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Records of the Zoological Survey of India

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(Heteroptera : Insecta) from West Bengal (India)**

Ananda Mukhopadhyay

Zoological Survey of India

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**TAXONOMIC STUDY OF LYGAEIDAE
(HETEROPTERA : INSECTA)
FROM WEST BENGAL (INDIA)**

By

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सत्यमेव जयते

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INTRODUCTION

The present work attempts to collate and add to the existing knowledge of the second largest heteropteran family, Lygaeidae, as is represented today in the tropical state of West Bengal in eastern India. It is said that in tropical and some temperate areas of the world, lygaeid taxonomy is still at the 'alpha' level with a vast number of new taxa awaiting discovery and description (Slater, 1964 a). The hitherto available information on lygaeid fauna of West Bengal is mainly from Distant's 'Fauna of British India, Rhynchota' (1904, 1910, 1918). However, this requires a reassessment, since many more species and genera have now been collected for the first time from the state, and consequently some of which from Indian subcontinent, and a number of these appear to be new to science. Collections made by the author in all seasons for about three years in succession provide him an opportunity to add much to the meagre knowledge of host, habitat, locality, and time of occurrence of these lygaeid species (Text-fig. 1.).

Diagnosis of the subfamily and tribal units, mostly based on existing literatures, is presented in the form of keys. The indicative characters of some genera and species that are closely related are elaborated wherever felt necessary. Keys for those categories are prepared with a varied approach as deemed desirable. In view of the availability of complete synonymy in Slater's (1964 a) 'Catalogue of the Lygaeidae of the World', the author has kept the list of synonyms for all taxa to a minimum and mostly referred to the publications with original descriptions.

The study of materials includes, besides the collections made by the author, the unidentified material present in the National Zoological Collection (NZC) at the Zoological Survey of India (including specimens received from Asiatic Society and Indian Museum) for over a hundred years. Determination of the species has been done on the basis of the existing literature and the comparative material available at the Zoological Survey of India already determined by eminent workers like Distant, Slater and Malipatil. Doubtful species were either compared with the types, mostly present at the British Museum (N. H.) or identified by experts on the group.

Needless to say that in such a faunistic study the chances of errors are much greater than in revisional work. The author has in some of the cases ventured descriptions of only the more obviously

distinct forms that have also been deemed so by experts. Detailing or redescription has been done only for those species having interesting features or variations not sufficiently covered in original description. A few species that were not present in the collections available to the author but stated to have been collected from some parts of West Bengal, are also included in the key, depending on the information available from other original reports and descriptions or examination of the materials collected from localities outside West Bengal. A few such species that are vaguely reported from Bengal (i. e. 'British Bengal' of the first quarter of the 20th century that included major parts of the present states of West Bengal, Bihar, Orissa, and relatively recent country Bangladesh) have been presumed to be also present in West Bengal and therefore, have been taken into account.

Only those plants for phytophagous, and prey species for predatory lygaeid bugs have been mentioned that are recorded from the State of West Bengal.

The author's name as collector has been abbreviated as 'AM' for Ananda Mukhopadhyay (=Ananda Mukherjee). The number following NZC indicates the registration number of the specimens at the repository of the Zoological Survey of India, Calcutta. Museum collection (abbreviated as Mus. coll.), sometimes found without date or collector's name, have been freshly registered, or where an old registration number is present, the same has been mentioned as reference number. As sex could not be noted for specimens with damaged abdomen, they have been denoted as 'damaged' while detailing the material examined. All measurements are in millimeters ; the mean is followed by range within brackets.

REVIEW OF LITERATURE

Literature on Oriental Lygaeidae is best available from the comprehensive report and short descriptions present in the 'Fauna of British India, Burma, and Ceylon (Sri Lanka)' that had been catalogued part by part in 1904, 1910, and 1918 by Distant. In 1909, however, Maxwell-Lefroy in his manual 'Indian Insect Life' incorporated some short notes on the biosystematics of some Indian lygaeids known till then. In the subsequent years for about half a century there was little work on Oriental lygaeids. Pruthi (1925) in general worked on male genitalia of heteropterans and therefore had included many lygaeids and also had prepared phylogeny of the groups. Manna (1951) worked on the chromosome number of the group and considered their distribution. Hamid and Meher (1974) reported *Spilostethus logulus* (Dallas), *S. hospes* (Fabr.), *S. pandurus* (Scopoli) (as subspecies *militaris*), *S. saxatilis* (Scopoli) and keyed them after redescription including genitalia. The same authors (1973) reported seven lygaeid genera for the first time from West Pakistan with a key, and general distribution. Kiritshenko (1967) gave an account of the heteropterans that had been collected as new, from South West Afghanistan. The same author and Scudder (1969) described a new species *Trapezonotus singularis* from Kashmir. Slater (1968) contributed towards the systematics of Oriental and Australian Blissinae where he described two new genera *Lucorocoris* and *Scintillademus* and nine new species. In commenting on the systematic position of the genus *Suffenus*, Sweet and Slater (1974) synonymised *S. fusconervosus* (Motschulsky), an Oriental species with *Exptochiomera nana* Barber. The genus *Teutates* Dist. was resurrected from synonymy with *Halcocranum* by Chopra and Rustagi (1980 a) and the only Indian species *T. sculpturatus* Dist. was redescribed. The genus *Artemidorus* and the species *A. pressus* Dist. were redescribed and illustrated by Chopra and Rustagi (1980 b).

Barber (1958) gave a comprehensive account of the lygaeids from Micronesia which have in common a number of genera and species of Oriental lygaeids. As a result of Lund University expedition to Africa, Slater (1964 b) published a faunistic account of the South African lygaeids. Scudder (1962 a) listed new synonymy and generic changes of Rhyparochrominae; the same author (1962 b) provided a key to the world genera of Heterogastrinae with description of few new genera and species. Ashlock (1964) erected two new tribes of Rhyparochrominae,

with a revaluation of the tribe Lethaeini. Another valuable contribution of Ashlock (1957) was on taxonomic value of the phallus of Lygaeidae. Sweet (1967) provided a tribal classification of Rhyparochrominae. A revision of one of these tribes, Myodochini from Australia was done by Malipatil (1978) which incidentally also included many genera and species common to Oriental region. The same author (1981) in revising the tribe Cleradini from Australian region described five new genera and transferred many species.

Of late, the present author added to the taxonomic knowledge of Indian lygaeids by erecting a new species of Heterogastrinae (Mukhopadhyay, 1980) and two new species of Geocorinae (Mukhopadhyay and Ghosh, 1982).

LIST OF LYGAEIDS FROM THE STATE OF
WEST BENGAL (INDIA)

Nomenclature of currently known species (1)	Distant's catalogue name (2)	West Bengal (3)	India (outside W Bengal) (4)	Other locality (outside India) (5)
Lygaeinae				
1. <i>Aethalotus horni</i> Breddin, 1907	do	—	+	+
2. <i>Caenocoris nerii</i> (Germar, 1847)	do	—	+	+
3. <i>Oncopeltus confusus</i> Horvath, 1914	<i>Oncopeltus nigriceps</i> Distant	—	+	+
4. <i>Lygaeosoma bipunctata</i> (Dallas, 1852)	<i>Melanotelus bipunctata</i> (Dallas)	—	+	+
5. <i>Lygaeosoma pusillum</i> (Dallas, 1852)	do	—	+	+
6. <i>Spilostethus pandurus militaris</i> (Fabricius, 1775)	<i>Lygaeus militaris</i> (Fabricius)	+	+	+
7. <i>Spilostethus hospes</i> (Fabricius, 1794)	<i>Lygaeus hospes</i> Fabricius	+	+	+

(1)	(2)	(3)	(4)	(5)
8. <i>Tropidothorax fimbriatus</i> (Dallas, 1852)	<i>Lygaeus fimbriatus</i> Dallas	—	+	+
9. <i>Aspilocoryphus mendicus</i> (Fabricius, 1775)	<i>Aspilocoryphus guttiger</i> (Dallas)	+	+	+
10. <i>Graptostethus argentatus</i> Fabricius, 1803)	do	+	+	+
11. <i>Graptostethus trisignatus</i> Distant, 1879	do	—	+	+
12. <i>Graptostethus verticalis</i> (Dallas, 1852)	<i>Lygaeus eosu</i> Distant	+	+	—
13. <i>Graptostethus servus</i> Fabricius, 1787)	do	+	+	+
14. <i>Pyrrhobaphus leucurus</i> (Fabricius, 1787)	do	—	—	+
Orsillinae				
15. <i>Nysius inconspicuus</i> Distant, 1904	do	+	+	+
16. <i>Nysius ceylanicus</i> Motschulsky, 1863	do	+	+	+
17. <i>Nysius minor</i> Distant, 1909	do	+	+	—
Cyminae				
NININI				
18. <i>Ninus insignis</i> Stal, 1860	<i>Ninus Singalensis</i> Breddin	+	+	+
19. <i>Cymoninus turaensis</i> (Paiva, 1919)	—	—	+	+
CYMINI				
20. <i>Cymodema basicornis</i> (Motschulsky, 1863)	<i>Cymus tabidus</i> Stal	+	+	+

Note : + Previously recorded from the locality (based on existing reports).
— Previously not recorded from the locality.

(1)	(2)	(3)	(4)	(5)
Blissinae				
21. <i>Macropes raja</i> Distant, 1909	do	+	+	—
22. <i>Macropes uniformis</i> Distant, 1909	do	+	+	—
23. <i>Dimorphopterus</i> <i>bicoloripes</i> (Distant, 1883)	—	—	+	+
Geocorinae				
24. <i>Geocoris pulvisculatus</i> Distant, 1904	do	+	+	+
25. <i>Geocoris bengalensis</i> Mukhopadhyay and Ghosh, 1982	—	+	—	—
26. <i>Geocoris ochropterus</i> (Fieber, 1844)	<i>G. tricolor</i> (Fabricius)	+	+	+
27. <i>Geocoris</i> <i>pseudolituratus</i> Mukhopadhyay and Ghosh, 1982	—	+	—	—
28. <i>Geocoris lituratus</i> (Fieber, 1844)	do	+	+	+
29. <i>Geocoris rufipennis</i> Distant, 1918	do	+	+	—
30. <i>Geocoris jucundus</i> (Fieber, 1861)	do	+	+	+
31. <i>Geocoris kalighatus</i> Distant, 1910	do	+	—	—
32. <i>Geocoris ornatus</i> (Fieber, 1861)	do	+	—	+
33. <i>Geocoris puri</i> Distant, 1910	do	+	+	—
Malcinae				
34. <i>Malcus scutellatus</i> Distant, 1901	do	—	—	+
Heterogastrinae				
35. <i>Artemidorus pressus</i> Distant, 1903	do	+	+	+

(1)	(2)	(3)	(4)	(5)
36. <i>Dinomachus rachinus</i> Distant, 1906	do	—	+	+
37. <i>Dinomachus indicus</i> Distant, 1909	do	—	+	+
38. <i>Dinomachus bengalensis</i> sp. n.	—	0	0	0
39. <i>Boccharis indicus</i> Mukhopadhyay, 1980	—	+	+	—
40. <i>Sadoletus pallescens</i> Distant, 1909	do	+	+	—
Artheneinae				
ARTHENEINI				
41. <i>Teutates sculpturatus</i> Distant, 1909	do	+	+	—
Pachygronthinae				
42. <i>Pachygrontha bipunctata</i> Stal, 1865	<i>Pachygrontha tabida</i> Lethierry and Severin	+	+	+
Oxycareninae				
43. <i>Oxycarenus bicolor</i> Fieber, 1852	do	—	+	+
44. <i>Oxycarenus laetus</i> Kirby, 1891	do	+	+	+
Rhyparochrominae				
CLERADINI				
45. <i>Clerada apicicornis</i> Signoret, 1863	do	+	+	+
PLINTHISINI				
46. <i>Plinthisus acanthothorax</i> Kiritshenko, 1931	—	—	+	—
ANTILLOCORINI				
47. <i>Botocudo signandus</i> (Distant, 1903)	<i>Cligenus signandus</i> (Distant)	—	+	+
48. <i>Botocudo punctatus</i> sp. n.	—	0	0	0

Note : '0' New species described by the present author in this paper

(1)	(2)	(3)	(4)	(5)
LETHAEINI				
49. <i>Neolethaeus indicus</i> sp. n.	—	0	0	0
50. <i>Hexatrichocoris mallens</i> Kiritshenko, 1931	—	—	+	—
51. <i>Lethaeus indicus</i> Dallas, 1852	do	+	+	+
52. <i>Diniella bengalensis</i> Distant, 1909	do	+	+	+
DRYMINI				
53. <i>Lemnius ovatus</i> Distant, 1904	do	—	—	+
54. <i>Appolonius cincticornis</i> (Walker, 1872)	<i>Agunga fulgida</i> Distant	+	+	+
55. <i>Appolonius crassus</i> (Distant, 1906)	<i>Agunga crassus</i> Distant	—	+	+
56. <i>Thebanus bengalensis</i> sp. n.	—	0	0	0
57. <i>Kanigara flavomarginata</i> Distant, 1906	do	—	+	+
58. <i>Scolopostethus montanus</i> (Distant, 1909)	<i>Manatanus montanus</i> Distant	—	+	—
59. <i>Scolopostethus bengalensis</i> sp. n.	—	0	0	0
OZOPHORINI				
60. <i>Primierus bispinus</i> (Motschulsky, 1863)	<i>Primierus indicus</i> Distant	+	+	+
STYGNOCORINI				
61. <i>Arrianus excavatus</i> Distant, 1904	do	—	+	—
RHYPAROCHROMINI				
62. <i>Elasmolomus</i>	<i>Aphanus</i>	+	+	+

(1)	(2)	(3)	(4)	(5)
<i>sordidus</i> (Fabricius, 1787)	<i>sordidus</i> (Fabricius)			
63. <i>Elasmolomus</i> <i>paralineosus</i> sp. n.	—	0	0	0
64. <i>Lachnesthus</i> <i>leucospilus</i> (Walker, 1872)	<i>Lachnophorus</i> <i>leucospilus</i> (Walker)	—	+	+
65. <i>Rhyparothesus</i> <i>bengalensis</i> (Distant, 1909)	<i>Aphanus</i> <i>bengalensis</i> Distant	+	+	—
66. <i>Rhyparothesus</i> <i>ornatulus</i> (Distant, 1909)	<i>Aphanus</i> <i>ornatulus</i> Distant	—	—	+
67. <i>Rhyparothesus</i> <i>sparsus</i> (Distant, 1904)	<i>Aphanus</i> <i>sparsus</i> Distant	—	+	—
68. <i>Dieuches femoralis</i> Dohrn, 1860	do	—	+	+
69. <i>Dieuches leucoceras</i> (Walker, 1872)	do	—	+	+
70. <i>Dieuches coloratus</i> (Distant, 1909)	<i>Abanus</i> <i>coloratus</i> Distant	+	+	—
71. <i>Metochus uniguttatus</i> (Thunberg, 1822)	do	+	+	+
72. <i>Poeantius festivus</i> Distant, 1901	do	+	+	+
MEGALONOTINI				
73. <i>Proderus spinosus</i> (Distant, 1909)	<i>Gonsalvus</i> <i>spinosus</i> Distant	+	+	—
MYODOCHINI				
74. <i>Suffenus fusconervosus</i> (Motschulsky, 1863)	do	—	—	+
75. <i>Stigmatonotum</i> <i>cephalotes</i> (Kiritschenko, 1931)	—	+	+	—

(1)	(2)	(3)	(4)	(5)
76. <i>Stigmatonotum minutum</i> Malipatil, 1978	—	—	+	+
77. <i>Pachybrachius annulipes</i> (Baerensprung, 1859)	<i>Pamera sinhalana</i> (Distant)	--	+	+
78. <i>Horridipamera nietneri</i> (Dohrn, 1860)	<i>Pamera nietneri</i> (Dohrn)	—	+	+
79. <i>Pseudopachybrachius guttus</i> (Dallas, 1852)	<i>Pamera vincta</i> Say	+	+	+
80. <i>Paromius gracilis</i> (Rambur, 1839)	<i>Paromius seychellesus</i> (Walker)	+	+	+
81. <i>Paromius pallidus</i> (Montrousier, 1865)	—	—	+	+
82. <i>Paromius exiguus</i> (Distant, 1883)	do	+	+	+
83. <i>Pamerana nigritula</i> (Walker, 1872)	<i>Pamerana cuneata</i> Distant	+	+	+
84. <i>Paraecosmetus pallicornis</i> (Dallas, 1852)	<i>Pamera pallicornis</i> Dallas	+	+	+
85. <i>Paraecosmetus brachylabius</i> sp. n.	—	0	0	0
UNKNOWN TRIBE OF RHYPAROCHROMINAE				
86. <i>Prostemmidea mimica</i> Reuter, 1893	do	—	+	—
GENUS OF UNKNOWN SYSTEMATIC POSITION				
87. <i>Meschia quadrimaculata</i> Distant, 1910	do	—	—	+
88. <i>Meschia pugnax</i> Distant, 1910	do	+	+	—

Family LYGAEIDAE Shilling

1829. *Lygaeides* Shilling, *Beitr. Ent. Schles. Fn.*, 1 : 35, 37.
 1835. *Lygaeodes* Burmeister, *Handb. Ent.*, 2 : 279.
 1843. *Infericornes* Amyot and Serville, *Hist. Nat. Ins. Hem.*, p. 248.
 1852. *Lygaeidae* Dallas, *List Hem. Ins. B. M.*, 2 : 531—533.
 1899. *Myodochidae* Kirkaldy, *Entomol.*, 32 : 220.
 1902. *Geocoridae* Kirkaldy, *Jour. Bombay Nat. Hist. Soc.*, 14 : 306.

Generally small or of moderate size, inconspicuously coloured (except members of the subfamily Lygaeinae), lowly placed antenna (below the line joining the eye and tylus), presence of ocellus (with a few exceptions), four or five simple veins on membrane, antenna and labium four-segmented, tarsus three-segmented.

Key to subfamilies of Lygaeidae

- | | | |
|---|-----|------------------|
| 1. Suture between IV and V sternite not extending to lateral margin and curving forward laterally (a few exceptions); generally three dorsal scent gland openings | ... | Rhyparochrominae |
| — All abdominal sutures extending to lateral margin ; generally two dorsal scent gland openings | ... | 2 |
| 2. Abdominal spiracles on segments II to VII located dorsally | ... | 3 |
| — Not all abdominal spiracles dorsal | ... | 5 |
| 3. Clavus punctate | ... | Malcinae |
| — Clavus impunctate | ... | 4 |
| 4. Apical margin of the corium straight ; usually brightly coloured with red and black combinations | ... | Lygaeinae |
| — Apical margin of the corium sinuate at inner angle ; usually cinereous | ... | Orsillinae |
| 5. All abdominal spiracles ventral | ... | 6 |
| — Not all abdominal spiracles ventral | ... | 7 |
| 6. Cross veins present on membrane of forewing resulting in close basal cells ; forefemora very weakly spinous | ... | Heterogastrinae |
| — Cross veins and basal cells absent on membrane ; forefemora incrassate and heavily spined | ... | Pachygronthinae |
| 7. Single abdominal spiracle between segments II to VII dorsal | ... | 8 |
| — More than abdominal spiracle dorsal | ... | 9 |
| 8. Bucculae long, commonly extending to base of head ; forefemora with spines | ... | Oxycareninae |
| — Bucculae short and tapering ; forefemora not with spines (at least in Indian genus <i>Teutates</i> Distant) | ... | Artheninae |
| 9. Abdominal spiracle of only segment VII ventral | ... | 10 |
| — Abdominal spiracle of segment V to VII ventral | ... | Geocorinae |
| 10. Hemielytra coarsely punctate | ... | Cyminae |
| — Hemielytra impunctate or very weakly or sparsely punctate | ... | Blissinae |

Subfamily LYGAEINAE Stal

1862. *Lygaeida* Stal, *Ofv. Vet. Akad. Forh.*, 10 : 210

Key to the genera of Lygaeinae

- | | | |
|---|-----|-------------------------|
| 1. Eyes set away from the antero-lateral pronotal margin, stalked, or bulging ; when bulging, portion of head behind eye tumid | ... | 2 |
| — Eyes touching or almost touching antero-lateral pronotal margin | ... | 3 |
| 2. Eyes stalked, head short, triangularly produced laterally with no tumescence behind eyes | ... | 1. <i>Aethalotus</i> |
| — Eyes nonstalked but produced and bulging, head long not deflected with distinct tumescence behind eyes | ... | 2. <i>Caenocoris</i> |
| 3. Head totally velvety or shiny piceous black | ... | 4 |
| — Head not totally black | ... | 5 |
| 4. Labium considerably exceeding third coxae ; humeral angular area of pronotal base with slight lobular extension | ... | 3. <i>Oncopeltus</i> |
| — Labium not exceeding third coxae ; pronotal base without lobular extension | ... | 4. <i>Lygaeosoma</i> |
| 5. Metathoracic scent gland opening inconspicuous | ... | 5. <i>Spilostethus</i> |
| — Osteolar peritreme well formed | ... | 6, |
| 6. Middorsal carination on anterior pronotal and apical region of scutellum prominent ; basal margin of the pronotum slightly concave at middle | ... | 6. <i>Tropidothorax</i> |
| — Carination on pronotum and scutellum absent or obscure ; basal margin of pronotum straight or convex | ... | 7 |
| 7. Presence of a white crescent marking on basal or discal part of membrane ; shiny black streak of calli on anterior pronotum recurved | ... | 7 <i>Aspilocoryphus</i> |
| — No white marking at least on discal or basal part of membrane ; shiny streaks of calli in single line, not recurved | ... | 8 |
| 8. Presence of at least two black maculate spots at basal area of pronotum, these may be coalesced partly along basal margin | ... | 8. <i>Graptostethus</i> |
| — Absence of any such maculate spot, major part of the pronotum centrally suffused with black tint | ... | 9. <i>Pyrrhobaphus</i> |

(1) Genus *Aethalotus* Stal1874. *Aethalotus* Stal, *En. Hem.*, 4 : 98.Type-species : *AE. afzellii* Stal, 1865.

Body oblong or suboblong ; head short triangularly produced, deflected ; eyes stalked variably ; labium passing posterior coxae ; pronotum trapezoidal and punctured ; ocelli one and a half of two times as

far removed from each other as from eyes ; scutellum equilateral and femora unarmed.

Of some eight species known from world, two are recorded from India and only one from West Bengal.

1. *Aethalotus horni* Breddin, 1907

1907. *Aethalotus horni* Breddin, *Deutsch. ent. Zeitsch.* 1907 p. 42

Material : 2 ♂♂, 3 ♀♀, Raja Rammohunpur, Darjeeling district, 15.XI.1984 coll. A.M.

Remarks : The adults and the nymphs of the species use *Calotropis procera* as host plant. The species is recorded for the first time from West Bengal, and appears little larger and more greyish than the ones described by Breddin (1907) from Sri Lanka and those found in peninsular India.

(2) Genus *Caenocoris* Fieber

1860. *Caenocoris* Fieber, *Eur. Hem.*, pp, 44, 166.

Type-species : *Lygaeus nerii* Germar, 1847

Eyes bulging but not stylated, located some distance away from anterior pronotal margin ; fourth antennal segment longer than second ; posterior margin of pronotum straight or slightly concavely truncated.

Of some 21 species known under this genus, only 2 are known from India and 1 from West Bengal.

2. *Caenocoris nerii* (Germar, 1847)

1847. *Lygaeus nerii* Germar, *Faun. Eur. Bur.* 24 : 17.

Material : 3 ♂♂, 2 ♀♀, Sibpur, Howrah district, 24. IV 1980, coll. A.M. NZC (757/H15).

Remarks : The species use *Calotropis gigantea* and *C. procera* as host plants, and is recorded for the first time from West Bengal.

(3) Genus *Oncopeltus* Stal

1868. *Lygaeus* s.g. *Oncopeltus* Stal, *Hem. Fabr.*, 2 : 70, 75.

Type-species : *Cimex famelicus* Fabricius, 1781

Large and brightly coloured insects with tumid Scutellum ; basal margin of the pronotum normally produced in form of lobes.

Of some 33 species known from world, 3 are known from India and only 1 is recorded from West Bengal.

3. *Oncopeltus confusus* Horvath, 1914.

