deer park, Dist. Maldah, West Bengal, 7.xi.1988, coll. Bijan Biswas; 3 (F), Maldah, Dist. Maldah, West Bengal, 8.xi. 1988, coll. B.K. Biswas; 6(F), Berhampur, Dist. Murshidabad, West Bengal, 10.xi. 1988, coll. B.K. Biswas & party; Kandhi, Dist. Murshidabad, West Bengal, 14.xi. 1988, coll. B.K. Biswas; 4 (F), Sagardighi, Dist. Murshidabad, West Bengal 16.xi. 1988. coll. B.K. Biswas & Party, 5 (F), Kolaghat, Dist. Medinipur, West Bengal, 19.xi.1988. coll. B.K. Biswas & party, 2 (F), Kharagpur, Dist. Medinipur, West Bengal, 27.xi. 1988, coll. B.K. Biswas & party; 4 (F),

Panskura, Dist. Medinipur, West Bengal, 23.xi. 1988, coll. Dr. B.K. Biswas; 4 (F), Medinipur, Dist. Medinipur, 24.xi.1988, coll. B.K. Biswas; 4 (F), Chandrakona Road, Dist. Medinipur, West Bengal, 25.xi.1988, coll. B.K. Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Bardhaman, Koch Bihar, Hugli, Jalpaiguri, Maldah, Medinipur, Murshidabad, Nadia); Allahabad, U.P.; Andaman and Nicobar Islands; Gujarat; Maharashtra; Punjab; Tamil Nadu. Elsewhere : Burma, Australia, Malaysia, New Guinea, Pakistan.

177. *Cyrtophora citricola* (Forsk.)

1775. *Aranea citricola* Forskal, *Descriptions animalium*, : 86.

1982. *Cyrtophora citricola* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 180.

Material examined : 3 (F), Durgapur, Dist. Bardhaman, West Bengal, 24.ii.1986, coll. Dr. B.K. Biswas & party; 5(F), Asansol, Dist. Bardhaman, West Bengal, 21.ii. 1986, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Bardhaman); Assam; Gujarat; Punjab; Karnataka; Maharashtra; Tamil Nadu, Madhya Pradesh. Elsewhere : Africa, Australia. Burma, Egypt, Europe, Madagascar, Malaysia.

178. *Cyrtophora feae* (Thorell)

1887. *Euetria feae* Thorell, *Ann. Mus. Genova*, 25 : 173.

1982. *Cyrtophora feae* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 176.

Distribution : India : West Bengal (Dist. Haora). Elsewhere : Burma.

179. *Cyrtophora moluccensis* (Doleschall)

1857. *Epeira moluccensis* Doleschall, *Naturrw. Ned. Indie*, 13 : 418.

1982. *Cyrtophora moluccensis* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 172.

Material examined : 1 (F), Chilapata Forest, Dist. Koch Bihar, West Bengal, 9.i.1985, col. Bijan Biswas.

Distribution : India : West Bengal (Dists. Koch Bihar, Darjiling); Andaman Nicobar Islands, Kerala; Karnataka; Madhya Pradesh. Elsewhere : Burma, Nepal, Sri Lanka, Austro-Malaysia.

Genus 62. *Gea* C.L. Koch 1843

1843. *Gea* Koch C.L., *Die Arachniden*, 10 : 101.

1971. *Gea* : Chrysonthus, *Zool. Verh. Leiden*, 113 : 18.

Type-species : *Gea heptagon* (Hentz)

Distribution : Asia, N. America.

180. *Gea corbetti* Tikader

1982. *Gea corbetti* Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 109.

Material examined : 3 (F), Jaldapara Sanctuary, Dist. Jalpaiguri, West Bengal, 19.i. 1985, coll. Bijan Biswas; 1 (F), Chittaranjan, Dist. Bardhaman, West Bengal, 23.ii. 1986, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Bardhaman, Jalpaiguri) (New Record); Uttar Pradesh.

Genus 63. *Larinia* Simon 1874.

1874. *Larinia* Simon, *Ar. Fr.*, 1 : 115.

1981. *Larinia* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 43.

Type-species : *Larinia lineata* (Lucas)

Distribution : Tropical and sub-tropical countries of the world.

Key to the species of the genus *Larinia* Simon

1. Cephalic region not clearly distinct from thoracic region *chloris*
 Cephalic region distinct from thoracic region 2
2. Labium as long as wide, brownish with proximal white boarder *jaysankari*
 Labium short, brownish with pale distal boarder 3
3. Dorsum of abdomen light yellowish white, provided with some greyish liner and a double of black spots *phtisica*

181. *Larinia chloris* (Audouin)

1825. *Epeira chloris* Audouin, *Descr. de. l Egrpte*, 22 : 347.

1982. *Larinia chloris* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 206.

Material examined : 2 (M), Krishnagar, Dist. Nadia, West Bengal, 18.ii. 1986, coll. Dr. B.K. Biswas & party; 1 (M), Adina deer park, Dist. Maldah, West Bengal, 7.xi. 1988, coll. Dr. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Maldah, Nadia), (New record); Maharashtra. Elsewhere: Egypt. Libiya, Syria, Uganda.

182. *Larinia jaysankari* Biswas

1984. *Larinia jaysankari* Biswas, *Bull. zool. Surv. India*, 6(1-3) : 133.

Distribution : India : West Bengal (Dists. Calcutta, Birbhum); (Type locality) : Assam; Kerala.

183. *Lanimia phtisica* (L. Koch)

1871. *Epeira phtisica* L. Koch, *Die Arachniden Australiens*, 1 (1) : 193.
 1975. *Larinia chhagani* Patel, *Oriental Ins.*, 9(11) : 113.
 1982. *Larinia phtisica* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 208.

Material examined : 2 (F), Parmadan deer park, Dist. North 24-Parganas., West Bengal, 1.iv.1984, coll. B.K. Biswas & party; 2 (F), 1 (M), Kalyani, Dist. Nadia, West Bengal, 15.ii. 1986. coll. B.K. Biswas and party; 2 (F), 1 (M), Krishnagar, Dist. Nadia, West Bengal, 18.ii. 1986, coll. B.K. Biswas & party; 1 (F), Barakar, Dist. Barddhaman, West Bengal; 22.ii. 1986, coll. B.K. Biswas & party; 6(F), 2 (M), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii.1984, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Barddhaman, Nadia, North 24-Parganas); Ahmedabad; Gujarat. Elsewhere : Australia, New Guinea.

Genus 64. *Parawixia* F.O.P. Cambridge 1904

1904. *Parawixia* F.O.P. Cambridge, *Biologia cent. am. (Zool)*, 2 : 487.
 1936. *Parawixia* : Chamberlin & Ive, *Bull. Univ. Utah. Biol.*, 27(5) : 52.

Type-species : *Parawixia destricta* (O.P. Cambridge)

Distribution : Cosmopolitan except Australia.

184. *Parawixia dehaanii* (Doleschall)

1859. *Epeira dehaanii* Doleschall, *Act. Soc. Ind. Neerl.*, 5(5):33.
 1970. *Araneus dehaanii* : Tikader, *Rec. zool., Surv. India*, 63 (1-4) : 30.
 1982. *Parawixia dehaanii* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 212.

Diagnosis : Cephalothorax and legs reddish brown, abdomen dark brown in colour. Cephalothorax longer than wide, narrowing in front, clothed with white pubescence, hair and spines with granular base. Cephalic region much elevated in the middle then forming a ridge behind the ocular area. Thoracic region provided with transverse groove. Ocular quad situated on an elevation, slightly wider in front than behind. Anterior median eyes larger than the posterior medians. Lateral eyes of both the rows nearly same in size, close and situated on the base of horn-like projection. Anterior row of eyes procurved and posterior rows of eyes recurved. Sternum heart-shaped pointed behind, reddish brown in colour, clothed with pubescence and hair with granular base. Chelicerae strong, reddish brown, provided with moderate base. Abdomen triangular, longer than wide, clothed with pubescence and hair, provided with two conspicuously pointed shoulder humps directed outward and on pointed tail hump at the posterior end. Five pairs of sigilla on the dorsum.

Material examined : 1(F), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii.1984, coll. B. K.

Biswas & party; 1(F) Jaintia Forest, Dist. Jalpaiguri, West Bengal, 18.i.1985, coll. B. K. Biswas; 1(F) Subhashini Tea Estate, Dist. Jalpaiguri, West Bengal, 13.1.1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Calcutta, Jalpaiguri, North 24-Parganas); Karnataka, Sikkim. Elsewhere : Burma, Java, Japan, Indo and Austro-Malaysia, Sumatra.

Genus 65. *Singa* Koch 1836

1836. *Singa* Koch, *Ar.*, 3 : 42.

1970. *Singa* : Tikader, *Rec. zool. Surv. India*, 64 (1-4) : 35.

Type species : *Singa hamata* Koch

Distribution : Cosmopolitan except Australia.

185. *Singa chota* Tikader

1970. *Singa chota* Tikader, *Rec. zool. Surv. India*, 64(1-4) : 35.

1981. *Singa chota* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 43.

Diagnosis : Cephalothorax and legs light green, abdomen shiny-white. Cephalothorax longer than wide, cephalic region slightly narrow and high, reddish brown in colour. Eyes pearly white, posterior row straight, anterior row recurved, posterior median eyes close to each other than to the posterior lateral eyes, lateral eyes almost contiguous. Ocular quad longer than wide and narrowing behind. Sternum heart-shaped, pointed behind, deep brown colour. Abdomen elliptical in out line. Dorsal side with shiny white, provided with a longitudinal brown cracked line.

Distribution : India : West Bengal (Dist. North 24-Parganas); Sikkim.

Genus 66. *Zygeilla* F.O.P. Cambridge 1902

1902. *Zygeilla* F.O.P. Cambridge, *Ann. Mag. nat. Hist.*, 9 (7) : 15.

1982. *Zygeilla* : Tikader, *Fauna of India, Spiders : Araneae* 2(1) : 214.

Type-species : *Zygeilla artica* (C. L. Koch)

Distribution : Cosmopolitan.

Key to the species of the genus *Zygeilla* F.O.P. Cambridge

1. Cephalic region blackish brown in colour *indica*
 Cephalic region not blackish brown in colour 2
2. Ocular quad slightly longer than wide *melanocrania*

186. *Zygeilla indica* Tikader & Bal1980. *Zygeilla indica* Tikader & Bal, *Proc. Indian Acad. Sci.*, 89(3) : 243-246.1982. *Zygeilla indica* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 217.

Material examined : 2(F), Patharpratima, Dist. South 24-Parganas, West Bengal, 22.iii.1984, coll. B. K. Biswas & party; 1(M), Kamarpukur, Dist. Hugli, West Bengal, 27.ii.1986, B. K. Biswas & party; 1(F), Barakar, Dist. Bardhaman, West Bengal, 22.ii.1986, coll. B. K. Biswas & party.

Distribution : India : West Bengal (Dists. Bardhaman, Hugli, South 24-Parganas) (New Record); Maharashtra.

187. *Zygeilla melanocrania* (Thorell)1887. *Epeira melanocrania* Thorell, *Annali. Mus. in Genova*, 25 : 209.1982. *Zygeilla melanocrania* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 215.

Material examined : 3(F), Patharpratima, Dist. South 24-Pgs., West Bengal, 22.iii.1984, coll. Biswas & party; 2(F), 1(M), Gopalpur, Dist. North 24-Parganas, West Bengal, 3.iv.1984, coll. B. K. Biswas & party; 1(F), Basirhat, Dist. North 24-Pgs., West Bengal, 28.iii.1984, coll. B. K. Biswas & Party; 2(F), Petrapole, Dist. 24-Pgs. (North), West Bengal, 2.iv.1984, coll. B. K. Biswas & party; 1(F), Barasat, Dist. North 24-Pgs., West Bengal, 30.iii.1984, coll. B. K. Biswas; 2(F) Gangasagar, Dist. South 24-Parganas, West Bengal, 20.iii.1984, coll. B. K. Biswas; 1(F), Krishnagar, Dist. Nadia, West Bengal, 18.ii.1986, coll. B. K. Biswas & party; 5(F) 1(M), Asansol, Dist. Bardhaman, West Bengal, 21.ii.1986, coll. B. K. Biswas & party.

Distribution : India : West Bengal (Dists. Bardhaman, Nadia, North and South 24-Parganas (New Record); Orissa. Elsewhere : Burma, Pakistan.

Genus 67. *Neoscona* Simon 18641864. *Neoscona* Simon, *Hist. nat. des Aragin*, 1 : 261.1981. *Neoscona* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 22.

Type-species : *Neoscona anabesca* (Walckenaer)

Distribution : Cosmopolitan.

