

Fauna of India



DIPTERA (ASILIDAE)

PART - I

A.N.T. JOSEPH

P. PARUI

Asilidae (robberflies) is one of the largest families of Brachycera, Diptera. Consequent to their predaceous nature they help to maintain the natural balance of insect population and have, therefore, considerable potential in biological control. Over 5000 species of robberflies are known from all over the world of which over 475 species are known from India and adjacent countries. In spite of their abundance not much work has been done because of the difficulty of their collection due to their extreme agility. In this part, out of total eight tribes, five tribes, Leptogasterini, Laphriini, Atomosini, Stichopogonini and Asilini, have been dealt with.

THE FAUNA OF INDIA
and
THE ADJACENT COUNTRIES

DIPTERA (ASILIDAE)
(PART- I)

**General Introduction and Tribes Leptogasterini,
Laphriini, Atomosini, Stichopogonini and Ommatini**

A.N.T. JOSEPH
P. PARUI

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FOREWORD

The family Asilidae, or 'robber flies' as they are commonly called, are an economic group of dipteran insects that controls the natural balance of pest-insect population, being predacious. The female larvae living in meadows are more powerful predators than the adults: The Asilidae is one of the largest families of Diptera which includes four subfamilies and eight tribes.

The present volume under *Fauna of India* on Asilidae -Part -I, by Dr. A.N.T. Joseph and Shri P. Parui, deals with five tribes comprising 16 genera and 162 species. It is the result of exhaustive surveys and research work of the authors. Their dedicated efforts can be realised from the fact that they have added nearly 247 species under this family, making a total of 475 known species from the Indian region. The remaining three tribes will be covered in the subsequent part.

This is the eighth fauna volume on Diptera which is appearing long after the one on Family Muscidae, published in 1965. It is hoped that the present volume will be useful to the professional taxonomists as well as the beginners.

Calcutta
March ,1998

J.R.B. Alfred
Director
Zoological Survey of India

AUTHORS' PREFACE

In spite of their abundance and striking predaceous habit, it is surprising that the study of robberflies from India and adjacent countries has not received much attention till recently. It may be due to the difficulty in collection of these flies because of their extreme agility. It was Rattan Lal (1960) who first gave a list of Asilidae from India. Subsequently, Hull (1962) in his monumental work 'Robber flies of the World' including those from India. Later on Oldroyd (1975) gave a complete list of asilids from the Oriental Region in 'A Catalog of Diptera of the Oriental Region, Volume II'. In 1990 Joseph and Parui gave an up-to-date list of Asilidae from India. The present work is the first comprehensive study of robberflies from India and adjacent countries. Due to some unavoidable reasons, it has not been possible to procure the specimens of a few species, and in these cases the original descriptions are quoted.

We are indebted to Prof. A. G. Scarbrough, Department of Biological Sciences, Towson University, Towson, U.S.A., for critically going through a major part of the manuscript and for offering valuable suggestions. Our heartfelt thanks are due to Dr. A.K. Ghosh, the then Director, and Dr. S.K. Bhattacharyya, the then Additional Director of the Zoological Survey of India, Calcutta, for their constant encouragement and help. To complete the work of this nature it is but natural that we received the help of many fellow workers and colleagues. Special attention may be made of the fellow workers; Prof. Robert Lavigne, University of Wyoming, Wyoming, U.S.A., and Dr. J.G.H. Londt, Assistant Director, Natal Museum, South Africa, Dr. K.G.V. Smith and Dr. J.E. Chainey of the Natural History Museum, London, readily gave on loan the types of a few species described here. Thanks are also due to our colleagues Dr. M. Datta and Mrs. M. Mukherjee for the kind co-operation extended to us during our work in the Diptera Section of the Zoological Survey of India, Calcutta, and to Miss P. Premila, Marine Biological Station, Zoological Survey of India, Madras, for typing the first and the final manuscripts of this publication, and to Mr. C. Thangavelu of the same station for tracing and inking the text-figures given in this volume.

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CONTENTS

<i>FORWARD</i>	iii
<i>AUTHOR'S PREFACE</i>	v
INTRODUCTION	1
HISTORICAL REVIEW	1
ECOLOGY	3
INTERRELATIONSHIPS	5
DISTRIBUTION	5
METHODS OF COLLECTION AND PRESERVATION	5
MORPHOLOGICAL CHARACTERS OF TAXONOMIC IMPORTANCE	5
Family ASILIDAE	9
Key to SUBFAMILIES	9
Key to TRIBES	10
Subfamily LEPTOGASTERINAE	15
Tribe-LEPTOGASTERINI	15
Key to genera of Leptogasterini	15
Genus 1. <i>Ammophilomima</i> Enderlein	15
1. <i>A. rufescens</i> Frey	16
Genus 2. <i>Euscelidia</i> Westwood	17
Key to species of <i>Euscelidia</i> Westwood	17
2. <i>E. marion</i> (Walker)	18
3. <i>E. simplex</i> (Bigot)	18
Genus 3. <i>Leptogaster</i> Meigen	19
Key to species of <i>Leptogaster</i> Meigen	19
4. <i>L. albimana</i> Walker	20
5. <i>L. basilaris</i> Coquillett	21
6. <i>L. cheriani</i> Bromley	21
7. <i>L. ophionea</i> Frey	23

Genus 4. <i>Lobus</i> Martin	23
Key to species of <i>Lobus</i> Martin	24
8. <i>L. bandipurensis</i> Joseph & Parui	25
9. <i>L. evenhuisi</i> Joseph & Parui	26
10. <i>L. himalayae</i> Martin	27
11. <i>L. jairami</i> Joseph & Parui	28
12. <i>L. keralae</i> Martin	29
13. <i>L. martini</i> Joseph & Parui	30
14. <i>L. pandai</i> Joseph & Parui	32
Subfamily LAPHRIINAE	33
Key to tribes of <i>Laphriinae</i>	33
Tribe LAPHRIINI	34
Key to genera of <i>Laphriini</i>	34
Genus 5. <i>Andrenosoma</i> Rondani	35
15. <i>A. choprai</i> Bromley	36
Genus 6. <i>Cormansis</i> Walker	37
16. <i>C. halictides</i> Walker	38
Genus 7. <i>Hoplistomerus</i> Macquart	38
<i>Hoplistomerus</i> sp.	39
Genus 8. <i>Hyperechia</i> Schiner	40
17. <i>H. xylocopiformis</i> (Walker)	40
Genus 9. <i>Laphria</i> Meigen	41
Key to species of <i>Laphria</i> Meigen	42
18. <i>L. alternans</i> Wiedemann	44
19. <i>L. assamensis</i> Joseph and Parui	45
20. <i>L. chrysonota</i> Hermann	47
21. <i>L. claripennis</i> Bigot	47
22. <i>L. dimidiata</i> Macquart	48
23. <i>L. flava</i> (Linne)	49

24.	<i>L. frommeri</i> Joseph & Parui	51
25.	<i>L. furva</i> van der Wulp	52
26.	<i>L. fuscata</i> Joseph & Parui	53
27.	<i>L. gilvoides</i> van der Wulp	54
28.	<i>L. indica</i> Joseph & Parui	55
29.	<i>L. keralaensis</i> Joseph & Parui	56
30.	<i>L. luteopilosa</i> Joseph & Parui	58
31.	<i>L. nathani</i> Joseph & Parui	59
32.	<i>L. nigrohirsuta</i> Lichtwart	61
33.	<i>L. orientalis</i> Joseph & Parui	62
34.	<i>L. semifulva</i> Bigot	63
35.	<i>L. valparaiensis</i> Joseph & Parui	64
Genus 10. <i>Laphystia</i> Loew		65
Key to species of <i>Laphystia</i> Loew		66
36.	<i>L. indica</i> Joseph & Parui	66
37.	<i>L. stigmatalis</i> Bigot	68
Genus 11. <i>Laxenecera</i> Macquart		68
Key to species of <i>Laxenecera</i> Macquart		69
38.	<i>L. albibarbis</i> Macquart	70
39.	<i>L. bengalensis</i> (Wiedemann)	71
40.	<i>L. flavibarbis</i> Macquart	72
41.	<i>L. sexfasciata</i> (Walker)	73
Genus 12. <i>Maira</i> Schiner		74
Key to species of <i>Maira</i> Schiner		75
42.	<i>M. abscissa</i> (Walker)	75
43.	<i>M. aurifacies</i> (Macquart)	76
44.	<i>M. bicolor</i> Joseph & Parui	77
45.	<i>M. compta</i> Walker	78
46.	<i>M. delfinadoi</i> Joseph & Parui	79

47.	<i>M. gloriosa</i> Walker	81
48.	<i>M. indiana</i> Joseph & Parui	82
49.	<i>M. longirostrata</i> Bromley	84
50.	<i>M. paria</i> Bigot	85
51.	<i>M. pseudoindiana</i> Joseph & Parui	85
Genus 13. <i>Nusa</i> Walker		86
Key to species of <i>Nusa</i> Walker		87
52.	<i>N. aequalis</i> Walker	89
53.	<i>N. albibasis</i> Ricardo	90
54.	<i>N. andhraensis</i> Joseph & Parui	91
55.	<i>N. balraji</i> Joseph & Parui	93
56.	<i>N. bengalensis</i> Joseph & Parui	95
57.	<i>N. bhargavai</i> Joseph & Parui	96
58.	<i>N. elva</i> (Walker)	98
59.	<i>N. formio</i> Walker	99
60.	<i>N. geniculata</i> Joseph & Parui	101
61.	<i>N. ghorpadei</i> Joseph & Parui	102
62.	<i>N. indica</i> Joseph & Parui	104
63.	<i>N. karikalensis</i> Joseph & Parui	105
64.	<i>N. mukherjeei</i> Joseph & Parui	106
65.	<i>N. pseudoalbibasis</i> Joseph & Parui	108
66.	<i>N. rajasthanensis</i> Joseph & Parui	109
67.	<i>N. sahai</i> Joseph & Parui	110
68.	<i>N. setosa</i> Joseph & Parui	112
69.	<i>N. shevaroyensis</i> Joseph & Parui	114
70.	<i>N. sirkari</i> Joseph & Parui	115
71.	<i>N. yerburyi</i> Ricardo	116

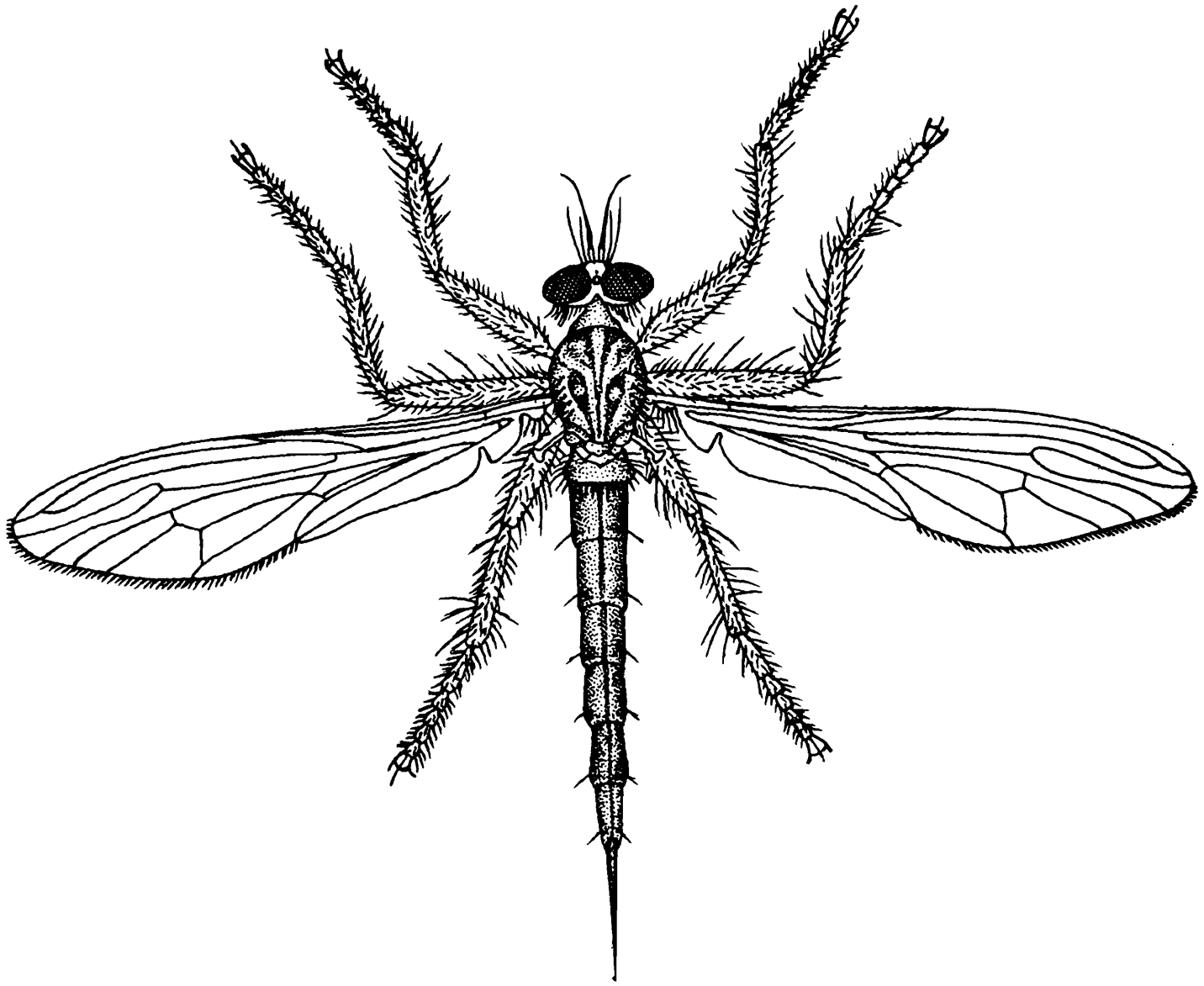
Genus 14. <i>Orthogonis</i> Hermann	117
72. <i>O. andamanensis</i> Joseph & Parui	118
Genus 15. <i>Pogonosoma</i> Rondani	119
73. <i>P. cedrusa</i> Ricardo	120
Genus 16. <i>Pseudonusa</i> Joseph & Parui	121
74. <i>P. andhraensis</i> Joseph & Parui	122
Tribe ATOMOSINI	124
Key to genera of <i>Atomosini</i>	124
Genus 17. <i>Anoplothyrea</i> de Meijere	124
75. <i>A. indiana</i> Joseph & Parui	125
Genus 18. <i>Loewinella</i> Hermann	126
76. <i>L. lehri</i> Londt	127
Genus 19. <i>Opeatocerus</i> Hermann	128
77. <i>O. purpurata</i> (Westwood)	128
Subfamily DASYPOGONINAE	130
Key to tribes of <i>Dasytrogoninae</i>	130
Tribe STICHOPOGONINI	130
Key to genera of <i>Stichopogonini</i>	130
Genus 20. <i>Clinopogon</i> Bezzi	131
Key to species of <i>Clinopogon</i> Bezzi	131
78. <i>C. nicobarensis</i> (Schiner)	131
79. <i>C. odontoferus</i> Joseph & Parui	132
Genus 21. <i>Stichopogon</i> Loew	133
Key to species of <i>Stichopogon</i> Loew	134
80. <i>S. albimystax</i> Joseph & Parui	135
81. <i>S. basiti</i> Joseph & Parui	136
82. <i>S. bengalensis</i> Joseph & Parui	138
83. <i>S. biharilali</i> Joseph & Parui	139
84. <i>S. elurensis</i> Joseph & Parui	141

85.	<i>S. gymnurus</i> Oldroyd	142
86.	<i>S. inaequalis</i> Loew	143
87.	<i>S. indicus</i> Joseph & Parui	145
88.	<i>S. mahatoi</i> Joseph & Parui	147
89.	<i>S. menoni</i> Joseph & Parui	148
90.	<i>S. meridionalis</i> Oldroyd	150
91.	<i>S. meridionalis</i> Oldroyd	151
92.	<i>S. oldroydi</i> Joseph & Parui	153
93.	<i>S. ramakrishnai</i> Joseph & Parui	155
94.	<i>S. tomentosus</i> Oldroyd	156
	Subfamily ASILINAE	158
	Key to tribes of <i>Asilinae</i>	158
	Tribe OMMATINI	158
	Key to genera of <i>Ommatini</i>	158
	Genus 22. <i>Cophinopoda</i> Hull	159
	95. <i>C. chinensis</i> (Fabricius)	160
	Genus 23. <i>Merodontina</i> Enderlein	161
	Key to species of <i>Merodontina</i> Enderlein	162
	96. <i>M. carmichaeli</i> (Bromley)	162
	97. <i>M. indiana</i> Joseph & Parui	164
	98. <i>M. robusta</i> Ramachandra Rao & Parui	165
	99. <i>M. sikkimensis</i> Enderlein	166
	100. <i>M. spinulosa</i> Joseph & Parui	168
	Genus 24. <i>Michotamia</i> Macquart	169
	Key to species of <i>Michotamia</i> Macquart	170
	101. <i>M. analis</i> Macquart	171
	102. <i>M. annulata</i> Bigot	171
	103. <i>M. assamensis</i> Joseph & Parui	172
	104. <i>M. aurata</i> (Fabricius)	173

105.	<i>M. compedita</i> (Wiedemann)	175
106.	<i>M. fuscifemorata</i> Joseph & Parui	175
107.	<i>M. indiana</i> Joseph & Parui	177
108.	<i>M. macquarti</i> Joseph & Parui	178
109.	<i>M. pruthii</i> Joseph & Parui	179
Genus 25. <i>Ommatius</i> Wiedemann		181
Key to species of <i>Ommatius</i> Wiedemann		181
110.	<i>O. andamanensis</i> Joseph & Parui	186
111.	<i>O. arunachalensis</i> Joseph & Parui	187
112.	<i>O. ater</i> Bromley	188
113.	<i>O. auratus</i> Wiedemann	189
114.	<i>O. bengalensis</i> Joseph & Parui	190
115.	<i>O. biharensis</i> Joseph & Parui	191
116.	<i>O. conopsoides</i> Wiedemann	192
117.	<i>O. dravidicus</i> Joseph & Parui	193
118.	<i>O. dubius</i> Joseph & Parui	195
119.	<i>O. femorata</i> (Bigot)	196
120.	<i>O. frauenfeldi</i> Schiner	196
121.	<i>O. fuscus</i> Joseph & Parui	197
122.	<i>O. genitalis</i> Joseph & Parui	198
123.	<i>O. gopalpurensis</i> Joseph & Parui	200
124.	<i>O. hradskyi</i> Joseph & Parui	201
125.	<i>O. hulli</i> Joseph & Parui	202
126.	<i>O. indicus</i> Joseph & Parui	204
127.	<i>O. jabalpurensis</i> Joseph & Parui	205
128.	<i>O. jairajpurii</i> Joseph & Parui	207
129.	<i>O. jonesi</i> Joseph & Parui	208
130.	<i>O. kempi</i> Joseph & Parui	209

131.	<i>O. kodaikanalensis</i> Joseph & Parui	211
132.	<i>O. leucopogon</i> Wiedemann	212
133.	<i>O. lividipes</i> Bigot	213
134.	<i>O. malabaricus</i> Joseph & Parui	214
135.	<i>O. meghalayensis</i> Joseph & Parui	215
136.	<i>O. minor</i> Doleschall	216
137.	<i>O. mitrai</i> Joseph & Parui	218
138.	<i>O. nanus</i> Walker	219
139.	<i>O. nicobarensis</i> Joseph & Parui	220
140.	<i>O. nilgiriensis</i> Joseph & Parui	222
141.	<i>O. nigra</i> (Schiner)	223
142.*	<i>O. pashokensis</i> Joseph & Parui	223
143.	<i>O. peregrinus</i> (van der Wulp)	225
144.	<i>O. pillaii</i> Joseph & Parui	226
145.	<i>O. ponti</i> Joseph & Parui	227
146.	<i>O. pseudodravidicus</i> Joseph & Parui	229
147.	<i>O. pseudojabalpurensis</i> Joseph & Parui	230
148.	<i>O. pseudokempi</i> Joseph & Parui	231
149.	<i>O. rajani</i> Joseph & Parui	233
150.	<i>O. ramakrishnai</i> Joseph & Parui	234
151.	<i>O. shishodiai</i> Joseph & Parui	235
152.	<i>O. singhi</i> Joseph & Parui	237
153.	<i>O. singlensis</i> Joseph & Parui	238
154.	<i>O. spathulatus</i> Doleschall	239
155.	<i>O. subgracilis</i> Bromley	240
156.	<i>O. tamenensis</i> Joseph & Parui	241

157.	<i>O. tandoni</i> Joseph & Parui	242
158.	<i>O. tenellus</i> van der Wulp	243
159.	<i>O. truncatus</i> Joseph & Parui	245
160.	<i>O. tuberculatus</i> Joseph & Parui	246
Genus 26. <i>Pseudomerodontina</i> Joseph & Parui		248
Key to species of <i>Pseudomerodontina</i> Joseph & Parui		248
161.	<i>P. indica</i> Joseph & Parui	248
162.	<i>P. jayaraji</i> Joseph & Parui	250
REFERENCES		252
General		252
Leptogasterini, Laphriini, Atomosini, Stichopogonini and Ommatini		267
ABBREVIATIONS		272
INDEX		273



Microstylum bhattacharyai Joseph & Parui

INTRODUCTION

Asilidae (robberflies) is one of the biggest in terms of species and most abundant families of Brachycera, Diptera. Their adults and larvae are predaceous feeding on other insects, especially on phytophagous insects, and thus help to maintain the natural balance of insect population. They, therefore, have considerable potential in biological control. The Asilidae are world wide in distribution and include well over 5000 described species of about 400 genera. Of these, 81 genera of about 850 species are known from the Oriental Region. Only 59 genera of over 475 species are known from India and adjacent countries.

The publication of 'A Catalog of Diptera of the Oriental Region' is a landmark in the study of Diptera in this region. In this, Oldroyd (1975) recorded 228 species from India and adjacent countries. Mainly through the efforts of Joseph and Parui for the last one decade their number has increased over 475 species.

This work deals with the Asilidae from India, Bangladesh, Burma (Myanmar), Nepal, Pakistan and Sri Lanka, which in subsequent pages are referred to as India and adjacent countries for brevity. Since specimens of a few species were not available for study, their descriptions are quoted from the original and are indicated in asterisk. Under the material examined the following abbreviations are used indicating the repositories of specimens.

- B.M.N.H. : British Museum (Natural History), London.
B.P.B.M. : B.P. Bishop Museum, Honolulu.
C.A.S. : California Academy of Sciences, San Francisco.
Ghorpade C. : Ghorpade Collection, Bangalore.
S.I. : Smithsonian Institution, Washington.
U.S.N.M. : United States National Museum, Washington.
Z.S.I. : Zoological Survey of India, Calcutta.

HISTORICAL REVIEW

Linnaeus (1758) in tenth edition of 'Systema naturae' erected *Asilus* with 11 species under the genus. Family status is credited to Leach (1819) basing *Asilus crabroniformis* Linnaeus as the type of the family. Macquart (1838) was the first to divide the family into Asilites, Dasypogonites and Laphrites. In 1847, Loew divided it into subfamilies : Dasypogoninae, Laphriinae and Asilinae. Later Schiner (1868) added Leptogasterinae. The system was followed by subsequent workers, notable among them were Hermann (1920), Efflataun (1934), Bromley (1934, 1935) and Martin (1957). Hardy (1934) divided the family into two subfamilies based on the number of palpal segments, viz., two segmented Dasypogoninae and one segmented Asilinae. Carrea (1949) followed Hardy's classification.

Within this century Hull (1962) studied the world genera and proposed the division of the family into five subfamilies : Asilinae, Dasypogoninae, Megapodinae, Laphriinae and Leptogasterinae. Hull's

system is often opposed because he attaches too much importance to the number of segments of the palpus. In 1968, Martin proposed elevating the Leptogastrinae to family rank but most of the authorities failed to accept this ranking. Papavero (1973) gave a detailed history of classification retaining the Asilidae and the Leptogastridae as separate families. He divided the family Asilidae into eight subfamilies : Asilinae, Apocleinae, Dasypogoninae, Laphriinae, Laphystiinae, Ommatiinae, Stenopogoninae and Trigonimiminae. Unfortunately this scheme attaches too much significance to the tibial spur. In 1988 Artigas and Papavero divided the family into ten subfamilies, Asilinae, Apocleinae, Dasypogoninae, Laphriinae, Laphystiinae, Leptogastrinae, Ommatiinae, Stenopogoninae, Stichopogoninae and Trigonimiminae, which is a modification of the earlier classification of Papavero (1973), including the Leptogastrinae within the Asilidae and raising the Stichopogonini into subfamily status. In concluding remarks they cautioned that 'the rank given to these groups is of course purely arbitrary, mostly designed to facilitate recognition, as we are still very far from understanding the phylogeny of the Asilidae'. There is no uniform opinion on the division of family into subfamilies, and in this work we follow the classification of Oldroyd (1974) for the sake of convenience. Oldroyd followed the earlier classification of Williston (1908), Hermann (1920) and others. It is based on the characters of palpus, antenna and venation, and includes four subfamilies : Asilinae, Dasypogoninae, Laphriinae and Leptogasterinae; the subfamily Megapodinae of Hull (1962) is included in the Dasypogoninae.

Often students of Asilidae divide into tribes without bothering to classify them into subfamilies. One of the main reasons for it is that the tribe Laphystini (Hull, 1962) is intermediate between Laphriinae and Dasypogoninae. The opinion of workers is quite variable with regard to the division of family into tribes. Among recent workers, Hull (1962) divided it into 16 tribes. Ctenonini, Enigmomorphini, Ommatini, Asilini, Thereutrini, Laphystini, Atomosini, Laphriini, Andrenosomini, Chrysopogonini, Stichopogonini, Phellini, Damalini, Dioctrini, Stenopogonini and Dasypogonini, whereas Oldroyd (1963, 1974) recognised only 8 tribes as valid : Leptogasterini, Saropogonini, Stichopogonini, Xenomyzini (Damalini), Atomosini, Laphriini, Ommatini and Asilini. In this work we follow Oldroyd as all genera fit in these 8 tribes. It can also avoid addition of new taxa, which are difficult to define precisely. The arrangement of tribes under the various subfamilies followed in this work is as follows :

Leptogasterinae, Leptogasterini; Dasypogoninae, Saropogonini, Stichopogonini, Damalini (Xenomyzini); Laphriinae, Atomosini, Laphriini; Asilinae, Ommatini, Asilini.

Of the eight tribes this part deals with the tribes Leptogasterini, Laphriini, Atomosini, Stichopogonini and Ommatini.

The notable students of asilids include Macquart (1826-49), Walker (1837-71), Loew (1840-81), Rondani (1845-75), Bigot (1852-92), Schiner (1854-68), Osten Sacken (1858-92), Lynch (1879-83), Roeder (1881-90), Williston (1884-1908), Becker (1887-1926), Strobl (1893-1909) and Villeneuve (1904-33). Outstanding contributions were made by Hermann (1905-26) on the Oriental, Hardy (1917-51) on the Australian, Engel (1925-30) on the Palaearctic, Eflatoun (1927-37) on the Ethiopian and Hobby (1931-48) on the Nearctic Asilidae. Hull (1962) monographed the world genera along with the distributional records of all the known species. Wiedemann (1817-30), Doleschall (1856-58), van der Wulp (1872), Ricardo (1900-27), de Meijere (1907-24), Hermann (1914-17), Frey (1911-37), Bromley (1935, 38) and Oldroyd (1938-75) contributed most to the Oriental fauna.

ECOLOGY

The majority of species of Asilidae occur in arid and semiarid regions. Even in desert and semi desert regions, dry stream beds attract considerable numbers, because the vegetation is mostly confined to along streams, where the insect activity is maximum. The asilids depend mainly on insects for food, so that the whole robberfly population of a region may be largely confined to such places. They are generally observed along the border of forests, where the grassland begins, but rarely deep inside forests. In temperate regions a few species may occur in swampy areas and inside forests.

Some genera like *Promachus*, *Laxenecera*, etc. occur in dry areas; *Ommatius*, *Xenomysza*, etc. in humid areas; *Stichopogon* inhabits dried stream and river beds while *Philodicus* is usually found on dry sandy areas including sea beaches. Dense populations of robberflies are seen in a few instances, and the number of individuals collected per hour is as follows : in Duga, Rangpo, Sikkim, *Neomochtherus gnavus* (Wulp) is widely distributed and we collected 26 individuals from wild grass in September 1978; in Andhra Pradesh, *Promachus yerburiensis* Ricardo enjoys wide distribution, and a maximum density was observed in Arsnath Forest, Mancherial Range, Adilabad District, with 24 individuals being collected in February 1985; in Rajasthan, *Laxenecera flavibarbis* Macquart occur in *bajra* and *jowar* cultivation, and from Choru, Sawai Madhopur District, as many as 33 individuals were collected in September 1986; and from South Point, Hut Bay, Little Andamans, 29 *Heligmoneura andamanensis* Joseph and Parui were collected from tall grass in January 1988. The occurrence of single population in a limited area is surprising. In December 1975, during the survey of Walayar in the boundary between Tamil Nadu and Kerala eucalyptus forest, a large population of *Clephydroneura brevipennis* Oldroyd was restricted to about 75 m, and we collected 151 examples in three days. But in an adjoining area with near similar habitat, this species was absent. Hull (1962) recorded similar isolated populations of *Asilus rubicundus* Bromley in a hilltop plot of field grass, beside a highway in the U.S.A. In three days, he collected 152 examples from half an acre, but a search of similar adjoining areas failed to locate the flies.

Foraging and prey capture : Asilids are extremely agile and dart after their prey, with the attack so sudden that the prey is surprised. The height from which the robberflies forage is quite variable. They may forage from either the vegetation, ground or both. Members of the genera *Promachus*, *Laxenecera*, etc. generally rest on grass or on herbs about 1 m above the ground level and dart 1-2 m to catch their prey. However, *Promachus yerburiensis* Ricardo rests more than 3 m above the ground level on shrubs in several parts of Andhra Pradesh. The members of the genus *Stichopogon*, containing some of the smallest members of the family, generally rest on dried stream or river beds and fly less than half a metre to catch prey. But *Philodicus jagannathi* Ramachandra Rao, a fairly large robberfly, found resting on Polavaram Beach in Vizianagaram District, is a fast flier and can easily fly 3 m or more at a stretch. Besides, it can take off immediately after touching the sand, like "hop step and jump"

Foraging of *Clephydroneura brevipennis* Oldroyd was studied in detail by the authors (1976) in the Walayar Forest. In the early hours of the day, they are sluggish and are rarely seen flying but as the day advances and with the rise in temperature, some individuals are seen in flight by about 10 A.M. Their peak period of activity is between 1-3 P.M. the most important factor affecting foraging is presumably temperature. They are generally seen resting on dry leaves, fallen twigs and dried stems of small herbs. They remain quiet for about half an hour at a time without any movement; they do not even clean their body as is commonly seen in other flies. It may be an adaptation to catch their prey stealthily. Their resting places so well match with their body colouration that it is often difficult to detect them unless they move.

Clephydroneura brevipennis feeds on a variety of small insects, especially damselflies, bugs and small butterflies. Generally, they catch prey which are on wings but occasionally, they may also catch them while at rest. When the prey is nearby they dart rather than fly and catch it firmly between their robust legs. The stout proboscis is immediately thrust into the thorax of the prey to suck the body fluid and the prey dies quickly. In one case, while feeding on *Eusarcoris* sp. (Heteroptera : Pentatomidae), it took about 40 minutes to suck the fluid from the body of the victim. The feeding time depends upon the size of the prey, varying from 15-45 minutes. During feeding, abdomen makes slow up and down movements and it gradually expands.

It is amazing to see the way robberflies predate on honeybees. We have observed *Laxenecera flavibarbis* Macquart and *L. albibarbis* Macquart feeding on *Apis* (*Megaspis*) *dorsata* Fabricius, and *Laxenecera flavibarbis* also on *Apis* (*Megaspis*) *florea* Fabricius. The capture and piercing of proboscis are so sudden that the prey does not struggle.

Between forage flights, the flies rest on a characteristic posture. Majority of the genera are seen resting at or above 45° C. By sitting on an elevated position, they can more readily observe and fly, and presumably it is easy to observe prey. But members of the genus *Stichopogon* and *Philodicus jagannathi* Ramachandra Rao rest on ground and turn suddenly to face the potential prey before foraging. It positions them to more readily take a direct flight. Asilids typically make several flights against their prey. It is not certain whether it is of an exploratory nature to ascertain the suitability of prey or whether these are unsuccessful attempts. Many workers reported that some species catch and release the insects, while others retain and feed on them. It may thus be assumed that the discriminatory power of all the species is not equal. The selection of prey depends upon its size also. Usually robberflies do not prey upon insects larger than their own size, it is more so in the case of larger flies whereas small flies prey upon proportionately larger insects.

The asilids immobilise their prey while in the air or at a feeding site. Most of the flies are seen immobilising them on the air, but in the genus *Michotamia* the prey is immobilised at the feeding site. All tarsi are used in positioning the prey, either in flight or at the feeding site. If the prey is large, it is manipulated during feeding. In case of smaller prey they are not generally manipulated. Apparently the digestive enzymes could easily move into smaller prey. Normally the prey is trapped by all tarsi either in air or at feeding site but in *Laxenecera flavibarbis* Macquart and *Michotamia aurata* (Fabricius), the fore pair are used for resting while the remaining are used in manipulating prey.

Cannibalism : We have observed it in *Promachus yerburiensis* Ricardo in several localities of Andhra Pradesh, particularly during the scarcity of prey.

Mating : It is described by a number of workers, including Melin (1923), Hull (1962), Lavigne (1963-84), Lavigne and Holland (1969), Dennis and Lavigne (1976), and Scarbrough and Sipes (1973). The male rides over the female facing the same direction or tail to tail position facing opposite directions. Mating usually takes place after feeding. Courtship or preliminary behaviour may be absent, simple or quite complex. In those species on which it occurs, the male may initiate the behaviour on a substrate with a perched female or in flight above a perched female. Mating generally takes place during the day, although it has been observed at night in some desert species (Lehr 1959-1964; Newkirk 1963). The life span of asilids is variable ranging from a week to six months. Oviposition occurs ten to eleven days after the emergence from pupae in some species (Lavigne *et al.*, 1978). The number of eggs varies from species to species and their size depends upon the size of the fly and the number of eggs laid at a time. The

larval and immature stages are passed in soil, decaying wood or beneath bark. Many larvae are predaceous on the immature stages of other insects, and some are omnivorous.

INTERRELATIONSHIPS

The Rhagionidae, Therevidae and Tabanidae and the lower members of the Asilidae have strikingly similar venation with marginal, posterior and anal cells open. Spines on the acanthophorites, similar to those of Asilidae, are also present in the females of Therevidae, Mydidae and Apioceridae. The Therevidae are close to the Asilidae in their bristle-like empodium and complete and fully fused prosternum.

Of the four subfamilies, Dasypogoninae includes the most generalised members of the family with two-segmented palpus and open marginal cell. So far no fossil Laphriinae is known and it appears that this subfamily is of more recent origin than others. In India and adjacent countries, the bulk of the robberflies belong to Asilinae and the least number to Leptogasterinae.

DISTRIBUTION

The Asilidae are distributed throughout the world. The zoogeographical picture of asilid fauna is far from complete because the Oriental fauna is inadequately known. Of about the known 400 genera, *Clephydroneura* Becker, *Laxenecera* Macquart, *Cyrtopogon* Loew, *Merodontina* Enderlein, *Pseudomerodontina* Joseph and Parui, *Neoholopogon* Joseph and Parui and *Pseudonusa* Joseph and Parui are so far recorded only from India and adjacent countries except one species of *Clephydroneura* Becker, *C. bengalensis* (Macquart), from Java, Sumatra and Philippines. The genera *Hoplophomerus* Becker, *Clephydroneura* Becker, *Trigonimima* Enderlein, *Oldroydia* Hull and *Anoplothyrea* de Meijere are so far known to occur only in the Oriental Region including India and adjacent countries. There is an intermingling of the Oriental and Palaearctic elements along the Himalaya. *Cophinopoda chinensis* (Fabricius), *Laphria dimidiata* Macquart and *L. flava* (Linnaeus) are confined to these two zoogeographical regions.

METHODS OF COLLECTION AND PRESERVATION

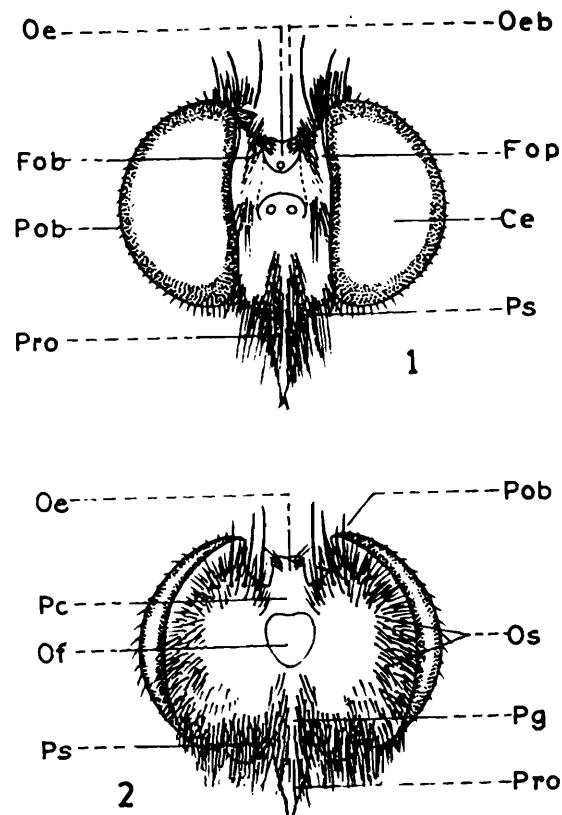
The Asilidae are very agile and swift on wings. A little practice is needed in netting the adults with an ordinary insect net. As far as possible they should be pinned soon after collection. The flies should be pinned through the scutum, a little towards one side. The usual care taken for dead and dried specimens of Diptera is needed for the Asilidae during collection, storage and study.

MORPHOLOGICAL CHARACTERS OF TAXONOMIC IMPORTANCE

Only those morphological terms which are used in this work are dealt here. The terminology used is after McAlpine (1981).

Head (Figs. 1,2,3) is dichoptic in both sexes. There is a well developed tubercle or gibbosity on the lower part of face, or all over it, which bears long, stout bristles, collectively called the mystax (Mx).

Between this and the antennae, the face often bears short to long setae or bristles. Posterior to the antennae is an ocellar triangle or ocellarium (Oe) which bears bristles or setae, ocellar bristles or ocellar setae (Oeb). Posteriorly in the middle of head there is an opening, occipital foramen (Of) through which



Figs. 1 & 2 : Head of *Astochia pseudoguptai* Joseph & Parui : 1. anterior view; 2, posterior view.

pass nerve cord, oesophagus, aorta and salivary ducts. The sclerite surrounding the occipital foramen is the postcranium (Pc), which includes the occiput above and postgena (Pg) below. The postcranium bears short setae called occipital setae (Os). The compound eyes (Ce) are conspicuous, posterior to which bear a row of bristles, postocular bristles (Pob). The frontal vitta is rarely distinct but the plate between it and the compound eye, fronto-orbital plate (Fop), is distinguishable. The fronto-orbital plate in the

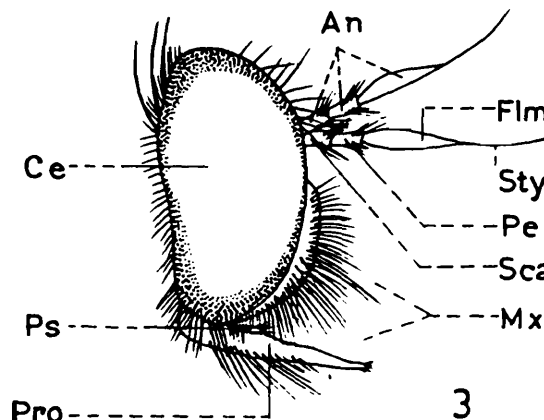


Fig. 3 : Head of *Astochia pseudoguptai* Joseph & Parui, lateral view.

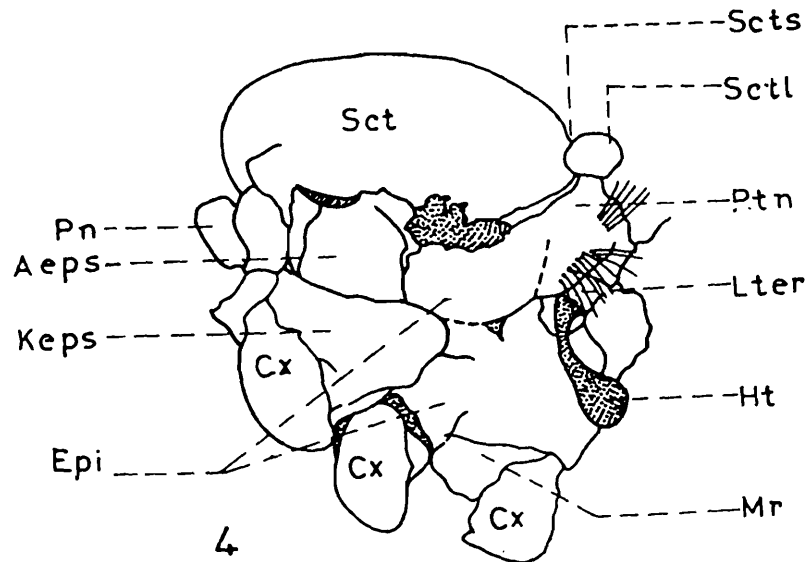


Fig. 4 : Lateral view of thorax (diagrammatic).

majority of asilids bears fronto-orbital bristles or setae (Fob). The antenna (An) is three segmented, with basal scape (Sca), middle pedicel (Pe) and terminal flagellum, which has varying number of segments

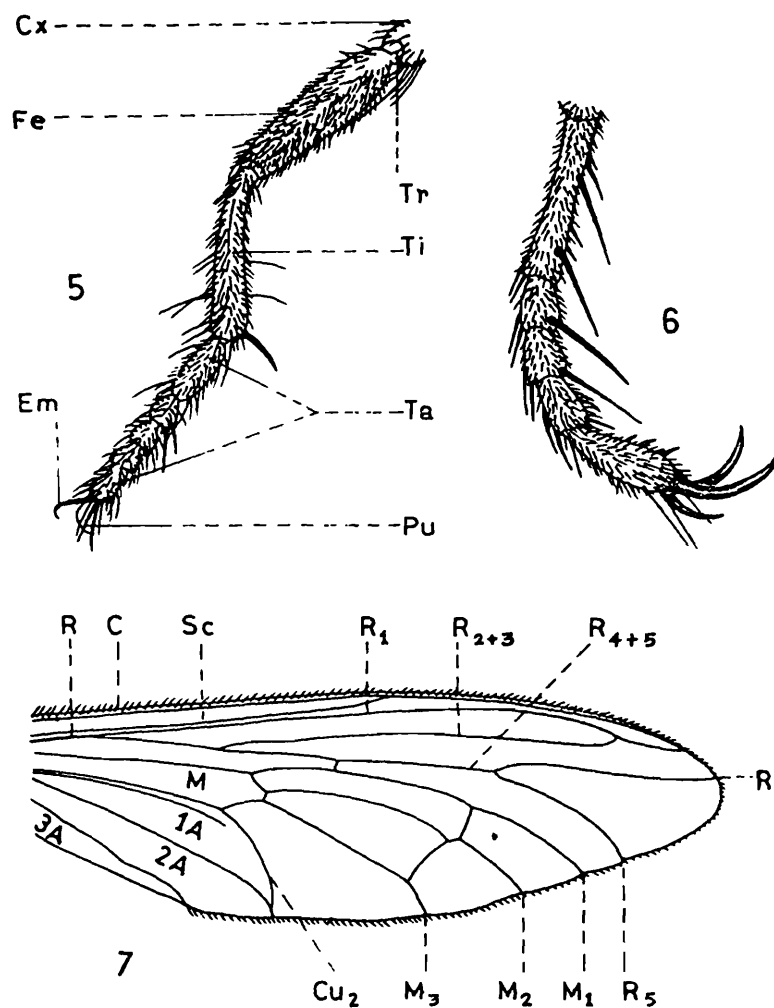


Fig. 5 : Leg showing various parts.

Fig. 6 : Tarsus of *Leptogaster* sp. showing the absence of pulvilli.

Fig. 7 : Wing of *Laphria* sp. showing venation.

called flagellomeres (Flm). The flagellum is quite variable and is often reduced to a bristle-like style or arista (Sty). The proboscis (Pro) is straight and usually longer than head, the palpi are situated at its base. Each palpus (Ps) is one or two segmented, in lower forms traces of a third segment is present.

Thorax (Fig. 4) is stout. The prothorax is weak with a small pronotum (Pn). The mesothorax is highly developed, the mesonotum includes the entire dorsum of mesothorax. The mesonotum is divisible into prescutum, scutum (Sct) and scutellum (Sctl). The prescutum is more or less indistinguishably fused with the scutum, the scutum and scutellum are separated by the scutoscuteellar suture (Scts). The scutellum also includes another part posterior to it, postnotum or metanotum (Ptn). The postnotum is divisible into a mediotergite and two laterotergites or metapleura (Lter) on either side, the division of which is rather indistinct. The dorsal laterotergite is divided into a dorsal anatergite and a ventral katatergite. The pleura consist of an anterior episternum and a posterior epimeron. The episternum is divided into an upper anepisternum (mesopleuron) (Aeps) and a lower katepisternum (sternopleuron) (Keps). The division of the epimeron (pteropleuron) (Epi) into anepimeron and katepimeron is not distinct. Similarly the meron (hypopleuron) (Mr) is also not distinctly demarcated. The haltere (Ht) has a long stalk and an oval club at its tip. The different parts of leg is illustrated in Figs. 5,6. Wing venation (Fig. 7) is much variable; the system adopted here for naming of veins and cells is that of Hull (1962)

Abdomen : This is composed of eight well developed segments in both sexes and the rest are incorporated with the genitalia. The male genitalia (Fig. 8) are very complex and highly variable. The female genitalia (Fig. 9) are rather simple. In some genera they are divided into two lateral lobes provided with a circlet of five or more pairs of stout spines, the size and shape of which are variable.

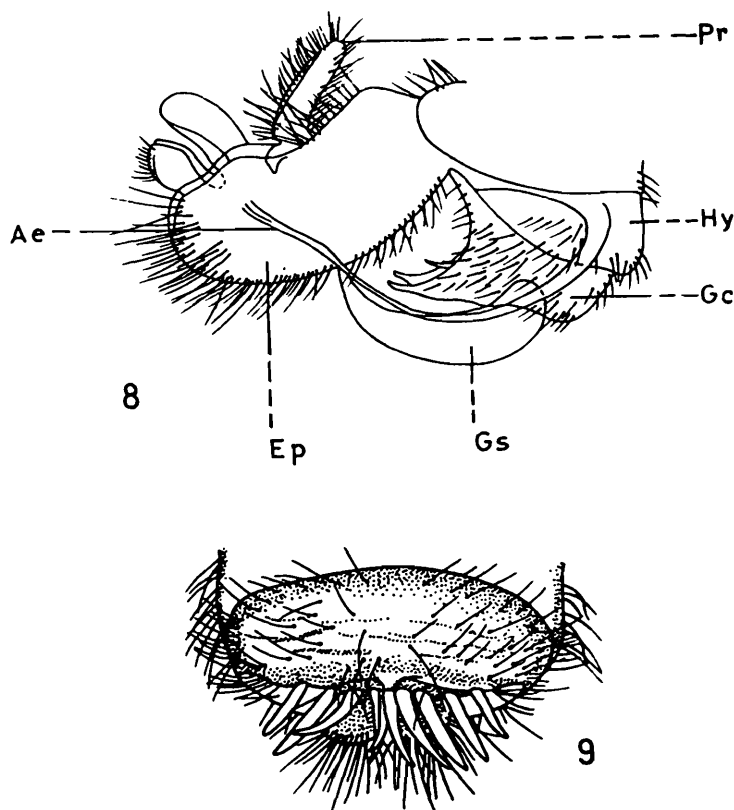


Fig. 8 : Male genitalia of *Astochia hulli* Joseph & Parui showing different parts.

Fig. 9 : Female genitalia of *Microstylum brunnipenne* Macquart showing acanthophorites.

FAMILY ASILIDAE

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The robberflies are elongate, bristly flies with a horny proboscis. They are readily recognised by the mystax or moustache, a growth of downward bristles between the eyes and mouth margin. The vertex of these flies is excavated above, and the ocelli are situated on a rounded tubercle. The antenna is three segmented, the third segment or flagellum is with or without a style. They have a convex thorax. The legs are well built, prehensile, and with a bristle-like empodium and a pad-like pulvilli. Each wing have one marginal, two to three submarginal and four to five posterior cells. The abdomen has eight segments with prominent genitalia.

Key to SUBFAMILIES

1	Palpus one segmented.....	2
	Palpus two segmented.....	3

2. Elongate and very slender species, marginal cell open, alula absent, first flagellomere short, ovoid with a long bristle-like style.....Leptogasterinae
Slender or robust species, marginal cell closed, first flagellomere long and slender with microsegment bearing short, bristle-like style.....Asilinae
3. Marginal cell open, first flagellomere spindle-shaped with apical microsegment, fourth posterior cell generally open or closed in the margin, females usually with circlet of spines on acanthophorites..... Dasypogoninae
Marginal cell closed, first flagellomere rod-like or clavate with apical pit, fourth posterior cell generally closed and stalked..... Laphriinae

Key to TRIBES

- 1 Marginal cell open.....2
- Marginal cell closed.....5
2. Very narrow, elongate flies, first flagellomere short, ovoid with a long bristle-like style, alula and pulvilli absent..... Leptogasterini (Figs. 10, 11)
- Usually stout flies of varied shape, pulvilli usually present, if absent then the first flagellomere well developed with a short apical style.....3
3. Prosternum isolated and surrounded by membrane, ninth sternum of female divided into two acanthophorites.....Saropogonini (Figs. 12-14)
- Prosternum complete with little or without membranous area.....4
4. Frons and vertex strongly diverge, vertex expanded but less wider at antennal level, first flagellomere with thick, spine-tipped style.....
.....Stichopogonini (Fig. 15)
- Frons and vertex not strongly divergent, first flagellomere with bristle-like terminal style, scutum elevated and arched.....Damalini (Fig. 16)
5. First flagellomere club-shaped, blunt with a tiny apical style, anepisternum often with bristle before wing base.....6
- First flagellomere of different shape, with feathered or bare style.....7
6. Vein M_3 straight and parallel with outer margin of discal cell, often in alignment with it
.....Atomosini (Fig. 17)
- Vein M_3 curved and not parallel with outer margin of discal cell and not in alignment except in *Orthogonis* Laphriini (Fig. 18-20)
7. Antennal style plumose..... Ommatini (Fig. 21)
- Antennal style bare..... Asilini (Fig. 22, 23)

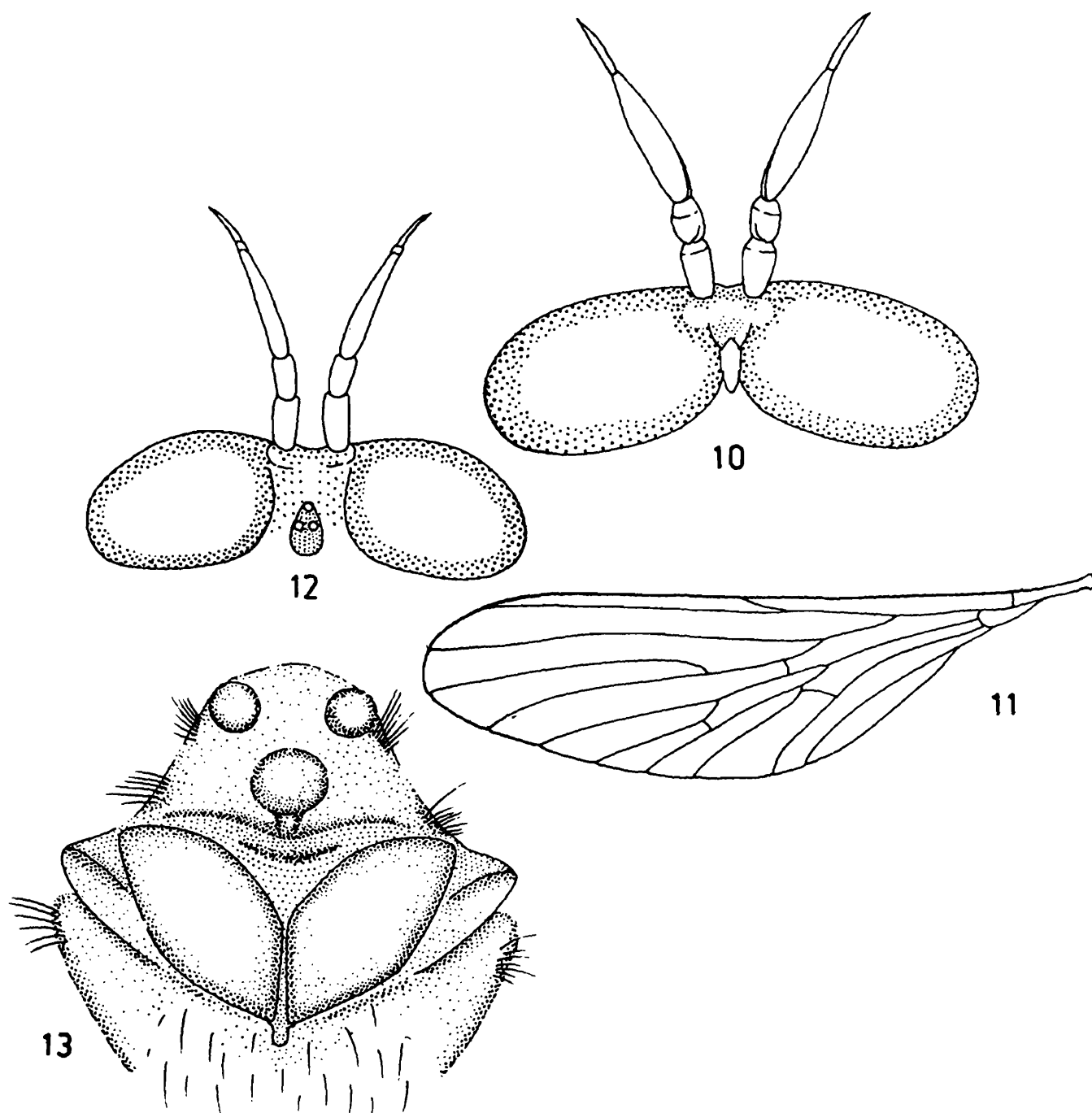


Fig. 10 & 11 : *Leptogaster cheriani* Bromley (Leptogasterini) : 10, head; 11, wing.
Fig. 12 & 13 : *Stenopogon manii* Joseph & Parui (Stenopogonini) : 12, head; 13, prosternum.

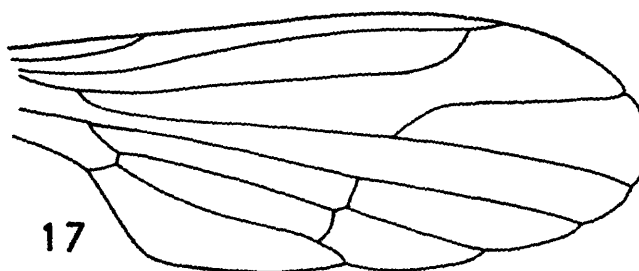
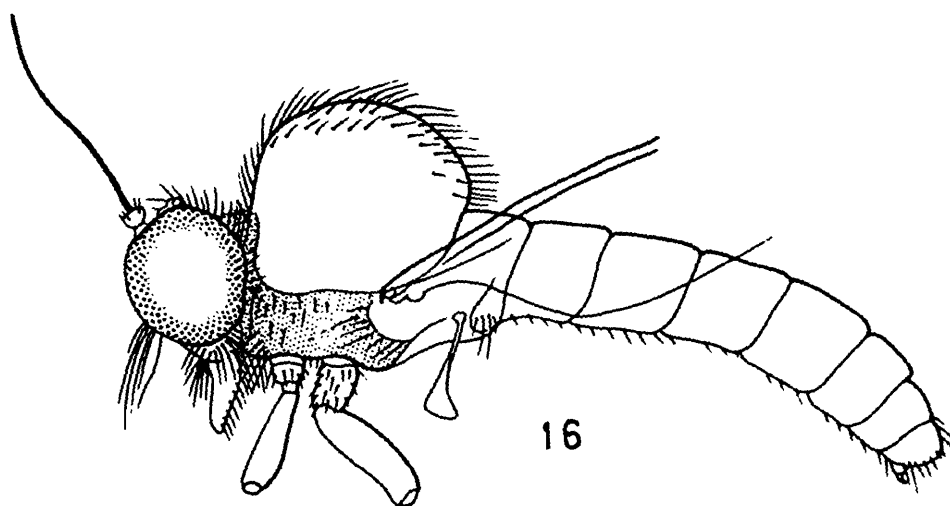
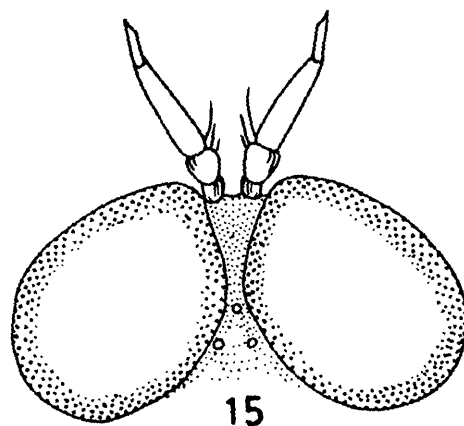
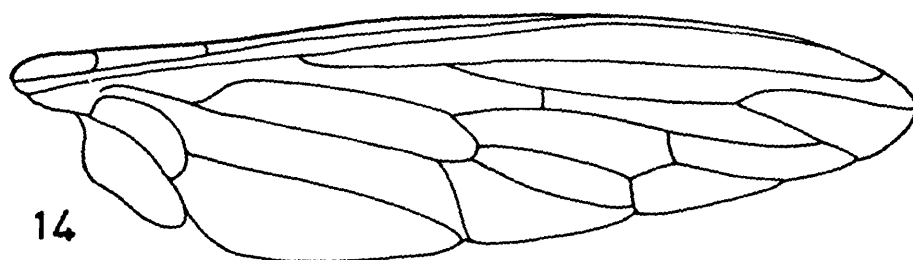


Fig. 14 : *Stenopogon manii* Joseph & Parui (Stenopogonini), wing.

Fig. 15 : *Stichopogon indicus* Joseph & Parui (Stichopogonini), head showing antenna with apical spine.

Fig. 16 : *Damalis artigasi* (Joseph & Parui) (Damalini-Xenomyzini), lateral view.

Fig. 17 : *Anoplothyrea indica* Joseph & Parui (Atomosini), wing.

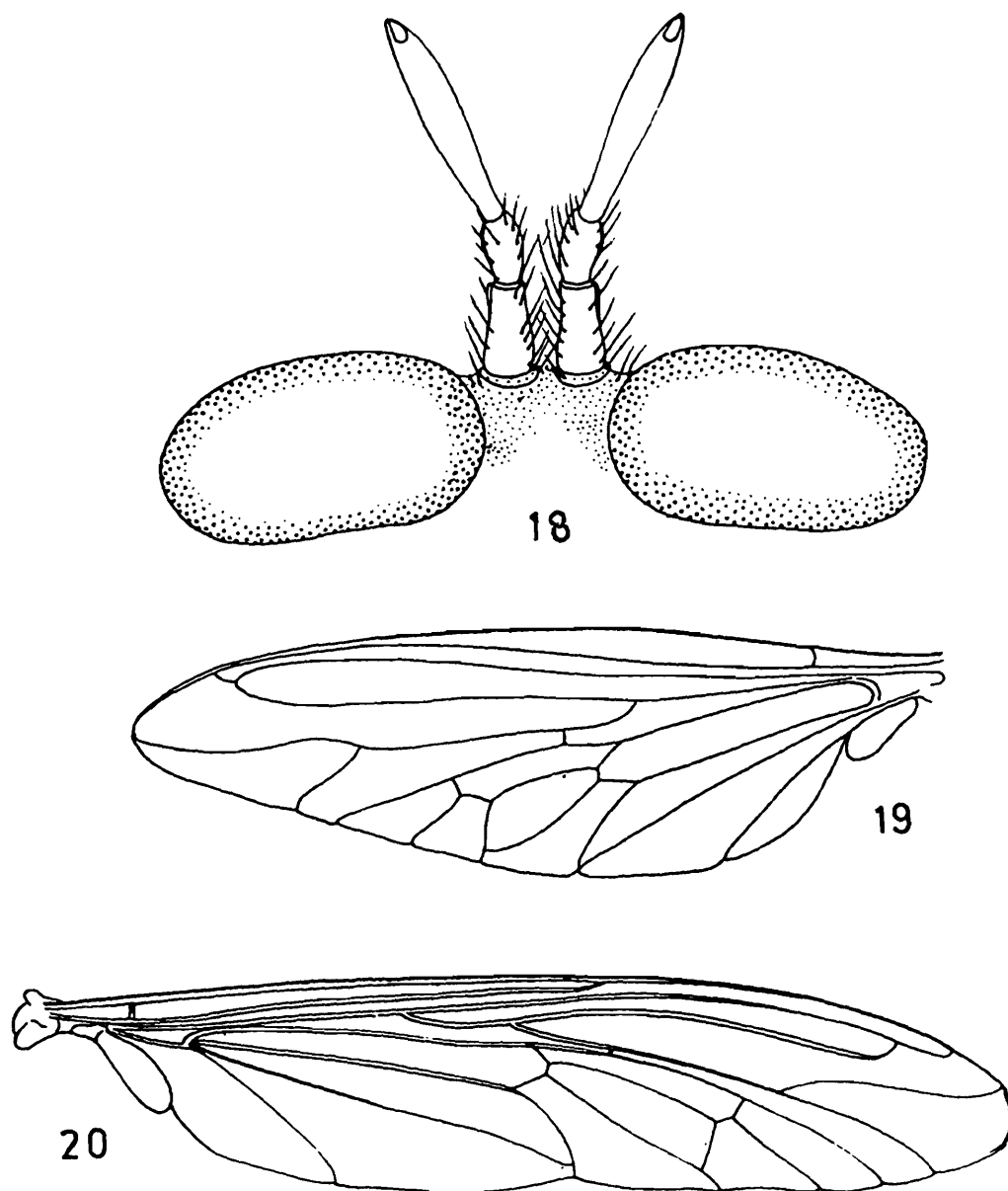


Fig. 18 & 19: *Laphria indica* Joseph & Parui (Laphriini) : 18, head; 19, wing showing normal curved vein M₃.

Fig. 20 : *Orthogonis andamanensis* Joseph & Parui (Laphriini), wing showing exception with straight vein M₃.