1904. *Oncopeltus nigriceps* Distant, *Faun. Brit. Ind. Rhynch.*, 2 : 4-5.

The species is represented in West Bengal by one of the varieties mentioned by Distant (1904). Head completely black, pronotum almost lacking any dark patch, hemielytra without any dark transverse fascia.

Material : 1 ♂, Calcutta, 25.V 1981, coll. A.M., NZC (759/H15), Additional material examined : 1 ♂, 3 ♀♀, Purneah, (Bihar), NZC (9955/14, 9665/14, 9666/14); 1 ♂, Kolaikanal, (Tamil Nadu), NZC (5502/H7).

Remarks : The species is collected from *Calotropis procera*, and is recorded from West Bengal for the first time.

(4) Genus *Lygaeosoma* Spinola

1837. *Lygaeosoma* Spinola, *Essai Gen. Ins. Hem.*, pp. 254-256

Type-species : *Lygaeosoma serdea* Spinola, 1837

Strongly punctate, thickly pubescent with black head and pale-red osteolar peritreme, anal orifice normally contrasting black.

Of 21 species known from world, 6 are known from India, and 2 recorded from West Bengal.

Key to species of *Lygaeosoma*

1. Pleura with blackish patches or spots ; antenna and labium entirely piceous ... *bipunctata* (Dallas)
- Pleura without black spot or patch ; labium and antenna blackish with joints whitish ... *Pusillum* (Dallas)

4. *Lygaeosoma bipunctata* (Dallas, 1852)

1852. *Lygaeus bipunctatus* Dallas, *List Hem. B. M.*, 2 : 547

Material : 1 ♀, Calcutta, 17. V. 1979, coll. A. M. ; 2 ♂♂, Baruipur, 24-Parganas district, 3. VIII. 1980, A. M. ; preceding collections with NZC (755/H15).

Remarks : The species occurs in litter of *Ficus religiosa*, and is recorded from West Bengal for the first time.

5. *Lygaeosoma pusillum* (Dallas, 1852)

1852. *Arocatus pusillus* Dallas, *List Hem. B. M.*, 2 : 550-551.

Material : 1 ♀, Sibpur, Howrah district, 14. VI. 1979, Coll. A. M. ; 2 ♀♀, Sibpur Howrah district, 17 V 1979, coll. A. M. ; 1 ♀, (Mus. coll.), 22. V 1909 ; preceding collections with NZC (756/H15).

Remarks : The species occurs in the litter habitat of the tall trees and shrubs, and is recorded for the first time from West Bengal.

(5) Genus **Spilostethus** Stal

1868. *Lygaeus* S. G. *Spilostethus* Stal, *Kongl. Svensk. Vet. Akad. Handl.*, 7 (11) : 72.

Type-species : *Cimex militaris* Fabricius, 1775. = *Cimex pandurus* Scopoli, 1763.

Femora of legs usually spinose in male ; lateral margins of the pronotum rolled and metathoracic scent gland orifices obsolete ; brightly coloured insects usually with a combination of red and black.

The genus is often considered as a subgenus or synonym of *Lygaeus*. As the following species satisfy the characters of genus *Spilostethus* more than *Lygaeus*, they are retained under the former.

Of some 23 species known from world, 6 are known from India and 2 from West Bengal.

Key to the species of spilostethus

1. Membrane black, with a central white spot and two crescent white markings on membranal suture ; labium reaches or passes 2nd coxae ... *pandurus* var. *militaris* (Fabricius)
- Membrane black and without white spot, labium passes third coxae ... *hospes* (Fabricius)

6. *Spilostethus pandurus militaris* (Fabricius, 1775)

1775. *Cimex militaris* Fabricius, *Syst. Ent.*, p. 717

Material : 2 ♂♂, 4 ♀♀, Sibpur, Howrah district, 17. V 1980, coll. A. M. ; 1 ♀, Sagar Island, 24-Parganas district, 31 V 1979, coll. A. M. ; 1 ♀, Chunabati, Darjeeling district, 9. III. 1974, coll. Bhowmik, H. K. ; preceding collections with NZC (748/H15).

Remarks : The species uses *Calotropis gigantea*, and *C. procera* as host plants. There is little variation in the population found in West Bengal, but being of all India distribution some specimens incidentally examined from desert area of western India (Rajasthan, Gudha) were found to have a yellow-ochraceous colour as compared to the dull red coloured ones from eastern India.

7. *Spilostethus hospes* (Fabricius, 1794)

1794. *Lygaeus hospes* Fabricius, *Ent. Syst.*, 4 : 150.

Material : 1 ♂, Calcutta, 30. VIII. 1978, coll. A. M. ; 2 ♀♀, Baruipur, 24-Parganas district, 5. IV 1979, coll. A. M. ; 3 ♂♂, 2 ♀♀, Sagar Island, 24-Parganas district, 11 VIII. 1978, coll. A. M. ; 1 ♂, 1 ♀, Amrawati, 24-Parganas district, 3. VI. 1978, coll. Prasad, M. and Iyengar ; 1 ♂, Purulia district, 1. VI. 1977, coll. Khera, S. ; preceding

collection with NZC (749/H15). Additional material examined : 1 ♀, Berhampur, Murshidabad district, 1970, coll. Sen Gupta, K.

Remarks : The species is recorded from the host plants *Calotropis gigantea*, *C. procera*, *Solanum melongena*, *Antirrhinum* sp., and *Morus indica*. Antennal oligomery with 3 Segments recorded.

Measurements : Normal segments : I, 0.78 ; II, 1.86 ; III, 1.56 ; IV, 1.74, Oligomeric segments : I, 0.78 ; II, 1.86 ; III, 2.28.

(6) Genus **Tropidothorax** Bergroth

1868. *Lygaeus* s. g. *Melanospilus* Stal, *Hem. Fabr.*, 1 : 75.

Type-species : *Lygaeus venustus* Herrich-Schaeffer, 1835 ;
Cimex leucopterus Goeze, 1778.

The genus *Tropidothorax* is often synonymised with *Lygaeus* but differs in pronotal structure in having a complete median ridge (subcarina) which is sometimes rather obsolete at slightly concave posterior margin ; osteolar peritreme well developed.

Of 9 species belonging to the genus only one is known from India and West Bengal.

8. **Tropidothorax fimbriatus** (Dallas, 1852)

1852. *Lygaeus fimbriatus* Dallas, *List Hem. B. M.*, 2 : 546-547

Material : 1 ♀, Baruipur, 24 Parganas district, 18. III, 1980, coll. A. M. ; 1 ♂, Calcutta, 27. III, 1924, coll. Annandale, N. ; preceding collections with NZC (750/H15).

Remarks : The species sucks sap of *Calotropis procera* and *Euphorbia* flowers, and is recorded for the first time from West Bengal.

(7) Genus **Aspilocoryphus** Stal

1874. *Aspilocoryphus* Stal, *Enum. Hem.*, 4 : 99, 117.

Type-species : *Lygaeus fasciiventris* Stal, 1858.

Short sericeous pile ; blackish peritreme of metathoracic scent gland ; pronotal calli with recurved streak.

Out of 7 species known from world. 3 are recorded in India and only 1 from West Bengal,

9. **Aspilocoryphus mendicus** (Fabricius, 1775)

1775. *Cimex mendicus* Fabricius *Syst. Ent.*, p. 720

Material : 1 ♂, 2 ♀ ♀, Chilka lake, (Orissa), — VII and VIII, 1917, coll. Annandale, N., NZC (6238/15) ; Additional material examined : 1 ♂, 1 ♀, Ranchi, (Bihar), (Mus. coll.), coll. Irvine.

(8) Genus **Graptostethus** Stal

1868. *Lygaeus* s. g. *Graptostethus* Stal, *Kongl. Svensk. Vet. Akad. Hand.*, 11 (7): 73, 74.

Type-species : *Cimex servus* Fabricius, 1787.

Metapleura with angulate posterior margin ; males with mutic femora ; osteolar peritreme distinct ; central carina of pronotum either lacking or subobsolete ; scutellum tumid and beyond middle obtusely carinate.

The genus comprises some 32 species, of which 8 are known from India and 4 from West Bengal.

Key to the species of Graptostethus

- | | | |
|---|-----|-------------------------------|
| 1. Head with single basal black marking confined to vertex or extending narrowly to telytus | ... | 2 |
| — Two discrete black spots on vertex | ... | <i>argentatus</i> (Fabricius) |
| 2. Corium and clavus without any black marking | ... | <i>tresignatus</i> Distant |
| — Corium and clavus with black markings | ... | 3 |
| 3. Scuteller apex with pale tint ; pronotum middorsally subcarinate | ... | <i>verticalis</i> (Dallas) |
| — Scuteller apex without any pale marking ; no pronotal subcarination | ... | <i>servus</i> (Fabricius) |

10. Graptostethus argentatus (Fabricius, 1803)

1803. *Lygaeus argentatus* Fabricius, *Syst. Rhync.*, p. 288.

Material : 1 ♂, Calcutta, (Mus. Coll), NZC (6515/5) ; 2 ♀ ♀, Pune (Maharashtra), 1979, NZC (754/H15).

11. Graptostethus trisignatus Distant, 1879

1879. *Graptostethus trisignatus* Distant, *Ann. Mag. Nat. Hist.*, (5) 3 : 130

Material : 1 ♀, Chunabati, Darjeeling District, 9. III. 1974, coll. Bhowmik, H. K. ; 1 (damaged), Teesta, Darjeeling district, 29. V 1980, coll. Tiwari, R. N. ; 1 ♂, 1 ♀ Kalimpong, Darjeeling district, 24. IV 1910, Gravely, F. A. ; preceding collections with NZC (753/H15).

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

12. Graptostethus verticalis (Dallas, 1852)

1852. *Lygaeus verticalis* Dallas, *List Hem. B. M.*, 2 : 548

Material : 1 ♂, 1 ♀, Calcutta, 24. II. 1980, coll. A. M. ; 1 ♀, Calcutta, 17 IV 1980, coll. A. M. ; 1 ♂, 1 ♀, Calcutta, 5. II. 1981, coll. A. M. ; Sibpur, Howrah district, 15. V. 1980, coll. A. M. ; 1 ♂,

Sibpur, Howrah district, 24. VI. 1979, coll. A. M., preceding collections with NZC (752/H15).

Remarks : The species remains associated with *Vernonia cineria*, and occasionally grass and dicotyledonous weeds.

13, *Graptostethus servus* (Fabricius, 1787)

1787. *Cimex servus* Fabricius, *Mant. Ins.*, 2 : 300

Material : 1 ♀, Karmaktar, Darjeeling district, 3.I.1976, coll. Sirvastav; G. K. and pty ; 1 ♂, Manibhonjan, Darjeeling district, 20. IV.1973, coll. Sharma, H. S. ; 1 ♀, Sokiapokri, Darjeeling district, 19. V 1971, coll, Bhowmik, A. R. ; 1 ♂, Monibhonjan, Darjeeling district, coll. Jonathan, J. K. ; 1 ♂, 1 ♀, Maharajpur, 1.III.1931. coll. Rebeiro, S. ; 1 ♂, Diamond Harbour, 24-Parganas District, 29.I.1966, coll. Bhanoter ; 1 ♀, Baruipur, 24-Parganas, 6.III.1979, coll. A. M. ; 1 ♂, Calcutta, 10.XII.1965, Ghosh, M. M. and pty ; preceding collections with NZC (751/H15)

Remarks : The species remains associated with *Calotropis* spp.

(9) Genus *Pyrrhobaphus* Stal

1868. *Lygaeus* s. g. *Pyrrhobaphus* Stal, *Hem. Fabr.*, 1 : 73.

1847. *Pyrrhobaphus* Stal, *Enum, Hem.* 4 : 99, 116.

Type-species : *Cimex leucurus* Fabricius, 1787.

Antenna long with II and IV segments longest ; labium long passing posterior coxae, segment I extending almost upto anterior coxae ; basal pronotal margin straight, femora unarmed, posterior metapleural margin obliquely truncated.

The genus comprises 5 species and is represented in India and West Bengal by a single species.

14. *Pyrrhobaphus leucurus* (Fabricius, 1787)

(Text-fig. 2.)

1787. *Cimex leucurus* Fabricius, *Mant. Ins.*, 2 : 299.

1894. *Pyrrhobaphus leucurus* Lethierry and Severin, *Gen. Cat, Hem.*, 2 : 150.

Material : 1 ♀, Dubalia side, Midnapur district, 3, XI. 1974, coll. Hazra, A. K. ; NZC (758/H15).

Subfamily ORSILLINAE Stal

1872. *Orsillaria* Stal, *Ofv. Vet. Akad. Forh.*, 29 (7) : 43-44

(10) Genus *Nysius* Dallas

1852. *Nysius* Dallas, *List Hem. B. M.*, 2 : 551-552.

Type-species : *Lygaeus thymi* wolff, 1804.

This well defined genus comprises nearly 100 species from the world and about 7 from India. According to Slater (1964 b) the systematic relationships of different species of this genus appear difficult to be made out, in view of subtle distinguishing features of different species.

The distinguishing characters as found in original descriptions of the three species of *Nysius* reported from West Bengal are not very clear and often confusing because of the variability of the species. Nevertheless, the following key has been prepared based on some apparent features. The view, that a revisional work of the genus from oriental region is necessary in order to understand the real status of the species and their distinctness, has also been corroborated by Mr. W R. Dolling. British Museum (N. H.), London. (in comm).

Key to the species of *Nysius*

- | | | |
|---|-----|-----------------------------------|
| 1. Head, antennae, and pronotum reddish ochraceous, latter with anterior transverse fascia ; body beneath ochraceous except blackish base of abdomen | ... | <i>inconspicuus</i> Distant |
| — Head, antennae, dark or piceous ; pronotum anteriorly black (posteriorly ochraceous ; abdomen ventrally black except a little of apical discal area yellowish-brown | ... | 2 |
| 2. All the antennal segments black with the 2nd segment distinctly longer than 3rd | ... | <i>Cylanicus</i>
(Motschulsky) |
| — 2nd and 3rd segments of the antenna subequal and brownish ochraceous ; 1st and 4th antennal segments blackish | ... | <i>minor</i> Distant |

15. *Nysius inconspicuus* Distant, 1904.

1904. *Nysius inconspicuus* Distant, *Faun. Brit. Ind. Rhyn.*, 2 : 18.

The species has a wide distribution and shows much variation specially in the pronotal and antennal colouration. The fuscous spots on corial veins and membranal sutures variable in number and extent. Abdomen ventrally some time variegated.

Material : 1 ♂, Baruipur, 24-Parganas district, 21.IV.1979, coll. A. M. ; 2 ♂♂, Calcutta. 24.IV.1981, coll. A. M. ; 1 ♂, Calcutta, 3.V.1908, coll. Annandale, N. ; 1 ♀, Jorpokri, Darjeeling district, 11.VI.1910, coll. Beebe, C. W ; preceding collections with NZC (761/H15). Additional material examined : 1 ♂, 3 ♀♀, 1 (damaged), pureshnath, (Bihar), 12-13.IV.1909, coll. Annandale, N. ;

2 ♀ ♀, Sibpur, Howrah district, 2. V 1981. coll. A. M. ; 2 ♂ ♂, Kulti, Burdwan district, coll. Lord, B. ; 1 ♂, Calcutta, 5.IV.1910, coll. Kemp, S. W ; 1 ♂, 1 ♀, Calcutta, 20-21.V.1909 (Mus. coll.).

16. *Nysius ceylanicus* (Motschulsky, 1863)

1863. *Heterogaster ceylanicus* Motschulsky, *Bull. Soc. Nat. Moscu.*, 36 : 78.

Three distinct oblong fuscous spots in the apical margin of ochraceous corium ; membrane hyaline ; antenna piceous.

Material : 2 ♂ ♂, 1 ♀, Calcutta, 28.VI.1979, coll. A. M. ; 1 ♂ Calcutta, 13.XII.1907, (Mus. coll.) ; 1 ♂, Calcutta, 16.VII.1907, (Mus. coll.) ; 1 ♂, 1 ♀, Bholukhop, Darjeeling district, 31 V.1980, coll. Tewari, R. N.

Remarks : The characters show some variation hence pose some problem in determination of the species.

17. *Nysius minor* Distant, 1909

1909, *Nysius minor* Distant, *Ann. Mag. Nat. Hist.*, (8) 3 : 321.

The species resembles *N. ceylanicus* but distinguished from it in being smaller in size ; 1st and 4th antennal segments darker than 2nd and 3rd, the latter are subequal in length.

Material : 5 ♂ ♂, 3 ♀ ♀, Mirik, Darjeeling district, 26.V.1980, coll. Tewari, R. N. ; 1 ♂, Kalimpong, Darjeeling district, 1.VI.1980, coll. Tewari, R. N.

Subfamily CYMINAE Stal

1860. *Cymides* Baerensprung, *Berl. Ent. Zeit.*, 4 : 10

Key to tribes of subfamily Cyminae

- | | | |
|---|-----|--------|
| 1. Apex of scutellum bifid ; hemielytra usually strongly hyaline and basal half of lateral corial margin strongly constricted | ... | Ninini |
| — Apex of the scutellum scute and simple ; lateral margins of corium evenly convex or very slightly contracted towards base, the corium completely coriaceous and uniformly and evenly punctate | ... | Cymini |

Tribe NININI Barber

Key to the genera of Ninini

- | | | |
|--|-----|----------------------|
| 1. First labial segment with apical half abruptly swollen, eyes stylated | ... | 11. <i>Ninus</i> |
| — First labial segment of uniform thickness, eyes sessile | ... | 12. <i>Cymoninus</i> |

(11) Genus *Ninus* Stal

1860. *Ninus* Stal, *Freg. Eug. Resa.*, 3 : Ins. 252—3

Type-species : *Ninus insignis* Stal, 1860.

Head broader than anterior pronotal margin ; antennae longer than half the body length ; pronotum constricted near middle ; hemielytra slightly sinuate close to base and amplified posteriorly ; claval suture not quite longer than scutellum.

The genus comprises 5 species, 2 are known from India and only 1 from West Bengal.

18. *Ninus insignis* Stal, 1860

1859. *Ninus insignis* Stal, *Freg. Eug. Resa. Hem.* 3 : 253

Material : Reported by Distant (1918) from West Bengal ; specimens not available for examination.

(12) Genus *Cymoninus* Breddin

1907. *Cymoninus* Breddin, *Deut. Ent. Zeit.*, 1907 : 38

Type-species : *Cymoninus subunicolor* Breddin 1907 = *Ninus sechellensis* Bergroth 1893.

Cymoninus is close to *Ninus* but distinguishable by different head shape with prominent central lobe ; sessile and smaller eyes, position of ocelli, short antennae, bucculae and labium.

The genus comprises 4 species, only one of these is recorded from India and also from West Bengal.

19. *Cymoninus turaensis* (paiva, 1919)

1919. *Ninus turaensis* Paiva, *Rec. Ind. Mus.*, 16 : 360.

Material : 3 ♀ ♀, Calcutta, 5.VII.1978, coll. A. M. ; 2 ♂ ♂, 2 ♀ ♀, Sibpur, Howrah district, 18.X.1979, coll. A. M. ; 1 (damaged), Sibpur, Howrah district, 22.I.1981, coll. A. M. ; 1 ♂, 3 ♀ ♀, Baruipur, 24-Parganas district, 6.V.1979, coll. A. M. ; 1 ♀, Singla, Darjeeling district, 21.I.1976, coll. Sirvastav, G. K. ; preceding collections with NZC (762/H15).

Remarks : The species use grass-sedges, chiefly *Cyperus irra* as host and habitat, and is recorded for the first time from West Bengal. Some intraspecific variations observed : scuteller structure may be 'Y' Shaped ; head, pronotum and scutellum darker with fuscous patches at pronotal area ; males smaller than females.

Tribe CYMINI Stal

(13) Genus *Cymodema* Spinola

1837. *Cymodema* Spinola, *Essai Hem.*, pp. 213—215.

Type-species : *Cymodema tabida* Spinola, 1837.

Large basal segment of antenna ; strongly developed gular groove.

This is a small genus comprising 3 species, and is represented in India and West Bengal by a single species.

20. *Cymodema basicornis* (Motschulsky, 1863)

1863. *Cymus basicornis* Motschulsky, *Bull. Soc. Nat. Mosc.*, 36 (3) : 90.

This species is well described under genus *Cymus* and was recorded from India (Bengal) by Distant 1904 as *Cymus tabidus* Stal, subsequently this was synonymised with *C. basicornis* Motschulsky and then transferred to genus *Cymodema*.

Material : 1 ♂, 2 ♀ ♀, Calcutta, 15.VII.1979, coll. A. M. ; 1 ♂, 2 ♀ ♀, Baruipur, 24-Parganas district, 10.VII.1979, coll. A. M. ; preceding collections with NZC (763/H15).

Remarks : Occurs on panicles of sedge, *Cyperus irra* during the period June to September.

Subfamily BLISSINAE Stal

1862. *Blissida* Stal, *Ofv. Vet. Akad. Forh.*, 19 : 210.

Key to the genera of Blissinae

- | | | |
|--|-----|---------------------------|
| 1. Forefemora much incrassate and multispined below ; membranal suture straight | ... | 14. <i>Macropes</i> |
| — Forefemora not much incrassate and usually unarmed or with one or two spines ; membranal suture concavely sinuate near claval apex | ... | 15. <i>Dimorphopterus</i> |

(14) Genus *Macropes* Motschulsky

1859. *Macropes* Motschulsky, *Etud. Ent.*, 8 : 108.

Type-species : *Macropes spinimanus* Motschulsky, 1859.

Strongly incrassate, multispinose forefemora ; front coxal cavity closed ; straight membranal suture ; pronotum longer than the maximum width ; lack of a deep median mesosternal furrow.

Of some 35 species belonging to this genus, 12 are recorded from India and 2 from West Bengal.

Key to the species of *Macropes*

- | | | |
|---|-----|---------------------|
| 1. Basal area of the pronotum with a transverse ridge | ... | <i>raja</i> Distant |
|---|-----|---------------------|

- Basal area of pronotum transversely wrinkled
or straight ... *uniformis* Distant

21. *Macropes raja* Distant, 1909

1909. *Macropes raja* Distant, *Ann. Mag. Nat. Hist.* (8) 3 : 323

Material : Reported by Distant (1909) from Calcutta, West Bengal ; specimens not available for examination.

22. *Macropes uniformis* Distant, 1909

1909. *Macropes uniformis* Distant, *Ann. Mag. Nat. Hist.* (8) 3 : 324.

Material : Reported by Distant (1909) from Calcutta, West Bengal ; specimens not available for examination.

(15) Genus *Dimorphopterus* Stal

1872. *Dimorphopterus* Stal, *Ofv. Vet. Akad. Forh.*, 29 : 44-45.

Type-species : *Micropus spinolae* Signoret, 1857.

Open forecoxal cavity ; shiny dorsal surface of head and pronotum lacking pruinosity ; forefemora mutic or sometimes with one or two spines ; concave membranal suture ; clavate antennae.

The genus is represented in the world by 5 species and in India and West Bengal by a single species.

23. *Dimorphopterus bicoloripes* (Distant, 1883)

1883. *Blissus bicoloripes* Distant, *Trans. Ent. Soc. Lond.*, 1883 : 432.

Material : 1 ♀, Calcutta, 16. IV 1979. coll. A. M., NZC (764/H15)

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

Subfamily GEOCORINAE Stal

1860. *Geocorides Baerensprung* *Ber. Ent. Zeit.*, 4 : 11

1862. *Geocorida* Stal, *Ofv. Vet. Akad. Forh.*, 19 : 212

(16) Genus *Geocoris* Fallen

1803. *Salda* Fabricius, (*nec. vera*) *Syst. Rhyngot.*, pp. 113-114.

1814. *Geocoris* Fallen, *Spec. Nov. Hem. Disp. Meth.*, p. 10.

Type-species : *Cimex grylloides* Linnaeus 1761.

Reniform large eyes ; lack of claval commissure ; first three abdominal spiracles dorsal and last three or four ventral.

There are some 122 species belonging to this genus, of which some 23 are recorded from India and 10 from West Bengal.