Key to the species of the genus *Neoscona* Simon

1. Epigynal scape right angle to the base; lateral lobes inconspicuous *bengalensis*
Epigynal scape not right angle to the base; lateral lobes conspicuous 2
2. Four pairs of sigilla on the dorsum of abdomen; caudal hump with a large black spot..... *excelsus*

- Three pairs of sigilla on the dorsum of abdomen, caudal hump without black spot..... 3
3. Abdomen cone-shaped posteriorly; caudal hump much elongated and extended beyond the spinnerets *laglaizei*
- Abdomen not cone-shaped posteriorly caudal hump not elongated and does not extended.....4
4. Cephalic region provided with a conspicuous dark brown "V" shaped patch; epigynal scape with deep constriction *mukerjei*
- Cephalic region not having any "V" shaped patch; epigynal scape without a deep constriction....5
5. Abdomen triangular; epigynal scape short, broad and triangular *nautica*
- Abdomen sub-triangular, epigynal scape long, narrow6
6. Carapace provided with a conspicuous "V"-shaped brown mark; epigynal scape bent at right angle to the base *pavida*
- Carapace not provided with a conspicuous "V" shaped brown mark; epigynal scape not bent with right angle to the base 7
7. Abdomen nearly pentangular; caudal hump short *poonaensis*
- Abdomen not pentangular; caudal hump long 8
8. Lateral lobes of epigyne very distinct and horn-like and visible from ventral side..... *rumpfi*
- Lateral lobes of epigyne not distinct and not horn-like and not visible from ventral side.....9
9. Sternum dark brown with longitudinal white band; epigynal scape with no prominent rim, constriction present behind the lateral lobe *theis*

188. *Neoscona bengalensis* Tikader & Bal

1981. *Neoscona bengalensis* Tikader & Bal, *Rec. zool. Surv. India, occ. No. 24* : 15.

Material examined : 1(F), Santipur, Dist. Nadia, West Bengal, 17.ii.1986, coll. B. K. Biswas & party : 1(F), Ranaghat, Dist. Nadia, 16.ii.1986, coll. B. K. Biswas & party.

Distribution : India : West Bengal (Dists. Calcutta, Nadia).

189. *Neoscona excelsus* (Simon)

1889. *Glyptogona excelsus* Simon, *J. Asiat. Soc. Bengal*, 58 : 337.

1982. *Neoscona excelsus* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 261.

Distribution : India : West Bengal (Dist. Darjiling); Bihar; Gujarat; Maharashtra. Elsewhere : Pakistan.

190. *Neoscona laglaizei* (Simon)

1877. *Epeira laglaizei* Simon, *Annals, Soc. ent. Frl.*, 7(5) : 77.

1982. *Neoscona laglaizei* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 263.

Material examined : 2(F), Ranaghat, Dist. Nadia, West Bengal, 16.ii.1986, coll. B. K. Biswas & party ; 2(F), Kalyani, Dist. Nadia, West Bengal, 15.ii.1986, coll. B. K. Biswas & party.

Distribution : India : West Bengal (Dist. Nadia), (New Record); Tamil Nadu. Elsewhere : Sri Lanka, Burma, Java, Indo and Austro-Malaysia.

191. *Neoscona mukerjei* Tikader

1980. *Neoscona mukerjei* Tikader, *Proc. Indian, Acad. Sci.*, 89 (3) : 247.

1982. *Neoscona mukerjei* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 248.

Material examined : 1(F), Gangasagar, Dist. South 24-Parganas, West Bengal, 20.iii.1984, coll. B. K. Biswas & party; 1(F), Bakkhali, Dist. South 24-Parganas, West Bengal, 21.iii.1984, coll. B. K. Biswas & party; 4(F) Namkhana, Dist. South 24-Parganas, West Bengal 21.iii.1984, coll. B. K. Biswas & party; 1(F), Kakdwip, Dist. South 24-Parganas, West Bengal, 23.iii.1984, coll. B. K. Biswas & party; 2(M), Dist. North 24-Parganas, West Bengal, 30.iii.1984, coll. B. K. Biswas & party; 1(F), Basirhat, Dist. North 24-Parganas, West Bengal, 28.iii.1984, coll. B. K. Biswas & party; 1(M), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.iv.1984, coll. B. K. Biswas & party; 4(F), 1(M), Petrapole, Dist. North 24-Parganas, West Bengal, 2.iv.1984, coll. B. K. Biswas & party; 3(F), 1(M), Gossanimari forest, Dist. Koch Bihar, West Bengal, 10.i.1985, coll. Bijan Biswas; 1(F), Subhasini Tea Estate, Dist. Jalpaiguri, West Bengal, 13.i.1985, coll. Bijan Biswas; 7(F) 4(M), Rajabhatkhawa, Dist. Jalpaiguri, West Bengal 16.i.1985, coll. Bijan Biswas; 2(F), 1(M), Jaintia forest, Dist. Jalpaiguri, West Bengal, 18.i.1985, coll. Bijan Biswas; 1(F), Boxa forest, Dist. Jalpaiguri, West Bengal, 17.i.1985, coll. Bijan Biswas; 3(F), Jalpaiguri, Dist. Jalpaiguri, West Bengal, 24.i.1985 coll. Bijan Biswas; 5(F), 1(M) Krishnagar, Dist. Nadia, West Bengal, 18.ii.1986, coll. B. K. Biswas & party; 3(F) 1(M), Santipur, Dist. Nadia, West Bengal, 17.ii.1986, coll. B. K. Biswas & party; 2(F), Ranaghat, Dist. Nadia, West Bengal, 16.ii.1986, coll. B. K. Biswas & party; 2(F), Chittaranjan, Dist. Barddhaman, West Bengal, 23.ii.1986, coll. B. K. Biswas & party; 1(F), Chittaranjan, Dist. Barddhaman, West Bengal, 23.ii.1986, coll. B. K. Biswas & party; 1(F), Durgapur, Dist. Barddhaman, West Bengal, 24.ii.1986, coll. B. K. Biswas & party; 2(F) 1(M), Kalyani, Dist. Nadia, West Bengal, 15.ii.1986, coll. B. K. Biswas & party; 7(F) 1(M), Plassey, Dist. Nadia, West Bengal, 19.ii.1986, coll. B. K. Biswas & party; 1(F), Ghatal, Dist. Medinipur, West Bengal, 26.xi.1988, coll. B. K. Biswas & party.

Distribution : India : West Bengal (Dists. Barddhaman, Koch Bihar, Medinipur, Nadia); Maharashtra.

192. *Neoscona nautica* (L. Koch)

1875. *Epeira nautica* L. Koch, *Aegypt. Abyssin Arachn, Jickeli*, : 17.

1982. *Neoscona nautica* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 242.

Distribution : India : West Bengal (Dist. Darjiling); Assam; Gujarat; Maharashtra. Elsewhere : Burma; Pakistan; North America.

193. *Neoscona pavida* (Simon)

1906. *Araneus pavida* Simon, *Annls. Soc. ent. Fr.*, 75 : 309.

1982. *Nescona pavida* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 276.

Distribution : India : West Bengal (Dist. Darjiling). Elsewhere : Pakistan.

194. *Neoscona poonaensis* Tikader & Bal

1981. *Neoscona poonaensis* Tikader & Bal, *Rec. zool. Surv. India, occ. pap.* 24 : 29.

1982. *Neoscona poonaensis* : Tikder, *Fauna of India, Spiders : Araneae*, 2 (1) : 265.

Material examined : 1 (F), 1 (M), Barasat, Dist. Noth 24-Parganas, West Bengal, 30.iii.1984, coll. B.K. Biswas & party; 2 (F), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.iv. 1984, coll. B.K. Biswas & party; 1 (F), Bongaon, Dist. North 24-Parganas, West Bengal, 31.iii. 1984, coll. B.K. Biswas & party; 2 (F), Lalgola, Dist. Murshidabad, West Bengal, 17.xi. 1988, coll. B.K. Biswas & party; 2 (F), Chandrakona Road, Dist. Medinipur, West Bengal, 25.xi.1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Medinipur, Murshidabd, North 24-Parganas); Maharashtra.

195. *Neoscona rumpfi* (Thorell)

1887. *Araneus rumpfi* Thorell, *Annal. Mus. eiv. Genova*, 13 : 269.

1982. *Neoscona rumpfi* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 253.

Material examined : 1 (F), Bamangola, Dist. Maldah, West Bengal, 5.xi.1988, coll. B. K. Biswas & party; 1 (F) Adiria deer park, Dist. Maldah, West Bengal, 7.xi. 1988. coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dist. Maldah), (New Record); Andhra Pradesh; Karnataka; Maharashtra; Orissa.

196. *Neoscona theis* (Walckenaer)

1841. *Epeira theis* Walckenaer, *His. Nat. Ins. Apt.* 2 : 53.

1982. *Neoscona theis* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 269.

Material examined : 9(F), Gangasagar, Dist. South 24-Parganas, West Bengal, 20.iii. 1984, coll. B.K. Biswas & party 2 (F) Namkhana, Dist. South 24-Parganas, West Bengal, 21.iii. 1984, coll. B.K. Biswas & party; 2 (F), 1 (M), Kakdwip, Dist. South 24-Parganas, West Bengal, 23.iii.1984, coll. B.K. Biswas & party; 2 (F), Gopalpur, Dist. North 24-Parganas, West Bengal, 3.iv.1984, coll. B.K. Biswas &

party; 2 (F), 1 (M), Basirhat, Dist North 24-Parganas, West Bengal, 28.iii. 1984, coll. B.K. Biswas & party; 2 (F) 1 (M), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.iv. 1984, coll. B.K. Biswas & party; 2(F), Baikunthapur, Dist. North 24-Parganas, West Bengal, 29.iii. 1984, coll. B.K. Biswas & party 2 (F), Tarakeswar, Dist. Hugli, West Bengal, 28.ii. 1986, coll. B.K. Biswas & party; 2 (F), Santipur, Dist. Nadia, West Bengal, 17.ii.1986, coll. B.K. Biswas & party; 5(F), Barakar, Dist. Barddhaman, West Bengal, 22.ii. 1986, coll. B.K. Biswas & party; 3 (F), 1 (M), Palassey, Dist. Nadia, West Bengal, 19.ii.1986, coll. B.K. Biswas & party; 1 (F), Krishnagar, Dst. Nadia, West Bengal, 18.ii.1986, coll. B.K. Biswas & party; 1 (F), Roypukur, Joyrambati, Dist. Bankura, West Bengal, 27.ix.1987, coll. M. Prasad; 1 (F), Mahadebpur (Gour), Dist. Maldah, West Bengal, 3.xi.1988, coll. B.K. Biswas & party; 1 (F), Habibpur, Dist. Maldah, West Bengal, 6.xi. 1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. South & North 24-Parganas, Hugli, Nadia, Bankura, Maldah); Gujarat; Maharashtra; Orissa. Elsewhere : South New Guinea.

Subfamily GASTERACANTHINAE

Genus 68. *Gasteracantha* Sundevall 1833

1833. *Gasteracantha* Sundevall, *Conspectus Arachniden*, : 14.

1981. *Gasteracantha* : Tikader & Biswas, *Rec. zool. Surv. India occ. Pap.* No. 30(1) : 33.

Type-species : *Gasteracantha cancriformis* (Linnaeus)

Distribution : Tropical countries of the world.

Key to the species of the genus *Gasteracantha* Sundevall

1. Median spines minute and simple *brevispina*
 Median spines not minute and simple 2
2. Dorsum of abdomen provided with three conspicuous transverse yellowish bars. *diadesma*
 Dorsum of abdomen not provided with three conspicuous transverse yellowish bars..... 3
3. Length of median spines slightly less than half the width of abdomen at the base of anterior spines
 *hasselti*
 Length of median spines greater than width of abdomen of the base of the anterior spines..... 4
4. Cephalic region provided with a median bulge-like conical elevation..... *mammosa*
 Cephalic region not provided with any conical elevation 5

5. Sternum heart-shaped pointed behind with a dark brown horseshoe-shaped chalk-white patch ...
.....**kuhlii**
- Sternum without a dark brown horse shoe-shaped chalk-white patch6
6. Spines provided with conspicuous buldge base and abruptly narrowed at the apex.....**unguifera**

197. *Gasteracantha brevispina* (Doleschall)

1857. *Plectana brevispina* Doleschall, *Nat. Tij. Nederland India*, 13 : 423.
1970. *Gasteracantha brevispina* : Tikader, *Rec. zool. Surv. India*, 64(1-4) : 38.

Material examind : 1 (F), Rajabhatkhawa, Dist. Jalpaiguri, West Bengal, 16.i. 1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. Jalpaiguri); Andaman and Nicobar Island; Tamil Nadu; Uttar Pradesh. Elsewhere : Burma; Austro-Malaysia.

198. *Gasteracantha diadesma* Thorell

1887. *Gasteracantha diadesma* Thorell, *Ann. Mus. civ. Genova*, 25 : 225.
1982. *Gasteracantha diadesma* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 61.

Distribution : India : West Bengal. (Dist. Darjiling); Andaman and Nicobar Islands; Sikkim. Elsewhere : Burma.

199. *Gasteracantha hasselti* C.L. Koch.

1938. *Gasteracantha hasseltii* C.L. Koch, *Die. Arachniden*, 4 : 29.
1982. *Gasteracantha hasseltii* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 63.