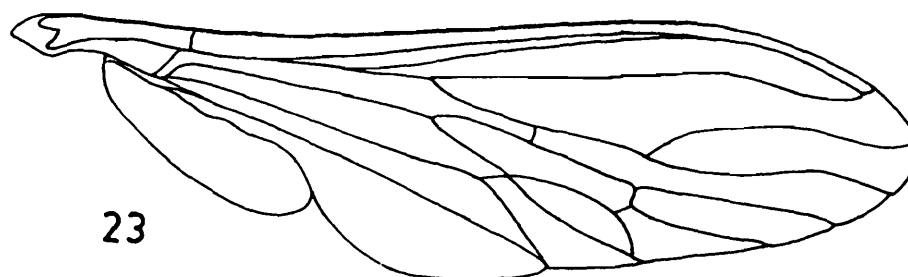
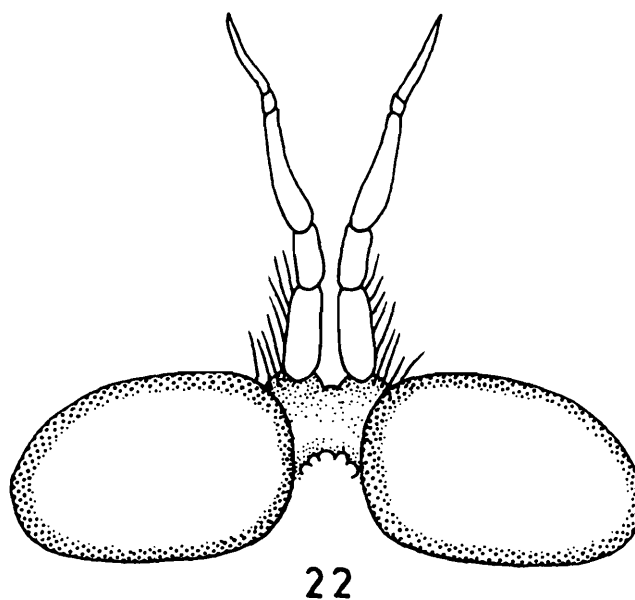
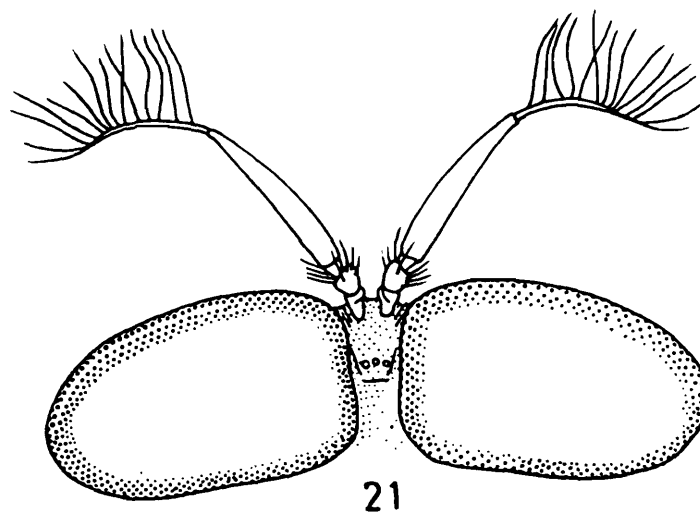


Fig. 21 : *Michotamia indiana* Joseph & Parui (Ommatini), head showing plumose style.
Fig. 22 & 23 : *Machimus indicus* Joseph & Parui (Asilini) : 22, head showing bare style : 23, wing.

Subfamily LEPTOGASTERINAE

1868. Leptogasterinae Schiner, *Dipt. Novara Reise*, 1857-59: 155.

The members of this subfamily are slender, bare, medium to large sized with clavate abdomen. Tarsi without pulvilli, very long claws with an elongate slender podium; wings with reduced alula, simple venation with marginal cell almost always open. The subfamily resembles Asilinae in having only one jointed palpus. Leptogasterinae has a single tribe, Leptogasterini, with four genera recorded from this region: *Ammophilomima* Enderlein, *Euscelidia* Westwood, *Leptogaster* Meigen and *Lobus* Martin.

Tribe LEPTOGASTERINI

Key to genera of Leptogasterini

1. Anal cell closed and stalked, generally large species with elongate abdomen, hind femur with a median isolated flock of setae, M_1 vein forks towards base of wing.....*Ammophilomima* Enderlein
- Anal cell open, mostly small and slender species.....2
2. Pronotum with a bifid process arising between the paired anterior process of scutum, empodium reduced or absent, first flagellomere spindle-like, always twice as long as the combined length of scape and pedicel.....*Euscelidia* Westwood
- Pronotum without any process between the paired anterior process of scutum, empodium generally well developed.....3
3. Antennal style projecting from the middle of first flagellomere, aedeagal sheath free.....*Leptogaster* Meigen
- Antennal style projecting from dorsal position of first flagellomere, aedeagal sheath united with the lobos-horizontal pod-like ventral organ of male genitalia (Fig. 28).....*Lobus* Martin

Genus 1. *Ammophilomima* Enderlein, 1914

1914. *Ammophilomima* Enderlein, *Wiener Ent. Zeitung*, **33**: 155. Type-species : *Ammophilomima imitatrix* Enderlein; original designation.
1975. *Ammophilomima* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 100.
1990. *Ammophilomima* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 9.

Large flies. Face plane, pubescent; mystax consists of two pairs of slender bristles; front narrow; post ocellar bristles stout and several. First flagellomere nearly double the length of scape and pedicel combined, and subequal to style. Thorax bare, but pubescent laterally and with well developed bristles dorsally; anepisternum, laterotergite and epimeron with abundant setae. Hind legs exceptionally long, with small setae all over and a small tuft of setae posteroventrally on middle third; hind basitarsi as long as the following three segments. Wings exceptionally long, slender; veins at apical region almost

parallel; vein R_1 ends at wing apex; anterior cross-vein situated opposite to the end of second basal cell; anal cell closed with long stalk. Abdomen very long, slender and gradually widened after fourth segment.

Discussion : The genus is generally similar to *Leptogaster* Meigen but differs in the long stalked anal cell together with the presence of isolated tuft of setae on hind femur.

Distribution : The genus is so far reported from India; Java; Philippines; Sumatra; and Africa.

Type-species : Location of types not known.

1. *Ammophilomima refescens* Frey*

1937. *Ammophilomima refescens* Frey, *Notul. ent.*, **17** : 47. Type locality: Calcutta

1975. *Ammophilomima refescens* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 100.

1990. *Ammophilomima rufescens* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 10.

India-Calcutta August 1936 (Annikki Tunturivuo-Ek-Lund), 2 ♂ 4 ♀.

Male : Head fluffed yellowish-brown. Back part of the head seen with spotted type dark region on each side. Postocular setae whitish. Antennae yellow, third segment about two-and-a-half times longer than the other basal two segments together. Style darkened, about thrice shorter than the third segment, flatly pressed, somewhat broader towards the edges, with a short, thin end segment. Setae above mouth whitish, proboscis red.

Thorax iridescent reddish-yellow, in the front with four shining black longitudinal stripes, which reach out behind only upto the transverse suture, right in the front one sees usually between both the middle ones the beginning of a fifth, abbreviated, black stripe. Thorax black at the rear, mid-reverse-sides, scutellum and ribs densely sprinkled brassy yellow and setose. Presutural and supra-alar black. Hind portion very thin, cylindrical, reddish-yellow, the last two segments top black, the four preceding exhibiting thin, black, hind border, abdomen reddish. Hypopygium big, open, marked black and reddish-yellow, with yellowish-white setae. Forceps split into two long, blackish-brown equally broad, separate arms; the upper arm characterised by a semicircular notch at the tip indicating double tips, the inner parts yellowish-red, much shorter, triangular.

Femora yellowish-red, dull sprinkled. Legs shining yellowish-red, all bristles inclined inside with it clear, thin, brownish longitudinal wisp, tarsus 3 outside not bristled, inside distal with one black bristle, tarsus 2 longitudinally on the whole inside found with five thin black bristles, which are longer at the tip, tarsus 1 inside along the whole with about eight fine, uniformly long yellowish tactile feelers. Tarsi down quite sparsely bristled black. Empodium half the length of the claws.

Wings tinged faintly yellow. Stigma faint. Prongs quite broad, almost parallel, roughly the same length as the stem. Small cross stripes before the middle of the discoidal cell. Third hind end cell strongly widened at the outside. Anal cell stemmed. Haltere faint yellow.

Female : Quite similar to the above male. Posterior region toward the edges somewhat broadened and compressed from the sides.

Body length 23 mm. length of hind region 18 mm. length of wings 13 mm.

This type reminds one of *Leptogaster trimucronate* Hermann from Formosa which however has an open anal cell.

Discussion: So far it is the only species recorded under the genus *Ammophilomima* Enderlein from India and adjacent countries.

Distribution : India (West Bengal).

Types : Location of types not known.

Genus 2. *Euscelidia* Westwood, 1850

1849. *Euscelidia* Westwood, *Trans. ent. Soc. Lond.*, **5** : 232. Type-species: *Euscelidia rapax* Westwood; monotypic.

1975. *Euscelidia* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 100.

1990. *Euscelidia* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 10.

Medium sized flies; face below antennae strongly diverging with micropubescence throughout; mystax consists of a tuft of many long bristles; palpus single segmented, robust; scape and pedicel of antenna bead like, first flagellomere elongate and gradually narrowed beyond middle with a thick style, the latter more than half of former. Pronotum with a peg-like bifid projection, anterior region bears a band of long, fine setae; scutum highly convex with prominent dorsal and lateral bristles; scutellar disc with long, fine setae and laterally with a fringe of long, fine, setae; pleura with long setae only. Hind femur long and uniformly thickened except for the basal third, and covered with fine long setae all over; hind femur and tibia equal in length, the latter uniformly thick throughout; anterior femur and tibia without bristles, pulvilli absent, empodium reduced. Wing almost uniformly slender with narrow cells, end vein of second basal cell fused distally, anal cell open, alula absent. Abdomen slender, first tergum very short with a band of stiff bristly setae laterally, in female ninth and tenth terga form a subtriangular plate.

Discussion : The genus resembles *Leptogaster* Meigen superficially but differs in the presence of bifid process of pronotum and generally well developed empodium. The genus was erected by Westwood (1849), and subsequently three Oriental species described under *Leptogaster* Meigen, *marion* Walker, *setifer* Frey and *simplex* Bigot, were brought under it.

Distribution : India; Philippines; Sri Lanka; Burma; (Myanmar); Africa; Palaearctic Region.

Type-species : Location of types not known.

Key to species of *Euscelidia* Westwood

- 1 Legs entirely pale yellow, wings hyaline but slightly tinged.....*simplex* (Bigot)
- Femora and tibiae of anterior two pairs of legs yellowish-brown except yellow base, wings dark brown, paler towards tip and along hind border.....*marion* (Walker)

2. *Euscelidia marion* (Walker)

1849. *Leptogaster marion* Walker, *List Dipt. Colln Br. Mus.*, 2 : 484. Type locality : North Bengal.

1975. *Euscelidia marion* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 100.

1990. *Euscelidia marion* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 10.

Specimen badly damaged; antennae lost, three legs missing, and abdomen from segment 3 onwards lost, hence sex cannot be ascertained. A small black species with dense grey tomentum, yellowish-brown and pale yellow legs, and brown wings. Length : wing 5 mm.

Head broader than thorax, black, grey tomentose; mystax more than one row of white bristles arranged transversely above mouth margin, fronto-orbitals brown, ocellar bristles indistinct, postocular bristles weak, brown above and white below, postcranium with sparse white setae, postgena with a few pale yellow setae. Antennae lost, Walker's original description is antennae black, scape and pedicel very short and bear a few, short, black bristles, first flagellomere spindle-shaped, much longer than the combined length of scape and pedicel. Palpus dark brown, proboscis black, their setae brown.

Thorax black with dense grey tomentum; pronotum almost bare; scutum without mediolongitudinal stripe; chaetotaxy: 1 notopleural, 1 supra-alar; vestiture white with some brown setae anteriorly, bristles black, scutellar disc with a few brown setae directed anteriorly, border with a few brown setae. Haltere white and pale yellow.

Legs yellowish-brown and pale yellow; coxa and trochanter yellowish-brown, mid and hind femora basally less than half pale yellow and the remainder yellowish-brown, in hind femur basally less than one-third pale yellow and the rest yellowish-brown, tibia yellowish-brown with extreme base and dorsally pale yellow, tarsus yellowish-brown except basitarsus being pale yellow, vestiture black, bristles black with also a few white ones.

Wing brown with anterior border deeper in colouration.

Abdomen black with dense grey tomentum, tergum 2 medially and distally grey, remainder black, rest of abdomen lost.

Material examined : *Holotype*, abdomen broken off, B.M.N.H., India : North Bengal, Coll. Miss Campbell, 42-25, no other details. Also bears another label, holotype, det. J.E. Chainey 1982.

Discussion : The only other known species of the genus from India and adjacent countries is *Euscelidia simplex* (Bigot) from which *E. marion* (Walker) differs by the yellowish-brown and yellow legs, and brown wings. The genitalia of the latter are not known for comparison.

Distribution : India (West Bengal).

Types : In the Collection of the Natural History Museum, London.

3. *Euscelidia simplex* (Bigot)*

1878. *Leptogaster simplex* Bigot, *Ann. Soc. Ent. Fr.*, (5) 8 : 444. Type locality: Sri Lanka.

1975. *Euscelidia simplex* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 100.

1990. *Euscelidia simplex* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 10.

Length 15 mm.

Greyish exoskeleton : antennae, proboscis, palpi, setae on top of mouth are scaly, front of head is white and top of head is scaly; thorax is greyish-fawn coloured underneath and whitish on the sides; scaly halteres; greyish abdomen, slightly reddish towards the base and ends; tarsi are fully lightly scaly, claws and ends of bristles of tarsi are black; wings are almost hyaline and slightly yellow tinted.

Discussion : The affinities of *Euscelidia simplex* (Bigot) with the only other known species from India and adjoining countries, *E. marion* (Walker), are discussed under the latter.

Distribution : India (no other details); Burma (Myanmar); Sri Lanka.

Types : Location of types not known.

Genus 3. *Leptogaster* Meigen, 1803

1803. *Leptogaster* Meigen, *Mag. Insektenkunde*, 2 : 269. Type-species : *Asilus tipuloides* Fabricius, monotypic, = *cylindrica* (De Geer).

1904. *Gonypes* Latreille, *Hist. nat. Crust. Ins.* 14 : 309. Type-species : *Asilus tipuloides* Fabricius, monotypic, = *cylindrica* (De Geer).

1975. *Leptogaster* : Oldroyd. *A Catalog of Diptera of the Orinetal Region*, 2 : 101.

1990. *Leptogaster* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113: 10.

Weak, elongate, slender flies; face strongly diverge; mystax one or two rows of bristles; antenna elongate and slender, first flagellomere elongate, about twice the length of scape and pedicel combined, style distally dilated with varying length; palpus single segmented, club-shaped. Scutum very high with median protuberance; pleuron pubescent; postnotum pollinose. All femora elongate and swollen distally but more so in hind pair, all tibiae elongate; hind femur with dense brushes of setae ventrally, anterior four femora almost bare, empodium nearly two-thirds as long as claws, pulvilli absent. Wing slender, all cells widely open, posterior branch of median and anterior branch of cubitus fused for a long distance, alula absent. Abdomen elongate, slender, devoid of bristles except for first tergum bearing lateral bristles. Male genitalia well developed, epandrium elongate, gonocoxite and hypandrium fused.

Discussion : *Leptogaster* Meigen resembles *Ammophilomima* Enderlein, their affinities are discussed under the latter.

Distribution : It is a common genus in all the zoogeographical regions of the world. In the Orinetal Region it is distributed in India; Burma (Myanmar); Celebes; Formosa; (Taiwan); Japan; Java; Philippines; Sri Lanka; Sumatra.

Type-species : Location of types not known.

Key to species of *Leptogaster* Meigen

1	Wing with distinct stigma.....	2
–	Wing uniformly hyaline.....	3

2. Scape and pedicel yellow, abdomen black with sutures of segments 2-5 yellow, fore and mid femora and tibiae brownish-yellow.....*basilaris* Coquillett.
- Antenna and abdomen wholly black, femora and tibia black except hind pair with yellow base.....*ophionea* Frey.
3. Abdomen black with whitish band on hind border of each segment, hind femur black with a golden yellow band.....*albimana* Walker.
- Abdomen pale yellowish-brown, basal three terga with dark brown spots, hind femur uniformly yellowish.....*cheriani* Bromley.

4. *Leptogaster albimana* Walker

1859. *Leptogaster albimana* Walker, *J. Linn. Soc. London*, 3 : 89. Type locality : Aru Islands, Moluccas.

1975. *Leptogaster albimana* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 101.

1990. *Leptogaster albimana* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 10.

Specimen damaged; one antenna, one mid leg and one wing lost, abdomen separately glued with genitalia damaged. A black species with dense grey tomentum, white, pale yellow and black legs, and hyaline wings. Male : length 12 mm. wing 7 mm.

Males : *Head* broader than thorax, black, grey tomentose; mystax four, white, bristly setae near mouth margin in a transverse row, fronto-orbitals absent, ocellar bristles lost, postocular bristles absent, postcranium white setose, postgena with dense, white setae. Antenna black except pedicel being pale yellow, scape and pedicel with black or white bristles, both nearly equal in length, first flagellomere slightly longer than the combined length of scape and pedicel. Palpus and proboscis black with sparse, white setae.

Thorax black, densely grey tomentose; pronotum bare, scutum badly damaged so much so the presence of mediolongitudinal stripe cannot be ascertained, vestiture white; scutellar disc with sparse, white setae, border with more than one row of white setae. Haltere with dark brown head and white stalk.

Legs white, yellowish-brown and black; coxa and trochanter black, fore femur nearly wholly black, mid femur white at extreme base and rest black, hind femur white basally followed by black, yellowish-brown, and again black bands, tibia white basally and remainder black, the area of former increases from fore to hind legs, basitarsus white with apical black marking, rest of tarsus black, vestiture and bristles predominantly black with also a few white ones.

Wing hyaline with a black spot at apex of Sc between Sc and R₁.

Abdomen black with hind part of terga with an apical, grey, transverse band, vestiture predominantly black with a few white ones. Genitalia badly damaged and cannot be figured..

Material examined : *Holotype* ♂ B.M.N.H., Malay archipelago : Aru Islands, A.R. Wallace, Coll. W.W. Saunders, 68-4, no other details. Also bears another label, holotype, det. J.E. Chainey 1982.

1 ♂ India : Kerala : Trivandrum District : Poonmudi Range, 900 m, iv-v. 1971, Coll. P.S. Nathan (Z.S.I.).

Discussion : The species resembles *Leptogaster ophionea* Frey but differs from it by the presence of golden yellow band on hind femur.

Distribution : India (Kerala) ; Burma (Myanmar); Moluccas; Sri Lanka.

Types : In the Collection of the Natural History Museum, London.

5. *Leptogaster basilaris* Coquillett*

1898. *Leptogaster basilaris* Coquillett, *Proc. U.S. Nat. Mus.*, **21** : 311. Type locality : Japan.

1975. *Leptogaster basilaris* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 101.

1990. *Leptogaster basilaris* : Joseph & Parui, *Bull. zool. Surv. India*, Occ. Paper No. 113 : 10.

Male : Head black, whitish pruinose, the mystax and hairs of occiput and cheeks also whitish; antennae yellowish-brown, the first two joints yellow, the third bare; proboscis black. Thorax black, the posterior angles yellow, the sides and pleura white pruinose, the hairs whitish, the bristles black; scutellum black; the margin bearing numerous white hairs. Abdomen black, sutures of segments 2-5 yellow, the first segment and suture of the others light grey pruinose; setae chiefly whitish. Front and middle femora and tibiae dark yellow, the apices brown, hind femora and tibiae brownish, the basal two-fifths white; tarsi brown, the first joint except the apex white. Haltere whitish, the knobs brown.

Wings hyaline, a brown cloud in the subcostal cell immediately before the apex of the auxillary vein. Length, 15 mm. A single specimen (No. 707). Type No. 3977, U.S.N.M.

Distribution : India (West Bengal); Formosa (Taiwan); Java; Philippines; Sumatra; Japan.

Types : In the Collection of the United States National Museum, Washington.

6. *Leptogaster cheriani* Bromley (Fig. 24)

1938. *Leptogaster cheriani* Bromley, *Indian J. Agric. Sci.* **8** : 893. Type locality: Coimbatore, Tamil Nadu.

1975. *Leptogaster cheriani* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 101.

1990. *Leptogaster cheriani* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 11.

A reddish and black species with pale yellow legs with the hind tibia at apex dark brown, and hyaline wings. Male : length 12-13 mm. wing 7 mm; female : length 13 mm, wing 7 mm.

Males : *Head* broader than thorax with dense grey tomentum; mystax a row of pale yellow bristly setae above the mouth margin; fronto orbital plate and ocellarium without bristles, postcranium with sparse, white setae below, postocular bristles yellowish-brown. Antenna pale yellow, scape about half the length of pedicel, first flagellomere about twice the combined length of scape and pedicel, style short. Palpus pale yellow with pale yellow setae, proboscis dark brown or mixed dark brown and yellowish-brown, bare.

Thorax reddish with black marking; pronotum bare; scutum reddish, holotype. with a mediolongitudinal black stripe extending the entire length, which is indistinctly divided anteriorly,

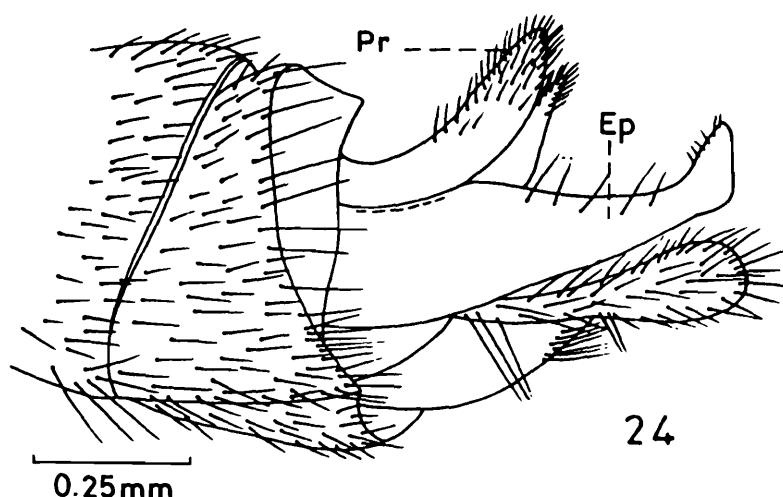


Fig. 24 : *Leptogaster cheriani* Bromley, lateral view of male genitalia.

laterally with two black marks which are confluent, in paratype black marking much lesser, median stripe restricted to front and lateral marks to hind region; chaetotaxy: 1 notopleural, 1 supra-alar; setae sparse and restricted to post pronotal lobe; scutellum bare; pleura grey tomentose. Haltere with stalk pale yellow and head pale brown.

Legs damaged, fore tibiae and tarsi missing; legs pale yellow except tip of hind tibia dark brown and hind tarsus with basal 2-3 segments pale yellow and the rest brown; mid tibia with a posteroventral row of bristles, hind tibia with a row of anterior and another row of posterior bristles, vestiture predominantly black with some white setae also, bristles black and pale yellow.

Wing hyaline, veins yellowish-brown.

Abdomen pale yellowish-brown with dark brown markings, tergum 1 with a large dark brown spot anteriorly, tergum 2 medially dark brown and laterally pale yellowish-brown, tergum 3 for about basal one-third pale yellowish-brown and rest dark brown, terga 4-6 with faint dark brown marking, remaining almost entirely dark brown; tergum 1 laterally with 3 pale yellow bristles; vestiture pale yellow. Male genitalia (Fig. 24) reddish.

Female : Similar but with the following differences : first flagellomere black; abdomen comparatively lighter coloured. Genitalia dark brown with golden yellow tomentum, proctiger obtuse apically, sternum 8 with a shallow, median incision.

Material examined : *Holotype* ♂ Tamil Nadu Agricultural University, Coimbatore, Reg. No. 75/35, S. India : Coimbatore, 20.1.1913. Coll. P.S. Coll. *Paratype* ♂ Reg. No. 75/35, S. India : Coimbatore, 24. ix.1912, Coll. A.G.R. Coll.

4 ♂ 2 ♀ Tamil Nadu : Coimbatore District : Agricultural University Compound, 1.i.1976, Coll. A.N.T. Joseph & P. Parui. 3 ♂ 2 ♀ Rajasthan : Alwar District : Sariska, Stn. No. 22, 4. x. 1986. Coll. A.N.T. Joseph & P. Parui. (Z.S.I.).

Discussion : It can be recognised from all the other known species of *Leptogaster* Meigen from India and adjoining countries by the reddish colouration, comparatively lighter coloured legs and abdomen, bare scutellum and structural details of male genitalia.

Distribution : India (Tamil Nadu and Rajasthan).

Types : In the Collection of Entomology Division of the Tamil Nadu Agricultural University, Coimbatore.

7. *Leptogaster ophionea* Frey*

1937. *Leptogaster ophionea* Frey, *Notul. Ent.*, **17** : 44. Type locality : Calcutta.

1975. *Leptogaster ophionea* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 103.

1990. *Leptogaster ophionea* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113: 103.

India: Calcutta (Annikki Tunturivuo-Eklund) 1 ♂, 4 ♀.

Male : The insect is uniformly shining black totally. Antennae black, third basal segment greyish, roughly twice as long as the other two basal segments together. Style thick, roughly as long as the third segment with a short thin end piece. Postocular setae whitish. Upper lip setae made up of a few white bristles. Proboscis black.

Mid-reverse-sides and ribs sprinkled whitish grey, long, white fluffy. Scutellum grey, black setose. Bristles black. Hind quarters black, short whitish setose. Hypopygium small, black.

Legs shining black, faintly thickened, f_3 and t_3 whitish yellow at base, t_3 almost free of bristles, t_2 inside has 2 black bristles in the last third portion, of which the inner one is shorter, t_1 inside is seen to have bright setae at the end half and with about three longer white tactile setae. Tarsi black brushed.

Wings tinged clearly rough brown, especially at the fore margin, stigma weakly discernible. Prongs almost parallel, a bit longer than their stem. Small cross-veins present especially before the middle of the discal cell. Third hind edge cell almost parallel sided. Anal cell open. Haltere completely whitish yellow.

Female : Totally like above, the third last abdominal segment with very small reddish incisure.

Body length 18-21 mm. length of posterior part 14.5 to 17.54 mm., length of wings 8.5 to 10mm.

This type appears to be similar to *Leptogaster levis* van der Wulp, which in turn could be identical with *L. basilaris* Coquillett.

Discussion : *Leptogaster ophionea* Frey closely resembles *L. albimana* Walker but can be distinguished from it by the presence of yellowish-white band on hind femur. The species was described from India and there is no second record of it.

Distribution: India (West Bengal).

Types : Location of types not known.

Genus 4. *Lobus* Martin, 1972

1972. *Lobus* Martin, *J. Kansas ent. Soc.*, **45** : 8. Type-species : *Leptogaster pallipes* Janssens, original designation.

1975. *Lobus* : Oldroyd. *A Catalog of Diptera of the Oriental Region*, **2** : 103.

1990. *Lobus* Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 11.

Face plane; scape and pedicel of antenna bead-like, first flagellomere elongate, about twice as long as the combined scape and pedicel, style arising from dorsal surface. Scutum high with median protuberance anteriorly, scutellum with setae or bristles on hind margin. Abdomen long, slender, epandrium apically divided into two unequal processes, proctiger usually discoid, aedeagus coalesced with the lobos (Lo)- the horizontal pod-like ventral organ of the male genitalia; female with stout bristles on posterior margin of eighth sternum.

Discussion : The genus resembles *Leptogaster* Meigen but differs in the presence of horizontal pod-like ventral organ of male genitalia together with the almost wholly fused aedeagus shath with the lobos.

Distribution : The genus is so far recorded from India; Ethiopian Region.

Type-species : Location of types not known.

Key to species of *Lobus* Martin

- 1 Anterior legs uniformly yellowish.....2
- Anterior legs differently coloured..... 3
2. Hind femur reddish-brown at tip, hind tibia with a brown band at apex, scutellum bears pale yellow setae on posterior margin, epandrium with only a few setae at basal region.....*himalayae* Martin.
- Hind femur with dark spot medially and basally, hind tibia without band, scutellum bears 8 short, dark bristles on posterior border, epandrium with bristly setae all over.....*keralae* Martin.
3. Epandrium almost straight and truncate at apex, fore femur dark brown apically and rest yellowish-brown.....*jairami* Joseph & Parui.
- Epandrium boat shaped.....4
4. Wing uniformly infuscated.....5
- Wing not uniformly infuscated.....6
5. Fore and mid femora dark brown with basal and apical yellowish-brown marks, male genitalia black, proctiger conically produced.....*evenhuisi* Joseph & Parui.
- Fore femur pale yellow with black apex, mid femur black with narrowly pale yellow base and subapex, male genitalia yellowish-brown and black, proctiger dorsally straight and ventrally incurved.....*bandipurensis* Joseph & Parui.
6. Lobos gradually tapered towards apex, wing light brown basally and clear distally.....*pandai* Joseph & Parui.
- Lobos uniformly broad, wing brown tinged, posterior half lighter than anterior half.....*martini* Joseph & Parui.

8. *Lobus bandipurensis* Joseph & Parui
(Fig. 25)

1992. *Lobus bandipurensis* Joseph & Parui, *Rec. Zool. Surv. India*, **92** (1-4) : 99. Type locality : Bandipur, Karnataka.

A slender black fly with black, pale yellow and yellowish-brown legs, and infuscated wings. Male : length 11 mm, wing 7 mm; female : length 12 mm, wing 8 mm.

Male : Head black with sparse grey and greyish-yellow tomentum; mystax white, postcranium with pale yellow setae, postgena with white setae. Antenna dark brown with black bristles on scape and pedicel, scape about two-thirds length of pedicel, first flagellomere elongate, style nearly as long as first flagellomere and gradually thickened distally. Palpus and proboscis black, former with black and latter with white setae.

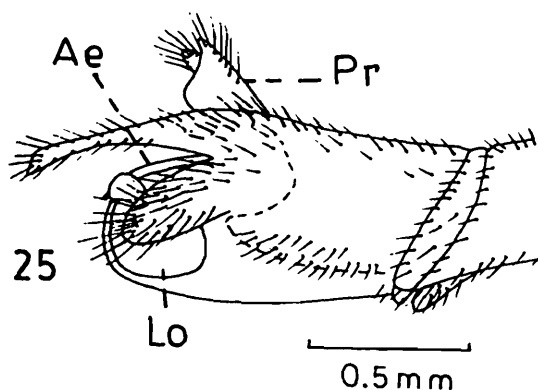


Fig. 25 : *Lobus bandipurensis* Joseph & Parui, lateral view of male genitalia.

Thorax black with greyish-yellow and grey tomentum; scutum with a faint mediolongitudinal black stripe extending from anterior border to near hind border, the stripe anteriorly divided by a still fainter, narrow, greyish-yellow stripe; chaetotaxy : 1 notopleural, 1 postalar (weak), 1 supra-alar; vestiture pale yellow, bristles black and pale yellow scutellar border with about 3 rows of pale yellow setae, disc with a few setae basally; pleura with dense, greyish-white tomentum, anepisternum and katepisternum anteriorly bearing white setae. Haltere pale yellow, with stalk lighter coloured.

Legs black, pale yellow and yellowish-brown; coxa and trochanter black; fore femur pale yellow with black apex, tibia pale yellow with anterior and apical black, basitarsus basally pale yellow for two-thirds distance from base and remainder black, rest of tarsal segments black; mid femur black with narrowly pale yellow basally and narrowly yellowish-brown subapically, tibia similar to that of fore tibia but black colour occupies more area, tarsus similar to that of fore tarsus; hind femur similar to that of mid femur but the median black area less extended, tibia less than one-fourth pale yellow basally and the rest black, tarsus similar to that of mid tarsus but in basitarsus pale yellow less and only for about one-third distance; fore tibia and basitarsus ventrally and hind tibia and basitarsus posteroventally with mat of golden yellow pubescence; vestiture white and black, bristles black and pale yellow.

Wing infuscated.

Abdomen black, tergum 1 with a basal, transverse row of black and pale yellow bristles, and a few, long pale yellow setae laterally, vestiture white and black. Male genitalia (Fig. 25) yellowish-brown and black with white setae.

Female : Quite similar but with the following differences : predominantly greyish-yellow tomentose on postcranium and pleura of thorax; abdominal terga 4-7 with grey tomentum both on anterior and posterior borders. Female genitalia black with white setae, sternum 8 apically with a median, shallow depression, proctiger narrowed from middle to apex.

Material examined : *Holotype* ♂ Z.S.I. Reg. No. 7713/H6, Karnataka: Bandipur, 12. xi. 1989, Coll. Joseph and Parui. *Paratype* ♀ Reg. No. 7714/H6, rest of details as in holotype.

Discussion : In the presence of more than two rows of setae on the border of scutellum, it is similar to *Lobus martini* Joseph & Parui, but otherwise a quite distinct species with large size and differences in the shape of structural details of male genitalia.

Distribution : India (Karnataka).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

9. *Lobus evenhuisi* Joseph & Parui (Fig. 26)

1991 *Lobus evenhuisi* Joseph & Parui, Rec. zool. Surv. India, 88 (3 & 4) : 241. Type locality : Cinchona, Tamil Nadu.

A slender black species with dark brown and yellowish-brown legs, brown wings, and black with grey tomentose abdomen. Male : length 11 mm, wing 7 mm.

Male : *Head* black with grey and greyish-yellow tomentum; gibbosity indistinct, mystax white and arranged in transverse row on mouth border, frontal vitta slightly raised and golden yellow, postcranium

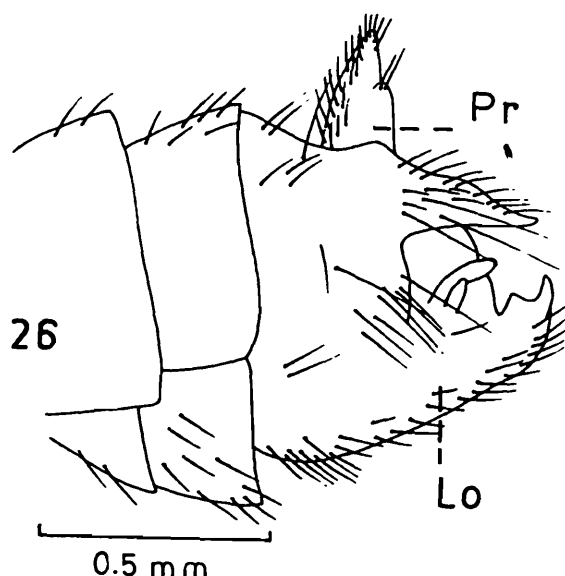


Fig. 26 : *Lobus evenhuisi* Joseph & Parui, lateral view of male genitalia.

black with greyish-white tomentum posterolaterally, setae black above and white below. Antennae broken with first flagellomere onwards lost, scape and pedicel dark brown, scape with 1 and pedicel with few black bristles, pedicel slightly longer than scape. Palpus and proboscis black, former black setose, latter bare.

Thorax black, greyish-white tomentose; pronotum rather densely greyish-white tomentose, bare; scutum shining black, vestiture black leaving mediolongitudinal bare stripe; chaetotaxy: 2 supra-alars; scutellum black, grey tomentose, scutellar disc with few black setae, hind border with rather dense black setae, without bristles; pleura grey tomentose, anepisternum and katepisternum anteriorly bearing dense white setae. Haltere pale yellow.

Legs dark brown and yellowish-brown, fore and mid femora dark brown with basal and apical yellowish-brown marks, yellowish-brown more in mid femur, hind femur yellowish-brown nearly half length; fore and mid tibiae dark brown and yellowish-brown particoloured to varying extent, hind tibia yellowish-brown with apical third dark brown, tarsus dark brown, but basitarsus to varying extent yellowish-brown, vestiture predominantly white, bristles black.

Wings uniformly brown.

Abdomen black with grey tomentum, tergum 2 medially and distally, terga 3 and 4 both anteriorly and posteriorly, and tergum 5 posteriorly with transverse band of grey tomentum, terga 1 and 2 laterally with black and pale yellow setae. Male genitalia (Fig. 26) black with pale yellow setae predominant.

Material examined : Holotype ♂, S. India : Madras (Tamil Nadu): Anamalai Hills : Cinchona, 1067 m, v. 1956, Coll. P.S. Nathan.

Discussion : There are three species of *Lobus* Martin, *L. evenhuisi* Joseph & Parui, *L. bandipurensis* Joseph & Parui and *L. pandai* Joseph & Parui, with boat-shaped epandrium. Of these, *L. evenhuisi* Joseph & Parui is the only species with uniformly infuscated wings, which together with its distinctive male genitalia makes it easily separable.

Distribution : India (Tamil Nadu)

Type : In the Collection of the B.P. Bishop Museum, Honolulu.

10. *Lobus himalayae* Martin *

1972. *Lobus (Nanilobus) himalayae* Martin, *J. Kansas ent. Soc.*, **45** : 15. Type locality : Mussoorie, India.

1975. *Lobus himalayae* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 103.

1990. *Lobus himalayae* : Joseph & Parui, *Rec. zool. Surv. India* Occ. Paper No. 113 : 11.

Male : Length 9 mm. Head grey tomentose; 4 long slender pale hairs in mystax, antennal bristles on segments 1 and 2 pale to dark brown depending on angle of view, no occipital hair or bristles, antennal segments 1 and 2 yellow, segment 3 brown, narrowly yellow basally, white tomentose, short hairs on margin of apex white, laterally brown, style reddish brown, slightly longer than segment. 3.

Thorax black, coxae red, brown and mixed greyish tomentose; an indistinct median stripe, in a lateral view narrow black stripes lateral of median stripe, scutellum brown and greyish tomentose, posterior

margin with pale setae; pleura black with anepisternum red posteriorly, somewhat reddish under and behind base of wings.

Abdomen blackish brown, tergites 2 to 4 with yellow bands on posterior margin, tergite 5 yellow posterolaterally; epandria broad basally, two apical branches narrowly cylindrical, dististyli horizontal, with apical pale bristles, dorsomedially small cylindrical processes, lateral processes shorter than dististyli, narrow, a pair of bristle-like hypandrial apodemes, proctiger ovoid.

Wings pale yellowish-brown, longitudinal vein 4 (M_2) angulate.

Anterior four legs yellowish, posterior legs yellow with a reddish brown band on claws, apical 40% of hind tibia brown, empodium of anterior legs as long as tarsal claws.

Type material : Holotype ♂ India: Mussoorie, 1829 m. July 21, 1944 (D.E. Hardy) (U.S.N.M.).

Discussion : The species is closely similar to *Lobus keralae* Martin but differs from it by the reddish-brown apex of hind femur, hind tibia with a brown apical band, scutellum with pale setae on its margin, and epandrium bearing bristly setae all over.

Distribution : India (Uttar Pradesh).

Type : In the Collection of the Smithsonian Institution, Washington.

11. *Lobus jairami* Joseph & Parui (Fig. 27)

1984. a. *Lobus jairami* Joseph & Parui, *Bull. zool. Surv. India*, 6 (1-3) : 250. Type locality : Edapaliyam, Kottayam, Kerala.

1990. *Lobus jairami* Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113: 11.

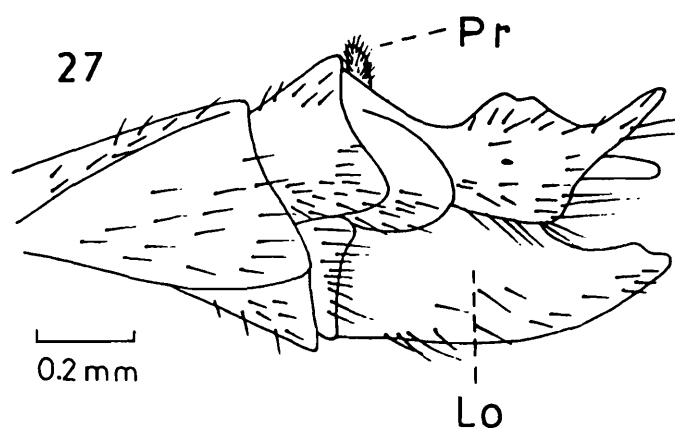


Fig. 27 : *Lobus jairami* Joseph & Parui, lateral view of male genitalia.

A slender black fly with dark brown and yellowish-brown legs, brownish tinged wings and dark brown abdomen. Male : length 8 mm. wing 4 mm; female : length 9 mm, wing 7 mm.

Male : *Head* black; gibbosity indistinct, mystax a transverse row of white bristles on mouth border with sparse grey tomentum, occipital setae short and pale coloured, which become grey on sides. Antenna dark brown, scape and pedicel nearly equal, first flagellomere elongate, style about two-thirds of first flagellomere. Palpus and proboscis dark brown.

Thorax black, sparsely grey tomentose; pronotum devoid of setae; scutum without mediolongitudinal stripe, sides, especially posteriorly, grey tomentose and the rest black, covering setae dark brown or pale, posterior side bearing somewhat dense, brown setae; scutellum thickly grey tomentose, covered with setae but without bristles; pleura to a greater extent covered with grey tomentum, mesoanepisternum and katepisternum anteriorly bearing dense, long, pale setae. Halteres brownish.

Legs dark brown and yellowish-brown, coxa and trochanter dark brown; fore femur for more than three-fourths yellowish-brown and apically dark brown, mid femur dark brown except at extreme base, hind femur with the basal half yellowish-brown and distal half dark brown, tibiae basally for more than half yellowish-brown while the rest dark brown, tarsus with the basitarsus yellowish-brown; bristles and clothing setae predominantly pale with some black ones also.

Wings brownish tinged, basally comparatively darker coloured.

Abdomen dark brown with terga somewhat lighter on anterior and posterior borders, the lighter colouration gradually decreases in hind terga. Male genitalia (Fig. 27) with the lobos yellowish-brown and rest dark brown, setae pale.

Female : Similar but comparatively darker coloured : in fore legs femur and tibia uniformly yellowish-brown, in mid and hind legs femur and tibia yellowish-brown and black; abdomen black with grey markings at the anterior and posterior sides of terga.

Material examined : *Holotype* ♂ Z.S.I. Reg. No. 6971/H6, India: Kerala Kottayam : Edapaliyam, 5.i.1971, Coll A.N.T. Joseph. *Paratype* ♀, Reg. No. 6972/H6, rest of details as in holotype.

Discussion : Of the various species of *Lobus* Martin known from India and adjoining countries *L. jairami* Joseph & Parui is somewhat similar to *L. martini* Joseph & Parui, but otherwise quite distinct in structural details of male genitalia and colouration of hind legs. This species is named in honour of Sri Jairam Singh, Insect Setter, who has collected many valuable flies.

Distribution : India (Kerala)

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

12. *Lobus keralae* Martin *

1972. *Lobus (Lobus) keralae* Martin, *J. Kansas ent. Soc.*, **45** : 13. Type locality : Walayar Forest, Kerala.

1975. *Lobus keralae* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 103.

1990. *Lobus keralae* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 11.

Male : Length 18 mm. Face yellowish; whitish yellow tomentose on lower half, narrowly darker along facial margins, front, vertex, and occiput black, front brown tomentose, vertex and occiput grey above; 4 long pale hairs in mystax, short bristles on antennal segment 2 brownish, strong occipital bristles pale brown; two basal antennal segments reddish brown; segment 3 lost; proboscis dark red.

Thorax polished, reddish dorsally, without stripes, laterally mostly reddish white tomentose, posterior declivity reddish-brown tomentose, whitish on posterior humeri and narrowly near scutellum; short pale sparse setae on dorsum; scutellum reddish brown, narrowly paler along margin, reddish brown tomentose, 4 short dark bristles on each side of posterior margin; pleura reddish, white tomentose, middle coxa and just above it pale reddish brown tomentose.

Abdomen reddish, narrow yellow bands on tergite 2, anteriorly and posteriorly on tergite 3; tergite 2 dorsally mixed reddish brown and grey anteriorly, reddish brown posteriorly, tergite 3 dorsoanteriorly reddish brown tomentose, tergites 7 and 8 with dense recumbent short black setae, semirecumbent strong pale setae; cerci more or less ovoid, about as long as wide, vestiture of long reddish yellow hairs; hypandrial apodeme free and narrow.

Wings uniformly pale yellowish brown, marginal cell 2 slightly expanded medially, posterior vein 4 (M_2) slightly bent at cross-vein.

Legs yellowish, posterior femora gradually clavate, a dark spot medially, darker on base; empodium more than half as long as tarsal claws.

Female : Unknown.

Type material : *Holotype* ♂ Kerala State: Walayar Forest, South India, alt. 213m. x. 1963. Coll. P.S. Nathan, (CRM).

Discussion : *Lobus keralae* Martin is closely similar to *L. himalayae* Martin but differs from it by the presence of dark spots medially and basally on hind femur, hind tibia without band, scutellum bearing 8 short bristles on hind border, and distinctive male genitalia.

Distribution : India (Kerala).

Type : In the Collection of the Smithsonian Institution, Washington.

13. *Lobus martini* Joseph & Parui (Fig - 28)

1983 a. *Lobus martini* Joseph & Parui, *Bull. zool. Surv. India*, 5 (1) : 67. Type localities : Trichur and Ernakulam Districts, Kerala.

1990. *Lobus martini* : Joseph & Parui, *Bull. zool. Surv. India*, Occ. Paper No. 113 : 11.

A slender black fly with pale and dark brown legs and brownish tinged wings. Male : length 7-9 mm, wing 4-5 mm; female : length 7-10 mm, wing 4-6 mm.

Males. - Head black, greyish-yellow scales on frons below antennae; gibbosity weakly developed with dense white bristles, occiput medially and laterally grey tomentose leaving a large area in between them or more or less uniformly grey tomentose, setae on occiput white become shorter and paler towards the middle. Antenna black, scape subequal to pedicel, first flagellomere elongate, style shorter than or nearly as long as first flagellomere and suddenly narrowed at apex. Proboscis and palpi black with pale setae.

Thorax black with grey tomentum; pronotum densely grey tomentose; scutum devoid of mediolongitudinal stripe, sides grey tomentose while the remaining black, covering setae white or pale, posterolateral sides with a pair of pale or dark brown bristles; scutellum thickly grey tomentose, hind border with 2 or 3 rows of pale or dark brown short bristles; pleura for greater part covered with grey tomentum, anepisternum and katepisternum anteriorly bearing dense, long white setae. Halteres pale yellowish-brown with their stalks comparatively lighter coloured.

Legs pale and dark brown, the extension of colouration variable but shows the following pattern: in fore leg femur pale yellow with its apex dark brown, tibia pale with its apex and sides dark brown, tarsus dark brown except the base of basitarsus being pale; in mid leg femur basally pale while the remaining dark brown, tibia basally and dorsally pale while the rest dark brown, tarsus similar to the preceding; in hind leg femur and tibia less than half pale and the remaining dark brown, basitarsus almost wholly pale or apically dark brown, remaining segments dark brown; clothing setae white or pale, bristles black with some pale ones also.

Wing brownish tinged, posterior half lighter than the anterior half.

Abdomen black with the terga at the anterior and posterior borders marked grey, the area of grey marking gradually decreases in the posterior terga, sides of terga 1 and 2 with pale setae. Male (Fig. 28) black with pale setae.

Females. - Similar to the males.

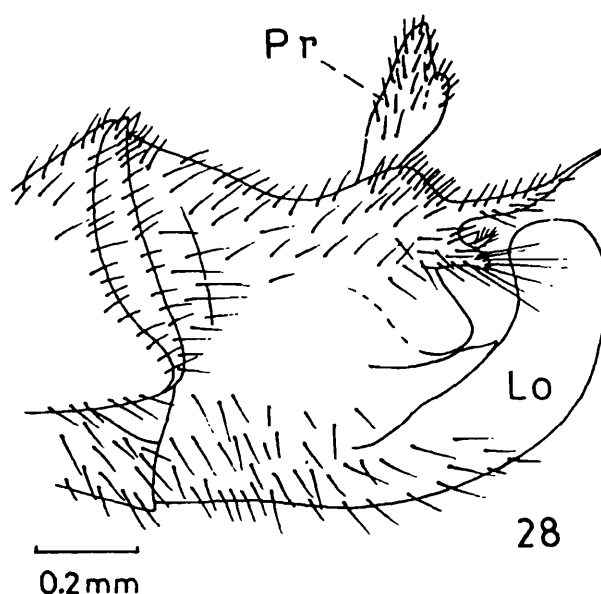


Fig. 28 : *Lobus martini* Joseph & Parui, lateral view of male genitalia.

Material examined. Holotype ♂, ZSI Reg. No. 6662/H6, India : Kerala State : Trichur District : Chalakudy : Konnakuzhi, 22.xii. 1979, Coll. Joseph & Parui. Paratypes 1 ♂, 3 ♀, Reg. No. 6663/H6 to 6666/H6, details as in holotype; 1 ♂, Reg. No. 6667/H6, Kerala State : Ernakulam District : Kannimangalam, 16. xii. 1979, Coll. Joseph & Parui; 1 ♀, Reg. No. 6668/H6, Malayattoor, rest of data as in preceding; 1 ♂, Reg. No. 6669/H6, Idamalaya, 18. xii. 1979, rest of details as in preceding.

1 ♀, India : Andhra Pradesh : Hyderabad District : Manjira Road, 14. viii. 1985; 1 ♂, 1 ♀, West Godavari District: Eluru: Nayam Palli, 14. ii. 1986, all Coll. A. N. T. Joseph (Z. S. I.).

Discussion. It can be recognised at once from all other known species of the genus by the structural details of male genitalia, in which character the various species exhibit great variation. It is named in honour of late Dr C. H. Martin, the author of the genus.

Distribution. India (Andhra Pradesh and Kerala).

Type. In the National Zoological Collection of the Zoological Survey of India, Calcutta.

14. *Lobus pandai* Joseph & Parui (Fig. 29)

1998. *Lobus pandai* Joseph & Parui, *Rec. zool. Surv. India* 97 (1 & 2): 1-28. Type locality: Pakhal Forest: Warangal District, Andhra Pradesh.

A slender black fly with grey tomentum, pale yellow, yellowish-brown and black legs, a dorsal yellowish-brown marking on hind femur, light brown wings and black abdomen. Male: length 8 mm, wing 5 mm.

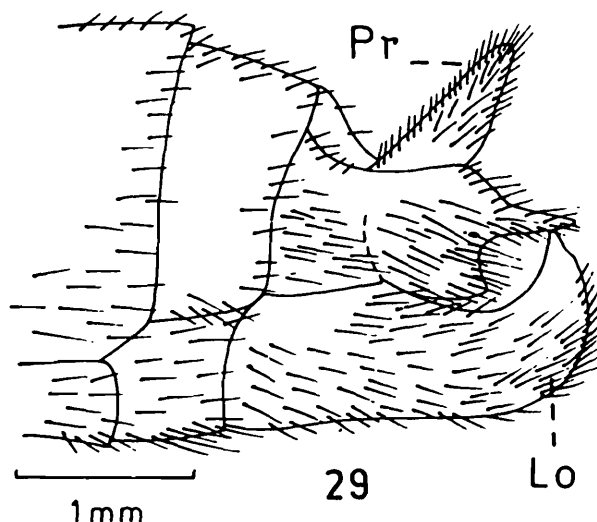


Fig. 29 : *Lobus pandai* Joseph & Parui, lateral view of male genitalia.

Male. Head black with greyish-white tomentum; gibbosity indistinct, mystax a transverse row of white bristles on mouth border; postcranium with sparse white setae but for a few brown setae adjoining to ocellar triangle. Antenna dark brown, scape slightly longer than half of pedicel, style about three-fourths the distance of first flagellomere. Palpus and proboscis black, the latter with sparse, white setae.

Thorax black with grey tomentum; pronotum without setae; scutum devoid of mediolongitudinal stripe, sides grey tomentose while the rest black; chaetotaxy: 1 notopleural, 1 supra-alar; vestiture black but on sides white, bristles black or pale yellow; scutellum with dense grey tomentum, border with dense, long, black setae, medially also with a few black setae; pleura with dense greyish-white tomentum, anepisternum and katepisternum anterodorsally with dense, long, white setae. Haltere pale yellow with the distal half of stalk white.

Legs pale yellow, yellowish-brown and black, coxa and trochanter black, fore and mid femora and tibiae basally yellowish-brown while the rest dark brown, hind femur about one-third from base white, rest pale yellow with the middle of which with a yellowish-brown marking dorsally, hind tibia basal half pale yellow and distal half black, metatarsus in all legs white with black apex, remainder black, vestiture white but for a few black setae, bristles white or black.

Wing light brown, but distally lighter coloured.

Abdomen black with grey marking on terga both anteriorly and posteriorly, the grey marking gradually decreases on posterior terga, terga 1, and 2 on sides with a few setae. Male genitalia (Fig. 29) black with white setae.

Material examined. *Holotype* ♂, ZSI Reg. No. 7496/H6, India: Andhra Pradesh: Waranagal District: Pakhal Forest, 4 vii. 1985, Coll. P. Parui.

Discussion. *Lobus pandai* Joseph & Parui is closely similar to *L. martini* Joseph & Parui, differing from it in the shape of lobos, which gradually tapers towards apex, and wing-light brown basally and clear distally.

Distribution. - India (Andhra Pradesh).

Type. - In the National Zoological Collection of the Zoological Survey of India, Calcutta.

Subfamily LAPHRIINAE

1847. Laphriinae Loew, *Linn. Ent.*, 2 : 384.

The Subfamily consists of two tribes - Atomosini and Laphriini having 3 genera, *Anoplothyrea* de Meijere, *Loewinella* Hermann and *Opeatocerus* Hermann, in the former and 12 genera, *Andrenosoma* Rondani, *Cormansis* Walker, *Hoplistomerus* Macquart, *Hyperechia* Schiner, *Laphria* Meigen, *Laphystia* Loew, *Laxenecera* Macquart, *Maira* Schiner, *Nusa* Walker, *Orthogonis* Hermann, *Pogonosoma* Rondani and *Pseudonusa* Joseph & Parui, in the latter from India and adjacent countries. The members of Atomosini are smaller and of Laphriini are larger flies. The species of Laphriinae are bee-like with first flagellomere rod-like or clavate. They resemble Asilinae in closed marginal cell and Dasypogoninae in the two-jointed palpi and from the latter by the closed marginal cell.

Key to tribes of Laphriinae

1. Posterior intercalary vein (M₃) straight and parallel with outer margin of discal cell, often in a line with it Atomosini
- Posterior intercalary vein (M₃) curved, not parallel with outer margin of discal cell and not in a line with it except *Orthogonis* Laphriini

Tribe LAPHRIINI

Of all the zoogeographical regions Oriental Region records the maximum number of genera. From the Oriental Region 15 genera have been recorded, of which from India and adjacent countries 12 genera have been reported. The members of this tribe can be distinguished from Atomosini by the membranous postmetacoxal area; vein M_3 curved and not parallel with the outer margin of discal cell and not in a line with it except *Orthogonis* Hermann. The principal character of the members of the tribe is the characteristic shape of proboscis which is either laterally flattened like paperknife or triangular in cross-section.

Key to genera of Laphriini

1. Proboscis laterally flattened like paperknife 2
 Proboscis triangular in cross-section 4
2. First flagellomere with spoon-shaped microsegment with an apical spine, hind femur with spinous protuberances, marginal cell bulbous *Hoplistomerus* Macquart
 First flagellomere without microsegment 3
3. First flagellomere with an apical spine, scutum not metallic coloured but abdomen partly so *Laphria* Meigen
 First flagellomere without apical spine, scutum and abdomen metallic coloured *Maira* Schiner
4. Wing with 3 submarginal cells *Pogonosoma* Rondani
 Wing with 2 submarginal cells 5
5. First flagellomere elongate, bearing a dorsal incision with a distinct spine, postnotal callosity bears pile or bristles *Cormansis* Walker
 First flagellomere without any incision and associated spine, postnotal callosity pubescent 6
6. First posterior cell open 7
 First posterior cell closed 8
7. Veins at apex of discal cell forming a cross, first flagellomere without microsegment, only with a subapical spine *Orthogonis* Hermann
 Veins at apex of discal cell not forming a cross, first flagellomere bears two microsegments, apical one spoon-shaped with a spine *Laphystia* Loew
8. Ambient vein absent, costa ends above wing apex, first posterior cell narrow throughout *Nusa* Walker
 Ambient vein complete 9
9. Marginal cell open, first flagellomere bears a spoon-shaped microsegment with an apical spine *Pseudonusa* Joseph & Parui

- Marginal cell closed, first flagellomere without microsegment 10
- 10. First flagellomere slender, elongate with conspicuous long setae, face thickly covered with bristly pile upto base of antennae *Laxenecera* Macquart
- First flagellomere without such setae 11
- 11. Large and robust flies with dense, long piles on legs, pleura and laterally on abdomen *Hyperechia* Schiner
- Medium sized flies with reduced piles on legs, pleura and laterally on abdomen *Andrenosoma* Rondani

Genus 5. *Andrenosoma* Rondani, 1856

1856. *Andrenosoma* Rondani, *Dipterol. ital. Prodr.* 1 : 160. Type-species: *Laphria atra* Fabricius = *Asilus atra* Linne, original designation.
1863. *Elaeotoma* Costa, *Atti. Accad. Sci. Napoli*, 1 : 49. Type-species: *Elaeotoma adjustiventris* Costa, monotypic.
1975. *Andrenosoma*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 104
1990. *Andrenosoma*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 13,

Large flies; head not wider than thorax, face highly produced on lower half, mystax consists of numerous long bristles and pile which continues upto base of antenna; vertex deeply excavated with dense pile, postocciput tumid, prominent, with dense pile; antennal scape twice the length of pedicel, first flagellomere as long as or a little longer than the combined length of scape and pedicel, gradually dilated from base and narrowed towards apex bearing at tip a small pit and a spine concealed in it; proboscis exceptionally stout, swollen at base and apex, shovel-like; palpus two segmented, apical segment flattened, spoon-like and with bristly pile. Thorax dull or shining; scutum with scanty bristly pile, humerus bristly pilose; lateral bristles of scutum consist of 1 notopleural, 5-6 supra-alar, 5-6 postalar; propleuron bears abundant bristly pile, anepisternum with several bristles and pile, laterotergite with a band of long bristles, postnotal callosity pollinose, post metacoxal area membranous. All femora stout, swollen distally and bears numerous bristly pile; fore and hind tibiae with double rows of several bristles; pulvilli well developed, empodium blade-like. Wing with the marginal cell closed, long and stalked, vein R₁ ends well above wing apex, vein R₅ ends far beyond, fourth posterior and anal cell closed with long stalk. Abdomen broad, shining, with adpressed pile which are longer, coarse, erect laterally, terga 1-5 with 1 or 2 lateral bristles; male genitalia large, epandrium long, undivided, hypandrium quite small; in female eighth tergum triangular, laterally compressed, ninth tergum elongate, pilose apically.

Discussion. - Presence of two submarginal cells separates *Andrenosoma* Rondani from its closest ally *Pogonosoma* Rondani.

Distribution. - The genus occurs throughout all the zoogeographical regions but is relatively more in Neotropical Region. From the Oriental Region so far only two species have been recorded, of which only one species has been reported from India (West Bengal) and adjacent countries.

Type-species : Location of types not known.

15. *Andrenosoma choprai* Bromley
(Fig. 30)

1935. *Andrenosoma choprai* Bromley, *Rec. Indian Mus.* 37 : 227. Type locality: Singla, Darjeeling.

1975. *Andrenosoma choprai*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 104.

1990. *Andrenosoma choprai*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 13

A medium sized black, white hirsute, species with grey tomentum, light brownish wings, and bluish-black abdomen. Male: length 17 mm, wing 12 mm.

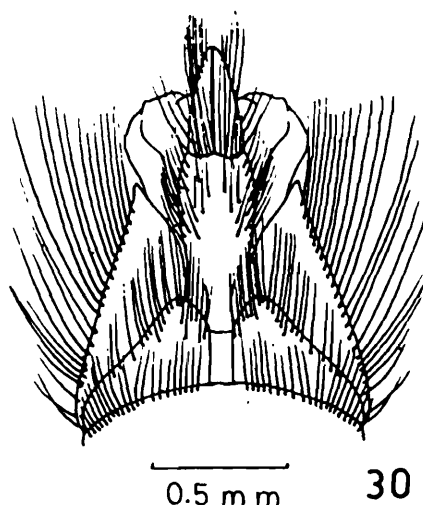


Fig. 30 : *Andrenosoma choprai* Bromley, dorsal view of male genitalia.

Male. *Head* broader than thorax, black covered with dense greyish-white tomentum; face strongly gibbous, below with spike-like bristles, mystax white below and black above, fronto-orbitals white and also with a row of black bristles on sides above antennae, ocellar bristles black; postcranium with black and white setae, postocular bristles present, postgena white setose. Antenna black, scape ventrally with white setae and one black bristle, dorsally with a few black setae, pedicel black setose, one of which both dorsally and ventrally form bristles, pedicel longer than two-thirds of scape, first flagellomere dilated beyond basal one-third and longer than the combined length of scape and pedicel. Palpus and proboscis black, former black setose, latter white setose with one of them being black.

Thorax black, grey tomentose; pronotum white setose with a median transverse row of black bristles; scutum with a mediolongitudinal black stripe extending the entire length which is divided by a longitudinal grey stripe, latter gradually becoming faint posteriorly so much so it becomes indistinct beyond the transverse suture, sides with two spots in a row, anterior being greyish-yellow while the latter black, clothing setae black but for the pale yellow ones on sides anterior to the transverse suture, bristles black; scutellum with the disc sparsely black setose and posteriorly with some black bristles, hind border with a pair of black bristles; laterotergite with dense elongate white setae, meron almost bare. Haltere with whitish head and brown stalk.

Legs black with bushy yellowish-white pile and some black bristles intermingled; in fore and mid legs femur ventrally and tibia ventrally and venterolaterally with dense, elongate, yellowish-white setae, apex of tibia and tarsus ventrally with a mat of golden yellow setae, which is distinct in hind leg.

Wing light brownish, but almost hyaline basally.

Abdomen bluish-black with a transverse narrow grey band at the base of terga, sides of terga 1-3 with dense yellowish-white setae amidst with black bristles; one on tergum 1, and two on terga 2 and 3, clothing setae predominantly black with some yellowish-white setae intermingled. Male genitalia (Fig. 30) black and dark brown with yellowish-white setae.

Females. Similar to the male.

Material examined. *Holotype* ♂, ZSI. Reg. No. 658/H6, India: Darjeeling District: Singla, 457 m, v. 1913, Coll. Lord Carmichael. *Allotype* ♀, data same as holotype.

1 ♀, India: Kerala: Parambikulam, 510-960 m, 16-24. ix. 1914, Coll. F. H. Cravely (Z. S. I.).

Discussion. - So far *Andrenosoma* Rondani are known only by two species from the Orient, *A. choprai* Bromley from India and *A. irigensis* Oldroyd from Philippines.

Distribution. India (West Bengal).

Type. In the National Zoological Collection of the Zoological Survey of India, Calcutta.

Genus 6. *Cormansis* Walker, 1851

1851. *Cormansis* Walker, *Insecta Saundersiana*, 1 : 154. Type-species: *Cormansis halictides* Walker, monotypic.

1975. *Cormansis*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 105.

1990. *Cormansis*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 13

Small flies; head as wide as thorax, face produced on lower fourth; mystax consists of scattered bristly pile and bristles above and a few bristles on epistome; scape one or two times the length of pedicel and bearing at about the middle a dorsal incision with a distinct spine in it; frons strongly divergent with stiff pile, vertex more strongly convergent, postocciput with pile ventrally and stout bristles laterally, ocellarium small with a pair of stout bristles; proboscis short, swollen at base, apex obtuse with fine pile. Thorax shining; pronotum bears numerous short bristles; scutum without distinct bristles dorsally; chaetotaxy: 1 notopleural, 1 supra-alar, 1-2 postalar; scutellum bears two pairs of marginal bristles; propleuron with bristly pile, anepisternum and katepisternum pilose, laterotergite bears a vertical band of bristles and pile, postnotal callosity with a patch of bristles. All femora stout and swollen but hind femur more swollen distally, and femur with a row of long, fine bristles ventromedially and ventrolaterally, hind femur with a pair of very long ventromedial bristles near base and a stout lateral bristle at the outer third, ventral surface bears a dense fringe of long pile; fore tibia with 4 dorsal and 3 posteroventral bristles, mid and hind tibiae with a row of bristles on all surfaces, hind tibia bears a dense, conspicuous fringe of long, fine pile; pulvilli and empodium well-developed. Wing with the marginal cell closed and stalked, vein R₁ strongly arched at base and ends just above wing apex, first posterior cell narrowly open or closed and stalked, fourth posterior cell closed and stalked, end vein of discal cell nearly aligned with end vein of fourth posterior cell, anal cell closed, ambient vein ends at vein M₂. Abdomen as wide as thorax and with abundant pile; tergum 1 laterally with 5-6 bristles, tergum 2 with 3 or more

lateral bristles, remaining terga with 1 or 2 lateral bristles; male genitalia concealed in the cup-like structure formed by the sixth tergum, epandrium broad, proctiger with two broad, triangular, distally rounded plates, hypandrium short and triangular.