Key to the species of *Geocoris*

- | | | |
|--|-----|--|
| 1. Head luteous or yellow-ochraceous in general | ... | 2 |
| — Whole or maximum part of the head black | ... | 6 |
| 2. Pronotum ochraceous | ... | <i>Pulvisculatus</i> Distant |
| — Pronotum partly or wholly black | ... | 3 |
| 3. Almost whole (90%) of pronotum black | ... | 4 |
| — Pronotum part luteous and part black (about 50%) | ... | 5 |
| 4. Pronotum narrowing anteriorly and separated from the slightly pedunculate eyes by a gap | ... | <i>bengalensis</i> Mukhopadhyay and Ghosh |
| — Anterior pronotal margin almost as broad as posterior; eyes sessile, touching pronotum | ... | <i>Ochropterus</i> (Fieber) |
| 5. Disk of corium punctate; anterior and lateral pronotal margin luteous without punctures (except a few at anterio-lateral corners); membrane hyaline | ... | <i>pseudolituratus</i>
Mukhopadhyay and Ghosh |
| — Disk of the corium impunctate; pronotum punctured almost throughout*; membrane fuscous | ... | <i>lituratus</i> (Fieber) |
| 6. Head beneath, coxae and apices of femora sanguineous | ... | <i>rufipennis</i> Distant |
| — Head beneath, coxae and apices of femora not sanguineous | ... | 7 |
| 7. Corium silvery grey with brown dot at the base of claval suture | ... | <i>jucundus</i> (Fieber) |
| — Corium with broad brown patch or black marking | ... | 8 |
| 8. Apical third of the corium with large black marking | ... | <i>kalighatus</i> Distant |
| — Only disk or whole of the corium castaneous | ... | 9 |
| 9. Femora luteous, corial disk castaneous | ... | <i>ornatus</i> Fieber |
| — Femora mostly castaneous; corium wholly castaneous except a narrow luteous lateral margin | ... | <i>puri</i> Distant |

24. *Geocoris pulvisculatus* Distant, 1904

1904. *Geocoria pulvisculatus* Distant, *Fn. Brit. Ind. Rhynch.*, 2: 30

Distant (1904) described the species basing on single specimen from Burma. Subsequently in 1910 he made some alterations to the original description on more specimens from Lahore (Pakistan), Calcutta (India) and a few from Bihar (India). The material from first two named localities are present in the collection of Z. S. I. (NZC) at Cal-

* Types at British Museum (N. H.) with uniformly punctate pronotum (W. R. Dolling, B. M. (N. H.) in comm.)

cutta. The collection data reveal that the material from Lahore was determined by Distant himself while the one from Calcutta does not bear the name of the determinant but bears a slip marked 'D' indicating that the material was also examined by Distant. Since Distant (1910) in *Fn. Brit. Ind. Rhynch.* vol. V refers to this species as available from Calcutta, it may be presumed to have been based on this specimen (dt. 4. VI. 1907). A careful study of these specimens reveals that the specimen from Lahore is sufficiently different from the one collected at Calcutta. Further, it appears that the specimen from Calcutta is conspecific with *G. pseudolituratus*.

Thus, in view of the foregoing discussion the finding of *G. pulvisculatus* in Calcutta is questionable.

From the examination of the material from Lahore it appears that Distant's description of *G. pulvisculatus* is inadequate. Hence, the species is redescribed taking in consideration the original description and the material from Lahore.

Redescription (Fig. 12 b)

Body in general ochraceous.

Head: Ochraceous with fuscous designs in ocellar region and either side of the tylus; 1st, 2nd, and 3rd antennal segment darker than luteous 4th segment.

Thorax: Pronotum semicircular with slightly convex basal margin, ochraceous with fuscous calli in anterior pronotal region, whole pronotum coarsely punctate (which appear blackish because of deep pitted nature); scutellum almost as broad basally as long, coarsely brownly punctate and with two basal tumescence; clavus and corium ochraceous, clavus with single complete row of puncture and corium with two rows of diverging punctures along claval suture, single row of puncture along subcostal region terminates at outer apical region of corium in numerous punctures; membrane hyaline extending beyond abdomen; pleura ochraceous, coarsely brownly punctate.

Abdomen: Ventrally light ochraceous with some ventrolateral brown markings.

Measurements: Body length 3.91; Pronotal length 1.0; Pronotal width 1.76; Head length 0.63; Head width 1.89; Antennal segment I. 0.22; II. 0.35; III. 0.25; IV. 0.38; Labial segment I. 0.63; II. 0.38; III. 0.28; IV. 0.35; Scuteller base 1.13; Scuteller length 1.2.

Material: 1 ♀, Lahore (Pakistan), 8.V.1908, NZC (9894/15).

Remarks; Occurrence of the species in West Bengal is doubtful (not considering Distant's report 1910 from Calcutta)

25. *Geocoris bengalensis* Mukhopadhyay and Ghosh

1982. Mukhopadhyay and Ghosh, *Kontyu*, 50 (2) : 169-174

Materiali : 4 ♂♂, 2 ♀♀, Sibpur, Howrah district, 15. V 1980, coll. A. M. ; NZC (747/H15).

Remarks : Material examined includes holotype, allotype, and paratypes.

The species occurs in litter of *Ficus religiosa*, *F. benghalensis*, and *F. infectoria*, feeding on the small invertebrates of the same habitat.

26. *Geocoris ochropterus* (Fieber, 1844)

1798. *Cimex tricolor* Fabricius, *Ent. Syst. Supp.*, p. 536.

1859. *Geocoris ochropterus* Dohrn, *Cat. Hem.* p. 35

Head colour range from pale yellow to yellowish red ; black fascia at base of head and vertex region may be continuous or discrete restricted to the ocellar region ; pronotum may be fully piceous black or with lateral margins narrowly testaceous (Text-fig. 12c).

Material : 2 ♂♂, 3 ♀♀, Calcutta, 22.I.1959—21.III.1961, coll. Kapoor, A. P. ; 1 ♂, Calcutta, 19.III.1966, coll. Arora, G. S. ; 2 ♂♂, Calcutta, 2.X.1980, coll. A. M. ; 1 ♀, Baruipur, 24-Parganas district, 3.VII.1980, coll. A. M. ; 1 ♀, Mirik, Darjeeling district, 26.VI.1979, coll. Haldar, P. ; 1 ♂, Kalimpong, Darjeeling district, 24.IV.1910, coll. Gravely, F. H. : preceding collections with NZC (765/H15). Additional material examined : 5 ♀♀, 2 (damaged), Calcutta, -V to -XII. 1907, (Mus. coll) : 1 ♀, Calcutta, 22.VIII.1907, coll. Annandale, N.

Remarks : The species feeds on insects and mites of the foliage habitat and also sucks plant sap.

27. *Geocoris pseudolituratus* Mukhopadhyay and Ghosh

1982. Mukhopadhyay and Ghosh *Kontyu*, 50 (2) : 169-174.

Material : 3 ♂♂, 3 ♀♀, Calcutta, 12 XI.1979, coll. A. M., NZC (746/H15).

Remarks : Material examined includes holotype, allotype, and paratypes.

The species feeds on jassids, psyllids, other soft insects and mites from the foliage habitat of *Ficus hispida* and associated vegetation. It also feeds on plant sap.

28. *Geocoris lituratus* (Fieber, 1844)

1844. *Ophthalmicus lituratus* Fieber, *Ent. Monogr.*, p. 116.

Material : Reported by Distant (1904) from Calcutta, West Bengal ; specimens not available for examination.

29. *Geocoris ruffipennis* Distant, 1918

1918. *Geocoris ruffipennis* Distant, *Fn. Brit. Ind. Rhynch.*, 7 : 189.

Material : Reported by Distant (1918) from Calcutta, West Bengal ; specimens not available for examination.

30. *Geocoris jucundus* (Fieber, 1861)

1861. *Ophthalmicus jucundus* Fieber, *wien. Ent. Monat.*, 5 : 269-270.

1874. *Geocoris jucundus* Stal, *Enum. Hem.*, 4 : 137.

The species shows some variation like, base of 3rd segment of labium may or may not be black ; apices of antennal segments I, II, III, and whole of IV segment pale luteous ; abdominal sterna castaneous, not black.

Material : 1 ♂, Calcutta, 13.V.1907, NZC (9897/15) ; 2 ♀ ♀, Calcutta, NZC (5008/11) ; 1 ♂, Calcutta, 2.IV.1979, coll. A. M., NZC (766/H15) ; 2 ♂ ♂, Calcutta, 15. VI. 1979, coll. A. M., NZC (766/H15).

31. *Geocoris kalighatus* Distant, 1910

1910. *Geocoris kalighatus* Distant, *Fn. Brit. Ind. Rhynch.*, 5 : 26.

Material : Reported by Distant (1910) from Calcutta, West Bengal specimens not available for examination.

32. *Geocoris ornatus* (Fieber, 1861)

(Text-fig. 3)

1861. *Ophthalmicus ornatus* Fieber, *Wien. Ent. Monat.*, 5 : 274.

1874. *Geocoris ornatus* Stal, *Enum. Hem*, 4 : 137

Redescription : Body black, elliptical and finely pilose.

Head : Base of head broadly and tylus piceous black with a pair of elongated pale marking, anterior part red castaneous, head more than twice broader than long ; antenna piceous black excepting proximal part of the 1st segment : I, II, and III segments with coarser hair than IV ; labium luteous excepting proximal part of I and distal apex of IV segment, labium reaching or passing 2nd coxae and without any punctures.

Thorax : Pronotum trapizoidal, black and punctate except anterior and posterior pale margins, under high magnification fine punctures are visible between coarse punctures, lateral pronotal margins with slight convex curvature ; pleura piceous shiny and deeply punctate ; acetabula and legs luteous with fine long pilosity ; anterior sternal margin luteous ; scutellum as long as broad, piceous, thinly but deeply punctate with fine bristles ; clavus obscurely marked off from corium rendering the brachypterous corium coleopterous, inner margin of clavus and subcostal margin of corium luteous and with concolorous puuctures (under high

magnification), three rows inner and one row of punctures in subcostal region, rest of hemielytron specially the discal part completely free of punctures but with long pilosity, membrane reduced.

Abdomen : Piceous black, posterior end attenuated.

Measurements (based on male specimen) : Body length 3. 2 ; Head length 0.5 ; Head width 2.95 ; Pronotal length 0.76 ; Pronotal width anterior 0.88, Posterior 1.32 ; Antennal segment I. 0.25 ; II. 0.47 ; III. 0.38 ; IV 0.5 ; Labial Segment I. 0.47 ; II. 0.35 ; III. 0.38 ; IV 0.47.

Material : 1 ♂, Calcutta, 23. X. 1980, coll. A. M. ; 1 ♂, Sibpur, Howrah district, 30. X. 1980, coll. A. M. ; preceding collections with NZC (767/H15) ; 1 (damaged), Peradeniya, (Sri Lanka), -VI. 1909, NZC (7722/16).

Remarks : The uniformity of coleoptery in specimens studied from eastern (Calcutta) and southern (Sri Lanka) extremities of Indian subcontinent is note worthy.

33. *Geocoris puri* Distant, 1910

Material : 1 ♂, Puri, (Orissa), 18-19. I. 1880, coll. Annandale. N., NZC (817/H15).

Remarks : Reported by Distant (1910) from Bengal. Specimen examined is the type material in Z. S. I. repository.

Subfamily MALCINAE Stal

1865. *Malcida* Stal, *Hem. Afr.*, 2 : 121

(17) Genus *Malcus* Stal

1859. *Malcus* Stal, *Frog. Eug. Resa.*, 3 : 241-242.

Type-species : *Malcus flavidipes* Stal, 1859.

Transverse head strongly deflected in front of eyes, ocelli very close to one another ; III antennal segment considerable longer than any other segment, IV segment fusiform ; abdomen with the apices of the last three segments marginally produced.

The genus comprises 4 species, 2 of which are recorded from India and 1 from West Bengal.

34. *Malcus scutellatus* Distant, 1901

1901. *Malcus scutellata* Distant, *Ann. Mag. Nat. Hist.*, (8) 7 : 472.

The species is variable, differing in colour and size from the original description and amongst specimens collected from the same locality (district). Whole of pronotum (except collar), small basal part of the corium and a major subapical part of corium range from cast-

aneous to piceous black ; basal disk of corium concolourously punctate (not impunctate as originally described) ; pale spot near basal angle of scutellum may be obliterated by fuscous colouration ; antennae with basal, apical, and a small proximal area of II segment fuscous black ; scutellum piceous black.

Measurements : Body length 4.61 (4.3 - 5.04) ; Head width 0.88 (0.85—0.95) ; Pronotal width 1.42 (1.32—1.51) ; Pronotal length 0.98 (0.95—1.07) ; Antennal segment I. 0.72 (0.63-0.82) ; II. 1.11 (1.07-1.13) ; III. 1.83 ; IV 0.65 (0.63-0.66).

Material : 1 ♀, Barbatia, Darjeeling district, 2.V 1975. coll. Jonathan, J. K. ; 1 ♀, Manibhanjan, Darjeeling district, 21.V.1975, coll. Sirvastav, G. K. ; preceding collections with NZC (818/H15) ; 2 ♂♂, 4 ♀♀, Kurseong, Darjeeling district, (Mus. coll.), NZC (4039/12, 4082/12, 5051/12, 5070/12). Additional material examined : 2 ♂♂, 2 ♀♀, Kurseong, Darjeeling district, -VI, 1910, coll. Annandale, N. ; 1 ♂, Pashok, Darjeeling district, 26.V.1914. coll. Gravely, F. H.

Remarks : The species is recorded for the first time from West Bengal and India.

Subfamily HETEROGASTRINAE Stal

1862. *Phygadicida* Stal, *Ofv. Vet. Akad. Forh.*, 19 : 211.

1872. *Heterogastrina* Stal, *Ofv, Vet. Akad. Forh.*, 29 : 40, 62.

That *Phygadicinae* has priority over *Heterogastrinae* was noted by China and Miller (1955) but they supported the sanction by usage of the latter name.

Key to the genera of *Heterogastrinae*

- | | | |
|---|-----|------------------------|
| 1. Basal margin of the pronotum concavely excavated mesally | ... | 2 |
| — Basal margin of the pronotum straight or slightly convex | ... | 3 |
| 2. Basal margin of the pronotum shorter than or subequal to the pronotal length | ... | 18. <i>Artemidorus</i> |
| — Basal margin of the pronotum distinctly broader than its length | ... | 19. <i>Dinomachus</i> |
| 3. Seen from above head distinctly broader than long | ... | 20. <i>Boccharis</i> |
| — Seen from above head width shorter or equal to its length | ... | 21. <i>Sadoletus</i> |

(18) Genus *Artemidorus* Distant

1903. *Artemidorus* Distant, *Ann. Mag. Nat. Hist.* (7) 11 : 73

Type-species : *Artemidorus pressus* Distant 1903.

Abdomen and hemielytra basally constricted ; legs with long hair,

posterior femoral apices incrassate ; rostrum just passing anterior coxae ; membrane not quite reaching apex of abdomen.

The genus comprises 5 species, and only 1 of these is known from India and West Bengal.

35. *Artemidorus pressus* Distant, 1903

1903. *Artemidorus pressus* Distant, *Ann. Mag. Nat. Hist.* (7) 11 : 74

Specimens of the same locality vary in pigmentation of posterior femoral apices, and posterior lobe of pronotum. The specimens also differ from original description in having outer area of corium punctate along costal and subcostal margin. In some cases membrane quite reaching abdominal apex. Dimorphism present, females with broader abdomen not fully covered (laterally exposed) by hemielytron, males with almost fully covered slender abdomen.

Material : 3 ♂♂, 1 ♀, Calcutta, 17.V.1979, coll. A. M., 1 ♂, 1 ♀, Calcutta, 12.XI.1980, coll. A.M. ; 1 ♂, 1 ♀, Calcutta, 7.XII.1980, coll. A.M. ; 1 ♂ Sibpur, Howrah district, 22.I.1981, coll. A.M. ; 1 ♂, Baruipur, 24-Parganas district, 1.IV.1980. coll. A.M. ; 1 ♂, Baruipur, 24-Parganas district, 20.I.1980, coll. A.M. ; preceding collections with NZC (771/H15) ; 1 ♂, Calcutta, 5.VIII.1906, coll. Annandale, N.A., NZC (427/15).

Remarks : Adults and nymphs of the species frequent low shrubs, and litter of *Ficus religiosa* and *F. benghalensis*.

(19) Genus *Dinomachus* Distant

1901. *Dinomachus* Distant, *Ann. Mag. Nat. Hist.*, (7) 8 : 473

Type-species : *Dinomachus marshalli* Distant 1901.

Head robust and pointed anteriorly ; pronotum distinctly centrally transversely impressed, anterior lobe slightly globose, posterior lobe widen with margin mesally concave, corium longer than membrane.

Scudder (1957) ignored the genus character of basal segment of labium extending beyond base of head as found in original description. This is corroborated by the present study, however the generic key characters like fuscous transverse band in corial subapex, two fuscous spots near claval suture, tibia with three fuscous annulations, are not found universally in all species studied.

The genus comprises some 15 species, of which 4 are known from India and 2 from West Bengal, and 1 is described as new here.

Key to the species of *Dinomachus*

- | | | |
|--|-----|---------------------------|
| 1. Femora annulated with alternate fuscous band | ... | <i>rhacinus</i> Distant |
| — Femora without fuscous annulations which may be wholly stramineous | ... | 2 |
| 2. Whole body, specially legs luxuriantly pilose (long haired) | ... | <i>indicus</i> Distant |
| — Sparsely decumbent (silky) hair present on body and leg | ... | <i>bengalensis</i> sp. n. |

36. *Dinomachus rhacinus* Distant, 1906

1906. *Dinomachus rhacinus* Distant, *Ann. Soc. Ent. Belg.*, 50 : 410-411.

A variable species in colour and size ; pronotal colour ranges from variegated piceous black to ochraceous with some fuscous marking at basal and lateral margins ; subapical region of the corium with colour variation (and rarely loss of markings) ; hemielytron may be narrow not covering the full breadth of abdomen ; sometimes few coarse hairs may be present on head and pronotum in addition to normal decumbent sericeous pilosity.

Material : 3♂♂ 2♀♀, Baruipur, 24-Parganas district, 3.VII.1980, coll. A.M. ; NZC (768/H15). Additional material examined ; 1♀, Rang, Darjeeling district, 9.IV.1973, coll. Sharma, H. S. ; 1♀, Calcutta. 18.XII.1906.

Remarks : Adults and nymphs of the species occur and feed on the litter and seeds of *Ficus religiosa*.

A variety collected from Baruipur, 24-Parganas district shows piceous black head (except narrow vertex region) and pronotum (except two narrow posteriolateral margins) ; scutellum and whole of corium piceous black except apex. As an exception to normal key character of annulated femora and tibiae of *Dinomachus*, it is all piceous black for the specimen ; antennae dark and fuscous (Text-fig. 4). Antennal oligomery with three segments of right antenna.

Measurements : Normal segments : I. 0.66 ; II. 1.44 ; III. 1.14 ; IV 0.99.

Oligomeric segments : I. 0.66 ; II. 1.8 ; III. 1.62.

37. *Dinomachus indicus* Distant, 1909.

1909. *Dinomachus indicus* Distant, *Ind. Ins. Life.* p, 49

The species shows variation. One of the two specimens examined has an over all castaneous colour lacking the black markings of the anterior pronotal lobe and head, which is present in the original description and the other specimen. The profuse setose nature of the species is a distinguishing character.

Material : 1♀ Calcutta, 25.IX.1912, (Mus. coll.) : 1 (damaged),

Calcutta, 22.V.1911, (Mus. coll.) ; preceding collections with NZC (769/H15).

38. **Dinomachus bengalensis** sp. n.

(Text-fig. 5)

This species is close to *D. indicus* Distant but lacks long setae of body. Some specific additional characters are : uniformly dark castaneous pronotum ; subapical region upto inner apical angle of corium uniformly brown ochraceous without any narrow fascia ; head and pronotum with sparse adpressed pilosity.

Measurements : Body length 7.59 (7.5-7.68) ; Pronotal length 1.56 (1.5-1.62) ; Head width 1.68 (1.65-1.71) ; Pronotal width (base) 2.22 ; Head length 1.35 (1.32-1.38) ; Antennal segment I. 0.84 (0.78-0.9) ; II. 1.68 (1.2-1.74) ; III. 1.26 ; IV. 1.14.

Material : Holotype, ♂, Calcutta, 17.III.1979, coll. A.M. (A. Mukhopadhyay), NZC (770/H15) (Abdomen mutilated and separately mounted on same card point ; right antenna mutilated) ; paratype, ♂, Calcutta, 22.V.1909, coll. Paiva, C., NZC (770/H15).

(20) Genus **Boccharis** Distant

1904. *Boccharis* Distant, *Fn. Brit. Ind. Rhynch.*, 2 : 35-36,

Type-species : *Boccharis significatus* Distant 1904.

Head much broader than long when seen from top ; anterior pronotal margin separate from and parallel to eye.

The genus is represented by a single species from India and West Bengal.

39. **Boccharis indicus** Mukhopadhyay, 1980

1980. *Boccharis indicus* Mukhopadhyay, *Bull. Zool. Surv. India*, 3 (1 and 2) : 107-109.

Description and affinities provided by Mukhopadhyay (1980). Some additional morphometric characters are given below.

Measurements : Body length 4.17 (3.99-4.35) ; Pronotal length 0.93 (0.9-0.96) ; Pronotal width (base) 1.34 (1.29-1.38) ; Head length 0.75 (0.72-0.78) ; Head width 1.1 (1.08-1.11) ; Antennal segment I. 0.26 (0.24-0.27) ; II. 0.51 (0.48-0.54) ; III. 0.47 (0.45-0.48) ; IV. 0.6.

Material : 1 ♂, Calcutta, 17.V.1979, coll. A.M. ; NZC (729/H15) ; 1 ♀, Calcutta, 17.V.1979, coll. A.M. ; 1 ♀, Calcutta, 17.V.1979, coll. A.M. ; 1 ♂, (Orissa), 17.XI.1913 ; 1 ♂, Madras, 18.II.1923 ; preceding collections with NZC (730/H15).

Remarks : The material examined includes holotype (♂) and paratypes.

(21) Genus **Sadoletus** Distant

1904. *Sadoletus* Distant, *Fn. Brit. Ind. Rhynch.*, 2 : 35, 37.

Type-species : *Sadoletus validus* Distant, 1904.

Head long, or as long as broad, when viewed from top ; clavus with three rows of punctures ; posterior pronotum without distinctly raised central line ; tibia usually without distinct fuscous annulations.

The genus comprises some 10 species, of which 2 are from India, and only a single species is reported by Distant (1910) from West Bengal.

40. **Sadoletus pallescens** Distant, 1909.

1909. *Sadoletus pallescens* Distant, *Ann. Mag. Nat. Hist.*, (8) 3 : 329.

A few specimens examined although agreed to some extent with the original description of *S. pallescens* yet showed certain key characters of *Boccharis*, viz., head broader than long, eyes separated from anterior margin of pronotum. Hence on this basis the specimens are considered under genus *Boccharis*.

Nevertheless, the systematic position of *S. pallescens* is still retained under the same genus *Sadoletus*, by Distant's original description (1909), pending collection and study of further specimens.

Material : Reported by Distant (1909) from Calcutta. West Bengal ; specimens satisfying all characters of the species not available for examination,

Subfamily ARTHENEINAE Stal

1872. *Artheneina* Stal, *Ofv. Vet. Akad. Forh.*, 29 : 38, 47.

Tribe ARTHENEINI Stal

(22) Genus **Teutates** Distant

1909. *Teutates* Distant, *Ann. Mag. Nat. Hist.*, (8) 3 : 335.

1911. *Holcocranum* Horvath, *Verg. Pal. Hem.*, 1 : 337.

1980. *Teutates* Chopra and Rustagi, *Oriental Insects*, 14 (3) : 291-296.

Type-species : *Teutates sculpturatus* Distant, 1909

Head as broad as long, broadly obtusely produced before insertion of antennae ; segment I short not passing tylus and almost half of II or IV segment that are subequal ; labium reaching anterior coxae, segment I not passing base of head ; pronotum one and a half times broader than long, lateral margins not constricted and narrowly explanate ; scutellum wider at base than long, 2nd abdominal spiracle located on 2nd latero-tergite.

The genus when considered a synonym of *Holcocranum* includes

6 species, and is represented in India as well as in West Bengal by a single species.