Distribution : India : West Bengal; (Dist. Darjiling); Andaman and Nicobar Islands; Sikkim. Elsewhere : Burma.

200. *Gasteracantha mammosa* C.L. Koch

1845. *Gasteracantha mammosa* C.L. Koch, *Die. Arachniden*, 11:57.
1982. *Gasteracantha mammosa* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 55.

Distribution : India : West Bengal (Dists. Calcutta, Darjiling); Andaman and Nicobar Islands; Bihar; Maharashtra; Meghalaya; Orissa; Sikkim; Tamil Nadu; Uttar Pradesh. Elsewhere : Burma, Bangladesh; Japan, Pakistan, Austro-Malaysia, Sri Lanka.

201. *Gasteracantha kuhlii* C.L. Koch1838. *Gasteracantha kuhlii* C.L. Koch, *Die. Arachniden*, 4 : 20.1982. *Gasteracantha kuhlii* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 59.

Material examined : 3 (F), Parmadan deer park, Dist. North 24-Parganas, West Bengal, 1.iv. 1984, coll. B.K. Biswas & party; 1 (F), Jaintia forest, Dist. Jalpaiguri, West Bengal, 24.i.1985, coll. Bijan Biswas; 2 (F), Subhasini Tea Estate, Dist. Jalpaiguri, West Bengal, 13.i.1985, coll. Bijan Biswas; 1(F), Jalpaiguri, Dist. Jalpaiguri, West Bengal, 24.i.1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Jalpaiguri, North 24-Parganas; Bihar; Andaman and Nicobar; Sikkim. Elsewhere : Japan, Bhutan, Burma, Malaysia.

202. *Gasteracantha unguifera* Simon1889. *Gasteracantha unguifera* Simon, *J. Asiat. Soc. Beng.*, 58 : 336.1982. *Gasteracantha unguifera* : Tikader, *Fauna of India, Spiders ; Araneae*, 2(1) : 57.

Material examined : 3 (F), Chilapata forest, Dist. Koch Bihar, West Bengal, 9.i. 1985, coll. Bijan Biswas; 4(F) Rajabhakhawa, Dist. Jalpaiguri, West Bengal, 16.i. 1985, coll. Bijan Biswas.

Distribution : India : West Bengal (Dists. Koch Bihar, Jalpaiguri), (New Record); Sikkim.

Subfamily MEDTINAE

Genus 69. *Leucauge* White 18411841. *Leucauge* White, *Ann. Mag. nat. Hist.*, 7(1) : 463.1981. *Leucauge* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 39.

Diagnosis : Cephalothorx truncate in front, legs long and slender, especially the first two pairs; the femora of IV legs with fringe of long hair. Abdomen twice as long as wide, blunt at both ends and ornamented with bands or spots of silvery pigment.

Type-species : *Leucauge hortorum* (Hents)

Distribution : Tropical and sub-tropical countries of the world.

Key to the species of the genus *Leucauge* White

1. Abdomen provided with three pairs of dorsal tubercles *bengalensis*
 Abdomen not provided with three pairs of tubercles 2
2. Abdomen uniformly silver white and decorated with longitudinal black bands..... *celebesiana*

- Abdomen having some silver white specks and not decorated with longitudinal black bands.....3
3. Three paired and one median black spots at the posterior end of dorsum..... *culata*
No such paired and single median black spots present at the posterior end of dorsum.....4
4. Both paired tubercles and median caudal tubercle highly prominent.....*decorata*
Both paired tubercles and median caudal tubercle are not prominent5
5. Abdomen with two blunt rounded prominences and blunt caudal hump at the posterior end
.....*tessellata*
Abdomen without blunt rounded prominence and blunt caudal hump at the posterior end6
6. Dorsum of abdomen decorated with black reticulate patches irregularly.....*ventralis*

203. *Leucauge bengalensis* Gravely

1921. *Leucauge bengalensis* Gravely, *Rec. Indian Mus.*, 22 (4):455.
1982. *Leucauge bengalensis* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 72.

Distribution : India : West Bengal (Dists. Calcutta, Hugli, North 24-Parganas).

204. *Leucauge celebesiana* (Walckenaer)

1841. *Tetragnatha celebesiana* Walckenaer, *Hist. Nat. Ins. Apt.*, 2 : 222.
1982. *Leucauge celebesiana* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 83.

Distribution : India : West Bengal (Dists. Calcutta, Darjiling); Assam; Maharashtra; Meghalaya; Tamil Nadu. Elsewhere : China, Burma, Sri Lanka.

205. *Leucauge culata* (O.P. Cambridge)

1969. *Tetragnatha culata* O.P. Cambridge, *J. Linn. Soc.*, 10 : 390.
1982. *Leucauge culata* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 87.

Distribution : India : West Bengal (Dist. Darjiling); Karnataka. Elsewhere : Sri Lanka.

206. *Leucauge decorata* (Blackwall)

1864. *Tetragnatha decorata* Blackwall, *Ann. Mag. nat. Hist.*, 14(3) : 44.
1982. *Leucauge decorata* : Tikader, *Fauna of India, Spiders : Araneae*, 2(1) : 78.

Material examined : 2(F), Chilapata forest, Dist. Koch Bihar, West Bengal, 9.i. 1985, coll. Bijan

Biswas; 4 (F), Subhasini Tea Estate, Dist. Jalpaiguri, West Bengal, 13.i. 1985, coll. Bijan Biswas; 2 (F), Raigange, Dist. West Dinajpur, West Bengal, 20.1.1985, coll. Bijan Biswas; 5(F), Barasat, Dist. North 24-Parganas, West Bengal, 30.iii. 1984, coll. B.K. Biswas & party; 1 (F), Kalyani, Dist. Nadia, West Bengal, 15.ii.1984, coll. B.K. Biswas & party; 2 (F), Krishnagar, Dist. Nadia, West Bengal, 18.ii.1986, coll. B.K. Biswas & party; 4(F) 1(M), Ranaghat, Dist. Nadia, West Bengal, 16.ii. 1986, coll. B.K. Biswas & party; 1 (F), Tarakeswar, Dist. Hugli, West Bengal, 28.ii.1986, coll. B.K. Biswas & party; 1 (F), Puruliya, Dist. Puruliya, West Bengal, 14.ix.1987, coll. M. Prasad; 2 (f), Mahadebpur (Gour), Dist. Maldah, West Bengal, 3.xi. 1988, coll. B.K. Biswas & party; 4 (F), Domkal, Dist. Murshidabad, West Bengal, 15.xi.1988, coll. B.K. Biswas & party; 4(F), Kolaghat, Dist. Medinipur, West Bengal, 27.xi. 1988, coll. B.K. Biswas & party.

Distribution : India : West Bengal (Dists. Koch Bihar, Hugli, Jalpaiguri, Maldah, Medinipur, Murshidabad, Nadia, Puruliya, West Dinajpur, North 24-Parganas); Assam; Bihar; Gujarat; Karnataka; Kerala; Meghalaya; Orissa; Pondicheri, Sikkim. Elsewhere : Burma, Pakistan, Si Lanka.

207. *Leucauge tessellata* (Thorell)

1887. *Callinethis tessellata* Thorell, *Annali. Mus. civ. Genova*, 25 : 153.
1982. *Leucauge tessellata* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 80.

Distribution : India : West Bengal (Dist. Darjiling); Assam; Gujarat; Karnataka; Kerala; Sikkim. Elsewhere : Burma; Bhutan.

208. *Leucauge ventralis* (Thorell)

1877. *Meta ventralis* Thorell, *Annali Mus. civ. Genova*, 10 : 423.
1982. *Leucauge ventralis* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 85.

Distribution : India : West Bengal : (Dist. Calcutta); Kerala. Elsewhere : Sri Lanka.

Subfamily NEPHILINAE

Genus 70. *Nephila* Leach 1815

1815. *Nephila* Leach, *Zoological Miscellany*, : 133.
1981. *Nephila* : Tikader & Biswas, *Rec. zool. Surv. India, occ. pap.* No. 30(1) : 37.

Type species : *Nephila maculata* (Fabricius)

Distribution : Tropical and rarely sub-tropical countries of the world.

Key to the species of the genus *Nephila* Leach

1. Carapace provided with 'v' shaped yellow patch *clavata*

- Carapace without 'v' shaped yellow patch2
2. Abdomen having single, mid-longitudinal broad yellow bar with dark brown side.....*kuhlii*
Abdomen without any mid-longitudinal broad yellow bar with dark brown side.....3
3. Cephalothorax relatively broad in front; a deep groove in the middle, with a pair of sharp tubercles in front*maculata*
Cephalothorax not broad; no such groove in the middle and sharp tubercles in front.....4
4. Abdomen oval; carapace provided with very strong and stout spines with prominent base.....
.....*malabarensis*
Abdomen elongated; carapace without strong and short spines and prominent bases.....5
5. Abdomen having single median, broad, longitudinal yellow bar and no small pale lines
.....*robusta*

209. *Nephila clavata* L. Koch

1878. *Nephila clavata* L. Koch, *verh. zool. bot. Ges wien.*, 27 : 741.
1982. *Nephila clavata* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 102.

Distribution : India : West Bengal : (Dist. Darjiling); Andaman and Nicobar Islands; Meghalaya; Sikkim; Laccadive Islands. Elsewhere : Burma, Bhutan, China, Japan, Formosa, Pakistan, Thailand.

210. *Nephila kuhlii* Doleschall

1859. *Nephila kuhlii* Doleschall, *Acta, Soc. Ind. Neerl.* 5 (5) : 27.
1982. *Nephila kuhlii* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 104.

Distribution : India : West Bengal : (Dists. Darjiling, North 24 Parganas). Elsewhere : Burma.

211. *Nephila maculata* (Fabricius)

1793. *Aranea maculata* Fabricius, *Ent. Syst.*, 2 : 425.
1982. *Nephila maculata* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 97.

Material examined : 1 (F), Palta, Dist. North 24-Parganas, West Bengal, 11.ii. 1989, coll. Bijan Biswas.

Distribution : India : West Bengal (Dist. North 24-Parganas); Assam; Andaman and Nicobar Islands; Gujarat; Maharashtra; Madhya Pradesh; Sikkim; Uttar Pradesh. Elsewhere : Burma, China, Japan, Australia, Malaysia, New Guinea, Sri Lanka.

212. *Nephila malabarensis* (Walckenaer)

1837. *Epeira malabarensis* Walckenaer, *Hist. Nat. Ins. Apt.*, 1 : 103.

1982. *Nephila malabarensis* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 95.

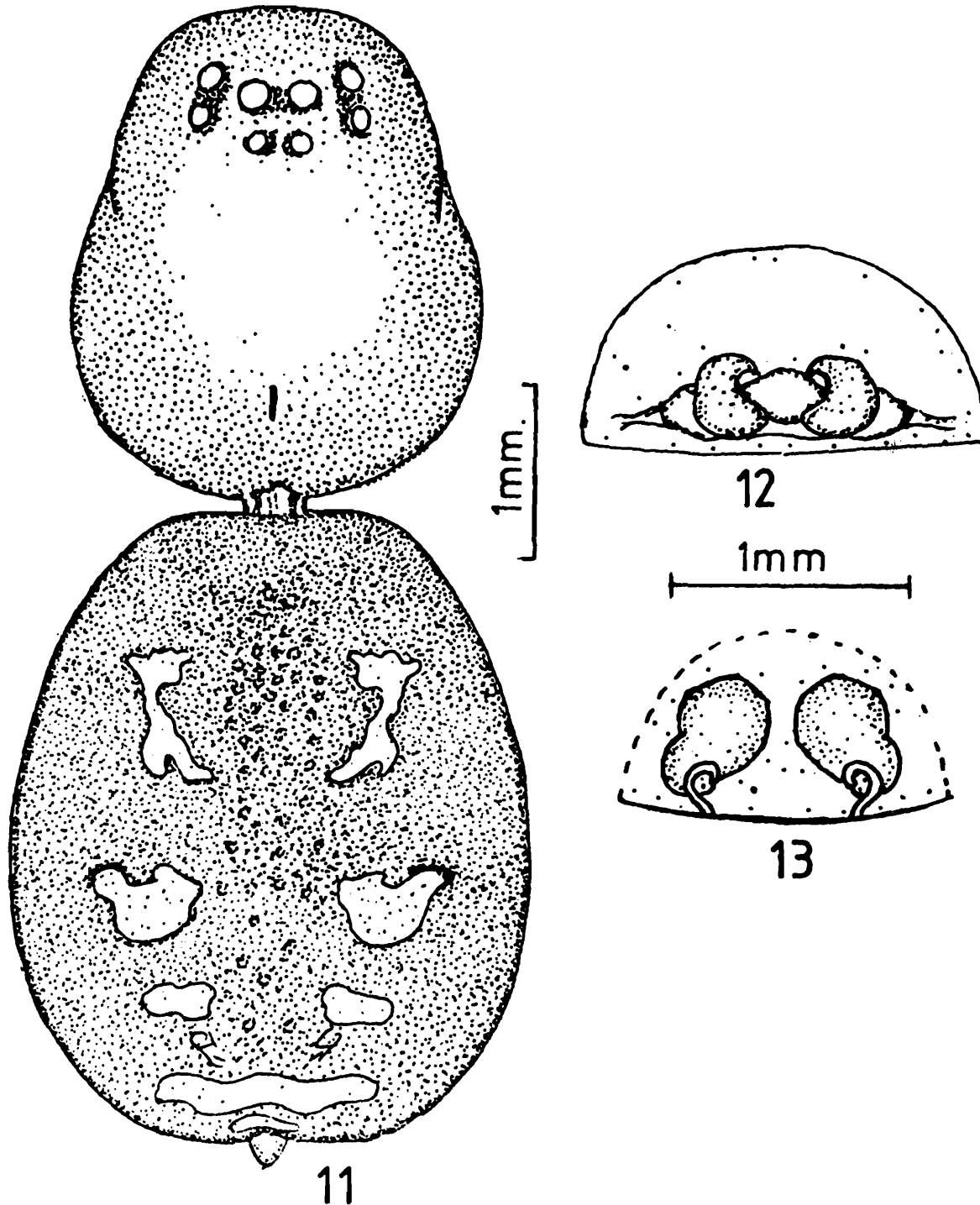
Distribution : India : West Bengal (Dist. Puruliya); Bihar; Andaman and Nicobar Islands; Maharashtra; Kerala; Tamil Nadu. Elsewhere : Burma, Australia, Malaya Peninsula, New Guinea, Sri Lanka, Thailand.