Discussion.- From all other genera of Laphriini *Cormansis* Walker can be easily distinguished by the distinctive first flagellomere possessing a dorsal incision with a spine in it and ambient vein ends at M₂ vein.

Distribution. The members of this genus are predominantly distributed in the Neotropical Region. In the Nearctic Region it is moderately distributed. From the Orient only *Cormansis halictides* Walker has been so far recorded in India.

Type -species. In the Collection of the Natural History Museum, London.

16. *Cormansis halictides* Walker

1851. *Cormansis halictides* Walker, *Insecta Soundersiana* 1 : 154. Type locality: "East India"

1975. *Cormansis halictides*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 105

1990. *Cormansis halictides*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 13.

Specimen badly damaged and represented by thorax bearing one wing and hind legs, which are also damaged. Length: wing 7 mm.

Legs only hind pair present but broken off from tarsus onwards, coxa and trochanter black, femur black with yellowish-brown apex, tibia yellowish-brown.

Wing brown with yellowish-brown at base and along anterior border between C and Sc.

Walker's original description is as follows. Body black; head tawny and thickly covered with short tawny hairs above, hoary and clothed with whitish hairs beneath; eyes reddish; fore part nearly flat, all the facets very small; sucker and feelers black; thorax thickly clothed with short tawny hairs; abdomen slightly spindle-shaped, a little broader than thorax and nearly twice its length, clothed with pale tawny hairs, which are most prevalent along each side; legs tawny, thinly clothed with yellow hairs, beset with a few black bristles; femora black with tawny tips; tarsi dark tawny; claws black, tawny at the base; pulvilli pale tawny; wings grey; wing ribs and poisers tawny; veins black, tawny towards the base and along the fore borders. Length of the body 4 lines; of the wings 7 lines.

Material examined. *Holotype*, badly damaged, B. M. N. H., India, Ex Saunders Coll. 68.4, no other details. Also bears another label, holotype, det. J. E. Chainey.

Discussion. - This is a monotypic genus.

Distribution. India ("East India").

Type. In the Collection of the Natural History Museum, London.

Genus 7. *Hoplistomerus* Macquart, 1838

1838. *Hoplistomerus* Macquart, *Dipteres exotiques*, 1: 59. Type-species: *Laphria serripes* Fabricius, 1805, monotypic.

1975. *Hoplistomerus*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2: 105.

1983. *Hoplistomerus*: Joseph & Parui, *Oriental Ins.* 17: 286

Medium sized flies; head long, face uniformly gibbous throughout; mystax consists of numerous weak bristles above epistome and stiff pile above it continuing upto base of antenna, frons short and divergent, vertex excavated, ocellarium bears a pair of stout, moderately long, divergent bristles as well as a pair or so fine piles, postocciput more prominent below than above with abundant long, fine pile; antenna with scape a little longer than pedicel, first flagellomere twice the combined length of scape and pedicel, apex bears a spoon-shaped micro-segment carrying a short spine. Thorax micropubescent; scutum with abundant, curled, fine pile, dorsal bristles absent, humerus bears pile and stout bristles; chaetotaxy: 2-4 postalars, a prominent fringe of short, stout, tuberculate bristles present above the wing base; scutellar disc setose; propleuron bears scattered, long, stiff pile, laterotergite with a vertical band of many weak bristles, postnotal slopes micropubescent, postmetacoxal area membranous. All femora thick through the middle, hind femur more so and strongly swollen beyond middle, fore femur with 3-4 posterodorsal, 4-6 dorsal, stout bristles and a few weak bristles basally, mid femur with fine pile ventrally, 2-3 anterior and a posterior bristle at apex, hind femur with 6-7 dorsal, 2 dorsolateral, 6 lateral bristles and 3 spindle-like ventral projections towards apex; fore tibia with 10 anterodorsal, 7-8 dorsal and 4 ventral bristles along with a few stiff piles, mid tibia bears 8 dorsal, 5 ventral and 4 posteroventral bristles, hind tibia with 6 dorsal, 3 dorsolateral and 1 lateral bristles near apex, and apex also with a few bristles on all surfaces. Wing with the marginal cell closed and bulbous, vein R₁ makes a rectangular turn below the end of marginal cell and ends well above wing apex, first and fourth posterior cells closed and stalked, end vein of fourth posterior cell and the lower discal cell form about a straight line, ambient vein ends at or near the end of anal cell. Abdomen robust with dense pile; terga 1-4 at least with 5 pairs of bristles on each side, number of bristles less in remaining terga; male genitalia with epandrium a highly convex, bulbous, uncleft plate with truncate apex, gonocoxite shorter than epandrium with a hood tipped process, hypandrium concealed beneath tergum 6; female genitalia concealed by the cup-like tergum 6.

Discussion. The flies of this genus can be readily distinguished from any other genera of Laphriini by the strongly thickened hind femur with three spinous protuberances, the apically bulbous marginal cell, and the robust abdomen with dense adpressed setae and numerous, lateral, tergal bristles.

Distribution. *Hoplistomerus* Macquart is Ethiopian in origin, where it is moderately distributed. From India and adjoining countries so far it is only reported by one species from Burma. (Myanmar).

Type-species. Location of types not known.

Hoplistomerus sp.

1940. *Hoplistomerus* sp. Oldroyd, *Trans. Roy. Ent. Soc.*, 90(9) : 310. Type locality: Burma (Myanmar).

1975. *Hoplistomerus* sp.: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 105.

1983. *Hoplistomerus* sp.: Joseph & Parui, *Oriental Ins.* 17 : 286.

Oldroyd (1940) reported the genus from Burma (Myanmar), from a specimen present in the Natural History Museum, London.

Genus 8. *Hyperechia* Schiner, 1866

1866. *Hyperechia* Schiner, *Verh. zool. bot. Ges. Wien.*, **16**: 673.
 1975. *Hyperechia*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2**: 105
 1990. *Hyperechia*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113: 13.

Very large and robust flies; face gradually produced from base of antenna and highly gibbous on lower third; mystax consists of dense, long, weak bristles and piles on gibbous region and above it fine pile continued upto the base of antenna; scape stout, a little longer than pedicel and with fine pile, first flagellomere gradually widened upto middle and then gradually narrowed towards apex, apex with truncate pit and concealed spine; frons shining, short with long, fine pile, postocciput tumid, medially bearing dense, fine pile throughout but with a few bristles near vertex, vertex well excavated, ocellarium small with one or two pairs of bristles or with fine pile only; proboscis short, exceptionally stout, strongly compressed dorsoventrally with numerous stout bristly pile on apical half, base bears stiff pile; second palpal segment large, thin leaf-like and with bristles at apex. Thorax pollinose; scutum with short subappressed pile dorsally; chaetotaxy: bristles weak, 3-11 notopleurals, 1-4 supra-alars, 4-5 postalars or bare; scutellar border with a row of bristles or with a dense band of long, stiff pile; propleuron bears dense pile, anepisternum, katepisternum, epimeron, meron and laterotergite with long pile, postnotal slopes micropubescent, postmetacoxal area membranous. All femora and tibiae exceptionally stout; hind femur moderately swollen dorsally, hind tibia arcuate, comparatively more swollen, all femora and tibiae with dense brush of long, stiff pile all over but much longer dorsally and ventrally, fore and mid basitarsi with a brush of similar pile dorsally. Wing broad basally and pointed apically, marginal cell closed, vein R₁ sigmoid, first posterior cell narrowed throughout, closed and stalked. Abdomen broad, robust shining with very short, scanty fine, setate pile, which may be absent on posterior segments, tergum 1 bears a few bristles laterally, remaining terga without bristles; male genitalia conspicuous, epandrium bowl-like; female genitalia long, laterally compressed, truncate apically with numerous stiff pile apically.

Discussion. The genus can be readily recognised from all other genera of Laphriini by the characterised dense, long brush of pile on femora, tibiae and tarsi together with exceptionally broad wing base and pointed apex.

Distribution. The members of *Hyperechia* Schiner is moderately distributed only in Ethiopian Region. In the Oriental Region only two species have been recorded, of which one is from India.

Type species. In the Collection of the Natural History Museum, London.

17. *Hyperechia xylocopiformis* (Walker)*

1849. *Laphria xylocopiformis* Walker, *List Dipt. Colln Br. Mus.*, **2**: 385. Type locality: Madras, India.
 1975. *Hyperechia xylocopiformis*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2**: 106
 1990. *Hyperechia xylocopiformis*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113: 14.

Body broad, bronze-black, with a purple tint, clothed with short hairs, head a little narrower than the chest, clothed with white hairs on the crown and on the front, and with long black hairs beneath; clypeus armed with many black bristles; lip black, shining, not so long as the head. beset at the base with black

bristles, clothed at the tip with short piceous hairs; eyes black, fore part flat, tolerably distinct from the other part and composed of larger facets: feelers black, very small, but little longer than half the breadth of crown between the eyes, first and second joints shining, slightly club-shaped, beset with a few black bristles; second joint more slender and a little shorter than the first; third joint very long spindle-shaped, dull, without hairs, about twice the length of first and the second joint: sides of the chests thickly clothed with long, black hairs, and each adorned in front with a tuft of very bright yellow hairs: abdomen nearly oval, smooth, shining, a little broader than the thorax, thickly clothed on each side with black hairs; first segment very short; second segment short; third and fourth segments of equal length; eighth and ninth segments very small; legs black, stout, thickly clothed especially the shanks with black hairs; hind femora not thick nor armed with teeth, hind shanks curved slightly but more so than the other shanks; claws black; foot cushions pale piceous, whitish beneath; wings black, adorned with bluish-purple lustre; wing ribs and veins black; poisers piceous.

Length of the body 15 lines; of the wings 28 lines.

Madras. Presented by Walker Elliot esq.

Type. In the Collection of the Natural History Museum, London

Genus 9. *Laphria* Meigen, 1803

- 1803. *Laphria* Meigen, *Magazin Insektenkde*, 2 : 270. Type-species: *Asilus gibbosus* Linnaeus; designated by Latreille (1810:43).
- 1820. *Ropalocera* Meigen, *Syst. Besch. zweif. Insekt.* 2 : 301. Type-species: *Laphria nigripennis* Meigen, monotypic.
- 1851 *Choerades* Walker, *Insecta Saundersiana*, 1 : 109. Type-species, *Laphria aurigena* Walker, monotypic = *vulcanus* Wiedemann.
- 1914. *Pagidolaphria* Hermann, *Ent. Mitt.*, 3 : 85. Type-species: *Laphria gigas* Macquart, original designation.
- 1914a. *Saliomima* Enderlein, *Zool. Anz.*, 44 : 243. Type-species, *Laphria reinwardtii* Wiedemann, monotypic.
- 1914. *Epholkiolaphria* Hermann, *Ent. Mitt.*, 3 : 89. Type-species: *Laphria egregia* van der Wulp, original designation.
- 1975. *Laphria*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 106.
- 1981a. *Laphria*: Joseph & Parui, *Ent. Scand.*, 12 : 213.
- 1990. *Laphria*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 14.

Large and robust flies; face well produced on lower half, occiput tumid in the middle with long, dense, coarse setae; mystax consists of long, coarse setae and bristles; proboscis elongate, laterally compressed and with numerous bristly setae on its apex; palpus two jointed; scape twice as long as pedicel, first flagellomere longer than the combined length of scape and pedicel, nearly club-shaped and with a small pit and a minute spine at its apex. Scutum broad, gently convex and with dense setae, laterotergite bears long, curved bristles, postnotal callosity usually bare. All femora stout and swollen but hind femur more so on the outer half, hind tibia curved and distinctly swollen than others, all femora and tibiae with dense

bristly setae. Wing with closed marginal cell, vein R_1 strongly sigmoid and ends above wing apex, first posterior cell open, fourth posterior and anal cell closed, ambient vein complete. Abdomen metallic coloured, with dense erect setae; male genitalia large and conspicuous, epandrium bowl-shaped, hypandrium very short or absent; female genitalia conspicuous.

Discussion. The genus closely resembles *Maira* Schiner but differs from it by the scutum not being metallic coloured together with the presence of more setae on thorax and abdomen.

The genera *Laphria* Meigen 1803 (furry and bee-like), *Choerades* Walker 1851 (rather bare with recumbent hairs), *Maira* Schiner 1866 (metallic blue green or purple) and *Pagidolaphria* Hermann 1914 (very large and hairy, black and yellow) are distinctive in appearance, but have no dependable structural characters to segregate them (see Hull 1962: 325 and Oldroyd 1975: 106). They are retained as separate genera more for the sake of convenience.

Distribution. The genus is cosmopolitan, having maximum recorded species from Palaearctic Region and lowest from Ethiopian Region. From India and adjacent countries so far 18 species have been recorded. In India they are reported from Assam, Himachal Pradesh, Karnataka, Kashmir, Kerala, Meghalaya, Nagaland, Tamil Nadu and West Bengal.

Type species. Location of types not known.

Key to species of *Laphria* Meigen

1. Mystax wholly black 2
- Mystax wholly yellow or mixed black and yellow 4
2. Mid tibia with long reddish piles, scutellum bears yellowish-brown pile *nigrohirsuta* Lichtward
- Mid tibia with mixed black and yellow or white piles, scutellar pile other than yellowish-brown 3
3. Abdomen with dense short black setae, scutellar disc bears short black setae, epandrium with a brush of bristles apically *dimidiata* Macquart
- Abdomen with black and predominant golden yellow setae, scutellar disc bears golden setae, epandrium with a few bristles *frommeri* Joseph & Parui
4. Wing uniformly infuscated 5
- Wing infuscated at the tip and hyaline at base 8
5. Legs wholly black, mystax predominantly golden yellow *flava* (Linne)
- Legs partly black or wholly orange or yellow, mystax yellowish 6
6. Tibiae uniformly brownish or reddish-yellow 7
- Tibiae yellowish-brown with black apex, wing yellowish-brown with some brown markings *alternans* Wiedemann

7. Antenna wholly black, femora uniformly black with yellowish-brown apex, wing wholly brown *luteopilosa* Joseph & Parui
 Antennal scape yellow, fore femur ventrally red, apex and hind border of wing cloudy *chrysonata* Hermann
8. Abdomen reddish 9
 - Abdomen black 10
9. All femora wholly black, mystax yellowish with a few black bristly pile *gilvoides* van der Wulp
 - All femora reddish with a brown spot towards the middle, mystax golden yellow *semifulva* Bigot
10. All femora wholly black 11
 All femora not wholly black 13
11. Hind margin of scutellum with a row of long, black, bristly pile, basal two abdominal segments laterally with reddish-yellow pile *furva* van der Wulp
 Hind margin of scutellum with a row of yellow bristly pile 12
12. Basal half of hind tibia black, rest yellowish-brown, hypandrium bears a pair of extraordinary stout bristles on either side *indica* Joseph & Parui
 Hind tibia black, hypandrium without any extraordinary stout bristles *valparaiensis* sp. nov.
13. Wing hyaline, thorax with three longitudinal stripes, abdominal terga 2-5 with triangular white tomentose spots on each side *claripennis* Bigot
 - Wing infuscated distally, hyaline at base 14.
14. Antennal scape and pedicel yellowish-brown, rest black, wing infuscated at apex and along posterior border *orientalis* Joseph & Parui
 - Antenna wholly black, wing dimidiate 15
15. Tibia always yellowish-brown, apical two-thirds of wing dark brown infuscated *assamensis* Joseph & Parui
 Tibia not wholly yellowish-brown 16
16. Mystax black with a few golden yellow pile in the middle, hypandrium bears a pair of extraordinary stout bristles *fuscata* sp. nov.
 - Mystax black with a few anterior white pile 17
17. Apex of epandrium conically produced, terga 3 and 4 with dense grey or greyish-yellow pile *keralaensis* Joseph & Parui
 - Apex of epandrium truncate, terga 3 and 4 with some pale yellow pile *nathani* Joseph & Parui

18. *Laphria alternans* Wiedemann
(Fig. 31)

1828. *Laphria alternans* Wiedemann, *Aussereurop. zweifl. Insekt.*, 1 : 511. Type locality: Java.
 1838. *Laphria senomera* Macquart, *Dipt. exot.*, 1(2) : 65. Type locality : West Bengal.
 1975. *Laphria alternans*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 107.
 1990. *Laphria alternans*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 14.

A comparatively small, black and yellowish-brown species with yellowish-brown and black legs, and yellowish-brown and brown wings. Male: 19 mm, wing 16 mm; female: length 15 mm, wing 14 mm.

Males.- Head as broad as thorax, black with greyish-yellow and grey tomentum; mystax golden yellow, fronto-orbital bristles and ocellar bristles golden yellow, postocular bristles golden yellow, postgena with pale yellow setae. Antennae damaged and lost from first flagellomere onwards in both sexes, scape and pedicel yellowish-brown with pale yellow setae and bristles, pedicel about half the length of scape. Palpus pale yellow, proboscis black, setae on both pale yellow.

Thorax black with yellowish-brown marking; pronotum with a transverse row of pale yellow bristles, laterally with pale yellow setae and bristly setae; scutum with the mediolongitudinal stripe faint and extending from anterior border to slightly beyond transverse suture, median dividing band yellow and broad, laterally with 3 black spots; chaetotaxy: 1 notopleural, 2+1 (small) postalars, 3 supra-alars; vestiture and bristles golden yellow; scutellar disc with sparse, golden yellow setae, border with 6 long, golden yellow bristles; pleuron with sparse, golden yellow tomentum, meron with a bunch of long, golden yellow setae. Haltere brown with dark brown to black mark.

Legs yellowish-brown with black mark; coxa and trochanter yellowish-brown, femur yellowish-brown with black tip, anterodorsally with a black band, in hind femur an additional anterior black band present, tibia yellowish-brown with black tip, tarsus yellowish-brown with tips of segments black, vestiture and bristles golden yellow.

Wings yellowish-brown with the following brown marks: at the union of Cu₂ and 2nd anal vein, along posterior cross-vein and at the furcation of R₄ and R₅.

Abdomen yellowish-brown and black, tergum 1 yellowish-brown, tergum 2 anteriorly yellowish-brown and posteriorly black, tergum 3 black anteriorly and somewhat yellowish-brown distally, terga 4 and 5 similar to 3 but yellowish-brown comparatively distinct and extensive, tergum 6 narrowly black anteriorly and rest yellowish-brown; tergum 1 laterally with setae and bristly setae, terga 2-4 with 1 or 2 bristles, vestiture black and golden yellow, bristles pale yellow. Genitalia (Fig. 31) yellowish-brown with pale yellow setae.

Females.- Similar but with the following differences: in hind femur anterior black band not so distinct; in abdomen yellowish-brown comparatively distinctive. Genitalia yellowish-brown, tergum 9 deeply incised apically, sternum 8 bearing a number of bristly setae, apex well projected medially, the projection being broad.

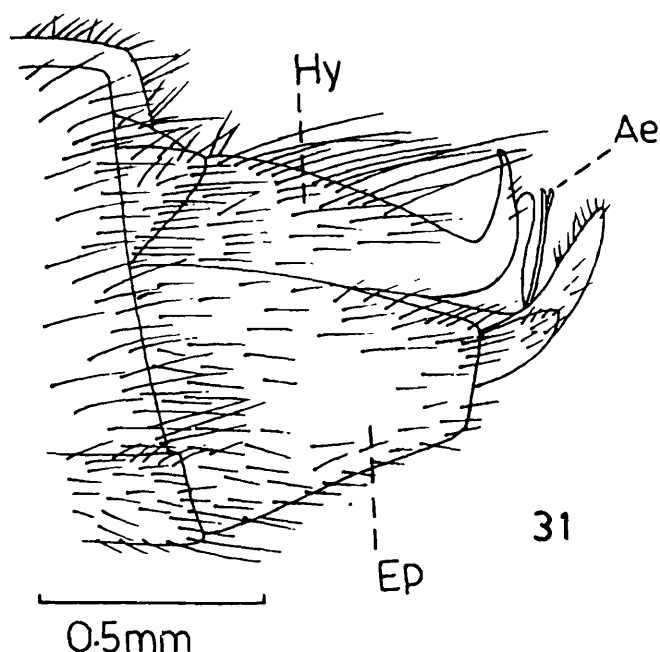


Fig. 31 : *Laphria alternans* Wiedemann, lateral view of male genitalia.

Material examined. 2 ♂, Z. S. I. Reg. No. 9902/H2, and 9909/H2, Bangladesh: Chittagong Hill Tracts: Rangamati, 11-16.vii.1951, Coll. R. Hodart, Indian Mus. Colln., det. name not given. 1 ♀, ZSI. Reg. No. 5348/8, label bears only 'Mergherita' and no other details. 1 ♀, India: W. Bengal: Darjeeling District: Sitong, 900 m, 22-28. x. 1917, Coll. N. A. & F. G. 1 ♂, Sikkim, no other data. 1 ♀, without locality label etc. (Z. S. I.) 20.v. 1 ♂, Kerala: Valparai-Chalakudi, 980-25m. 1985, Coll. K. Ghorpade (Ghorpade C.).

Discussion : *Laphria alternans* Wiedemann, along with all other Philippine *Laphria* Meigen, was transferred to the genus *Choerades* Walker by Oldroyd (1972: 235) for the sake of convenience. Subsequently in 1975 Oldroyd himself brought it back to *Laphria*. In general colouration, it resembles *L. orientalis* Joseph & Parui but both can be readily separated by the male genitalia.

Distribution : India (Arunachal Pradesh, Assam, Kerala, and Rajasthan); Bangladesh; Burma (Myanmar); Java; Philippines.

Type : Holotype in the Collection of Rijksmuseum van natuurlijke Historie, Leiden, Netherland.

19. *Laphria assamensis* Joseph & Parui (Fig. 32)

1981. a. *Laphria assamensis* Joseph & Parui, *Ent. Scand.*, 12 : 215. Type locality : Tura, Assam (Meghalaya).

1990. *Laphria assamensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 14.

A comparatively small species with dimidiata wings, clear basally and infuscated apically. Male : length 18 mm. wing 15 mm.

Males : Head broader than thorax, black with golden yellow tomentum; mystax yellowish-brown, but in one example a pair of bristles black; fronto-orbitals golden yellow and bristles of ocellarium yellowish-brown; postcranium golden yellow setose. Antenna black, scape with yellow setae and pedicel with black setae, pedicel less than half of scape, first flagellomere lost. Palpus and proboscis black, their setae yellow.

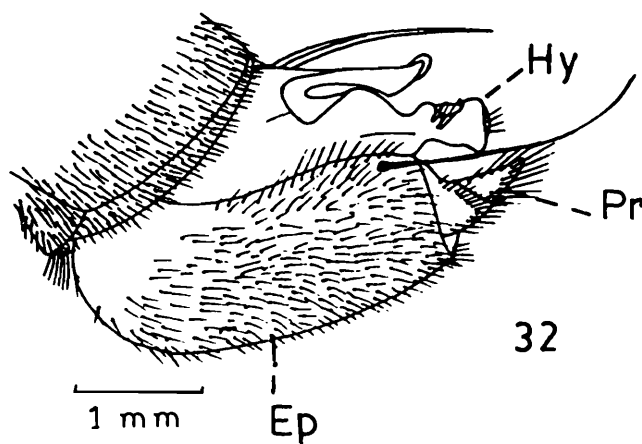


Fig. 32 : *Laphria assamensis* Joseph & Parui, lateral view of male genitalia.

Thorax black with golden yellow matting of setae; pronotum grey tomentose, setae yellow; scutum without mediolongitudinal stripe, anterior one-third medially bare, rest including scutellum covered with golden yellow matting of setae; setae at the hind border of scutellum golden yellow; pleuron divided by a median transverse band of golden yellow setae, rest black. Haltere orange.

Legs yellowish-brown and black; coxa and trochanter black, femur basally black, rest yellowish-brown, but in hind leg more than half black basally, tibia yellowish-brown, tarsus yellowish-brown with the terminal one or more segments infuscated; setae and bristles golden yellow; coxa of fore and mid legs anteriorly, femur of fore and mid legs anteroventrally, and mid tibia anteriorly and ventrally with dense, long setae mixed with or without bristles, mid tarsus also bearing anteriorly a few long setae.

Wing dimidiate, more than one-third at base clear and the rest infuscated.

Abdomen black, tergum 1 on sides, 2 entirely, 3 mostly and 4 partly covered with golden yellow matting of setae, but in one example 3-7 mostly covered with golden yellow matting of setae. Male genitalia (Fig. 32) black with two pairs of elongate black bristles, setae black but a few at the tip pale.

Material examined : *Holotype* ♂, India: Meghalaya : Garo Hills: Tura, 366-457 m, 15. vi-15.vii. 1917, Coll. S. Kemp. *Paratypes* 1 ♂, above Tura, 1067-1189 m, 15. vii 30. viii. 1917, Coll. S. Kemp ; 1 ♂ Tura, 427 m, x. 1917, Coll, Mrs. Kemp.

Discussion : It can be readily recognised from other Indian species by the distinct male genitalia together with the golden yellow matting of setae of thorax and abdomen. It resembles *Laphria dimidiata* Macquart in the dimidiate wings.

Distribution : India (Meghalaya).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

20. *Laphria chrysonota* Hermann*

1914. *Laphria chrysonota* Hermann, *Ent. Mitt.*, **3** : 88. Type locality : 'Ostindien'.
 1975. *Laphria chrysonota* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 108.
 1983. *Laphria chrysonota* : Joseph & Parui, *Oriental Ins.*, **17** : 290

Male : Head-Tomentum entirely bright yellow, including face and mystax; the setae of face, forehead, occipitals and proboscis golden yellow. Antenna black with yellow basal segment, pedicel black setose, both ocellar bristles red.

Throat : Mesonotum and scutellum with golden tomentum and setae of similar colour, the lateral bristles partly red, partly black, the marginal bristles of scutellum red. Pleura with brown tomentum and black setae, bristles on laterotergite and notopleural bristles black. The partly yellow tomentose coxa carry predominantly light yellow setae.

Abdomen dull black and predominantly black setose. At the border of each segment present red setae upto half. This red setose bands are light on the first segment only but each subsequent band becomes increasingly broader so that the last segment is almost completely red setose. Also the dark reddish-brown hypopygium with predominantly red setae. Lateral bristles black.

Legs-femur except the apex black, this as well as the lower side of each fore femur red. Tibiae and tarsi similarly dark reddish. Both fore legs especially with long setae and bristles arranged in a row through the entire length. The tarsi and inner side of fore and hind tibiae bear reddish-brown bristly setae.

Wings generally rust coloured, the tip and hind border slightly cloudy, the network of veins remarkably reddish-brown.

The female distinguished hardly from male, on the abdomen only red adpressed setae in general, in addition to which the short black ovipositor predominantly yellow setose.

Distribution : India (no other details).

Types : Location of types not known.

21. *Laphria claripennis* Bigot *

1878. *Laphria claripennis* Bigot, *Annls Soc. Ent. Fr.*, (5) **8** : 224. Type locality : Sri Lanka.
 1975. *Laphria claripennis* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 108.
 1983. *Laphria claripennis* : Joseph & Parui, *Oriental Ins.*, **17** : 290.

Length 12 mm.

Sparsely setose, blackish with greyish setae : blackish antennae, black bristles at base, white front of head with white setae and black setae above mouth, white mystax, palps with black setae, those at the base of the head and behind the head are brownish; the thorax has three longitudinal stripes tapering posteriorly, the lateral bands are bigger and more diverging; whitish grey humeri, sides, posterior margin and scutum; a few black spurs mainly on scutum; greyish sides with white setae; brown halteres with white ends; blackish brown abdomen with a few white setae and black spurs on the sides of segments, four triangular white spots with white setae on each side and on posterior margins of second,

third, fourth and fifth segments; scaly tarsi covered with long white setae; brown coxa, femur, ends of tibia and tarsal segments are scaly; hyaline wings and brown veins.

Discussion : The species has distinctive white, triangular, spots on either side of second to fifth abdominal terga, this together with the details of male genitalia, can separate *Laphria claripennis* Bigot from all other known species of *Laphria* Meigen.

Distribution : Sri Lanka.

Types : Bigot's Collection.

22. *Laphria dimidiata* Macquart (Fig. 33)

1846. *Laphria dimidiata* Macquart, *Dipt. exot. Supl.* 1 : 72. Type locality : Manila, Philippines.

1975. *Laphria dimidiata* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 108.

1990. *Laphria dimidiata* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 14.

A comparatively small, black species with shining blue black abdomen, dimidiate wings-clear basally with remaining infuscated. Male : length 18 mm, wing 15 mm (Reg. No. 235 2/3). In two other examples length cannot be measured as they are broken, wing 13-14 mm.

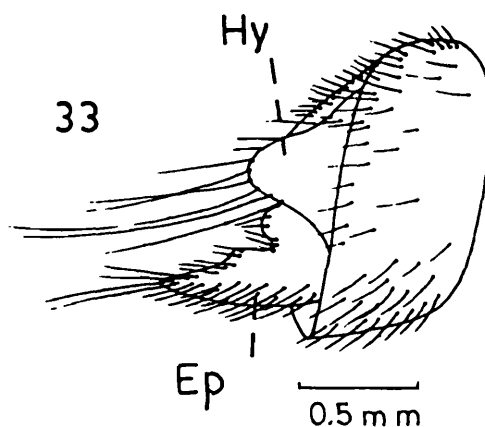


Fig. 33 : *Laphria dimidiata* Macquart, lateral view of male genitalia.

Male : *Head* as broad as thorax, black with greyish-yellow or grey tomentum, mystax black, setae of front scaly, yellow, fronto-orbital setae above antennae black, ocellar bristles black, postcranium with black setae amidst which present a row of black bristles. Antenna from first flagellomere onwards lost, scape and pedicel black with black setae and with or without an elongate ventral bristle, pedicel nearly half of preceding. Palpus and proboscis black with concolourous setae.

Thorax black with grey and greyish-yellow tomentum; pronotum black setose which are dense on sides; scutum with a faint mediolongitudinal grey stripe divided by a median black stripe, the stripe extending to the midway between transverse suture and hind border, greyish-yellow and grey tomentose

anteriorly, posterolaterally and laterally along the transverse suture, covering setae and bristles black; pleuron with two transverse black bands alternate with three greyish-yellow bands, laterotergite with dense elongate black bristles; scutellum with sparse black setae. Halteres with the head light brown tinged.

Legs black; in one example (235 1/3) fore tibia and mid tibia ventrally and laterally with dense long black setae, fore femur distally on ventral side with some black setae, in another example (235 2/3) setae not so well developed, and in the remaining (235 3/3) legs lost; covering setae a mixture of black and white, bristles black.

Wing dimidiate, basally hyaline and the rest infuscated.

Abdomen shining bluish-black with brown tomentum, sides of terga 1 and 2 with black or mixed black and pale yellow setae and the latter also with a pair of black bristles. Male genitalia (Fig. 33) black with a few elongate concolourous bristles on hypandrium.

Material examined : Three types were received through the courtesy of Dr. George C. McGavin of Hope Department, Oxford. One specimen (damaged, antennal segment 3 onwards, one hind leg and apex of abdomen lost, sex cannot be ascertained as apex of abdomen is lost), bears the following four labels: 228 in coll. Bigot; coll. Bigot, abt 1845-93, Press. 1913 by J.E. Collin; 235 1/3, Hope Department, Oxford; 228, Manila. The remaining two types are males bearing the first three labels but with the Hope Department's numbers 235 2/3 (head badly damaged, one leg and one wing lost, and abdomen damaged; male genitalia figured); and 235 3/3 (head and legs lost, thorax damaged). Oldroyd (1972) says that holotype is deposited in HDO (Hope Department, Oxford) but it is not clear which is the holotype.

Discussion : Among the species of *Laphria* Meigen dealt with in this work, only three species, i.e. *L. dimidiata* Macquart, *L. nigrohirsuta* Lichtwardt and *L. frommeri* Joseph & Parui, possess entirely black mystax. From the other two *L. dimidiata* Macquart can be separated by its distinctive dimidiate wing, and the presence of a brush of bristles at the apex of epandrium. It resembles *L. assamensis* Joseph & Parui in the wing colouration.

Distribution : India (further details not given); Indian Ocean; Java; Moluccas; Philippines.

Types : In the Collection of the Hope Department, Oxford.

23. *Laphria flava* (Linne)

(Fig. 34)

1761. *Asilus flava* Linne, *Fauna Svecia*, 2nd Ed. : 469. Type locality : Europe.

1804. *Laphria flava* : Meigen, *Klassifikation und Beschreibung der europaischen zweiflugeligen Insekten* (Diptera). Braunschweig, 1 (2) : 261.

1990. *Laphria flava* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 15.

A comparatively small, black, grey and yellow tomentose species, with black legs, brown and hyaline wings, and abdomen bearing matting of golden yellow setae. Male : length 16 mm. wing 13mm; female 18 mm, wing apex broken off.

Male : Head slightly narrower than thorax, black with yellow tomentum, mystax predominantly golden yellow with some black bristles in the middle, fronto-orbital bristles black and golden yellow,

ocellar bristles black, postocular bristles black and golden yellow, postgena with dense pale yellow setae. Antennae damaged and lost from first flagellomere onwards, scape and pedicel black with pale yellow and black bristles and setae, pedicel less than half the length of scape. Palpus and proboscis black, palpus with black and a few pale yellow setae whereas proboscis with wholly pale yellow setae.

Thorax black, yellow tomentose; pronotum with dense black and pale yellow setae; mediolongitudinal stripe cannot be ascertained as scutum is damaged in both sexes; chaetotaxy not distinct; laterally and posteriorly with elongate, golden yellow setae; scutellar disc with sparse, pale yellow setae and border with a row of long, bristly setae; pleuron with sparse yellow tomentum, meron with dense, long, pale yellow bristly setae. Haltere yellowish-brown.

Legs black, vestiture long, dense, golden yellow setae.

Wing brown with hyaline posterobasally and in the submarginal and posterior cells.

Abdomen black with matting of golden yellow setae. Genitalia (Fig. 34) black with black and some golden yellow setae.

Females : Similar but with the following differences: mystax predominantly black with some golden yellow bristles in the middle, setae on postgena black, antennae lost, proboscis with predominantly black setae; haltere black at apex; vestiture of legs predominantly black; in wing the extent of hyaline lesser in submarginal and posterior cells. Genitalia black, tergum 9 obtuse at apex, sternum 8 with elongate, bristly setae, medially highly projected, the projection narrowly constricted at base and semicircular at apex.

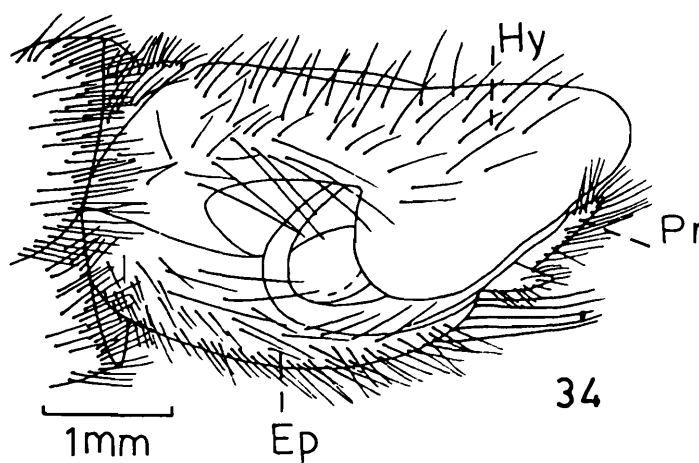


Fig. 34 : *Laphria flava* Linne, lateral view of male genitalia.

Material examined : 1 ♂, Reg No. 7935/14, no other data; 1 ♀ Reg No. 6185/6, Austria, no other details. (Z.S.I.) India: Himachal Pradesh : Ahla, 2286 m, iii, 1971; 1 ♂ 1 ♀ Himachal Pradesh; Narkanda, 2700 m, 24. vi. 1972, all Coll. V.K. Gupta (Z.S.I.).

Discussion : The species resembles *Laphria nigrohirsuta* Lichdwardt but it can be distinguished by fewer black setae and the details of male genitalia.

Distribution : India (Himachal Pradesh, and Kashmir); Nearctic and Neotropical Regions.

Types : Location of types not known.

24. *Laphria frommeri* Joseph & Parui
(Fig. 35)

1981. a. *Laphria frommeri* Joseph & Parui, *Ent. Scand.*, **12** : 219. Type localities : Kerala and Karnataka.

1990. *Laphria frommeri* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 15.

A small black species with almost wholly black scutum, black legs and infuscated wings. Moreover the hind femora thickened and the male genitalia distinctive. Male : length 11-12 mm, wing 9-10 mm; female : length 11-12 mm, wing 9-10 mm.

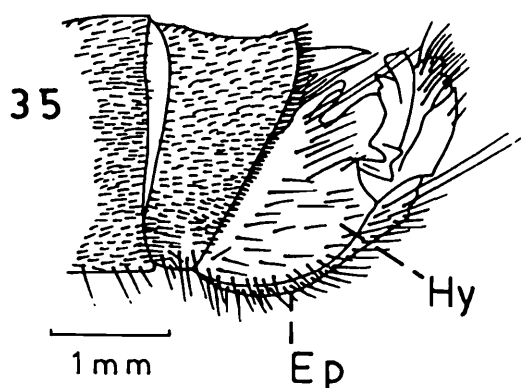


Fig. 35 : *Laphria frommeri* Joseph & Parui, lateral view of male genitalia.

Males : Head broader than thorax, black with grey tomentum; mystax black; front with white to pale yellow scales and setae, fronto-orbitals below antennae black, ocellar bristles black; postcranium black with grey tomentum restricted to the lower half, setae black except for a few pale yellow ones at the lower half. Antenna black, scape and pedicel black setose, the latter more than half of the former, first flagellomere about one-and-a-half times the combined length of scape and pedicel. Palpus and proboscis black, the former black and the latter pale yellow setose.

Thorax black with grey or greyish-yellow tomentum; pronotum black setose; scutum devoid of mediolongitudinal stripe, tomentum faint, present on humeri, along the transverse suture for a short distance from sides and behind it along the sides, vestiture and bristles black and golden yellow, along the hind border golden yellow setae arranged in a band, pleuron with a median faint transverse grey band, grey tomentum also present anterior to the fore and hind coxae; scutellum with the setae golden yellow, bristles of border black; laterotergite with black bristles. Haltere pale yellow to brownish.

Legs black with thick hind coxa, setae and bristles black and yellow.

Wing with dense infuscation, but the base hyaline.

Abdomen black, terga 3-5 to a varying extent brown, sides of terga 1 and 2 with dense, yellow setae, vestiture black and golden yellow, golden yellow setae predominant on terga 3 and 4. Hind border of tergum 7 medially with dense, short, black setae. Male genitalia (Fig. 35) black, apically bearing a yellow seta, remaining setae and bristles black.

Females : Similar but with the following differences : in one example mystax yellow; hind border of tergum 7 of abdomen not modified.

Material examined : *Holotype* ♂ India : Tamil Nadu : Anamalai Hills: Cinchona, 1067 m, v.1968. Coll. P.S. Nathan. Paratypes 1♀, data as in holotype; 1♂ v. 1964. Coll. T.R.S. Nathan, rest of details as in preceding; 1♀ details as in holotype; 1♀, India : Mysore State (Karnataka):Shimoga District, Agumbe Ghat, 610 m, v. 1974. Coll. T.R.S. Nathan; 1♂ Tamil Nadu; Anamalai Hills, 1050 m, iv. 1956; 1♂, Anamalai Hills. 1067 m, v. 1956, all Coll. P.S. Nathan.

Discussion : The male genitalia of *Laphria frommeri* Joseph & Parui is distinctive. It is superficially similar to *L. keralaensis* Joseph & Parui from which it can be readily separated by the entirely black legs and thick hind femora.

Distribution : India (Karnataka and Tamil Nadu).

Types : Holotype in the Collection of the California University, San Francisco, and paratypes in the California University Collection and in the National Zoological Collection of the Zoological Survey of India, Calcutta.

25. *Laphria furva* van der Wulp*

1898. *Laphria furva* van der Wulp. *Tijdscher. Ent.*, **41** : 121. Type locality : Darjeeling, West Bengal.

1975. *Laphria furva* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 109.

1990. *Laphria furva* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 15.

Dark brown; abdomen, antennae and legs black; face, fore and mid tibiae uniformly with reddish-yellow pilosity; wings brown.

Length 18-22 mm.

Frons black; face with dense, reddish-yellow, golden yellow shining pilosity, on the lower half one slightly projecting; the pilosity below the antennae longer and with a few black setae intermixed; mystax consisting of long black bristles, with a few shorter reddish-yellow setae intermixed; mystax reddish-yellow; pilosity of back of forehead dark brown. Antennae black; the basal segments with black bristles; first flagellomere slender, almost one-and-a-half times as long as both basal segments combined. Proboscis longer than head, shining black, basoventrally with black bristles; palpus small, black, with yellow setae at tip. Thorax black, but thoroughly a short, dense dirty-yellow pilosity which appears dark brown; a side stripe is reddish yellow, and also on the sides of the pleura they display more or less obvious patches of this colour; scutellum blackish, the hind margin with a row of long, fine, black bristles; the outstanding setae in front of halteres black. Abdomen black, the first two segments ventrally with reddish-yellow pilosity; male genitalia glossy black. Legs glossy black; femora thickened; hind tibiae bent; the legs have long and dense pilosity; on the fore tibiae the pilosity is reddish-yellow and so dense that the ground colour is entirely covered; on the outer side of the mid tibiae bent; the legs have long and dense pilosity; on the fore tibiae the pilosity is reddish-yellow and so dense that the ground colour is entirely covered; on the outer side of the mid tibia the pilosity is also reddish-yellow, but on the inner sides, where they are longer, black, as the general pilosity of the legs; claws black, 'footballs' (? pulvilli? tarsomeres) reddish-yellow. Haltere reddish-yellow. Wings dark brown, on the outermost basal part just a little lighter; the first outer cell not narrowed at the end.

Various examples (all males) from Darjeeling.

Distribution : India (West Bengal).

Types : Location of types not known.

26. *Laphria fuscata* Joseph & Parui
(Fig. 36).

1997. *Laphria fuscata* Joseph & Parui, *Colemania, Insect Biosystematics*, No. 5 : 3. Type locality : Munnar, Kerala.

A small, black species with golden yellow setae, black and yellowish-brown legs, and black and hyaline wings. There are a number of closely similar species all of which have to be separated by male genitalia. Male : length 16 mm. wing 13 mm.

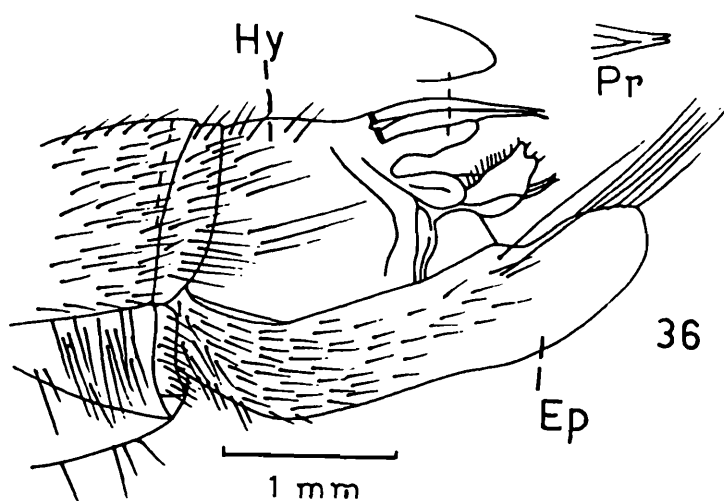


Fig. 36 : *Laphria fuscata* Joseph & Parui, lateral view of male genitalia.

Male : *Head* as broad as thorax, black infuscated with greyish-yellow and grey tomentum; mystax black with a few golden yellow setae in the middle, face with golden yellow scales, fronto-orbital setae black, ocellar bristles golden yellow, postocular bristles black, postcranium bearing golden yellow setae, postgena with golden yellow setae. Antenna black, scape and pedicel with black bristles and setae, pedicel about three-fourths length of scape, first flagellomere one third longer than combined length of scape and pedicel. Palpus and proboscis black, former black and golden yellow setose, while latter with golden yellow setae.

Thorax black with golden yellow and grey tomentum; pronotum golden yellow setose; scutum without mediolongitudinal stripe and black spots, laterally and posteriorly golden yellow tomentose, vestiture black with golden yellow setae laterally and posteriorly, bristles golden yellow and black; chaetotaxy; 1 notopleural, 3 postalars, .6 or more supra-alars, 3 weak dorsocentrals; scutellum with a row of 9 golden yellow bristles, disc predominantly golden yellow setose also with a few black setae; laterotergite with infuscated head.

Legs black and yellowish-brown, coxa, trochanter and femur black, femur yellowish-brown with apex of hind femur faintly dark brown, basitarsus yellow and the rest of tarsus dark brown, fore and mid

femora and tibiae golden yellow setose, apex of hind tibia and tarsus with mat of golden yellow setae, vestiture predominantly golden yellow, bristles golden yellow and black.

Wing less than half hyaline basally, and the rest black.

Abdomen black with dense golden yellow setae on terga 1-5, the density of setae decreases gradually on posterior terga so much so on tergum 5 restricted to anterolateral sides, vestiture golden yellow and black. Genitalia (Fig. 36) black with a pair of extraordinarily stout bristles on both sides, setae and bristles black.

Material examined : *Holotype* ♂ India : Kerala : Munnar, 26 km N.H, 22.ix. 1985; Coll. K. Ghorpade, No. B 393.

Discussion : It is similar to *Laphria indica* Joseph & Parui from which it differs in the almost wholly yellowish-brown hind tibia and in the differences in the structural details of male genitalia, especially the hypandrium and epandrium.

Distribution : India (Kerala)

Type : In the Collection of Dr. K. Ghorpade, Bangalore.

27. *Laphria gilvoides* van der Wulp *

1898. *Laphria gilvoides* van der Wulp. *Tijdschr. Ent.* 41 : 124. Type locality : Darjeeling, West Bengal.

1975. *Laphria gilvoides* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 109.

1990. *Laphria gilvoides* : Joseph & Parui, *Rec.zool. Surv. India*, Occ. Paper No. 113 : 15.

Black ; abdomen red; face golden yellow; distal half of wings brown.

Length 23 mm.

Head slightly broader than broadest part of thorax; front black, deeply sunken; face parallel sided, densely covered with gold-yellow setae, those immediately below antennae being longer; mystax yellow, amongst which are a number of longer black bristles; beard also with a single dark seta in between; pilosity of the back of forehead exclusively black. Antennae slender, black, both scape and pedicel with black setae; first flagellomere one-and-a-half times as long as the basal segments combined. Proboscis shining black, longer than the head; palpus black; with black setae at the tip. Thorax and scutellum black; the back of the thorax with short pale pilosity, the actual ground colour slightly different; sides of pleura greyish; the hind margin of the scutellum with a row of long dark bristles. Abdomen bright red; the short first segment black; sometimes in the male has black side spots on the three following segments; male genitalia slightly projecting and black, similar to the short ovipositor of the female. Legs black, stout; femur thickened; the hind tibia slightly bent; the legs generally with some long and thick, partly grey, partly black pilosity and with black bristles; in the female the pilosity of the legs is generally much lighter in colour, through which the black bristles arise, on the sides of the tibiae these are extremely long; in one of the other males the pilosity underneath the basal half of the fore femur reddish. Halteres reddish-yellow. Wings on the basal half almost transparent, on the distal half brown; the brown tint covers the discal cell, all the hind cells and the end of the lower basal cell; cross-vein r-m at one-quarter of the length of the discal cell.

Three examples (2♂ 1♀) from Darjeeling.

This species looks very much like the European *L. gilva* L., but is more robust; the femora are more robust and the legs generally more strongly setose; it differs mainly in the golden yellow face and the strong brown colour of the distal half of the wings.

Distribution : India (West Bengal).

Types : Location of types not known.

28. *Laphria indica* Joseph & Parui (Fig. 37)

1981 a. *Laphria indica* Joseph & Parui, *Ent. Scand.*, 12 : 216. Type localities : Cinchona and Poonmudi Range, Kerala.

1990. *Laphria indica* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 15.

A small black and greyish-yellow species with black and yellowish-brown legs and infuscated wings. Male : length 15-16 mm. wing 14 mm; female : length 15-16 mm, wing 14 mm.

Males : *Head* broader than thorax, black infuscated with greyish-yellow tomentum; mystax black with some anterior pale yellow setae or most of the setae yellow, a few setae may be black below antennae and that of ocellar setae black; postcranium above devoid of tomentum except for a pair of median apposed spots, sides tomentose, some upper setae black while the remaining yellow. Antenna black, scape and pedicel black setose, pedicel more than half of the preceding, first flagellomere about or more than one-and-a-half times the combined length of scape and pedicel. Palpus and proboscis black, their setae yellow but a few of them on the former may be black.

Thorax black with greyish-yellow tomentum; pronotum yellow or mixed yellow and black setose; scutum devoid of mediolongitudinal stripe, humeri, along the transverse suture for some distance from sides, behind it at sides and anterior to scutellum greyish-yellow, vestiture black and golden yellow, the latter prominent on tomentose background and along the hind border, bristles golden yellow, pleuron divided by a transverse greyish-yellow band, similarly coloured marks also present anterior to the fore and hind coxae; scutellum with the setae of disc golden yellow while the bristles at the border yellow, laterotergite with golden yellow bristles. Haltere pale, basal part of stalk yellow.

Legs black and yellowish-brown, coxa, trochanter and femur black, tibia yellowish-brown basally and one-third to half black in hind legs; one or two basal tarsal segments yellowish-brown and the rest black in fore and mid legs but only basal part of proximal segment tinged in hind legs; setae and bristles black and yellow.

Wing infuscated for about more than two-thirds distally and hyaline basally.

Abdomen black, tergum 1 laterally, and 2-5 posterolaterally with grey to greyish-yellow tomentum, tomentose area bearing dense, long, golden yellow setae, vestiture black and golden yellow. Male genitalia (Fig. 37) black with a pair of extraordinarily stout bristles on either side, bristles and setae black.

Females : Similar but with the following differences : darker especially wings; in some examples mystax wholly yellow; in most of the specimens the distal part of hind tibia lighter coloured so much so in two specimens it is almost wholly yellowish-brown.

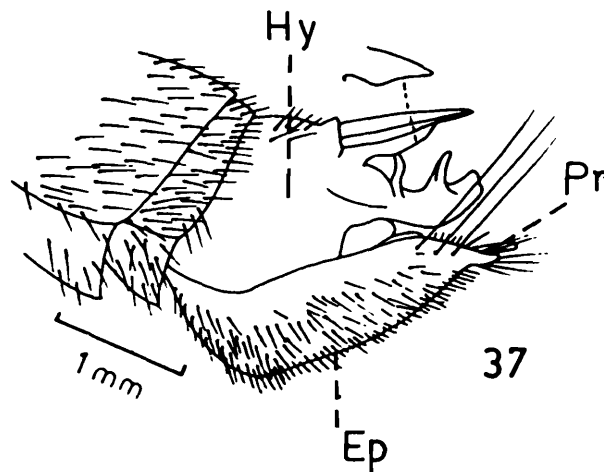


Fig. 37 : *Laphria indica* Joseph & Parui, lateral view of male genitalia.

Material examined : Holotype ♂, India : Kerala State : Anamalai Hills: Cinchona, 1067m, v.1968, Coll. P.S. Nathan. Paratypes 3♀, details as in holotype except date of collection being v. 1969 and Coll. T.R.S. Nathan; 1 ♂ 2 ♀, data as in holotype; 2 ♂ 1 ♀, Kerala State : Trivandrum District: Poonmudi Range, 914 m, Coll. T. R.S. Nathan; 1 ♀, iv.1972, remaining details as in preceding.

2 ♂ Anamalai Hills: Cinchona, 1050 m, i.1967, Coll. P.S. Nathan (Z.S.I.). 1 ♂, Cinchona, 1068 m, v.1067, Coll. P.S. Nathan (C.A.S.). 1 ♂, 1 ♀, Trivandrum district : Poonmudi Range, 910m, v. 1971, Coll. T.R.S. Nathan (Z.S.I.).

Discussion : It is most similar to *Laphria fuscata* Joseph & Parui from which it differs in the nearly basal half of hind tibia being black and structural details of male genitalia especially the hypandrium and epandrium. It is also similar to *L. nathani* Joseph & Parui from which it can be readily recognised by the differences in the male genitalia, the extent of greyish-yellow markings of scutum and colouration of legs.

Distribution : India (Kerala).

Types : Holotype in the Collection of the California University, San Francisco and paratypes in the California University Collection and in the National Zoological Collection of the Zoological Survey of India, Calcutta.

29. *Laphria keralaensis* Joseph & Parui (Fig. 38)

1981.a. *Laphria keralaensis* Joseph & Parui, *Ent. Scand.*, 12 : 218. Type localities : Trivandrum District and Anamalai Hills, Kerala.

1990. *Laphria keralaensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 14.

A small black species with almost wholly black scutum, yellowish-brown and black legs and infuscated wings. Male : length 15 mm, wing 13 mm.

Males : Head broader than thorax, black with greyish-yellow tomentum; mystax black but for a few anterior setae white; setae and scales of front pale yellow with a few black setae intermingled, ocellar bristles black; postcranium above devoid of tomentum but for a pair of median apposed oval spots of

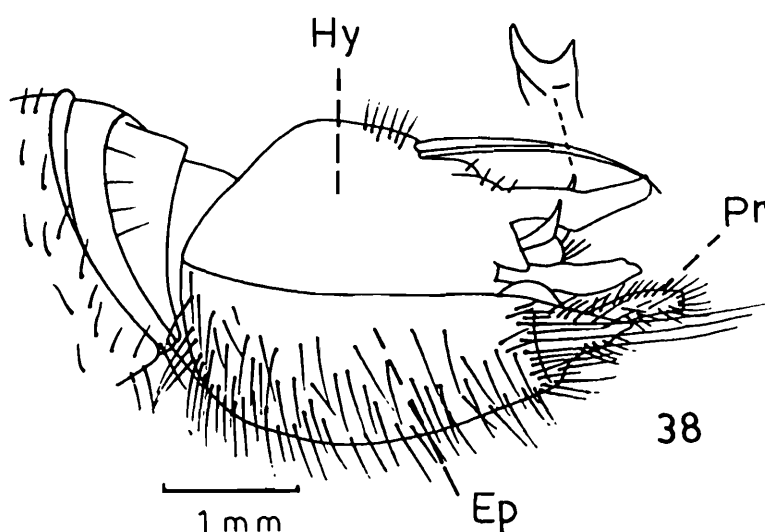


Fig. 38 : *Laphria keralaensis* Joseph & Parui, lateral view of male genitalia.

tomentum, laterally tomentose, setae above black and below yellow. Antenna black, scape with black and a few pale yellow setae, pedicel entirely black setose, pedicel more than half of preceding, first flagellomere slightly longer than the combined length of scape and pedicel. Palpus and proboscis black, the former with black and the latter with white to pale yellow setose.

Thorax black with greyish-yellow tomentum; pronotum black setose; scutum without mediolongitudinal stripe, tomentum faint, present on humeri, along the transverse suture for some distance from sides and behind laterally, vestiture black and white to golden yellow, bristles black, divided by a transverse greyish-yellow band, tomentum also present anterior to fore and hind coxae; scutellar disc with white to golden yellow setae, bristles on border black but for a few being pale yellow in the middle; laterotergite with black bristles. Haltere yellowish-brown.

Legs yellowish-brown and black; coxa and trochanter black; femur yellowish-brown but dorsally from base or beyond the base to apex black in fore and mid legs, and distal half in hind legs; tibia yellowish-brown but in hind legs extreme base and half or more than that distally black; fore and mid tarsi yellowish-brown but the terminal tarsomere black, hind tarsi wholly black, setae and bristles pale yellow and black.

Wing infuscated for more than half distally and hyaline basally.

Abdomen black, tergum 2 laterally greyish-yellow tomentose, terga 3 and 4 posterolaterally grey or greyish-yellow tomentose, laterally terga 1 and 2 with dense pale yellow setae and 3 and 4 with rather dense grey or greyish-yellow setae, vestiture white to pale yellow and black. Male genitalia (Fig. 38) black with black setae and bristles.

Material examined : *Holotype* ♂ India : Kerala State: Trivandrum District: Poonmudi Range, 914 m, ix.1971, Coll. T.R.S. Nathan. *Paratypes* 1 ♂ data as in preceding; 1 ♂ Kerala State: Anamalai Hills: Cinchona, 1067 m, v.1968, Coll. P.S. Nathan.

1 ♂, Kerala State: Poonmudi Range, 915 m, v.1971, Coll. T.R.S. Nathan. 2 ♀ v.1972, Coll. T.R.S. Nathan, no other data. (Z.S.I.).

Discussion : This fly is similar to *Laphria nathani* Joseph & Parui, but can be readily distinguished by male genitalia. It is superficially similar to *L. frommeri* Joseph & Parui differing from which in the not entirely black legs and thick hind femur.

Distribution : India (Kerala).

Types : Holotype and one paratype in the Collection of the California University, San Francisco, and the remaining paratype in the National Zoological Collection of the Zoological Survey of India, Calcutta.

30. *Laphria luteopilosa* Joseph & Parui
(Fig. 39)

1981.a. *Laphria luteopilosa* Joseph & Parui, *Ent. Scand.*, 12 : 216. Type localities : Tura, Assam (Meghalaya) and Sikkim.

1990. *Laphria luteopilosa* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 15.

A large black species with golden yellow scutal setae, black and brown legs and brown wings. Male : length 26 mm, wing 24 mm; female: length : 27 mm, wing 25 mm.

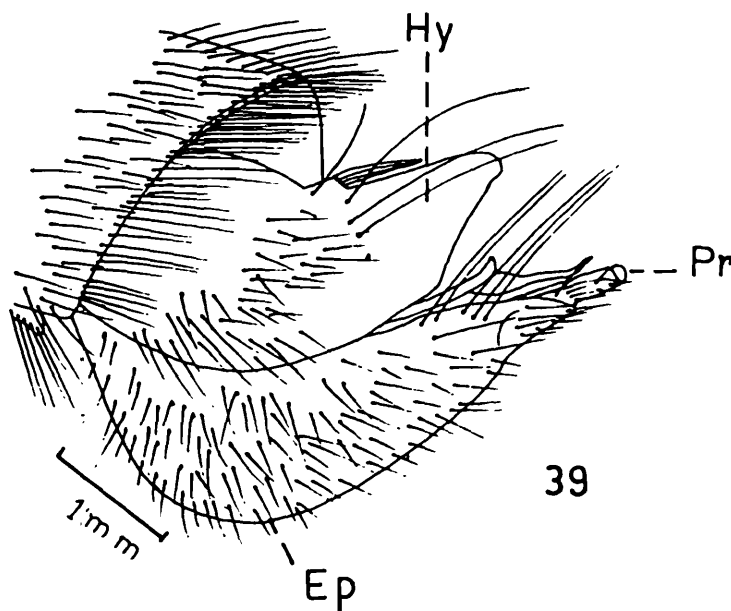


Fig. 39 : *Laphria luteopilosa* Joseph & Parui, lateral view of male genitalia.

Males : Head slightly broader than thorax, black infuscated with greyish-yellow tomentum; mystax golden yellow; fronto-orbitals golden yellow, ocellar bristles yellowish-brown; postcranium greyish-yellow tomentose with the setae below yellow and above golden yellow. Antenna black, scape and pedicel with yellow setae, first flagellomere broken off, pedicel less than half of scape. Palpus and proboscis black, the former black setose and the latter yellow setose.

Thorax black covered with yellowish-grey to golden yellow tomentum; pronotal setae yellow but a few of them laterally black; scutum covered with golden yellow setae, mediolongitudinal stripe faint, the stripe black, medially divided by a greyish-yellow band and extending from the anterior border to

slightly posterior to the transverse suture, tomentum of humeri golden yellow with some setae anteriorly black, pleura divided by a transverse greyish-yellow band; scutellum with the setae of disc golden yellow and the bristles on hind border dark brown; laterotergite bearing black bristles. Haltere yellowish-brown.

Legs black and yellowish-brown, coxa and trochanter black, femur black with the apex yellowish-brown, tibia yellowish-brown, tarsus with the basal 1 or 2 segments yellowish-brown, and the rest dark; setae and bristles golden yellow and black.

Wing uniformly brown.

Abdomen black, terga 1-6 black setose, remaining black and golden yellow setose, 2-6 with bristles at sides which decreases in number from the anterior to hind terga. Male genitalia (Fig. 39) yellowish-brown with similarly coloured setae.

Females : Similar but with the following differences; setae of proboscis in some examples black; distribution of golden yellow setae on terga more extensive so much so in some examples they occur from terga 2 onwards; genitalia black.

Material examined : *Holotype* ♂, India : Eastern India : Assam (Meghalaya) : Garo Hills : above Tura, 1067-1189m, 15.vii.-30.viii.1917, Coll. S. Kemp. *Paratypes* 1 ♀ data as in holotype; 2 ♂ Sikkim, date of collection not given, Coll. Knyvett.

1 ♀, Assam : Gatanga : Kaziranga, 6.x.1961, Coll. E.S. Ross and D.Q. Cavagnaro, 1 ♂ 1 ♀ Assam : 4.8 km, N.E. of Digboi, 17. x.1943. Coll, D.E. Hardy. (C.A.S.).

Discussion : This fly is closely similar to *Laphria orientalis* Joseph & Parui, both of which differ in the colouration of wings and legs and details of male genitalia. It also resembles *L. horrida* Walker with respect to the male genitalia.

Distribution : India (Assam, Meghalaya, and Sikkim).

Types : Holotype in the National Zoological Collection of the Zoological Survey of India, Calcutta, and the paratypes in the Collection of the California University, San Francisco.

31. *Laphria nathani* Joseph & Parui (Fig. 40).

1981.a. *Laphria nathani* Joseph & Parui, Ent. Scand., 12 : 217. Type localities : Tamil Nadu, Kerala State and Mysore State (Karnataka).

1990. *Laphria nathani* Joseph & Parui, Rec. zool. Surv. India, Occ. Paper No. 113 : 15.

A small black species with black and greyish-yellow scutum, yellowish-brown and black legs and infuscated wings. Male : length 12-14 m, wing 10-12 mm.