41. *Teutates sculpturatus* Distant

1909. *Teutates sculpturatus* Distant, *Ann. Mag. Nat. Hist.*, (8) 3 : 355,

The species has been redescribed by Chopra and Rustagi (1980a) on materials collected from Western India. Single specimen studied from West Bengal (eastern India) shows some variation from the redescription. Some parts of the basal and lateral margins of the testaceous pronotum irregularly fuscous ; all three pleural segments with broad anterior dark ochraceous patches and with pale posterior margins with obscure or absence of punctures ; antennae and labium luteous excepting brown terminal segments ; no prominent collar, and anterior pronotum uniformly punctate as posterior ; labial segment I by far not reaching base of head, and labium reaching 1st coxae.

Material : 1 ♂, Calcutta, 28.I.1913, coll. Gravely, F. H., NZC (814/H15).

Subfamily PACHYGRONTHINAE Stal

1865. *Pachygronthida* Stal, *Hem. Afr.*, 2 : 121, 145-146.

(23) Genus *Pachygrontha* Germar

1837. *Pachygrontha* Germar, *Silb. Rev. Ent.*, 5 : 152-153.

Type-species : *Pachygrontha lineata* Germar, 1837.

Basal segment of antenna longest with incrassate apex ; scutellum longer than broad ; apical corial margin straight.

Of some 33 species belonging to this genus, only 2 are recorded from India and a single one from West Bengal.

42. *Pachygrontha bipunctata* Stal, 1865

1865. *Pachygrontha bipunctata* Stal, *Hem. Afr.*, 2 : 149.

Material : 1 ♂, 1 ♀, Calcutta, -X, 1911, coll. Gravely, F. H. ; 1 ♂, 1 ♀ Calcutta, -XI. 1911, coll. Gravely, F.H. ; 1 ♂, 1 ♀ Baruipur, 24-Parganas district, coll. A. M. ; preceding collections with NZC (772/H15).

Remarks ; The species occur on *Cyperus irra* and other sedges.

Subfamily OXYCARENINAE Stal

1862. *Oxycarenida* Stal, *Ofv. Vet. Akad. Forh.*, 19 : 212,

(24) Genus **Oxycarenum** Fieber1835. *Stenogaster* Hahn, *Wanz. Ins.*, 3 : 15-16.1837. *Oxycarenum* Fieber, *Beitr. Nat. Ges. Heilwiss.*, pp. 339-340.

Type-species : *Stenogaster tardus* Hahn, 1835
 = *Acanthia lavaterae* Fabricius, 1787.

Prorect, ovoid and elongate head accommodated in anteriorly narrowed and punctate pronotum ; elongated bucculae reaching base of head ; anterior femora spined below ; corium flat expanded, wider than abdomen ; clavus with two rows of punctures.

Of some 38 species comprising the genus, 6 are recorded from India and 2 from West Bengal.

Key to the species of Oxycarenum

- | | | |
|---|-----|-----------------------|
| 1. Corium white with transverse band (fascia)
and apex black | ... | <i>bicolor</i> Fieber |
| — Corium pale semihyaline without any dark
marking | ... | <i>laetus</i> Kirby |

43. Oxycarenum bicolor Fieber, 18521852. *Oxycarenum bicolor* Fieber, *Abh. Kenig. Bohm. Ges. Wissen.*, 5 (7) : 463.

Distinct species agrees well with the original description, some additional points in description are the presence of erect and capitate setae on head, pronotum, scutellum, clavus, and corium ; single row of subcostal and three rows of claval punctures ; head pronotum coarsely and concolourously punctate.

Material : 2 ♂♂, 1 ♀, Sibpur, Howrah district, 15.V.1980, coll. A. M. ; 2 ♂♂, Sibpur, Howrah district, 6.IV.1981, coll. A. M. ; preceding collections with NZC (773/H15).

Remarks : The species is swept from grass (*Ischaemum indicum* and *Cloris inflata*) mixed with bird guano.

44. Oxycarenum laetus Kirby, 18911891. *Oxycarenum laetus* Kirby. *Jour. Linn. Soc. Lond.*, 24 : 102.

Specimens studied differ from the description provided by Distant (1904) in having I and IV antennal segments fully, II and III segments apically piceous. Some additional points in description are : head, pronotum, clavus and corium with capitate hair ; subcostal region with single prominent row of puncture ; clavus with three rows of punctures, middle one incomplete

Material : 3 ♀♀, Calcutta, 26.IV.1979, A.M. ; 3 ♂♂, 6 ♀♀,

Baruipur, 24-Parganas district, 18.I.1980, coll. A. M. ; preceding collections with NZC (774/H15).

Remarks : Occurs in fruits and capsules of *Sida rhombifolia* and *Hibiscus abelmoschus*, mainly feeding on seeds. Infestation mostly recorded in winter and early spring.

Subfamily RHYPAROCHROMINAE Stal

1843. Rhyparochromides Amyot and Serville, *Hist. Nat. Ins. Hem.*, p. 251.
 1862. Rhyparochromida Stal, *Ofv. Vet. Akad. Forh.*, 19 : 210.
 1872. Myodochina Stal, *Ofv. Vet. Akad. Forh.*, 29 : 40, 50-62.
 1957. Megalonotinae Slater, *Bull. Brook. Ent. Soc.*, 52 : 35.

Key to the tribes of subfamily Rhyparochrominae

- | | | | |
|---|-----|---------------|-----------|
| 1. All abdominal spiracles ventral | ... | ... | 2 |
| — More than one abdominal spiracle dorsal | ... | ... | 8 |
| 2. Second labial segment not or just exceeding base of head ; ocelli widely separated and very close to eye | ... | Cleradini | |
| — Second labial segment well extended beyond base of head ; ocelli mostly set on vertex | ... | ... | 3 |
| 3. Female with intersegmental conjunctive between IV and V sterna ; males with stridulatory mechanism involving 1st abdominal segment plectrum and a metathoracic wing stridulation | ... | Plinthisini | |
| — Sternal segment IV and V fused ; males without above mentioned stridulatory mechanism | ... | ... | 4 |
| 4. Lateral part of sternum V with an isolated anterior trichobothrium and two posterior trichobothria ; the two posterior trichobothria closely grouped together in a single spot | ... | ... | 6 |
| — Lateral part of sternum V with three dull spots indicating trichobothria in a linear series | ... | ... | 5 |
| 5. Bucculae meeting well behind labium ; middle trichobothrium much closer to posterior than anterior trichobothrium | ... | Antillocorini | |
| — Bucculae meet just after labium ; middle trichobothrium much closer to anterior than to posterior trichobothrium | ... | ... | Lethaeini |
| 6. Posterior dull spot (two trichobothria) on sternum V anterior to spiracle V ; anterior sterna usually with lateral pores | ... | ... | Drymini |
| — Posterior dull spot on sternum V posterior to spiracle V ; anterior sterna without lateral pores | ... | ... | 7 |

- | | | | |
|--|-----|-----|----------------------------------|
| 7. Presence of distinct pronotal collar | ... | ... | Ozophorini |
| — Absence of any such distinct collar | ... | ... | Stygnocorini |
| 8. Abdominal spiracles of segments III and IV dorsal, and II ventral | ... | ... | Rhyparochromini and Megalonotini |
| — Abdominal spiracles of segments II, III, and IV dorsal | ... | ... | Myodochini |

Tribe CLERADINI Stal

(25) Genus **Clerada** Signoret

1863. *Clerada* Signoret, *In Maillard, Note Sur L'ile Reunion, Ins.*, p. 28.

Type-species : *Clerada apicicornis* Signoret, 1863.

Narrow ovate body, prorect head, with postocular parallel sides, slightly longer than trapezoidal pronotum, labium reaches intermediate coxae with II joint about reaching base of head, antennal I segment shorter than head but passes tylus ; corium much longer than membrane with costal margin moderately convex.

Of 9 species presently comprising the genus only a single one is recorded from India and West Bengal.

45. **Clerada apicicornis** Signoret, 1863

1863. *Clerada apicicornis* Signoret. *In Maillard, Notes sur L'ile Reunion, Ins.*, pp. 28-29.

Material : 1 ♀, Calcutta, -VII.1914, coll. paiva ; 1 ♂, Calcutta, 11.IV.1981. coll. A.M. ; preceding collections with NZC (775/H15).

Tribe PLINTHISINI Slater and Sweet

(26) Genus **Plinthisus** Stephens

1829. *Plinthisus* Stephens, *Nomencl. Brit. Ins.*, p. 65.

Type-Species : *Lygaeus brevipennis* Latreille 1807.

Nearly parallel body-form, and distinctive pronotum generally broadest across the antero-lateral angle, which are strongly produced forward forming a deeply concave anterior margin. Males lack curving suture between abdominal sternites IV and V, the suture being the characteristic of most Rhyparochrominae.

Of about 55 species comprising the genus, 5 are recorded from India and only 1 from West Bengal.

46. **Plinthisus acanthothorax** Kiritschenko, 1931

1931. *Plinthisus (Plinthisus) acanthothorax* Kiritschenko, *Ann. Mag. Nat. Hist.*, (10) 7 : 364, 375-376.

Material : 1 ♂, Darjeeling, Darjeeling district, 28.IV.1914, coll. Gravely, F.H., NZC (799/H15).

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

Tribe ANTILLOCORINI Sweet

(27) Genus **Botocudo** Kirkaldy

1874. *Salacia* Stal, *Enum. Hem.*, 4 : 154-157.

1904. *Botocudo* Kirkaldy, *Entomologist*, 37 : 280.

Type-species : *Aphanus diluticornis* Stal, 1858.

Kirkaldy in 1904, discovering that both the generic names *Salacia* and *Pygaeus* were preoccupied, erected two new names to replace them ; *Anillocoris* for *Pygaeus*. and *Botocudo* for *Salacia*. Since *Salacia* was already under the name *Cligenes*, and *Botocudo* which must take the same type as *Salacia*, namely *S. diluticornis* Stal, become a synonym of *Cligenes* Distant. However, according to Scudder (1962 a) *Cligenes* can be separated from *Botocudo* by the distinct laminate lateral carina to the pronotum and the distinct rostral groove on the prosternum.

Of about 23 species comprising the genus only 3 are known from India, and 1 from West Bengal besides a new species described here under.

Key to the species of **Botocudo**

- | | | |
|--|-----|----------------------------|
| 1. Anterior pronotal lobe impunctate | ... | <i>signandus</i> (Distant) |
| — Anterior pronotal lobe finely punctate | ... | <i>punctatus</i> sp.n. |

47 **Botocudo signandus** (Distant, 1903)

1903. *Salacia signanda* Distant, *Ann. Soc. Ent. Belg.*, 47 : 46.

The species shows some variation in characters and some difference from original description in having variegated antennal segment, which are not always brown ochraceous and apices of segments luteous, the whole antenna may be stramineous or II, III and base of IV segment brown-ochraceous ; presence of single row of seven tiny spines on inner margin of fore femur , anterior lobe of pronotum impunctate.

Measurements : Body length 2.3 (2.07-2.52) ; pronotal length 0.5 (0.42-0.57) ; Head width 0.51 (0.45-0.54) ; pronotal width 0.89 (0.78-0.95) ; Antennal segment I. 0.23 (0.21-0.34) ; II, 0.34 (0.3-0.36) ; III. 0.34 (0.33-0.36) ; IV 0.41 (0.39-0.42) ; Scuteller length 0.53 (0.45-0.6) ; Scuteller width 0.59 (0.54-0.66).

Material : 1 ♀, Calcutta. 28.II.1980, coll. A.M. ; 1 ♂, 2 ♀ ♀, Calcutta, 12.XI.1980, coll. A.M. ; preceding collections with NZC

(796/H15). Additional material examined ; 1 ♂, coimbatore, (Tamil Nadu), coll. Thangavelu, K.

Remarks : The species occurs in the litter of *Ficus religiosa* and *F. benghalensis*, occasionally on grass, and is recorded for the first time from West Bengal. Antennal oligomery with 3 segments noted in a female : Measurements : Oligomeric segments I. 0.27 ; II. 0.48 ; III. 0.6.

48. *Botocudo punctatus* sp.n.

(Text-fig. 6)

Body in general testaceous and elliptical.

Head : Castaneous, sparingly punctate, ocelli nearer to eye than to one another, tylus marked out from juga, eye surface rough almost touching pronotal apex ; antennifers moderately developed, II, III, and IV antennal segments more pilose and castaneous than I, which is proximally pale ; labium pale ochraceous almost reaching 2nd coxae; basal segment not passing head base.

Thorax : Pronotum trapezoidal, indistinctly divided into fore and hind lobes, anterior lobe light castaneous and posterior pale ochraceous with tumid fuscous basal corners, basal margin concave and often fuscous, anterior and posterior pronotal lobes uniformly finely punctate ; pleura brown ochraceous, sparingly punctate with dorsal area of propleuron pale ; legs pale luteous, fore femora feebly incrassate and unarmed ; scutellum typically triangular and punctate basal area testaceous with a pair of short transverse plaits, followed by a broad fuscous fascia, apex pale ; clavus, corium semihyaline and membrane hyaline, clavus with two complete and one incomplete rows of punctures, corium with two parallel rows of punctures along claval suture, and single row along subcostal margin extending upto discal area where it is scattered, two fuscous patches on costal margin one at apex and the other half way between apex and base, inner apical angle concavely sinuate and hyaline as membrane ; membrane thin hyaline extending beyond abdomen.

Abdomen : Ventrally deep castaneous with fine grey pilosity.

Measurements : Body length 2.27 (2.04-2.46) ; pronotal length 0.46 (0.42-0.48) ; Head width 0.52 (0.48-0.54) ; pronotal width 1.0 (0.9-1.08) ; Antennal segment I. 0.23 (0.21-0.24) II. 0.34 (0.3-0.36) ; III. 0.32 (0.27-0.3) ; IV 0.35 (0.3-0.36) ; Scuteller length 0.57 (0.48-0.66) ; Scuteller breadth (base) 0.65 (0.57-0.72).

Material : Holotype, ♀, Calcutta, 15.I.1981, coll. A.M. (A. Mukhopadhyay). NZC (797/H15) ; allotype, ♂ Calcutta, 15.I.1981. coll. A.M., NZC (797/H15) (III and IV segments of right antenna

mutilated) ; paratypes, 6 ♀ ♀, Calcutta, 12.XI.1980, coll, A.M. ; 4 ♂ ♂ 9 ♀ ♀, Baruipur, 24-Parganas district, 28.II.1980, coll. A.M. ; 1 ♂, 5 ♀ ♀, Sibpur, Howrah district. 22.I,1981. coll. A.M. ; preceding collections (paratypes) with NZC (797/H15).

Remarks : The species remains confined to damp litter of *Ficus religiosa*, *F. benghalensis*, and *F. infectoria*. Frequent occurrence of specimens with antennal oligomery is recorded in population but the segments do not show any unusual length excepting a single case, where antennal oligomery with 3 segments and unusual lengths is noted in a female.

Measurements : Antennal segment I. 0.24 ; II. 0.36. ; III. 0.39.

Tribe LETHAEINI stal

Key to the genera of Lethaeini

- | | | |
|---|-----|----------------------------|
| 1. Basal segment of antenna well passing the tylus | ... | 2 |
| — Basal segment of antenna just reaching or not reaching the tylus | ... | 3 |
| 2. Head punctate ; ocelli very close to eyes away from pronotal apex | ... | 28. <i>Neolethaeus</i> |
| — Head impunctate ; ocelli away from eyes and very close to pronotal apex | ... | 29. <i>Hexatrichocoris</i> |
| 3. Basal segment of labium not reaching base of head | ... | 30. <i>Lethaeus</i> |
| — Basal segment of labium incrassate and passing base of head | ... | 31. <i>Diniella</i> |

(28) Genus *Neolethaeus* Distant

1909. *Neolethaeus* Distant, *Ann. Mag. Nat. Hist.* (8) 3 : 340.

Type-species : *Neolethaeus typicus* Distant 1909.

Moderately thickened antennal segment I slightly shorter than head ; labium reaching intermediate coxae, segment I reaching the base of head ; pronotum sub-quadrate, slightly transversely impressed, with central longitudinal carinate line, basal lateral angle longitudinally ridged ; scutellum as long as broad, discally depressed ; anterior femora shortly spined beneath ; basal tarsal joint twice as long as remaining joints together.

Only 4 species comprise this genus, which is here represented by a new species from India and West Bengal.

49. *Neolethaeus indicus* sp.n.

(Text-fig. 7)

Black ; elongately elliptical.

Head : piceous, coarsely punctate in jugal and frons area ; eyes dark piceous, rough, well separated from pronotal apex, ocelli nearer to eyes than to one another ; antennae brown ochraceous, with I, distal end of II and IV segment fuscous, segment I passes tylus ; labium brown castaneous, distal end of segment II fuscous, segment I just passes base of head and segment II just passes first coxae.

Thorax : pronotum trapezoidal, distinctly divided in anterior and posterior parts (not lobes), collar region well marked out and heavily punctate ; lateral margins subcarinate and sinuate, basal margin almost straight with slight convexity, anterior region piceous with sparse punctures and posterior dark castaneous with closely set punctures ; pleura fuscous, meso- and metapleura fairly punctate ; well developed metathoracic scent gland orifice with large grey evaporating surface ; legs dark castaneous, proximal segments darker than distal ones, 3 to 4 spines in distal end of fore-femora feebly developed : tibiae with scanty bristles ; scutellum fuscous, deeply punctured ; clavus fuscous with four rows of punctures, corium with prominent subcostal vein forming a ridge, costal margin anteriorly sinuate ; corium wholly punctate and fuscous excepting a luteous patch at subapex ; membrane ochraceous (the part that sticks to the tergum appears black).

Abdomen : Sternum fuscous with short pilosity.

Measurement : Body length 7.44 ; Head length 1.08 ; Head width 1.29 ; Interocular width 0.6 ; pronotal length 1.56 ; pronotal width (apical) 1.14 ; pronotal width (basal) 2.52 ; Scuteller length 1.32 ; Scuteller width (basal) 1.44 ; Antennal segment I. 0.9 ; II. 1.2 ; III. 1.08 ; IV 1.08 ; Labial segment I. 1.08 ; II. 1.2 ; III. — ; IV —

Material : Holotype ♀, Pashok, Darjeeling district, 26.V.—14.VI.1916 ; coll. Gravely, F.H., NZC (794/H15) ; (right antenna broken and mounted on card point ; III and IV segments of left antenna mutilated ; III and IV labial segments mutilated).

(29) Genus *Hexatrichocoris* Kiritshenko

1931. *Hexatrichocoris*: Kiritshenko, *Ann. Mag. Nat. Hist.*, (10) 7 : 378-379.

Type-species : *Hexatrichocoris mellcus* Kiritshenko 1931.

The genus contains a single species and was so far only known from type locality of Sikkim (now, an Indian state). It is for the first

time being recorded from Darjeeling (Wes Bengal). Diagnostic characters same as given in the key.

50. **Hexatrichocoris melleus** Kiritshenko, 1931

1931. *Hexatrichocoris melleus* Kiritshenko, *Ann. Mag. Nat. Hist.*, (10) 7 : 364, 379-380.

Material : 1 ♂, Darjeeling, Darjeeling district, 12.IV.1914, coll. Gravely, F.H.

(30) Genus **Lethaeus** Dallas

1852. *Lethaeus* Dallas, *List. Hem. B.M.*, 2 : 557.

Type-species ; *Lethaeus africanus* Dallas 1852

Diagnostic characters of the genus is given in the key ; it comprises some 40 species, 3 are recorded from India and 1 from West Bengal.

51. **Lethaeus indicus** Dallas, 1852

1852. *Lethaeus indicus* Dallas, *List Hem.* 2 : 558.

Material : Reported from North Bengal by Campbell ; specimens not available for examination.

(31) Genus **Diniella** Bergroth

1893. *Diniella* Bergroth, *Rev. d'Ent.*, 12 : 202.

Type-species : *Dinia glabrata* Stal 1874.

Head long, almost equal to pronotal length ; basal segment of antenna not passing tylus and shorter than the basal segment of labium ; pronotum without transverse impression.

The genus comprises some 15 species, 2 are recorded from India, and 1 from West Bengal.

52. **Diniella bengalensis** Distant, 1909

1909. *Dinella bengalensis* Distant, *Ann. Mag. Nat. Hist.* (8) 3 : 334.

Material : Reported from Bengal by Distant (1909) ; specimens not available for examination.

Tribe DRYMINI Stal

Key to the genera of Drymini

- | | | |
|---|-----|-----------------------|
| 1. Four complete rows of punctures on clavus | ... | 32. <i>Lemnius</i> |
| — Three complete rows of punctures on clavus | ... | ... |
| 2. pronotal base equal or just subequal to head width (across eyes) | ... | 33. <i>Appolonius</i> |

— Pronotal base almost 1·5 or 2 times wider than head width (across eyes)	...	...	3
3. Scutellum with 'Y'-shaped carina	...	34.	<i>Thebanus</i>
— Scutellum without such carina	...	...	4
4. Legs coarsely setose	...	35.	<i>Kanigara</i>
— Legs without prominent hair	...	36.	<i>Scolopostethus</i>

(32) Genus **Lemnius** Distant

1904. *Lemnius* Distant, *Faun. Brit. Ind. Rhynch.*, 2 : 66-67.

Type-species : *Lemnius ovatus* Distant, 1904.

Body ovate ; labium reaching posterior coxae, segment I not exceeding base of head, scutellum very large, half as long as abdomen with a discal cruciform elevation ; pronotum transversely constricted and narrowed anteriorly ; corium long with apical margin straight ; femora unarmed.

The genus is represented by only two species.

53. **Lemnius ovatus** Distant. 1904

1904. *Lemnius ovatus* Distant, *Fa. Brit. Ind. Rhynch.*, 2 : 67.

Only a few characters are found different from the original description based on a Ceylonian specimen. Corium stramineous with brown ochraceous punctures ; apical angle slightly castaneous but not broadened near inner angle.

Measurement : Body length 4.26 ; pronotal length 0.96 ; Head width (basal) 0.81 ; pronotal width 1.62 ; Antennal segment I. 0.33 ; II. 0.57 ; III. 0.39 ; IV 0.54.

Material : 1 ♀, Darjeeling, Darjeeling district, 28.IV.—14.V.1915, coll. Gravely, F.H., NZC (789/H15).

Remarks : The genus as well as the species is recorded for the first time from India and West Bengal.

(33) Genus **Appolonius** Distant

1901. *Appolonius* Distant, *Ann. Mag. Nat. Hist.*, (7) 8 : 484,

Type-species : *Ophthalmicus cincticornis* Walker 1872.

Large protrudant but non-stylate eyes, head about as broad as pronotum across base and strongly deflected, pronotum with transverse constriction and margin explanate and sinuate in front of a web between anterior and posterior lobes ; scutellum basally tumid ; apical corial margin straight or slightly convex ; fourth abdominal sternite with two lateral trichobothria, the posterior one near middle of the segment and closer to anterior spot than to posterior margin of segment.

Of the 6 species comprising the genus, 4 are recorded from India and 2 from West Bengal.

Key to the species of *Appolonius*

1. Anterior pronotal lobe black and shiny ;
major part of III and IV antennal segment
pale ... *cincticornis* (Walker)
— Anterior pronotal lobe dull black ; III and
IV antennal segment piceous black ... *crassus* (Distant)

54. *Appolonius cincticornis* (Walker, 1872)

1872. *Ophthalmicus cincticornis* Walker, *Cat. Hem. Het. B.M.*, 5 : 138-139.

The species shows little variation ; posterior pronotal lobe generally pale-ochraceous with 3 centrally placed longitudinal brown markings, but may also be wholly brown ochraceous, antenna pale-stramineous with segments proximally brown, dark brown shade more prominent in III (sometimes the whole segment), and proximal end of IV

Measurement : Body length 2.87 (2.7-3.03) ; pronotal length 0.83 (0.81-0.84) ; Head width 1.04 (0.99-1.11) ; pronotal width (base) 1.09 (1.02-1.14) ; Antennal segment I. 0.25 (0.21-0.27) ; II. 0.31 (0.3-0.33) ; III. 0.36 ; IV 0.55 (0.48-0.61).

Material : 5 ♂♂, 1 ♀, Calcutta, —IV—V.1979, coll. A.M. ; 2 ♀♀, Calcutta, —I.1980, coll. A.M. ; 1 ♂, 4 ♀♀, Baruipur, 24-Parganas district, 28.II.1980, coll. A.M. ; 3 ♂♂, Baruipur, 24-Parganas district, 3.V 1980, coll. A.M. ; preceding collections with NZC (787/H15).