213. *Nephila robusts* Tikader

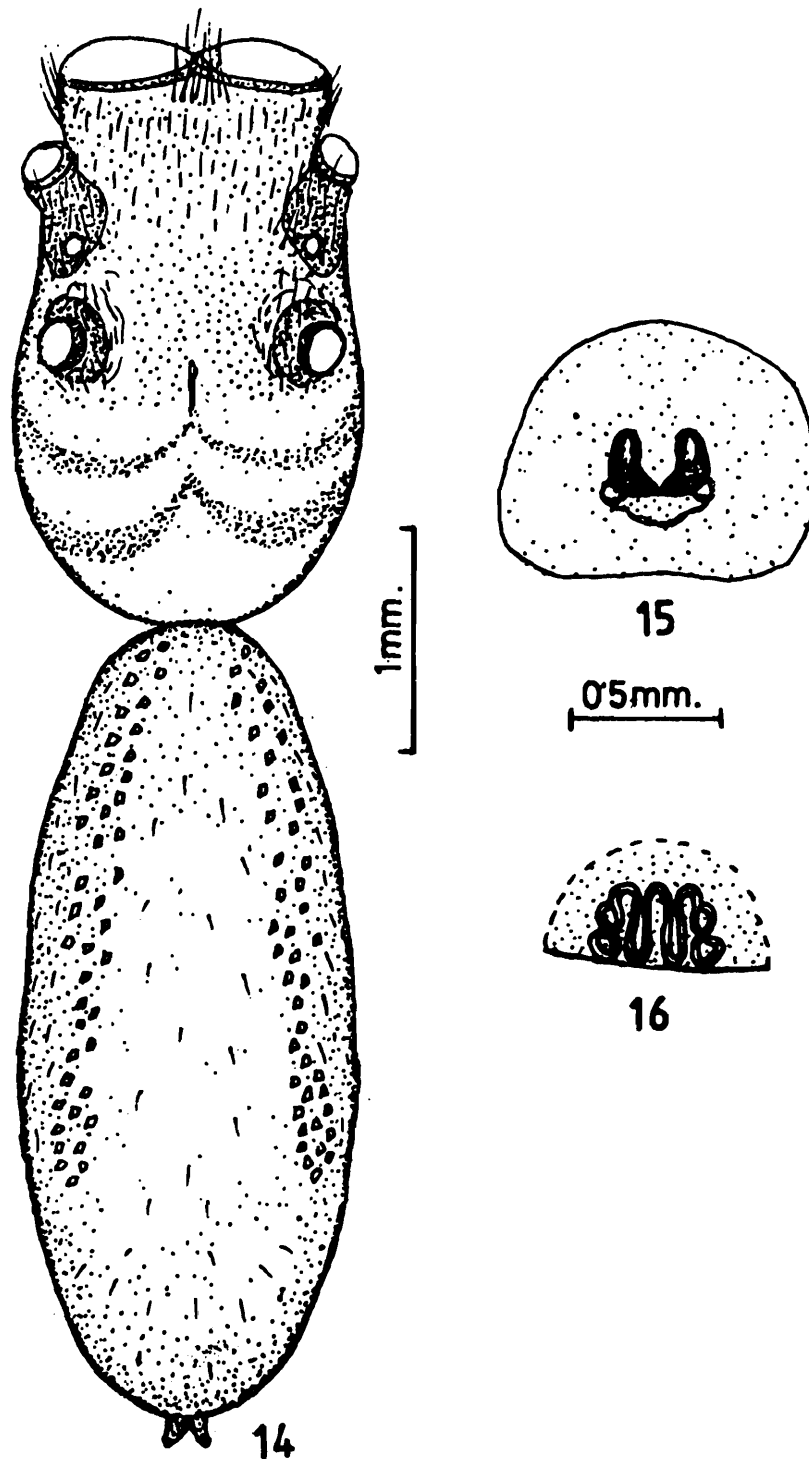
1962. *Nephila robusts* Tikader, *J. Linn. Soc.*, 44 (300) : 566.

1982. *Nephila robusta* : Tikader, *Fauna of India, Spiders : Araneae*, 2 (1) : 100.

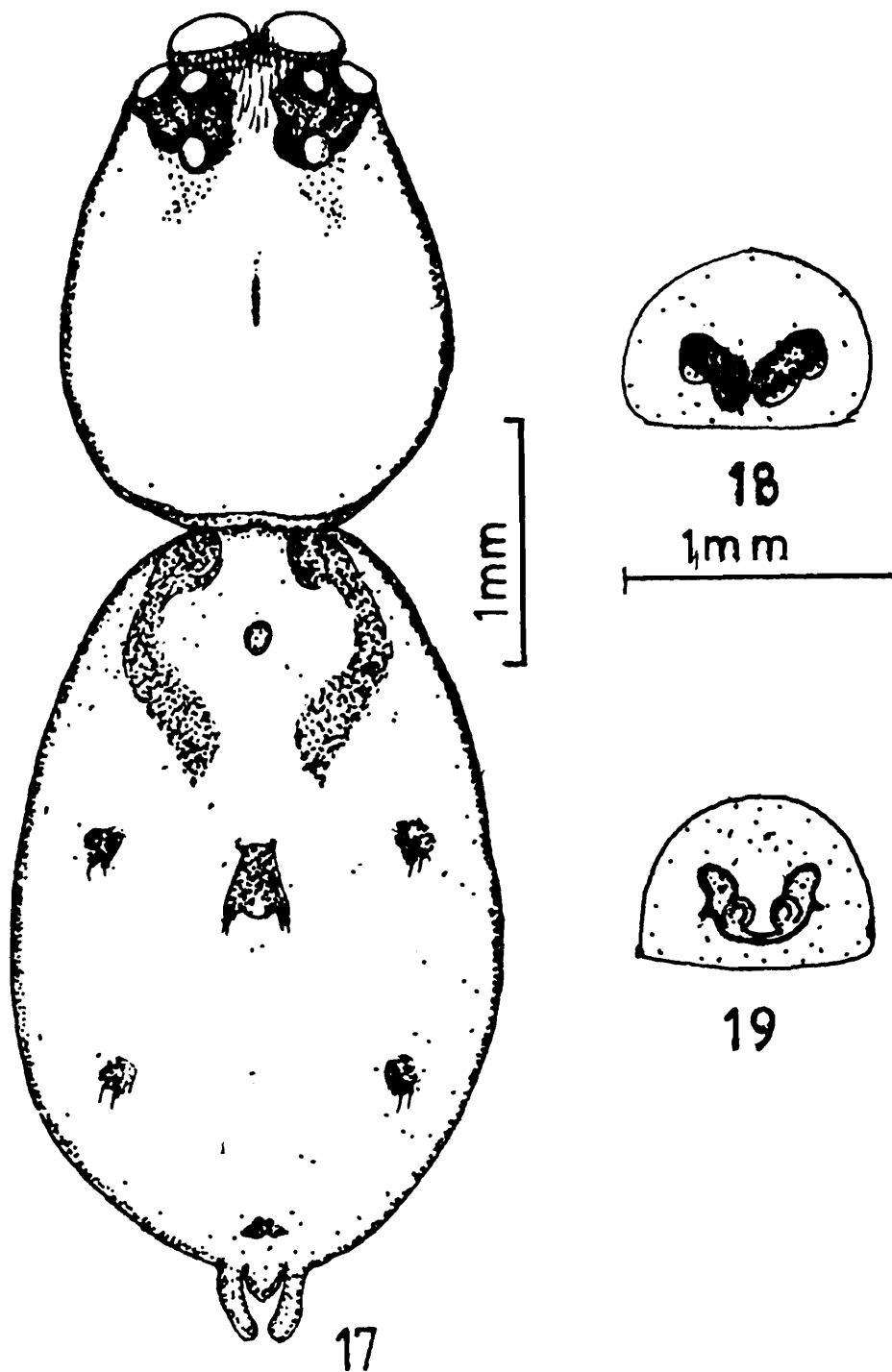
Distribution : India : West Bdnal (Dist. North 24-Parganas) (Type locality).



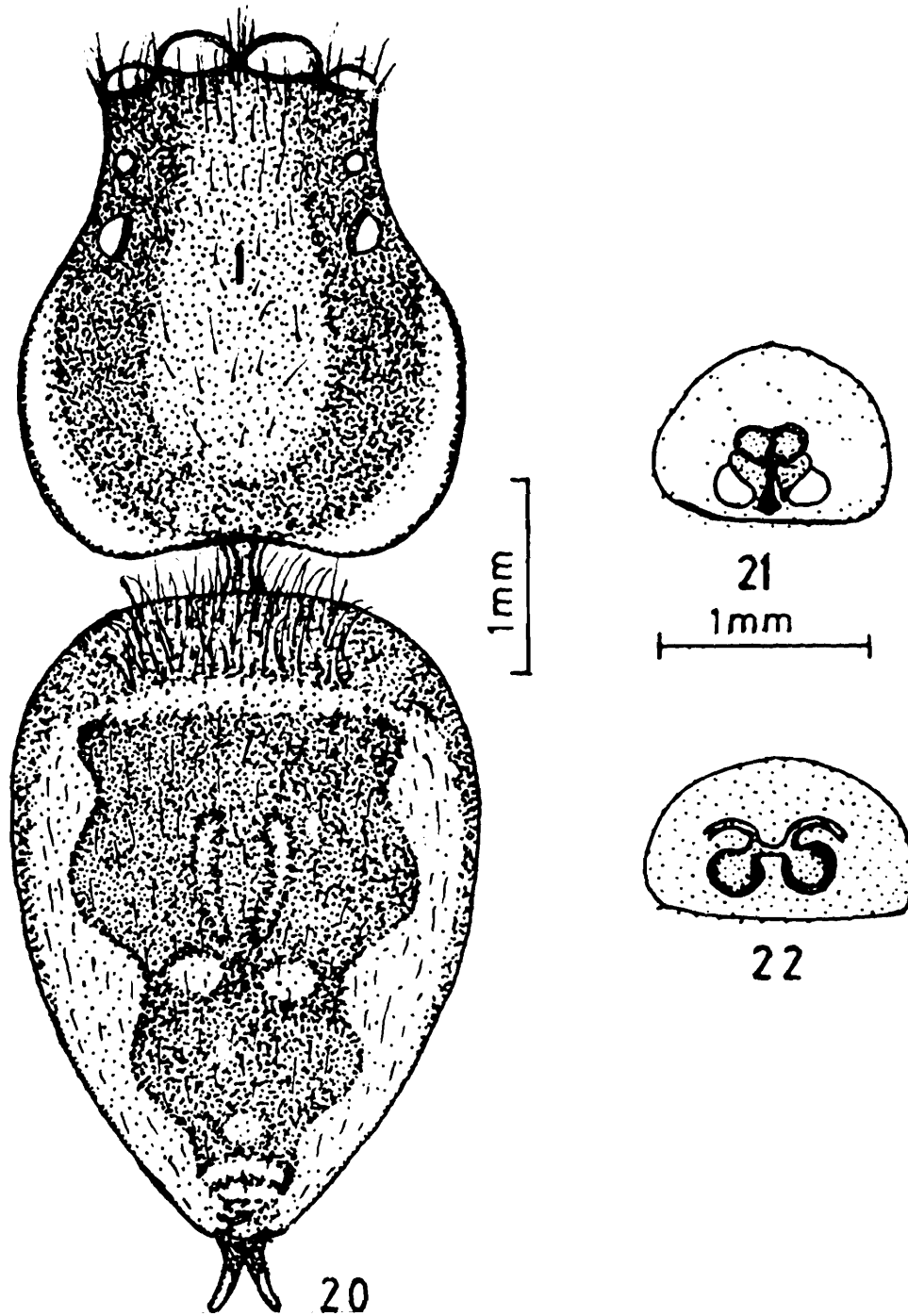
Figs. 11-13 : *Storena debasrae* sp. nov. 11. Dorsal view of female, legs omitted. 12. Egipyne. 13. Internal genitalia.