Males : *Head* broader than thorax, black infuscated with grey tomentum; mystax black with a few anterior setae white, front with white scales and setae, a few fronto-orbital setae below antennae black, ocellar bristles black, postcranium above devoid of tomentum but for a pair of median apposed spots of tomentum, sides tomentose, upper setae black while the lower yellow. Antenna black, scape with black and a few yellow setae, pedicel entirely black setose, pedicel more than half to subequal to the preceding,

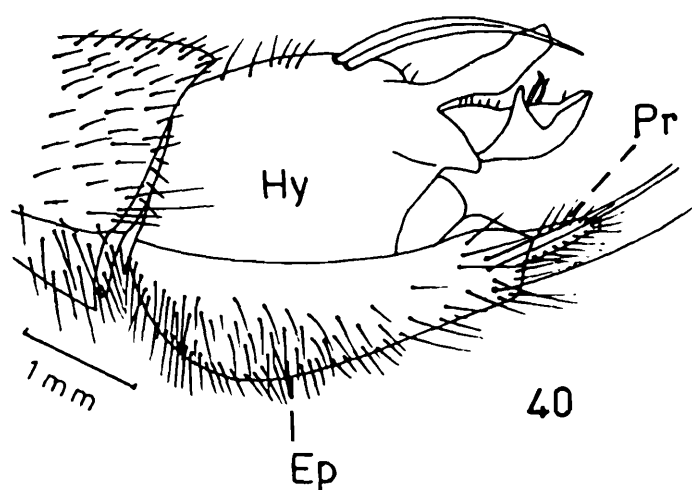


Fig. 40 : *Laphria nathani* Joseph & Parui, lateral view of male genitalia.

first flagellomere longer than the combined length of scape and pedicel. Palpus and proboscis black, the former with black and the latter with white to pale yellow setae.

Thorax black with black to greyish-yellow tomentum; pronotum black setose; scutum without mediolongitudinal stripe, humeri, along the transverse suture for some distance from sides and behind it along sides greyish-yellow, vestiture black and yellow, bristles black, pleuron divided by a transverse greyish-yellow band, greyish-yellow tomentum present anterior to the fore and hind coxae; scutellum with the setae of disc yellow, bristles of border black but a few of them medially pale yellow; laterotergite with black bristles. Haltere pale yellow.

Legs yellowish-brown and black; coxa and trochanter black, femur yellowish-brown but dorsally from base or beyond base to apex in fore and mid legs, and distal half in hind legs black; tibia yellowish-brown but in hind legs extreme base and half or more than that distally black; fore and mid tarsi yellowish-brown except for the black terminal segment, hind tarsi entirely black; setae and bristles pale yellow and black.

Wing infuscated for more than half distally and hyaline basally.

Abdomen black, in most of the specimens terga 3-4 posterolaterally grey or greyish-yellow tomentose, sides of terga 1 and 2 with dense pale yellow and 3 and 4 with some pale yellow setae, vestiture pale yellow and black. Male genitalia (Fig. 40) black with black setae and bristles.

Females : There are several females of *Laphria nathani* Joseph & Parui and *L. keralaensis* Joseph & Parui, but they cannot be placed correctly to species as they do not exhibit sufficient differences. They can be ascertained only if they are caught in copula.

Material examined : Holotype ♂ India : Tamil Nadu : Anamalai Hills : Cinchona, 1067 m, ix.1969, Coll. T.R.S. Nathaan. *Paratypes* 3 ♂ Kerala State: Trivandrum District : Poonmudi Range, 914m, v.1971, Coll. T.R.S. Nathan; 1 ♂ iv. 1972, rest of details as in preceding; 1 ♂ v.1972, rest of data as in preceding; 1 ♂, vi.1972, remaining details as in preceding; 2 ♂ Kerala State : Kottayam District : Peermade, 1280 m, vi.1975, Coll. T.R.S. Nathan; 3 ♂ (one of them immature), Mysore State(Karnataka) : Coorg District: Mercara, 1219 m, v.1973, Coll. T.R.S. Nathan; 6 ♂ (one of them immature), v. 1974, rest of data as in preceding.

2 ♂, Travancore : Pirmed, 850 m, 4-6 v.1937, B.M.C.M. Expedition to South India; 1 ♂ Kerala State: Calicut District : Chembra Peak area, 1067 m, v.1970, Coll. T.R.S. Nathan. 1 ♂, 1 ♀ Karnataka: Coorg District: Mercara, 1220 m, v.1973, Coll. T.R.S. Nathan. 1 ♀, Karnataka : Shimoga District : Agumbi ghat, 610 m, v.1974. Coll. T.R.S. Nathan. (C.A.S.).

Discussion : *Laphria nathani* Joseph & Parui is closely allied to *L. keralaensis* Joseph & Parui; they can be separated by the differences in the male genitalia. In the former the greyish-yellow marking of scutum is also distinct. *L. nathani* Joseph & Parui is also similar to *L. indica* Joseph & Parui, both of which can be differentiated by the male genitalia, the extent of greyish-yellow marking of scutum and colouration of legs.

Distribution : India (Karnataka, Kerala, and Tamil Nadu).

Types : Holotype in the Collection of the California University, San Francisco, and paratypes in the California University Collection and in the National Zoological Collection of the Zoological Survey of India, Calcutta.

32. *Laphria nigrohirsuta* Lichtwardt*

1909. *Laphria nigrohirsuta* Lichtwardt, *Deutsch Ent. Z.*, 1909 : 125. Type locality : Kashmir, India.

1975. *Laphria nigrohirsuta*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 110.

1990. *Laphria nigrohirsuta* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 15.

Similar to *Laphria flava* L. It is characterised via its blackish setae in comparison to its well known related species *L. flava* L., *fulva*, Meigen *limbinervis* Strobl, *varia* Loew and *vulpina* Meigen show through their upper lip setae, humeri, sides of thorax, legs and genitalia more or less a big mixture of bright, reddish or yellowish setae. From amongst the other species descriptions, which account for the north Indian varieties, none fits. Those are the following : *L. dimidiata* Loew, *ursula* Loew, *gilvoides* and *furva* van der Wulp. Walker had described *chrysotelus*, *elva* and *aurigena*. Even the comparisons with *alternans* Wiedemann, *gigas* Macquart and *semifulva* Bigot show no similarity.

Black, shiny, upper mouth setae, base of antennae, front and cheeks totally black setose, only near the eyes on both sides of the face with golden iridescent setae. Mystax a tuft of long, whitish setae, which contrast from the blackish seta pattern of the rest. The anterior femora also exhibit such whitish colour of setae. The thorax above with short upright black setae, the posterior edge and the scutellum with long low-lying yellowish-red setae distributed in such a fashion that both the colours interact side by side without a break. The whole of the back region is covered by a thin reddish-brown layer of setae, so that the shining black rings on this back region remain clearly visible. At the sides the setae are twice as long and more yellowish pale.

The hypopygium is black, at the extreme tip appearing reddish-brown and with sparse black setae. All legs have black setae, the mid tibiae carry on their frontal sides long reddish-yellow setae, the posterior sides exhibit a thinly spread fox red bristles. This type of fox red mossy setae are also found below the tarsi. Hind femur club-shaped, thickened. Wings strongly tinged brownish, however the wing base and middle of the back edge cells remain brighter. Superficially, this type is similar to *L. ephippium* Fabricius. Kashmir 2438-2743m., length 8 mm. wings 14 mm.

Discussion : The species is quite similar to *Laphria flava* (L) but can be readily separated by the presence of much more black setae and details of male genitalia.

Distribution : India (Kashmir).

Types : Location of types not known.

33. *Laphria orientalis* Joseph & Parui (Fig. 41)

1981 a. *Laphria orientalis* Joseph & Parui, Ent. Scand., **12** : 214. Type localities : Assam and Nagaland, Eastern India.

1990. *Laphria orientalis* : Joseph & Parui, Rec. zool. Surv. India, Occ. Paper No. 113 : 15.

A large black and yellowish-brown species with yellowish-brown legs and dark brown and pale yellow wings. Male : length 23 mm, wing 21 mm; female.: 21-23 mm, wing 21 mm.

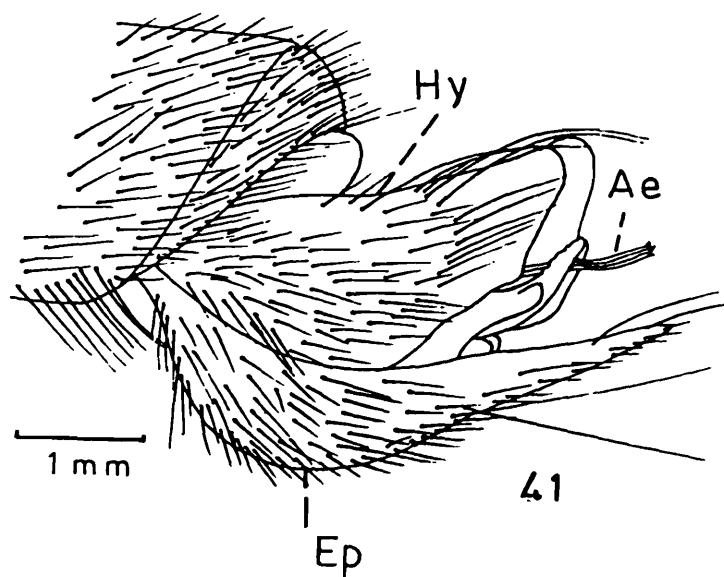


Fig. 41 : *Laphria orientalis* Joseph & Parui, lateral view of male genitalia.

Males : Head slightly or not broader than thorax, black infuscated with golden yellow tomentum; mystax golden yellow; fronto-orbitals and ocellar bristles golden yellow, postcranium golden yellow tomentose. Antennal scape and pedicel with golden yellow setae, first flagellomere black, scape about thrice the length of pedicel, first flagellomere about twice the combined length of scape and pedicel. Palpus and proboscis black with golden yellow setae.

Thorax black infuscated with golden yellow tomentum; pronotum with the tomentum lighter coloured, setae similarly coloured like that of tomentum; scutum with a dark brown to black mediolongitudinal stripe which is indistinctly divided by a brownish stripe anterior to the transverse suture and two lateral dark brown to black markings on either side; scutellum medially black, rest covered with golden yellow tomentum, bristles of hind border golden yellow; pleuron with 2 transverse black bands alternate with 3 greyish-yellow bands. Haltere yellowish-brown.

Legs with coxa and trochanter black, rest of leg yellowish-brown, coxa infuscated with grey tomentum, posterolaterally femur with a light brown mark, setae and bristles golden yellow, setae on ventral side of femur and tibia elongate and profuse.

Wing dark brown at distal one-fourth which continued along hind half to alula, rest pale yellow, or the dark brown marking more extensive covering the entire wing except for a few hyaline patches at the hind border.

Abdomen yellowish-brown and dark brown, tergum 1 yellowish-brown, terga 2-7 with basal dark brown and distal yellowish-brown transverse bands, the yellowish-brown covering most area except for a narrow anterior band in 2, from 3 onwards about half or more yellowish-brown, setae golden yellow, sides of terga 1 and 2 with a cluster and the middle of remaining terga with a few golden yellow bristles; sterna dark brown with hind transverse yellowish-brown band, setae golden yellow. Male genitalia (Fig. 41) yellowish-brown, setae similarly coloured.

Females : Similar but with the following differences : dark brown marking of femora indistinct in some examples; female genitalia black.

Material examined : *Holotype* ♂, India : Meghalaya : Garo Hills : above Tura, 1067-1189 m, 15.viii. 30. viii. 1917, Coll. S. Kemp. *Paratypes* 3 ♀, data as in holotype; 1 ♀, Coll. Mrs. Kemp, rest of data as in preceding; 1 ♀, Assam; Dawana Hills; Thingannyinaung to Sukli, 274-640 m, 23-27. xi. 1911, Coll. F.H. Gravely; 1 ♂, Assam: Margherita, other details not given; 1 ♀, Nagaland: Kohima, other details not given.

Discussion : The male genitalia of *Laphria orientalis* Joseph & Parui is similar to *L. horrida* Walker from which it can be readily distinguished by the differences in the colouration of wings, legs and abdomen. In general colouration, it is similar to *L. alternans* (Wiedemann), particularly in the wings and legs, but differs in the structural details of male genitalia.

Distribution : India (Assam, Meghalaya, and Nagaland).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

34. *Laphria semifulva* Bigot*

1878. *Laphria semifulva* Bigot, *Ann. Soc. Ent. Fr.*, 8 : 223. Type locality : "Ind. Orient"

1975. *Laphria semifulva* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 111.

1990. *Laphria semifulva* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 15.

Length 25 mm.

Reddish fawn in colour and fairly smooth; antennae, palp and proboscis are black in colouration; fine golden setae on front of head; setae above mouth and palpal bristles are reddish-golden yellow; golden mystax, reddish setae behind head; reddish thorax with black glints on either side, a brown band runs from the shoulder to where wings are fixed, golden sides, a few red spurs at the back and on sides. Scutum is brownish at base; halteres are fawn coloured; reddish-fawn coloured abdomen with a big brownish transverse band at the base of each segment; reddish male organs; blackish coxa covered with fine setae and golden setae; reddish tarsus, a light brown spot underneath, in the centre of the femur setae and pads

are of the same shade, black tibial spurs and claws, fawn coloured wings, ends, internal and posterior margins are mostly blackish.

Discussion : It is similar to *Laphria gilvodes* van der Wulp but differs from it by the reddish femora, golden yellow mystax and details of male genitalia.

Distribution : India ("Ind. Orient").

Types : Bigot's Collection.

35. *Laphria valparaiensis* Joseph & Parui
(Fig. 42)

1997. *Laphria valparaiensis* Joseph & Parui, *Colemania, Insect Biosystematics*, No. 5 : 4. Type locality : Valparai, Tamil Nadu.

A medium, black species with golden yellow setae, black legs, and black and golden yellow wings. Male : length 18-21 mm, wing 14-18 mm; female : length 21-23 mm, wing 18-20 mm.

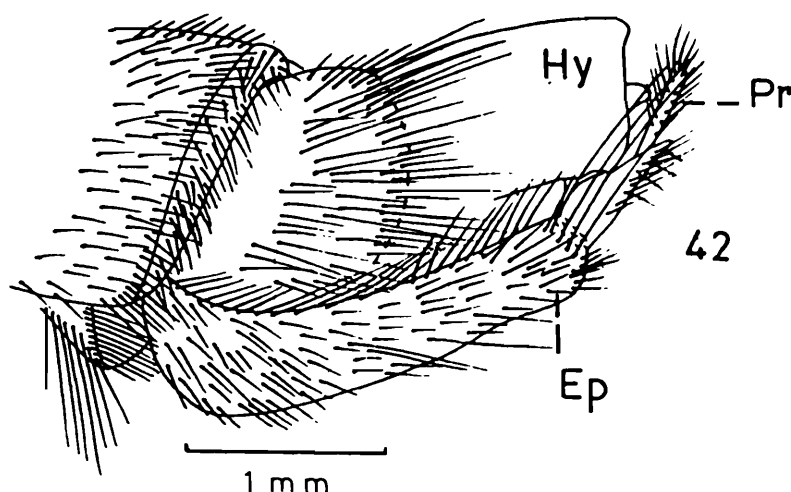


Fig. 42 : *Laphria valparaiensis* Joseph & Parui, lateral view of male genitalia.

Males : *Head* broader than thorax, black with sparse greyish-yellow or grey tomentum; mystax black or black and golden yellow, face with white or golden yellow scales, fronto-orbital setae black and golden yellow, ocellar bristles golden yellow, postocular bristles golden yellow, postcranium and postgena with golden yellow setae. Antenna black, scape and pedicel with golden yellow and black bristles and setae, scape about twice the length of pedicel, first flagellomere about twice the combined length of scape and pedicel. Palpus and proboscis black, palpus golden yellow and black setose, proboscis with golden yellow setae.

Thorax black with sparse grey or greyish-yellow tomentum; pronotum black, with long golden yellow setae, scutum devoid of mediolongitudinal stripe and lateral black spots, vestiture and bristles golden yellow; chaetotaxy: 6 or more postalar, posterolaterally with a few setae, 4 or more weak dorsocentrals; scutellum with a row of golden yellow bristles on border, disc golden yellow setose; laterotergite with elongate, bristly, pale yellow or golden yellow setae. Haltere pale yellow, or pale yellow with yellowish-brown or yellowish-orange marking.

Legs black, rather densely golden yellow setose, fore tibiae and tarsi and apex of hind tibiae and tarsi with mat of golden yellow pubescence ventrally; vestiture and bristles golden yellow.

Wing a little more than one-fourth distally black, the black colour continues along hind border but gradually becoming lighter basally, remainder golden yellow; most of cells hyaline to a varying extent.

Abdomen black with golden yellow pubescence, pubescence dense along hind border and appear as a transverse band, laterally with long, golden yellow setae and two or more similarly coloured bristles, vestiture golden yellow. Genitalia (Fig. 42) black, golden yellow setose, hypandrium truncate.

Females : Similar but with the following differences : scape and pedicel with golden yellow bristles and setae; palpus wholly golden yellow setose, proboscis with black or black and golden yellow setae. Genitalia shining black, tergum 9 slightly shorter than preceding, proctiger with a pair of long, golden yellow, bristly setae, sternum 8 well produced and distally bearing a few, long, golden yellow, bristly setae.

Material examined: Holotype ♂, India: Tamil Nadu: Valparai, 1067 m, 5.vii.1982. Coll. K.D. Ghorpade, No. A 968. Paratypes 1 ♂, 1 ♀, details as in holotype; 1 ♀, 4.vii.1982, No. A 967, rest of details as in holotype.

Discussion : *Laphria valparaiensis* Joseph & Parui is similar to *L. furva* van der Wulp and *L. indica* Joseph & Parui. *Laphria valparaiensis* Joseph & Parui differs from *L. furva* in the black and golden yellow wings, bristles on hind border of scutellum being golden and in the presence of long, golden yellow setae laterally on terga; male genitalia of the latter is not known for comparison. From *L. indica*, it differs in the black and golden yellow wings and in the differences in the shape of structural details of male genitalia.

Distribution : India (Tamil Nadu).

Types : In the Collection of Dr. K. Ghorpade, Bangalore.

Genus 10. *Laphystia* Loew, 1847.

1847. *Laphystia* Loew, *Linn. Ent.* 2 : 538. Type- species : *Laphystia sabulicola* Loew, monotypic.

1975. *Laphystia* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 112.

1983. *Laphystia* : Joseph & Parui, *Oriental Ins.*, 17 : 296.

Small to medium sized flies; face highly produced throughout, mystax consists of a few bristles along with abundant long pile continued upto base of antenna; scape a little longer than pedicel, first flagellomere nearly twice the combined length of scape and pedicel, uniformly thick throughout, scape with bristly setae and two pairs of long, stout bristles, pedicel bears apical setae, first flagellomere with a short as well as a longer spoon-shaped microsegment; frons short with lateral pile and bristles; postcranium bears abundant, long, fine pile and bristles, vertex deeply excavated, ocellarium large, bearing eight to ten bristles, eye strongly convex with facets centrally enlarged; proboscis short, swollen at base with numerous pile, apex obtuse bearing bristly pile; palpus two segmented. Thorax with minute pubescence; chaetotaxy: 2 notopleurals, 2 supra-alars, 2 postalars; scutellum micropubescent; propleuron bears a tuft of abundant fine pile anteroventrally and numerous bristly pile

posteriorly. katepisternum, anepisternum, epimeron and meron with numerous fine pile, laterotergite with a vertical band of long bristly pile, postnotal slopes micropubescent, postcoxal area membranous. Legs moderately stout, fore femur with a few long, fine pile ventrally, mid femur with 2 bristles near apex, hind femur with a bristle at base and another one at apex, all tibiae with bristles on all sides. Wing with marginal cell closed and stalked or closed to the margin; vein R_1 originates forming an angle and strongly sigmoid, fourth posterior cell and anal cell closed and stalked. Abdomen with dense, minute, adpressed pile; tergum 1 bears a bunch of bristly pile on each side, remaining terga beyond the middle laterally with a row of 3-5 similar pile; male genitalia with bowl-shaped epandrium, gonocoxite as long as epandrium with apical process, hypandrium triangular; female genitalia with an apically notched dorsal plate produced as far as the last tergum.

Discussion. *Laphystia* Loew can be easily distinguished from all the other genera of Laphriini by the robust first flagellomere bearing two apical microsegments of which terminal one being spoon-shaped; vein R_1 forms an angle, and is strongly sigmoid; and highly produced face.

Distribution. The flies of this genus are moderately distributed in the Nearctic and Palearctic regions. In the Oriental Region it is represented by two species, of which only one is known from India, *Laphystia indica* Joseph & Parui.

Type species. Location of types not known.

Key to species of *Laphystia* Loew

Mystax yellowish-grey, femora reddish with a brown band at apex, tibiae dull yellowish-brown with brown apex, male genitalia reddish *stigmatalis* Bigot

Mystax black, femora pale yellow to yellowish-brown, tibiae pale yellow, male genitalia dark brown *indica* Joseph & Parui

36. *Laphystia indica* Joseph & Parui (Fig. 43)

1997. *Laphystia indica* Joseph & Parui, *Rec. zool. Surv. India* Part 7 : 87. Type locality: Malda District, West Bengal.

A dark brown and black, or black species with thorax and abdomen with short, adpressed pile, the male small and female medium sized, male legs pale yellow and wing pale yellow anterodistally, female legs black and wing brown distally. Male : length 6 mm. wing 6 mm; female : length 9 mm, wing 8 mm.

Male : *Head* broader than thorax, dark brown with pale yellow pile, face moderately prominent and nearly straight; mystax with a few black bristles above the lower facial margin; face and fronto-orbital plate with pale yellow setae, postcranium white setose, postocular bristles white and confined to above. Antennae damaged, lost from first flagellomere onwards and so described under female, scape and pedicel black, former with a pair of ventral elongate bristles, pedicel slightly shorter than scape. Palpus dark brown, proboscis yellowish-brown and black, both white setose.

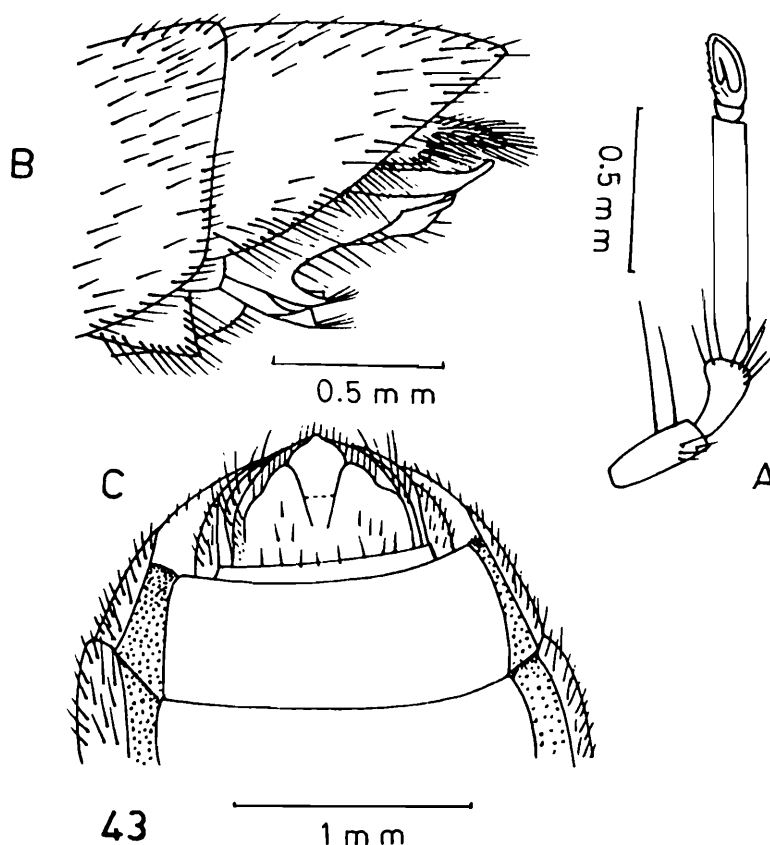


Fig. 43 : *Laphystia indica* Joseph & Parui : A, antenna; B, lateral view of male genitalia; C, ventral view of female genitalia.

Thorax black; pronotum with long white setae, especially laterally, scutum without mediolongitudinal stripe or lateral spots; chaetotaxy: 2 notopleurals, 2 supra-alars; vestiture short, appressed, white pile, also with a few, moderately long, white setae on postpronotal lobe and posterior border of scutum; scutellar disc with appressed white setae, border without bristles; laterotergite with some elongate white setae. Haltere white with yellowish tinge, base brown.

Legs with coxa and trochanter yellowish-brown, remainder pale yellow with varying extent of yellowish-brown on femur, and brown on apex of tarsal segments; fore and mid tibiae with dorsal, anterodorsal and posteroventral rows of bristles, hind tibia with anterodorsal and anteroventral rows of bristles, vestiture and bristles white.

Wing anterodistally pale yellow, rest hyaline, marginal cell closed with a minute stalk, vein R_1 sigmoid and arched at base, fourth posterior and anal cells closed and stalked.

Abdomen dark brown with 6 terga only; terga 1-3 laterally with white, long, dense setae, tergum 1 with two and 2 with one white bristle, vestiture densely and minutely, short, appressed pile. Male genitalia (Fig. 43A) dark brown, ventrally placed.

Female : Similar to male but with the following differences : comparatively large, black; antenna (Fig. 43B) with the first flagellomere yellowish-brown with dark brown apex, microsegments dark brown, first flagellomere long, slightly shorter than one-and-a-half times the combined length of scape and pedicel, microsegment 1 short, 2 long, extended outward obliquely ventrally, spoon-shaped with a concealed minute spine; chaetotaxy: some additional setae present, 2 notopleurals with an additional seta on one side, 2 supra-alars, 1 or 2 intra-alars; legs wholly black; wing hyaline basally, brown for more

than half distally with hyaline band in marginal cell, 1st submarginal cell, 1st posterior cell, discal cell and fourth posterior cell; abdomen with 8 terga, tergum 1 with three or more white bristles, tergum 2 with two white bristles; genitalia (Fig. 43C) with an apically notched ventral plate.

Material examined : Holotype ♂ Reg. No. 7484/H6, India: West Bengal: Malda District : Bamangola, 23. vi.1987, Coll. P. Parui. Paratype Reg., No. 7485/H6, rest of details as in holotype.

Discussion : The genus *Laphystia* Loew is represented by two species, *L. indica* Joseph & Parui and *L. stigmatalis* Bigot, in India and adjacent countries. The former differs from the latter in the colouration of body, specially in the predominantly black mystax, uniformly black or dark brown abdomen, and pale yellow or black femora and tibia.

Distribution : India (W. Bengal).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

37. *Laphystia stigmatalis* Bigot*

1878. *Laphystia stigmatalis* Bigot, *Annl. Soc. Ent. Fr.*, (5) 8 : 430. Type locality : Sri Lanka.

1975. *Laphystia stigmatalis* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 112.

1990. *Laphystia stigmatalis* : Joseph & Parui, *Oriental Ins.*, 17 : 296.

Length 10 mm.

Black : black antennae; front of head, setae above mouth, mystax and occipital bristles are yellowish-grey in colour; humeri, posterior margins of abdominal segments on each side plus a round spot towards the centre are greyish and scaly, male organ is fawn coloured; yellowish-white halteres with fawn base, fawn coloured femora with a brown band ventrally, scaly tibia with brown ends, posterior tarsi are reddish at ends; greyish wings, external margin is slightly brownish and has a brown base.

Discussion : The only known Oriental species is *Laphystia indica* Joseph & Parui, the affinities of *L. stigmatalis* Bigot are discussed under the former.

Distribution : Sri Lanka.

Types : Bigot's Collection.

Genus 11. *Laxenecera* Macquart, 1838

1838. *Laxenecera* Macquart, *Dipt. exot.*, 1 (2) : 77. Type-species : *Laxenecera albibarbis* Macquart, designated by Hermann (1919 : 340).

1851. *Acurana* Walker, *Insecta Saundersiana*, 1 : 107. Type-species : *Acurana sexfasciata* Walker, monotypic.

1857. *Dyseris* Loew, *Ofvers K. svenska Vet. Acad. Forch.*, 14 : 357. Type-species : *Dyseris albicincta* Loew, designated by Hull (1962:44).

1975. *Laxenecera* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 112.

1990. *Laxenecera* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 16.

Medium sized flies; face highly produced on lower half, mystax consists of dense curved bristles directed downwards, which continue upto base of antennae; occiput swollen with abundant long piles, ocellar tubercle highly produced with three pairs of long, divergent bristles; scape about two-and-a-half times as long as pedicel, first flagellomere twice the length of scape, wider than other segments and slightly narrowed near apex with round tip and with a shallow depression on apical fifth, the entire segment bears dense, long piles; proboscis short with blunt apex and bears numerous long piles; palpus two segmented with long ventral pile on both the segments. Thorax bare or with coarse setae; pronotum bears long piles; scutum with scattered setae; scutellum with setae on disc; anepisternum bears numerous long piles, epimeron bare, meron with long piles, postnotal slopes pubescent. Femora thickened, especially the hind pair, and covered with numerous bristles, fore femur with bristles posteriorly and dorsally near apex, mid femur with dense stout bristles on anterior apical region, dorsal and posterior regions, hind tibia stout covered with scattered bristles all over. Wing with marginal cell closed and stalked, vein R_1 ends well before wing apex, first and fourth posterior cells closed and stalked. Abdomen stout, convex with long erect piles on anterior or posterior margins, usually terga 1-5 with lateral bristles, slightly more on first segment.

Discussion : The genus may be distinguished from any other genera of the tribe by the presence of numerous long bristly piles along the entire face and the elongate first flagellomere bearing numerous dense setae.

Distribution : The genus is widely distributed in the Ethiopian Region. From the Orient, it has been recorded only from India. So far only 4 species have been recorded from Bihar, Goa, Gujarat, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

Type species : Location of types not known.

Key to species of *Laxenecera* Macquart

1. Legs wholly black.....2
- Legs not wholly black.....3
2. Mystax greyish-white, abdomen uniformly dark brown, wing hyaline.....
.....sexfasciata (Walker)
- Mystax white and black, abdominal segments whitish on sides, wing yellow.....
.....bengalensis (Wiedemann)
3. Epandrium bears a spinous projection ventrally at apex, scutellar disc with golden yellow setae
.....flavibarbis Macquart
- Epandrium without such projection, scutellar disc with pale yellow setae.....
.....alibibarbis Macquart

38. *Laxenecera albibarbis* Macquart

(Fig. 44)

1838. *Laxenecera albibarbis* Macquart, *Dipt. exot.*, **1** (2) : 77. Type locality : West Bengal.
1975. *Laxenecera albibarbis* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 112.
1990. *Laxenecera albibarbis* : Joseph & Parui, *Rec. zool. Surv. India. Occ. Paper No. 113* : 16.

A medium black species with black and pale yellow legs, and infuscated wings. Male : length 12 mm, wing damaged; female: length 13 mm, wing 9 mm.

Males : *Head* as broad as thorax, black with grey tomentum; mystax black above and pale yellow below, fronto-orbital bristles and ocellar bristles golden yellow, postocular bristles black and golden yellow, postgena with white setae. Antenna black, scape with golden yellow setae, and pedicel and first flagellomere with black setae, pedicel slightly longer than half of scape, first flagellomere much longer than the combined length of scape and pedicel. Palpus and proboscis black, former black setose while latter pale yellow setose.

Thorax black with sparsely grey tomentose; pronotum with medially pale yellow and laterally white setose; scutum without mediolongitudinal stripe and lateral spots; chaetotaxy : not distinct; vestiture dense, short, golden yellow setae; scutellum with scattered pale yellow setae, border with a row of bristly setae; pleuron white tomentose, meron with dense, pale yellow bristly setae. Haltere yellowish-brown with dark brown head.

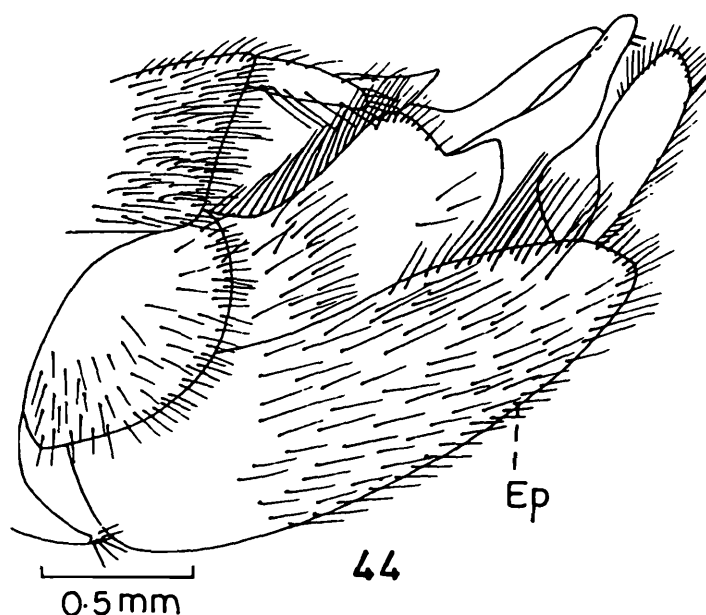


Fig. 44 : *Laxenecera albibarbis* Macquart, lateral view of male genitalia.

Legs black and pale yellow, in fore and mid legs coxa, trochanter and femur black, tibia pale yellow above and black below, tarsus black, hind leg black except the base of femur with yellowish-brown mark, vestiture white and black, bristles white.

Wing infuscated with a longitudinal hyaline mark medially.

Abdomen with black and grey transverse bands, each tergum black for two-thirds anteriorly and grey for one-third posteriorly, tergum 1 laterally with long setae and a few bristly setae, vestiture black and white or black and pale yellow. Genitalia (Fig. 44) black with pale yellow and white setae.

Females : Similar but with the following differences; mystax white, postocular bristles black and white; setae on thorax mostly white and sparse on scutum. Genitalia black, tergum 9 broad, subequal to tergum 8, and somewhat pointed apically, sternum 8 concave apically.

Material examined : 1 ♂, Reg. No. not given, India: United Provinces : Allahabad, 15.viii.1909, Coll. name indistinct, Indian Mus. det. name not given (Z.S.I.). 1 ♂, 30.ix.1955, Coll. Nayar; 1 ♀, 29.viii.1960, Coll. Sharda; 1 ♀, 23. x .1960 Coll Ghatak. 1 ♀, 5.viii. 1961, Coll, Ghatak; 1 ♂ 16 vi.1962 Coll. Girish; 1 ♂, 30.viii 962, Coll. A Seth; 1 ♂, 20.x.1962, Coll. Sharda; 1 ♂ 4.ix.1986, Coll. Sharda; all collected from the Delhi University Campus (Z.S.I.) 2 ♂ India : Gujarat: Baroda, 4.x.1984; 2 ♂, Baroda, 12.x.1984, all Coll. K. Ghorpade (Ghorpade C.). 1 ♀, Rajasthan: Abu Road, 375 m, 18.ix.1986, Coll. Joseph & Parui; 1 ♂, 1 ♀, Rajasthan: Ranathambore, 25.ix.1986; 1 ♂, 1 ♀, Rajasthan : Swai Madhopur District : Choru, 26.ix.1986, all Coll. A.N.T. Joseph. 2 ♀, Little Andaman : Hut Bay, 22.i.1988, Coll. A.N.T. Joseph & Party. 2 ♂, Gujarat : Rajkot District : Rajkot, 29.viii.1988; 1 ♂, 3 ♀, Baroda District: Baroda, 29.viii.1988, all Coll. A.N.T. Joseph (Z.S.I.).

Discussion : The species is similar to *Laxenecera flavibarbis* Macquart but differs from it by the black hind femur with basal yellowish-brown mark, pale yellow bristly setae on different parts of body, and details of the male genitalia, particularly the epandrium.

Distribution : India (Bihar, Gujarat, Himachal Pradesh, Maharashtra, Rajasthan, Uttar Pradesh, and West Bengal).

Types : Location of types not known.

39. *Laxenecera bengalensis* (Wiedemann)*

1821. *Laphria bengalensis* Wiedemann, *Dipt. exot.* 1 : 237. Type locality : Bengal.
 1828. *Laphria bengalensis* : Wiedemann, *Aussereuropäische zweiflügelige Insekten, als Fortsetzung des Meigenschen Werkes*, 1 : 512.
 1975. *Laxenecera bengalensis* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 112.
 1990. *Laxenecera bengalensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 16.

Nigra abdominis incisuris utrinque albidis. Black segments of the hind body whitish on both sides -8 lines ♂, -from Bengal.

Wiedem. *Dipt. exot.*, 1. 237.

Since the redescription of Wiedemann (1828) is in more details, it is quoted. Antennae black; bottom face whitish, shiny black white with black vittae. Mystax whitish, upper mouth bristles black. Scutum black, hardly vittate, on the sides, joints and in the spaces between the vittae almost silver white shiny in certain directions, similarly also at the sides of thorax. Abdomen slog grey, root edge of the segments a little whitish shiny. Back edges on both the sides broader, similarly also against the side edges, all these are greyish-white and white setose. On the fifth and sixth segments the whole of the back edge is white

and is covered with whitish setae. Wings yellowish mainly, halteres black with white heads. Legs black with long very fine yellowish-white setae, and tarsi black setose-from Westermanns Collection.

Discussion : Closely similar to *Laxenecera sexfasciata* (Walker) but differs in the white and black mystax, yellow wings, and whitish on sides of abdomen.

Distribution : India (Bengal)

Types : Location of types not known.

40. *Laxenecera flavibarbis* Macquart

(Fig. 45)

1838. *Laxenecera flavibarbis* Macquart, *Dipt. exot.*, 1 (2) : 77. Type locality : West Bengal.

1975. *Laxenecera flavibarbis* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 112.

1990. *Laxenecera flavibarbis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 16.

A medium black species with greyish-yellow and grey tomentum, black and yellowish-brown legs and light brown wings. Male : length 11 mm, wing 7 mm; female : length 11 mm, wing 8 mm.

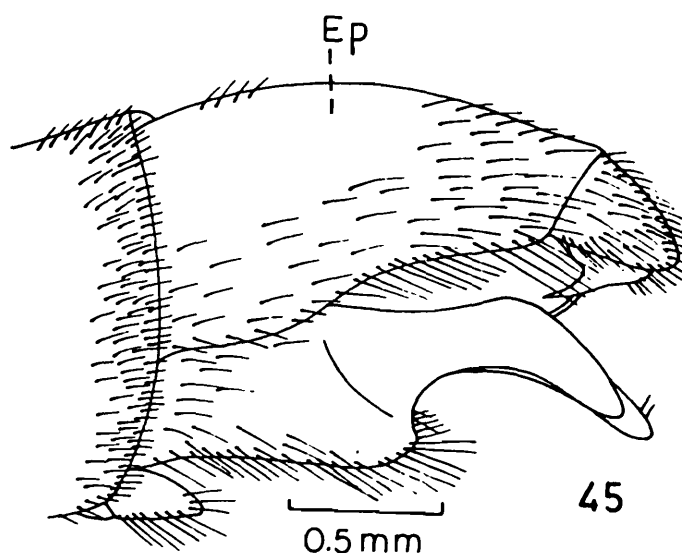


Fig. 45 : *Laxenecera flavibarbis* Macquart, lateral view of male genitalia.

Males : Head as broad as thorax, black with greyish-yellow and grey tomentum; mystax black above and golden yellow below, fronto-orbital bristles golden yellow and black, ocellar bristles golden yellow, postocular bristles black and golden yellow, postgena with pale yellow setae. Antennae lost, but in female scape and pedicel present, both black, former with pale yellow and latter with black setae, pedicel lesser than half the length of scape. Palpus and proboscis black, former with black and latter with pale yellow setae.

Thorax black with grey and greyish-yellow tomentum; pronotum with dense, elongate golden yellow setae; scutum devoid of mediolongitudinal stripe, lateral spots also absent; chaetotaxy: a few, bristly setae posterolaterally and on postalar callus; vestiture dense, short, golden yellow setae, border

bearing 4 pale yellow bristly setae; pleuron with sparse grey and greyish-yellow tomentum, meron with elongate golden yellow setae. Haltere yellowish-brown.

Legs black and yellowish-brown, in fore and mid legs coxa and trochanter black, femur black with yellowish-brown tip, tibia yellowish-brown above and black below, tarsus black, hind leg completely black, vestiture black and golden yellow.

Wing light brown.

Abdomen black, tergum 1 laterally with golden yellow setae and bristly setae, each tergum anteriorly for about two-thirds black and the remainder pale yellow, vestiture black and pale yellow, Genitalia (Fig. 45) black with golden yellow setae.

Females : Similar except mystax and fronto-orbital setae entirely golden yellow. Genitalia black, tergum 9 short, entire at apex, sternum 8 concave apically.

Material examined. : 1♂, 1♀, India : Mormugao : Chiquilim Point, 29.ix.1916, Coll. S. Kemp, det. name not given (Z.S.I.). 1♂, Bihar : Pusa, 26-30.viii.1925, Coll. H.S. Pruthi (Z.S.I.). 2♂, 2♀, Tamil Nadu : Coimbatore, 117 m, ix.1917, Coll. T.R.S. Nathan (C.A.S.). 1♂, Gujarat : Baroda, 4.x.1984; 2♂ Baroda, 6.x.1984; 1♂, Baroda, 22 km S.E., 11.x.1984; 1♀, Baroda, 12.x.1984; 1♂ 2♀, 20 km S.E. Pavagarh, 13.x.1984, all Coll. K. Ghorpade (Ghorpade C.). 1♀, Rajasthan: Tonk District: Indergarh, 28.viii.1986; 2♂, 5♀, Jodhpur District : Balsamandh, 14.ix.1986; 2♂, 2♀, Sirohi District: Kiarali, 19.ix.1986; 2♂, 1♀, Swai Madhopur District: Ranathambore, 25.ix.1986; 2♀, Gujarat ; Baroda District: Pipae, 29.viii.1988; 2♂, Baroda District: Baroda, 29.viii.1988, all Coll. A.N.T. Joseph (Z.S.I.).

Discussion : The species is closely similar to *Laxenecera albibarbis* Macquart differing from which in the wholly black hind femur, golden yellow bristly setae on different parts of body, and details of male genitalia.

Distribution : India ("Bengal", Bihar, Goa, Maharashtra, Rajasthan, Tamil Nadu, and Uttar Pradesh).

Types : Location of types not known.

41. *Laxenecera sexfasciata* (Walker)*

1851. *Acurana 6-fasciata* Walker, *Insecta Saundersiana*, 1 : 107. Type locality : East India.

1975. *Laxenecera sexfasciata* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 112.

1990. *Laxenecera sexfasciata* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 16.

Body black: head thickly and completely clothed with long hoary hairs, beset behind the eyes with black bristles: eyes black; fore part nearly flat, its facets much larger than those elsewhere: sucker black, clothed at the tip with tawny hairs; palpi black, beset with black bristles: feelers black; first joint clothed with long hoary hairs; second and third beset with short black bristles, second about half the length of the first; third longer than the first and the second, very slightly spindle-shaped: chest and breast thinly clothed with short tawny hairs: abdomen dark brown, nearly linear, much longer but hardly narrower than the chest, conical at the tip, clothed with short, pale yellow hairs; these are most prevalent on the

broad pale tawny bands which adorn the hind borders of the segments: legs black, clothed with pale yellow hairs; thighs thick, especially the hind pair; four anterior shanks tawny, almost straight; hind pair much curved; hind-feet and tips of hind-shanks clothed with short tawny hairs; claws towards the base and foot cushions tawny: wings almost colourless; wing ribs tawny; veins pitchy, tawny towards the base and along the fore border; poisers tawny. Length of the body 6-7 lines; of the wings 9-11 lines.

East India.

Discussion. - *Laxenecera sexfasciata* (Walker) is similar to *L. bengalensis* (Wiedemann), but differs in the greyish-white mystax, hyaline wing and uniformly dark brown abdomen.

Distribution. India (East India).

Types. In the Collection of the Natural History Museum, London.

Genus 12. *Maira* Schiner, 1866

1866. *Maira* Schiner, *Verh. zool. Bot. Ges. Wien*, 16 : 673. Type-species: *Laphria spectabilis* Guerin-Meneville, original designation.

1975. *Maira*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 112.

1990. *Maira*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 16.

Generally large flies with brilliant metallic colour; head generally wider than thorax, face with a distinct gibbosity on lower half, mystax consists of many bristles and setae, frons and vertex divergent, the latter deeply excavated; the former with a few bristly setae, ocellarium low with a pair of stout bristles, postociput bears abundant setae; scape about twice as long as pedicel, first flagellomere attenuate on basal half, widest in the middle and then gradually tapered to a blunt point. Scutum moderately convex, shining with abundant setae, humerus bears bristly pile; chaetotaxy: dorsocentral bristles may be thin or stout, 1 notopleural, 3-4 supra-alars, 2-3 postalars; scutellum metallic with fine setae on disc and 1-3 pairs of bristles on margin, pleura densely pollinose, katapisternum with a tuft of pile above and epimeron with scattered setae, postnotal callosity pollinose. Legs metallic with fine pile and setae dorsally but reduced on the tibiae, fore femur with long dorsal and ventral setae, fore tibia slightly bent with about 4 long bristles near apex; mid tibia with a few, very long, strong, anterodorsal bristles and a few similar posterodorsal bristles; hind femur strongly swollen dorsally with a few stout bristles along with bristly pile and fine pile ventromedially, hind tibia bears a few strong dorsal bristles. Wings hyaline, or pale grey, or sometimes blue black, marginal cell closed with long stalk, anterior branch of third vein almost straight reaching to tip of wing, posterior branch ends away from it, first posterior cell slightly narrowed, fourth posterior cell closed with long stalk. Abdomen stout, widened distally, shining metallic coloured with scattered fine, long pile laterally; male genitalia rotate one-half, epandrium well developed, bowl-shaped, hypandrium short, concealed.

Discussion. - *Maira* Schiner is difficult to separate from *Laphria* Meigen excepting the differences in the male genitalia and the abdomen being wholly metallic along with scutum. In *Laphria* only the abdominal colouration may be partly so.

Distribution. It is predominantly distributed in the Oriental Region, especially throughout the Indo-Malayan Region down to New Guinea. It is also widely available in the Australian Region. Species from India have been recorded from Assam, Himachal Pradesh, Meghalaya, Punjab and West Bengal. From India and adjacent countries so far 10 species have been reported.

Type species. Location of types not known.

Key to species of *Maira* Schiner

1. Antennal scape yellowish-brown, rest black, legs black with shining metallic blue femora *pseudoindiana* Joseph & Parui
- Antenna wholly black 2
2. Abdomen opaque black 3
- Abdomen metallic blue, green or purple 5
3. Mystax golden yellow or mixed black and golden yellow 4
- Mystax wholly black, legs black *abscissa* (Walker)
4. Mystax black and golden yellow, hind femur with a pair of short spiny bristles anteroventrally on distal side, legs black and golden yellow *bicolor* Joseph & Parui
- Mystax golden, hind femur with only sparse, black setae ventrally, legs black *paria* Bigot
5. Abdomen metallic green 6
- Abdomen metallic blue or purple 7
6. Each abdominal tergum with a yellow bristle on either side, scutellar disc bears yellow setae, laterotergite with predominant yellow bristles *aurifacies* (Macquart)
- Abdominal terga 2-6 with 1-2 lateral black bristles, scutellar disc bears black setae, laterotergite with black bristles *delfinadoi* Joseph & Parui
7. Abdomen metallic blue 8
- Abdomen purple 9
8. Mystax pale yellow with a few black bristles above, femora shining metallic blue *indiana* Joseph & Parui
- Mystax black, legs green and purple, abdominal terga with whitish triangular spots laterally *compta* Walker
9. Scutum black with metallic purple reflection and covered with brownish-white tomentum, humeri with a large patch of white tomentum *longirostrata* Bromley
- Scutum with cuprous reflection, humeri without such patch of tomentum *gloriosa* Walker

42. *Maira abscissa* (Walker)*

1860. *Laphria abscissa* Walker, *Trans. ent. Soc. London*, 5 (2) : 282. Type locality: Burma. (Myanmar).
 1975. *Maira abscissa*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 112.
 1983. *Maira abscissa*: Joseph & Parui, *Oriental Ins.* 17 : 297

♀, Black: front prominent; mystax with black bristles; proboscis porrect; abdomen a little broader towards the tip, longer than the thorax; legs stout; wing blackish, almost colourless for nearly half the length from base.

Length of body 4 lines; of wings 8 lines.

Distribution. Burma (Myanmar).

Types.- Location of types not know.

43. *Maira aurifacies* (Macquart)*

1848. *Laphria aurifacies* Macquart, *Dipt. exot. Suppl.*, 3 : 22. Type locality: Moluccas.

1972. *Maira aurifacies*: Oldroyd. *Pacific Insects*, 14 (2) : 247.

1975. *Maira aurifacies*: Oldroyd. *A Catalog of Diptera of the Oriental Region*, 2 : 113.

1990. *Maira aurifacies*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 17.

Length 6.1 mm. Male. Palpi with black setae. Yellowish-white mystax. Front of head with fine setae and golden yellow setae; black setae on top of mouth. Top of head with greyish fine setae. Black antennae; first segment with black setae underneath. Thorax with whitish-yellow marks on humeri; a band of the same colour present on the sides; yellowish fine setae on each side of posterior fringe of second, third and fourth segments of abdomen. Tarsi with blue glints; femur and tibia with whitish setae; the first tarsal segments have reddish fine setae underneath. One half of wings is lighter in front and brownish at the back; fourth cell behind base is fairly large.

Moluku (Indonesian Archipelago). Mr. Payen's collection.

Since the original description is sketchy and detailed description by Oldroyd (1972) is available it is quoted below.

This species seems to be the most abundant species of *Maira* in the Philippine Islands, and is probably the species seen by Osten Sacken (1882: 110): "A small, greenish metallic species, with a golden face. A single specimen" Bezzi (1917: 125) commented that it was "widely spread over the Malay Archipelago, and usually referred to the genus *Maira*" though he himself placed it in the genus *Epholchiolaphria*, without commenting on the fact.

Head. Face and frons densely covered with golden yellow tomentum, and with a double row of dense golden hairs running from antennae to mystax. Mystax black, with one or two yellow setae. Frons with a single row of long, black hairs along each eye margin. Two long, strong, black ocellar bristles. Antennae black: first segment just over twice as long as second, with black setae and bristles. Proboscis and palpi black, palpi with black hairs. Occipital bristles black, beard dense, white.

Thorax. Mesonotum metallic green, sparsely covered with very short black, and even shorter yellow hairs, as well as the usual long black bristly hairs. Humeri, postalar calli and a narrow strip laterally and posteriorly, with a more dense yellow tomentum. Scutellum rather flat, with corrugated surface, and clothed with hairs as mesonotum. Two strong black marginal bristles and several finer ones. Pleura entirely covered with yellowish white tomentum. Hairs mostly yellowish, but metapleural tuft may have a few black hairs dorsally.

Abdomen. Dorsum metallic green, with fine black hairs; on lateral margins yellow hairs and a stout yellow discal bristle on each side of each segment. Each segment has a triangular patch of white tomentum in each posterior angle. Venter covered with dense whitish tomentum and long hairs, which are pale except posteriorly, where they are black. Male genitalia as in figure.

Legs. Shining metallic green, clothed with long hairs and bristles, which are predominant yellowish, but a number are black, especially on tibiae.

Wings. Mostly brownish gray, but paler in basal half.

Length of body 9-12 mm; of wing 9 mm.

Discussion. The other two species with mixed coloured mystax are *Maira delfinadoi* Joseph & Parui and *M. hispidella* van der Wulp from both of which *M. aurifacies* (Macquart) differs in the presence of two stout bristles on the scutellar border and details of male genitalia.

Distribution. India (Nicobar Islands); Borneo (E. Malaysia and Kalimantan); Malaya; Philippines; Sumatra.

Type.- Holotype in "coll M. Payen Tournai, Belgium."

44. *Maira bicolor* Joseph & Parui (Fig. 46)

1987b. *Maira bicolor* Joseph & Parui, *Bull. zool. Surv. India*, 8 (1-3) : 223. Type locality: Sukna, Darjeeling District, West Bengal.

1990. *Maira bicolor*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 17.

A small, black and yellowish-brown species with bicoloured abdomen and legs and infuscated wings. Male: length 10 mm, wing 9 mm.

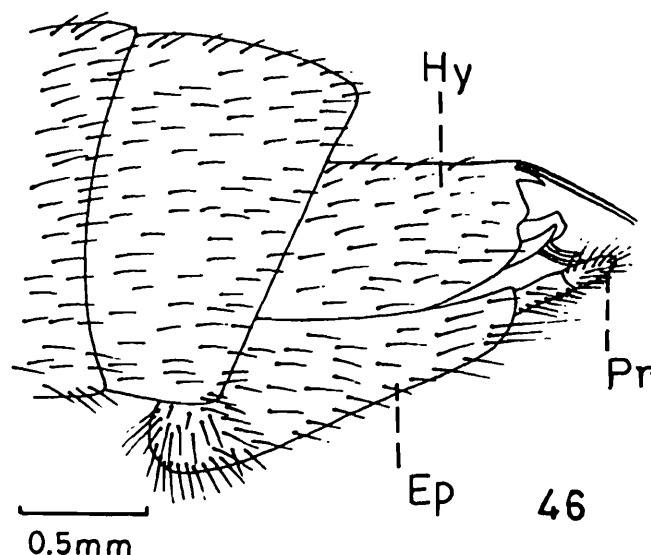


Fig. 46 : *Maira bicolor* Joseph & Parui, lateral view of male genitalia.

Male. Head broader than thorax, black, tomentum grey and greyish-yellow; mystax with long black and short golden yellow bristles; fronto-orbital setae golden yellow below and black above, ocellar setae black; postcranium above devoid of tomentum, below tomentose, above and side with black setae, postgena with pale yellow setae. Antenna black, scape and pedicel with black setae, scape about thrice the length of pedicel, first flagellomere about twice the combined length of scape and pedicel. Palpus and proboscis black with pale yellow setae.

Thorax shining black; pronotum black setose; scutum without mediolongitudinal stripe, vestiture very small, pale yellow; scutellum with the disc bearing pale yellow setae, hind border with a pair of black bristles, pleura grey tomentose. Haltere yellowish-brown.

Legs black and yellowish-brown; coxa and trochanter black, with its tip yellowish-brown, tibia and tarsus yellowish-brown but hind tibia distally dark brown, hind femur with a pair of short, spiny bristles anteroventrally on the distal side, vestiture pale yellow with some black setae also, tibia on apex ventrally as well as tarsal segments ventrally with thick golden yellow setae.

Wing infuscated, but lighter basally; discal cell in one wing with a supernumerary cross-vein.

Abdomen yellowish-brown and shining black, segment 1 shining black, segment 2 yellowish-brown with a black mark on tergum, segments 3-4 yellowish-brown, 5 yellowish-brown and black, vestiture golden yellow, a few setae laterally on tergum 1 form bristles. Male genitalia (Fig. 46) shining black with black setae.

Material examined. Holotype ♂ India: Sukna: 55 km. S. of Darjeeling, v. 1966, Coll. J. and M. Sedlaeck, B. M. N. H. Reg. No. 13104.

Discussion. It differs from all the other known species of *Maira* Schiner from India and adjacent countries by the yellowish-brown and black abdomen. The male genitalia resembles *M. hispidella* Wulp from Java from which it can be separated by the structural details of the hypandrium.

Distribution. India (W. Bengal).

Type. In the Collection of the Natural History Museum, London.

45. *Maira compta* Walker (Fig. 47)

1861 *Maira compta* Walker, *J. Linn. Soc. London*, 5 : 146. Type locality: Amboina, Moluccas.

1975. *Maira compta*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 113.

1990. *Maira compta*: Joseph & Parui, *Rec. zool. Surv. India, Occ. Paper No.* 113 : 17.

A medium, brown fly with shining metallic blue scutum, terga of abdomen brown with shining light metallic blue, legs brown with femur slightly shining metallic blue, and light brown wings. Male: length 17 mm, wing 13 mm.

Male. Head slightly broader than thorax, dark brown with dense grey tomentum, mystax long black bristles, face with short, golden yellow setae, frontoorbital setae and ocellar bristles black, postocular bristles black, postcranium white setose. Antennal scape and pedicel yellowish-brown, with dark brown distally, first flagellomere dark brown, scape and pedicel black setose, one seta ventrally on scape forms a bristle, pedicel about half the length of scape, first flagellomere longer than the combined length of scape and pedicel. Palpus yellowish-brown with black setae, proboscis black with white setae.

Thorax with shining metallic blue scutum, remainder yellowish-brown with dense greyish-white tomentum; pronotum with long, black, bristly setae and pale yellow setae; scutum with a faint, undivided, mediolongitudinal brown stripe extending from anterior border to beyond transverse suture; chaetotaxy: 2 notopleurals, 5 supra-alars, 4 dorsocentrals, 4 postalars; vestiture and bristles black;

scutellum black and pale yellow setose, hind border with a row of 6 black bristles, laterotergite with dense elongate black bristles. Haltere yellowish-brown with black marking on head.

Legs yellowish-brown with apex of tarsal segments dark brown, femur dorsally with light metallic, shining blue, legs with dense elongate black and white setae.

Wing light brown, vein R_1 nearly straight.

Abdomen brown, in certain angles light metallic shining blue, terga laterally with long, white or black setae, tergum 2 with 3 black bristles, terga 3-6 with 2 black bristles which gradually decrease in size posteriorly. Genitalia (Fig. 47) brown with 2 elongate bristles on hypandrium.

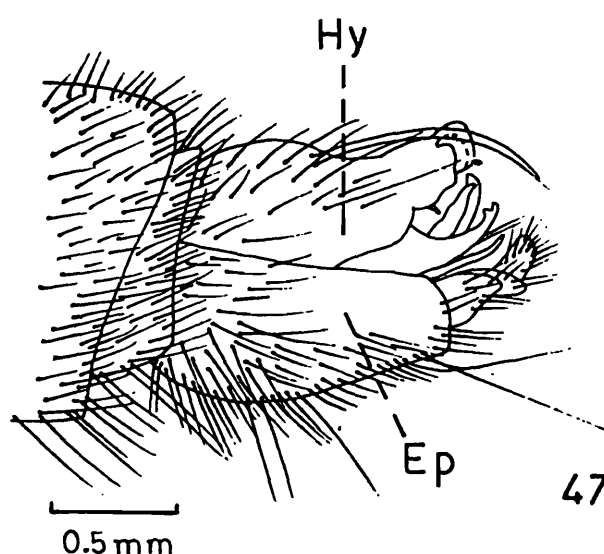


Fig. 47 : *Maira compta* Walker, lateral view of male genitalia.

Material examined. - *Holotype* ♂, Moluccas: Ambonia, no other details. Bears a label "M, Type, rarians", and another label "Holotype, *Laphria compta* Walker, det. J. E. Chainey, 1984, N. B. Wrong sex"

Discussion. - This species is quite similar to *Maira gloriosa* Walker but can be readily distinguished from it by the fusiform first flagellomere, uniformly light brown wing and brown genitalia with its structural details.

Distribution. India (no other details); Java; Moluccas (Amboina); New Guinea.

Type. - In the Collection of the Natural History Museum, London.

46. *Maira delfinadoi* Joseph & Parui (Fig. 48)

1981a. *Maira delfinadoi* Joseph & Parui, *Ent. scand.* 12 : 215. Type localities: Tura, Assam (Meghalaya) and Darjeeling, West Bengal.

1990. *Maira delfinadoi*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 17.

A medium sized black species with shining metallic green dorsum of thorax and abdomen, dark brown legs and infuscated wing. Male : length 18 mm, wing 14 mm; female : length 16 mm, wing 14 mm.

Males : *Head* broader than thorax, black with grey tomentum; mystax black with a few lower bristles pale yellow, front with white setae, fronto-orbital setae below antennae mixed black and white, setae of ocellarium black; postcranium above devoid of tomentum except for a median patch behind ocellarium, laterally tomentose, upper setae black while remaining pale yellow. Antenna black, scape black and pale yellow setose, pedicel entirely pale yellow setose, scape about two-and-a-half times pedicel, first flagellomere about two-and-a-half times the combined length of scape and pedicel. Palpus and proboscis black, the former with black and the latter with pale yellow setae.

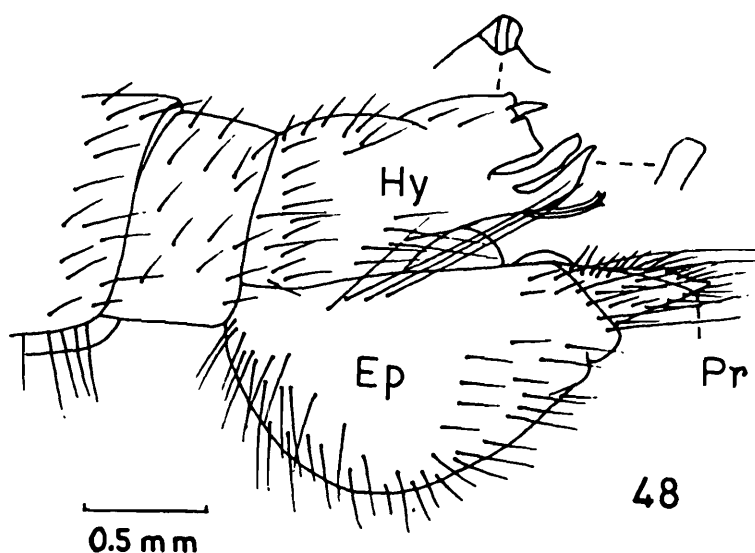


Fig. 48 : *Maira delfinadoi* Joseph & Parui, lateral view of male genitalia.

Thorax black with metallic green dorsum; pronotum black setose; scutum with the mediolongitudinal stripe indistinct, humeri grey tomentose, sides behind the transverse suture greyish which extends towards the middle along the transverse suture for a short distance, vestiture and bristles black, pleuron with a transverse grey band and two similar marks above the fore and hind coxae; scutellum with the setae of disc and bristles of border black; laterotergite with black bristles. Haltere yellowish-brown.

Legs black with the femora shining metallic green, setae white, yellow and black, bristles black.

Wing brownish apically and clear basally.

Abdomen shining metallic green dorsally, setae white but with some black ones also, terga laterally bearing some long, black setae, 1 or 2 of which on either side from 2-6 segments form bristles. Male genitalia (Fig. 48) black with black setae.

Female : Same but for the entirely black mystax.

Material examined : *Holotype* ♂ India : Meghalaya : Garo Hills : above Tura, 1067-1188 m, 15.vii-30.viii. 1917, Coll. S. Kemp. *Paratypes* 1 ♀, data as in holotype; 1 ♂ West Bengal: Darjeeling District : Kalimpong, 183-1372 m, 24.iv.-10. v.1915, Coll. F.H. Gravely.

Discussion : *Maira delfinadoi* Joseph & Parui is similar to *M. longirostrata* Bromley from which it can be readily recognised by the small size, mixed black and white frontoorbitals below antennae and the body colouration. It is in honour of Dr. Mercedes D. Delfinado, who jointly with Professor D. Elmo Hardy, compiled and edited the valuable Catalog of Diptera of the Oriental Region.

Distribution : India (Meghalaya, and West Bengal).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

47. *Maira gloriosa* Walker
(Fig. 49)

1859. *Maira gloriosa* Walker, *J. Linn. Soc. London*, **3** : 84. Type locality : Aru, Moluccas.

1975. *Maira gloriosa* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 113.

1990. *Maira gloriosa* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 17

Large fly with shining metallic blue abdomen and dense golden yellow setose scutum, and light brown wings. Male : length 21 mm, wing 18 mm; female : length 20 mm, wing 17 mm.

Male : *Head* broader than thorax, black with greyish-white tomentum, mystax a few, long, black bristly setae, frontoorbital plate with white scales, ocellar bristles black, postocular bristles black. postcranium white setose, postgena with dense white setae. Antenna broken off from first flagellomere onwards, scape and pedicel black with black setae; pedicel about half the length of scape. Palpus and proboscis black, palpus with black and white setae, proboscis white setose.