Remarks : The species feeds on seeds of *Ficus religiosa*, *F. infectoria*, and *F. benghalensis*. Usually lives in their litter and also goes up (about two meters) on their trunks. Oligomery found in both sexes in either antenna, segment III sometimes with an unusual length. Measurement : Oligomeric segment I. 0.26 (0.24-0.27) ; II. 0.39 (0.36-0.42) ; III. 0.57 (0.54-0.6).

55. *Appolonius crassus* (Distant, 1906)

1906. *Agunga crassus* Distant, *Ann. Ent. Soc. Belg.*, 50 : 413-414.

The species is ecologically and morphologically very close to *A. cincticornis*. Distinguishable from the latter by a less gibbous, dull black anterior lobe of pronotum and dark smoky posterior lobe ; III and IV antennal segments wholly dark fuscous, I and II proximally pale.

Measurements : Body length 3.32 (3.28-3.33) ; Pronotal length

0.87 (0.81-0.96) ; Head width 1.09 (0.96-1.2) ; Pronotal width (base) 1.18 (1.11-1.32) ; Antennal segment I. 0.25 (0.24-0.27) ; II. 0.34 (0.3-0.36) ; III. 0.36 ; IV 0.49 (0.48-0.51).

Material : 1 ♂, 2 ♀ ♀, Calcutta, 24.I.1980, coll. A.M. ; 2 ♀ ♀, Baruipur. 24-Parganas district, 28.II.1980, coll. A.M. ; preceding collections with NZC (788/H15).

Remarks : The species occurs in litter of *Ficus religiosa* and is a new record from West Bengal. It shares the same habitat as *A. cincticornis* but is less numerous. Left antenna of a female found oligomeric. Measurement ; Oligomeric segment I. 0.27. II. 0.3. III. 0.48.

(34) Genus **Thebanus** Distant

1904. *Thebanus* Distant, *Faun. Brit. Ind. Rhynch.* 2 : 67.

Type-species : *Thebanus politus* Distant 1904.

The genus is close to *Lemnius* but principally differs from it in having pronotum without transverse constriction, small scutellum ; discal cruciform elevation, the lateral area of which are slightly gibbous.

The genus comprises 4 species, 2 of these are recorded from India. and 1 from West Bengal described as new.

56. **Thebanus bengalensis** sp.n.

(Text-fig. 8)

Body in general dark-smoky and elliptical.

Head : Triangular, black, finely punctate ; eyes narrowly separated from pronotal apex, tylus with few fine hair ; antennae stramineous with segments ochraceous, finely setose, basal segment exceeding tylus ; labium stramineous reaching third coxae, variably setose, basal segment just crossing base of head ; ocelli closer to eye than to each other.

Thorax : Pronotum trapezoidal, anterior half fuscous and posterior half pale suffused with dark ochraceous markings, whole pronotum coarsely and brownly punctate ; scutellum fuscous with pale lateral marginal areas and with uniform coarse punctures ; legs stramineous ; acetabula, finely setose coxae and trochanter ochraceous, tibiae with few coarse setae ; pleura and sterna fuscous and coarsely punctate ; clavus and corium translucent (semihyaline) ; clavus with three rows of coarse brown punctures ; corium with two rows of punctures along claval suture and apically few rows in discal and subcostal area ; costal margin fuscous and sinuate ; membranal suture sinuate near inner angle, apical region of costal margin explanate and forms a hyaline long cell ; membrane hyaline exceeding abdomen.

Abdomen : Sternum dark-ochraceous.

Measurement : Body length 3.0 ; Pronotal length 0.6 ; Head width 0.66 ; Head length 0.45 ; Pronotal width 1.14 ; Interocular width 0.42 ; Antennal segment I. 0.3 ; II. 0.54 ; III. 0.57 ; IV 0.6 ; Labial segment I. 0.42 ; II. 0.56 ; III. 0.3 ; IV Glued obscure.

Material : Holotype ♂ Baruipur, 24-Parganas district, 28.II.1980, coll. A.M. ; (A. Mukhopadhyay), NZC (790/H15).

Remarks : The species differ from Indo-chinese species, *T politus* Distant in having sternum fuscous for castaneous, head finely punctate for coarse punctures, and the oblique discal pale spot of scutellum punctate for impunctate. The species also differs from the South Indian species *T antennatus* Distant, which is synonymised with *Fabulimus mysorensis* Distant in having the antennae pale stramineous for black, membrane hyaline for greyish hyaline and scuteller apex fuscous for castaneous, head finely for thickly punctate and no distinct transverse callous in anterior margin of pronotum, subcruciform elevation of scutellum not very prominent.

(35) Genus **Kanigara** Distant

1906, *Kanigara* Distant, *Ann. Soc. Ent. Belg.*, 50 : 414.

Type-species : *Kanigara flavomarginata* Distant 1906.

Short head, ocelli very close to eye ; antennal segment I hirsuate, passing tylus, segment II little longer than III ; labium passing anterior coxae, segment I not passing base of head ; pronotum broad, subquadrate, depressed anteriorly, basal margin concavely rounded ; scutellum subtriangular as long as head and pronotum together ; tibiae strongly and femora sparsely hirsuate ; tarsi with basal joint very long.

The genus comprises a couple of species and is represented in India and West Bengal by a single species.

57. **Kanigara flavomarginata** Distant, 1906

1906. *Kanigara flavomarginata* Distant, *Ann. Soc. Ent. Belg.*, 50 : 415.

Material : 1 ♂, 1 ♀, Baruipur, 24-Parganas district, 28.II.1980, coll. A.M. ; 1 ♂, 1 ♀, Baruipur, 24-Parganas district, 3.III.1980, coll. A.M. ; 2 ♀ ♀, Baruipur, 24-Parganas district, 3.VII.1980, coll. A.M. ; 2 ♂ ♂, Sibpur, Howrah district, 22.I.1981, coll. A.M. ; preceding collections with NZC (791/H15).

Remarks : The species greatly varies in body size in the same population. Habitat is mostly damp litter of *Ficus religiosa* and *F. benghalensis* where the bugs feed on the scattered seeds. It is recorded for the first time from West Bengal.

(36) Genus **Scolopostethus** Fieber1860. *Scolopostethus* Fieber, *Bur. Hem.*, p. 49, 188.Type-species : *Scolopostethus cognatus* Fieber 1861.

Antennal segment I passing tylus ; eyes not touching trapezoidal (or square) pronotum which is laterally sinuately laminate ; labium reaches intermediate coxae ; incrassate forefemora with a single long spine and a series of small ones between it and apex.

Of some 21 species comprising the genus, only 2 are recorded from India and presently 2 are being recorded from West Bengal that includes a new species.

Key to the species of Scolopostethus

- | | |
|---|-------------------------------|
| 1. Membrane marked with black and pale colour | ... <i>montanus</i> (Distant) |
| — Membrane hyaline without marking | ... <i>bengalensis</i> sp.n. |

58. Scolopostethus montanus (Distant 1909)1909. *Manatanus montanus* Distant, *Ann. Mag. Nat. Hist.*, (8) 3 : 405.

Material : 1 ♀, Darjeeling, Darjeeling district, 11.V.1975. coll. Jonathan, J.K. ; NZC (792/H15).

Remarks : The species is recorded for the first time from West Bengal. The specimens studied, in general, agrees with Distant's description of *S. montanus* based on a specimen from hilly areas of Western India but differs in lacking long hair on body. So the specimen may be considered as a new variety. The specimen is also brachypterous.

59. Scolopostethus bengalensis sp.n.

(Text-fig. 9)

Head : Dull piceous, short triangular just broader than long with a few obscure fine punctures in frons and vertex, tylus protruding, juga not prominent ; eyes big, close to but wider than pronotal apex (excluding lateral ampliation) ; antennae black finely pilose ; basal and apical labial segments black, former just passing base of head.

Thorax pronotum black, trapezoidal (narrowing anteriorly), amplified margins pale, impunctate except black patches at basal corners, hind lobe ochraceous suffused with black, and prominently punctate, forelobe piceous with sparse obscure punctures ; clavus and corium semihyaline, clavus with one incomplete and three complete rows of punctures, and apex slightly fuscous ; apical and mid-costal regions of corium with fuscous patches, two rows of punctures along

claval suture, one in subcostal region with an incomplete row on its inner side ; forefemora incrassate black (except pale apex) with single prominent spine, middle and hind legs ochraceous with subapical regions of forefemora fuscous ; pleura piceous, obscurely punctate except pale acetabula, and hind margins of pro-and metapleura.

Abdomen : Sternum black with sparse decumbent pilosity.

Measurement : Body length 4.04 (3.78-4.14) ; Pronotal length 0.86 (0.78-0.9) ; Pronotal width (base) 1.31 (1.2-1.44) ; Head width 0.74 (0.72-0.75) ; Antennal segment I. 0.41 (0.36-0.48) ; II. 0.66 (0.54-0.72) ; III. 0.58 (0.54-0.6) ; IV 0.6 (0.54-0.66).

Material : Holotype, ♀, Manibhanjan, Darjeeling district, 24.V 1980, coll. Bhumik, H. N., NZC (793/H15) ; (segment IV of right antenna mutilated) ; allotype, ♂, Darjeeling, Darjeeling district, 7.X.-1974, coll. Bhomik, H. K. ; paratypes, 1 ♀, Hillforest, Darjeeling district, 21.XI.1973, coll. Maity, P. K. ; 1 ♂. 1 ♀, Manibhanjan, Darjeeling district, 19-21.V 1975, coll. Jonathan, J. K. ; 1 ♀, Sukiapukria, Darjeeling district, 20.V 1971, coll. Bhomik, A. R. ; preceding collections (allotype and paratypes) with NZC (793/H15).

Remarks : The species differ from *S. ornandus* Distant of Burma in having apex of clavus brownish and patches at the middle of the costal margin not extending as a black transverse fascia ; membrane is hyaline instead of greyish-black anterior pronotal lobe shorter or subequal to posterior lobe and indistinctly divided ; scuteller base not much tumid. The species also differs from *S. montanus* Distant in having complete wing (macroptery) for brachyptery and membrane hyaline instead of black and pale markings ; pronotum trapezoidal for squarish one of the latter. The fuscous patch at apex and middle costal region variable in size.

Tribe OZOPHORINI Sweet

(37) Genus *Primierus* Distant

1901. *Primierus* Distant, *Ann. Mag. Nat. Hist.*, (7) 8 : 477.

Type-species : *Plociomerus bispinus* Motschulsky, 1863.

Slender head almost as long as pronotum, antennae with the basal segment stout, reaching about half head length, II longest slender, III clavate at apex, subequal to thickened apical joint ; labium reaching posterior coxae, segment I shorter than head ; pronotum with narrow collar, strongly constricted at middle, anterior lobe moderately globose shorter than posterior lobe, posterior margin concave with lateral angle distinctly spinous ; intermediate and posterior femora without spines.

The genus is represented in India as well as in west Bengal by a single species. It has extra Indian distribution too.

60. **Primierus bispinus** (Motschulsky, 1863)

1863. *Plociomerus bispinus* Motschulsky, *Bull. Soc. Nat. Mosc.*, p. 81.

1901. *Primierus bispinus* Distant, *Ann. Mag. Nat. Hist.*, (7) 3 : 477.

Material : Reported by Distant (1904) from West Bengal ; specimens not available for examination.

Tribe STYGNOCORINI Gulde

1936, Stygnocorini Gulde, *Wanz Mitteleur.*, 5 (1) : 141-142.

(38) Genus **Arrianus** Distant

1904. *Arrianus* Distant, *Fn. Brit. Ind. Rhynch.*, 2 : 74.

Type-species : *Arrianus excavatus* Distant 1904.

Elongated subovate body ; elongated scutellum foveate from near apex to apex ; corium extending to about $\frac{3}{4}$ the length of abdomen.

The genus comprises a single species from India. It has also extra Indian distribution.

61. **Arrianus excavatus** Distant, 1904

1904. *Arrianus excavatus* Distant, *Fn. Brit. Ind. Rhynch.*, 2 : 74.

Material : 1 ♀, Darjeeling, Darjeeling district, 13. VI. 1914. coll. Gravely, F. H., NZC (794/H15).

Remarks : The species is recorded for the first time from West Bengal ; the specimen examined shows finely pilose body with length of 2.8 mm, for 2.5 mm, given in original description. Left antenna of the specimen studied is oligomeric with 3 segments. Measurement : oligomeric segment I. 1.9 ; II. 0.44 ; III. 0.3,

Tribe RHYPAROCHROMINI Stal

1872. *Beosaria* Stal, *Ofv. Vet. Akad. Forh.*, 29 : 54.

1904. *Aphanaria* Distant, *Fn. Brit. Ind. Rhynch.*, 2 ; 78.

1961. *Rhyparochromini* Slater and China. *Bull. Zool. Nomen.*, 18 (5) : 344.

Key to the genera of Rhyparochromini

1. Lateral margins of pronotum laminately ampliate ... 2
- Lateral margins of pronotum subcarinate or rounded without any ampliation ... 5
2. Head. anterior lobe of pronotum. basal part of scutellum dark ochraceous to fuscous ... 39. *Elasmolomus*

— Whole of head, pronotum and scutellum concolorous or variegated	... ..	3
3. Antennae robust, segment III and IV specially incrassate, segment II and III equal or almost equal	... 40	<i>Lachnesthus</i>
-- Antennal segments of normal thickning, segment II by far longer than III	... ..	4
4. Length and basal width of scutellum equal or just subequal	... 41.	<i>Rhyparothesus</i>
— Scutellum always longer by a good margin than broad	... 42.	<i>Dieuches</i>
5. Pronotum with long bristle like hair	... 43.	<i>Metochus</i>
— Pronotum without hair	... 44.	<i>Poentius</i>

(39) Genus *Elasmolomus* Stal

1872. *Elasmolomus* Stal, *Ofv. Vet. Akad. Forh.*, 89 : 58.

Type-species : *Cimex sordidus* Fabricius 1787

Pale brownish body with anterior pronotal lobe and basal half of the scutellum dark brown to black, pronotum, scutellum, and hemielytra strongly punctate, latter with apices darkened ; antennal segment I much shorter than the labial segment I.

Of some 10 species comprising the genus, 3 are known from India and 2 from West Bengal, one of which is described as new.

Key to the species of *Elasmolomus*

1. Antennal segment II more than twice
segment I and longer than III segment ;
anterior pronotal lobe reddish brown ... *sordidus* (Fabricius)
- Antennal segment II about twice segment
I and subequal to segment III ; anterior
pronotal lobe and base of scutellum
fuscous brown (velvety) ... *paralineosus* sp.n.

62. *Elasmolomus sordidus* (Fabricius, 1787)

1787. *Cimex sordidus* Fabricius. *Mant. Ins.*, 2 : 302.

Material : 1 ♀, Calcutta, 17.V.1979, coll. A.M ; 1 ♂, Siliguri, Darjeeling district, 3-4.VI.1911, coll. Annandale, N. ; 2 ♂ ♂, Naxalbari, Darjeeling district, 19.VI.1979, coll. Haldar, P. ; 1 ♂, Kurseong, Darjeeling district, 4.V.1971, coll. Bhaumik, A.R ; 1 ♂, 1 ♀, Pashok, Darjeeling district, 26.V.1914, -XI.1916, Gravely, F.H. ; preceding collections with NZC (800/H15). Additional material examined : 1 ♂, 3 ♀ ♀, Calcutta, 19.XII.1906, (Mus. coll.) ; 2 ♀ ♀, Calcutta, 14.XI.1907. (Mus. coll.).

Remarks : Colour of anterior lobe of pronotum and base of

scutellum varies, ranging from bright castaneous to sordid brown. Body size varies in the same sex.

63. ***Elasmolomus paralineosus*** sp. n.

(Text-fig. 10)

Body in general ochraceous and elliptically elongated.

Head : Short, triangular, pilose ; greyishly pilose tylus with few setae ; ocelli nearer to eyes than to one another, eyes almost touch pronotal apex ; antennae stramineous with distal two-thirds of IV segment dark ochraceous, basal segment just passing tylus with few coarse setae, rest of segments finely pilose ; labium stramineous reaching 2nd coxae, basal segment about reaching base of head, apical segment dark ochraceous.

Thorax : Pronotum laterally explanate, anterior lobe fuscous, coarsely punctate, posterior lobe moderately and brownly punctate, postero-lateral corner fuscous with pale tumescent marks ; scutellum basally as wide as its length and uniformly punctate, basal half dull black and apex pale ; calvus with 3 straight rows of punctures, 2 on outer and 1 on inner side, in between those there are some haphazardly scattered punctures ; corium with several complete and incomplete rows of punctures along claval suture and subcostal area, costal margin pale impunctate with brown markings at apical and subapical regions ; pleura fuscous except posterior pale castaneous marking at pro- and meta-pleura ; legs stramineous with fuscous coxae and light brown apex of hind femora, brownly punctate and with a single prominent spine, tibiae with coarse setae ; membrane fuliginous, appear blackish and reaching abdominal apex

Abdomen : Sternum fuscous with fine adpressed pilosity.

Measurement : Body length 5.16 ; Pronotal length 1.08 ; Pronotal width 1.18 ; Scuteller length 1.08 ; Scuteller breadth (basal) 1.02 ; Head width 1.02 ; Antennal segment I. 0.36 ; II. 0.72 ; III. 0.63 ; IV. 0.78 ; Labial segment I. 0.54 ; II. 0.57 ; III. 0.45 ; IV. 0.39.

Material : Holotype, ♀, Calcutta, 18.V 1980, coll. A'M, (A. Mukhopadhyay), NZC (801/H15).

Remarks : The species agrees in general with *E. sordidus* but differs in being smaller in size, structure of pronotum, head, colouration and number of spines of fore femora. The species also agrees with *E. lineosus* in size and colour but differs in having basal half of the anterior femora stramineous for black and first three antennal segments fully stramineous for partly fuscous.

One of the antennae oligomeric with 3 segments.

Measurement : Oligomeric segment I. 0.36 ; II. 1.08 ; III.0.9.

(40) Genus **Lachnethus** Bergroth

1915. *Lachnethus* Bergroth, *Jour. Bombay nat. Hist. Soc.*, 24 : 173.

Type-species : *Lachnophorus guttulatus* Reuter 1887.

Oblong body with long pilosity ; labium reaching middle of mesosternum, segment I not reaching head base, segments II and III subequal in length ; antennal segment I passing apex of head, segment IV as long as II or longer ; pronotum with moderate transverse constriction, lateral margins suberect and laminate, slightly narrowed and rounded anteriorly ; scutellum elongately triangular.

Of some 7 species comprising the genus, only 2 are reported from India and 1 from West Bengal.

64. **Lachnethus leucospilus** (Walker, 1872)

1972. *Rhyparochromus leucospilus* Walker, *Cat. Hem. Het. B.M.*, 5 : 98-99.

Material : 1 ♀, Kalimpong, Darjeeling district, 24.IV-10.V 1915, Gravely, F.H., NZC (805/H15).

Remarks : On comparing the above specimen with type of *L. leucospilus* it was found to be very close excepting presence of more pale marking on costal margin of corium. (W. R. Dolling, British Museum N.H. in comm.)

(41) Genus **Rhyparothesus** Scudder

1962. *Rhyparothesus* Scudder, *Can. Ent.*, 95 : 983.

Type-species : *Aphanus orientalis* Distant, 1904.

Head, anterior part of pronotal disc and base of scutellum without fuscous colouration ; head almost impunctate, anterior lobe of pronotum, clavus, apical third of corium with apical margin distinctly punctate, tylus not much marked out from jugs ; spiracles on III and IV abdominal segments dorsal.

Key to the species of Rhyparothesus

- | | | |
|--|--------|------------------------------|
| 1. Apical region of the corium and part or whole membrane dark piceous | ... .. | 2 |
| — Apex of corium with an ochraceous brown tint, membrane dull ochraceous | ... .. | <i>bengalensis</i> (Distant) |
| 2. Body brownish, clavus and disc of corium brownly punctate, only corial apex piceous black | ... .. | <i>Ornatulus</i> (Distant) |
| — Body sordid black ; heavy black punctures in apical half of the corium which is almost wholly piceous (excepting a pale patch at margin) | ... .. | <i>sparsus</i> (Distant) |

65. **Rhyparothesus bengalensis** (Distant, 1909)

1909. *Aphanus bengalensis* Distant, *Ann. Mag. Nat. Hist.*, (8) 3 : 337.

Pronotum, hemielytron pale or pale-ochraceous ; ampliate pronotal margins parallel and only gradually narrowing anteriorly instead of being curved ; scuteller disc with a pair of black markings (sometimes faint) ; outer apex of the corium and inner angle narrowly brownish ; punctures in general uniform, moderate and small ; membrane translucent fuliginous.

The species is morphologically very close to *Rh. sparsus*, nevertheless differing in colour and shape. Some additional morphometric characters are given below.

Measurement : Body length 5.95 (5.28-6.72) ; Pronotal length 1.42 (1.2-1.62) ; Pronotal width 2.05 (1.8-2.28) ; Head width 1.14 (1.02-1.26) ; Scuteller length 1.39 (1.32-1.5) ; Scuteller width 1.32 (1.26-1.44) ; Antennal segment I. 0.43 (0.36-0.48) ; II. 1.07 (0.9-1.26) ; III. 0.85 (0.78-0.96) ; IV 1.08 (0.96-1.2).

Material : 1 ♂, 1 ♀, Calcutta, 16.III.1980, coll. A.M. ; 1 (damaged), Calcutta, 4.IV.1950, coll. Manna, G.K. ; Preceding collections with NZC (809/H15). Additional material examined : 2 ♂♂, Calcutta, 25.V.1911, coll. Gravely, F.H. ; 1 ♂, 1 ♀, Baruipur, 24-Parganas district, 15.IV.1980, coll. A.M.

Remarks : The species is reported for the first time from West Bengal. The two species, *Rh. sparsus* and *Rh. bengalensis* occur in the same litter of *Ficus religiosa*, although ecologically and morphologically so close, these species never interbreed. The early nymphal instars of these species are similar and cannot easily be morphologically differentiated.

66. **Rhyparothesus ornatulus** (Distant, 1909)

1909. *Aphanus ornatulus* Distant, *Ann. Mag. Nat. Hist.*, (8) 3 : 336-337.

This species is close to *Rh. sparsus* in morphology but differs from the latter in having brown ferruginous general colouration with brown punctures ; subapex of corium normally without a fascia but when present it is light fuscous (not black), inner apex also with a smoky brown (for black) blurred patch, disc of scutellum with slight depression but without any patch. Some additional morphometric characters are given below.

Measurement : Body length 7.53 (6.82-8.06) ; Pronotal length 1.78 (1.71-2.02) ; Pronotal width 2.5 (2.23-2.64) ; Head width 1.36 (1.32-1.47) ; Scuteller length 1.55 (1.44-1.68) ; Scuteller width 1.49

(1.38-1.62) ; Antennal segment I. 0.48 (0.47-0.54) ; II. 1.26 (1.16-1.4) ; III. 1.09 (1.01-1.16) ; IV 1.46 (1.24-1.55).

Material : 1 ♂, Kharagpur, Midnapur district, 17-30.VI.1911, coll. Hodgart, R. ; 1 ♂, 4 ♀ ♀, Baruipur, 24-Parganas district, 1.V.1980, coll. A.M. ; 2 ♀ ♀, Baruipur, 24-Parganas district, 5.IV.1980, coll. A.M. ; preceding collections with NZC (810/H15). Additional material examined : 1 ♀, Purneah district, (Bihar), coll. Paiva, C.A. ; (Mus. coll.), (det. Distant), NZC (9881/15) ; 1 ♀, Calcutta, 13.II.1907, (Mus. Coll.) (det. Distant).

Remarks : The species inhabit the litter of *Ficus religiosa*.

The present author on comparing his self-collected specimens found them to be the same as the one in the Museum collection (mentioned above), determined by Distant as *Rh. orientalis* (Distant). However, when these specimens (author's collection) were compared with types at British Museum, they were determined as *Rh. orantulus* (not *Rh. orientalis*) with the comment that *Rh. orantulus* had a shorter pronotum than *Rh. orientalis* and was a variable species (W R. Dolling. British Museum, N.H. in comm.). This was evident through various degree of development of the fascia at the inner apex of corium (Text-fig. 12 d-f).