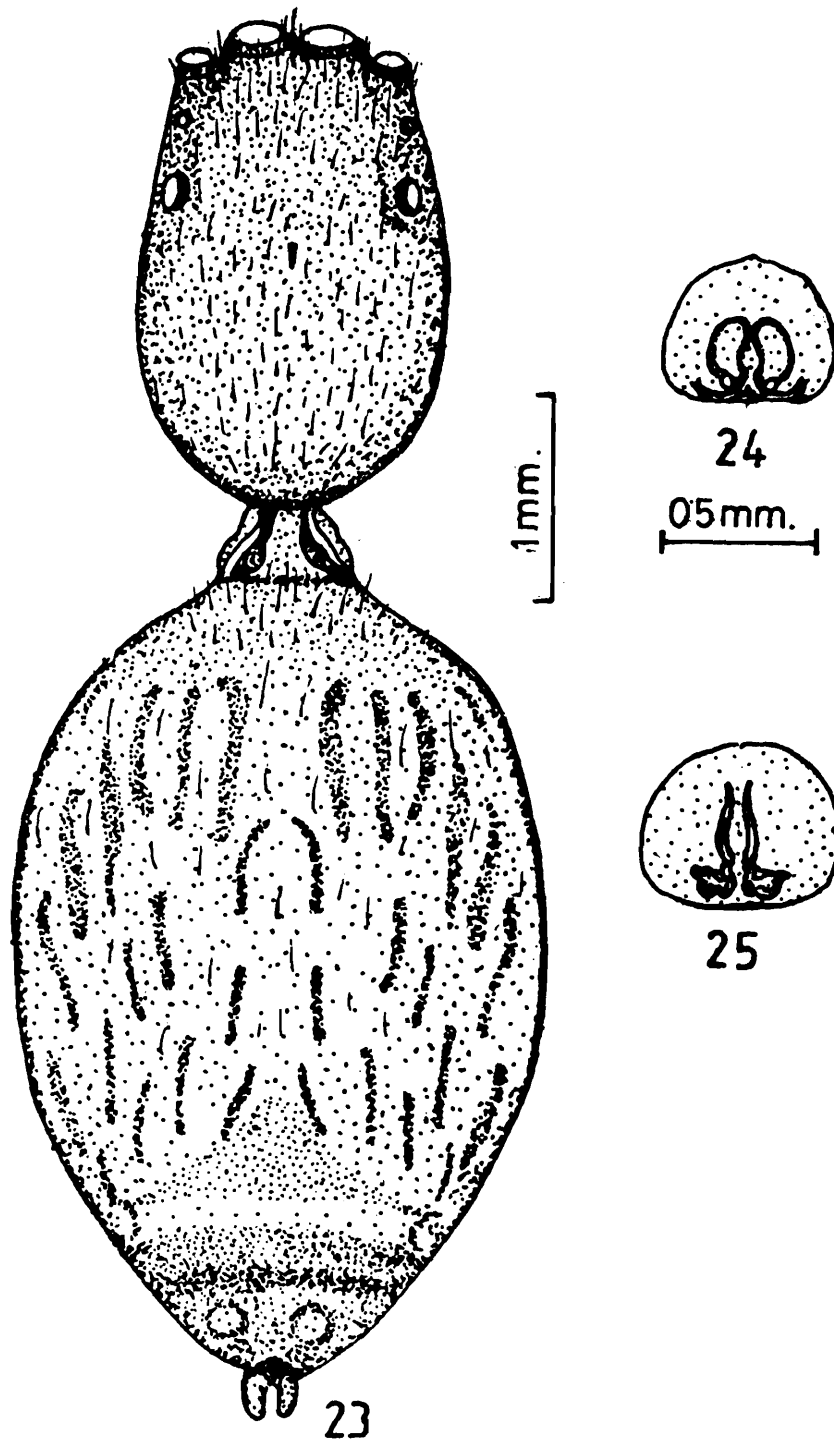
Figs. 14-16 : *Lyssomanes chilapataensis* sp. nov. 14. Dorsal view of female, legs omitted. 15. Epigyne. 16. Internal genitalia.



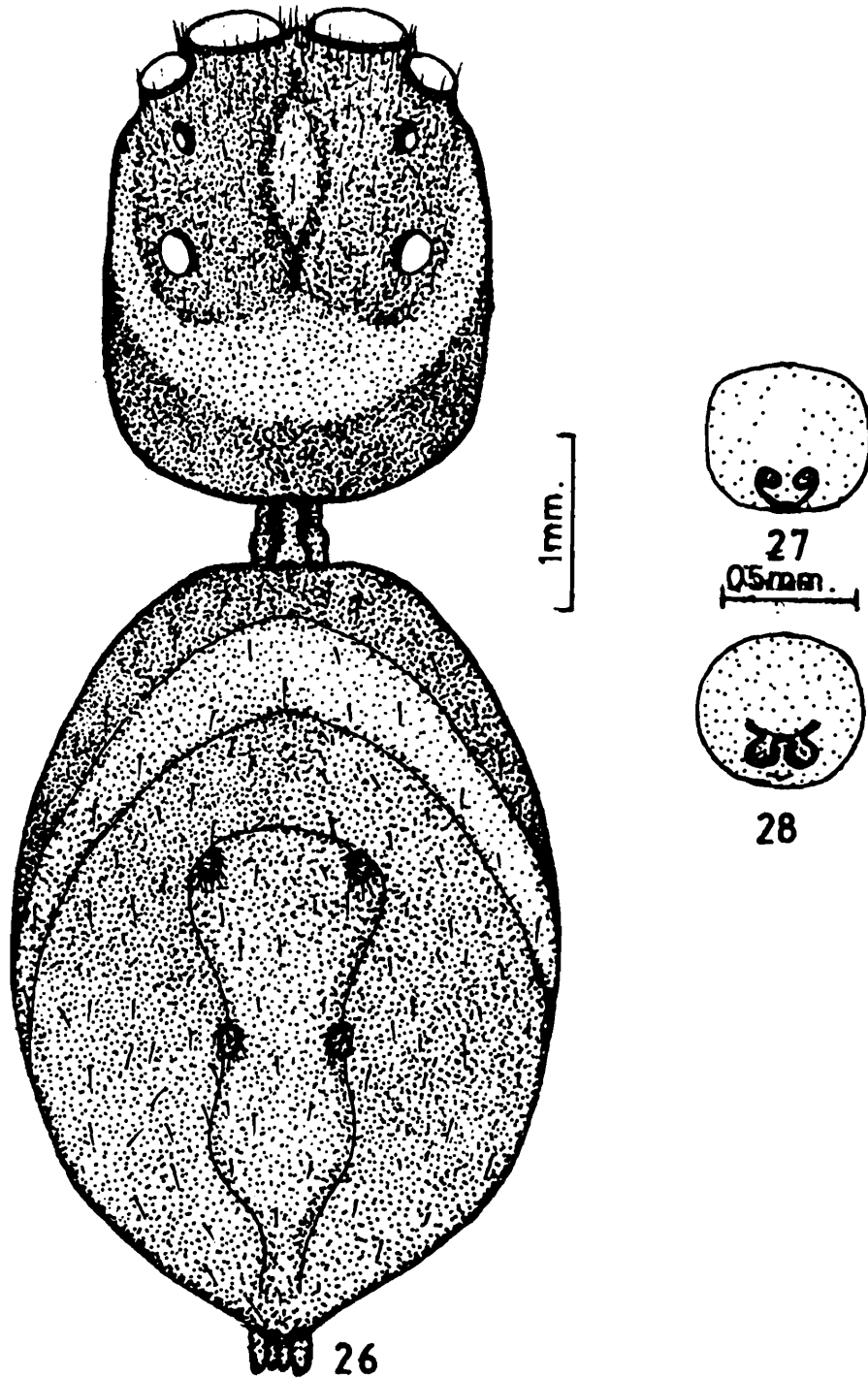
Figs. 17-19 : *Lyssomanes santinagarensis* sp. nov. 17. Dorsal view of female, legs omitted. 18. Egipyne. 19. Internal genitalia.



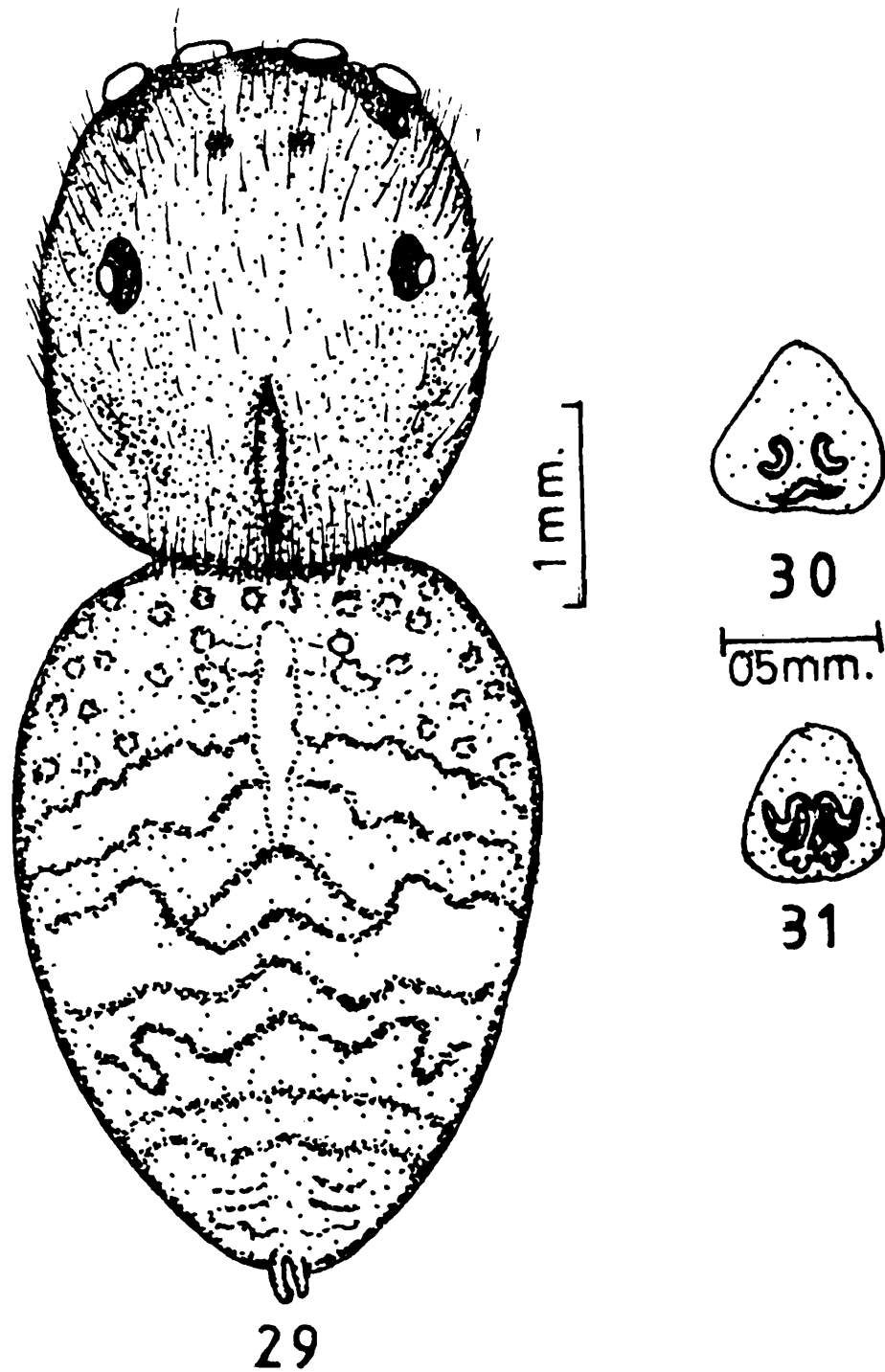
Figs. 20-22 : *Marpissa arambagensis* sp. nov. 20. Dorsal view of female, legs omitted. 21. Epigynum. 22. Internal genitalia.