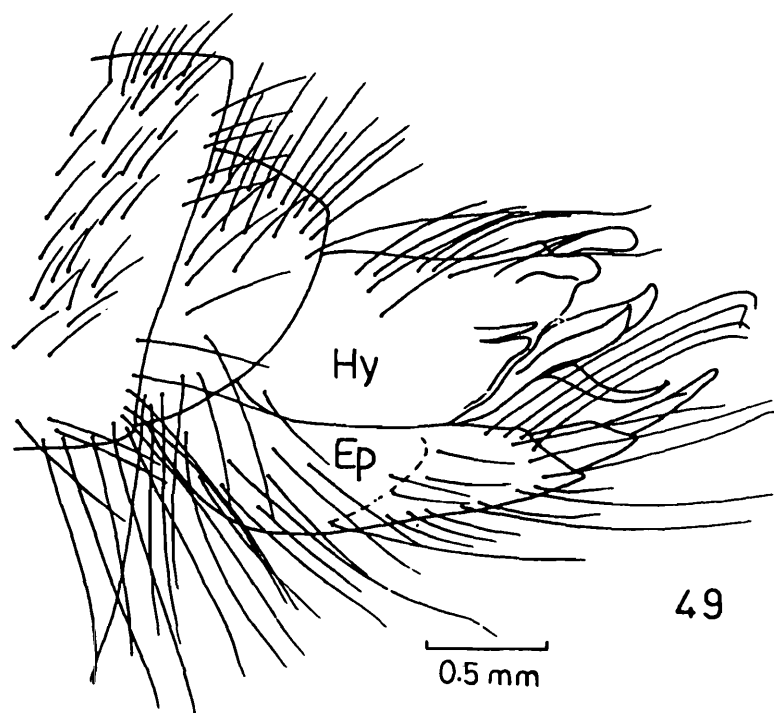


Fig. 49 : *Maira gloriosa* Walker, lateral view of male genitalia.

Thorax black with dense grey tomentum; pronotum with a few black bristly setae and scattered white setae; scutum covered with a mat of golden yellow setae, mediolongitudinal stripe absent; chaetotaxy: 1 notopleural, 5-6 supra-alars, 3 postalars; vestiture golden yellow with a few black setae laterally; scutellar disc golden yellow setose, hind border with 4 bristles; laterotergite with a bunch of black bristles. Haltere pale yellow with dark brown marking.

Legs shining metallic blue, vestiture dense white setae and long black setae, setae on tibia particularly long, femur posteriorly with a few black bristles.

Wing light brown, but basally hyaline, vein R_1 nearly straight.

Abdomen black and shining metallic blue, terga 2-5 with a posterolateral, small, triangular grey tomentose mark, tergum 2 with three and terga 3-5 with one black bristle laterally, vestiture black, terga 1-4 laterally with a few long white setae, tergum 5 with long black and white setae, terga 6-7 with a few long black setae laterally. Genitalia (Fig. 49) shining blue with long black setae.

Female : Similar but with the following differences : chaetotaxy : 3-4 supra-alars; legs with comparatively short and not so dense setae. Genitalia with proctiger long and bearing pale yellow setae, distally with a few pale yellow bristles.

Material examined : Type male, Malay Archipelago: Aru Islands : near New Guinea, Coll. A.R. Wallace, No. 58, 48. Type female, details as in type male. Both specimens bear label 'Syntype, *Laphria gloriosa* Walker, det. J.E. Chaïney 1984'. B.M.N.H.

Discussion : *Maira gloriosa* Walker can be readily separated from its closely similar species *M. compta* Walker by its cone-shaped first flagellomere, basally hyaline and apically light brown wing and shining blue colour and structural details of the male genitalia.

Distribution : India (no other details); Java; Moluccas; New Guinea.

Types : In the Collection of the Natural History Museum, London.

48. *Maira indiana* Joseph & Parui (Fig. 50)

1987a. *Maira indiana* Joseph & Parui, *Bull. zool. Surv. India*, 8 (1-3): 90. Type locality : Maghi Basti, Arunachal Pradesh, India.

1990. *Maira indiana* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 17.

A medium sized black species with dorsum of thorax and abdomen shining metallic blue, legs black with shining metallic blue femora, and wings dark brown. Male : length 18 mm, wing 14 mm.

Male : *Head* broader than thorax, black with greyish-yellow and grey tomentum; mystax pale yellow with a few black bristles above; frontoorbital setae black and pale yellow, ocellar setae black, posteranium sparsely grey tomentose with golden yellow setae below and with both black and golden yellow setae above, some of the black setae well developed and form bristles. Antenna black with black bristles on scape and pedicel, scape about one-and-a-half times the length of pedicel, first flagellomere

about one-and-a-half times the combined length of scape and pedicel. Palpus and proboscis black with golden yellow setae, the former also with a few black setae.

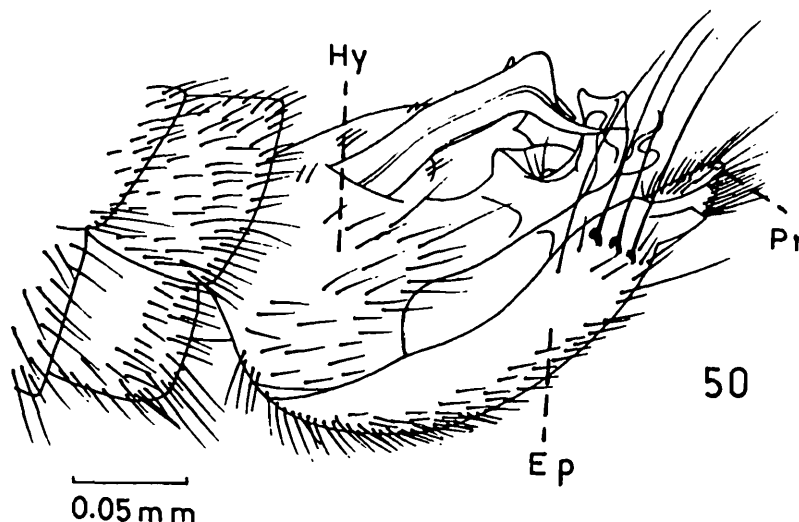


Fig. 50 : *Maira indiana* Joseph & Parui, lateral view of male genitalia.

Thorax black, scutum shining metallic blue; pronotum black, golden yellow setose; mediolongitudinal stripe of scutum indistinct, tomentum more or less confined to sides, setae black except for a few anterolateral pale yellow ones, bristles black; scutellum with black setae, hind border with elongate black and pale yellow setae; laterotergite with golden yellow and black bristles. Haltere yellowish-brown.

Legs black, femora shining metallic blue; fore and mid femora and tibia bearing dense, elongate setae, setae predominantly golden yellow with some black setae intermixed, distal half of fore tibia anteriorly and basal 2 or 3 tarsal segments, both anteriorly and ventrally, bearing a mat of golden yellow pubescence, on middle tarsi golden yellow mat confined to ventral surface, on hind leg the golden yellow mat present posteriorly and ventrally at the apex of tibia and tarsal segments, vestiture mixed black and golden yellow.

Wing dark brown, slightly lighter basally, hyaline area present in anal cell and axillary cell.

Abdomen shining metallic blue dorsally, terga 1-4 with golden yellow setae laterally and posteriorly, lateral setae long, remaining setae black. Male genitalia (Fig. 50) black and yellowish-brown, setae black and pale yellow.

Material examined : *Holotype* ♂, Reg. No. 7261/H6, India : Arunachal Pradesh: Maghi Basti (Lekhabali) , 8.x.1966, Coll. S.K. Tandon.

Discussion : This beautiful robberfly can be separated from all other known species of *Maira* Schiner from Southeast Asia on the basis of structure of male genitalia.

Distribution : India (Arunachal Pradesh).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

49. *Maira longirostrata* Bromley

1935. *Maira longirostrata* Bromley, *Rec. Indian Mus.*, **37** : 227. Type locality : Singla, Darjeeling District, West Bengal.
1975. *Maira longirostrata* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 114.
1990. *Maira longirostrata* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 17.

A medium, black species with whitish tomentose head and thorax, blue-black legs, grayish wings, and with metallic purple reflections on abdomen. Female : length 19 mm, wing 15 mm.

Females : Head broader than thorax, black, whitish tomentose; mystax black; front with white setae; frontoorbital setae black, ocellar bristles black, postocular bristles black, postcranium bare above, laterally with sparse, black setae, below bearing white setae. Antenna long, black, scape and pedicel black setose, pedicel shorter than half of scape, first flagellomere longer than twice the combined length of scape and pedicel. Palpus and proboscis black, former with setae and bristles black while latter white setose.

Thorax black with metallic purplish reflections, and covered with whitish and brownish-white tomentum; pronotum black setose with a median transverse row of black bristles; scutum with the mediolongitudinal stripe indistinct and extending from anterior end to transverse suture, a large patch of whitish pollen on back of humeri, vestiture and bristles black; pleura mostly covered with dense whitish tomentum, laterotergite bearing some elongate black bristles; scutellum with the disc sparsely black setose, border with a row of black bristles. Haltere whitish with a tinge of light yellow.

Legs blue black, coxa covered with thick whitish tomentum, clothing setae white on coxa, on remaining pale yellow and a few black intermingled, in fore leg tibia anteriorly and tarsus ventrally, in mid leg tarsus ventrally, and in hind leg apex of tibia and tarsus ventrally bearing a mat of golden yellow setae.

Wing grayish, but basal one-third hyaline.

Abdomen black with metallic purple reflections, club-shaped, segment 2 narrower than 1, from segment 2-5 gradually broadening and segment 5 being about as broad as thorax, from segment 6 onwards tapers posteriorly, terga 1-5 with a white patch on posterolateral borders, incisures brownish-white pollinose, terga 1 and 2 with some long, black setae laterally.

Material examined : Holotype ♀, Reg. No. 660/H6, India : Darjeeling District: Singla, 457 m, v.1913, Carmichael's collection. 1 ♀ Meghalaya : Garo Hills : above Tura, 122-152 m, 15.vi-15.vii.1917. Coll. S. Kemp (Z. S.I.)

Discussion : *Maira longirostrata* Bromley, *M. compta* Walker and *M. gloriosa* Walker have metallic blue or purple abdomen with entirely black mystax. Of these, the species under discussion can be recognised by the brownish-white tomentose scutum with metallic purple background and a large patch of white tomentum on humeri.

Distribution : India (Meghalaya, and West Bengal).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

50. *Maira paria* Bigot*

1878. *Maira paria* Bigot, *Ann. Soc. Ent. Fr.*, (5) 8 : 230. Type locality : 'Indiae Orient'.

1975. *Maira paria* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 114.

1990. *Maira paria* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 17.

Dull black, fairly smooth underneath: black antennae, black palpi and black setae on top of mouth, front of head and mystax are golden fawn in colour; a few greyish bristles on coxa and sides; scaly halteres, fore legs have long greyish setae and black bristles underneath, tarsal bristles are black, hind legs have sparse black setae under femur, scaly pads; wings are blackish and lighter at base, black veins.

Discussion : Of the species of *Maira* Schiner with golden yellow mystax, *M. paria* Bigot can be separated by the opaque black abdomen.

Distribution : 'India Orient'.

Types : Bigot's Collection.

51. *Maira pseudoindiana* Joseph & Parui

(Fig. 51)

1994. *Maira pseudoindiana* Joseph & Parui, *The Wasmann Journ. Biology* 50 (1-2) : 3. Type locality : Kerala.

A rather small, black species with the dorsum of abdomen shining metallic blue, legs black with shining metallic blue femora, and wings infuscated. Male : length 11 mm, wing 9 mm.

Male : Head broader than thorax, black with greyish-white tomentum; mystax white with a few black bristles below ; fronto-orbital setae and ocellar bristles black, postcranium with dense shining white and grey tomentum, setae sparse, white below and black above, postocular bristles black and confined to above. Antenna with scape yellowish-brown, remainder black, scape black and white setose, pedicel black setose, scape about thrice the length of pedicel, first flagellomere about one-and-a-half times the combined length of scape and pedicel. Palpus dark brown with pale yellow setae, proboscis black with white setae.

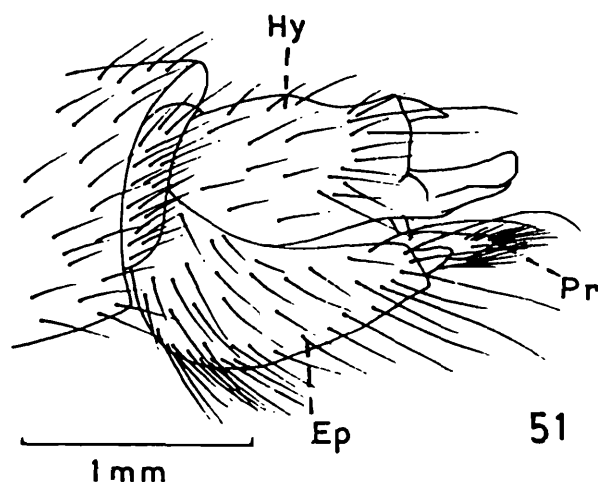


Fig. 51 : *Maira pseudoindiana* Joseph & Parui, lateral view of male genitalia.

Thorax black, grey tomentose; pronotum black setose with a median transverse row of short black bristles; scutum with the mediolongitudinal stripe indistinct, laterally near border on each side with a faint, grey stripe; chaetotaxy: 1 notopleural, 3 supra-alars, 2 postalars + 1 bristly seta, dorsocentral absent; vestiture and bristles black; scutellar disc with sparse, short, black setae, border with 6 long, black setae; laterotergite with a brush of black bristles. Haltere pale yellow and yellowish-brown.

Legs black with shining metallic blue femora, femur and tibia with dense, elongate setae, predominantly white with some black ones also, hind femur and tibia with comparatively lesser setae, tarsi ventrally with a mat of golden yellow setae, similar mat also present on apex of fore and hind tibia.

Wing infuscated, somewhat lighter coloured basally.

Abdomen shining metallic blue dorsally, terga 2-4 laterally with some long, pale yellow setae, terga 4-6 with a mediolateral black seta on each side, vestiture pale yellow. Genitalia (Fig. 51) black with black setae.

Material examined. Holotype ♂ India: Kerala State: Trivandrum District, Poonmudi Range, 914 m, v. 1971, Coll. T. R. S. Nathan. Joseph Wilcox Collection 1981, Gift to California Academy of Sciences.

Discussion. It is closely similar to *Maira indiana* Joseph & Parui from which it differs by the proportionate length of antennal segments, scape being thrice the length of the pedicel, and colouration of the mystax, which consists of upper white bristles and lower black bristles. Besides both have distinct male genitalia.

Distribution. India (Kerala State).

Type. In the Collection of Department of Entomology, California Academy of Sciences, San Francisco.

Genus 13. *Nusa* Walker, 1851

- 1851 *Nusa* Walker, *Insecta Saundersiana*, 1 : 105. Type-species : *Nusa aequalis* Walker, designated by Hermann (1912 : 243).
- 1851 *Dasythrix* Loew, *Progr. K. Realsch. Meseritz* : 21. Type-species: *Dasythrix infumata* Loew, original designation.
- 1873. *Halictosoma* Rondani, *Annali Mus. Civ. Stor. Nat. Giacoma Doria*, 4 : 298. Type-species: *Halictosoma puella* Rondani, monotypic.
- 1975. *Nusa*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 115.
- 1990. *Nusa*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 18.

Face prominent below; mystax with numerous stout bristles reaching upto the base of antenna, vertex strongly to moderately excavated, occiput bears dense, long, fine setae, ocellar triangle large, prominent bearing a pair of extraordinary long, stout bristles as well as a pair of slender, long bristly setae; scape stout, robust, a little longer than pedicel, first flagellomere usually as long as the combined length of scape and pedicel and bears at its tip a conspicuous pit containing a distinct spine or in some species a short microsegment with an apical spine; proboscis weak, slender, a little swollen at base and

apical region dorsoventrally compressed; palpus small, two jointed, second segment bears apical bristly piles. Thorax pollinose; pronotum bears weak bristles; scutum with abundant short setae, lateral bristles consists of 1-7 humerals, 8-10 notopleurals, 2-4 supra-alars, 3-5 postalars; scutellum convex, disc with numerous short setae, border bears 10-12 bristles; anepisternum with a few scattered setae, epimeron bare, laterotergite with a vertical band of long bristles. Legs stout, uniformly thick with dense pile, adpressed setae and stout bristles; hind femur with 2 dorsolaterals, 3-4 laterals and with 2 more bristles on each side; hind tibia arcuate with dorsal and lateral bristles, pulvilli long, wide, empodium long, blade-like. Wing with marginal cell closed and stalked; costa and vein R₁ end far above wing apex, first posterior cell narrow, closed with long stalk or open, anal cell closed and stalked, ambient vein absent. Abdomen robust, each tergum bears 2-3 stout bristles or bristly setae; epandrium convex, bowl-shaped, gonocoxite swollen at base but separate ventrally; female genitalia consists of lappet-like plate extending beyond the margin of last tergum, lateral corners of sternum 8 bears a lobe-like process.

Discussion : The absence of ambient vein together with the weak proboscis readily distinguishes *Nusa* Walker from its closest ally *Andrenosoma* Rondani.

Distribution : The maximum number of recorded species of this genus is from the Oriental Region. So far 18 species have been reported from India.

Type species. Types in the Collection of the Natural History Museum, London.

Key to species of *Nusa* Walker

- 1 First flagellomere not elongate 2
First flagellomere elongate 13
2. All tibiae almost wholly brown to black 3
All tibiae almost wholly yellowish-brown 10
3. First flagellomere wholly yellowish-brown or black 4
First flagellomere mixed coloured 7
4. Abdomen and first flagellomere yellowish-brown 5
Abdomen and first flagellomere black 6
5. Mystax white with a few black bristles below on either side, gonocoxite less than half the length of epandrium and with long bristles on posterior border upto apex *shevaroyensis* Joseph & Parui
Mystax pale yellow with a few black bristles above and below, gonocoxite as long as epandrium, its apex without bristles *sahai* Joseph & Parui
6. Mystax white, scutellar disc white setose, femur and tibia dark brown with orange bases *karikalensis* Joseph & Parui
Mystax pale yellow with a few black bristles above and on sides, scutellar disc black setose, femur and tibia uniformly blackish-brown *indica* Joseph & Parui

- 7 Male genitalia black 8
 Male genitalia yellowish-brown or yellowish-brown and black 9
8. First flagellomere orange brown with black base, tibiae black except for narrowly yellowish-brown base *balraji* Joseph & Parui
 Basal half of first flagellomere black, distal half orange, tibiae black *bhargavai* Joseph & Parui
9. Tibiae brown, wing uniformly light brown *formio* Walker
 Tibiae black and yellowish-brown, wing brown, anterobasally lighter *geniculata* Joseph & Parui
10. First flagellomere uniformly dark brown, abdomen with lateral greyish spots *aequalis* Walker
 First flagellomere mixed coloured, colour pattern of abdomen different 11
11. Male genitalia black, epandrium truncate at apex *mukherjeei* Joseph & Parui
 Male genitalia black and yellowish-brown, epandrium conically produced apically 12
12. First posterior cell closed to wing margin, mystax black with some pale yellow setae on sides, fore and mid femora black *elva* Walker
 – First posterior cell closed well before wing margin, mystax white, fore and mid femora black with yellowish-brown apex *sirkari* Joseph & Parui
13. Mystax predominantly white to pale yellow or wholly pale yellow 14
 – Mystax predominantly black, abdomen black and yellowish-brown with lateral and hind borders narrowly grey tomentose, wing dark brown, first flagellomere black at base and yellowish-brown at apex *yerburyi* Ricardo
14. Gonocoxite usually truncate at apex 15
 – Gonocoxite usually conically produced 18
15. Terga 1-4 with a pair of lateral bristles and pale setae 16
 – Tergum 1 only with a few pale bristles, fore and mid femora with dense white setae, veins R_5 and M_1 united close to the border *ghorpadei* Joseph & Parui
16. Mystax white and pale yellow, male genitalia yellowish-brown, gonocoxite invaginated at apex *andhraensis* Joseph & Parui
 – Mystax white and black, male genitalia black, gonocoxite convexly produced at apex 17
17. Veins R_5 and M_1 united close to wing border, terga 1-5 with median black spot and rest greyish tomentose which decreases posteriorly *pseudoalbibasis* Joseph & Parui
 – Veins R_5 and M_1 united well before wing border, terga 1-4 with yellowish-brown hind border and rest grey tomentose *bengalensis* Joseph & Parui

18. Gonocoxite with a row of spinous bristles ventrally, first flagellomere basally pale yellow and rest dark brown.....*setosa* Joseph & Parui
- Gonocoxite devoid of such bristles..... 19
19. Antenna dark brown, male genitalia black, epandrium curved down at apex, wing uniformly dark brown.....*albibasis* Ricardo
- Antennal scape yellowish-brown, pedicel black, first flagellomere black with yellowish-brown base, male genitalia yellowish-brown, epandrium straight, wing pale yellow with hind border hyaline.....*rajasthanensis* Joseph & Parui

52. *Nusa aequalis* Walker

(Fig. 52)

1851. *Nusa aequalis* Walker, *Insecta Saundersiana*, 1 : 105. Type locality : East India.

1975 *Nusa aequalis* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 115.

1990. *Nusa aequalis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 18.

A medium, black species with grey and greyish-yellow tomentum, black and yellowish-brown legs and lightly infuscated wings. Female : length 13 mm, wing 10mm.

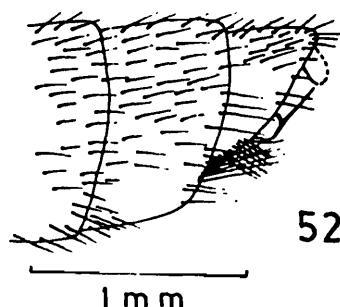


Fig. 52 : *Nusa aequalis* Walker, lateral view of female genitalia.

Female : **Head** broader than thorax, black covered with dense grey tomentum; mystax pale yellow with about three black setae on upper side, fronto-orbital setae black, ocellar bristles black, postocular bristles consists of 2 to 3 elongate pale yellow ones above and four black bristles below, postgena densely white setose. Antenna damaged, first flagellomere of one antenna lost, scape pale yellow while the rest dark brown, scape with pale yellow and black bristles, while pedicel with wholly black bristles, pedicel about two-thirds the length of scape, first flagellomere longer than scape. Palpus yellowish-brown, proboscis black, their setae pale yellow.

Thorax black, grey and greyish-yellow tomentose; pronotum with a transverse row of pale yellow and black bristles medially and dense white setae laterally; scutum with a mediolongitudinal black stripe extending from anterior end to beyond two-thirds, the details of which cannot be determined as that area is greasy, bristles black but for a few ones anterolaterally and posterolaterally being pale yellow, setae black; scutellum with black setae, and hind border with a row of black and yellow bristles; pleura densely

grey tomentose, laterotergite with elongate pale yellow bristles and setae. Haltere with its knob pale yellow and stalk yellowish-brown.

Legs damaged, mid legs lost, in the remaining legs tarsus lost; coxae, trochanters and femora black, tibiae yellowish-brown, fore femur densely white setose ventrally near base, two or more of which form bristles, bristles pale yellow, setae pale yellow and black.

Wing lightly infuscated; R_5 and M_1 united well before the border.

Abdomen black with lateral grey tomentose spots on terga, tergum 1 laterally with four pale yellow bristles, tergum 2 with three bristles, terga 3 and 4 with two bristles and 5 with one bristle, vestiture black with some pale yellow setae also. Female genitalia (Fig. 52) figured.

Material examined : Holotype ♀, "ind." no other data; the specimen bears a label "holotype: *Nusa aequalis* Walker, det. J.B. Chainey, 1984" According to the original publication, the type locality is East India.

Discussion : *Nusa aequalis* Walker can be distinguished from all the other known regional species with short first flagellomere, by the black abdomen with lateral grey tomentose spots, and yellowish-brown tibiae.

Distribution : India (East India)

Type : In the Collection of the Natural History Museum, London.

53. *Nusa albibasis* Ricardo

(Fig. 53)

1927. *Nusa albibasis* Ricardo, *Ann. Mag. nat. Hist.*, (9) **20** : 206. Type locality : Burma (Myanmar).

1975. *Nusa albibasis* : Oldroyd. *A Catalog of Diptera of the Oriental Region*, **2** : 115.

1990. *Nusa albibasis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 18.

A rather large black species with dense grey tomentum, black legs, dark brown wings, and densely grey tomentose basal segments of abdomen. Male : length 18 mm, wing 11 mm.

Male : Head broader than thorax, black covered with grey tomentum; mystax white and pale yellow, fronto-orbital bristles black, ocellar bristles black, postcranium with a few white setae above and some black setae below, postocular bristles black above and white below, postgena densely white setose. Antenna dark brown, scape with black bristles whereas pedicel with pale yellow bristles, pedicel subequal to scape, first flagellomere elongate. Palpus and proboscis black with white setae.

Thorax black, densely grey tomentose; pronotum laterally white setose, medially with some black setae, medially bearing a transverse row of black and pale yellow bristles, scutum with a broad mediolongitudinal black-yellow stripe divided by a longitudinal grey stripe, the stripe extending the entire length, setae and bristles black; scutellum with the disc sparsely black setose, and hind border bearing six elongate black bristles; pleura heavily grey tomentose, laterotergite with dense elongate pale yellow bristles. Haltere pale yellow with its knob still paler.

Legs black, femur and tibia ventrally bearing dense, elongate, white setae, the density and length of which decrease from anterior to hind legs, bristles pale yellow, vestiture predominantly white with some

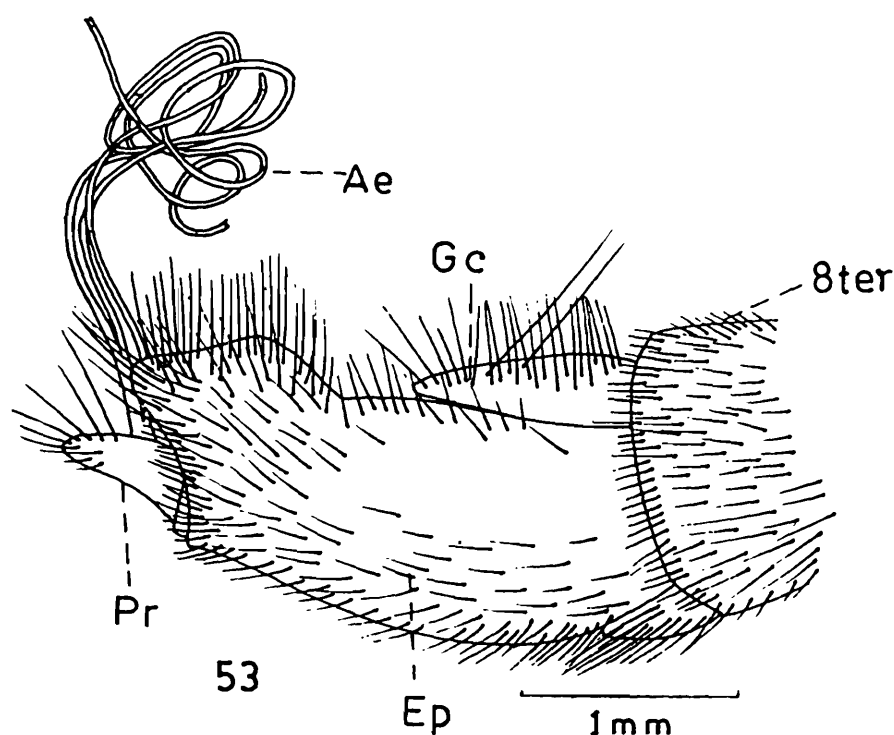


Fig. 53 : *Nusa albibasis* Ricardo, lateral view of male genitalia.

black setae also, distal two-thirds of fore tibia and basitarsus ventrally bearing a mat of golden yellow setae, apex of hind tibia and tarsal segments ventrally bearing golden yellow setae.

Wing dark brown, comparatively lighter coloured basally; R_5 and M_1 united close to the border.

Abdomen black with grey tomentum, terga 2-4 densely grey tomentose leaving a median black spot, tergum 5 laterally and posteriorly grey tomentose, terga 6-7 similar but the area of grey tomentum laterally much lesser, terga laterally with pale yellow bristles: 2 with about four, 3 with three, 4 with two and 5-7 with one pale yellow bristle, vestiture pale yellow with some black setae also. Male genitalia (Fig. 53) black with black setae.

Material examined : *Holotype* ♂, Burma (Myanmar) : Leat, Coll. E.Y. Watson, Reg. No. 94.4. no other data. The specimen also bears a label 'Holotype, *Nusa albibasis* Ricardo, det. J.E. Chainey, 1984'.

Discussion : *Nusa albibasis* Ricardo can be readily distinguished from *N. pseudoalbibasis* Joseph & Parui by the characteristic male genitalia.

Distribution : Burma (Myanmar).

Type : In the Collection of the Natural History Museum, London.

54. *Nusa andhraensis* Joseph & Parui

(Fig. 54)

1998. *Nusa andhraensis* Joseph & Parui, *Rec. zool. Surv. India* **97** (1&2) : 1-28. Type locality : Nandyal, Andhra Pradesh.

A very small black species with golden yellow pubescence, black and yellowish-brown legs, hind femur stout, hind border of terga yellowish-brown, and distally fuscous wings, Male : length 7 mm, wing 5 mm; females: length 7-8 mm, wing 5-6 mm.

Males : *Head* broader than thorax, black with sparse grey tomentum; mystax white and pale yellow, fronto-orbital plate white setose, ocellar bristles brown, postcranium with sparse white setae, postocular bristles pale yellow above and white below, postgena white setose. Antenna dark brown, scape with an elongate black or pale yellow ventral bristle, pedicel with a short, black, ventral bristle, pedicel slightly longer than scape, first flagellomere long. Palpus and proboscis black with white setae.

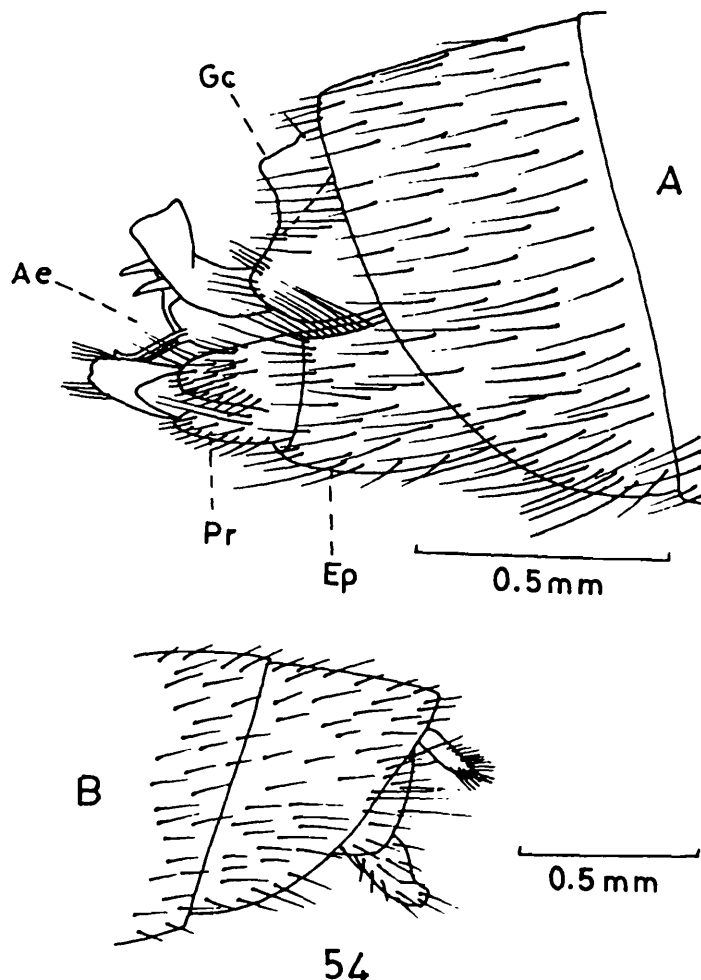


Fig. 54 : *Nusa andhraensis* Joseph & Parui : A, lateral view of male genitalia; B. lateral view of female genitalia.

Thorax black with golden yellow tomentum; pronotum black with a transverse row of black and pale yellow bristles, scutum without mediolongitudinal stripe; chaetotaxy: 2 notopleurals, 4 supra-alars, 1 or 2 intra-alars; vestiture golden yellow, bristles pale yellow; scutellum with white setae which are sparse posteriorly, hind border without bristles, pleura nearly bare, laterotergite with white bristly setae. Haltere yellowish-brown with lighter coloured knob.

Legs yellowish-brown and black, fore and mid femora black with basal and apical ends yellowish-brown while the remainder black, tibia basally yellowish-brown and the remainder black, tarsus almost wholly black, hind leg large with stout femur which ventrally bears a few microtuberculate setae which anteroventrally are arranged in a row, vestiture and bristles white, apex of hind tibia and tarsal segments with a mat of golden yellow setae.

Wing basally hyaline and distally fuscous : R_5 and M_1 united close to the border.

Abdomen black with yellowish-brown mark on hind border of terga, tergum 7 almost wholly yellowish-brown, terga 2-5 posterolaterally with 1-4 white bristles, vestiture white. Male genitalia (Fig. 54A) yellowish-brown with white setae.

Females : Similar but with the following differences: comparatively darker coloured; pleura sparsely or densely grey tomentose; chaetotaxy: in one paratype 3 notopleurals; the ventral microtuberculate bristly setae on hind femur may or may not be arranged in an anteroventral row; abdomen with lesser area of yellowish-brown colouration so much so tergum 7 black with yellowish-brown hind border. Female genitalia (Fig. 54B) illustrated.

Material examined : *Holotype* ♂ Reg. No. 7497/H6, India: Andhra Pradesh: Kurnool District Nandyal : Gajalpally Forest Rest House: Mahananda Road, 22.vi.1985; Coll. P. Parui. Paratypes 1 ♂ 4 ♀, Reg. No. 7498/H6 to 7502/H6, rest of data as in holotype.

Discussion : It can be readily recognised from all the other known Indian species of the genus *Nasa* Walker by the distinctive male genitalia especially gonocoxite, together with the presence of microtuberculate setae on hind femur.

Distribution : India (Andhra Pradesh).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

55. *Nusa balraji* Joseph & Parui

(Fig. 55)

1998. *Nusa balraji* Joseph & Parui, *Rec. zool. Surv. India*, **97** (1&2) : 1-28. Type locality : Nandyal. Andhra Pradesh.

A rather large black species with grey tomentum, black legs, fuscous wings and black and greyish-white abdomen. Male : length 15-17 mm, wing 8-9 mm; female : length 14 mm, wing 9 mm.

Males : *Head* as broad as thorax, black with grey tomentum, mystax white or white with a few black bristles below, fronto-orbital bristles white, ocellar bristles black, postocular bristles black, pale yellow and white, postcranium white setose, postgena with dense white setae. Antenna with scape and pedicel black, first flagellomere orange-brown with base black, scape with white bristles, scape and pedicel nearly equal in length, first flagellomere longer than scape and pedicel but not elongate. Palpus and proboscis black with white setae.

Thorax black, grey tomentose; pronotum black with a transverse median row of black bristles, laterally white setose; scutum with a faint, black mediolongitudinal stripe extending the entire length, bristles and setae black but for a few posterolateral pale yellow bristles; chaetotaxy: 2-3 notopleurals, 2-4 supra-alars, 3 postalars, 1-2 intra-alars, 3-4 dorsocentrals; scutellum black setose with a row of pale yellow and black bristles; pleura with dense greyish-white tomentum; laterotergite with long, pale yellow bristly setae. Haltere yellowish-brown.

Legs black with apex of femur and base of tibia narrowly yellowish-brown; coxa anteriorly with dense white setae and a few white bristly setae, fore tibia with 3 long, posteroventral bristles, vestiture

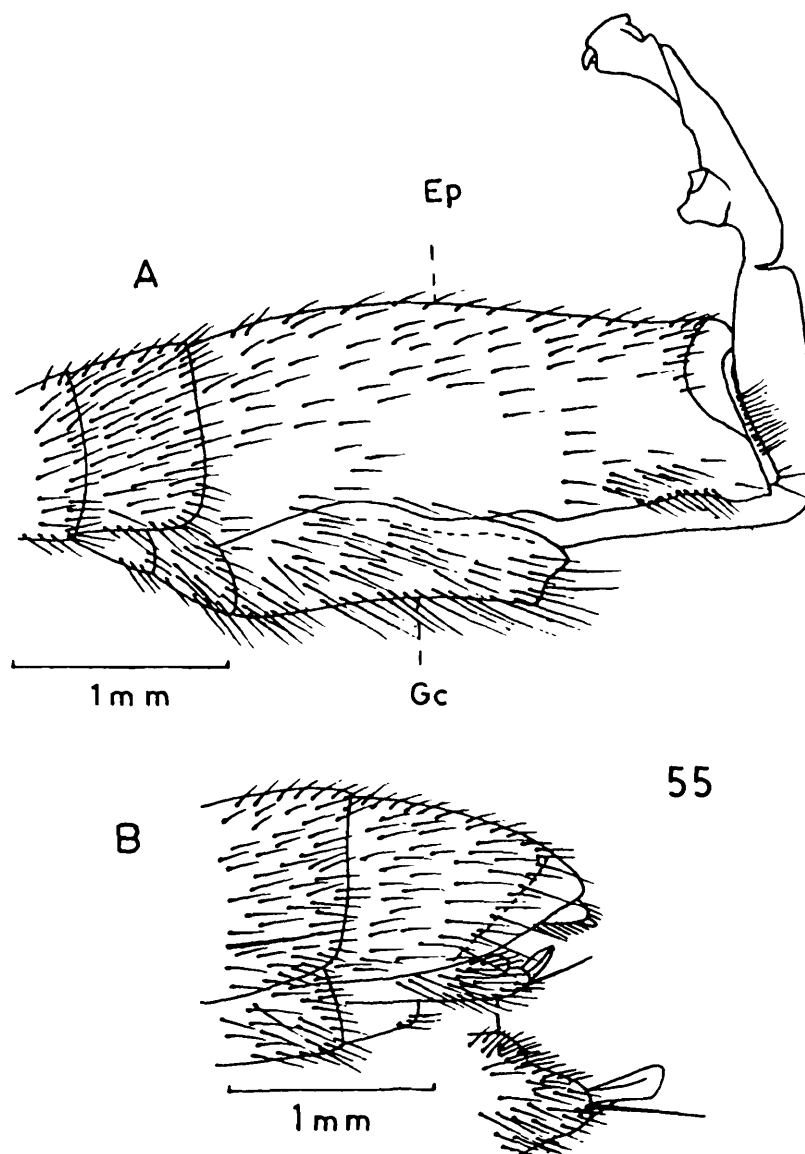


Fig. 55 : *Nusa balraji* Joseph & Parui : A, lateral view of male genitalia ;
B, lateral view of female genitalia.

and bristles white with a few black ones also, fore tibia at apex and basitarsus ventrally with a mat of golden yellow pubescence, similar pubescence present on hind tibia, basitarsus and tarsomere 2.

Wing fuscous; R_5 and M_1 united well before the border.

Abdomen black with greyish-white tomentum, terga 1-2 greyish-white tomentose with median black, terga 3-7 medially black and laterally and posteriorly greyish-white, tergum 8 black with sparse grey tomentum, terga mediolaterally with 1-4 white bristles. Male genitalia (Fig. 55A) black with black setae and black bristly setae.

Females : Similar but with the following differences : sparsely tomentose; mystax also with a few median black bristles; 2 dorsocentrals; bristles on hind border of scutellum wholly black or pale yellow. Genitalia (Fig. 55B) figured.

Material examined : *Holotype* ♂ Reg. No. 7503/H6, India : Andhra Pradesh: Kurnool District : Nandyal : Gajalpally, 22.vi.1985, Coll. P. Parui and party. *Paratypes* 3 ♂ 1 ♀, Reg. No. 7504/H6 to

7507/H6, rest of data as in holotype; 1 ♀, Reg. No. 7508/H6, Warangal District : Pakhal Forest, 4.i.1985, Coll. P. Parui and party.

Discussion : It superficially resembles *Nusa aequalis* Walker from which it differs in the black scape and orange brown first flagellomere, black tibia, and details of the female genitalia (male *N. aequalis* Walker not yet recorded). Also it differs from all the other known species of the genus by the details of male genitalia, especially the shape of the epandrium.

Distribution : India (Andhra Pradesh).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

56. *Nusa bengalensis* Joseph & Parui

(Fig. 56)

1987d. *Nusa bengalensis* Joseph & Parui, *Oriental Ins.*, **21** : 136. Type locality: Chapamari Forest, Darjeeling, W. Bengal.

1990. *Nusa bengalensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 18.

A rather large, black grey tomentose species with dark brown legs, black abdomen and brown wings. Male : length 17 mm, wing 10 mm.

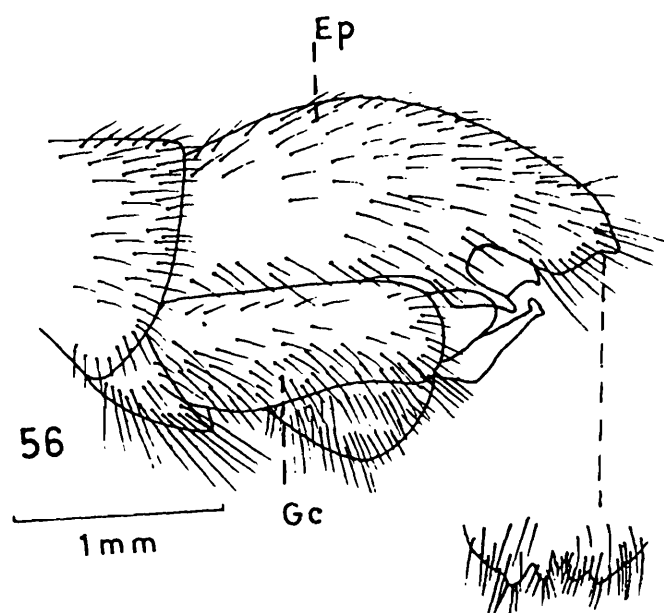


Fig. 56 : *Nusa bengalensis* Joseph & Parui, lateral view of male genitalia.

Male : *Head* broader than thorax, black with grey and greyish-white tomentum; mystax white with a few median black bristles, fronto-orbital bristles, ocellar bristles and postocular bristles black, postcranium sparsely black setose, postgena densely white setose. Antenna black and yellowish-brown, scape black, pedicel basally yellowish-brown and distally black, first flagellomere basally and distally yellowish-brown and medially black, scape with black bristles and a few pale yellow ones ventrally, some of the ventral bristles elongate, pedicel with black bristles, pedicel and scape subequal in length, first flagellomere elongate. Palpus and proboscis black with white setae.

Thorax black, grey tomentose; pronotum black setose, a few of which medially form bristles, laterally pale yellow setose; scutum with a mediolongitudinal black stripe extending the entire length, the stripe divided by a narrow grey stripe, laterally with two black spots in a longitudinal row, scutum posterolaterally brownish, setae and bristles black; scutellum with the disc sparsely black setose and the hind border with a row of black bristles; pleura grey tomentose, laterotergite with a tuft of pale yellow and black bristles and setae. Haltere yellowish-brown basally and light brown distally.

Legs dark brown, fore femur ventrally with dense elongate white setae, fore tibia ventrally with dense elongate pale yellow setae, mid femur and mid tibia also similarly setose but setae not so dense, setae pale yellow and black, the former being predominant, bristles black and pale yellow; fore tibia and basitarsus ventrally with mat of golden yellow setae, tip of hind tibia and the basal two to three tarsal segments ventrally bearing mat of golden yellow setae.

Wing brown, lighter coloured medially, especially on basal half; R_5 and M_1 united well before the border.

Abdomen black, grey tomentose, tergum 1 laterally and posteriorly with grey tomentum, the area of grey tomentum gradually decreasing on posterior terga, terga 1-4 with yellowish-brown hind border, terga 1-4 with a pair of pale yellow bristles which decrease in size from anterior to posterior terga, terga 1-2 and to some extent, 3 with dense pale yellow setae laterally, setae black and pale yellow mixed. Male genitalia (Fig. 56) black with black and some pale yellow setae.

Material examined : Holotype ♂ Reg. No. 7394/H6, India : Darjeeling: Khuniamoor:Chapamari Forest, 2.v.1975, Coll. B.C. Nandi.

Discussion : Of the species of *Nusa* Walker with an elongate first flagellomere from the Indian Region-*N. yerburyi* Ricardo, *N. albibasis* Rocardo, *N. ghorpadei* Joseph & Parui and *N. pseudoalbibasis* Joseph & Parui-*N. bengalensis* Joseph & Parui is most similar to *N. yerburyi* Ricardo and *N. ghorpadei* Joseph & Parui in male genitalia; all of these can be readily separated by the differences in the shape of gonocoxite.

Distribution : India (W. Bengal).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

57. *Nusa bhargavai* Joseph & Parui

(Fig. 57)

1992. *Nusa bhargavai* Joseph & Parui, *Rec. zool. Surv. India*, **92** (1-4) : 124. Type locality : Gujarat.

A medium to rather large, black species with grey tomentum, black legs and dark brown wings.

Male : length 14-17 mm, wing 8-9 mm; female : length 13 mm, wing 10 mm.

Males : *Head* broader than thorax, black with dense grey tomentum; mystax white with a few black bristles. fronto-orbital bristles and ocellar bristles black, postocular bristles with one or two pairs of pale yellow bristles or wholly black, postcranium with sparse, white setae, postgena with white setae. Antenna black with distal half of first flagellomere orange, scape and pedicel bear black and white

bristles, pedicel from two-thirds to subequal to the length of scape, scape more than half to two-thirds length of first flagellomere, the latter short. Palpus and proboscis black with white setae.

Thorax black, grey tomentose; pronotum with a median transverse row of black bristles, laterally with white setae; scutum devoid of mediolongitudinal stripe; chaetotaxy: 2 notopleurals, 3 (+ 1 weak) postalars, 4 supra-alars, 1 additional chaeta anterior to notopleurals; vestiture black with a few white setae on humeri, bristles black or black and pale yellow; scutellum with 10 black or black and pale yellow bristles on border, disc with black setae; laterotergite with elongate pale yellow and white bristly setae. Haltere yellowish-brown to dark brown.

Legs black, fore tibia anteroventrally and tarsus ventrally with mat of golden yellow setae, bristles black and white, vestiture black.

Wing dark brown; R_5 and M_1 united well before the border.

Abdomen black, terga laterally and posteriorly with light grey tomentum which gradually decrease from anterior to posterior terga, terga 1-5 with 1 to 5 white bristles, vestitures black and white. Male genitalia (Fig. 57A) black, epandrium distinctive.

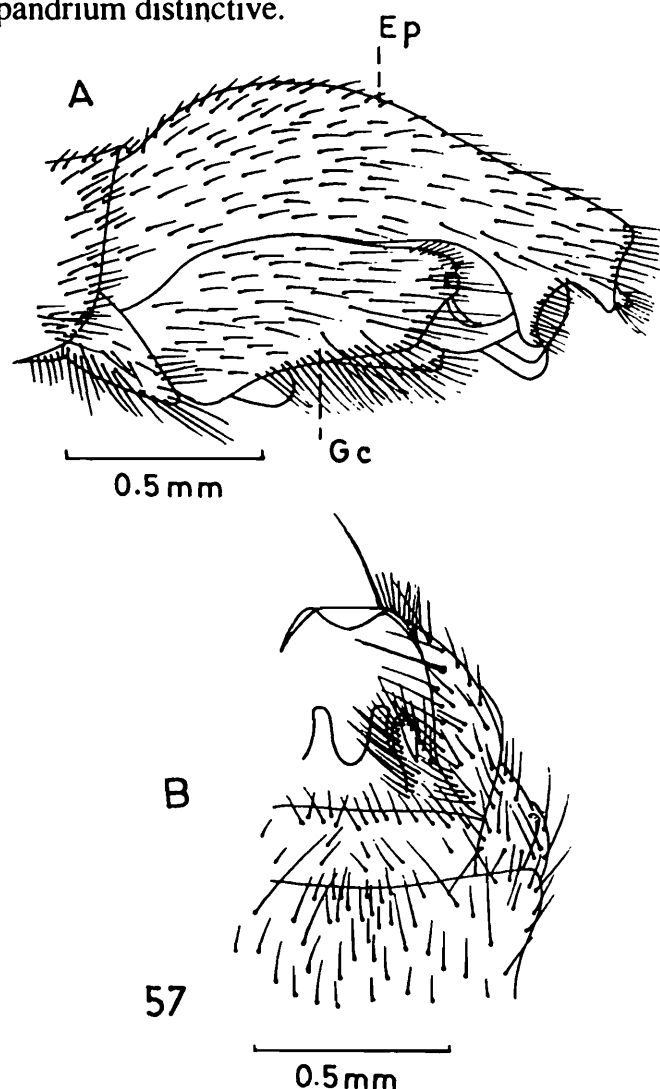


Fig. 57 : *Nusa bhargavai* Joseph & Parui : A, lateral view of male genitalia ; B, ventral view of female genitalia.

Female : Similar to males but with the following differences : mystax wholly white, fronto-orbital bristles white, postocular bristles white with 2 black bristles, antennal scape and pedicel with bristles wholly white; chaetotaxy: about 10 setae in place of supra-alars; scutellar bristles and setae white; haltere pale yellow; abdominal terga posteriorly and laterally yellowish-brown. Genitalia (Fig. 57B) figured.

Material examined : *Holotype* ♂ Reg. No. 7709/H6, India : Gujarat : Junagadh Dist.: Veraval : Kukusvada, 15.viii.1988, Coll. A.N.T. Joseph. *Paratypes* 2 ♂ Reg. No. 7710/H6 and 7711/H6, Veraval : Garakmandi, 16.viii.1988; 1 ♀, Reg. No. 7712/H6, Rajkot Dist.: Rajkot, 21.viii.1988, all Coll. A.N.T. Joseph and P. Parui.

Discussion : It is similar to *Nusa formio* Walker differing from which in the following : black species including wholly black legs, dark brown wings and differences in the shape of male genitalia, especially epandrium and gonocoxite. It is named in honour of Shri R.N. Bhargava, our colleague, who successfully helped us to complete the survey of robberflies from Gujarat.

Distribution : India (Gujarat).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

58. *Nusa elva* (Walker)

(Fig. 58)

1849. *Asilus elva* Walker, *List. Dipt. Colln. Br. Mus.*, 2 : 445. Type locality : W. Bengal.

1975. *Nusa elva* Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 115.

1987d. *Nusa elva* : Joseph & Parui, *Oriental Ins.*, 21 : 137.

1990. *Nusa elva* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113: 18.

A medium, black species with grey tomentum, dark brown and yellowish-brown legs and brownish wings. Male : length 13 mm, wing 11 mm.

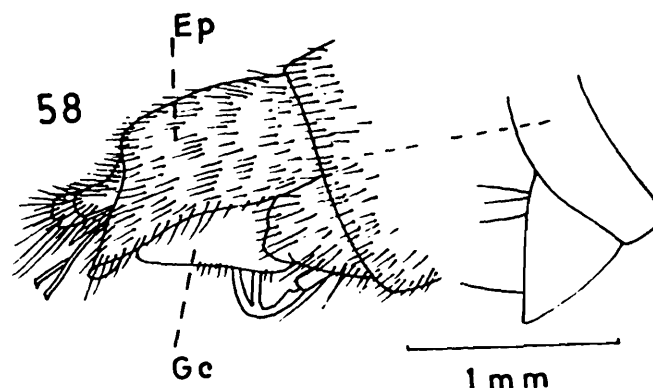


Fig. 58 : *Nusa elva* (Walker), lateral view of male genitalia.

Male : Head narrower than thorax, black, covered with dense grey tomentum; mystax black with some pale yellow setae on sides, fronto-orbital bristles and setae black, ocellar bristles black; postcranium pale yellow setose, postocular bristles black, postgena with dense black and golden yellow setae. Antennae damaged, first flagellomere of one antenna lost; scape pale yellow, pedicel pale yellow with dark brown

above, first flagellomere brown and yellowish-brown, pedicel about two-thirds length of scape, scape and first flagellomere subequal in length. Palpus and proboscis black with pale yellow setae.

Thorax black, grey tomentose; pronotum with a transverse row of black bristles medially and dense black and pale yellow setae laterally; scutum devoid of mediolongitudinal stripe, setae and bristles black; scutellum with the disc bearing black setae and posterior border with a row of black bristles; pleura grey tomentose, laterotergite with dense elongate black setae. Haltere dark brown and pale yellow.

Legs lost except for one mid and one hind leg; coxa and femur dark brown while the remaining yellowish-brown, hind femur dorsally and anteriorly with one row of black bristles, setae black and pale yellow, bristles black.

Wing brownish; R_5 and M_1 united close to the border.

Abdomen black, grey tomentose, tergum 2 damaged, terga 3-5 laterally and posteriorly grey tomentose leaving a median black area, terga 1-5 laterally with bristles which become lesser in number in posterior segments, setae black and pale yellow. Male genitalia (Fig. 58) black and yellowish-brown with pale yellow setae.

Material examined : *Holotype* ♂ Bengal, no other details, Reg. No. 42 25. The specimen also bears a label 'Holotype, *Asilus elva* Walker, det. J.E. Chainey, 1984'.

1 ♂ India : Gujarat: Junagadh District : near Sidhakar, 12.viii.1988; 1 ♀, Junagadh District: Veraval Dari, 15.viii.1988; 2 ♂ Rajkot District : Targharia, 21.viii.1988, all Coll. A.N.T. Joseph (Z.S.I.).

Discussion : *Nusa elva* (Walker), *N. aequalis* Walker, *N. formio* Walker and *N. indica* Joseph & Parui are the four known species from the Indian region with short first flagellomere. *N. elva* (Walker) differs from the other three in the yellowish-brown tibiae and tarsus together with the shape of male genitalia.

Distribution : India (W. Bengal).

Type : In the Collection of the Natural History Museum, London.

59. *Nusa formio* Walker

(Fig. 59)

1851. *Nusa formio* Walker, *Insecta Saundersiana*, **1** : 106. Type locality : East India.

1975. *Nusa formio* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 115.

1987d. *Nusa formio* : Joseph & Parui, *Oriental Ins.*, **21** : 137.

1990. *Nusa formio* : Joseph & Parui, *Rec. zool. Survey. India*, Occ. Paper No. 113 : 18.

A medium, black species with grey tomentum; black legs and light brown wings. Female : length 14 mm, wing 9 mm.

Female : **Head** broader than thorax, black infuscated with grey tomentum; mystax pale yellow and black, frontoorbital setae pale yellow, ocellar bristles black, postocular bristles golden yellow and black, postgena with golden yellow and white setae. Antennae damaged, first flagellomere of one

antenna lost, scape and pedicel black with pale yellow bristles and setae, first flagellomere dark brown and yellowish-brown, pedicel longer than two-thirds length of scape, first flagellomere slightly longer than scape. Palpus and proboscis black with white setae.

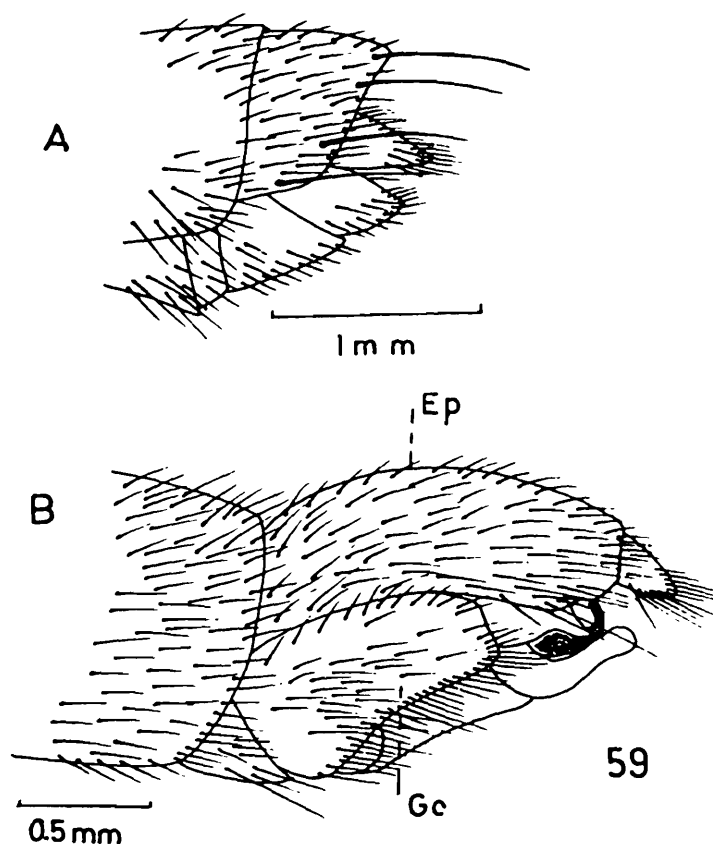


Fig. 59 : *Nusa formio* Walker: A, lateral view of female genitalia; B, lateral view of male genitalia.

Thorax black, grey tomentose; pronotum with a median transverse row of black and pale yellow setae, laterally pale yellow setose; scutum with a mediolongitudinal black stripe whose extent cannot be ascertained as it is damaged, bristles as well as setae black; scutellum with the disc bearing sparse black setae and hind border with eight black bristles; pleura sparsely grey tomentose, laterotergite with elongate plae yellow bristles and setae. Haltere yellowish-brown.

Legs damaged, one mid and one hind leg lost, other mid leg broken off beyond femur, fore tarsal segments lost; legs black, tibia and tarsus comparatively lighter coloured, hind femur anteriorly with a row of three pale yellow bristles, setae pale yellow and white, bristles pale yellow.

Wing light brown; R_5 and M_1 united well before the border.

Abdomen black and dark brown with sparse grey tomentum, terga 1, 6, 7 and 8 black, terga 2-5 black and dark brown, terga laterally with pale yellow bristles, 1 with four, 2 and 3 with three, and 4 and 5 with two bristles, vestiture black with some pale yellow setae. Female genitalia (Fig. 59A) figured.

Male : Similar; genitalia figured (Fig. 59B) from a specimen from Shangai, China.

Material examined : *Holotype* ♀, Ind. no other details. Specimen bears a label 'Holotype *Nusa formio* Walker, det. J.E. Chainey, 1984'. According to the original publication, the type locality is East India.

1 ♂ China : Shangai, Coll. E. Suenson, A.L. Melander Collection 1961, no other details (S.I.).
 1 ♂ India: Tamil Nadu: Shevaroy, 600-1300 m, 25.vi.1984, Coll. K. Ghorpade; 1 ♀, 26.vi.1984;
 2 ♀, 27.vi.1984 and 3 ♂, 1 ♀, 19-21.vi.1985, other details as in preceding (Ghorpade C.).

Discussion : It can be recognised from all the other known species with the short first flagellomere, by the black and dark brown abdomen and legs, and the details of genitalia.

Distribution : India (East India; W. Bengal).

Type : In the Collection of the Natural History Museum, London.

60. *Nusa geniculata* Joseph & Parui

(Fig. 60)

1997. *Nusa geniculata* Joseph & Parui, *Colemania, Insect Biosystematics*, No. 5 : 5. Type locality : Jagalbet, Karnataka.

A rather large, black species with grey and greyish-yellow tomentum, black legs with yellowish-brown on base of tibia, and brown wings. Male : length 15-16 mm, wing 9 mm; female : 14-15 mm, wing 10-11 mm.

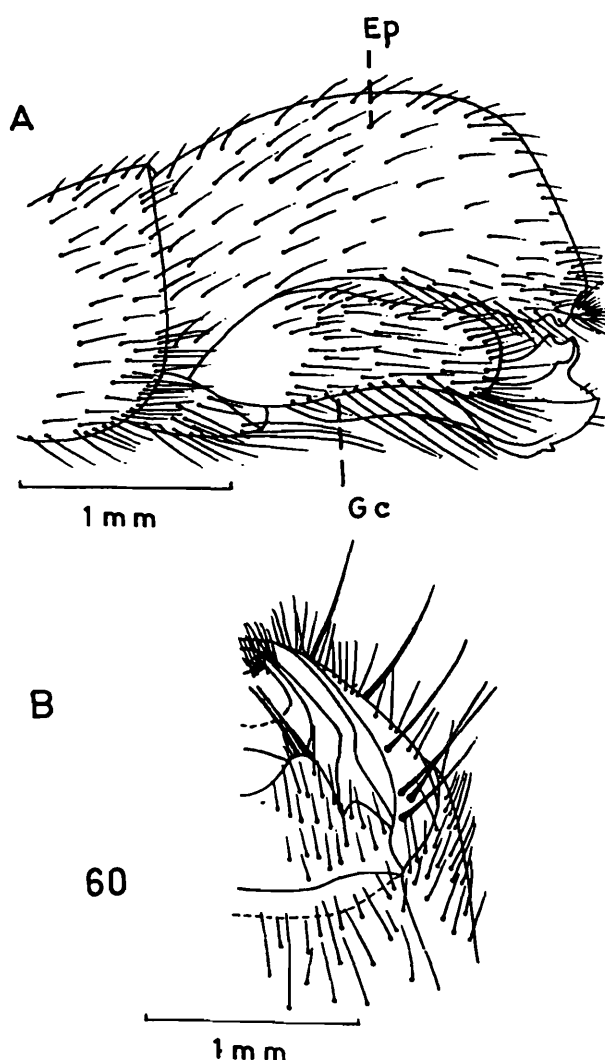


Fig. 60 : *Nusa geniculata* Joseph & Parui : A, lateral view of male genitalia; B, ventral view of female genitalia.

Males : *Head* broader than thorax, black with dense greyish-white tomentum; mystax white with a few black bristles above and below, frontoorbital setae and ocellar bristles black, postocular bristles black or black and pale yellow, postcranium black setose above and white setose below, postgena with dense white setae. Antenna with scape and pedicel black, first flagellomere black on basal half and orange yellow on distal half, scape and pedicel bear black setae and bristles, pedicel subequal to scape, first flagellomere short, scape about two-thirds length of first flagellomere. Palpus and proboscis black with white setae.

Thorax black, greyish-yellow and grey tomentose; pronotum white setose or white and black setose medially with a transverse row of bristly setae; scutum with a mediolongitudinal black stripe extending from anterior border to near hind margin, the stripe medially divided by a narrow, faint greyish-yellow stripe extending upto transverse suture, sides with three, almost contiguous, black spots, vestiture black; chaetotaxy : 2 notopleurals, 3-4 postalars, 4 supra-alars, of which the anterior one may be weak, 2-4 intra-alars (cheatae weak to varying extent); scutellum with the border bearing a row of black bristles, disc black setose; laterotergite with elongate, pale yellow, bristly setae. Haltere pale yellow or light brown, head with or without black marking.

Legs black, except for the yellowish-brown at the base of tibia; fore tibia with a dorsal row of 5 black bristles, a mat of golden yellow setae present anteroventrally on fore tibia and basitarsus, vestiture white and black, bristles black, golden yellow or pale yellow.

Wing brown, anterobasally lighter coloured : R_5 and M_1 united well before the border.

Abdomen black with greyish-white tomentum laterally, tergum black medially and greyish-white laterally, the latter extends towards middle at hind border, the tomentum gradually decreases in posterior terga; each tergum laterally with 2-4 white bristles, vestiture black with some white setae laterally. Genitalia (Fig. 60A) black and yellowish-brown.

Females : Similar. Genitalia (Fig. 60B) figured.

Material examined : *Holotype* ♂, India : Karnataka : Jagalbet, 700 m, 28.v.1985, Coll. K. Ghorpade, No. B 325. *Paratypes* 2 ♂, 2 ♀, details as in holotype.

Discussion : By its distinctive male genitalia, *Nusa geniculata* Joseph & Parui can be readily recognised from all the other known Indian species of the genus which have a short first flagellomere. The general colouration is similar to *Nusa formio* Walker but the first flagellomere in the former is black and orange.

Distribution : India (Karnataka).

Types : In the Collection of Dr. K. Ghorpade, Bangalore.

61. *Nusa ghorpadei* Joseph & Parui

(Fig. 61)

1987d. *Nusa ghorpadei* Joseph & Parui, *Oriental Ins.*, **21** : 138. Type locality : near Bellary, Sandur, Karnataka.