67. *Rhyparothesus sparsus* (Distant, 1904)

1904. *Aphanus sparsus* Distant, *Fn. Brit. Ind. Rhynch.*, 2 : 81.

1909. *Aphanus dudgeoni* Distant, *Ann. Mag. Nat. Hist.*, (8) 3 : 336.
(new synonymy)

1964. *Rhyparochromus sparsus* Slater. *A. Catalogue of the Lygaeidae of the World* 2 : 1289.

The colouration of the species is variable and ranges from pale-ochraceous to dark-ochraceous, Distant (1904) described the species (*Rh. sparsus*) originally from Western India and later *Rh.* (= *Aphanus*) *dudgeoni* (Distant 1909) from Kangra valley (North West India). The former species was subsequently recorded also from Purneah district (Bihar, North East India) by Paiva. The present study reveals that the light ochraceous form of the species (*Rh. sparsus*) agrees well with the morphological description of *Rh. dudgeoni*, which differs in being dark ochraceous. This observation is corroborated by Mr. W.R. Dolling's comments (British Museum, N.H.) on the specimens of *Rh. sparsus* on comparing with type—" *Rhyparothesus dudgeoni*—possibly this is a synonym of *Rh. sparsus* as we have only one, dark example of the latter, the type, and may be just an unusual dark aberration of *Rh. dudgeoni*".

Some additional morphometric characters are given below.

Measurement : Body length 6.89 (5.85-7.32) ; Pronotal length 1.62 (1.32-2.22) ; Pronotal width 2.20 (1.86-2.22) ; Head width 1.25

(1.2-1.32) ; Scuteller length 1.51 (1.38-1.62) ; Scuteller width 1.46 (1.38-1.56) ; Antennal segment I. 0.47 (0.36-0.54) ; II. 1.15 (1.02-1.38) ; III. 1.0 (0.84-1.14) ; IV 1.35 (1.08-1.5).

Material : 2 ♂♂, 1 ♀, Calcutta, 29.II.1980, coll. A.M. ; 1 ♂, 1 ♀, Calcutta, 15.XII.1980, coll. A.M. ; 2 ♂♂, 5 ♀♀, Sibpur, Howrah district, 16.XI.1980. coll. A.M. ; 1 (damaged), Calcutta, 11.IV.1950, coll. Manna, G.K. ; 1 ♂, Theog (Simla hills), (Himachal Pradesh), 27.VI.1907, coll. Annandale, N., (det. Distant), NZC (9982/15) ; 1 ♂, Purneah district, (Bihar), coll. Paiva, C.A. ; (det. Distant), NZC (9884/15).

Remarks : The species abounds the litter of *Ficus religiosa*, *F. benghalensis* and *F. infectoria* and is being recorded for the first time from West Bengal.

(42) Genus **Dieuches** Dohrn

1860. *Dieuches* Dohrn, *Stett. Ent. Zeit.*, 21 : 159.

Type-species : *Dieuches syriacus* Dohrn, 1860

Head not (or scarcely) broader than the apex of pronotum and lateral margins of pronotum broadly laminate and not (or scarcely) sinuate.

This large genus comprises some 70 species, of which 13 are recorded from India and 3 from West Bengal.

Key to the species of **Dieuches**

1. Lateral margin of the pronotum uniformly narrowed anteriorly ; posterior pronotal margin more than two and a half times of collar (pronotal apex excluding ampliation) ... *femorialis* Dohrn
- Lateral pronotal margins run almost parallel and sharply bend to give a rounded anterior edge ; pronotal base two and a half (or little less) times wider than collar 2
2. Pronotal base subequal to the length of pronotum ; subapex of corium with castaneous fascia and apex pale ... *leucoceras* (Walker)
- Pronotal base always broader than length of pronotum, corium uniformly brown ochraceous without the castaneous fascia ... *coloratus* (Distant)

68. **Dieuches femoralis** Dohrn, 1860

1860. *Dieuches femoralis* Dohrn, *Stett. Ent. Zeit* 21 : 405.

Material : 1 ♂, Calcutta, 1936, (Mus. coll.); 1 ♂, 2 ♀♀, Kalim-

pong, Darjeeling district, -V-VI.1905, coll. Gravely, F.H. ; 2 ♀ ♀, Kalimpong, Darjeeling district. 1.VI.1980, coll. Tewari, R.N. ; 1 ♂, Mahananda, Darjeeling district, 24.IV.1971, coll. Bhaumik, A.R. ; 1 ♂, 1 ♀, Mirik, Darjeeling district, 24.VI.1971, coll. Halder, P ; 2 ♀ ♀, Siliguri, Darjeeling district, 18-20.VII.1907, (Mus. coll.) ; 1 (damaged), Kurseong, Darjeeling district, 21-29.V.1906, coll. Annandale, N. ; preceding collections with NZC (802/H15).

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

69. *Dieuches leucoceras* (Walker, 1872)

1872. *Rhyparochromus leucoceras* Walker, *Cat. Hem. Het. B.M.*, 5 ; 98-99.

Material : 1 (damaged), Calcutta, 9.XI.1907, (Mus. coll.) ; NZC (803/H15) ; 1 ♀, Pussumbing, Darjeeling district, -X-XII.1906, coll. Mann, H.H. ; NZC (1504/15) ; 1 (damaged), Pussumbing, Darjeeling district, -X-XII.1906, coll. Mann, H.H. ; NZC (1505/15).

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

70. *Dieuches coloratus* (Distant, 1909)

1909. *Abanus coloratus* Distant, *Ann. Mag. Nat. Hist.*, (8) 3 : 493-494.

Material : 1 (damaged), Calcutta, -XI.1907, (Mus. coll.), NZC (804/H15) ; 1 ♂, Hoshiarpur, (Panjab), 1955, coll. Sharma, G.P., NZC (6762/H7) ; 1 ♀, Hoshiarpur, (Punjab), 1955, coll. Sharma, G.P., NZC (6761/H7).

Remarks : Minor colour difference of the specimens examined were noted from the original description. Basal segment of the labium brown for black ; apex of corium fuscous for black ; membrane fuliginous for dark piceous.

(43) Genus *Metochus* Scott

1847. *Metochus* Scott, *Ann. Mag. Nat. Hist.*, (4) 14 : 433-434.

Type-species : *Metochus abbreviatus* Scott, 1874.

The genus differs from the allied genus, *Dieuches* in having head much broader than the apex of pronotum, and lateral margins of pronotum narrowly carinate or sub-carinate and strongly sinuate.

Of about 11 species belonging to this genus. 6 are known from India and a single one in West Bengal.

71. *Metochus uniguttatus* (Thunberg, 1822)

1822. *Pendulinus uniguttatus* Thunberg, *Hem. Rost. Cap.*, 4 : 6.

Material : 1 ♀, Calcutta, 10.IV.1980, coll. A.M. ; 1 ♀, Calcutta, 11.IV 1981, coll. A. M. ; 1 ♂, Calcutta, coll. Chopra, B.N. ; 1 ♂, 1 ♀. Sibpur, Howrah district, 30.X.1980, coll. A.M. ; preceding collections with NZC (806/H15) ; 1 ♀, Calcutta, (Mus. coll.), NZC (3737/15).

Remarks : Adult and nymphal population of this species occur in litter of *Ficus hispida*, *F. religiosa*, *F. benghalensis*, and *F. infectoria*. In Sagar island (district 24-Parganas, West Bengal) the species was found to infest green capsules of gingelly besides fig trees.

Variation in size occur in population from different regions of India and within the same population at different seasons.

(44) Genus **Poeantius** Stal

1865. *Poeantius* Stal. *Hem, Afr.*, 2 : 163.

Type-species : *Rhyparochromus nigropictus* Stal 1855.

Deflected head immersed to eyes ; pronotum longer than broad, transversely constricted behind middle ; scutellum longer than broad at base ; incrassate forefemora finely spined beneath ; posterior tarsi with basal joint nearly three times longer than the other two joints together.

Of some 12 species comprising the genus, only 2 occur in India and a single one in West Bengal.

72. **Poeantius festivus** Distant, 1901

1901. *Poeantius festivus* Distant, *Ann. Mag. Nat. Hist.*, (7) 8 : 506.

Material : 1 ♂, Calcutta, 27 VI.1979, coll. A.M. ; NZC (807/H15). Additional material examined : 1 ♂, 1 ♀, Coimbatore, (Tamil Nadu), 26.IX.1976. coll. Thangavelu, K.

Remarks : All the examples studied are brachypterous.

Tribe MEGALONOTINI Stal

1872. *Rhyparochromaria* Stal, *Ofv. Vet. Akad. Forh.*, 29 : 51-54.

1957. *Megalonotini* Slater, *Bull. Brook. Ent. Soc.*, 52 : 35.

(45) Genus **Proderus** Fieber

1860. *Rhyparochromus proderus* Baerensprung, *Ber. Ent. Zeit.*, 4 : 10.

1860. *Proderus* Fieber, *Eur. Hem*, pp. 45, 172-173.

1904. *Gonsalvus* Distant. *Fn. Brit. Ind. Rhynch*, 2 : 93.

Type-species : *Rhyparochromus flavipes* Lucas 1849 = *Pachymerus suberythropus* Costa 1841.

Body elongate, tapering gradually from pronotal base to apex of head ; head narrowed anteriorly and about half the length of pronotum ; labium long, reaching the posterior coxae ; pronotum faintly

divided into glabrous anterior and punctate posterior lobe, pronotal base concave ; scutellum large with acute apex ; anterior femora incrassate and anterior tibiae flattened and notched ; membrane with longitudinal veins extending beyond abdominal apex.

Of some 7 species belonging to this genus only 2 are known to occur in India and 1 in West Bengal.

73. *Proderus spinosus* (Distant, 1909)

1909. *Gonsalvus spinosus* Distant, *Ann. Mag. Nat. Hist.*, (8) 3: 344-345.

1962. *Proderus spinosus* Scudder, *Can. Ent.*, 94 : 772.

Material : 1 ♀, Calcutta, 26.V.1907, coll. Annandale, N. ; 1 ♀, Calcutta, 24.IX.1979, coll. A.M. ; preceding collections with NZC (811/H15) ; 1 ♀, Rahara, 24-Parganas district, 9.VI.1966, coll. Roy, S.B., NZC (8916/H7). Additional material examined : 1 ♀, Calcutta, 1.VI.1908, (Mus. coll.) ; 1 ♂, 3 ♀ ♀, Calcutta, 6-10.XI.1910, (Mus. coll.).

Tribe MYODOCHINI Boitard

Key to the genera of Myodochini

- | | |
|---|-------------------------------------|
| 1. Pronotum indistinctly constricted with lateral margins bluntly subcarinate | ... 46. <i>Suffenus</i> |
| — Pronotum distinctly constricted with rounded lateral margins | 2 |
| 2. Collar not separate from anterior lobe of pronotum by a distinct constriction ; forecoxal spines reduced or absent : forefemora weakly armed and weakly incrassate | ... 47. <i>Stigmatonotum</i> |
| — Collar separated from by a distinct constriction, forecoxae well armed and forefemora moderately or heavily incrassate and strongly armed | 3 |
| 3. Pronotum with numerous long bristle like hair | 4 |
| — Pronotum without such numerous long hair | 5 |
| 4. Collar moderately broad ; posterior lobe of pronotum prominently punctate | ... 48. <i>Pachybrachius</i> |
| — Collar narrow (about half the above width), posterior lobe of pronotum with obscure concolourous punctures | ... 49. <i>Horridipamera</i> |
| 5. Head broader than long | ... 50. <i>Pseudopachybrachiits</i> |
| — Head as long as broad or longer than its breadth | 6 |
| 6. Length of the anterior pronotal lobe almost twice posterior pronotal lobe ; basal margin of pronotum concavely truncated | ... 51. <i>Paromius</i> |

- Length of anterior pronotal lobe almost equal to posterior pronotal lobe ; basal margin of pronotum straight or slightly convex 7
- 7. Basal margin of pronotum always wider than pronotal length ... 52 *Pamerana*
- Basal margin of pronotum subequal to pronotal length ... 53 *Paraeucosmetus*

(46) Genus **Suffenus** Distant

1904. *Suffenus* Distant, *Fn. Brit. Ind. Rhynch.*, 2 : 75.

Type-species : *Rhyparochromus fusconervosus* Motshulsky.

Ovate shape, red ochraceous colour ; head immersed to eyes, eyes touching pronotum, bucculae long, forms a 'U' posteriorly ; pronotal base about twice as its length, collar and middle pronotal constriction indistinct and margin subcarinate, corium with veins very prominent.

This is a monotypic genus, recorded in India as well as from extra Indian regions.

74. **Suffenus fusconervosus** (Motshulsky, 1863)

1863. *Rhyparochromus fusconervosus* Motshulsky, *Bull. Soc. Nat. Mosc.*, 36 : 79.

1904. *Suffenus fusconervosus* Distant, *Fn. Brit. Ind. Rhynch.*, 2 : 75.

Material : 4 ♂♂, 5 ♀♀. Calcutta, I.VI.1980, coll. A.M. ; 1 ♂, 1 ♀, Calcutta, 6.VI.1980, coll. A.M., 3 ♀♀, Calcutta, 22.VI.1980, coll. A.M. ; 2 ♀♀, Calcutta, -VI.1914, coll. Gravely, F.H. ; preceding collections with NZC (776/H15).

(47) Genus **Stigmatonotum** Lindberg

1927. *Stigmatonotum* Lindberg *Act. Soc. Fn Fl. Fern.*, 56 : 9-10.

Type-species : *Stigmatonotum sparsus* Lindberg 1927.

Depressed pronotal collar, not separated from the anterior lobe by distinct constriction ; forecoxal spines greatly reduced or absent, forefemora weakly incrassate and feebly armed (1 or 2 spines in a series).

The genus comprises 4 species, 2 of which are recorded from India as well as West Bengal.

Key to the species of Stigmatonotum

1. Head, pronotum and hemielytra with long bristle like hair besides short decumbent pubescence ; posterior lobe of pronotum deeply thickly punctate ... *cephalotes* (Kiritshenko)
- Head, pronotum and hemielytra with only short, decumbent pubescence ; posterior

lobe of pronotum shallowly finely
punctate

... *minutum* Malipatil

75. *Stigmatonotum cephalotes* (Kiritshenko, 1931)

1931. *Orthaea cephalotes* Kiritshenko, *Ann. Mag. Nat. Hist.*, (10) 7 : 363.

1825. *Rhyparochromus cephalotes* Dallas, *List Hem B.M.*, 2 : 577-578.

1962. *Srigmatonotum cephalotes* Scudder, *Con. Ent.* 94 : 772.

Material : 1 ♀, Darjeeling, Darjeeling district, 7.X.1974, coll. Bhoumik, H.K. ; 1 ♂, Merong, Darjeeling district, 23.II.1972; coll. Bhoumik, H.K. ; 1 ♀, Jorpokhri, Darjeeling district. 22.V.1971, coll. Bhoumik, H.K. ; 1 ♀, Goombhanjang, Darjeeling district, 29.V.1975, coll. Jonathan, J.K. ; 2 ♀ ♀, Hepchajagal, Darjeeling district, 1 VI.1975, coll. Jonathan, J.K. ; preceding collections with NZC (777/H15).

Remarks : The species is recorded for the first time from India and West Bengal. All the specimens studied are submacropterous.

76. *Stigmatonotum minutum* Malipatil, 1978

1978. *Stigmatonotum minutum* Malipatil, *Aust. J. Zool.*, supplementary series no. 56 pp. 23-25.

Material : 1 ♀, Baruipur, 24 Parganas district, 28.II.1980, coll. A.M. ; 1 ♂, Sibpur, Howrah district, 18.X.1979, coll. A.M. ; 1 ♀, Calcutta, 27.III.1981, coll. A.M. ; preceding collections with NZC (778/H15).

Remarks : Occurs in grass habitat (chiefly *Chloris inflata*). The species is recorded for the first time from India and West Bengal.

(48) Genus *Pachybrachius* Hahn

1826. *Pachybrachius* Hahn, *Icon. Mon. Cim.*, 1 : 18.

Type-species : *Pachybrachius luridus* Hahn, 1826.

Castaneous, elongate-ovate body with long bristles (especially in pronotum, scutellum, clavus and corium) ; head length subequal to its breadth ; posterior pronotal lobe only punctate ; scutellum equilateral or slightly longer than wide ; foretibia with 2 or 3 minute spines or one large spine which may also be absent ; in male tergum VII finely punctate.

This large genus includes some 85 species, 6 of which are from India and only a single one from West Bengal.

77. *Pachybrachius annulipes* (Baerensprung, 1859)

1859. *Plociomerus annulipes* Baerensprung, *Ber. Ent. Zeit.*, 3 : 330. 332-333.

1935. *Pachybrachius annulipes* Stichel, III. *Bst. Deut. Wanz.*, 12 : 352.

Material : 1 ♀, Calcutta, 17.IX.1979, coll. A.M. ; 1 ♀, Chinsura, Hooghly district, 15.IX.1979, A.M. ; preceding collections with NZC

(779H15); 1 ♂, Pilani, (Rajasthan), coll. Narula, S.C.; NZC (9053/H15).

Remarks : Castaneous spot at outer apex of corium variable and may be obscure. The species is recorded for the first time from West Bengal.

(49) Genus **Horridipamera** Malipatil

1978. *Horridipamera* Malipatil, *Aust. J. Zool.*, supplementary series no. 56 p. 89.

Type-species : *Plociomerus nietneri* Dohrn 1860

General colouration castaneous to black; bristle like hair on head and pronotum in addition to short decumbent pubescence; pronotal collar distinct, anterior lobe gibbous, posterior lobe punctate; scutellum slightly longer than wide, punctate on margins; foretibia in males armed with 1 stout or 2-4 small posteriorly directed spines near middle; proximal half of terminal antennal segment pale.

The genus comprises 3 species, only a single one of which is known from India and West Bengal.

78. **Horridipamera nietneri** (Dohrn, 1860)

1860. *Plociomerus nietneri* Dohrn, *Ent. Zeit.*, 21 : 404-405.

1978. *Horridipamera nietneri* Malipatil, *Aust. J. Zool.*, supplementary series no. 56 p. 90.

Material : 1 ♀, Calcutta, 3.X.1980, coll. A.M.; 1 ♀, Calcutta, 15.I.1981, coll. A.M.; 2 ♂♂, Singla, Darjeeling district, 2.I.1976, coll. Srivastav, G.K.; 1 ♀ Bijanbari, H. School, Darjeeling district, 19.V.1974, coll. Jonathan, J.K.; 1 ♀, Bamonpokri, Darjeeling district, 23.VIII.1979, coll. Bhoumik, H.K.; preceding collection with NZC (780/H15).

Remarks : The species occurs in litter of *Ficus benghalensis* and grass, and is recorded for the first time from West Bengal. Colour varies from deep castaneous to fuscous; pronotum normally with long bristle like hair which may sometimes be very much reduced in number.

(50) Genus **Pseudopachybrachius** Malipatil

1978. *Pseudopachybrachius* Malipatil, *Aust. J. Zool.*, Supplementary series no. 56 p. 63.

Type-species : *Rhyparochromus gutta* Dallas, 1852.

The genus is close to *Paraecosmatus* Malipatil but differs from it in having dorsal surface of head convex and antennifers narrowed anteriorly; forecoxae of both sexes armed with single spine, foretrochanters unarmed.

The genus is monotypic ; the species has a wide distribution in the eastern hemisphere, India, and West Bengal.

79. **Pseudopachybrachius guttus** (Dallas, 1852)

1852. *Rhyparochromus gutta* Dallas, *List Hem. B.M.*, 2 : 573-574.

1978. *Pseudopachybrachius guttus* Malipatil, *Aust. J. Zool.*, supplementary series no. 56 p. 63.

Material : 1 ♂, 2 ♀ ♀, Calcutta, 20.V 1979, coll. A.M. ; 2 ♀ ♀, Canning, 24-Parganas district, 18.X.1965, coll. Joseph, A.N.T ; 4 ♂ ♂, 2 ♀ ♀, Sibpur, Howrah district, 30.X.1980, coll. A.M. ; 1 ♀, Chinsura, Hooghly district, 15.XI.1979, coll. A.M. ; 1 ♀, Takipur, 24-Parganas district, 10.IX.1965, coll. Bhoumik, H.K. and pty ; 1 ♂, 1 ♀, Krishra-nagar, Nadia district, 13.VIII.1965, coll. Chakraborty, S.P. ; 6 ♀ ♀, Kharibari Sulka para, Jalpaiguri district, 27.VIII.1975, coll. Bhoumik. H.K. ; 1 ♀, Naxalbari, Darjeeling district, 20.IV 1979 ; preceding collec-tions with NZC (781/H15).

Remarks : Occurs and breeds on grasses like *Ischaemus indicus*, *Chloris inflata*, but occasionally adults are found in the litter of *Ficus benghalensis*.

The species shows colour variation within the same population. Head, pronotal, scuteller and membrane colouration ranges from dull piceous to castaneous. Females more robust than males.

(51) Genus **Paromius** Fieber

1839. *Stenocoris* Rambur. *Fn. Andalous*, pp. 139-140.

1860. *Paromius* Fieber, *Eur. Hem.*, pp. 45, 170-171.

Type-species : *S. gracilis* Rambur. 1839.

Elongated body with linear outline ; head gradually constricted behind eyes, antennal segment I passing tylus, labial segment I never passing base of head ; long constricted pronotum, posterior lobe finely punctate ; scutellum one and a half times as long as wide ; forecoxa with a single and forefemur with two rows of variously developed spines ; hind basitarsus about or less than twice as long as distal segments together.

The genus comprises 11 species, 3 of which are known from India and West Bengal.

Key to the species of Paromius

- | | | |
|---|----------|-------------------------------|
| 1. Labium reaching or just passing 1st coxae | ... | <i>gracilis</i> (Rambur) |
| — Labium reaching or passing 2nd coxae | 2 | |
| 2. Collar fuscous and all labial segments deep castaneous | ... | <i>pallidus</i> (Montrousier) |

- Collar pale ochraceous and only terminal
or two distal labial segments fuscous ... *exiguus* (Distant)

80. *Paromius gracilis* (Rambur, 1839)

1839. *Stenocoris gracilis* Rambur, *Fn. Andal.* 2 : 140.

1913. *Paromius pallidus* Distant, *Ann. Mag. Nat. Hist.*, (8) 12 : 556-557.

Material : 1 ♀, Calcutta, 15.V.1930, coll. Mathi, G. ; 3 ♂♂, 1 ♀, Calcutta, 5.IV.1980, coll. A.M. ; 1 ♂, 1 ♀, Calcutta, 4.III.1979, coll. A.M. ; 3 ♂♂, 1 ♀, Sibpur, Howrah district, 13.III.1980, coll. A.M. ; 1 ♀, Sukiapokri, Darjeeling district, 30.VI.1979, coll. Haldar, P and pty. ; 1 ♂, 1 ♀, Naxalbari, Darjeeling district, 20.VI.1979, Haldar, P. and pty. ; preceding collections with NZC (782/H15).

Remarks : Adults and nymphs occur on panicles of *Ischaeum indicum* and *Chloris inflata*. The species shows some colour and size variations. Head, anterior lobe of pronotum and scuteller colour vary from greyochraceous to fuscous with various amounts of short sericeous pilosity. Dimorphism occur, with males generally smaller than females.

81. *Paromius pallidus* (Montrousier, 1865)

1865. *Plociomerus pallidus* Montrousier, *Ann. Soc. Linn. Lyon*, (2) 11 : 229-230.

1913. *Paromius pallidus* Distant, *Ann. Mag. Nat. Hist.*, (8) 12 : 556-557.

Material : 1 ♂, Calcutta, 17.V.1979, coll. A M, ; NZC (783/H15).

Remarks : The species is more robust and darker in shade than *P. gracilis*.

82. *Paromius exiguus* (Distant, 1883)

1883. *Pamera exigua* Distant, *Trans. Ent. Soc. Lond.*, p, 434.

1904. *Paromius exiguus* Distant. *Fn. Brit. Ind, Rhynch.*, 2 : 54.

Material : 1 ♀, Calcutta, 5.IV.1980, coll. A.M. ; 2 (damaged), Kurseong, Darjeeling district, 6-8.VII.1908, coll. Annandale, N. ; preceding collections with NZC (784/H15) ; 1 ♀, Calcutta, 20.VIII.1907, (Mus. coll.), NZC (9902/15).