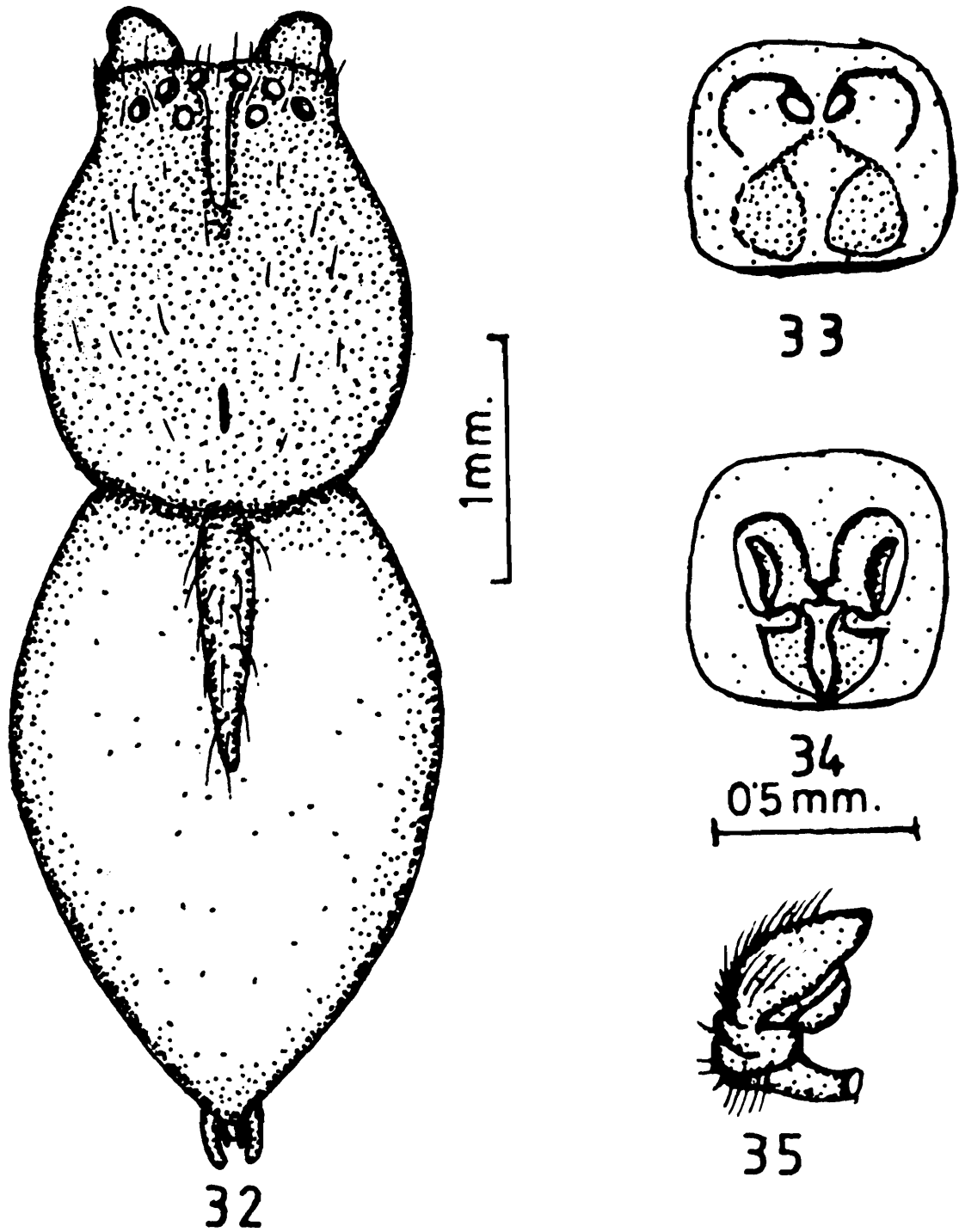
Figs. 23-25 : *Marpissa edenae* sp. nov. 23. Dorsal view of female, legs omitted. 24. Egipyne. 25. Internal genitalia.



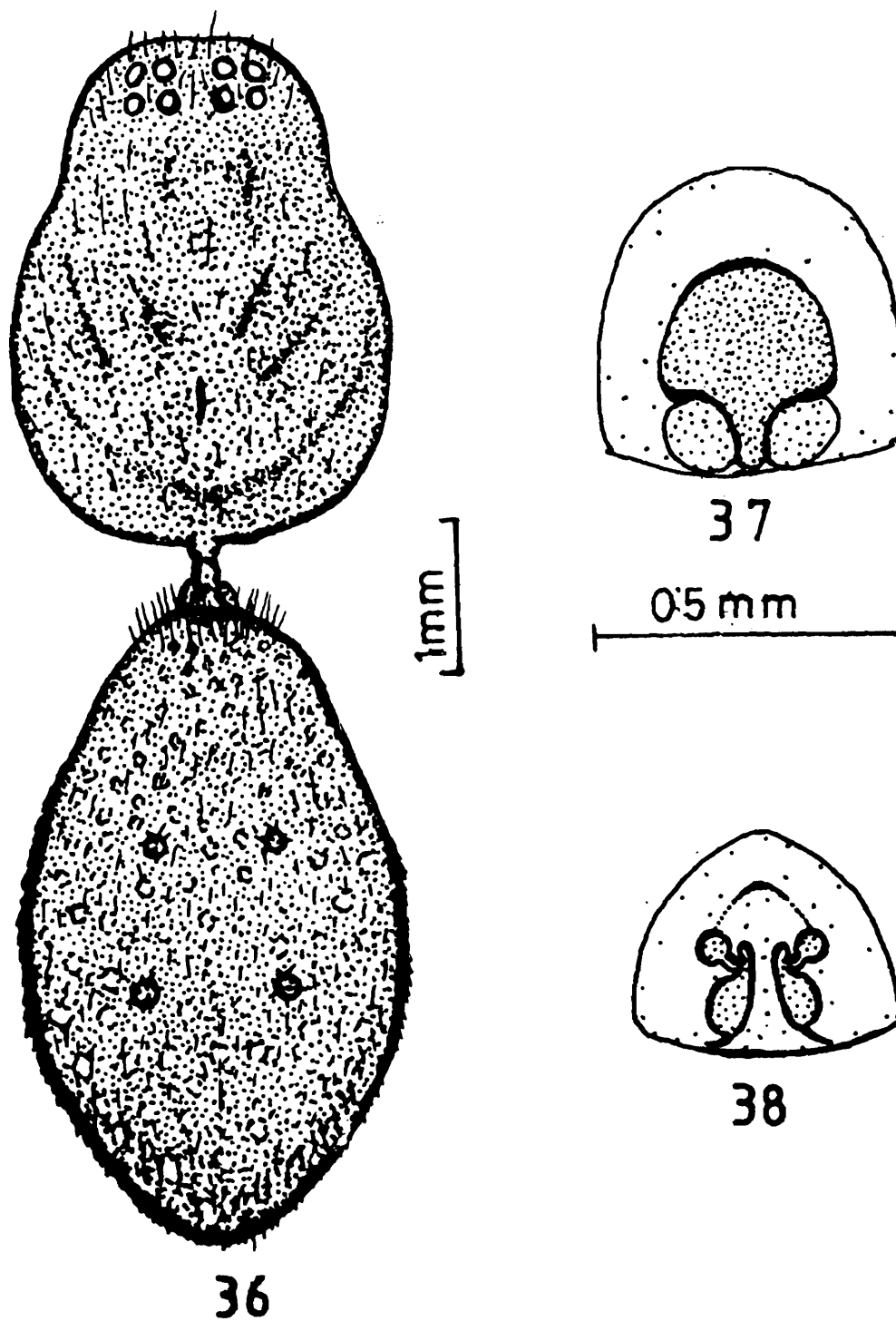
Figs. 26-28 : *Marpissa kalighatensis* sp. nov. 26. Dorsal view of female, legs omitted. 27. Epigyne. 28. Internal genitalia.



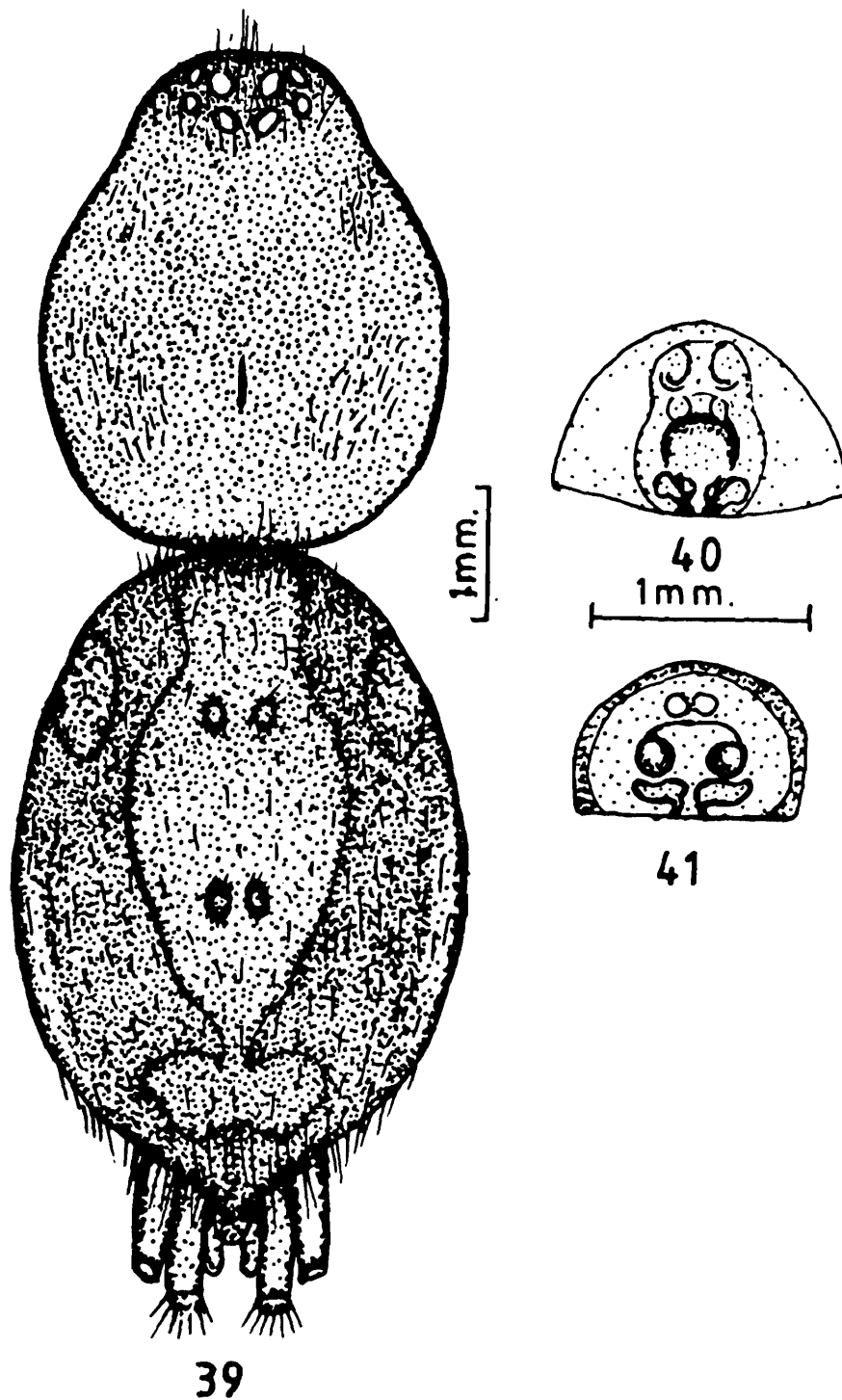
Figs. 29-31 : *Rhene pantharae* sp. nov. 29. Dorsal view of female, legs omitted. 30. Epigyne. 31. Internal genitalia.