1990. *Nusa ghorpadei* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 19.

A medium, black species with black legs, black abdomen and brown wings. Male : length 14 mm, wing 9 mm.

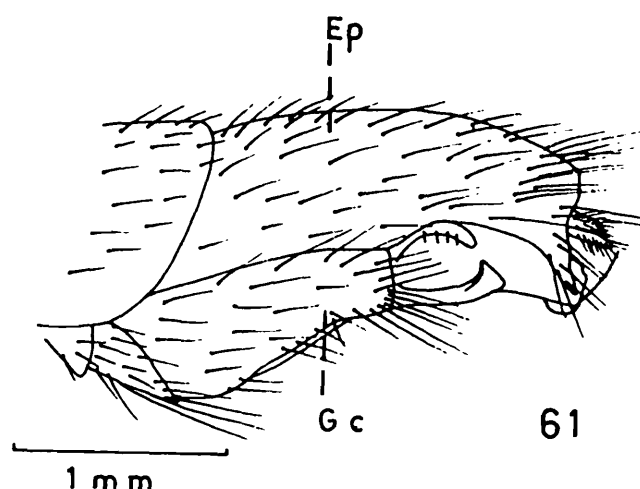


Fig. 61 : *Nusa ghorpadei* Joseph & Parui, lateral view of male genitalia.

Male : Head broader than thorax, black with greyish white tomentum, mystax pale yellow with one black bristle at the lower side laterally, upper and lower side also with a few black setae, fronto-orbital setae pale yellow, ocellar bristles black, postocular bristles weak, pale yellow above and black below, postcranium sparsely pale yellow setose, postgena densely white setose. Antenna black, scape with pale yellow bristles, a pair of which black dorsally, pedicel slightly shorter in length than scape, first flagellomere elongate. Palpus and proboscis black, the former with black and white setae, the latter completely white setose.

Thorax black, sparsely grey tomentose; pronotum with a transverse row of pale yellow bristles, rather densely pale yellow setose laterally; scutum with a mediolongitudinal black stripe extending the entire length which is divided by a median narrow stripe, sides with two black spots which are contiguous, posterolaterally greyish-yellow, laterally with yellowish-brown bristles, remaining bristles and setae black; scutellum with the disc black setose, hind border with a row of eight yellowish-brown bristles; pleura sparsely grey tomentose, laterotergite with a tuft of pale yellow bristles and setae. Haltere yellowish-brown.

Legs black, fore and mid femora with dense white setae, hind femur with a row of four anterolateral pale yellow bristles, setae predominantly pale yellow mixed with some black setae, bristles pale yellow; fore tibia anteroventrally and basitarsus ventrally with mat of golden yellow setae.

Wing brown, medially lighter coloured; R_5 and M_1 united well before the border.

Abdomen black with grey tomentum, tergum 1 grey tomentose laterally and posteriorly leaving a median black spot, the area of grey tomentum decreasing from anterior to posterior terga, tergum 1 laterally with a few pale yellow bristles, setae pale yellow and black. Male genitalia (Fig. 61) black with black setae, some of which elongate.

Material examined : Holotype ♂ India : Karnataka : Sandur: near Bellary, 12.viii.1978. Coll. K.D. Ghorpade, Reg. No. A 640.

Discussion : In male genitalia *Nusa ghorpadei* Joseph & Parui is generally similar to *N. yerburyi* Ricardo from Sri Lanka, and both species have an elongate first flagellomere. These two species can be readily distinguished by the distinctive shape of gonocoxite. The new species is named in honour of Dr. K.D. Ghorpade, who is a well known student of Syrphidae and has collected many interesting robberflies.

Distribution : India (Karnataka).

Type : In the Collection of Dr. K.D. Ghorpade, Bangalore.

62. *Nusa indica* Joseph & Parui

(Fig. 62)

1987d. *Nusa indica* Joseph & Parui, *Oriental Ins.*, **21** : 139. Type locality : Yemmiganur, Karnataka.

1990. *Nusa indica* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 19.

A medium, dark brown species with blackish-brown legs, yellowish-brown, and brown wings.

Male : length 14 mm, wing 8 mm.

Male : *Head* broader than thorax, dark brown covered with greyish-white and grey tomentum; mystax pale yellow with a few black bristles above and on sides, frontoorbital bristles black, ocellar bristles black, postocular bristles black but for the uppermost bristle on either side being pale yellow, postcranium with sparse pale yellow setae, but below with dense pale yellow setae. Antenna with scape and pedicel dark brown, first flagellomere yellowish-brown, scape with pale yellow bristles, and one black bristle, pedicel subequal in length to scape, the latter subequal in length to first flagellomere. Palpus and proboscis dark brown with pale yellow setae.

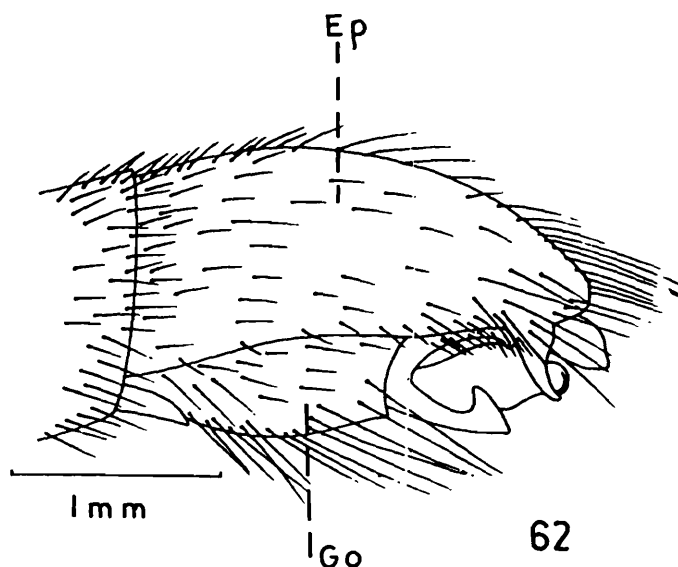


Fig. 62 : *Nusa indica* Joseph & Parui, lateral view of male genitalia.

Thorax dark brown, grey tomentose; pronotum dark brown, sparsely pale yellow setose laterally; scutum greasy but with a faint mediolongitudinal stripe extending the entire length, bristles and setae black; scutellum with the disc sparsely black setose, hind border with a row of eight black bristles; pleura

sparsely greyish-white tomentose, laterotergite with a transverse row of elongate pale yellow bristles and setae. Haltere pale yellow with lighter coloured knob.

Legs blackish-brown, fore femur and fore tibia densely pale yellow setose ventrally, setae mixed black and pale yellow, bristles pale yellow, a mat of golden yellow pubescent present on fore tibia and basitarsus.

Wing brown, comparatively lighter coloured basally ; R_5 and M_1 united well before the border.

Abdomen yellowish-brown with terga grey tomentose laterally and posteriorly, on terga 6 and 7 grey tomentum absent posteriorly, terga 1-3 with a few pale yellow bristles laterally, terga 4-5 with only a pair of bristles laterally. Setae black with some pale yellow ones on sides and posteriorly, bristles pale yellow. Male genitalia (Fig. 62) with elongate black setae.

Material examined : *Holotype* ♂, Reg. No. 7395/H6, India : Bellari District : Yemmiganur, 13.viii. to 2.ix.1913, Coll. A.G.R.

Discussion : The gonocoxite of *Nusa indica* Joseph & Parui is quite distinctive. It has uniformly yellowish-brown abdomen with the terga greyish tomentose laterally and posteriorly. It is similar to *Nusa aequalis* Walker in possessing black-brown legs but otherwise a quite distinct species.

Distribution : India (Karnataka).

Types : In the Collection of Dr. K.D. Ghorpade, Bangalore.

63. *Nusa karikalensis* Joseph & Parui

(Fig. 63)

1989.a. *Nusa karikalensis* Joseph & Parui, *Oriental Ins.*, 23 : 193. Type locality : Karikal, Tamil Nadu.

A medium black species with dense grey tomentum, dark brown legs with basally orange femur and tibia, brown abdomen, and light brown wings. Male : length 16 mm, wing 8 mm.

Male : *Head* broader than thorax, black covered with dense greyish-white tomentum; mystax white; fronto-orbital bristles white, ocellar bristles pale yellow, postocular bristles pale yellow, postcranium white setose, postgena densely white setose. Antennal scape and pedicel yellow-brown with dense grey tomentum, first flagellomere yellowish-brown with dark brown base, scape slightly longer than pedicel, first flagellomere a little longer than scape. Palpus and proboscis black with white setae.

Thorax black, grey tomentose; pronotum with a median transverse row of pale yellow bristles, sides white setose; scutum black with humeri orange, mediolongitudinal stripe faint and extending from anterior border to beyond the transverse suture, bristles and setae black and pale yellow; chaetotaxy: 2 notopleurals, 3 supra-alars, 3 postalars; scutellum basally orange and distally grey tomentose, scutellar disc white setose, hind border with a row of 9 pale yellow bristles; pleura grey tomentose, laterotergite with a transverse row of pale yellow and white bristles. Haltere pale yellow.

Legs dark brown with base of femur and tibia orange, bristles and vestiture white or pale yellow, mat of golden yellow pubescence present ventrally on tarsal segments and also dorsally on fore tibia.

Wing light brown ; R_5 and M_1 united well before the border.

Abdomen brown with terga greyish-yellow tomentose posteriorly and laterally, tomentum gradually decrease in area from anterior to posterior terga, terga laterally bear 2-5 pale yellow bristles. vestiture pale yellow and black. Male genitalia (Fig. 63) with short white setae:

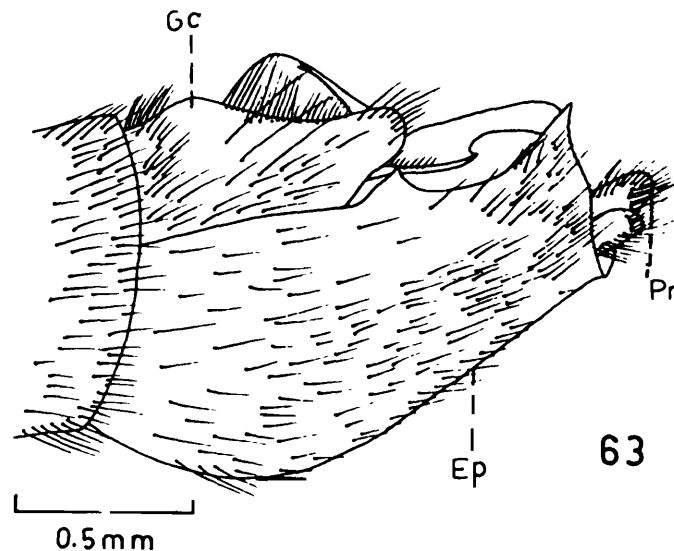


Fig. 63 : *Nusa karikalensis* Joseph & Parui, lateral view of male genitalia.

Material examined : Holotype ♂, India : Pondicherry: Karikal : Bagaram: Kuram, iii.1947. Coll. P.S. Nathan, S.W. Bromley Collection, 1955.

Discussion : It is similar to *Nusa indica* Joseph & Parui from which it differs in the darker abdomen, in the pale yellow marginal bristles of the scutellum and in the structural details of the male genitalia, especially the gonocoxite.

Distribution : India (Pondicherry).

Type : In the Collection of the Smithsonian Institution, Washington.

64. *Nusa mukherjeei* Joseph & Parui

(Fig. 64.)

1997. *Nusa mukherjeei* Joseph & Parui, Rec. zool. Surv. India Part 7 : 91. Type locality : Malda District, W. Bengal.

A medium, black species with black and yellowish-brown legs, brown wings and black with lateral narrow yellowish-brown marked, or wholly black abdomen. Male : length 12-14 mm, wing 7 mm; female : length 12-13 mm, wing 7-8 mm.

Males : Head broader than thorax, black, sparsely grey tomentose; mystax white with one bristle above may be black, fronto-orbital bristles black and white, ocellar bristles black, postocular setae black and white, postcranium with sparse white setae, postgena densely white setose. Antenna black or dark brown and yellowish-brown, scape black or dark brown, pedicel basally and distally and first flagellomere distally yellowish-brown, remainder black or dark brown, first flagellomere slightly longer than scape. Palpus and proboscis black with white setae.

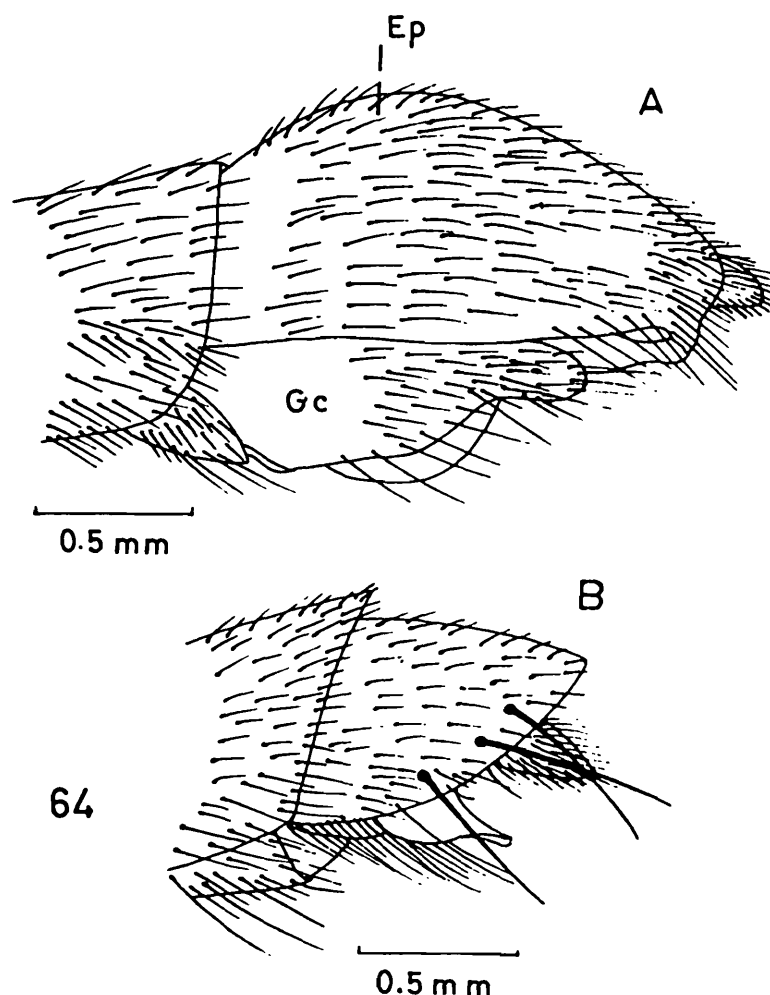


Fig. 64 : *Nusa mukherjeei* Joseph & Parui : A, lateral view of male genitalia; B, lateral view of female genitalia.

Thorax black, sparsely grey tomentose; pronotum with a median transverse row of black bristles, laterally pale yellow setose; scutum with a faint mediolongitudinal black stripe of varying length, extending from anterior border to beyond middle to slightly anterior to scutoscutellar suture, the stripe dividing it indistinct or absent; chaetotaxy: 3 notopleurals, 3 postalars, 4 supra-alars, 2 intra-alars, 4 dorsocentrals of which anterior 1-2 weak; bristles and setae predominantly black, also with a few pale yellow ones; scutellum with the disc bearing black or black and white setae, border with a row of black and white bristles; pleura sparsely grey tomentose, laterotergite with white bristles and setae. Haltere pale yellow to dark brown.

Legs black except tibia being yellowish-brown to varying extent, the latter colour decreases from fore to hind tibia so much so it is mostly black, setae white and golden yellow, bristles black, white and golden yellow, mat of golden yellow pubescence present on fore tibia and basitarsus, and hind basitarsus.

Wing brown, but medially lighter coloured and almost hyaline; R_5 and M_1 united well before the border.

Abdomen black with lateral, narrow, yellowish-brown colour, terga on hind border grey tomentose and laterally bear white bristles, vestiture black and white. Male genitalia (Fig. 64A) black with black setae.

Females : Similar but with the following differences : chaetotaxy : presutural supra-alars and anterior (Postsutural) intra-alar weak; scutellar disc white and black setose, bristles of border in one paratype completely black. Female genitalia figured (Fig. 64B).

Material examined : Holotype ♂ Reg. No. 7570/H6, India : W. Bengal : Malda District : Gangarampur, 15.vi.1987, Coll. K.P. Mukherjee and party. Paratypes 1 ♀, Reg. No. 7571/H6, data as in holotype; 1 ♂ 1 ♀, Reg. No. 7572/H6, 7573/H6, Malda District: Alal, 19.vi.1987, Coll. K.P. Mukherjee and party.

Discussion : It is similar to *N. formio* Walker but differs in the structural details of the male and female genitalia, especially in the shape of the epandrium and gonocoxite. The species is named in honour of our colleague, Shri K.P. Mukherjee, who collected this interesting fly.

Distribution : India (West Bengal)

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

65. *Nusa pseudoalbibasis* Joseph & Parui

(Fig. 65)

1987.d. *Nusa pseudoalbibasis* Joseph & Parui, *Oriental Ins.*, 21 : 140. Type locality : Tenmalai, Kerala.

1990. *Nusa pseudoalbibasis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 19.

A rather large, black, greyish-white tomentose species with black abdomen and brown wings. Male : length 16 mm, wing 10-11 mm.

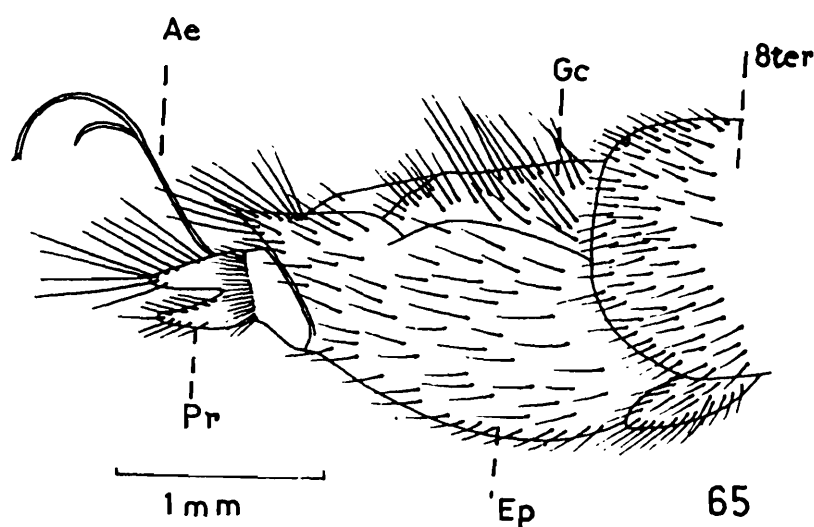


Fig. 65 : *Nusa pseudoalbibasis* Joseph & Parui, lateral view of male genitalia.

Males : Head broader than thorax, black covered with dense greyish-white tomentum; mystax white with a few black bristles above, fronto-orbital bristles and ocellar bristles black, postocular bristles black, postcranium black setose above and white setose below, postgena with dense white setae. Antenna black, first flagellomere lost in holotype, scape and pedicel bearing black bristles, some of which on the former elongate ventrally, pedicel slightly shorter in length than scape, first flagellomere elongate. Palpus and proboscis black, the former black and pale yellow setose whereas the latter white setose.

Thorax black, greyish-white tomentose; pronotum medially black setose and laterally dense white setose; scutum with a mediolongitudinal black stripe extending the entire length, the median stripe in paratype greyish-yellow, narrowed posteriorly and become indistinct beyond two-thirds, but in holotype it is discernible only anteriorly, laterally with two black spots in a longitudinal row, setae and bristles black; scutellum with the disc black setose, hind border with a row of elongate black bristles; pleura densely greyish-white tomentose, laterotergite with a tuft of white bristles and setae. Haltere pale yellow with the knob whitish in holotype, but darker coloured in paratype.

Legs black, fore femur and fore tibia ventrally with dense elongate white setae, mid femur and hind femur similarly setose but not so dense, setae black and pale yellow mixed, bristles pale yellow and black, fore tibia anteroventrally and first tarsal segment ventrally with mat of golden yellow setae, apex of hind tibia and tarsal segments 1-3 ventrally with mat of golden yellow setae.

Wing brown, basomedially lighter coloured; R_5 and M_1 united quite close to the border.

Abdomen black, greyish white tomentose, tergum 1 with an anteromedian black spot and the remaining covered with greyish-white tomentum, terga 2-4 similarly coloured but grey tomentum gradually decreasing in area from anterior to posterior terga, on terga 5-7 tomentum reduced to hind border, tergum 1 laterally with about three white bristles and elongate dense white setae, terga 2-4 with a lateral pair of white bristles and dense elongate white setae, the length and density of setae gradually decreasing from anterior to posterior terga, vestiture pale yellow and black setae. Male genitalia (Fig. 65) black with black setae.

Material examined : Holotype ♂, India : Travancore (Kerala State): Tenmalai 12-15.v.1937, B.M.C.M. Expedition to South India, April-May 1937. Paratype ♂, data same as that of holotype.

Discussion : It is similar to *Nusa albibasis* Ricardo but differs in the presence of some black bristles on the mystax and in the structural details of the male genitalia, especially the epandrium.

Distribution : India (Kerala).

Types : In the Collection of the Natural History Museum, London.

66. *Nusa rajasthanensis* Joseph & Parui

(Fig. 66)

1992. *Nusa rajasthanensis* Joseph & Parui *Rec. zool. Surv. India* **91** (1) : 90. Type locality : Jodhpur, Rajasthan.

A small species with black head and thorax, black and yellowish-brown abdomen and legs and pale yellow wings. Male : length 9 mm, wing 5 mm.

Male : *Head* slightly broader than thorax, black with scarce greyish-yellow or grey tomentum; mystax pale yellow, frontoorbital setae white, ocellar bristles pale yellow, postocular bristles pale yellow, postgena with dense white setae. Antenna with scape yellowish-brown, pedicel black, first flagellomere black with its base yellowish brown, scape subequal to pedicel, first flagellomere elongate. Palpus and proboscis black with white setae.

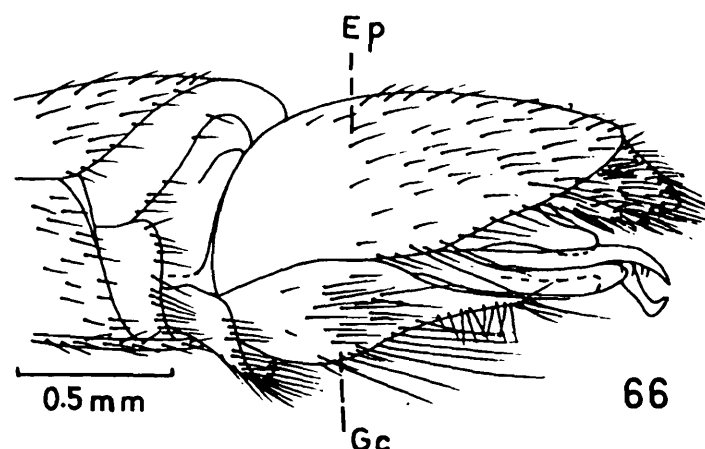


Fig. 66 : *Nusa rajasthanensis* Joseph & Parui, lateral view of male genitalia.

Thorax black, with grey tomentum on pleura; pronotum with a transverse row of 4 white bristles amidst white setae; scutum without stripe; chaetotaxy: 1 notopleural, 6-7 bristles posterolaterally; vestiture golden yellow and bristles pale yellow; scutellum without bristles, disc with vestiture like that of scutum; laterotergite with long, white, bristly setae. Haltere yellowish-brown with dark brown or black on head.

Legs black and yellowish-brown, fore coxa black, trochanter yellowish-brown, femur black with its apex narrowly yellowish-brown, tibia yellowish-brown and dark brown, tarsus dark brown, mid leg similar except coxa being yellowish-brown, hind coxa, trochanter and femur similarly coloured like that of mid leg, tibia basally yellowish-brown and rest black, tarsus black; vestiture and bristles pale yellow.

Wing pale yellow, but medially and along hind border hyaline; R_5 and M_1 united close to the border.

Abdomen black and yellowish-brown, terga 1-3 black with yellowish-brown hind border, tergum 4 yellowish-brown with lateral black marking, remaining terga wholly yellowish-brown, tergum 1 laterally with a few pale yellow bristles, terga 2-5 with a pair of pale yellow bristles, vestiture golden yellow. Male genitalia (Fig. 66) yellowish-brown with white setae.

Material examined : Holotype ♂, Reg. No. 7644/H6, India : Rajasthan : Jodhpur : Balsamandh, 14.ix.1986, Coll. A.N.T. Joseph & Party.

Discussion : Of the various known species of *Nusa* Walker from India and adjoining countries. *N. rajasthanensis* Joseph & Parui is most similar to *N. albibasis* Ricardo from which it differs in the thorax being without a stripe, black and yellowish-brown legs, hind border of scutellum without bristles, abdomen predominantly yellowish-brown and the differences in the shape of the epandrium and gonocoxite.

Distribution : India (Rajasthan).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

67. *Nusa sahai* Joseph & Parui

(Fig. 67)

1997. *Nusa sahai* Joseph & Parui, *Colemania, Insect Biosystematics*, No. 5 : 5. Type locality : Kerala.

A medium, black species with dense greyish-white tomentum, black legs and abdomen, and brown wings; gonocoxite distinctive. Male : length 14-17 mm, wing 8-9 mm; female : length 13 mm, wing 8 mm.

Males : *Head* broader than thorax, black with dense greyish-white tomentum; mystax pale yellow with 2 or more black bristles above and 1 or more black bristles below, fronto-orbital bristles and ocellar bristles black, postocular bristles black, or pale yellow and black, postcranium sparsely white setose, postgena densely white setose. Antenna black, scape with bristles white below and black above, pedicel with bristles completely black, pedicel subequal to scape, first flagellomere slightly longer than scape. Palpus and proboscis black with white setae.

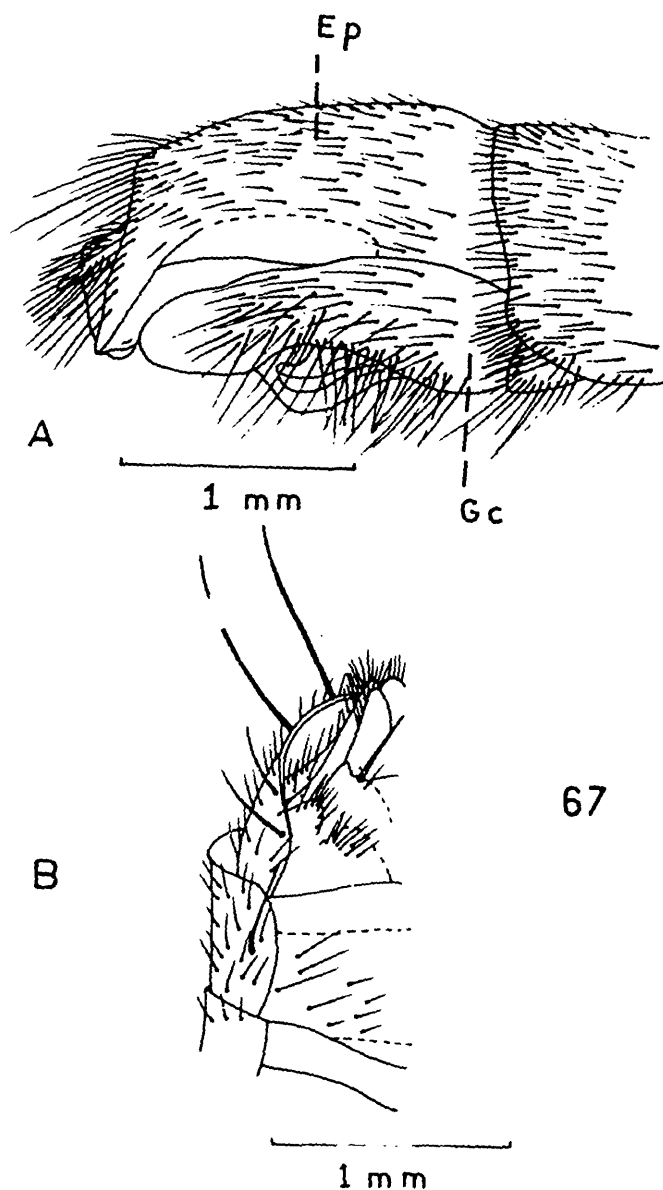


Fig. 67 : *Nusa sahai* Joseph & Parui : A, lateral view of male genitalia; B, lateral view of female genitalia.

Thorax black with dense grey tomentum; pronotum with a transverse row of black bristles, sides white and black setose; scutum with a mediolongitudinal black or black and blackish-brown stripe extending nearly the entire length which is divided by a faint median stripe, sides with 2 contiguous or separate black spots, vestiture and bristles black; chaetotaxy; 2 notopleurals, 2 postalars, 3 supra-alars, 3-4 weak intra-alars; scutellum with 8 long, black bristles on border, disc black setose; laterotergite with long, pale yellow and a few black, bristly setae. Haltere pale yellow to yellowish-brown.

Legs black; fore and mid femora with dense white setae, hind femur with an anterior row of 3 white bristles, in fore and hind legs tarsus and tibia apically with mat of golden yellow pubescence, vestiture and bristles white and black.

Wing brown; R_5 and M_1 united well before the border.

Abdomen black, greyish-white or greyish-yellow tomentose laterally and posteriorly leaving a median black area, the area of black increasing gradually in posterior terga, each tergum posterolaterally with 2-3 pale yellow bristles, terga 1 and 2 laterally also with a few, long white setae, vestiture black and white. Genitalia (Fig. 67A) black, gonocoxite distinctive.

Female : Similar, except that mystax with more black bristles. Genitalia (Fig. 67B) figured.

Material examined : *Holotype* ♂ India : Kerala : 10 km E. Nolambur, 30.x.1984, Coll. K. Ghorpade, No. B 167. *Paratypes* 1 ♀, details as in holotype ; 2 ♂ Kerala : Valparai-Chalakudi, 980-25 m, 20.v.1985, Coll. Ghorpade, No. B. 309.

Discussion : The male genitalia is similar to *Nusa ghorpadei* Joseph & Parui, but both can be readily separated by the shape of the gonocoxite. Furthermore the first flagellomere is short in *N. sahai* Joseph & Parui. It is named in honour of our colleague, Shri N. Saha, who recently retired.

Distribution : India (Kerala)

Types : In the Collection of Dr. K. Ghorpade, Bangalore.

68. *Nusa setosa* Joseph & Parui

(Fig. 68)

1992. *Nusa setosa* Joseph & Parui, *Rec. zool Surv. India* 91 (1) : 92. Type locality : Jodhpur, Rajasthan.

A small, pilose, yellowish-brown or orange species marked with dark brown or black to varying extent, legs pale yellow or yellowish-brown with dark brown or black, and wings hyaline. Male : length 9 mm, wing 5-6 mm; female : length 8-9 mm, wing 6 mm.

Males : *Head* as broad as thorax, yellowish-brown and black with dense grey tomentum; mystax golden yellow, frontoorbital setae and ocellar bristles white. Antenna with scape and pedicel pale yellow, first flagellomere basally pale yellow and remainder dark brown, scape with white setae and 1 or 2 white bristles, pedicel slightly shorter than or nearly equal to scape, first flagellomere elongate. Palpus yellowish-brown, proboscis yellowish-brown and black, both with white setae.

Thorax yellowish-brown with dark brown or black to varying extent so much so in some examples mostly dark brown or black, short white or golden yellow tomentose; pronotum with white setae; scutum in holotype with a broad mediolongitudinal, black stripe extending from anterior border to midway between transverse suture and hind border, laterally with the black spots united, in one paratype the stripe faint and in the other absent, in both paratypes lateral black spots much smaller and faint; chaetotaxy: 1 notopleural, 2 postalar, a few bristles posterolaterally; scutellum with dense pile but in holotype comparatively less, border without bristles; laterotergite with long, white, bristly setae. Haltere pale yellow, with or without dark brown on head.

Legs pale yellow or yellowish-brown with dorsal dark brown or black marking on femur, the intensity and area of dark brown or black increased from fore to hind tibia so much so in the latter in some examples it occupies the whole of upper side, apex of hind tibia also dark brown or black; vestiture and bristles white.

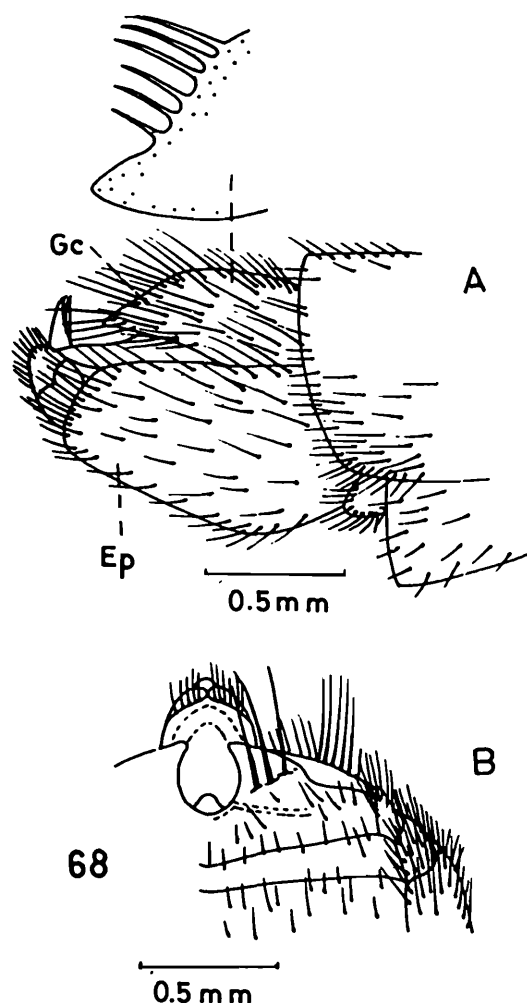


Fig. 68 : *Nusa setosa* Joseph & Parui : A, lateral view of male genitalia;
B, ventral view of female genitalia.

Wing hyaline with the veins pale yellow basally.

Abdomen yellowish-brown or orange brown with short, white or golden yellow pilose, holotype with faint median and lateral black markings on terga and with sparse setae, tergum 2 laterally with three bristles, terga 3 and 4 and in some examples tergum 5 also with 1 or 2 bristles. Male genitalia (Fig. 68A) with gonocoxite bearing a row of bristles apically.

Females : Similar but with the following differences: comparatively darker specimens; scutum with the mediolongitudinal stripe and lateral spots larger and distinctly marked; haltere yellowish-brown with black mark on head; abdomen mostly black with much less yellowish-brown or orange-brown. Female genitalia (Fig. 68B) figured.

Material examined : *Holotype* ♂, Reg. No. 7645/H6, India: Rajasthan : Jodhpur University Campus, 13.ix.1986, Coll. A.N.T. Joseph and Party. *Paratypes* 1 ♀, Reg. No. 7646/H6, rest of data as in holotype : 2 ♂, 2 ♀, Reg. No. 7647/H6 to 7650/H6, Jodhpur : Bavadchoraya, 15.ix.1986, Coll. A.N.T. Joseph and Party.

Discussion : The male genitalia of *Nusa setose* Joseph & Parui is distinctive and this species can be readily distinguished by the presence of an apical row of bristles on the gonocoxite.

Distribution : India (Rajasthan).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

69. *Nusa shevaroyensis* Joseph & Parui

(Fig. 69)

1992. *Nusa shevaroyensis* Joseph & Parui. *Rec. zool. Surv. India*, **91** (1-4) : 101. Type locality : Shevaroy Hills, Tamil Nadu.

A medium, black species with grey and greyish-yellow tomentum, black legs, dark brown wings and distinctive male genitalia. Male : length 13 mm, wing 7 mm.

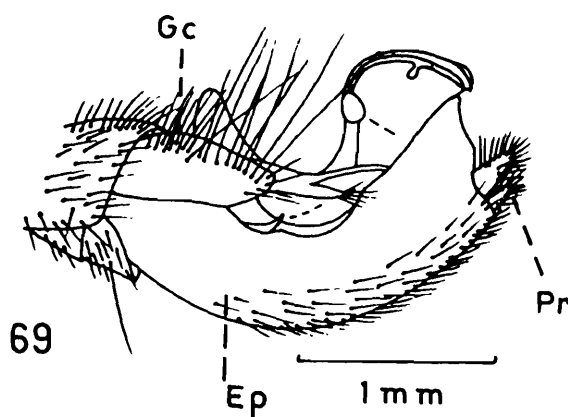


Fig. 69 : *Nusa shevaroyensis* Joseph & Parui, lateral view of male genitalia.

Male : Head broader than thorax, black with sparse grey tomentum; mystax white with a few black bristles below on either side, fronto-orbital setae and ocellar bristles black, postgena with dense white setae, postocular bristles consist of 3 long ones and a row of comparatively shorter ones. Antenna black scape and pedicel bear white and black bristles, pedicel slightly shorter than scape, first flagellomere short. Palpus and proboscis black with white setae.

Thorax black, grey tomentose; pronotum with a transverse row of black bristles medially and a few pale yellow setae laterally; scutum with a mediolongitudinal black stripe extending from anterior border to slightly beyond transverse suture, the stripe dividing it absent, sides with two black, contiguous spots; chaetotaxy: 2 notopleurals, 2 postalar, 3 supra-alar; scutellum with hind border bearing a row of 8 bristles, disc with sparse, short, black setae; laterotergite with a bunch of long, white, and two or three black, bristly setae. Haltere yellowish-brown.

Legs black, hind femur with 3 white bristles posteriorly, fore and mid tibiae with dense, elongate, white, bristly setae, vestiture white and black, the former predominant in fore and mid legs and the latter in hind leg, bristles black and white, fore tibia and tarsal segments ventrally and hind tibia at apex ventrally and on tarsal segments ventrally with mat of golden yellow setae.

Wing dark brown; R_5 and M_1 united well before the border.

Abdomen black, tergum 1 with three, tergum 2 with two and terga from 3-5 with one white bristles laterally, vestiture pale yellow. Male genitalia (Fig. 69) black with black setae.

Material examined : Holotype ♂ Reg. No. 7715/H6, India: Tamil Nadu: Dharampuri District: Shevaroy Hills, 6.xi.1989, Coll. Joseph and Parui.

Discussion : *Nusa shevaroyensis* Joseph & Parui is generally similar to *N. aequalis* Walker from which it differs in the black scape and legs, dark brown wing and in the absence of lateral grey spots on abdomen. The male genitalia of *N. aequalis* Walker is not known for comparison.

Distribution : India (Tamil Nadu).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

70. *Nusa sirkari* Joseph & Parui

(Fig. 70)

1997. *Nusa sirkari* Joseph & Parui, *Colemania, Insect Biosystematics* No. 5 : 6. Type locality : Kolleru Lake, Andhra Pradesh.

A medium, black, sparsely grey tomentose species with black and yellowish-brown legs and abdomen, and brown wings. Male : length 15 mm, wing 9 mm.

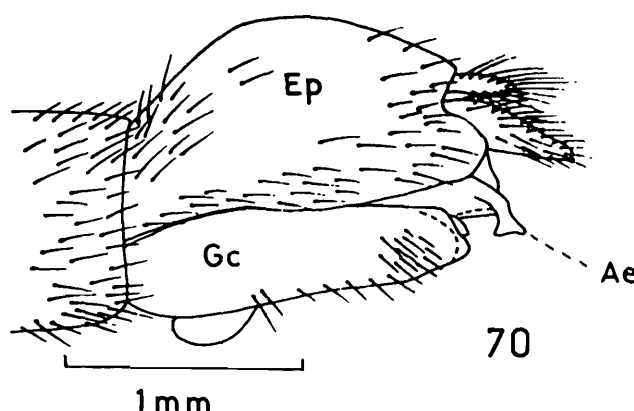


Fig. 70 : *Nusa sirkari* Joseph & Parui, lateral view of male genitalia.

Male : *Head* broader than thorax, black with sparse, grey tomentum: mystax white, fronto-orbital bristles and ocellar bristles white to pale yellow, postocular bristles white, postcranium and postgena white setose. Antenna with scape and pedicel black, former with pale yellow bristles and the latter with black bristles, first flagellomere yellowish-brown with basal half predominantly dark brown, pedicel subequal to scape, first flagellomere short, about one-and-a-half times the length of scape. Palpus and proboscis black, their setae white.

Thorax black, sparsely grey tomentose; pronotum white setose and also with a transverse row of white bristles, one on either side of which black; scutum effaced with the result mediolongitudinal stripe not discernible, vestiture and bristles black and pale yellow; chaetotaxy: 2 notopleurals, 3 postalars, 3 supra-alars; scutellum with a row of 5 pale yellow bristles and 2 black bristles on hind border, disc black setose; laterotergite with long, pale yellow bristles. Haltere yellowish-brown.

Legs black and yellowish-brown; coxa and trochanter black, fore and mid femora black with yellowish-brown apex, hind femur black with yellowish-brown both basally and distally, tarsus black, fore tibia posteroventrally with a row of 3 white bristles and posteriorly with a mat of white setae, vestiture and bristles white or pale yellow.

Wing brown; R_5 and M_1 united well before the margin.

Abdomen black with sides of anterior 5 terga yellowish-brown, terga 1-5 with a mediolateral pale yellow bristle, vestiture pale yellow, golden yellow or black. Genitalia (Fig. 70) black basally and yellowish-brown distally.

Material examined: Holotype ♂ India : Andhra Pradesh : Kolleru Lake, 18.viii.1985, Coll. K. Ghorpade, No. B 362.

Discussion : It belongs to the group with a short first flagellomere but with male genitalia similar to *Nusa yerburyi* Ricardo, both of which can be easily separated by the differences in the shape of male genitalia. It is named in honour of our colleague Shri H.K. Sirkar, who recently retired.

Distribution : India (Andhra Pradesh)

Type : In the Collection of Dr. K. Ghorpade, Bangalore.

71. *Nusa yerburyi* Ricardo

(Fig. 71)

1927. *Nusa yerburyi* Ricardo, *Ann. Mag. nat. Hist.*, (9) 20 : 208. Type locality : Sri Lanka

1975. *Nusa yerburyi* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 115.

1987d. *Nusa yerburyi* : Joseph & Parui, *Oriental Ins.*, 21 : 140.

1990. *Nusa yerburyi* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 19.

A rather large, black species with grey tomentum, black legs, dark brown wings and black and yellowish-brown abdomen. Male : length 17 mm. wing 11 mm.

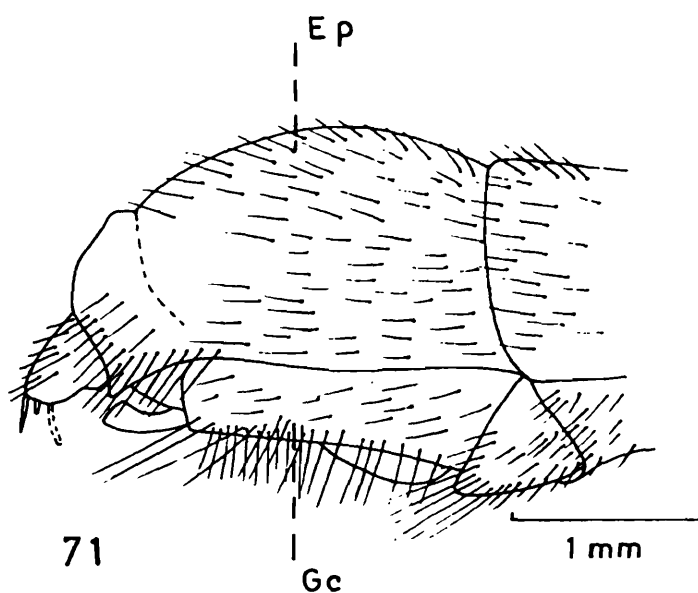


Fig. 71 : *Nusa yerburyi* Ricardo, lateral view of male genitalia.

Male : Head broader than thorax, black with grey tomentum; mystax black with a few pale yellow setae also, frontoorbital setae black and arranged in a row, ocellar bristles black, postcranium black setose, postocular bristles black, postgena densely white setose with some black ones also. Antennae damaged, black and yellowish-brown, scape and pedicel black, first flagellomere basally black and apically yellowish-brown, scape with black setae and bristles, pedicel with black setae only, pedicel shorter than scape, first flagellomere elongate. Palpus and proboscis black, their setae white.

Thorax black, grey tomentose; pronotum black setose and also with a median transverse row of black bristles; scutum with a mediolongitudinal black stripe extending from the anterior border to three-fourths, which is divided anteriorly upto the middle by a faint grey stripe, scutum anterolaterally grey tomentose and posterior to which golden yellow tomentose, laterally grey tomentose, setae and bristles black; scutellum with sparse black setae on disc and a row of black bristles on hind border; pleura heavily grey tomentose, metapleuron with elongate dense black and pale yellow bristles. Haltere basally yellowish-brown and distally pale yellow.

Legs damaged ; one fore and both mid legs lost; legs black, femora ventrally with dense elongate white setae, tibiae ventrally with dense elongate black setae some of which form bristles, on fore tibia and tarsus ventrally with golden yellow mat of setae. Apex of hind tibia and tarsus ventrally as well as posteriorly with golden yellow mat of setae, bristles black, vestiture predominantly black with some pale yellow setae also.

Wing dark brown; R_5 and M_1 united rather close to the border.

Abdomen black and yellowish-brown with lateral and hind borders of terga narrowly grey tomentose, tergum 1 laterally with black setae, tergum 2 laterally with black and pale yellow setae and three pale yellow bristles, terga 3-6 laterally with pale yellow setae and one pale yellow bristle, vestiture predominantly black with some pale yellow setae also. Male genitalia (Fig. 71) black with black setae.

Material examined : Syntype ♂, Sri Lanka, 18.iv.92; no other details. The specimen also bears a label "Syntype, *Nusa yerburyi* Ricardo, det. J.E. Chainey, 1984"

Discussion : *Nusa yerburyi* Ricardo resembles *N. albibasis* Ricardo and *N. ghorpadei* Joseph & Parui, in possessing an elongate first flagellomere. They are readily distinguished from each other by the structural details of male genitalia, especially the gonocoxite.

Distribution : Sri Lanka.

Type : In the Collection of the Natural History Museum, London.

Genus 14. *Orthogonis* Hermann, 1914

- 1914. *Orthogonis* Hermann, *Ent. Mitt.*, 3 : 132. Type-species : *Laphria scapularis* Wiedemann, original designation.
- 1975. *Orthogonis* : Oldroyd, *A Catalog of Diptera of the Oriental Region*. 2 : 115.
- 1990. *Orthogonis* : Joseph & Parui, *Rec. zool. Surv. India* Occ. Paper No. 113 : 19.

Large flies with purplish colour; face divergent, lower half gibbous, mystax consists of a patch of stout bristles and abundant bristly pile continued upto the base of antenna; postocciput prominent below

with scanty bristly pile and bristles; vertex deeply excavated, ocellarium highly developed with a pair of very long, stout bristles; anterior eye facets distinctly developed; proboscis long, compressed dorsoventrally towards the apex, apex blunt bearing numerous stiff pile, also basal third bears similar pile ventrally; palpus two segmented. Thorax pollinose; pronotum bears dorsal bristles; scutum with predominant dorsocentral bristles upto suture, humerus with bristly pile; scutellum with setae on disc and a few bristles on margin; propleuron with numerous stiff pile, anepisternum and katepisternum with scattered pile, meron bears long, fine pile, katatergite with a row of long, stout bristles, postnotal callosity micropubescent. All femora stout and slightly swollen dorsally, fore femur bears comparatively very long piles than others; all tibia with row of bristles on all sides. Wing with closed marginal cell, the lower end vein of discal cell and of the closed and stalked fourth posterior cell usually in a line, anal cell closed and stalked, ambient vein complete. Abdomen robust with scanty fine pile, lateral pile more abundant and longer; male genitalia large, conspicuous, epandrium bowl-shaped; female genitalia ventrally with a pair of small bristle bearing lobes.

Discussion : This genus is generally similar in appearance to *Maira* Schiner but can be readily distinguished by its characteristic alignment of the end vein of the discal cell with the end vein of the fourth posterior cell, usually in line.

Distribution : The genus is recorded from the Oriental and Ethiopian Regions. Of the three species so far known from the Orient, only *Orthogonis andamanensis* Joseph & Parui has been reported from India and adjacent countries.

Type species : Location of types not known.

72. *Orthogonis andamanensis* Joseph & Parui

(Fig. 72)

1981. a. *Orthogonis andamanensis* Joseph & Parui, *Ent. scand.*, **12** : 221. Type locality : Wrightmyo, S. Andaman.

1990. *Orthogonis andamanensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 19.

A large, black and violet species with contrasting yellow legs and light brown wings. Male : length 21 mm, wing 18 mm.

Male : *Head* broader than thorax, black with grey tomentum; mystax pale yellow, frontoorbitals pale yellow, ocellar setae yellow and black, two of the yellow setae long and form bristles; postcranium grey tomentose except for two upper longitudinal stripes on either side of ocellarium, setae yellow on upper half and grey on lower half. Antennae with scape and pedicel and extreme base of first flagellomere yellow, rest of first flagellomere black, scape and pedicel dorsally black and ventrally yellow setose, pedicel more than half of scape, first flagellomere about one-and-a-half times the combined length of scape and pedicel. Palpus and proboscis black with yellow setae.

Thorax black with grey or greyish-yellow tomentum; pronotum yellow setose; scutum with the mediolongitudinal stripe indistinct, humeri grey tomentose, laterally and posteriorly yellow tomentose which extends slightly towards the middle along the transverse suture, vestiture black, bristles brown with a few black ones also, pleuron with a transverse yellowish-grey band and two similarly coloured

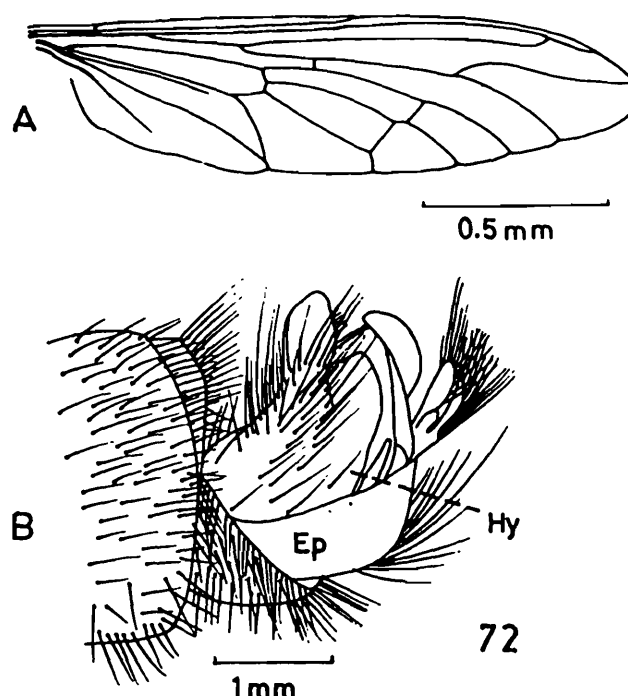


Fig. 72 : *Orthogonis andamanensis* Joseph & Parui : A, venation; B, lateral view of male genitalia.

marks above the fore and hind coxae; scutellum with the setae of disc black, bristles of border brown but for one being black, laterotergite with yellow bristles. Haltere yellow, stalk lighter coloured.

Legs predominantly yellow; coxa black, trochanter dark brown, and remaining yellow except the extreme tip of femur in mid and hind legs dark brown, setae and bristles yellow.

Wing (Fig. 72A) light brown.

Abdomen shining violet dorsally, vestiture black, setae on sides dense, sides of terga 1 and 2 with yellow setae and 3-6 with a pair of yellow bristles on either side. Male genitalia (Fig. 72B) brown, setae yellow and black.

Material examined : Holotype ♂ India : Andaman Islands : S. Andaman: Wrightmyo, 18 m, 1.iv.1964. Coll. B.S. Lamba.

Discussion : It differs from the type species *Orthogonis scapularis* (Wiedemann) in the details of male genitalia, proportional length of veins at the distal part of discal cell (the lower end vein of discal cell and of the closed and stalked fourth posterior cell) and the details of body colouration.

Distribution : Andaman Islands (S. Andaman).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

Genus 15. *Pogonosoma* Rondani, 1855

1856. *Pogonosoma* Rondani, *Dipterol. ital. Prodr.*, 1 : 160. Type-species: *Asilus maroccanus* Fabricius, original designation.

1975. *Pogonosoma* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 116.

1990. *Pogonosoma* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 19.

Head long, not as wide as thorax; face highly gibbous ventrally, mystax consists of dense stout bristles; frons short, broad with distinct tubercle, vertex well excavated, postocciput very prominent below, ocellarium large with a pair of stout bristles and some fine pile; antenna with scape slightly longer than pedicel, first flagellomere strongly dilated from base and narrowed at apex with a small pit at the tip bearing a small spine; proboscis exceptionally stout with swollen base, apex narrowed with numerous bristly pile; palpus two segmented, apical segment flattened, scoop-like, with bristly pile. Thorax long, generally shining with bristly pile; pronotum with bristles; chaetotaxy : double row of acrostichals, 1 notopleural, 3-6 supra-alars, 3-8 postalars; propleuron with dense, long, bristly pile, anepisternum with 1-2 bristles, laterotergite with numerous long bristly pile, postnotal callosity pollinose, postmetacoxal area membranous. Legs with numerous bristly pile, bristles less; all femora exceptionally stout and swollen, tibiae and tarsi stout, basitarsi short, fore and mid tibiae with striking anterior, ventral and posterior fringe of long, dense, bristly pile; pulvilli long, empodium blade-like. Wing venation similar to *Andrenosoma* Rondani, submarginal cells three, first posterior cell narrow throughout, narrowly open or closed with stalk, ambient vein complete. Abdomen broad, robust, densely pilose; all terga with 2-4 bristles or sometimes terga 1 and 2 bear weak bristles; male genitalia large, epandrium short, broad.

Discussion : The genus is closely allied to *Andrenosoma* Rondani but can be readily told by the presence of three submarginal cells, well excavated vertex, broad frons with sharply marked tubercle and the shape of proboscis and palpus.

Distribution : The maximum number of species of the genus have so far been reported from the Oriental Region, particularly throughout the Indo-Malayan Region. From India and adjoining countries, however, only one species, *Pogonosoma cedrusa* Ricardo, has been recorded.

Type species : Location of types not known.

73. *Pogonosoma cedrusa* Ricardo*

1927. *Pogonosoma cedrusa* Ricardo, *Ann. Mag. nat. Hist.*, (9) **20** : 211. Type localities : Simla, Himachal Pradesh; Khasi Hills, Assam (Meghalaya).

1975. *Pogonosoma cedrusa* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 116.

1990. *Pogonosoma cedrusa* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 19.

Pogonosoma semifusca van der Wulp may be nearly allied to this new species, which is distinguished from it by the bright blue metallic colouring of the abdomen, the simple hind femur, the short ovipositor, and the less well defined colouring of wing.

Type (female) from Fagu, 2438 m, Simla Hills, 8.iv.1922 (C.F.C. Beeson). Bred from *Cedrus deodora*.

A medium-sized species, with purple blackish shining metallic abdomen. Face with black bristles and white hairs. Legs nearly the same colour as the abdomen, white pubescence. Wings tinged brown.

Length 19 mm.

Face blackish-brown, the tubercle large covered with stout black bristles, forming the moustache, a few fine white hairs intermixed. Cheeks with long fine, white hairs, a few shorter black ones on each side below the antennae. Palpi with black hairs. Beard white. Hind part of head with bristly black hairs, becoming weaker and reaching round to the proboscis. On the ocelligerous tubercle two weak black bristles. Antennae with the first two joints blackish-brown and with stout black bristles (3rd broken off). Thorax dull blue with brighter metallic glittering patches on the sides, devoid of the brownish-yellow tomentum on the dorsum, which is nearly bare of pubescence anteriorly, but the sides have long soft black hairs disposed in groups; prealar bristles stout, three in number, postalar two in number. Posterior part of dorsum with rather numerous weak black hairs, and the tomentum here is whitish. Scutellum dark blue, somewhat shining, with no bristles (denuded). On the specimen from Khasi Hills there are two weak ones. Abdomen almost devoid of pubescence, sides of anterior segments with long white hairs; on the posterior segments shorter black hairs predominate; on each segment one or more stout black bristles present on the side, and second, third and fourth have small triangular white tomentose spots. Ovipositor short, no longer than the last segment. Legs dull black, but the anterior pair are more brownish than blue, and the same is the case with middle pair; pubescence long, white, thick on tibiae, on the femora it is black above and intermixed white hair below; the tarsi with black hairs and bristles; there are numerous black bristles on the tibiae and one or more stout ones on the hind femora at the apices; the underside of tibiae with black brush-like foxy-red hairs. Wing tinged brown, paler at the extreme base, with clear white spots in all the cells on the posterior border except the apical one, and including the fourth posterior cell; the first posterior cell is widely opened, the brown colouring is more intense on the anterior border in the centre. Halteres pale.

A very much damaged specimen from Khasi Hills, India (F.W.L. Sladen), seems identical with the type; it is also female. A female from Trincomales, Ceylone, is very nearly allied to these, but appears somewhat different.

Discussion : It is the only species of *Pogonosoma* Rondani so far recorded from India and adjacent countries.

Distribution : India (Assam, and Himachal Pradesh).

Types : Location of types not known.

Genus 16. *Pseudonusa* Joseph & Parui, 1989

1989b. *Pseudonusa* Joseph & Parui. *Hexapoda*, 1 : 27. Type-species : *Pseudonusa andhraensis* Joseph & Parui, 1991; original designation.

Medium, black flies with short adpressed pile ; head broader than thorax, compound eyes with median facet larger; face plane, about a third of head width and parallel sided, bristly setose except for a small, median, bare area, mystax about a dozen white bristles on the lower facial margin; antenna with scape and pedicel nearly equal in length, first flagellomere slightly longer than the combined length of scape and pedicel, apically with one microsegment which is spoon shaped with a spinous projection and in between with a hairy projection; vertex strongly excavated, ocellarium highly developed bearing a few thin pile. Thorax with dense pile of setae on scutum; chaetotaxy: 2 or 3 notopleurals, supra-alars and intra-alars together 9 which are closely approximated at their bases as well also with notopleurals and hence

difficult to distinguish; scutellum covered with rather dense setae, hind border with 2 to a row of white bristly setae; laterotergite with long bristly setae. Legs stout, uniformly thick with dense pile, adpressed setae and stout bristles; fore femur bare of bristles, mid femur with a dorsolateral and an anteroventral bristles in the subapical region, hind femur with 1 dorsal, 1 anterior and 1-3 ventral bristles in the subapical region, all femora ventrally with long, thin pile; all tibiae and tarsi bristly on all sides. Wing with ambient vein, first posterior cell narrowly open or closed to the border or closed with a short stalk, fourth posterior cell and anal cell closed. Abdomen robust, setate, male with 7 terga and female with 8 terga, male genitalia rotate.

Discussion : *Pseudonusa* Joseph & Parui is close to *Nusa* Walker but differing in the presence of an ambient vein, marginal cell is open, first posterior cell is narrowly open, or close to the border or closed with a short stalk.

Distribution : India (Andhra Pradesh).

Type species : Types in the National Zoological Collection of the Zoological Survey of India, Calcutta.

74. *Pseudonusa andhraensis* Joseph & Parui

(Fig. 73)

1989b. *Pseudonusa andhraensis* Joseph & Parui, *Hexapoda*, 1 : 27. Type locality : Kurnool District, Andhra Pradesh.

A medium black fly with greyish-white or grey tomentum, scutum covered with dense, short pile of golden-yellow setae, first flagellomere with one spoon-shaped microsegment, legs black and yellowish-brown, and wings light brown. Male : length 9-10mm, wing 6-7 mm; female : length 11 mm, wing 8 mm.

Males : *Head* broader than thorax, black with dense greyish-white tomentum, compound eyes with median large facets; mystax about a dozen white bristles on the lower facial margin, face with bristly white setae except for a small, median bare area; ocellarium protuberant with a few pale yellow bristly setae, postocular bristles white. Antenna (Fig. 73A) black and dark brown, scape and pedicel nearly equal in length, first flagellomere slightly longer than the combined length of scape and pedicel, apically with one microsegment which is spoon-shaped with a spinous projection, in between with a hairy projection. Palpus and proboscis black with white setae.

Thorax black with grey tomentum; pronotum setose but without bristles; scutum covered with dense, short, pile of yellow setae, but postpronotal lobes and posteriorly on scutum with white setae; chaetotaxy: 2 or 3 notopleurals, supra-alars and intra-alars together 9 which are closely approximated at their bases as also with the notopleurals and hence difficult to distinguish; scutellum covered with rather dense setae, hind border with two to a row of white bristly setae; laterotergite with long bristly setae. Haltere white and pale yellow or white and yellowish-brown.

Legs black and yellowish-brown; coxa and trochanter black, femur black with its extreme tip yellowish-brown, tibia yellowish-brown but apically black and in fore tibia anteriorly also black, tarsus black. tibia with a row of dorsal bristles which are reduced in the hind tibia of one of the paratypes, vestiture white. bristles pale yellow.

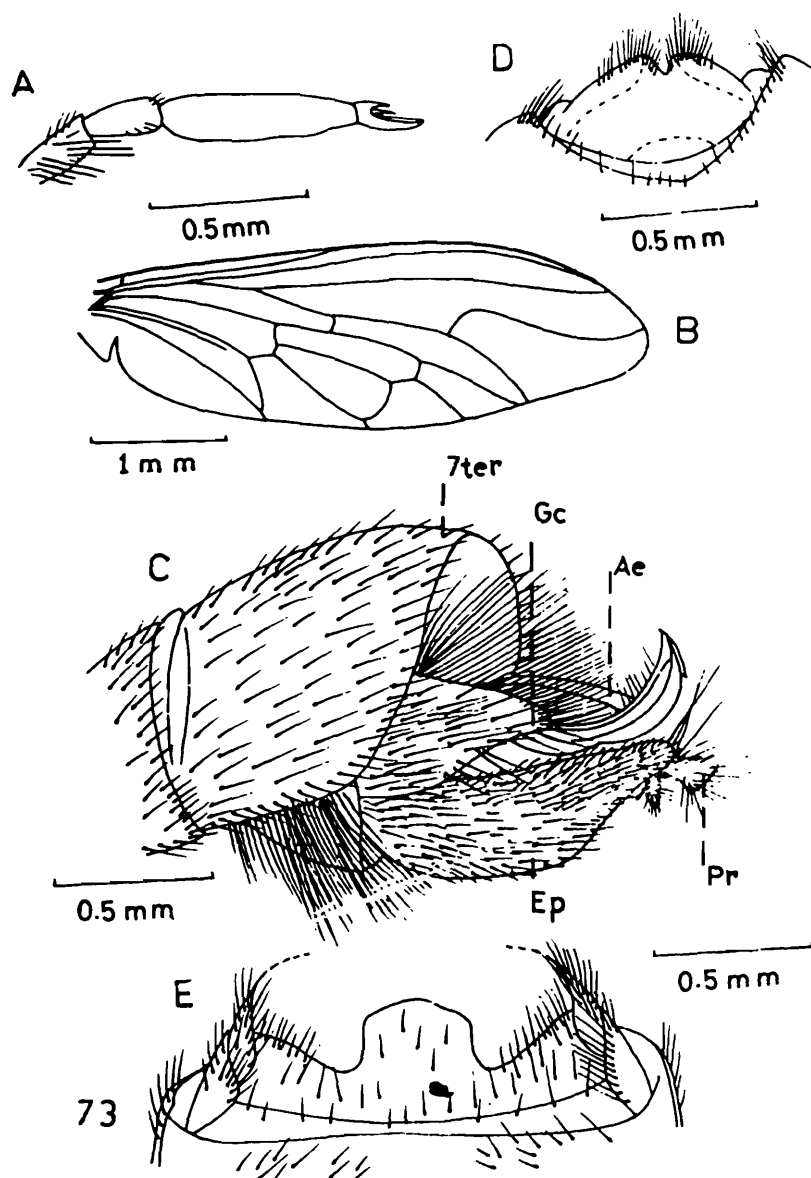


Fig. 73 : *Pseudonusa andhraensis* Joseph & Parui : A, antenna; B, venation; C, lateral view of male genitalia; D, dorsal view of female genitalia; E, ventral view of female genitalia.