(52) Genus *Pamerana* Distant

1909. *Pamerana* Distant, *Ann. Mag. Nat. Hist.*, (8) 3 : 331-332.

Type-species : *Pamerana cuneata* Distant 1909 = *Rhyparochromus nigritulus* Walker 1872.

Head scarcely longer than wide but definitely longer than anterior lobe of pronotum, 4 to 7 pairs of trichobothria distributed over head ; antenniferous tubercles prominent and outwardly produced in short spinous tubercles ; pronotum wider basally than long, basal margin twice

anterior margin ; scutellum slightly longer than wide with feebly marked 'Y' shaped carina on disc.

Of 6 species comprising the genus, only 1 occur in India and West Bengal.

83. *Pamerana nigrifula* (Walker, 1872)

1872. *Rhyparochromus nigrifulus* Walker, *Cat. Hem. Het. B.M.*, p. 106.

1909. *Pamerana cuneata* Distant, *Ann. Mag. Nat. Hist.*, (8) 3 : 332.

Material : Reported from Calcutta, West Bengal by Distant (1909) ; specimens not available for examination.

(53) Genus *Paraecosmetus* Malipatil

1978. *Paraecosmetus* Malipatil, *Aust. J. Zool.*, supplementary series no. 56 p. 67.

Type-species : *Rhyparochromus pallicornis* Dallas, 1852.

General colouration blackish ; pronotum nude or covered by short decumbent pubescence and only few long hairs ; head contracted behind eyes, sides of antecular part of head between eye and base of antenna parallel, vertex region almost flat ; pronotal collar wide, more so in middle, anterior lobe narrower than and never more than twice as long as posterior lobe which is finely punctate ; the genus is related to Oriental genus *Eucosmetus* but differs in having mutic foretibia in male.

The genus comprises 9 species, 1 of which *P pallicornis* is determined satisfactorily and is known to occur in parts of India and West Bengal, while another one from hilly region of West Bengal appears to be new.

Key to the species of *Paraecosmetus*

1. Labium reaching 2nd coxae ; middle and hind femora proximally white and distally black ... *pallicornis* (Dallas)
- Labium just passing 1st coxae ; middle and hind femora uniformly light ochraceous ... *brachylabius* sp. n.

84. *Paraecosmetus pallicornis* (Dallas, 1852)

1852. *Rhyparochromus pallicornis* Dallas, *List Hem B.M.*, 2 : 573.

Material : 3 ♂♂, 1 ♀♀ Baruipur, 24-Parganas district, 16.X.1980, coll. A.M. ; 1 ♀, Baruipur, 24-Parganas district, 28.II.1980, coll. A.M. ; 1 ♀, Sibpur, Howrah district, 11.XII.1980. coll. A.M. ; 2 ♀♀, Mirik, Darjeeling district, 26.VI.1979, coll. Haldar, P. ; 2 (damaged), Bijnbi, Darjeeling district, 19.V.1974, coll. Jonathan, J.K. ; 1 (damaged), Rangirum, Darjeeling district, 25.V.1974, coll. Jonathan, J.K. ; 2 ♀♀,

Bamonpokri, Darjeeling district, 23.VIII.1975, coll. Bhoumik, H.K. ; 1 ♂, Ghoom, Darjeeling district, -1973-1974 ; 1 ♂, Chandmari, Darjeeling district, 17.XII.1975, coll. Srivastav, G.K. ; 1 ♀, Khairbari, Sulkapaira, Jalpaiguri district, 27.VIII.1975, coll. Bhoumik. H.K. ; preceding collections with NZC (785/H15).

Remarks : The species occur in litter of *Ficus religiosa* and on some dicotyledonous weeds. Females of the species normally more robust than males. Specimens from southern part of West Bengal do not show any brachypterism, whereas some specimens from northern part are submacropterous or brachypterous.

85. *Paraucosmetus brachylabius* sp. n.

(Text-fig. 11)

Brown-ochraceous, head black with silvery pubescence, labium ochraceous with IV segment fully and basal segment partly fuscous ; collar ochraceous brownly punctate, anterior pronotal lobe black with scanty adpressed grey pubescence, posterior lobe pale ochraceous and brownly punctate ; pleura piceous obscurely punctate which is only prominent at ochraceous posterior margin of pro-and metathorax, acetabula and metathoracic peritreme ochraceous ; coxae dark ochraceous, foretrochanter brown castaneous rest of leg stramineous, distal segment of tarsus deep ochraceous ; corium and clavus stramineous, outer apex of corium deep ochraceous ; membrane hyaline transparent ; abdominal sternites brown ochraceous.

Head : Triangular, tylus protruding, antennifers parallel, eyes prominent well separated from pronotal collar, ocelli nearer to eye than to one another, vertex flat, bucculae short restricted to proximal third of labial segment.

Thorax : Collar well separated by a constriction from gibbous anterior lobe of pronotum, posterior lobe elevated with straight posterior and oblique lateral margins, and tumid postero-lateral corner ; coxae, trochanter lack spine, forefemur with ventral spines of various size in two rows, accommodating unarmed tibia ; meso-and metathoracic legs free of setae ; scutellum basally as broad as long, centrally subcarinate leading to anterior tumescence, scuteller apex pale ; clavus with three complete and one incomplete row of brown punctures ; corium with two rows of punctures along claval suture and subcostal area, apical and discal area also punctate.

Abdomen : Elongated with grey adpressed pubescence.

Measurement : Body length 5.66 ; Head length 0.94 ; Head width 1.0 ; Pronotal length 1.1 ; Collar width 0.69 ; Pronotal width (basal)

1.38 ; Antennal segment I. 0.44 ; II, 1.0 ; III. 0.94 ; IV. 1.0 ; Labial segment I. 0.63 ; II. 0.56 ; III, 0.28 ; IV. 0.38.

Material : Holotype ♂, Teesta, Darjeeling district, 29.V.1980, coll. Tewari, R.N., NZC (786/H15); (IV segment of left antenna mutilated).

Unknown Tribe

(54) Genus *Prostemmidea* Reuter

1893. *Prostemmidea* Reuter, *Ent. Mo. Mag.*, 29 : 252-253.

Type-species : *Prostemmidea mimica* Reuter, 1893.

Ventrally deflected head with prominent eyes ; pronotum as broad as long, behind middle strongly constricted, anterior lobe moderately globose ; scutellum longer than broad ; labium reaching intermediate coxae ; body, head, and pronotum coarsely hirsuate.

The genus is monotypic.

86. *Prostemmidea mimica* Reuter

1893. *Prostemmidea mimica* Reuter, *Ent. Mo. Mag.*, 29 : 253.

Body in general black-stramineous and hirsuate. Some additional morphometric characters are given below.

Measurement : Body length 4.58 (4.5-4.68) ; Pronotal length 1.54 (1.5-1.56) ; Head width 0.93 (0.9-0.96) ; Pronotal width (basal) 1.48 (1.44-1.5) ; Antennal segment I. 0.3 ; II. 0.48 ; III. 0.42 ; IV 0.64 (0.6-0.66) ; Scuteller length 1.0 (0.84-1.14) ; Scuteller width (basal) 0.96 (0.84-1.14).

Material : 1 ♀, Kalimpong, Darjeeling district, 24.IV.1910, coll. Gravely, F.H., NZC (812/H15) ; 1 ♂, Purneah, (Bihar), NZC (9677/14).

Remarks : Antennal oligomery with three segments.

Measurement : oligomeric segment I. 0.3 ; II. 0.66 ; III. 0.75.

Unknown Subfamily

(55) Genus *Meschia* Distant

1910. *Meschia* Distant, *Fn. Brit. Ind. Rhynch.*, 5 : 36-37.

Type-species : *Meschia pugnax* Distant 1910.

Angulate and sinuate anterior margin of head with strongly produced central lobe, ocelli nearer to base and eyes, labium passing middle of abdomen with segment II longest ; head and pronotum broader than long, antennae robust with segment I not passing head, and segment II longest ; connexivum usually exposed laterally beyond middle of corium.

Of two species known from this genus only a single one is known from West Bengal (considering synonymy of *Meschia quadrimaculata* and *M. pugnax*).

Key to the species of *Meschia*

- | | | |
|--|-----|----------------------------------|
| 1. Presence of four maculate (fuscous) spots at the basal margin of pronotum | ... | <i>quadrimaculata</i>
Distant |
| — Absence of any maculate spots at basal margin of pronotum | ... | <i>pugnax</i> Distant |

87. *Meschia quadrimaculata* Distant, 1910

1910. *Meschia quadrimaculata* Distant, *Fn. Brit. Ind. Rhynch.*, 5 : 38.

Measurement : Body length 4.17 (3.9-4.6) ; Pronotal length 1.03 (0.95-1.13) ; Head width 1.8 (1.64-2.02) ; Pronotal width 1.8 (1.64-2.02) ; Antennal segment I. 0.31 (0.28-0.32) ; II. 0.84 (0.82-0.88) ; III. 0.63 ; IV. 0.73 (0.69-0.76).

Material : 1 ♂, Calcutta, 25.X.1911, coll. Gravely, F.H. ; 1 ♀, Calcutta, 7.XII.1980, coll. A.M. ; 1 (damaged), Baruipur, 24-Parganas district, 3.VII.1980, coll. A.M.

Remarks : Adults and nymphs of the species occur in litter of *Ficus religiosa*, and is recorded from West Bengal for the first time.

Distant (1910) described *M. quadrimaculata* from East Bengal (renamed Bangladesh), he in the same year described *M. pugnax* from Calcutta. In describing these species as new to science neither he discussed their affinities nor he provided a key for differentiating the species. However, from a careful look at the original description of the two species, it appears that *M. quadrimaculata* differs from *M. pugnax* by the presence of four prominent pronotal spots at basal margin. Subsequently some specimens of *Meschia* were collected from Calcutta proper and Baruipur (24 Parganas), located south of Calcutta. The material from the latter locality were sent to British Museum (N.H.), London, for comments. The author was informed that those specimens were *M. quadrimaculata* Distant. On comparing the specimens collected from Calcutta with these specimens, the former were found also to be *M. quadrimaculata*. Further, in course of examining the materials from Calcutta proper and Baruipur it was found that the pronotal spots may be either well developed or very much reduced. Thus it appears that the pronotal spots vary appreciably not only in different populations but also in individuals of one and the same population (Text-fig. 12 i-k). If that be the case, then one has to reassess the status of *M. pugnax* and

find out the possibility of its synonymy with *M. quadrimaculata* in a revisional work.

88. *Meschia pugnax* Distant, 1910

1910. *Meschia pugnax* Distant, *Fn. Brit. Ind. Rhynch.*, 5 : 37.

Material : Reported by Distant (1910) from Calcutta, West Bengal ; specimens not available for examination.

DISCUSSION

The faunistic study of lygaeids found in the state of West Bengal reveals interesting and comprehensive results.

In the first quarter of the present century Distant in 'Fauna of British India, Rhynchota' (1904, 1910, 1918) gave an account of some 200 species under 81 genera from the Indian subregion. The total number of lygaeid species recorded until recently from all over India is little over 250 under nearly 100 genera. The present study reveals that the lygaeid fauna of this state, the area of which is only about one thirtyseventh part of India, is relatively rich. A total of 88 lygaeid species belonging to 55 genera and 11 subfamilies have come to our knowledge from the state. Only seven of these species are described new to science. However, due to poor availability of specimens, certain new species have to be described on the basis of a few examples. Nevertheless, their affinities with other congeners from this region have been adequately considered and a further corroboration would be possible with future enrichment of collections and generic revisions. The largest subfamily Rhyparochrominae is represented by 42 species, spread over 30 genera and 10 tribes, with one species belonging to an unknown tribe.

On further analysis in light of the locality data provided in Distant's 'Fauna of British India' (1904, 1910, 1918), and Slater's Catalogue (1964 a) of the Lygaeidae of the world, and some more latest literature, it is found that out of 88 species listed in this study from West Bengal, 33 are recorded for the first time from the state. It is interesting to note that West Bengal lygaeid fauna, inspite of having majority of the species endemic (48.2% Oriental), has considerable influx of elements from other zoogeographic regions. A percentage analysis approximately shows that the exotic species found in West Bengal are maximum from Palaearctic (25.0%), rest comprise Australian (15.7%),

Ethiopian (9.3%), and only traces of Nearctic (0.9%) and Neotropic (0.9%).

It may be noted that districts of West Bengal like Darjeeling, Jalpaiguri that partly encompass some regions of the eastern Himalaya have a more primitive and a stable habitat than the lower (southern) Bengal. This region of the gangetic plain is relatively recent with invasion of new flora replacing for last 300 years the original mangrove plant community. This difference in physiognomy of West Bengal is reflected through the greater diversity of the lygaeid fauna in the southern region than the more stable northern region. A percentage analysis shows that about 17% of the lygaeid species are normally restricted to the north and 50% to the south and about 33% occurs throughout the state.

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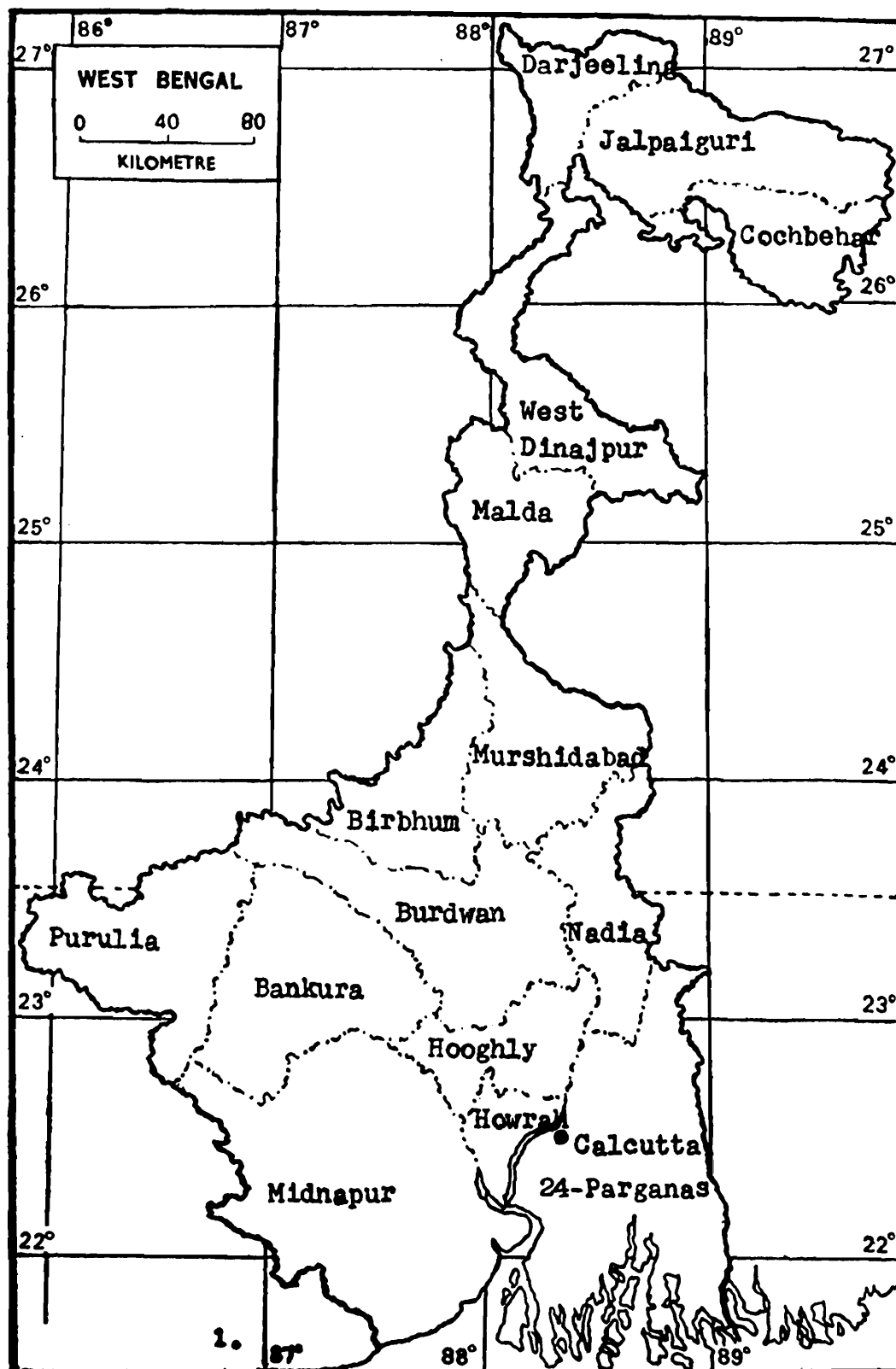
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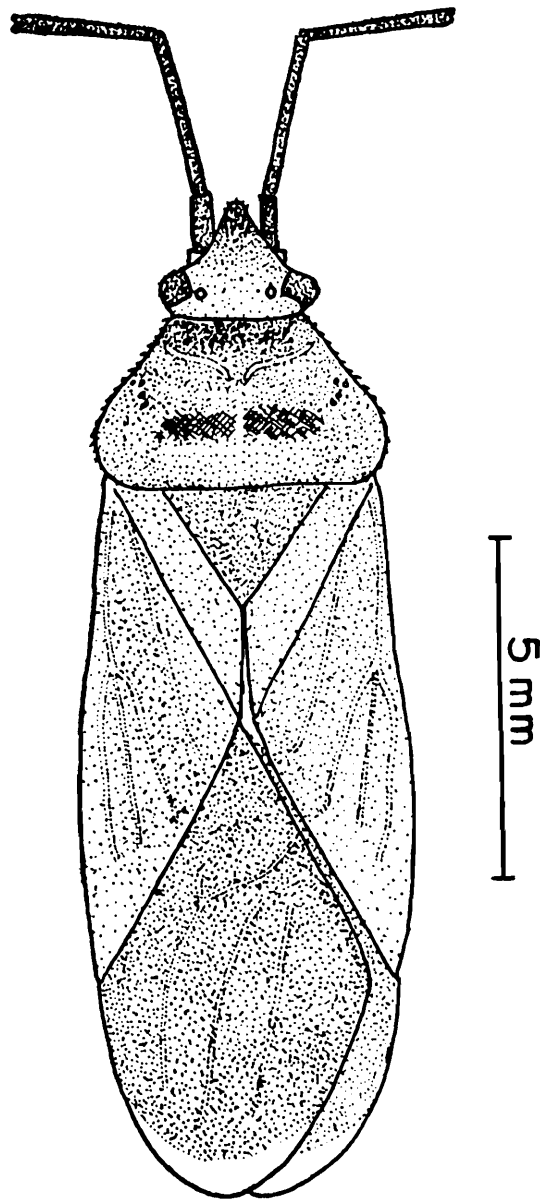
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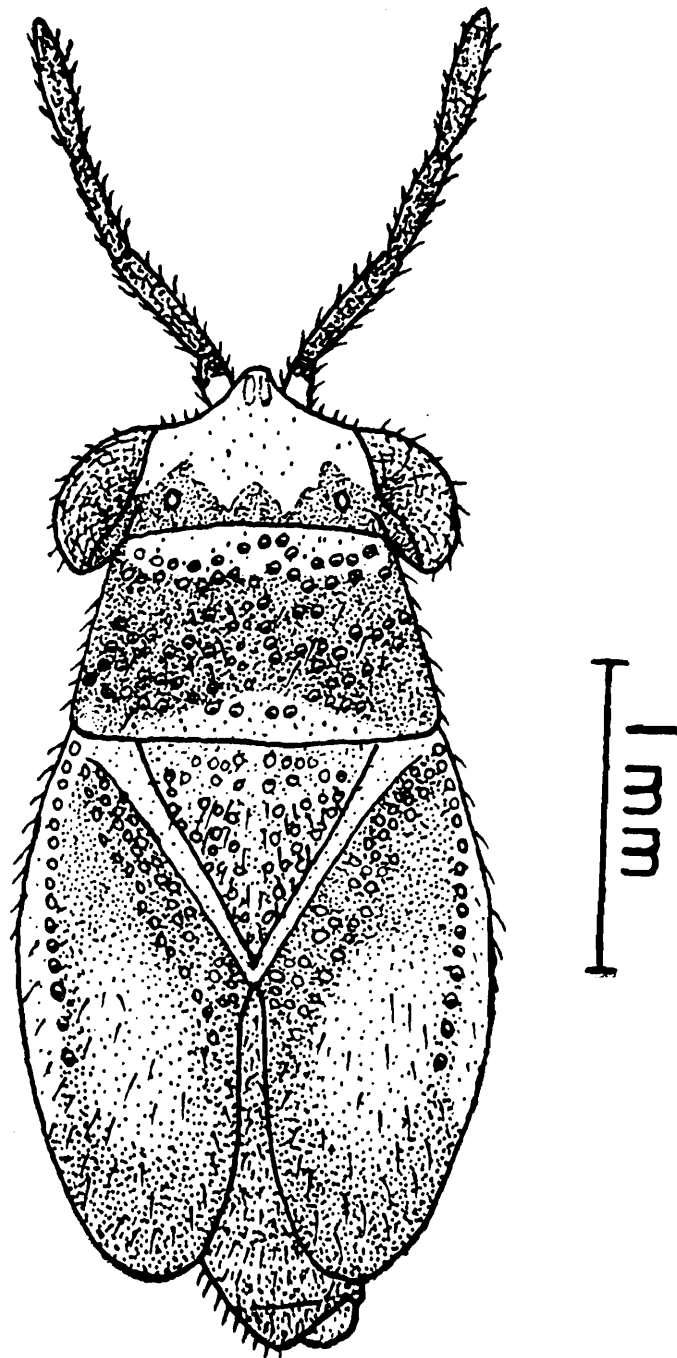
FIGURES



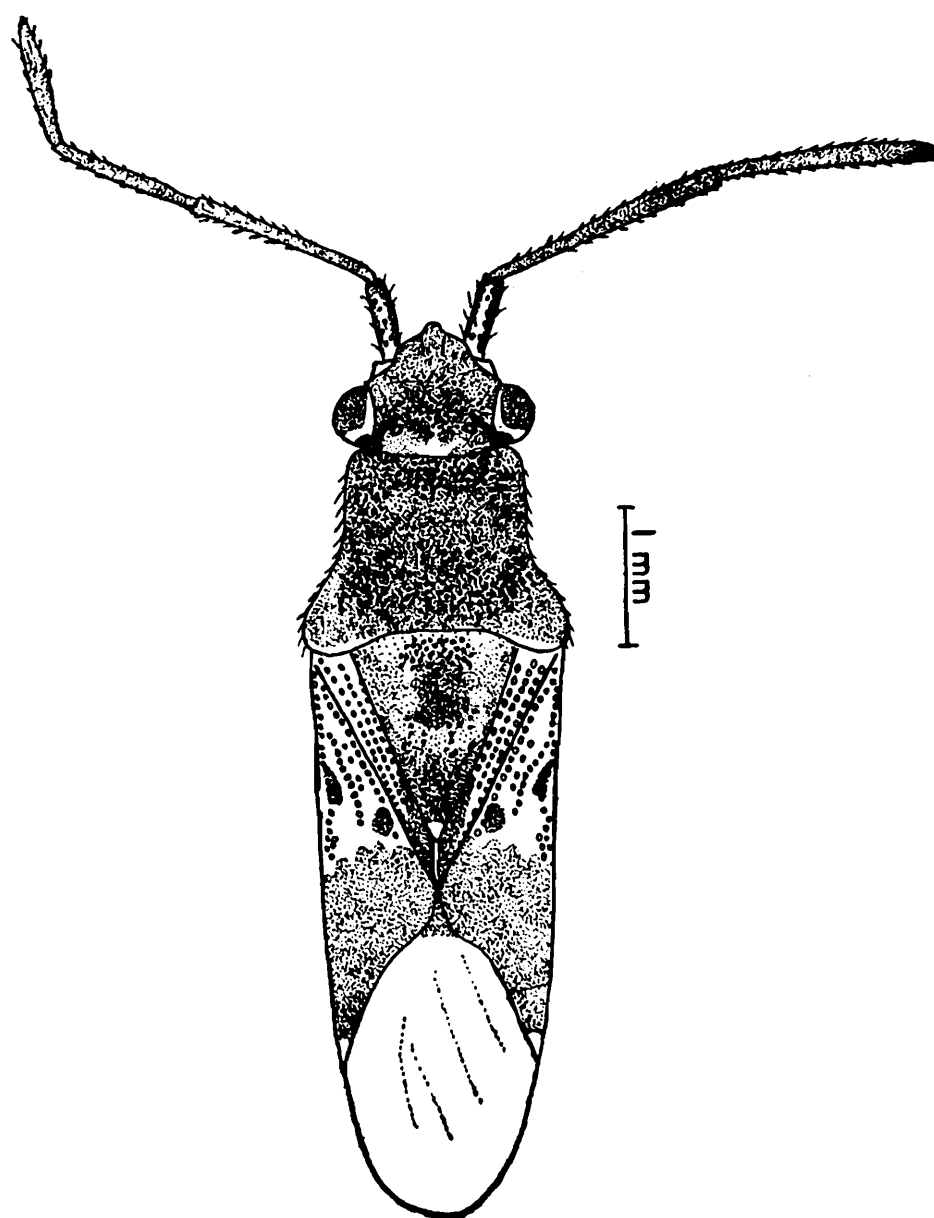
Text-fig. 1—Districts of West Bengal : the area of study of lygaeid fauna.