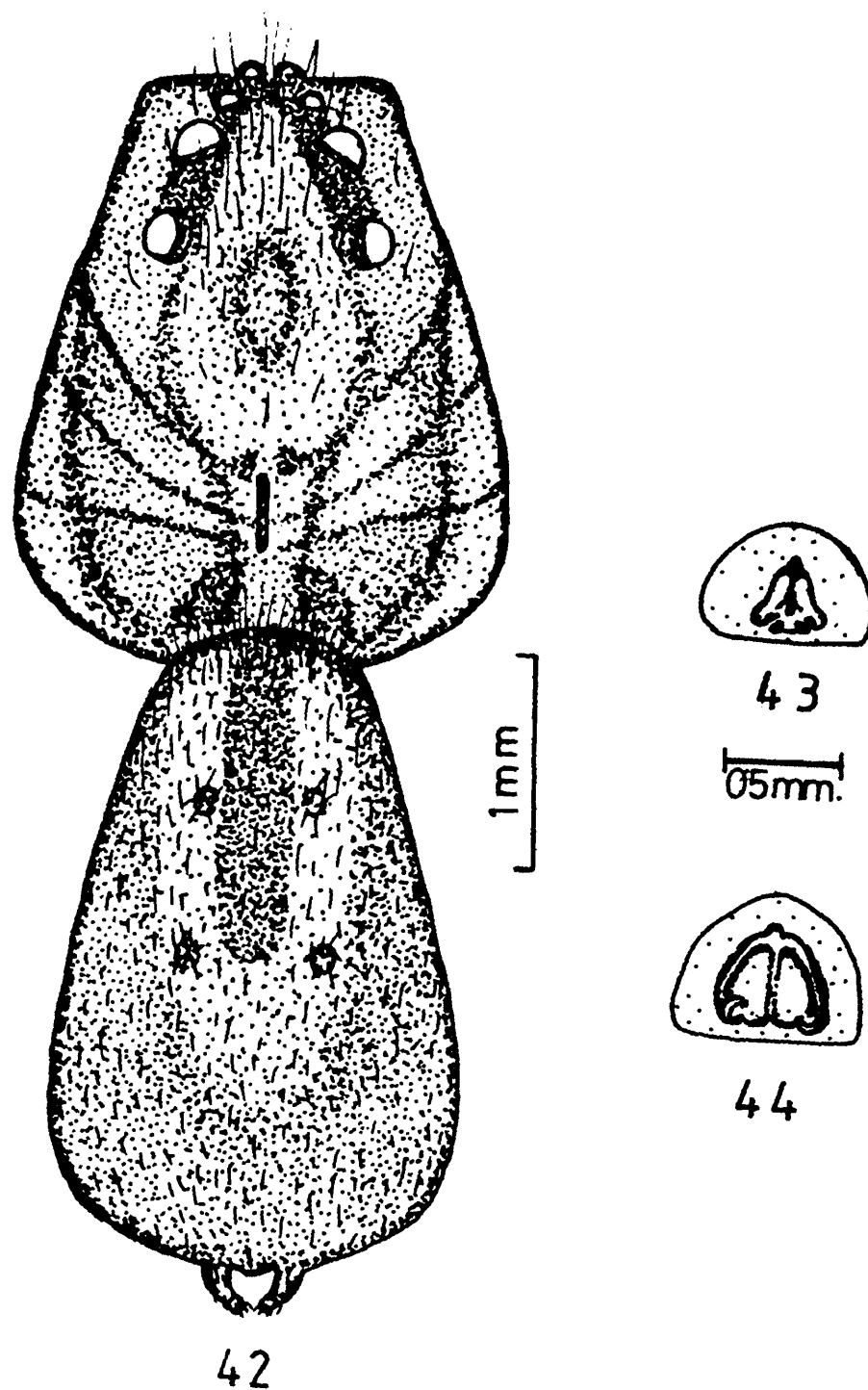
Figs. 32-35 : *Clubiona boxaensis* sp. nov. 32. Dorsal view of female, legs omitted. 33. Epigyne. 34. Internal genitalia. 35. Palpal organ.



Figs. 36-38 : *Sphingius paltensis* sp. nov. 36. Dorsal view of female, legs omitted. 37. Epigyne. 38. Internal genitalia.



Figs, 39-41 : *Megamyrmecion kajalae* sp. nov. 39. Dorsal view of female, legs omitted. 40. Epigyne. 41. Internal genitalia.



Figs. 42-44 : *Lycosa arambagensis* sp. nov. 42. Dorsal view of female, legs omitted. 43. Epigyne. 44. Internal genitalia.

Table 1. Distribution of oribatid species in different districts of West Bengal

	Bankura	Bardhaman	Birbhum	Calcutta	Darjiling	Haora	Hugli	Jalpaiguri	Koch Bihar	Maldah	Medinipur	Murshidabad	Nadia	North 24-Parganas	Puruliya	South 24-Parganas	W. Dinajpur
Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Phlogoides himlayensis</i> Tikader	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Oecobius putus</i> Cambridge	-	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Stegodyphus sarasinorum</i> Karsch	-	+	-	+	-	-	-	-	-	+	+	-	-	-	-	+	-
<i>Uloborus danolius</i> Tikader	-	-	-	+	-	-	-	-	-	+	+	-	-	+	-	+	-
<i>U. krishnae</i> Tikader	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
<i>Lutica bengalensis</i> Tikader & Patel	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Storena debasrae</i> sp.nov.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Hersilia savignyi</i> Lucas	-	-	-	+	-	-	+	+	-	+	+	+	+	+	-	+	+
<i>Artema atenta</i> Walckenaer	-	-	-	+	-	-	-	-	-	+	+	+	+	-	-	-	-
<i>Crossopriza lyoni</i> (Blackwall)	-	-	-	+	-	-	-	-	-	+	+	-	+	+	-	+	-
<i>Scytodes propinqua</i> Stoliczka	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	+	-
<i>S. thoracica</i> (Latreille)	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Lyssomanes andamanensis</i> Tikader	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-
<i>L. bengalensis</i> Tikader & Biswas	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-
<i>L. chilapataensis</i> sp. nov.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>L. santinagarensis</i> sp. nov.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Europhrys chiriatapuensis</i> Tikader	-	-	-	+	-	-	-	+	+	-	-	+	+	+	-	+	-
<i>Marpissa anusuae</i> Tikader & Biswas	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. arambagensis</i> sp. nov.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>M. bengalensis</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. calcuttaensis</i> Tikader	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>M. decorata</i> Tikader	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>M. dhakuriensis</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. edenae</i> sp. nov.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. kalighatensis</i> sp. nov.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. nutanae</i> Biswas & Biswas	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. prathamae</i> Biswas & Biswas	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	+	-
<i>M. tigrina</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. tikaderi</i> Biswas	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Myrmarachne bengalensis</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. calcuttaensis</i> Biswas	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. maratha</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>M. orientalis</i> Tikader	-	-	-	+	+	+	-	-	-	+	+	-	-	+	-	+	+
<i>M. plataleoides</i> (Cambridge)	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>Phidippus bengalensis</i> Tikader	-	-	-	+	-	+	-	-	-	-	+	-	+	-	-	-	-
<i>P. indicus</i> Tikader	-	-	-	+	-	+	+	+	-	+	-	+	+	+	-	+	+

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>P. pateli</i> Tikader	-	-	-	+	-	-	-	+	+	+	-	+	+	+	-	+	-
<i>Plexippus paykullii</i> (Aud.)	-	+	-	+	-	+	-	+	-	+	+	-	-	+	-	+	-
<i>Rhene decoratus</i> Tikader	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>R. danieli</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>R. indicus</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>R. khandalensis</i> Tikader	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>R. pantharae</i> sp. nov.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Salticus ranjitus</i> Tikader	-	+	-	+	-	+	+	+	+	+	+	+	+	+	-	+	-
<i>ygoballus narmadaensis</i> Tikader	-	-	+	-	-	-	+	-	-	-	-	-	-	+	-	+	-
<i>myciaea forticeps</i> (Cambridge)	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	+	-
<i>Bomis bengalensis</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>B. calcuttaensis</i> Biswas & Majumder	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Camaricus formosus</i> Thorell	-	-	-	+	-	-	-	+	-	-	-	-	+	+	-	-	-
<i>Diaea bengalensis</i> Biswas & Majumder	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>Oyptila mani</i> Tikader	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>O. reena</i> Basu	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>Synaema brunettii</i> Tikader	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. decorata</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Thomisus beautifularis</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>T. bulani</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>T. cherapunjeus</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>T. dhakuriensis</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>T. elongatus</i> Stol.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>T. katrajghatus</i> Tikader	-	-	-	+	-	-	+	+	-	-	-	-	+	+	-	-	-
<i>T. memae</i> Sen & Basu	-		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Thomisus projectus</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>T. pugilis</i> Stol.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>T. sorajaii</i> Basu	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Xysticus bengalensis</i> Tikader & Biswas	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>X. himalayensis</i> Tikader & Biswas	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>X. hindusthanicus</i> Basu	-		-	+		-	-	-	-	-	-	-	-	-	-	-	-
<i>X. minutus</i> Tikader	-	-	-	+	-	+	-	-	-		+	-	+	+	-	-	-
<i>X. kali</i> Tikader & Biswas	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Philodromus assamensis</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. malinae</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tibellus elongatus</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Heteropoda leprosa</i> Simon	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
<i>H. prompta</i> O.P. Cambridge	-	-	-	-	+	-		-	-	-	-	-	-	+	-	-	-
<i>H. sexpuctata</i> Simon	-	-	+	+	-	-	+	-	-	-	-	-	-	-	-	+	-
<i>Clubiona analis</i> Thorell	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>C. bengalensis</i> Biswas	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. boxaensis</i> sp. nov.	-	-	-	-	-		-	+	-	-	-	-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>C. drassodes</i> Cambridge	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>C. filicata</i> Cambridge	-	+	-	+	-	-	+	-	-	-	-	-	-	+	-	+	-
<i>C. ludhianaenss</i> Tikader	-	-	+	-	-	-	+	-	-	-	-	-	-	+	-	-	-
<i>C. pogonias</i> Simon	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. shillongensis</i> Majumder & Tikader	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cheiracanthium himalayensis</i> Gravely	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. melanostoma</i> (Thorell)	-	-	-	+	-	-	-	-	-	-	+	-	+	+	-	+	-
<i>C. mirina</i> Thorell	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. mysorensis</i> Majumder & Tikader	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>Cheiracanthum indicum</i> Cambridge	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. insigne</i> Cambridge	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
<i>C. pauriensis</i> Majumder & Tikader	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. trivialis</i> (Thorell)	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
<i>Simalio biswasi</i> Majumder & Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Sedignatha scrobiculata</i> Thorell	-	-	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-
<i>O. carli</i> Reimoser	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Castianeira albopieta</i> Gravely	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. bengalensis</i> Biswas	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. himalayensis</i> Gravely	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. indica</i> Tikader	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. tinae</i> Patel & Patel	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>C. quadrimaculata</i> Reimoser	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>C. zetes</i> Simon	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Sphingius caniceps</i> Simon	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. paltaensis</i> sp. nov.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Drassodes malodes</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>D. oppenheimeri</i> Tikader	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>Haplodrassus dumdumensis</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Herpyllus calcuttaensis</i> Biswas	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Megamyrmecon kajalae</i> sp. nov.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Poecilochroa barmani</i> Tikader	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>Scopodes kulgitae</i> Tikader	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>Scotophaeus domesticus</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Oxyopes birmanicus</i> Thorell	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>O. javanus</i> Thorell	-	-	-	+	-	-	-	+	-	-	-	-	-	+	-	-	-
<i>Oxyopes ratnae</i> Tikader	-	-	-	+	-	-	+	-	-	+	+	+	-	+	-	+	-
<i>O. sakuntalae</i> Tikader	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>O. sweata</i> Tikader	-	-	-	+	-	-	+	+	-	-	-	-	-	+	-	-	-
<i>O. sikkimensis</i> Tikader	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>O. sitae</i> Tikader	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>Peucetia latikae</i> Tikader	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	+	-
<i>P. viridana</i> Stol.	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Achaearanea durgae</i> Tikader	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>Theridion indica</i> Tikader	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Arctosa himalayensis</i> Tikader & Malhotra	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>A. indicus</i> Tikader & Malhotra	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hippasa greenalliae</i> (Blackwall)	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>H. holmerae</i> Thorell	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>H. madhuae</i> Tikader & Malhotra	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>H. partita</i> (Cambridge)	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Lycosa arambagensis</i> sp. nov.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>L. carmichaeli</i> Gravely	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>L. choudhury</i> Tikader & Malhotra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>L. himalayensis</i> Gravely	+	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-
<i>L. kempis</i> Gravely	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>L. mackenziei</i> Gravely	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>L. shillongensis</i> Tikader & Malhotra	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Pardosa annandalei</i> (Gravely)	-	+	+	+	+	-	+	+	-	-	-	-	-	-	-	-	-
<i>P. atropalpis</i> Gravely	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>Pardosa birmanica</i> Simon	-	+	+	+	+	-	-	-	-	-	-	+	-	-	-	-	-
<i>P. burasantiensis</i> Tikader & Malhotra	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>P. heterophthalmus</i> (Simon)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>P. leucopalpis</i> Gravely	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>P. mukundi</i> Tikader & Malhotra			+	-	-	-	-	-	-		-	-	-	-	-		-
<i>P. oakleyi</i> Gravely	-	+	-	-	-	-	-		-	-	-	-	-	-	-	-	-
<i>P. shyamae</i> (Tikader)				-	+		-		-		-	-	-	-		-	
<i>P. sumatrana</i> (Thorell)		+	+	+	+		+		-		-	-	+		-		
<i>P. sutherlandi</i> (Gravely)	-				+							-		-			-
<i>Venonia himalayensis</i> Tikader & Malhotra				-	+		-					-	-	-			-
<i>Pisaura gitae</i> Tikader												-		+	-		-
<i>Eucta javanus</i> Thorell			+	+	+		-							-		-	-
<i>Tetragnatha andamanensis</i> Tikader	+	+	+					+	+	+	+	+	-	+	+	+	-
<i>T. mandibulata</i> Walckenaer				+	+		-					-		-			+
<i>Araneus bituberculata</i> (Walck.)				+								-				-	
<i>A. dehaani</i> (Doleschall)			-	+		-		-				-	-	+			-
<i>A. excelsus</i> (Simon)			-	-		-						-	-	+			-
<i>A. himalayensis</i> Tikader	-	-	-	-	+	-	-					-	-	-		-	-
<i>A. mitifica</i> (Simon)				-	-		-	+	-	-		-	+	-	-	-	-
<i>Argiope aemula</i> (Walck.)				-	+		-	-				-	-	-			-
<i>A. anasuja</i> Thorell				+		-			+		-	-	-	-	-	-	-
<i>A. arcuata</i> Simon						-					-	-	+	-			-
<i>A. catenulata</i> (Doleschall)	-	-		-		-	-	+	-	-	-	-	-	+	-	+	-
<i>A. kalimpongensis</i> Sinha				-	+	-	-				-	-	-	-		-	-
<i>A. lalita</i> Sherriffe				+	-	-				-		-	-			-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>A. pulchella</i> Thorell	+	-	-	-	-	-	-	+	-	+	+	+	+	+	-	-	-
<i>Argiope shillongensis</i> Sinha	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Chorizopes bengalensis</i> Tikader	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cyclosa bifida</i> (Doleschall)	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>C. confraga</i> (Thorell)	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>C. hexatuberculata</i> Tikader	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
<i>C. insulana</i> (Costa)	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. simoni</i> Tikader	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>C. spinifera</i> Simon	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>Crytarachne bengalensis</i> Tikader	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>C. graveli</i> Tikader	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. inequalis</i> Thorell	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>C. reniceps</i> Pocock	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>Cyrtophora cicatrosa</i> (Stol.)	-	+	-	+	-	-	+	+	+	+	+	+	+	-	-	-	-
<i>C. citricola</i> (Forsk.)	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>C. feae</i> (Thorell)	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>C. moluccensis</i> (Doleschall)	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-
<i>Gea corbetti</i> Tikader	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>Larinia chloris</i> (Aud.)	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-
<i>L. jaysankari</i> Biswas	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>L. phtisica</i> (L. Koch)	-	+	-	+	-	-	-	-	-	-	-	-	+	+	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Parawixia dehaanii</i> (Dol.)				+				+		-		-		+			
<i>Singa chota</i> Tikader			-						-				-	+	-		
<i>Zygeilla indica</i> Tikader & Bal		+	-				+						-	-	-	+	
<i>Z. melanocrania</i> (Thorell)		+					+					-	+	+		+	
<i>Neoscona bengalensis</i> Tikader & Bal				+			-					-	+				-
<i>N. excelsus</i> (Simon)					+							-			-		
<i>N. laglaizei</i> (Simon)	-			+	-	-			-			-	+		-	-	
<i>Neoscona mukerji</i> Tikader	-	+						+			+	-	+		-	-	-
<i>N. nautica</i> (L. Koch)			-		+												
<i>N. pavidata</i> (Simon)					+				-			-	-	-	-	-	
<i>N. poonaensis</i> Tikader & Bal	-		-								+	+		+			
<i>N. rumpfi</i> (Thorell)										+				-	-	-	-
<i>N. theis</i> (Walckenaer)	+						+			+		-	+	+	-	+	
<i>Gasteracantha brevispina</i> (Dol.)								+				-	-	-	-	-	-
<i>G. diadesma</i> Thorell	-				+						-	-		-	-	-	-
<i>G. hasselti</i> C. L. Koch					+						-	-	-	-	-	-	-
<i>G. mammosa</i> C. L. Koch	-			+	+						-	-	-	-	-	-	-
<i>G. kuhli</i> C. L. Koch								+			-	-		+	-	+	-
<i>G. unguifera</i> Simon	-	-	-	-		-	-	+	+		-	-	-	-	-	-	-
<i>Leucauge bengalensis</i> Gravely	-	-	-	+		-	+	-		-	-	-	-	+	-	-	-
<i>L. celebesiana</i> (Walckenaer)	-		-	+	+			-				-	-	-	-	-	-