Wing (Fig. 73B) light brown, ambient vein present, marginal cell open, first posterior cell narrowly open, or closed to the border, or closed with a short stalk, fourth posterior cell and anal cell closed.

Abdomen robust, black coloured with 7 terga, terga 1 and 2 laterally with a few white long setae, vestiture black but on sides white. Male genitalia (Fig. 73C) rotate, black with pale yellow setae.

Female : Similar to males but with 8 terga; apical sternum medially projected (Figs. 73D, 73E).

Material examined : *Holotype* ♂, Reg. No. 7444/H6, India : Andhra Pradesh: Kurnool District : Nandyal, Gajalpalli Forest Rest House, 23.vi.1985, Coll. P. Parui. Paratypes 3 ♂, 1 ♀, Reg Nos. 7445/H6 to 7448/H6, rest of details as in holotype; 1 ♂, Reg. No. 7449/H6, 2.vi.1985, rest of data as in holotype.

Distribution : India (Andhra Pradesh).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

Tribe ATOMOSINI

Of all the zoogeographical regions Neotropical Region records the maximum number of genera of this tribe. In the Oriental Region 9 genera have been recorded, of which from India and adjacent countries only 3 genera have been reported. The members of this tribe can be distinguished from Laphriini by the presence of a complete chitinous arch behind the posterior coxae, the postnotal callosity is usually bristly, and the proboscis is usually shorter than face, cylindrical and truncate.

Key to genera of Atomosini

1. First flagellomere shallowly excavated near middle bearing a minute spine, marginal cell closed with a long stalk.....*Anoplothyrea* de Meijere
- First flagellomere without excavation or with spine in the middle.....2
2. First flagellomere micropubescent with an indistinct microsegment at apex bearing long pubescence and a dorsal spine at base, lateral slopes of postnotum with bristles and piles.....*Opeatocerus* Hermann
- First flagellomere bare, with a robust microsegment bearing a short spine at its base, lateral slopes of postnotum with a few exceptionally stout spines.....*Loewinella* Hermann.

Genus 17. *Anoplothyrea* de Meijere, 1914

1914. *Anoplothyrea* de Meijere, *Tijdschr Ent.*, **56** (Suppl.) : 56. Type-species : *Clariola javana* de Meijere, 1911; original designation.
1975. *Anoplothyrea* : Oldroyd, *A Catalog of Diptera of the Oriental Region* **2** : 116.
1990. *Anoplothyrea* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 20.

Face plane with short protuberance above epistome and covered with micropubescence all over, mystax consists of a few long setae, postcranium with short setae below and with a pair of microtuberculate bristles near middle above. Scape a little longer than pedicel and with long fine bristly setae in the middle along with some short setae; pedicel with a few bristly setae at apical region, first flagellomere tapered near apex, a little longer than twice the combined length of scape and pedicel and with an excavation near middle which bears a distinct minute spine. Vertex deeply excavated and divergent. Scutum highly convex with setae all over, humerus pilose; scutellum with fine setae on disc and a pair of weak marginal bristles; meron with a patch of long pubescence and laterotergite with a vertical row of 6-7 apically bent setae. Hind leg distinctly longer than others, hind femur thickened distally with scattered bristles and with a median fringe of long, fine setae ventrally; hind tibia thickened distally with 4 long bristles laterally, 4 bristles ventrally and a few dorsomedial bristles; mid and anterior femora with long bristles. Wing slender with closed marginal cell bearing a long stalk, fourth posterior cell closed with its end lies in a line with the end vein of discal cell, alula reduced. Abdomen slender, first segment with a fan of a few setae laterally, second segment with one or two bristles, bristles absent on the remaining segments. Male genitalia concealed.

Discussion : It is generally similar to *Clariola* Kertész but differs from it in that the proboscis is not constricted at the base and obtuse at apex, and differences in the shape of antenna.

Distribution. India; Java; Philippines.

Type species. Location of types not known.

75. *Anoplothyrea indiana* Joseph & Parui

(Fig. 74)

1987c. *Anoplothyrea indiana* Joseph & Parui, *Oriental Ins.*, **21** : 129. Type locality: Cinchona, Tamil Nadu.

1990. *Anoplothyrea indiana*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 20.

A small, black species with pale yellow and dark brown legs with distinctive chaetotaxy of hind legs, wings light brown, closed marginal cell with a short stalk and discal cell extending beyond the fourth posterior cell. Male: length 8 mm; wing 6 mm.

Male. Head broader than thorax, black, sparsely grey tomentose; face extremely narrow, mystax consists of about six white bristles, face white setose, ocellar tubercle abruptly projecting and bearing one white and another dark diverging bristles, postcranium below and postgena sparsely white setose. Antenna (Fig. 74A) elongate, black, scape with an elongate ventral black bristle near middle and a few

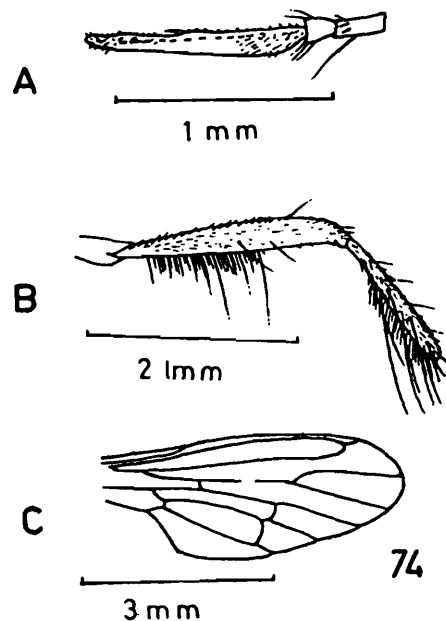


Fig. 74 : *Anoplothyrea indiana* Joseph & Parui : A, antenna; B, anterior view of hind leg; C, venation.

shorter bristly setae near apex, pedicel with one ventral bristle beyond middle and a few shorter bristly setae near apex, first flagellomere elongate, and obtuse at apex, with a shallow excavation beyond middle from which projects a distinct but minute sharp spine directed distad; scape one-and-a-half times the pedicel, first flagellomere a little longer than two and-a-half times the combined length of scape and pedicel. Palpus minute with one or two long white bristles, proboscis constricted at base, black, with a few white setae.

Thorax black with sparse grey and greyish-white tomentum; pronotum laterally with a bunch of pale yellow setae; scutum rather strongly convex, covered with abundant, short, subappressed, yellow pile; scutellum with a pair of black or yellow marginal bristles, disc bare; pleura sparsely grey and greyish-white tomentose, postnotum with long white pile, laterotergite with a transverse row of quite long, fan-like, bristly, apically bent setae. Haltere pale yellow.

Legs (Fig. 74B) pale yellow, in fore and mid legs tarsal segments dark brown to a varying extent, in hind leg femur with dark brown infuscation for about one-third beyond middle, tibia and tarsus black. Fore femur with 6 anteroventral thin bristly setae and 1 ventral bristles. Fore tibia with 3 long ventral bristles, 4-5 short, dorsal bristles and 4 posterior bristles. Mid femur with 1 anterior bristle, 3 posteroventral bristles, and 1 dorsal bristle. Mid tibia with an anterior row of small basal bristles, 2 long median microtuberculate bristles, 3 long posteroventral bristles, and 4-5 short, anteroventral bristles. Hind femur elongate and thickened distally, anteriorly with 2 long bristles, basally with 2 elongate posteroventral bristles, ventrally with 2 elongate bristles, at apical fourth with 1 dorsal and 1 posterodorsal fine bristles, and at apex with 2 dorsal fine bristles, ventrally with erect pile. Hind tibia slightly thickened distally, anteriorly with 3 equally long, stiff, microtuberculate bristles, ventrally with 3 curved bristles, posteroventrally with 1 basal bristle and dorsally with 3-4 bristles, ventrally with erect pile.

Wing (Fig. 74C) slender, light brown but basomedially almost hyaline; marginal cell closed with a short stalk, fourth posterior cell closed, apical end of discal cell situated beyond fourth posterior cell, alula reduced.

Abdomen black, subcylindroid and rather convex, with very fine punctures, sides of terga 1-3 with long, thin white setae, terga 2-8 bearing lateral white bristles; 2 with four, 3-4 with two and 5-8 with one; vestiture sparse, extremely short setae. Male genitalia inconspicuous, basally and distally with processes, the latter bearing a pair of short, spiny bristles apically and another similar bristle subapically.

Material examined. *Holotype* ♂ India: Tamil Nadu: Anamalai Hills: Cinchona, 1067 m, v. 1964, Coll. P. S. Nathan. Joseph Wilcox Collection, presented to California Academy of Sciences.

Discussion. The only other known species of the genus is *Anoplothyrea javana* (de Meijere) from which *A. indiana* Joseph & Parui differs in the proportionate length of scape and pedicel; hind tibia with 3 long and 1 short anterior bristles, and 2 long and 1 short curved ventral bristles; marginal cell with a short stalk and discal cell ending beyond the fourth posterior cell; and tergum 1 without bristles, tergum 2 with four bristles and the remaining terga with one or two bristles.

Distribution. India (Tamil Nadu).

Type. In the Collection of the California Academy of Sciences, San Francisco.

Genus 18. *Loewinella* Hermann, 1912

1912. *Lowinella* Hermann, *Nova Acta Acad. Caes. Leop. Carol.*, **96** : 104.

Type-Species : *Atomosia virescens* Loew : original designation. *Loewinella* amended spelling accepted by the ICZN Code, Articles 27, 32c.

1982. *Loewinella*: Londt, *Ann. Natal. Mus.*, **75** (1) : 229.

Small but robust flies; face produced both above and below leaving a concave area in between; mystax consists of a patch of numerous long, bristles; occiput bears abundant long, fine piles ventrally; proboscis quite short, stout and blunt with numerous stiff pile at apex and a few long fine pile at base ventrally; scape slightly longer than pedicel, first flagellomere about one and-a-half times the combined length of scape and pedicel, uniformly wide with a robust microsegment bearing a spine at its base. Thorax shining; pronotum with short stiff pile; scutum punctate with short setae; chaetotaxy: 1 notopleural, 1 supra-alar, 1 postalar; scutellum with short pile on disc; katepisternum with some long bristles above, laterotergite with a vertical row of a few bristles; epimeron and meron bare. Femora stout and swollen; fore femur with long, slender pile ventrally, mid dorsally bears median and lateral bristles, hind femur short, strongly swollen distally and spindled at base; fore and mid tibia with a few anterodorsal, posterodorsal and posteroventral bristles, hind tibia stout, arcuate with a fringe of fine pile ventrally. Wing with closed marginal cell, which is short stalked; vein R_1 ends quite a distance from apex; first posterior cell widely open, fourth posterior cell closed with long stalk; end vein of discal cell and of the fourth posterior cell very nearly aligned. Abdomen flattened as wide as thorax, each tergum laterally with a stout bristle on either side; male genitalia large.

Discussion. *Loewinella* Hermann can be readily separated from all other genera of Atomosini by the first flagellomere having a comparatively large microsegment with an apical spine at its base.

Distribution. It is mainly Palaearctic and Afrotropical, with only one species reported from the Orient recently by Londt (1982).

Type species. Location of types not known.

76. *Loewinella lehri* Londt*

1982. *Loewinella lehri* Londt, *Ann. Natal. Mus.*, **75**(1) : 236. Type locality: Quetta, Pakistan.

Derivation. Named after Dr P. A. Lehr in recognition of his good work on Palaearctic Asilidae.

Description. Based on unique ♂ holotype.

Head. Antennae broken off. Frons fairly broad (eye: frons width ratio = 1, 6 mm); silver pruinose. Mystax and setae on upper frons white. Vertex: blackish, uniform silver-gold pruinose; a pair of long, yellowish ocellar bristles. Occiput: uniform gold-silver pruinose; a row of 6 or 7 short bristles behind each eye (some black, some yellow). Rostrum short, dark red-brown.

Thorax. Length 1, 7 mm. Mesonotum shiny blue-black, finely punctate, covered with fine, pale yellow-white setae. Dorsal bristles: tiny, white acrostichals present, 1 black presutural, 1 black supra-alar, 1 pale yellow postalar. Scutellum shiny blue-black, covered with fine, white setae, marginal bristles apparently absent. Pleura silver pruinose except for a shiny, bare band occupying parts of the mesopleuron and sternopleuron; pteropleuron mostly pruinose, but lower margin very narrowly bare. Mesepimeral setae long, white, well developed. Hypopleural setae sparse (only 2) poorly developed, white. Metanotum silver pruinose with 2 short black bristles on each callosity. Legs: Femora slightly arcuate dark red-brown with yellow apices; tibiae red-brown except for upper proximal parts which are yellowish. Tarsi uniform dark-brown. Bristles and setae white except for a few black ones on ventral parts of tarsi. Wings 4,0 mm; membrane with slight yellowish tinge.

Abdomen. Terga shiny blue-black, punctate, covered with tiny shiny white setae. Sterna shiny dark-brown, apunctate. ♂ genitalia as in Figs.

Material examined. 1 ♂ Holotype, Pakistan: Quetta, N. W. India, v. 1902. G. G. Nurse (BM).

Discussion. So far it is the only species of *Loewinella* Hermann recorded from the Oriental Region.

Distribution. Pakistan.

Type. In the Collection of the Natural History Museum, London.

Genus 19. *Opeatocerus* Hermann, 1912

1912. *Opeatocerus* Hermann, *Nova Acta Leop Carol Akad. Naturf.*, **96** : 16. Type-species: *Atomosia purpurata* Westwood, 1849 : 223; original designation.

1975. *Opeatocerus*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 118.

1990. *Opeatocerus*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 20.

Small flies; face plane but gently produced on lower third above epistome; mystax consists of 2 long stout bristles along with 2-3 setae; occiput short with a few, fine setae, laterally with a few spine-like bristles; proboscis short, stout with blunt apex; palpus very short with a stout apical bristle. Antennal scape as long as pedicel, first flagellomere longer than the combined length of scape and pedicel, narrowed at base and apex, micropubescent with a short indistinctly separated terminal microsegment and a short spine at its base. Pronotum with bristly setae, scutum bears scattered setae anteriorly, humerus pilose, laterotergite with a fan of few, long setae, lateral region of postnotum with setae and bristles. All the femora yellowish-brown, hind femur slightly curved with dense brush of long setae ventromedially, hind tibia curved with dense fine setae and a few, very long bristly setae ventrally, fore and mid femora less thickened with fine setae below, their tibiae bear long bristles; tarsi with exceptionally long bristles. Wing with marginal cell closed with short stalk, fourth posterior cell with long stalk. Abdomen convex, broad with short setae, first tergum bears a few, spinous bristles, remaining terga bear bristly setae, male and female genitalia concealed.

Discussion : The genus has some similarities with wing venation and the head of *Dichaetothyrea* Hermann. So far only one species is reported under the genus.

Distribution : India (Assam).

Type species: Location of types not known.

77. *Opeatocerus purpurata* (Westwood)

(Fig. 75)

1849. *Atomosia purpurata* Westwood, *Trans. Ent. Soc. London*, **5** : 233. Type locality : India.

1975. *Opeatocerus purpurata* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 118.

1990. *Opeatocerus purpurata* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 21.

A small, black, cylindroid, fly with shining blue scutum, first flagellomere with an attenuate microsegment and a short, blunt spine, pale yellowish-brown and dark brown legs, infuscated wings and coarsely punctate thorax and abdomen. Male : length 7 mm; wing 5 mm.

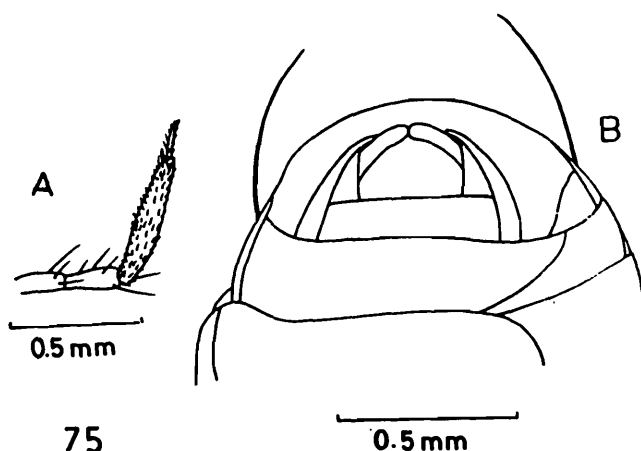


Fig. 75 : *Opeatocerus purpurata* (Westwood) : A, antenna; B, ventral view of male genitalia.

Male : *Head* broader than thorax, black, grey tomentose; mystax scattered, black, bristly setae, fronto-orbitals absent, ocellar protuberance high with black bristles, postocular bristles absent, postcranium bare except for a few weak setae along border, postgena almost bare. Antenna black, scape and pedicel with black bristles, first flagellomere onwards micropubescent, scape slightly shorter than pedicel, first flagellomere longer than the combined length of scape and pedicel, first flagellomere (Fig. 75A) slightly narrow at base and apex, apically with a short, blunt, dorsal spine, terminally the former bears a short, indistinctly separated microsegment. Palpus and proboscis extremely short, former with a few black setae while latter bare.

Thorax shining blue black with grey tomentum, coarsely punctate; pronotum bare; scutum without mediolongitudinal stripe; chaetotaxy: 1 notopleural, 1 supra-alar, 2 postalars (weak); short, subappressed setae present along borders, vestiture and bristles black; scutellum with short scattered, dark brown setae; pleuron with dense grey tomentum, laterotergite with a transverse row of brown to pale yellow bristly setae, lower three of which very long. Haltere pale yellow.

Legs pale yellowish-brown to yellowish-brown and dark brown; fore and mid legs pale yellowish-brown except tarsus with one or two basal tarsal segments pale yellowish-brown and dark brown and the rest dark brown; in hind leg coxa and trochanter pale yellowish-brown and dark brown, femur pale yellowish-brown, tibia mainly dark brown marked with pale yellow to varying extent, tarsus similar to other legs, hind femur not so strongly thickened as described by Hull (1962), hind tibia somewhat arcuate with thick apex; femur ventrally with thin setae, about 3 of which in hind femur form bristly setae, fore tibia with 2-3 anterior and posterior bristly setae, mid and hind tibiae with a few bristly setae, vestiture mainly black with some pale yellow ones also, bristly setae black, hind tibia anteroventrally at apex with a mat of thick, black pubescence.

Wing infuscated.

Abdomen rather shining black, gently convex, coarsely punctate, tergum I laterally with about 4 pale yellow long setae, vestiture dense, fine, short appressed setae. Genitalia (Fig. 75B) figured.

Females : Similar.

Material examined : 1 ♀, India : Assam : 16 km N. of Tinsukia; 5.iv.1944, Coll. D.E. Hardy (S.I.) 1 ♀ Tamil Nadu : Pykara, 1982 m, 12.iii.1962, Coll. E.S. Ross and D.Q. Cavagnaro (C.A.S.). 1 ♂, 1 ♀, Meghalaya : West Garo Hills District : Siju Cave area, 27.iv. 1991, Coll. B.N. Das (Z.S.I.).

Discussion : So far only one species is reported under the genus. The species was described from India without giving detailed collection locality.

Types : Location of types not known.

Subfamily DASYPOGONINAE

1847. Dasypogoninae (partim) Loew, *Linn. Ent.*, 2 : 384.

The members of this subfamily fall under 3 tribes : Saropogonini, Stichopogonini and Damalini (Xenomyzini). These are elongate and very slender species, which are devoid of alula. They resemble Leptogastrinae in the marginal cell being open and Laphriinae in the two jointed palpus. They differ from the former in the one segmented palpus and from the latter in the spindle-shaped apical microsegment of first flagellomere.

Key to tribes of Dasypogoninae

1. Prosternum isolated and surrounded by membrane, ninth sternum of female divided into two acanthophorites.....Saropogonini
- Prosternum complete with little or without membranous area.....2.
2. Frons and vertex strongly diverge, vertex expanded but less wider at antennal level, first flagellomere with thick, spine-tipped style.....Stichopogonini.
- Frons and vertex not strongly divergent, first flagellomere with bristle-like terminal style, scutum elevated and arched.....Damalini.

Tribe STICHOPOGONINI

The members of the tribe are habitants of sandy areas. Their characteristic features are frons and vertex exceptionally wide, the latter being deeply excavated. The compound eyes are comparatively large. In the Oriental Region the tribe is represented by *Clinopogon* Loew and *Stichopogon* Bezzi, the latter being dominant. *Stichopogon* Loew can be easily separated from the genus *Clinopogon* Bezzi by its fragile nature, in the presence of bristles on legs and the well patterned abdomen.

Key to genera of Stichopogonini

1. Fourth posterior cell closed with long stalk, ocellar triangle with a pair of well developed bristles*Stichopogon* Loew
- Fourth posterior cell usually closed to the margin, ocellar bristles weak or absent.....*Clinopogon* Bezzi.

Genus 20. *Clinopogon* Bezzi, 1910

1910. *Clinopogon* Bezzi, *Annals Hist. Nat. Mus. Natn. Hung.*, 8 : 153. Type-species : *sauteri* Bezzi, original designation.
1975. *Clinopogon* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 128.
1990. *Clinopogon* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 34.

Flies of less than medium size; head broader than long; face plane below antennae and then gradually produced below; mystax composed of dense, long pile directed downwards; frons strongly divergent with scattered stiff piles, vertex comparatively narrowly excavated, occiput slightly produced with abundant fine pile on dorsal half, rest with dense, long, curved pile; first flagellomere highly compressed laterally and bearing a short thick microsegment with an apical spine; palpus two segmented; proboscis small, slender, apex obtuse with a criclet of stiff pile subapically. Scutum tomentose with setate pile, dorsal bristles absent, laterally with long, stiff pile and bristles, humeri densely pilose; pronotum laterally and anepisternum with dense fine pile; scutellum with numerous fine pile on disc and a fringe of long pile on border; postnotal callosity micropubescent. Femur stout, fore and mid femora with dense, fine pile, hind femur slightly convex dorsally and a little thick beyond middle with a small fringe of pile ventrally; fore and mid tibiae with dense, long ventral fringe, hind tibia with stiff pile and bristles. Wing broad basally and gradually narrowed towards tip, marginal cell open, posterior cells broadly open, ambient vein complete, alula narrow. Abdomen as broad as thorax with subappressed pile, terga 1 to 3 bear long lateral pile, tergum 1 also with a few bristles; acanthophorites with a few hollow spines, ventral plate divided at apex.

Discussion : The genus is closely related to *Stichopogon* Loew but it can be distinguished by the shape of wing which gradually narrows towards apex, face with conspicuous, triangle-shaped, densely matted, downturned pile, and the shape of abdomen, which being strongly tapered apically.

Distribution : It is a small genus reported from the Oriental, Palaearctic and Australian Regions. From India and adjacent countries so far only 2 species are recorded : *Clinopogon nicobarensis* (Schiner) from Nicobar Islands and *C. odontoferus* Joseph & Parui from Sri Lanka.

Type species : Location of types not known.

Key to species of *Clinopogon* Bezzi

1	Scutellar disc with abundant, fine, long, pale yellow piles, legs wholly black <i>nicobarensis</i> (Schiner)
–	Scutellar disc without fine piles, legs black with basal yellowish-brown marking on tibia..... <i>odontoferus</i> Joseph & Parui

78. *Clinopogon nicobarensis* (Schiner)*

1868. *Stichopogon nicobarensis* Schiner, *In. Reise der Osterreichischen Fregatte Novara, Dipt.*, :161. Type locality : Kondul, Nicobar Islands.
1975. *Clinopogon nicobarensis* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 128.
1990. *Clinopogon nicobarensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 35.

Female : Resembles *Stichopogon arganteus* Say except in the following : it is somewhat bigger, the wings are quite glass bright. The veins are black, the fourth hind border cell is not stalked, but broadly set at the base. All other features are like one mentioned.

Material : ♀, Nicobar : Kondul.

Discussion : So far *Clinopogon Bezzi* is represented by two species *C. nicobarensis* (Schiner) and *C. odontoferus* Joseph & Parui, from India and adjacent countries. The former differs from the latter in the presence of long piles on the scutellar disc and the wholly black legs.

Distribution : India (Nicobar Islands).

Types : Location of types not known.

79. *Clinopogon odontoferus* Joseph & Parui

(Fig. 76)

1984b. *Clinopogon odontoferus* Joseph & Parui, *Oriental Ins.*, **18** : 55. Type locality : Mahaveli River, Peradeniya, Sri Lanka.

A small, black, heavily infuscated grey or greyish-yellow species with similarly coloured legs and more or less wholly lightly infuscated wings. Male : length 5-6 mm, wing 4-5 mm; female : length 7-8 mm, wing 6 mm.

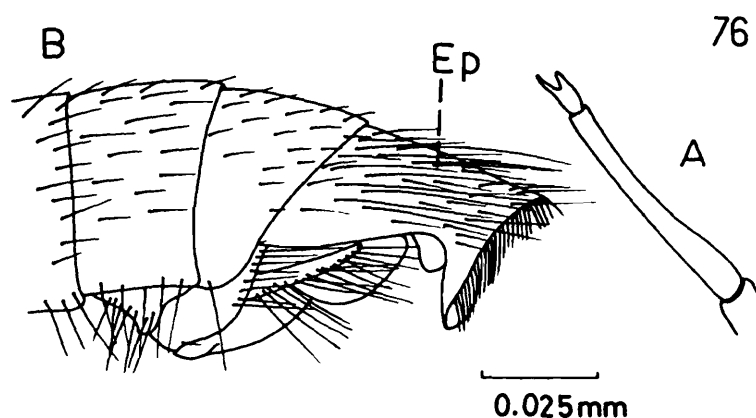


Fig. 76 : *Clinopogon odontoferus* Joseph & Parui : A, antenna; B, lateral view of male genitalia.

Males : *Head* black, grey or greyish-yellow tomentose; mystax white; front above antennae wide, velvet black, ocellar bristles black, postcranium with black bristles and setae above and white setae below. Antennae black, scape and pedicel with pale yellow setae and one or two dark brown bristles, scape shorter than pedicel, first flagellomere elongate and bears an apical microsegment, the latter carrying a subapical projection (Fig. 76A). Palpus and proboscis black, their setae sparse, pale yellow.

Thorax black with grey and greyish-yellow tomentum; pronotum with sparse pale yellow setae on sides; scutum medially greyish-yellow and on sides grey, devoid of mediolongitudinal stripe, vestiture black except for some pale yellow setae on humeri, bristles black; pleura dense grey tomentose; scutellum greyish-yellow tomentose, disc bare, hind border with some pale yellow or dark brown setae but without bristles; laterotergite with pale yellow and black bristles. Haltere pale yellow, stalk paler.

Legs black with grey tomentum but for the basal yellowish-brown marking of tibia, vestiture pale yellow, bristles black and pale yellow, tarsal segments 1 and 2 ventrally with a mat of white or pale yellow setae.

Wing more or less uniformly lightly infuscated.

Abdomen black with grey markings, terga laterally grey, their hind margins narrowly yellowish-brown, tergum 1 grey and greyish-yellow tomentose except for a median black area; tergum 2 with anterior triangular grey marking, tergum 3 with or without a narrow, transverse grey marking, anteriorly, terga 4 and 5 with anterior grey marking, tergum 8 almost wholly grey tomentose, vestiture pale yellow and black, terga 1 and 2 laterally with long pale yellow setae, the former also with one or two black bristles. Male genitalia (Fig. 76B) distinctive, epandrium apically with short bristles.

Females : Similar to male, but yellowish-brown marking of tibia more pronounced; tergum 9 with four pairs of black blunt spines.

Material examined : *Holotype* ♂ Sri Lanka : Kandy District: Peradeniya : Mahaveli River, 22-24.ii.1974, Coll. A.E. Stubbs & P.J. Chandler. *Paratypes* 3 ♂ (one without head), 3 ♀, data as in holotype; 1 ♂ 25.ii.1974, rest of data as in holotype.

Discussion : Though this species is retained under the genus *Clinopogon* Bezzi, it has a rather characteristic antennal microsegment; in this respect it is not only different from other species of the genus, but also from all other genera of Stichopogonini. *Clinopogon* Bezzi and *Stichopogon* Loew share many common characters that they may not merit generic identities.

Distribution : Sri Lanka (Kandy District).

Types : In the Collection of the Natural History Museum, London.

Genus 21. *Stichopogon* Loew, 1847

- 1847. *Stichopogon* Loew, *Linn. Ent.*, **2** : 499. Type-species : *Dasypogon elegantulus* Wiedemann, 1820, original designation.
- 1975. *Stichopogon* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 129.
- 1988. *Stichopogon* : Joseph & Parui, *Oriental Ins.*, **22** : 87.
- 1990. *Stichopogon* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 41.

Members of this genus are minute flies of dark colour and are banded with grey tomentum; compound eyes strongly convex with greatly enlarged anterior eye facets; mystax a single row of mat-like epistomal bristles; frons and vertex strongly divergent; antenna small and slender, scape and pedicel short, subequal, first flagellomere about twice the combined length of scape and pedicel, style spine tipped and about half the length of first flagellomere; palpus two segmented; proboscis stout and cylindrical. Scutum shining, infuscated with tomentum to a varying extent, laterotergite with a transverse row of bristly setae. Femur stout, especially of fore and mid legs. Marginal cell open, fourth posterior cell closed with a long stalk, ambient vein complete, alula absent. Abdomen robust, nearly as broad as thorax, tomentose with fine appressed pile which are longer on tergum 1; epandrium turned

downward and form a hood-like cover of the male genitalia; in female tergum 8 with a circlet of spines, sternum 9 with terminal lamellae which may or may not bear tuft of golden setae.

Discussion : *Stichopogon* Loew is allied to *Clinopogon* Bezzi, their affinities are discussed under the latter. The female genitalia of the former is distinctive in possessing lamellae.

Distribution : It is a widely distributed species occurring in all the zoogeographical regions, the maximum number being reported from Palaearctic Region. From India and adjacent countries so far 15 species have been recorded. In India they are recorded from most of the states.

Type species : Location of types not known.

Key to species of *Stichopogon* Loew

1. Fore femur partly or wholly orange or yellow.....2
- Fore femur black..... 11
2. Lamella of female rather bare with pointed tuft of golden setae.....*meridionalis* Oldroyd
- Lamella of female tomentose, without tuft of setae.....3
3. Wing hyaline with some dark brown patches..... 4
- Wing without dark patch.....5
4. Antennal scape and pedicel pale yellow, remainder black, scutellum bears a row of marginal bristles, wing with two dark brown markings.....*basiti* Joseph & Parui
- Antenna dark brown, scutellum bears dense long marginal bristles, wing with three dark brown markings.....*ramakrishnai* Joseph & Parui
5. All femora and antenna wholly orange.....*eluruensis* sp. nov
- All femora not orange.....6
6. Antenna wholly black..... 7
- Antenna not wholly black.....8
7. Female genitalia black except pale yellow lamella, lamella conically produced, all tibiae pale yellow except dark brown apex of hind tibia.....*mukherjeei* Joseph & Parui
- Female genitalia black, lamella round at apex, all tibiae pale yellow with black apex.....*oldroydi* Joseph & Parui
8. First flagellomere yellow to orange.....9
- First flagellomere black..... 10
9. Thorax and fore femur orange, eighth tergum bears uniformly distributed setae.....*mahatoi* Joseph & Parui
- Thorax black, fore femur yellowish-brown with black marking dorsally, setae on eighth tergum not uniformly distributed.....*menoni* Joseph & Parui

10. Fore femur black dorsally on distal two-thirds, rest orange, all tibiae orange except black apex on hind tibia.....*tomentosus* Oldroyd
- Fore femur black except pale yellow base, all tibiae pale yellow with black apex.....*bengalensis* Joseph & Parui
11. Tibiae uniformly black, scutellar border bears dense, long, white piles.....*albimystax* Joseph & Parui
- Tibiae pale yellow with dark apex, scutellar border bears a row of piles..... 12
12. Female lamella bears a tuft of setae..... 13
- Female lamella without tuft of setae..... 14
13. Tuft of setae on lamella fringing all upper margin.....*inaequalis* (Loew)
- Tuft of setae on lamella in spindle form.....*biharilali* Joseph & Parui
14. Antenna orange except blackish style, mystax white in female and bright golden yellow in male.....*gymnurus* Oldroyd
- Antennal scape and pedicel black, first flagellomere brown with black upper side, mystax straw coloured.....*indicus* Joseph & Parui

80. *Stichopogon albimystax* Joseph & Parui

(Fig. 77)

1988. *Stichopogon albimystax* Joseph & Parui, *Oriental Ins.*, 22 : 88. Type locality : Rudpur, Nainital District, Western Himalaya.
1990. *Stichopogon albimystax* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 42.

A medium black species with dense greyish-white tomentum, black with densely greyish-white tomentose legs, and light brown wings. Male : length 8 mm, wing 6 mm.

Male : *Head* as broad as thorax, black with grey tomentum leaving an indistinct black area on either side of the ocellar triangle and a mediolongitudinal black stripe extending from ocelli to occipital foramen; mystax white; fronto-orbital plate white setose, ocellar bristles white, occipital setae white, some of which are well developed and form bristles, postgena white setose. Antenna damaged, one antenna lost from first flagellomere, antenna dark brown with grey tomentum, scape about two-thirds of pedicel, first flagellomere slightly longer than one and-a-half times the combined length of scape and pedicel, style a little longer than half of first flagellomere. Palpus and proboscis black, the latter sparsely white setose.

Thorax black, grey tomentose; pronotum white setose; scutum with a faint black mediolongitudinal stripe, which is longitudinally divided by a faint grey stripe, laterally with two large confluent spots, setae sparse, white, bristles yellow; scutellum sparsely greyish-white tomentose, disc bare, hind border with dense long white setae; pleura densely greyish-white tomentose, laterotergite with a transverse row of long white setae. Haltere pale yellow with yellowish-brown head.

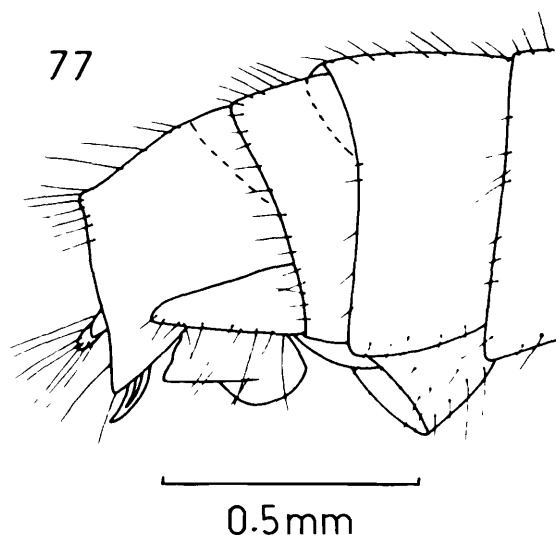


Fig. 77 : *Stichopogon albimystax* Joseph & Parui, lateral view of male genitalia.

Legs black with densely greyish-white tomentum; fore tibia with 2-3 posterior bristles, mid tibia with 3 anterior and 4 ventral bristles, setae and bristles white.

Wing light brown, but posterobasally hyaline.

Abdomen black, greyish-white tomentose, tergum 1 almost completely greyish-white tomentose except for a basomedian brown mark; tergum 2 with a median large triangular and lateral small greyish-white tomentose marks, remaining black; terga 3-5 with anterior greyish-white tomentum and the rest black, remaining terga black with sparse grey tomentum. Male genitalia (Fig. 77) figured.

Material examined : Holotype ♂ Z.S.I. Reg. No. 1752/H1, Western Himalaya; Nainital District : Rudpur, 18.iv.1910, Coll. Museum Collector.

Discussion : Of all the known Indian species of *Stichopogon*, *S. albimystax* Joseph & Parui is similar to *S. inaequalis* (Loew), from which it differs in the large size, uniformly black tibia and in the densely setose scutellum. The species was named and registered by Brunetti but without publishing.

Distribution : India (Uttar Pradesh).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

81. *Stichopogon basiti* Joseph & Parui

(Fig. 78)

1992. *Stichopogon basiti* Joseph & Parui, *Rec. zool. Surv. India*, **91** (1) : 96. Type locality : Jaipur, Rajasthan.

A tiny, densely grey or greyish-yellow tomentose species with pale yellow legs with dark brown or black markings, wings with two brown spots, and abdomen with a broken, mediolongitudinal, black or dark brown stripe; in female lamella without tuft of setae.

Females : *Head* broader than thorax, densely greyish-white or greyish yellow tomentose; mystax white, fronto-orbital plate with white bristles and setae, ocellar setae white, postcranium with white setae, postocular bristles white and confined to above, postgena with white setae. Antennal scape and

pedicel pale yellow, remainder black, pedicel bearing a few white bristles, scape very short, about one-fourth the length of pedicel, first flagellomere long, longer than one and-a-half times the combined length of scape and pedicel. Palpus and proboscis black with sparse, white setae.

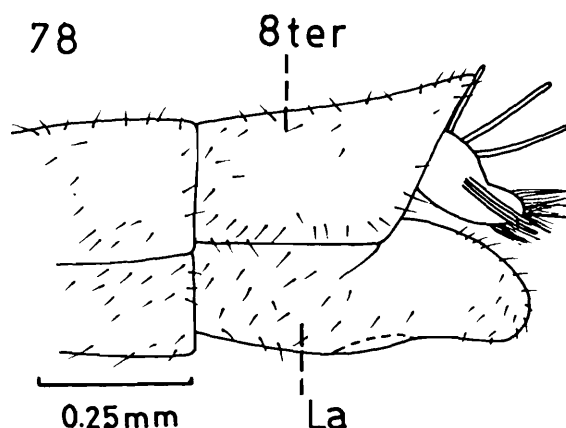


Fig. 78 : *Stichopogon basiti* Joseph & Parui, lateral view of female genitalia.

Thorax black, greyish-yellow and grey tomentose; pronotum with a median transverse row of white, bristly setae; scutum without mediolongitudinal stripe and lateral spots in holotype but with a faint, black mediolongitudinal stripe extending from anterior border to transverse suture in paratype; chaetotaxy: 1 notopleural, 1 postalar, 1 supra-alar, 1 dorsocentral; vestiture and bristles white; scutellar disc bare, hind border with a few, long, white setae and 8 white bristles; laterotergite with a row of elongate bristly setae. Haltere yellowish-brown or pale yellow.

Legs pale yellow with dark brown or black marking, fore and mid femora pale yellow or pale yellow with dark infuscation medially for about one-third length, hind tibia basally pale yellow and distally black or dark brown for about half or lesser than that, tarsal segments yellowish-brown with apical 1 or 2 segments black, vestiture and bristles white.

Wing lightly infuscated with two brown spots; one at the origin of R_4 , and the other at the junction between discal, 2nd posterior and 3rd posterior cells.

Abdomen black or dark brown with grey and greyish-yellow tomentum, medially with a broken, black or dark brown stripe from terga 1-6, tergum 7 with the stripe faint, and succeeding tergum without it, tergum 7 mostly and tergum 8 wholly tomentose, hind border of terga with a narrow grey or yellowish-brown border, tergum 1 posterolaterally with a few, long, white setae. Female genitalia (Fig. 78) with tergum 8 bearing a circlet of ten spines; lamella without tuft of setae.

Material examined : *Holotype* ♀, Z.S.I. Reg. No. 7669/H6, Rajasthan: Jaipur, 3.x.1986, Coll. A.N.T. Joseph and Party. *Paratype* ♀, Reg. No. 7670/H6, rest of details as in holotype.

Discussion : This species closely resembles *Stichopogon ramakrishnai* Joseph & Parui but can be readily distinguished by the pale yellow scape and pedicel and the presence of two brown markings on wing. It is named in honour of Shri Abdul Basit, our colleague in Jodhpur, who has taken some excellent photographs on insects.

Distribution : India (Rajasthan).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

82. *Stichopogon bengalensis* Joseph & Parui

(Fig. 79)

1997. *Stichopogon bengalensis* Joseph & Parui, *Rec. zool. Surv. India*, Part 7 : 99. Type locality : Parbatidanga, Malda District, West Bengal.

A tiny black species with dense grey tomentum, black and pale yellow legs and lightly infuscated wings. Male : length 3.5 mm, wing 2.5 mm; female : length 4 mm, wing 3 mm.

Female : *Head* broader than thorax, black with dense greyish-white tomentum; mystax white; fronto-orbital setae white, ocellar bristles pale yellow, postcranium white setose, postocular bristles restricted to above, postgena with dense white setae. Antennal scape and pedicel dark brown with grey tomentum, the latter white setose, first flagellomere black, slightly longer than the combined length of scape and pedicel. Palpus and proboscis black, almost bare.

Thorax black, densely grey tomentose; pronotum with a few white setae laterally; scutum with a faint mediolongitudinal black stripe extending from anterior border to beyond the transverse suture, laterally with three large black spots in a longitudinal row; chaetotaxy: 1 notopleural, 1 supra-alar, 1 postalar; vestiture brown or white, bristles pale yellow or white; scutellum sparsely grey tomentose, hind border with white setae, a pair of which form bristly setae; pleura with dense grey tomentum. Haltere white.

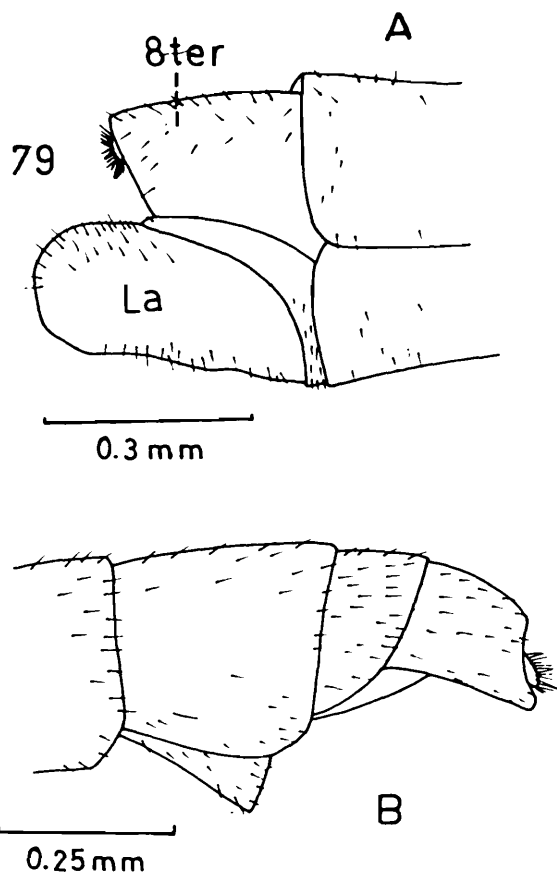


Fig. 79 : *Stichopogon bengalensis* Joseph & Parui :
A, lateral view of female genitalia; B, lateral view of male genitalia.

Legs black and pale yellow; coxa black, trochanter yellowish-brown, femur black with extreme base pale yellow, tibia pale yellow with black apex which is comparatively extensive on hind tibia, tarsal

segments pale yellow with black apex, in hind leg the distal segments completely black, vestiture and bristles white.

Wing lightly infuscated distally and hyaline basally.

Abdomen black with grey tomentum, terga 1, 7 and 8 nearly completely grey, remainder predominantly black with grey tomentum on all sides which is very narrow on hind border, the black medially extends to anterior border, tergum 1 with a few, long, white, posterolateral setae, vestiture white and brown. Genitalia (Fig. 79A) illustrated; lamella without tuft of setae.

Male : Similar but with the following differences: antenna wholly black, first flagellomere equal to the combined length of scape and pedicel; mediolongitudinal stripe of scutum indistinct, scutellum bare; abdomen with much less grey tomentum. Genitalia (Fig. 79B) black.

Material examined : *Holotype* ♀, Z.S.I. Reg. No. 7486/H6, West Bengal: Malda district : Parbatidanga, 27.vi. 1987, Coll. P. Parui. *Paratypes* 1 ♂, Reg. No. 7487/H6, rest of data as in holotype; 1 ex. Reg. No. 7488/H6, broken off from mid of abdomen and sex cannot be ascertained, details as in holotype.

Discussion : This species is closely similar to *Stichopogon tomentosus* Oldroyd but can be distinguished from it by the black fore femur except pale yellow base and the pale yellow tibiae with black apex. It is also closely similar to *S. indicus* Joseph & Parui, from which it can be readily told by the smaller size, black first flagellomere and details of genitalia.

Distribution : India (West Bengal).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

83. *Stichopogon biharilali* Joseph & Parui

(Fig. 80)

1992. *Stichopogon biharilali* Joseph & Parui, *Rec. zool. Surv. India* 91 (1) : 97. Type localities : Alwar and Ajmer Districts, Rajasthan.

A tiny black species with greyish-white tomentum, black and pale yellow or yellowish-orange legs, and faintly infuscated wings; in female lamella with closely matted setae in a spindle-like tuft. Male : length 3 mm, wing 2.5 mm; female : length 4-5 mm, wing 3-3.5 mm.

Females : *Head* broader than thorax, black, grey tomentose, specimens with dense grey tomentum with a mediolongitudinal black line extending from ocellar triangle to occipital foramen; mystax white except in one paratype it being pale yellow, frontoorbital setae and ocellar bristles white, postcranium with white setae, postocular bristles white and confined to above, postgena with white setae. Antennal scape and pedicel pale yellow to yellowish-brown with sparse white setae, remainder black, scape less than half to slightly more than half of pedicel, first flagellomere long, about one and-a-half times the length of scape and pedicel combined. Palpus and proboscis black, latter with sparse white setae.

Thorax black, grey and greyish-yellow tomentose; pronotum with sparse white setae; scutum with a narrow mediolongitudinal stripe extending from anterior border to transverse suture, the breadth and length of which quite variable, laterally with or without 2 black spots; chaetotaxy: 1 notopleural. 1 postalar, 1 supra-alar; vestiture sparse, white, bristles white or pale yellow; scutellar disc bare, border

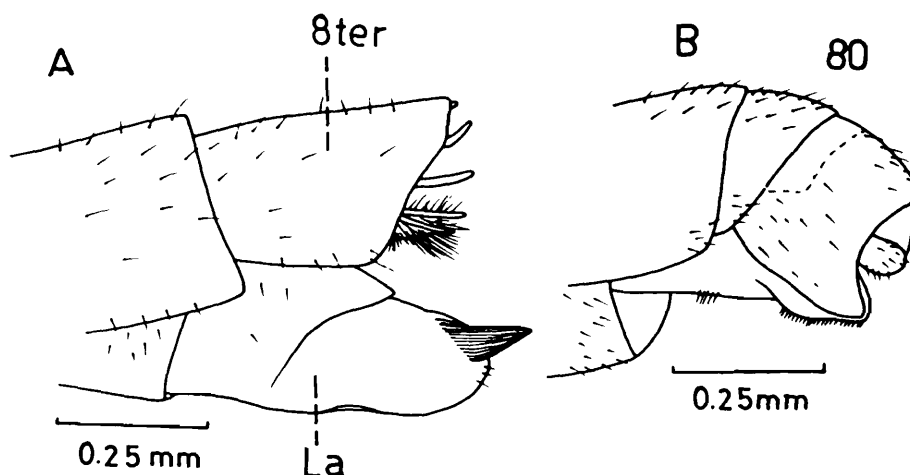


Fig. 80 : *Stichopogon biharilali* Joseph & Parui :
A, lateral view of female genitalia; B, lateral view of male genitalia.

with a few elongate setae, 2 or 4 of which may form bristly setae; laterotergite with a few, elongate, white bristly setae. Haltere pale yellow in most of the cases, but in one example yellowish-brown and in the other white.

Legs black and yellowish-orange or pale yellow, coxa, trochanter and femur black, tibia yellow with black apex, the black colouration increases from fore to hind tibiae so much so in the latter one-third or more black, vestiture and bristles white.

Wing faintly infuscated.

Abdomen black, greyish-white pollinose, in typical case as in holotype tergum 1 greyish-white pollinose with a median black mark, terga 2-6 black, on anterior border with a medially incomplete greyish-white stripe and laterally greyish-white, tergum 7 similar but hind border also greyish-white so much so the black area much reduced, tergum 8 completely greyish-white, the extent of black and greyish-white areas quite variable from specimen to specimen. Female genitalia (Fig. 80A) figured, tergum 8 with a circlet of ten spines; lamella with closely matted setae in spindle-like tuft.

Male : Similar except the border of scutellum with 6 bristly setae; abdomen with much less greyish-white pollinose so much so terga 4-6 almost wholly black, tergum 7 with greyish-white restricted to hind border, terga 8 and 9 almost wholly greyish-white. Male genitalia (Fig. 80B) illustrated.

Material examined : *Holotype*. ♀, Z.S.I. Reg. No. 7671/H6, Rajasthan: Alwar District : Prathapgarh, 1.x.1986, Coll A.N.T. Joseph & Party. *Paratypes* 3 ♀, Reg. No. 7672/H6 to 7674/H6, rest of details as in holotype; 2 ♂, 1 ♀, Reg. No. 7675/H6 to 7677/H6, Ajmer : Beer Tank, 20.ix.1986, Coll. A.N.T. Joseph.

Discussion : The species is similar to *Stichopogon inaequalis* (Loew) but can be readily told by the spindle-shaped tuft of setae on lamella of female. In the presence of spindle-shaped tuft of setae on lamella it is similar to *S. meridionalis* Oldroyd but the present species falls to the group of species with fore and mid femora black. It is named in honour of our colleague Mr Biharilal, who had helped us in several ways to make our Rajasthan Survey successful.

Distribution : India (Rajasthan).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

84. *Stichopogon eluruensis* Joseph & Parui

(Fig. 81)

1997. *Stichopogon eluruensis* Joseph & Parui, *Colemania Insect Biosystematics*, No. 5 : 9. Type locality : Eluru, Andhra Pradesh.

A small, black species with orange legs, light brown wings and sparsely grey tomentose abdomen: lamella without tuft of setae. Female : length 7 mm, wing 4 mm.

Female : *Head* broader than thorax, sparsely grey tomentose; mystax pale yellow, frontoorbital setae white, ocellar bristles missing, postocular bristles white, postcranium with sparse white setae. postgena bearing dense white setae. Antenna orange, scape short, less than half of pedicel, first flagellomere about one and-a-half times the combined length of scape and pedicel. Palpus and proboscis black with white setae.

Thorax black, effaced and so presence of tomentum cannot be ascertained; pronotum laterally bearing white setae, other setae lost as pronotum effaced; scutum also effaced and the presence of mediolongitudinal stripe and lateral spots cannot be ascertained, vestiture black and pale yellow, bristles pale yellow : chaetotaxy : 1 notopleural, 2 postalar; scutellum with a row of pale yellow setae on border, disc nearly bare. Haltere pale yellow.

Legs orange except apical tarsomere being dark brown, vestiture and bristles white.

Wing light brown.

Abdomen black, extreme hind border of terga from 1-6 lighter coloured; tergum 1 posterolaterally with 3 white bristles. Genitalia (Fig. 81) with tergum 8 bearing a circlet of ten spines; lamella without tuft of setae.

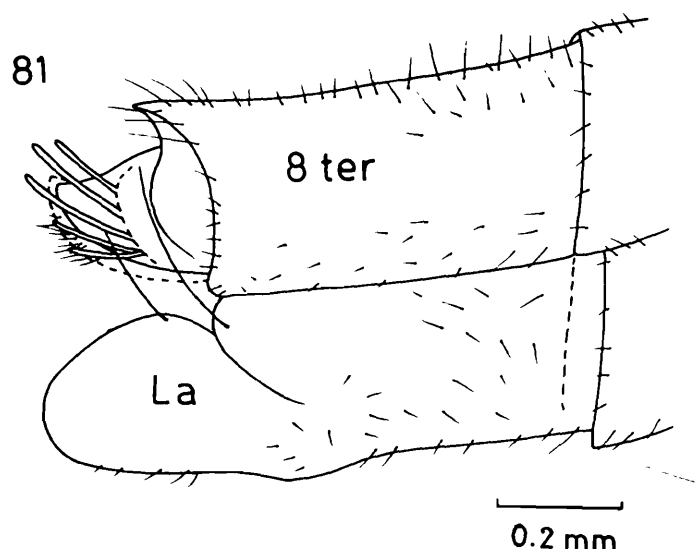


Fig. 81 : *Stichopogon eluruensis* Joseph & Parui, lateral view of female genitalia.

Material examined : Holotype ♀, No. B 361, Andhra Pradesh: 12 km N. Eluru, 17 .viii. 1985, Coll. K. Ghorpade.

Discussion : Among the species with tuft of setae on lamella of female and fore femora not wholly black, *Stichopogon eluruensis* Joseph & Parui can be readily separated by the wholly orange antenna and

femora, and in the details of female genitalia. It is similar to *S. tomentosus* Oldroyd from which it differs in the wholly orange antenna, femur and tibia.

Distribution : India (Andhra Pradesh)

Type : In the Collection of Dr K. Ghorpade, Bangalore.

85. *Stichopogon gymnurus* Oldroyd

(Fig. 82)

1948. *Stichopogon gymnurus* Oldroyd, *Entomologist's mon. Mag.*, **84** : 262. Type locality: Dohnavur, Tinnelvalley District, Tamil Nadu.

1988. *Stichopogon gymnurus* : Joseph & Parui, *Oriental Ins.*, **22** : 89.

1990. *Stichopogon gymnurus* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 42.

A small, dark brown, grey tomentose species with pale yellow legs, femora dusky, and faintly infuscated wings; female lamella without tuft. Female : length 8 mm, wing 5 mm.

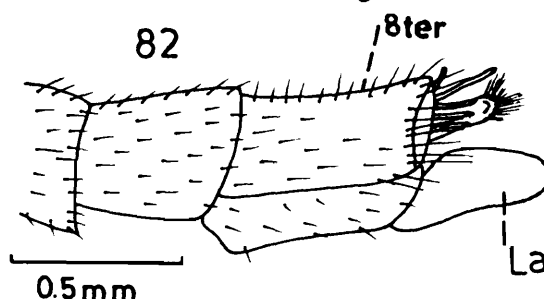


Fig. 82 : *Stichopogon gymnurus* Oldroyd, lateral view of female genitalia.

Female : Head broader than thorax, dark brown infuscated with grey tomentum leaving a mediolongitudinal dark brown line extending from the ocellar triangle to occipital foramen; mystax white; frontoorbital plate with white setae, ocellar bristles lost, postcranium white setose, postocular bristles white and confined to above, postgena with dense white setae. Antenna dusky with scape and pedicel comparatively lighter coloured, scape and pedicel with white bristles, scape short, about one-third length of pedicel, first flagellomere long, about twice the combined length of scape and pedicel, style short. Palpus dark brown, proboscis black, both with white setae.

Thorax dark brown, grey tomentose; pronotum medially with a transverse row of white bristles, laterally sparsely white setose, scutum with a mediolongitudinal greyish-yellow tomentose band extending from anterior border to two-thirds, anteriorly it is longitudinally divided by a black line which gradually narrows and disappears anterior to the transverse suture, lateral spots faintly marked, setae black but for some white setae laterally, bristles pale yellow; scutellum with the disc bare, hind border bearing a row of white setae; pleura densely greyish-white tomentose, laterotergite with a transverse row of white bristles. Haltere pale yellow, stalk lighter coloured.

Legs pale yellow, grey tomentose, femora dusky, apex of fore and mid tibiae and distal half of hind tibia dusky, tarsal segments of all legs dusky, setae and bristles white.

Wing more or less uniformly faintly infuscated.

Abdomen dark brown with grey tomentum, tergum 1 laterally grey tomentose and medially dark brown, terga 2 and 3 medially dark brown, anterior border with a medially incomplete grey stripe, posterior border with a complete narrow grey stripe and laterally grey, tergum 4 similar to the preceding tergum but lacking posterior grey stripe, terga 5 and 6 anteriorly and laterally grey tomentose and the remainder dark brown, terga 7 and 8 completely grey tomentose, tergum 1 laterally with white setae and white bristles, vestiture white and black depending upon the background of their origin. Female genitalia (Fig. 82) with the eighth tergum bearing a circlet of ten spines, of which the median two spines quite short; lamella without tuft.

Material examined : *Holotype* ♀, S. India : Tinnelvalley District : Dohnavur, 107 m, 10.x.1938, Coll. B.M.C.M. Expdn. to S. India, Sept-Oct. 1938.

1 ♂ Tamil Nadu; Coimbatore, 7.ii.1949, Coll. P. Susai Nathan (S.I.), 2 ♂ 1 ♀, Tamil Nadu : Nagarcoil, 15 m, 26.iii.1962; 1 ♂ 1 ♀, Tirunelveli District, 27.iii.1962, all Coll. E.S. Ross and D.Q. Cavagnaro (C.A.S). 2 ♂ Tamil Nadu : Maruthamalai, 488 m, 3.vii.1982; 1 ♂, Karnataka : Bangalore, 916 m, 2.vi.1984; 2 ♀, Tamil Nadu: 12 km N. Salem, 26.iv.1984; 1 ♂ Bangalore, 14.vi.1985; 2 ♀, Tamil Nadu: Shevaraya Hills, 800-1400 m, 19-21.vi.1985, all Coll. K. Ghorpade (Ghorpade C.). 2 ♂ 4 ♀ Andhra Pradesh: Visakhapatnam District: Lakhimpatti Rajupeta, 23.ii.1986; 1 ♂, 3 ♀, Polavaram Beach, 23.ii.1986; 7 ♂ 16 ♀, Araku Valley : Ananthagiri, 900 m, 28.ii.1986; 2 ♂, 3 ♀, Vizianagaram District: Thinnukarja Forest, 4.iii.1986, all Coll. A.N.T. Joseph (Z.S.I.).

Discussion : Of all the species with black fore femur the present species is similar to *Stichopogon indicus* Joseph & Parui, but differs from the latter by the orange antenna except blackish stylè, white to bright golden yellow mystax and details of genitalia.

Distribution : India (Andhra Pradesh, Karnataka and Tamil Nadu); Sri Lanka.

Type : In the Collection of the Natural History Museum, London.

86. *Stichopogon inaequalis* (Loew)

(Fig. 83)

1847. *Dasypogon inaequalis* Loew, Linn. Ent., 2 : 505. Type localities : Portugal; Greece.

1948. *Stichopogon inaequalis* : Oldroyd, Entomologist's mon. Mag. 84 : 262.

1983. *Stichopogon inaequalis* : Joseph & Parui, Oriental Ins. 17 : 325.

1990. *Stichopogon inaequalis* : Joseph & Parui, Rec. zol. Surv. India, Occ. Paper No. 113 : 42.

A small, black and brown species with white tomentum, legs with dark brown femur and pale yellow tibia and wings light brown and hyaline; female lamella with extended tuft of setae. Male : length 5 mm, wing 4 mm; female : length 7 mm, wing 6 mm.

Females : Head broader than thorax, white tomentose; mystax white; frontoorbital plate white setose, ocellar bristles white, postocular bristles not developed, posterior to ocellar triangle with a transverse row of white bristles extending across the breadth, postcranium with sparse white setae.

postgena with dense, short, white setae. Antenna dark brown with the scape and pedicel comparatively lighter coloured, pedicel with white bristly setae, scape slightly longer than half of pedicel, first flagellomere a little longer than combined length of scape and pedicel, style short and about half the length of first flagellomere. Palpus yellowish-brown, proboscis black, both sparsely white setose.

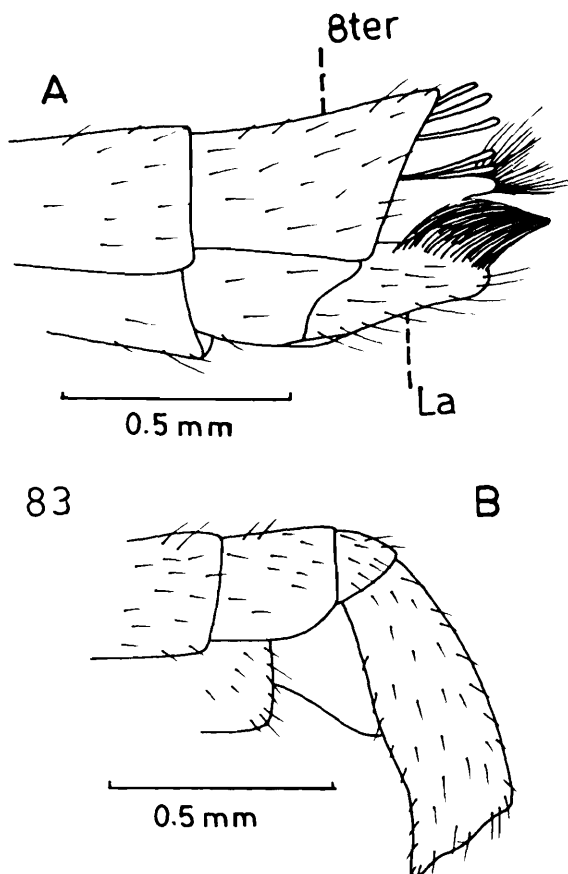


Fig. 83 : *Stichopogon inaequalis* (Loew) :
A, lateral view of female genitalia; B, lateral view of male genitalia.

Thorax black, white tomentose; pronotum with a median transverse row of white bristly setae; scutum with a faint mediolongitudinal black stripe from anterior border to one-third distance, submedially at the anterior border with two short black vittae, vestiture white and bristles pale yellow; scutellum with the disc bare, hind border with a row of long, white setae; pleura densely white tomentose, laterotergite with a transverse row of white bristly setae. Haltere white with pale yellow at apex of knob.

Legs dark brown and pale yellow; coxa, trochanter and femur dark brown infuscated with dense grey tomentum, tibia pale yellow with dark brown apex, the intensity of dark brown increases from fore to hind tibia, tarsus with the basal segments yellowish-brown and dark brown, the extent of latter colour increases in distal segments so much so they are entirely dark brown, fore and mid tibiae with 2 posteroventral bristles, one near middle and other at apex, vestiture and bristles white.

Wing light brown anteriorly and distally while the rest nearly hyaline.

Abdomen greyish-white and brown; terga 1 and 8 greyish-white with former with an indistinct median brown mark, tergum 2 with broad triangular brown and terga 4 and 5 with comparatively small, triangular, median brown marking while the remaining densely greyish-white, terga 3, 6 and 7 wholly

brown, tergum 1 laterally with a bunch of white setae, vestiture white. Female genitalia (Fig. 83A) with the eighth tergum bearing a circlet of ten spines; lamella shining black brown with a broad tuft of setae fringing all dorsal margin.

Males : Quite similar but the brown marking of abdomen deeper; male genitalia figured (Fig. 83B).

Material examined : *Lectotype* ♀, (designated by Joseph & Parui, 1988), Coll H. Loew, no other details. *Paralectotype* ♀, details as in lectotype.