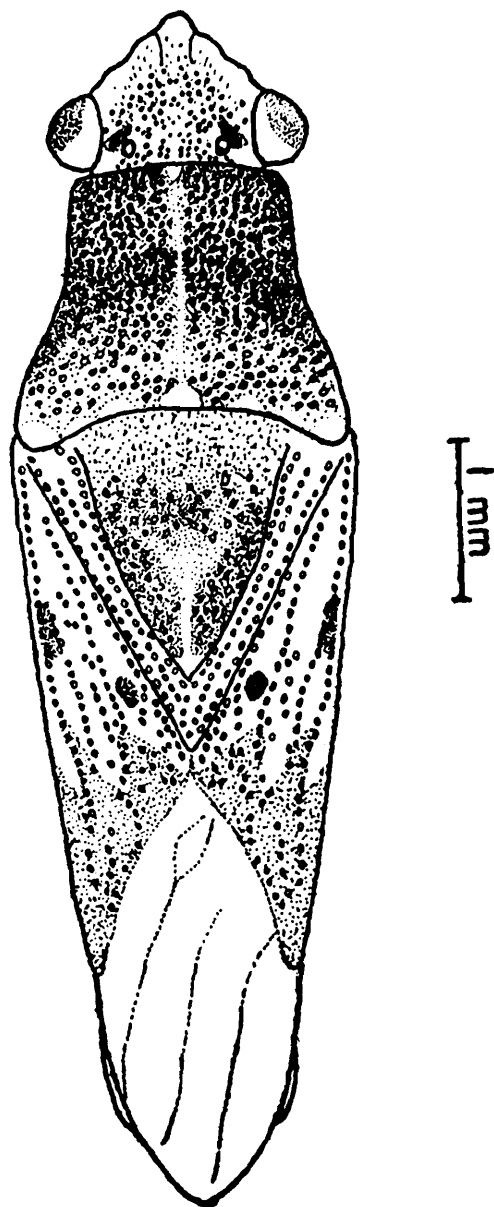
Text-fig. 2—Dorsal view of *Pyrrhobaphus leucurus*
Fabricius, legs omitted.



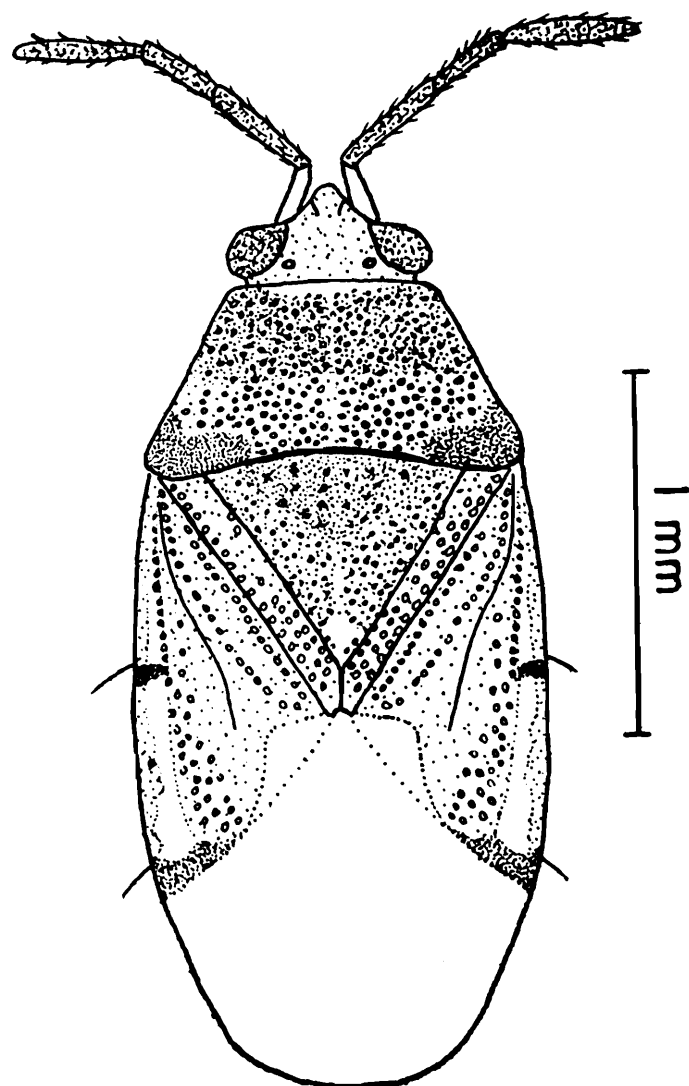
Text-fig. 3—Dorsal view of *Geocoris ornatus* Fieber, legs omitted.



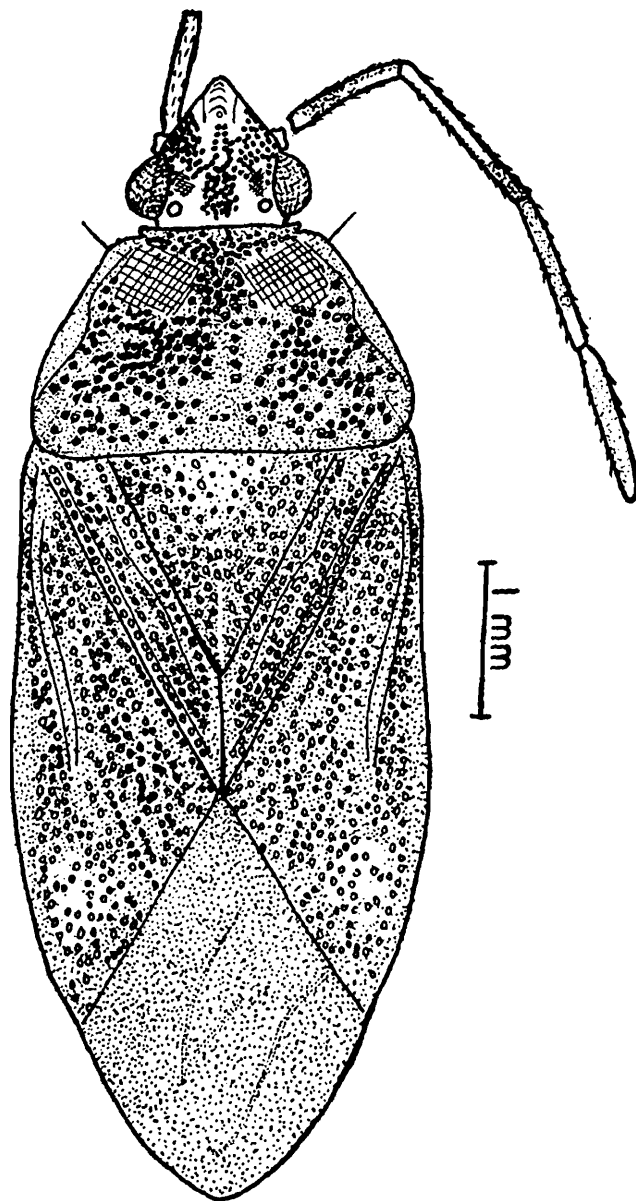
Text-fig. 4—Dorsal view of *Dinomachus rachinus* Distant
(black variety), legs omitted,



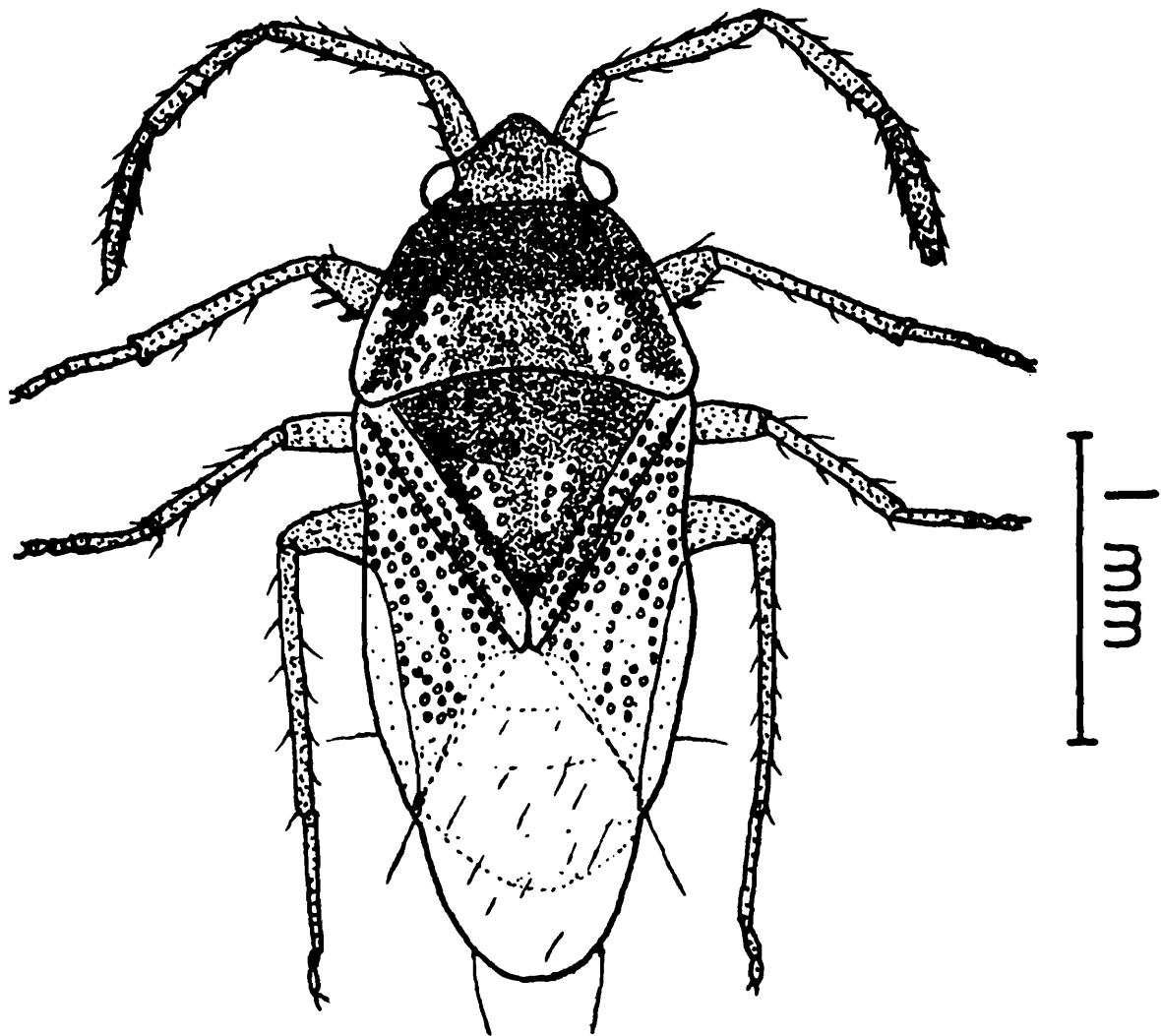
Text-fig. 5—Dorsal view of *Dinomachus bengalensis* sp.n.,
legs and antennae omitted.



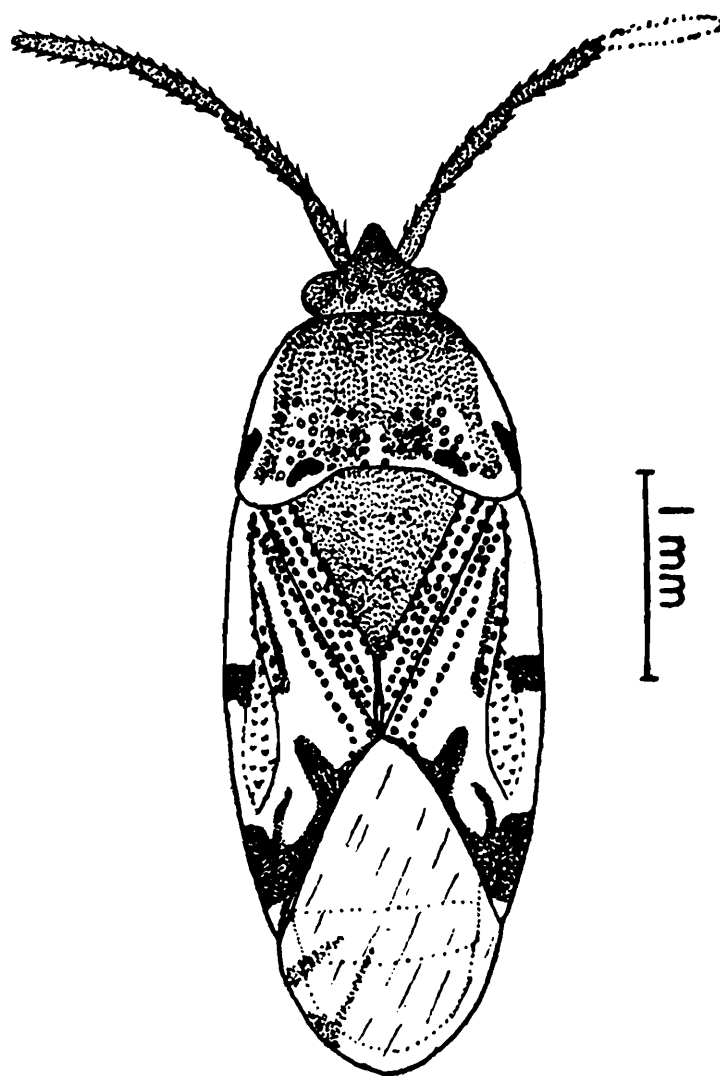
Text-fig. 6—Dorsal view of *Botocudo punctatus* sp.n.,
legs omitted,



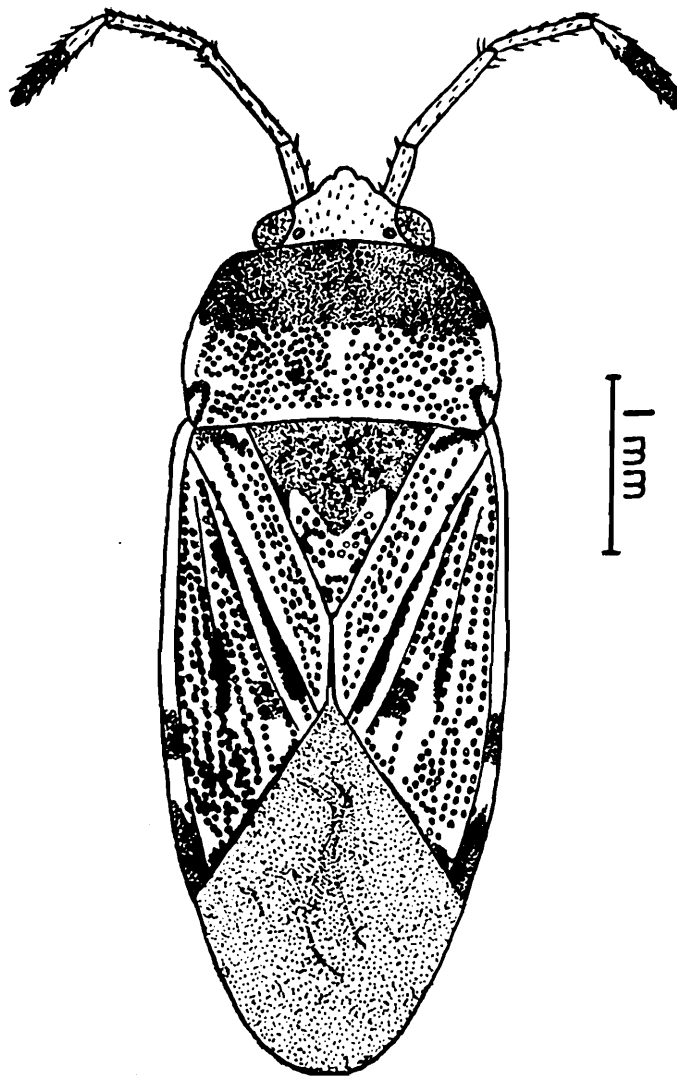
Text-fig. 7—Dorsal view of *Neolethaeus indicus* sp.n., legs omitted ;
II, III and IV segments of left antenna mutilated.



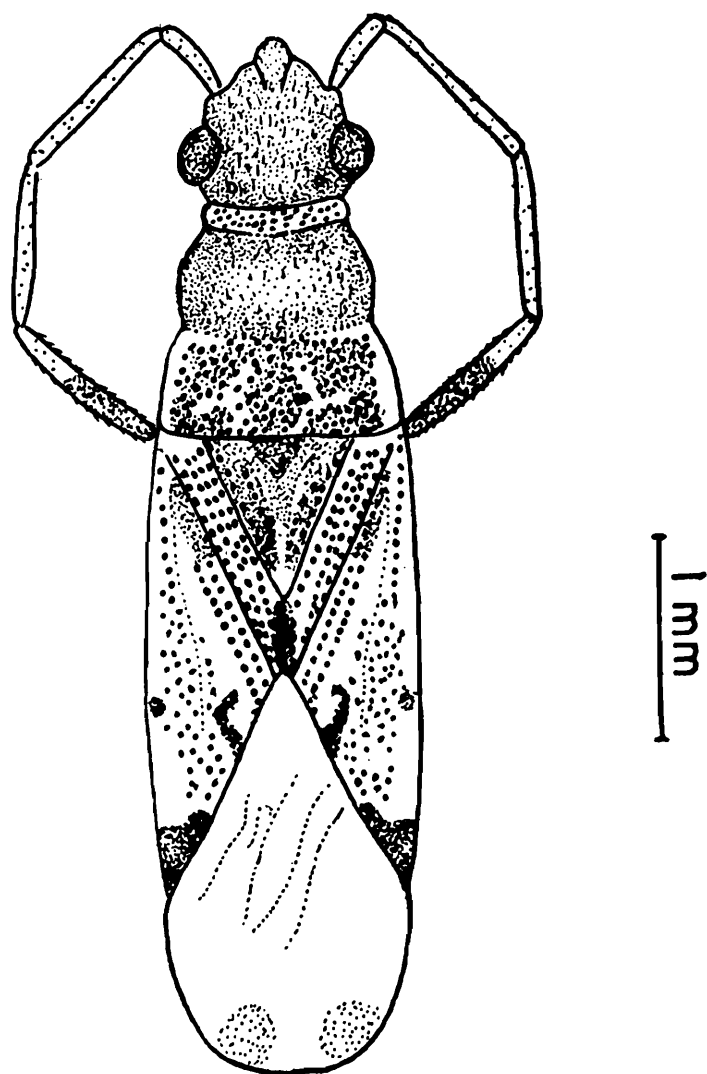
Text-fig. 8— Dorsal view of *Thebanus bengalensis* sp.n.



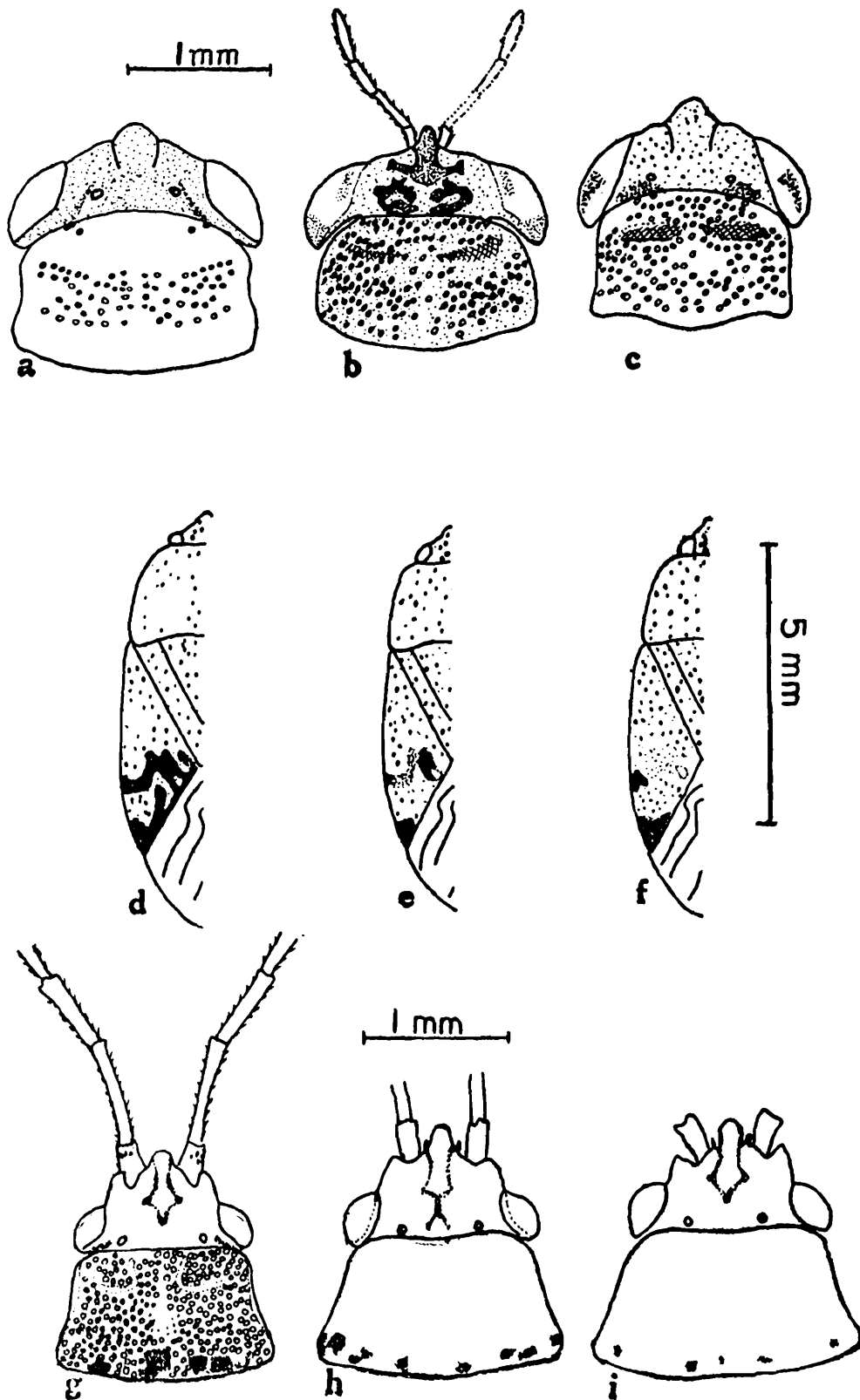
**Text-fig. 9—Dorsal view of *Scolopostethus bengalensis* sp. n.,
legs omitted,**



Text-fig. 10—Dorsal view of *Elasmolomus paralineosus* sp.n.,
legs omitted.



Text-fig. 11—Dorsal view of *Paraeucosmatus brachylabius* sp.n.,
legs omitted.



Text-figs. 12 a-i—Dorsal views of some lygaeids showing structural and colour variations.

- (a-c)—Interspecific variation of head and pronotal features of *G. pseudolituratus*, *G. pulvisculatus*, and *G. ochropterus* respectively.
- (d-f)—Interspecific variation in corial markings of *Rh. ornatulus*
- (g-i)—Interspecific variation of the markings at the pronotal base of *Meschia quadrimaculata*.