Name of the Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>L. culta</i> (O. P. Cambridge)	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>L. decorata</i> (Blackwall)	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	-	+
<i>L. tessellata</i> (Thorell)	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>L. ventralis</i> (Thorell)	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Nephila clavata</i> L. Koch	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>N. kuhlii</i> Doleschall	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-
<i>N. maculata</i> (Fabricius)	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>N. malabarensis</i> (Walckenaer)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>N. robusta</i> Tikader	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-

+ = recorded

- = not yet recorded

SUMMARY

This faunistic work summarizes the five years (1984-1989) of the families : Theraphosidae, Oecobidae, Eresidae, Uloboridae, Zodariidae, Hersilidae, Pholcidae, Scytodiidae, Lyssomanidae, Salticidae, Thomisidae, Heteropodidae, Clubionidae, Gnaphosidae, Oxyopidae, Theridiidae, Lycosidae, Pisauridae, Tetragnathidae, Araneidae. The materials provides this work usually collected from the different districts of West Bengal : Calcutta, Bardhaman, Darjiling, Haora, Hugli, Jalpaiguri, Koch Bihar, Maldah, Medinipur, Murshidabad, Nadia, West Dinajpur, North and South 24-Parganas.

During the course of studies 2500 specimens of these families were examined and identified. Altogether, 213 species 70 genera under 20 families are treated here. Among these 11 species in 8 genera under 6 families are described here new to science and 39 species 25 genera under 10 families are recorded here for the first time from West Bengal.

The synonymes, distributional records both in India and abroad, ecological observation, when ever recorded in the field and affinities with related species are given as far as possible for each species. All the references cited in the text are listed in the bibliography which is arranged authorwise and chronologically.

The types of all the new species are deposited in the National collection of Zoological Survey of India, Calcutta.

REFERENCES

- Biswas Bijan, 1984. Description of six new species of spiders of the families Clubionidae, Gnaphosidae and Salticidae from India. *Bull. zool. Surv. India*, 6(1-3) : 119.
- Biswas Bijan, 1984. Description of a new species of spider (Araneidae : Larinia) from India. *Bull. zool. Surv. India*, 6 (1-3) : 133.
- Biswas Bijan & Biswas Kajal, 1984. Description of two new species of jumping spiders of the genus *Marpissa* (Family : Salticidae) from India. *Bull. zool. Surv. India*, 6(1-3) : 129.
- Biswas Bijan, 1987. Fauna of Orissa : Araneae spiders (Families : Araneidae, Gnaphosidae and Salticidae), State Fauna Series No. 1(1) : 257-272.
- Bhattacharya, G.C. 1984. Notes on observation of some peculiar habits of an antmimicking spider *Amyciaea forticeps* (Cambridge). *J. Bombay nat. Hist. Soc.* 37(1) : 233.
- Bristowe, W.S. 1958. The World of spiders, London.
- Caporiacco, L. 1934. Aracnidi dell Himalaia del Karakoram. *Mem. Soc. Ent. ital.*, 13:113.
- Comstock, J.H. 1940. The Spider Book, New York.
- Dyal, S. 1935. Spiders of Lahore. *Bull. Zool. Punjab Univ.*, 1 : 119.

- Gertsch, W.J. 1949. *American Spiders*, New York.
- Gravely, F.H. 1931. Some Indian spiders of the families Ctenidae, Sparassidae, Selenopidae and Clubionidae. *Rec. Indian Mus.*, 33(3) : 211.
- Narayan, K. 1915. Notes on Ant-like spiders of the family Attidae in the collection of the Indian Museum. *Rec. Indian Mus.*, 11 : 393.
- Oppenheimer, J. R. & Tikader, B.K. 1977. The ground activity of spiders Araneae and harvestmen (phalangida) in West Bengal, India. *J. Bombay nat. Hist. Soc.*, 73(1) : 121.
- Pocock, R.J. 1900. *Fauna of British India, Arachnida*, London.
- Simon, E. 1897. *Histoire naturelle Araignees*, Paris, 2.
- Sinha, T.B. 1952. Some Indian spiders of the family Argiopidae. *Rec. Indian Mus.*, 49(1) : 67.
- Stoliczka, F. 1869. Contribution towards the knowledge of Indian Arachnoidae. *J. Asia Soc. Bengal*, 33(2): 201.
- Thorell, T. 1895. Descriptive catalogue of the spiders of Burma, *British Museum*, London : 1-406.
- Tikader, B.K. 1960. On some new species of spiders (Anachnida) of the family Thomisidae from India. *J. Bombay nat. Hist. Soc.*, 57 (1) : 173.
- Tikader, B.K. 1961. Protective devices of some orbweaving spiders from India. *J. Bombay nat. Hist. Soc.*, 58(3) : 825.
- Tikader, B.K. 1962. On two new species of spiders of the genus *Scotophaeus* and *Drassodes* (Family : Gnaphosidae) from West Bengal. *Proc. First All India Congress of Zoology*, (2) : 570.
- Tikader, B.K. 1963. On some new species of spiders of the genus *Argyrodes* Simon (Family : Theridiidae) from India. *Proc. Indian Acad. Sci.*, 57(2) : 99.
- Tikader, B.K. 1964. Zoological results of the Indian Cho-Oyu Expedition (1958) in Nepal, Part B, Arachnida, *Rec. Indian Mus.*, 59(3) : 267.
- Tikader, B.K. 1965. On some new species of spiders of the family Thomisidae from India. *Proc. Indian Acad. Sci.*, 61(5) : 277.
- Tikader, B.K. 1966. A new species of spiders of the genus *Scytodes* (Family : Scytodidae) from India. *Curr. Sci.*, 35(24) : 627.
- Tikader, B.K. 1967. Studies on some Salticidae spiders from Sikkim, Himalaya, India. *Proc. Indian Sci.*, 66(4) : 119.

- Tikader, B.K. 1968. Studies on spider fauna of Khasi and Jaintia Hills, Assam, India. Part III. *J. Assam Sci. Soc.*, 11 : 154.
- Tikader, B.K. 1969. Two new species of the genus *Uloborus* of the family Uloboridae from India. *Proc. Indian Acad. Sci.*, 70(3) : 127.
- Tikader, B.K. 1970. Spider fauna of Sikkim. *Rec. zool. Surv. India*, 64(1-4) : 1-84.
- Tikader, B.K. 1973. Studies on some spiders of the family Gnaphosidae from India. *Proc. Indian Acad. Sci.*, 77(5) : 186.
- Tikader, B.K. & Biswas Bijan , 1974. Some spiders of the genus *Xysticus* (Family : Thomisidae) from Darjeeling, India. *Proc. Indian Acad. Sci.*, 80(6) : 262.
- Tikader, B.K. 1975. Studies on jumping spiders of the genus *Zygoballus* from India (Family : Salticidae). *Proc. Indian Acad. Sci.*, 81(4) : 150.
- Tikader, B.K. 1976. Two new species of the spiders of genus *Cheiracanthium* Koch and *Clubiona* Latreille (Family : Clubionidae) from India. *J. Bombay nat. Hist. Soc.*, 73(1) : 175.
- Tikader, B.K. 1977. Studies on spider fauna of Andaman and Nicobar Islands Indian Ocean. *Rec. zool. Surv. India*, 72(1-4) : 153-212.
- Tikader, B.K. & Biswas Bijan , 1978. Two new species of spiders of the family Lyssomanidae from India. *Proc. Indian Acad. Sci.*, 87 (9) : 257.
- Tikader, B.K. 1982. Fauna of India : Spider (Araneidae and Gnaphosidae) 2 : (1-2) : 533.
- Tikader, B.K. & Biswas Bijan , 1979. Two new species of spiders of genus *Therpyna* Koch from India (Family : Thomisidae) *J. Bombay nat. Hist. Soc.*, 75(3) : 903.
- Tikader, B.K. 1980. Fauna of India : Spider (Thomisidae) 1 (1) : 1-248.
- Tikader, B.K. & Biswas Bijan , 1981. Spider fauna of Calcutta and vicinity Part I. *Rec. zool. Surv. India*, occ. pap. No. 30 : 1-148.
- Yaginuma, T. 1960. Spiders of Japan in colour, Japan : 1-186.
- Walckenaer, C.A. 1842. *Histoire naturelle des Insectes Apteres*, Paris, 2 : 1-549.
- Wanless, F.R. 1981. A revision of the spider genus *Hispo* (Araneae : Salticidae). *Bull. Br. Mus. nat. Hist. (Zool.)*, 41 (4) : 179.

ZOOLOGICAL SURVEY OF INDIA PUBLICATIONS

State Fauna Series 3 : Fauna of West Bengal

- Part 1 :** Overview, Mammalia, Aves and Wildlife.
- Part 2 :** Reptilia, Amphibia, Fishes, Hemichordata and Archaeozoology.
- Part 3 :** Arachnida and Acari.
- Part 4 :** Insecta : Thysanura, Ephemeroptera, Odonata, Plecoptera, Orthoptera, Dermaptera, Dictyoptera, Mantid, Isoptera and Psocoptera.
- Part 5 :** Insecta : Hemiptera.
- Part 6 :** Insecta : Coleoptera.
- Part 7 :** Insecta : Diptera and Lepidoptera.
- Part 8 :** Insecta : Trichoptera, Thysanoptera, Neuroptera, Hymenoptera and Anoplura.
- Part 9 :** Land, Freshwater and Marine Molluscs.
- Part 10 :** Porifera, Cnidaria, Platyhelminthes, Rotifera and Nematodes.
- Part 11 :** Echiura, Sipuncula, Annelida, Crustacea, Freshwater Bryozoa and Echinodermata.
- Part 12 :** Protozoa.