3 ♂, 3 ♀, Karnataka : 30 km S. Kanakapura, 20.v.1978, Coll. K.D. Ghorpade (Ghorpade C.). 1 ♀, Pondicherry : Mahenn, 9.x.1984; 1 ♀, Kerala : Calicut, 30.x.1984; 4 ♀, Andhra Pradesh, 9 km W. Araku, 900 m, 23.viii.1985; 1 ♂, 2 ♀, near Lattugodda Jot, 700 m, 24.viii.1985, all Coll. K. Ghorpade (Ghorpade C.). 1 ♂, Andhra Pradesh : West Godavari District; Eluru : Tamiladu River bed, 16.ii.1986; 6 ♀, Visakapatnam District : Lakhimpatti : Rajupeta, 23.ii.1986; 1 ♂ Araku Valley : Ananthagiri, 900 m, 1.iii.1986; 1 ♂, 1 ♀, Visakapatnam Sea Shore, 1.iii.1986; 1 ♂ 1 ♀ Vizianagaram District : Bobbli : Gurgi, 3.iii.1986, all Coll. A.N.T. Joseph (Z.S.I.). 1 ♂ 1 ♀, Rajasthan : Ajmer District : Gogal, 23.ix.1986; 4 ♂, 18 ♀, Swai Madhopur District : Pali : Chambal River bed, 27.ix.1986, all Coll. A.N.T. Joseph (Z.S.I.). 3 ♀, Gujarat : Mahesana District : Taranga Hills, 9.viii.1988; 5 ♂ 8 ♀, Gandhinagar District : Indrora Nature Park, 28.viii.1988; 1 ♀, Ahmedabad District : Vastrapur, 31.viii.1988, all Coll. A.N.T. Joseph (Z.S.I.). 1 ♀, Uttar Pradesh : Bulandshahr District : Gulawthi, 2.v.1989, Coll. M.S. Shishodia (Z.S.I.). 3 ♂ 3 ♀, Goa : Canacona : Palolen, 18.xi.1989; 4 ♂ 4 ♀, Goa : Vasco : Consaulin Beach, 24.xi.1989; 7 ♀, Goa : Panaji Mirmar Beach, 25.xi.1989; 2 ♂, 6 ♀, Pajani : Donapola, 26.xi.1989; 3 ♂ 1 ♀, Panaji : Bambolim, 29.xi.1989, all Coll. Joseph and Parui (Z.S.I.).

Discussion : The species can be readily distinguished from all other known species dealt with here by the tuft of setae fringing all the upper margin of lamella of female.

Distribution : India (Andaman Islands, Andhra Pradesh, Goa, Gujarat, Karnataka, Kerala, Pondicherry, Rajasthan and Uttar Pradesh); Sri Lanka; Palearctic Region.

Types : In the Collection of the Natural History Museum, London.

87. *Stichopogon indicus* Joseph & Parui

(Fig. 84)

1984. *Stichopogon indicus* Joseph & Parui, *Bull. zool. Surv. India*, 6 (1-3) : 249. Type locality : Ratnagiri, Maharashtra.

1990. *Stichopogon indicus* : Joseph & Parui, *Rec. zool. surv. India*, Occ. Paper No. 113 : 42.

A tiny black species with black and yellowish-brown legs and lightly infuscated wings. Male : length 5-6 mm, wing 4-5 mm; female : length 6-7 mm, wing 4-5 mm.

Female : **Head** broader than thorax, black with sparse yellowish tomentum above antennae and grey to greyish-yellow tomentum below them; mystax straw coloured; fronto-orbital setae white, ocellar bristles pale yellow, postcranium sparsely white setose and also with 4 pale yellow bristles, postgena white setose. Antennal scape and pedicel black, the latter grey tomentose with white bristles, first

flagellomere with its upper side black, first flagellomere much longer than the combined length of scape and pedicel. Palpus and proboscis black, the former bearing sparse pale yellow setae.

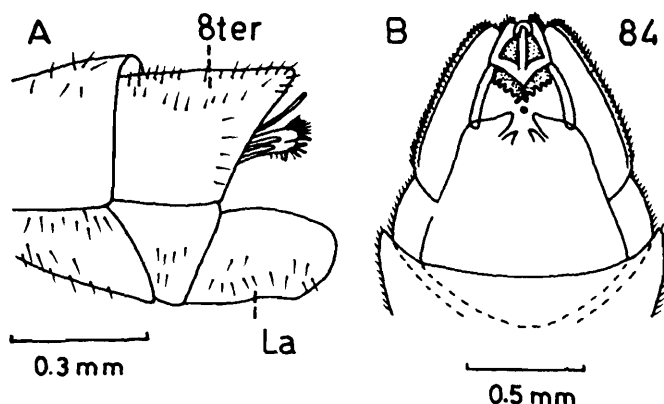


Fig. 84 : *Stichopogon indicus* Joseph & Parui :
A, lateral view of female genitalia; B, ventral view of male genitalia.

Thorax black, sparsely grey tomentose; pronotum with pale yellow setae anteriorly; scutum with sparse pale yellow vestiture and brown bristles; scutellum grey tomentose, disc bare, hind border bearing pale yellow setae; pleura sparsely grey tomentose. Haltere brownish tinged, stalk still lighter coloured.

Legs black and yellowish-brown; coxa to femur black, tibia yellowish-brown with black apex, tarsal segments black with yellowish-brown basal marking on basal 2-3 segments, vestiture as well as bristles pale yellow.

Wing lightly infuscated.

Abdomen black, terga laterally grey which occupies lesser area in posterior segments, tergum I on sides with long pale yellow setae, vestiture pale yellow. Genitalia (Fig. 84A) illustrated; lamella without apical tuft of setae.

Male : Similar but grey tomentum not so distinct; genitalia (Fig. 84B) similarly coloured like that of rest of abdomen.

Material examined : *Holotype* ♀, Z.S.I. Reg. No. 6920/H6, India : Maharashtra : Ratnagiri District : Ratnagiri, 7.vii.1981, Coll. P. Parui & P.H. Roy. Paratypes 1 ♀ 4 ♂ Reg. No. 6921/H6 to 6925/H6, rest of details as in holotype.

1 ♀, Assam : Chabua, 25.iv.1944, Coll. D.E. Hardy, (S.I.). 1 ♂ 1 ♀, Andhra Pradesh : 9 km W. Araku, 900 m, 23.viii.1985, Coll. K. Ghorpade (Ghorpade C.). 1 ♂, 2 ♀ Rajasthan : Swai Madhopur: Pali : Chambal River bed, 27.ix.1986, Coll. A.N.T. Joseph (Z.S.I.).

Discussion : The species is closely similar to *Stichopogon gymnurus* Oldroyd but differs in the black scape and pedicel, and the female, lamella devoid of apical tuft of setae.

Distribution : India (Andhra Pradesh, Assam, Maharashtra and Rajasthan).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

88. *Stichopogon mahatoi* Joseph & Parui

(Fig. 85)

1998. *Stichopogon mahatoi* Joseph & Parui, *Rec. zool. Surv. India* **97** (1&2) : 1-28. Type localities : Nagarjunkonda and Pakhal Forest Rest House, Andhra Pradesh.

A small, orange and black species with legs wholly orange or mid and hind femora with black marking, and light brown wings; female lamella without tuft of setae. Female : length 7-8 mm, wing 5 mm.

Female : Head as broad as thorax, black, sparsely grey tomentose; mystax pale yellow; frontoorbital plate bare, ocellar bristles pale yellow, postocular bristles pale yellow and confined to above, postcranium mostly bare but below white setose, postgena with dense white setae. Antenna orange with style black, first flagellomere longer than combined length of scape and pedicel. Palpus dark brown and yellowish-brown mixed, proboscis black, both white setose.

Thorax orange with black marking, sparsely grey tomentose; pronotum with a transverse row of white bristly setae; scutum with a broad incomplete mediolongitudinal black stripe, lateral black spots faintly marked; chaetotaxy: 1 notopleural, 1 postalar, 1 supra-alar; vestiture sparse white setae, bristles pale yellow; scutellar disc bare, hind border with setae and 4 pale yellow bristles; pleura sparsely grey tomentose; laterotergite with a transverse row of long, bristly white to pale yellow setae. Haltere with pale yellow to orange head, and pale yellow to dark brown stalk.

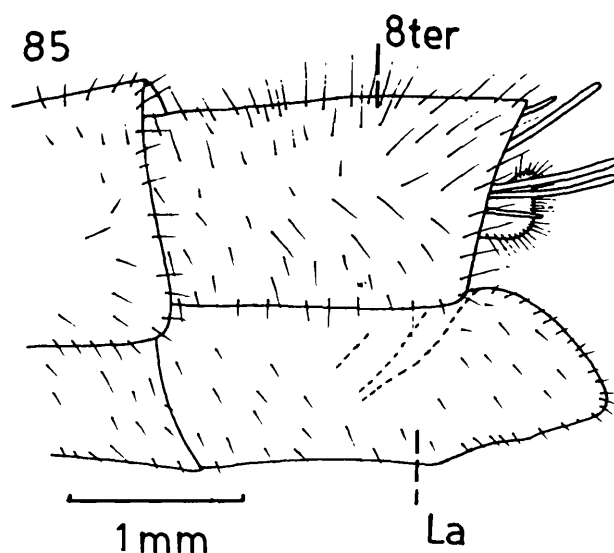


Fig. 85 : *Stichopogon mahatoi* Joseph & Parui, lateral view of female genitalia.

Legs wholly orange or with black marking on mid and hind femora, the intensity and extent of black colour quite variable, vestiture and bristles white.

Wing light brown.

Abdomen particuloured orange and black; tergum 1 black and orange to varying extent. terga 2-5 or rarely even upto 7 with large median, triangular shaped black marking and rest orange. remaining terga wholly black, tergum 1 laterally with a bunch of pale yellow setae, a few of which form bristles. vestiture black and pale yellow. Female genitalia (Fig. 85) with tergum 8 bearing a circlet of 10 spines; lamella without tuft of setae, not tomentose.

Material examined : Holotype ♀, Z.S.I. Reg. No. 7517/H6, Andhra Pradesh : Nalgonda District : Nagarjunkonda, 26.ix.1985, Coll. P. Parui. *Paratypes* 2 ♀, Reg No. 7518/H6, 7519/H6, details as in holotype; 2 ♀, Rg. No. 7520/H6, 7521/H6, Warangal District : Pakhal Forest Rest House, 4.vii.1985, Coll. P. Parui.

Discussion : *Stichopogon mahatoi* Joseph & Parui is similar to *S. menoni* Joseph & Parui but differs from it by the orange thorax and fore femur and by the uniformly distributed setae on eighth tergum. It also closely resembles *S. tomentosus* Oldroyd but can be readily distinguished by the shape of lamella. It is named after our colleague Mr. D.N. Mahato, who has collected many interesting robberflies.

Distribution : India (Andhra Pradesh).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

89. *Stichopogon menoni* Joseph & Parui

(Fig. 86)

1997. *Stichopogon menoni* Joseph & Parui, *Rec. zool. Surv. India*, Part 7 : 100. Type locality : Mahananda River side, Malda Town, West Bengal.

A very small black species with yellowish-brown legs with black markings and light brown wings. Male : length 6 mm, wing 4 mm; female : length 6-7 mm, wing 4-6 mm.

Female : *Head* as broad as or slightly broader than thorax; black with greyish-yellow and grey tomentum; mystax white; fronto-orbital setae and ocellar bristles white, postcranium white setose, also with white bristles, postgena white setose. Antennal scape, pedicel and first flagellomere yellowish-brown, remainder brown, pedicel with a few pale yellow bristles, combined length of scape and pedicel slightly longer than half of first flagellomere. Palpus and proboscis black with sparse white setae.

Thorax black, grey tomentose; pronotum with a transverse row of white bristly setae, scutum with a faint, narrow, mediolongitudinal black stripe, whose length quite variable and extending from almost the entire length to restricted to anterior and posterior parts; chaetotaxy: 1 notopleural, 1 postalar, 1 supra-alar; vestiture white and bristles pale yellow to white; scutellum with disc bare, hind border bearing pale yellow setae; pleura greyish-white tomentose, laterotergite with a few, elongate, pale yellow to white, bristly setae. Haltere white to pale yellow.

Legs yellowish-brown with black markings; coxa yellowish-brown mostly covered with black, femur yellowish-brown with black marking dorsally which decreases from fore to hind femur, in lighter coloured specimens black colour may be restricted to one femur or all femora almost wholly yellowish-brown, tibia yellowish-brown with black apex, the black colouration increases from fore to hind tibia, tarsus black except basitarsus being yellowish-brown, vestiture and bristles white.

Wing light brown.

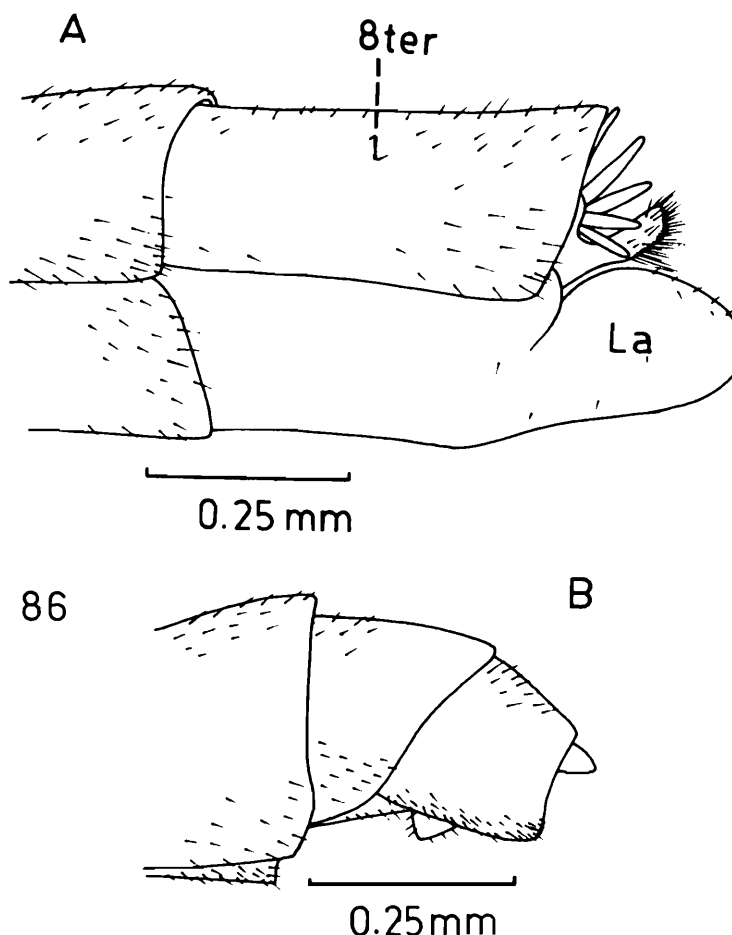


Fig. 86 : *Stichopogon menoni* Joseph & Parui :
A, lateral view of female genitalia; B, lateral view of male genitalia.

Abdomen black, laterally terga comparatively lighter coloured so much so in some paratypes it may be yellowish-brown, tergum 1 lightly grey tomentose with a few elongate, white setae posterolaterally, terga 2-6 laterally lightly grey tomentose, remainder lightly grey tomentose, vestiture white and black. Genitalia black, illustrated (Fig. 86A); lamella without tuft of setae.

Male : Similar, genitalia black, illustrated (Fig. 86B).

Material examined. : Holotype ♀, Z.S.I. Reg. No. 7546/H6, West Bengal : Malda Town : Mahananda River Side, 15.vi.1987, Coll. K.P. Mukherjee. Paratype 1 ♂ 4 ♀, Reg. No. 7565/H6 to 7569/H6, details as in holotype.

Discussion : This species is closely similar to *Stichopogon mahatoi* Joseph & Parui but differs from it by the black thorax, yellowish-brown fore femur with black marking dorsally and setae on eighth tergum not uniformly distributed. It also resembles *S. indicus* Joseph & Parui and *S. bengalensis* Joseph & Parui from both of which it can be differentiated by the wholly pale yellow first flagellomere, yellowish-brown femur with upper black marking and shape of lamella. It is named in honour of late Dr. M.G. Ramdas Menon, retired Systematist of Indian Agricultural Research Institute, New Delhi, for the many favours received by us during our studies on Diptera.

Distribution : India (West Bengal).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

90. *Stichopogon meridionalis* Oldroyd

(Fig. 87)

1948. *Stichopogon meridionalis* Oldroyd, *Entomologist's mon. Mag.* **84** : 261. Type locality: Karikal, Tamil Nadu.

1983. *Stichopogon meridionalis*: Joseph & Parui, *Oriental Ins.*, **22** : 91.

1990. *Stichopogon meridionalis*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 42.

A tiny black species with dense greyish-white tomentum, reddish-yellow legs and faintly infuscated wings; female lamella with closely matted setae in a spindle-like tuft. Female: length 6mm, wing 4 mm.

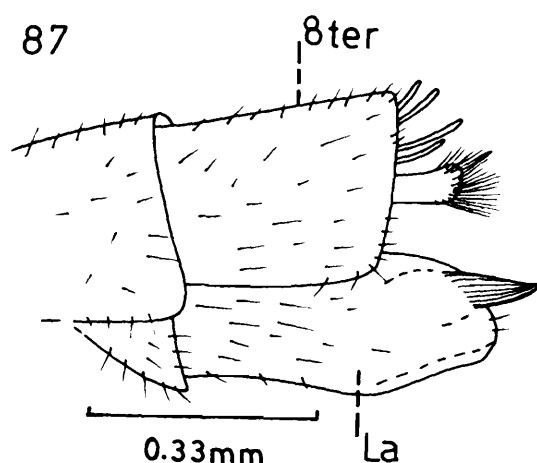


Fig. 87 : *Stichopogon meridionalis* Oldroyd, lateral view of female genitalia.

Females. Head broader than thorax, black, densely greyish-white tomentose leaving an indistinct black area on vertex on either side of the ocellar triangle and a mediolongitudinal black line extending from the ocellar triangle to occipital foramen; mystax white; frontoorbital plate white setose, ocellar bristles white, postcranium white setose, postocular bristles white and confined to above, postgena white setose. Antennal scape and pedicel white with sparse white setae ventrally and a pair of white setae on the apex of pedicel dorsally, first flagellomere and style dusky, scape short, about half the length of pedicel, pedicel swollen, first flagellomere long, about one and-a-half times the length of scape and pedicel, style short. Palpus and proboscis black, the latter sparsely white setose.

Thorax black, dense greyish-white pollinose; pronotum white setose with a median transverse row of pale yellow bristly setae; scutum with a faint black mediolongitudinal stripe, which is longitudinally divided by a grey stripe, lateral black spots small and faintly marked, setae sparse, white bristles yellow; scutellum greyish-white tomentose, disc bare, presence or absence of setae and bristles on the border cannot be ascertained as they are lost; pleura densely greyish-white tomentose, laterotergite with a transverse row of white bristles. Haltere white with pale yellow marking on head.

Legs reddish-yellow, in mid leg tarsal segment 2 onwards dusky, in hind leg apex of femur and tarsal segment 1 dusky and the remaining segments completely dusky, setae and bristles white with some of the bristles on the tarsi being pale yellow.

Wing faintly infuscated distally and posteriorly, rest hyaline.

Abdomen black, greyish-white pollinose, tergum 1 greyish-white pollinose, leaving a median black spot, terga 2-4 black, on anterior border with a medially incomplete greyish-white stripe, on posterior border with a narrow complete band of same colour and laterally broadly greyish-white, the area of pollinosity decreasing from anterior to posterior segments, terga 5 and 6 laterally and on posterior border only with similar pollinosity, but occupying still lesser area, tergum 7 with greyish-white on all sides leaving a median triangular black area, tergum 8 completely greyish-white pollinose, tergum 1 laterally with white setae and bristles, vestiture white. Female genitalia (Fig. 87) illustrated, eighth tergum bearing a circlet of eight spines; lamella with closely matted setae in a spindle-like tuft.

Males : Similar

Material examined : *Holotype* ♀, India : Tamil Nadu: Karikal: Kurrubarara, 19.xi.1946, Coll. P.S. Nathan

1 ♀, Karnataka: Bangalore, 916 m, 1.iii.1979, Coll. K.D. Ghorpade (Ghorpade C.). 1 ♀, Gujarat: Baroda, 14 km N, 14.x.1984; 1 ♀, Kerala : Calicut, 30.x.1984; 2 ♀, Andhra Pradesh : Visakhapatnam, 21.viii.1985, all Coll. K.D. Ghorpade (Ghorpade C.). 5 ♂, 19 ♀, Andhra Pradesh : West Godavari District : Eluru : Tamlaru River bed, 13-16.ii.1986; 7 ♂ Vizianagaram District : Bobbili : Gurji, 3.iii.1986; 2 ♀, Parbatipuram: Thinnukurja Forest, 4.iii.1986, all Coll. A.N.T. Joseph (Z.S.I.). 4 ♀, West Bengal: Malda District: Parbatidanga, 27.vi.1987, Coll. K.P. Mukherjee (Z.S.I.). 2 ♂ 1 ♀, Uttar Pradesh: Meerut District; Modi Nagar, 24.v.1986; 1 ♂, 2 ♀, Meerut District: Baghpat, 23.v.1989; 3 ♀, Bulandshahr District: Bulanshar: Gulawthi, 2.vi.1989, all Coll. M.S. Shishodia (Z.S.I.). 1 ♂ 8 ♀, Goa : Canacona: Palolen, 18.xi.1989; 6 ♂ 16 ♀, Margoa; Colva Beach, 21.xi.1989; 4 ♀, Goa : Vasco : Bogmalla Beach, 24.xi.1989; 3 ♂ 1 ♀, Goa : Panaji, 25.xi.1989; 4 ♂, 3 ♀, Panaji; Calangut Beach, 27.xi.1989; 5 ♀, Goa : Bambolin Beach, 29.xi.1989; 5 ♂ 2 ♀, Panaji, 29.xi.1989, all Coll. Joseph & Parui (Z.S.I.).

Discussion : *Stichopogon meridionalis* Oldroyd can be readily separated from any other species of this region by the presence of pointed tuft of golden setae on female lamella.

Distribution : India (Andhra Pradesh, Goa, Gujarat, Karnataka, Kerala, Tamil Nadu, Uttar Pradesh and West Bengal); Sri Lanka.

Type : In the Collection of the Natural History Museum, London.

91 *Stichopogon mukherjeei* Joseph & Parui

(Fig. 88)

1998. *Stichopogon mukherjeei* Joseph & Parui, *Rec. zool. Surv. India* **97** (1&2) : 1-28. Type localities : Tamlaru River bed and Sanivaram Forest, Andhra Pradesh.

A tiny black species with dense grey tomentum, pale yellow or pale yellow and black legs, and light brown tinged wings; female lamella without tuft of setae. Male : length 6 mm, wing 4-5 mm; female: length 6 mm, wing 4 mm.

Females : *Head* broader than thorax, dense greyish-white tomentose; mystax straw coloured; fronto-orbital setae and ocellar setae white, postocular bristles white and confined to above, postcranium

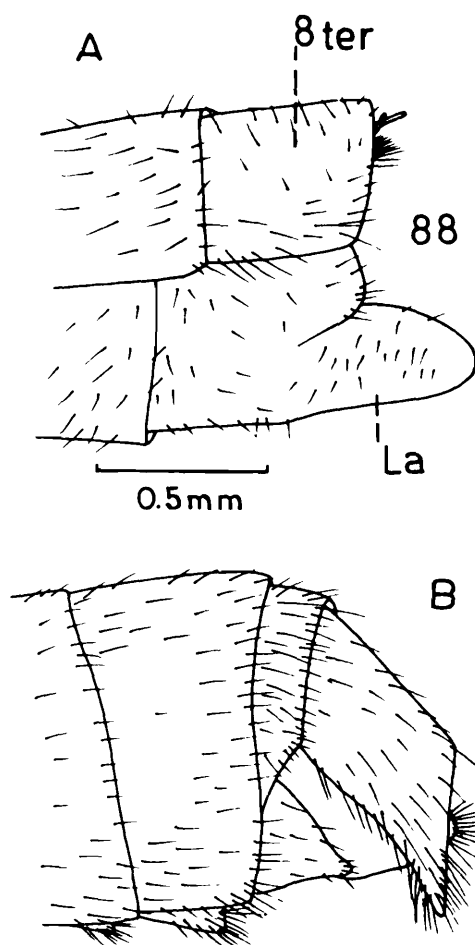


Fig. 88 : *Stichopogon mukherjeei* Joseph & Parui :
A, lateral view of female genitalia; B, lateral view of male genitalia

with sparse white setae and also with a few pale yellow bristles above, postgena white setose. Antenna black, grey tomentose, distal half or more of pedicel with dense greyish-white tomentum, first flagellomere much longer than the combined length of scape and pedicel. Palpus and proboscis black with white setae.

Thorax black with dense greyish-white or greyish-yellow tomentum; pronotum with a transverse row of white or pale yellow bristles; scutum with a narrow mediolongitudinal black stripe extending from anterior border to transverse suture, laterally with or without two, narrow, brown, short stripes; chaetotaxy: 1 notopleural, 1 postalar, 1 supra-alar; vestiture and bristles white; scutellum on border with long, white setae, and a row of long, white bristly setae; laterotergite with a transverse row of long, white bristles; pleura with dense grey tomentum. Haltere white.

Legs pale yellow, in holotype hind tibia apically dark brown, and terminal tarsal segment in all legs black, in paratype femur basally and apically pale yellow while the rest black, apex of hind tibia dark brown, terminal tarsal segments in fore and mid legs and terminal and preceding 2 tarsal segments in hind leg black; vestiture and bristles white.

Wing light brown tinged, but basally still lighter coloured.

Abdomen black, grey tomentose, hind border of tergum narrowly white bordered, terga 1-3 laterally with long, white setae, a few of which well developed and form bristly setae on tergum 1, vestiture white. Female genitalia (Fig. 88A) illustrated, lamella pale yellow while the rest black, tergum 8 bearing 4 spines; lamella without tuft of setae.

Males : Similar but with the following differences: comparatively darker coloured, in one paratype scutum with a broad mediolongitudinal black stripe but without lateral brown stripes, in the other vice versa; wing comparatively more brownish; leg colour like that of paratype male, terga 2-7 with median black marking to varying extent which in most cases triangular shaped. Male genitalia (Fig. 88B) illustrated.

Material examined : *Holotype* ♀, Z.S.I. Reg. No. 7522/H6; Andhra Pradesh: West Godavari District : Eluru : Tamilaru River bed, 13.ii.1986, Coll. A.N.T. Joseph and party. Paratypes 1 ♂ Reg. No. 7523/H6, rest of details as in holotype; 1 ♂, 1 ♀, Reg. No. 7524/H6. 7525/H6, Visakhapatnam District : Sanivaram Forest, 29.ii.1986, Coll. A.N.T. Joseph and party.

Discussion : It is closely similar to *Stichopogon oldroydi* Joseph & Parui but differs from the latter by the not wholly black female genitalia, and only the apex of hind tibia is dark brown.

Distribution : India (Andhra Pradesh).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

92. *Stichopogon oldroydi* Joseph & Parui (Fig. 89)

1993. *Stichopogon oldroydi* Joseph & Parui, *Rec. zool. Surv. India* 93 (1-2) : 297. Type localities : South Andaman and Little Andaman.

A tiny black species with grey tomentum, black and pale yellow legs and brownish tinged wings; female lamella without tuft. Male : length 4-6 mm, wing 3-4 mm; female : length 6 mm, wing 4-5 mm.

Female : *Head* as broad as or slightly broader than thorax, mystax pale yellow with a few white bristles; fronto-orbital plate with white setae, ocellar bristles white or pale yellow, postocular bristles pale yellow, posterior to ocellar triangle with a few pale yellow bristles, postcranium with white setae, postgena with dense white setae. Antenna black, densely grey tomentose, pedicel with a few white bristly setae, scape about two-thirds length of pedicel, first flagellomere longer than the combined length of scape and pedicel, style about two-thirds length of first flagellomere. Palpus and proboscis black with sparse white setae.

Thorax black, grey to greyish yellow tomentose; pronotum with white setae laterally, in holotype scutum with a broad mediolongitudinal black stripe, the stripe lightly grey tomentose on anterior half which is divided by a narrow black stripe, paratypes similar but tomentum on mediolongitudinal stripe may be densely greyish-yellow, also with two submedian black spots; chaetotaxy: 1 notopleural, 1 postalar, 1 (with or without an additional) supra-alar; vestiture white and bristles pale yellow; scutellum with hind border bearing 6-8 bristles, disc with sparse long setae and two bristles; pleura sparsely grey tomentose. Haltere pale yellow with yellowish-brown stalk.

Legs black and pale yellow to yellowish-brown; coxa black and pale yellow to a varying extent, trochanter pale yellow, femur black but basally pale yellow, the latter colour increases from fore to hind femur so much so it occupies slightly less than half on hind femur, tibia pale yellow with black apex, black colour extensive and occupies about one-third on hind tibia, tarsus pale yellow with the segments wholly pale yellow or pale yellow with varying extent black, fore tibia with 2-3 posteroventral bristles, mid tibia with 2-3 posteroventral bristles, 2 anteroventral bristles and 2 anterior bristles, vestiture and bristles white with a few of the bristles being pale yellow.

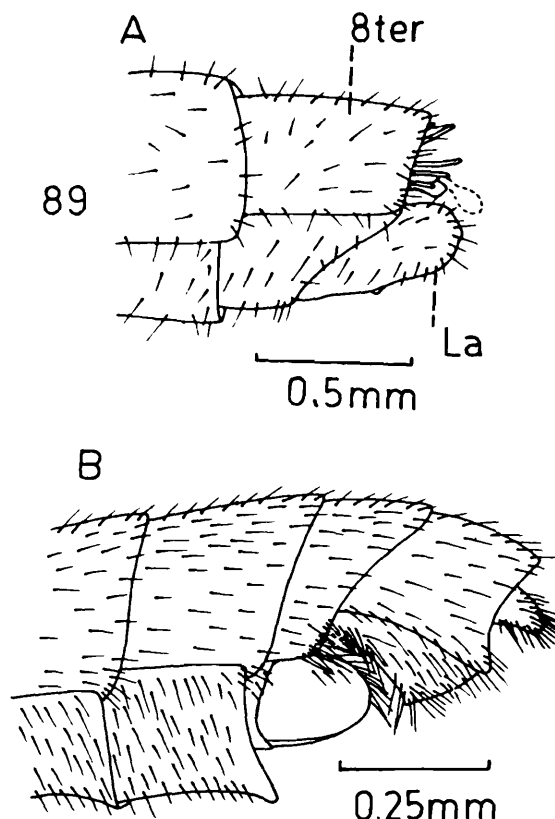


Fig. 89 : *Stichopogon oldroydi* Joseph & Parui :
A, lateral view of female genitalia; B, lateral view of male genitalia.

Wing light brown.

Abdomen black with varying extent grey tomentose, terga grey tomentose anteriorly, especially laterally, and in some cases narrowly grey tomentose along posterior border, tergum I laterally with a bunch of white setae, vestiture white. Female genitalia (Fig. 89A) black with eighth tergum bearing a circlet of about ten spines; lamella without apical tuft of setae.

Male : Similar but with the following differences: mystax in some paratypes wholly pale yellow, length of scape variable from two-thirds to slightly shorter to pedicel; in some examples scutellar border with lesser number of bristles, bristles on scutellar disc may be absent; on hind femur pale yellow colouration not so extensive; abdomen with white and black vestiture. Male genitalia (Fig. 89B) figured.

Material examined : *Holotype* ♀, Z.S.I. Reg. No. 7601/H6, S. Andaman: South Point, 24.i.1988, Coll. A.N.T. Joseph & Party. *Paratypes* 1 ♀, 4 ♂ Reg. No. 7602/H6 to 7606/H6, rest of data as in holotype; 1 ♀, Reg. No. 7607/H6, Little Andaman: Hut Bay, 27.i.1988, Coll. A.N.T. Joseph & Party.

Discussion : *Stichopogon oldroydi* Joseph & Parui resembles *S. mukherjeei* Joseph & Parui, their affinities are discussed under the latter. It is also generally similar to *S. indicus* Joseph & Parui and *S. menoni* Joseph & Parui. Of these, the species under consideration is closer to *S. menoni*, from which it can be readily told by the short lamella together with its shape. The species is named in honour of Dr. Harold Oldroyd, the distinguished student of robberflies who revised the Indian species of the genus *Stichopogon*.

Distribution : India (Andaman Islands).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

93. *Stichopogon ramakrishnai* Joseph & Parui

(Fig. 90)

1988. *Stichopogon ramakrishnai* Joseph & Parui, *Oriental Ins.*, **22** : 92. Type locality : Gurji, Bobbli, Vizianagaram District, Andhra Pradesh.

1990. *Stichopogon ramakrishnai* : Joseph & Parui, *Rec. zool Surv. India*. Occ. Paper No. 113 : 42.

Very small, densely grey or greyish-yellow tomentose species with pale yellow legs, hind tibia dark brown apically, and wings with three brown marks; female lamella without tuft of setae. Male : length 4-5 mm, wing 3-4 mm; female : length 5-6 mm, wing 4-5 mm.

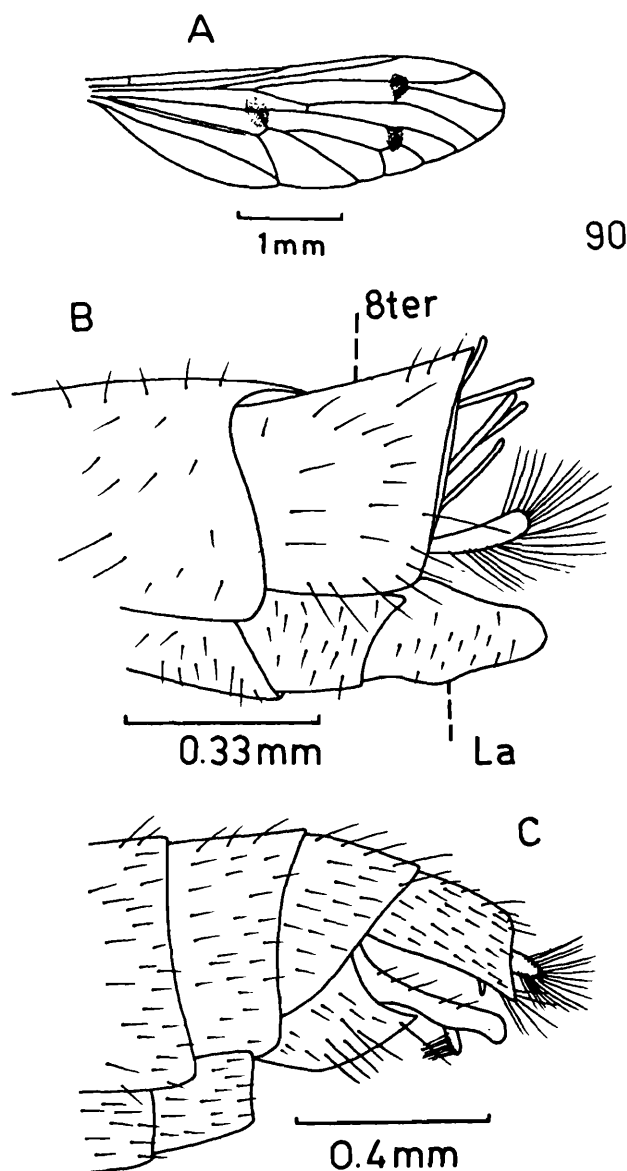


Fig. 90 : *Stichopogon ramakrishnai* Joseph & Parui :

A, venation; B, lateral view of female genitalia; C, lateral view of male genitalia.

Female : Head broader than thorax, densely greyish-white or greyish-yellow tomentose with a Y-shaped dark brown line with its arms at the level of ocellar triangle, in some paratypes the line faint; mystax white; fronto-orbital plate white setose, ocellar setae white, postcranium white setose with some

pale yellow setae above, postocular bristles white and confined to above, postgena densely white setose. Antenna dark brown, largely grey tomentose, scape and pedicel with white bristly setae, scape two-thirds to slightly shorter to the length of the pedicel, first flagellomere slightly longer than the combined length of scape and pedicel, style short. Palpus and proboscis black with white setae.

Thorax dark brown with heavy greyish-yellow and grey tomentum; pronotum with a median transverse row of pale yellow bristly setae; scutum anteriorly with dark brown mediolongitudinal stripes, two lateral broad and one median narrow stripes, the former short while the latter extending to the middle, posteriorly behind the middle broadly dark brown, the extent and intensity of stripes and the posterior dark brown quite variable, vestiture and bristles pale yellow; scutellum medially dark brown and the rest grey tomentose, disc almost bare medially, on border bearing somewhat dense long pale yellow setae; pleura densely greyish-yellow tomentose, laterotergite with a transverse row of pale yellow bristly setae. Haltere white.

Legs pale yellow, trochanter and apex of femur in all legs and apex of hind tibia dark brown, in fore and mid tarsi terminal two or more segments to varying extent dark brown, in hind tarsus from segment 2 onwards more distinctly dark brown, vestiture and bristles pale yellow.

Wing hyaline with three dark brown marks (Fig. 90A), the basal one faint.

Abdomen grey tomentose with dark brown marking, terga 1, 7 and 8 grey tomentose, but in some examples 1 and 7 with faint median dark brown mark, terga 2, 4 and 5 with median triangular dark brown to black marking while the rest grey tomentose, terga 3 and 6 almost completely black, tergum 1 posteriorly with a row of elongate pale yellow setae on either side, vestiture pale yellow. Female genitalia (Fig. 90B) with the eighth tergum bearing a circlet of ten spines; lamella without tuft of setae, thinly tomentose and sparsely setose.

Males : Similar, but the abdomen with more grey tomentum. Male genitalia figured (Fig. 90C).

Material examined : *Holotype* ♀, Z.S.I. Reg. No. 7398/H6, India : Andhra Pradesh: Vizianagaram District : Bobbili; Gurji, Stn. No. 17. 3.iii.1986, Coll. A.N.T. Joseph, *Paratypes* : 6 ♀, 2 ♂ Z.S.I. Reg. No 7399/H6 to 7406/H6, data same as in the holotype.

2 ♂, 2 ♀, Andhra Pradesh : Vizianagaram District : Bobbili : Gurji, 3.iii.1986, Coll. A.N.T. Joseph. 4 ♀, Meghalaya : West Garo Hills District: Baghmara, from river bed, 29.iv.1991, Coll. B.N. Das (Z.S.I.).

Discussion : This species is similar to *Stichopogon basiti* Joseph & Parui but can be readily separated by the presence of dense long, marginal bristles on scutellum and wing with three dark brown markings. It is named after our colleague, Mr N. Ramkrishna, who helped us in the collection of asilids.

Distribution : India (Andhra Pradesh and Meghalaya).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

94. *Stichopogon tomentosus* Oldroyd

(Fig. 91)

- 1948. *Stichopogon tomentosus* Oldroyd, *Entomologist's mon. Mag.*, **84** : 263. Type locality : Banhar, Bihar.
- 1988. *Stichopogon tomentosus* : Joseph & Parui, *Oriental Ins.*, **22** : 94.
- 1990. *Stichopogon tomentosus* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 42.

A tiny, densely grey tomentous species, with dark brown and grey tomentose abdomen, orange with grey pollinose legs, hind tibia apically dark brown, and faintly infuscated wings; female lamella without tuft of setae. Female : length 6 mm, wing 4 mm.

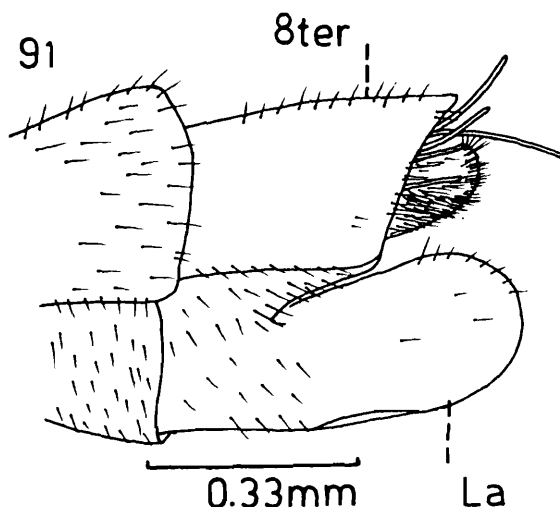


Fig. 91 : *Stichopogon tomentosus* Oldroyd, lateral view of female genitalia.

Female : Head as broad as thorax, densely grey tomentose with a narrow black mediolongitudinal line extending from the ocellar triangle to occipital foramen; mystax white; frontoorbital plate white setose, ocellar bristles white, postcranium white setose, postocular bristles white and confined to above, postgena bearing dense white setae. Antenna with first flagellomere onwards lost, scape and pedicel white with pale yellow tinge on the former, scape and pedicel with white bristles ventrally, the latter also bears a few white bristles dorsally at apex, scape about half the length of pedicel. Palpus and proboscis dark brown, the latter white setose.

Thorax densely grey tomentose; pronotum with dense white setae laterally, medially with an incurved row of brown bristles; scutum devoid of mediolongitudinal stripe but with a pair of brown markings mediolaterally on anterior border and a median one posteriorly at hind border, lateral black spots faintly marked, setae white laterally and black medially, bristles pale yellow; scutellum densely grey tomentose, disc bare, border with white setae and bristles, pleura densely grey tomentose, laterotergite with a transverse row of white bristles. Haltere white.

Legs orange, grey tomentose; fore femur black dorsally on distal two-thirds leaving orange apex, hind femur similar but the dark marking still fainter, in fore and mid legs tarsal segments 4 and 5 dark brown, in hind leg apex of tibia and tarsal segment 1 apically dark brown and the remaining segments completely dark brown, vestiture white.

Wing lightly infuscated, but anterobasally hyaline.

Abdomen dark brown with grey tomentum, tergum 1 grey tomentose leaving a median dark brown spot, terga 2-4 dark brown, on anterior border with a medially incomplete grey stripe and on posterior border with a narrow complete stripe of similar colour, terga 5 and 6 anteriorly with similar grey stripes but posteriorly lacking, sides grey tomentose, tergum 7 grey tomentose leaving a large nearly rectangular dark brown area anteriorly, tergum 8 completely grey tomentose, tergum 1 laterally with white setae and bristles, vestiture white and black. Female genitalia (Fig. 91) with the eighth tergum bearing a circlet of ten spines, of which two are elongate; lamella without tuft of setae, tomentose.

Male : Similar to female.

Material examined : Holotype ♀, B.M. 1924-100, Bihar : Banhar, 19.vi.1920, Coll. R. Senior White.

3 ♀, West Bengal: Malda District : Parbatidanga, 27.vi.1987, Coll. K.P. Mukherjee. 2 ♂, 1 ♀, Little Andaman : Netaji Nagar, 25.i.1988, Coll. A.N.T. Joseph (Z.S.I.).

Discussion : This species can be distinguished from all the other known species from the region by the dense grey tomentum, predominantly black fore femur, and setose lamella but setae not forming tuft.

Distribution : India (Andaman Islands, Bihar and West Bengal).

Type : In the Collection of the Natural History Museum, London.

Subfamily ASILINAE

1847. Asilinae Loew, *Linn. Ent.*, 2: 384.

It has two tribes : Ommatini and Asilini. Members of Asilinae are elongate, grey, bristly flies. They resemble Leptogastrinae in the one jointed palpus. Some of its genera, possessing arisal filaments, have similarities with Leptogastrinae in the absence of ovipositorial spines, but these genera have the typical venation of Asilinae.

Key to tribes of Asilinae

- 1. Antennal style plumose.....Ommatini
- Antennal style bare.....Asilini

Tribe OMMATINI

The flies of this tribe are characterised by the plumose arista together with closed marginal cell. Ommatini resembles Leptogastrini and Asilini in having single jointed palpus. *Cophinopoda* Hull, *Merodontina* Enderlein, *Michotamia* Macquart, *Ommatius* Wiedemann and *Pseudomerodontina* Joseph and Parui are the genera of the Oriental Region, of which *Ommatius* is the dominant genus.

Key to genera of Ommatini

- 1 First flagellomere at least four times the combined length of scape and pedicel, style shorter than first flagellomere.....*Michotamia* Macquart.
- First flagellomere short, from slightly longer to shorter than the combined length of scape and pedicel, style long..... 2

- 2. Hind femur ventrally near the base with a blunt projection.....3
- Hind femur without such projection.....4
- 3. Hind femoral projection tooth-like, first flagellomere as long as or slightly longer than the combined scape and pedicel.....*Merodontina* Enderlein
- Hind femoral projection curved at apex, first flagellomere shorter than the combined scape and pedicel.....*Pseudomerodontina* Joseph & Parui
- 4. A brush of setae immediately above base of haltere, on either side of base of scutellum also with a brush of setae, plumes of style in single row, style usually two to three times the length of first flagellomere.....*Cophinopoda* Hull
- Such brush of setae absent, plumes of style in two rows, style several times the length of first flagellomere.....*Ommatius* Wiedemann

Genus 22. *Cophinopoda* Hull, 1958

1958. *Cophinopoda* Hull, *Proc. Ent. Soc. Washington*, **60** : 251. Type-species : *Asilus chinensis* Fabricius, 1794 : 383, original designation.
1975. *Cophinopoda* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 129.
1990. *Cophinopoda* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 35.

Medium sized flies; face wide, prominent with long bristly pile at middle; mystax dense, long, bristly pile; ocellarium with some short setae and a pair of bristles; occiput moderately prominent with the bristles confined to above, densely pilose below; antenna with first flagellomere short and pyriform, style with one row of plumes throughout; palpus one jointed with apical bristles, proboscis rather long, robust. Scutum moderately high, covered with dense setae especially anteriorly; scutellum basally with a tuft of pile on either side, another tuft of pile just above the base of haltere, which is characteristic of the genus, callosity of postnotum bare. Legs with rather stout femora, both femora and tibiae with appressed setae dorsally, bristles stout and blunt. Wing with first and second posterior cells widely open at the border, fourth posterior cell closed and stalked. Abdomen stout and basally as wide as scutum, distally gently tapered; ventral prongs of epandrium with wing-like process, medial process of hypandrium with a terminal brush of long pile; in female sternum 8 with a pair or more of well developed bristles.

Discussion : It is allied to *Ommatius* Wiedemann from which it differs in the wide, more prominent face with bristly pile over the middle, presence of a brush of setae above the base of haltere, shorter style, and ventral prongs of epandrium with wing-like process.

Distribution : India; Borneo (E. Malaysia and Kalimantan); China; Christmas Island; Java; Thailand; Timor.

Type species : Location of types not known.

95. *Cophinopoda chinensis* (Fabricius)

(Fig. 92)

1794. *Asilus chinensis* Fabricius, *Ent. Syst.*, 4 : 383. Type locality : China.1805. *Dasypogon flavescens* Fabricius, *Syst. Antliat.*: 169. Type locality : Sumatra.1821. *Ommatius fulvidus* Wiedemann, *Dipt. exot.* : 214. Type locality : Java.1849. *Ommatius coryphe* Walker, *List Dipt. Colln. Br. Mus.*, 2 : 469. Type locality; unknown.1849. *Ommatius pennus* Walker, *List Dipt. Colln. Br. Mus.*, 2 : 469. Type locality : Korea, 2 : 129.1975. *Cophinopoda chinensis* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 129.1990. *Cophinopoda chinensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 35.

A medium, black species with dense golden yellow tomentum, black and orange yellow legs, and infuscated wings. Male : length 17 mm, wing 16 mm; female : length 17 mm, wing 16 mm.

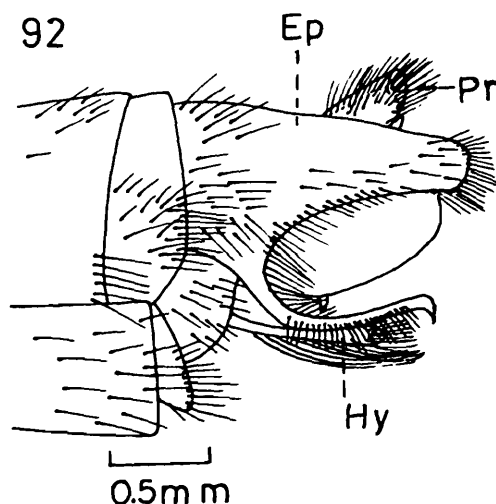


Fig. 92 : *Cophinopoda chinensis* (Fabricius), lateral view of male genitalia.

Male: Head broader than thorax, black with dense golden yellow and grey tomentum; mystax pale yellow; fronto-orbital and ocellar bristles pale yellow, postocular bristles pale yellow and confined to above, postcranium white setose, postgena with dense white setae. Antenna with scape and pedicel yellowish-brown, their bristles pale yellow and black, first flagellomere black, pedicel subequal to the length of scape, first flagellomere about one and-a-half times the length of scape. Palpus and proboscis black with pale yellow setae.

Thorax black with golden yellow and grey tomentum; scutum grey tomentose with a median black stripe extending the entire length, the median grey dividing stripe extends upto a little before the hind border; chaetotaxy: 2 notopleurals, 1 postalar, 1 supra-alar, 3 dorsocentrals; vestiture black with pale yellow setae laterally and posteriorly, bristles black; scutellar border with 2 bristles, slightly anterior to them with an additional bristle, disc pale yellow setose. Haltere with dark brown head and pale yellow stalk.

Legs black with orange yellow tibia, hind tibia dark brown at apex; vestiture pale yellow and golden yellow, bristles black, hind femur with anterior, anteroventral and posteroventral row of bristles.

Wing infuscated with the base medially hyaline.

Abdomen golden yellow with tergum 2 basally black, and terga 2-4 medially black; terga 1 and 2 laterally with long, golden yellow, bristly setae, vestiture golden yellow. Genitalia (Fig. 92) yellowish-brown with pale yellow setae.

Female : Similar, but black more extensive and present on terga 2-7. Genitalia golden yellow and yellowish-brown, proctiger almost truncate at apex, sternum 8 apically concave with a black bristle on each side.

Material examined : 1 ♀, India : Assam : Chabua, 20.vii.1943, Coll. D.E. Hardy; 1 ♂, Chabua, vii.1943, Coll. W.L. Jellison; 1 ♀, Assam : Rupai, 6.xi.1943, Coll. D.E. Hardy (B.P.B.M.). 1 ♀, Tamil Nadu: Coimbatore, 420m, x. 1962, Coll. P.S. Nathan (C.A.S.). 1 ♂, 1 ♀, Rajasthan : Shirohi District: Kiarali, 19.x.1986, Coll. A.N.T. Joseph. 1 ♂, 2 ♀, S. Andaman : Port Blair : Corbyn's Cove Beach, 14.1.1988; 2 ♀, Chiriatapu : 15.i.1988; 3 ♂, Rutland Island, 3.ii.1988, all Coll. A.N.T. Joseph. (Z.S.I.)

Discussion : It is the only one species of *Cophinopoda* Hull so far reported from India and adjacent countries.

Distribution : India (Andaman Islands, Andhra Pradesh, Assam, Bihar, Kerala, Meghalaya, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal); China; Japan; Java; Korea; Sri Lanka; Sumatra.

Types : Location of types not known.

Genus 23. *Merodontina* Enderlein, 1914

1914a. *Merodontina* Enderlein, *Zool. Anz.* 44 : 262. Type-species: *Merodontina sikkimensis* Enderlein, original designation.

1975. *Merodontina* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 130.

1990. *Merodontina* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 36.

Medium sized flies; mystax long, bristly setae covering most of face; vertex deeply excavated, ocellarium with a few minute pile and a pair of stout, long bristles; occiput prominent with pile which are sparse above and abundant below, postocular bristles strongly proclinate; antenna with scape and pedicel nearly equal in length, first flagellomere as long as or slightly longer than the combined length of scape and pedicel, style long and plumose. Palpus one segmented with long pile all over, proboscis of moderate length with swollen base, base laterally bears numerous long setae and apically bears bristly setae. Thorax highly sloped; pronotum setose with a transverse row of 4 bristles; scutum without or faintly marked longitudinal stripe, humeri bear long pile; scutellum with 4 or more bristles on border, anepisternum and upper part of katepisternum with long pile, laterotergite with a transverse row of bristly setae. Legs with hind femur thickened and basally with a strong, rounded tooth. Wing basally hyaline and distally infuscated to a varying extent; costa bulged in male; marginal cell, fourth posterior cell and anal cell closed. Abdomen usually clavate with terga 1-3 with long lateral setae, tergum 1 also with a few bristles; male genitalia quite complicated, epandrium basally swollen and strongly narrowed apically, aedeagus branched at apex.

Discussion : It is generally similar to *Ommatius* Wiedemann from which it can be readily told by the toothed hind femur and shape of aedeagus.

Distribution : It is a small genus so far recorded only from India.

Type species: Location of types not known.

Key to species of *Merodontina* Enderlein

1. Epandrium spinose apically, all femora yellow with black apex..... *spinulosa* sp. nov.
- Epandrium without spinose apically, all femora not wholly yellow.....2
2. Secondary excrescence of aedeagus more or less sickle-shaped, male genitalia black with black piles.....*robusta* Ramachandra Rao & Parui
- Secondary excrescence of aedeagus tridentate.....3
3. Scutellar disc with sparse black setae.....4
- Scutellar disc with pale yellow setae, terga 1-3 bear long white setae laterally.....*sikkimensis* Enderlein
4. Robust species, fore and mid femora pale yellow with dorsal black stripe, hind tibia yellow with brown apex, stigma lightly infuscated.....*indiana* Joseph & Parui
- Comparatively weak species, fore and mid femora yellow with anterodorsal dark brown stripe, hind tibia uniformly yellow, stigma deeply infuscated.....*carmichaeli* (Bromley)

96. *Merodontina carmichaeli* (Bromley)

(Fig. 93)

1935. *Ommatius carmichaeli* Bromley, *Rec. Indian Mus.*, 37 : 225. Type locality: Singla, Darjiling District, West Bengal.

1975. *Ommatius carmichaeli* : Oldroyd, *A Catalog of Diptera of the Oriental Region*. 2 : 131.

1990. *Ommatius carmichaeli* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 38.

Merodontina carmichaeli (Bromley) : *N. comb.*

A black and brown species with grey tomentum, yellow, yellowish-brown and dark brown legs, and distally brownish wings. Male : length 18 mm, wing 15 mm.

Males : *Head* as broad as thorax, black with grey and greyish-yellow tomentum; mystax pale yellow with an upper black bristle, fronto-orbital setae pale yellow, ocellar bristles black, postcranium bare above and white setose below, postocular bristles black. Antenna dark brown, scape with pale yellow setae, pedicel with dark brown bristles, scape and pedicel nearly equal in length, first flagellomere slightly longer than scape and pedicel. Palpus and proboscis black, the former with white and black setae while the latter wholly white setose.

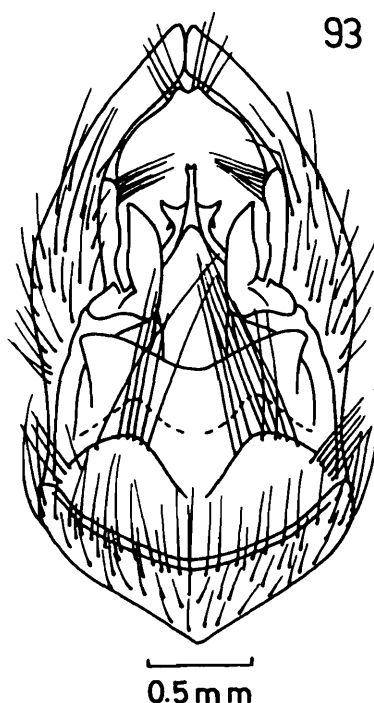


Fig. 93 : *Merodontina carmichaeli* (Bromley), ventral view of male genitalia.

Thorax black with grey tomentum; pronotum white setose with a transverse row of four black bristles; scutum with a faint mediolongitudinal black stripe divided by a grey stripe, the stripe extending from the anterior border to midway between transverse suture and hind border, laterally grey tomentose; chaetotaxy: 3-4 prescutellar dorsocentrals; vestiture and bristles black; scutellum sparsely black setose with a row of black bristles on border. Haltere yellowish-white.

Legs yellow, dark brown and black, coxa and trochanter black, fore and mid femora yellow with anterodorsal dark brown streak, hind femur wholly black, tibia yellow with its apex in hind leg yellowish-brown, tarsus yellowish-brown, hind femur basally with a posteroventral projection, fore tibia posteroventrally with 3 elongate yellow bristles, mid femur with 3 anterior black bristles, hind femur with 6 anteroventral black bristles, vestiture dense, pale yellow and black.

Wing basally hyaline and distally brownish, anterior half darker than posterior half, stigma dark brown.

Abdomen black with the terga from 2 onwards medially brown and hind border whitish, tergum 1 laterally with long white setae amidst which present about 5 black bristles, terga 2 and 3 with long white setae on sides, vestiture pale yellow and black. Male genitalia (Fig. 93) dark brown and yellowish-brown.

Female : Similar.

Material examined : *Holotype* ♂, Z.S.I. Reg. No. 649/H6, Darjiling District : Singla, 457 m, v.1913, Coll. Lord Carmichael. *Allotype* ♀, Reg. No. 650/H6, Darjiling District : Ghumti, 457-1665 m, vi.1914, Coll. Lord Carmichael. *Paratypes* 1 ♂, Darjiling District ; Kalimpong, 205-1380 m, 24.iv.1915, Coll. F.H. Gravely; 1 ♀, Reg. No. 651/H6, Darjiling District : Singla, 460 m, v.1913; 1 ♀, Reg. No. 652/H6, Darjiling District: Ghumti, 457-1665 m, vi.1914, all Coll. Lord Carmichael.

Discussion : *Merodontina carmichaeli* (Bromley), *M. sikkimensis* Enderlein and *M. indiana* Joseph & Parui are the three species from the region with tridentate secondary excrescence on aedeagus. *M. carmichaeli* (Bromley) can be separated from *M. sikkimensis* Enderlein by the presence of sparse black setae on scutellar disc, and from *M. indiana* Joseph & Parui by the lighter coloured fore and mid femora. Besides, the male genitalia is distinctive in all the three species.

Distribution : India (West Bengal)

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

97. *Merodontina indiana* Joseph & Parui

(Fig. 94)

1984c. *Merodontina indiana* Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 66 : 32. Type localities : Almora, Uttar Pradesh and Kalimpong Road, West Bengal.

1990. *Merodontina indiana* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 36.

A black species with pale yellow and black legs and distally infuscated wings. Male : length 18-19 mm, wing 14-16 mm.

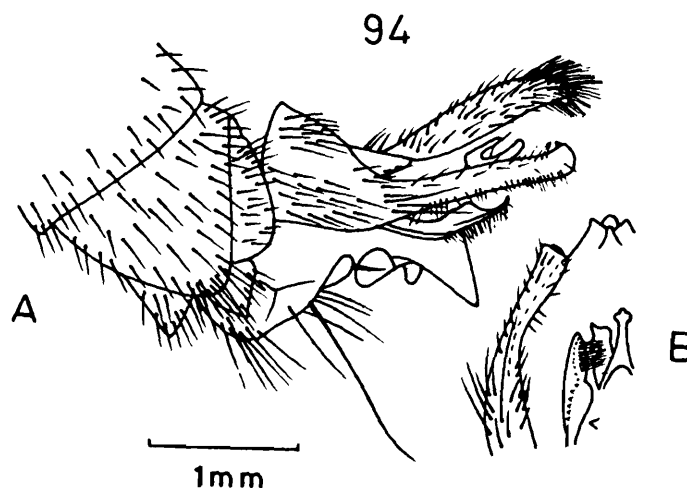


Fig. 94 : *Merodontina indiana* Joseph & Parui :
A, lateral view of male genitalia; B, ventral view of male genitalia.

Males : *Head* broader than thorax, black with sparse grey and greyish-yellow tomentum; mystax pale yellow with one or two brown bristles above; frontoorbital setae pale yellow, ocellar bristles black, postcranium with black setae above and white setae below. Antenna black, bristles on scape and pedicel black and also with a few pale yellow setae, pedicel subequal to scape, first flagellomere tapering distally, about one and-a-half times the length of pedicel, style long and bearing a ventral row of long filaments. Palpus and proboscis black, the former with black and some pale yellow setae while the latter wholly pale yellow setose.

Thorax black, grey tomentose; pronotum with a median transverse row of six black bristles, sides pale yellow setose; scutum devoid of mediolongitudinal stripe, vestiture and bristles black but for some pale yellow setae on humeri; scutellum with the disc black setose and hind border bearing three to five black bristles. Haltere pale yellow.

Legs black and pale yellow, paratype comparatively lighter coloured; coxa and trochanter black, femur pale yellow with a dorsal black stripe, apex also black, tibia pale yellow, basitarsus pale yellow with black apex, rest of tarsal segments black, hind coxa, trochanter and femur black, tibia pale yellow with blackened apex, tarsal segments black, hind femur with the usual basal projection and also with a ventral row of black bristles, vestiture and bristles pale yellow and black.

Wing basally hyaline and distally infuscated with its anterior border medially deeply coloured, comparatively lighter coloured in paratype.

Abdomen black, sides of tergum 1 with long pale yellow setae and a few black bristles, 2 and 3 and even 4 also bearing pale yellow setae on sides, in paratypes setae longer and denser, vestiture pale yellow and black. Male genitalia (Fig. 94) black setose with some pale yellow ones at apex.

Material examined : *Holotype* ♂, No. G81, India: Uttar Pradesh : Almora, 1680 m, 29.vi.1976, Coll. G. Chandra. *Paratype* ♂ No. B 35a, India: West Bengal: Kalimpong Road, 1470 m, 6.vi.1976, Coll. S. Biswas.

Discussion : In male genitalia *Merodontina indiana* Joseph & Parui is similar to *M. sikkimensis* Enderlein but differing in the structural details. The paratype is comparatively lighter coloured.

Distribution : India (Uttar Pradesh and West Bengal).

Types : In the Collection of Dr. K. Ghorpade, Bangalore.

98. *Merodontina robusta* Ramachandra Rao & Parui

(Fig. 95)

1969. *Merodontina robusta* Ramachandra Rao & Parui, *Zool. Anz.*, **182** : 110. Type locality : Dengzi, Arunachal Pradesh.

1975. *Merodontina robusta* : Oldroyd, *A Catalog of Diptera of the Oriental Region* **2** : 130.

1990. *Merodontina robusta* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 36

A robust, black species with grey tomentum, black and yellowish-brown legs, and greyish-brown wings. Male : length 19 mm, wing 15 mm.

Males : *Head* as broad as thorax, black with dense, grey tomentum; mystax pale yellow, fronto-orbital and ocellar bristles pale yellow, postocular bristles black, postcranium white setose, postgena with dense, white setae. Antenna black, scape and pedicel with black bristles, scape and pedicel nearly equal in length, first flagellomere longer than scape and pedicel. Palpus and proboscis black, former black setose while latter with white setae.

Thorax black with grey and greyish-yellow tomentose; pronotum white setose amidst which with a transverse row of four black bristles; scutum with a mediolongitudinal black stripe extending the entire length, which is divided by a greyish-yellow stripe extending well beyond the transverse suture, lateral spots indistinct; chaetotaxy: 2 notopleurals, 2 postalars, 3 supra-alars, 1 (additional 1 or 2 weak) dorsocentrals; vestiture sparse, black medially and pale yellow laterally, bristles black; scutellum with 4 black bristles on border, disc with sparse black setae. Haltere pale yellow and dark brown.

Legs black and yellowish-brown, fore and mid femora dorsally, anteriorly and at apex dark brown, tibia yellowish-brown, basitarsus yellowish-brown and the rest black, hind femur black, tibia yellowish-brown with black apex, tarsus black, hind femur with the usual projection and an anteroventral row of black bristles, vestiture and bristles black and pale yellow.

Wing basally hyaline and distally greyish-brown, its anterior border medially dark brown.

Abdomen black with hind border of terga 1-3 with narrow yellowish-brown border, terga 1-3 with long, white setae laterally, tergum 1 also with a few black bristles, vestiture white and black. Genitalia (Fig. 95) black with black setae.



Fig. 95 : *Merodontina robusta* Ramachandra Rao & Parui, ventral view of male genitalia.

Material examined : Holotype ♂, India: NEFA (Arunachal Pradesh) : Kameng Division : Dengzi, 29.v.1961, Coll. K.C. Jayaram. Paratype ♂, details as in holotype.

1 ♂, India: NEFA (Arunachal Pradesh): Subansiri Division: Pinjuli, 244 m, 4.v.1966, Coll. A.N.T. Joseph (Z.S.I.).

Discussion : *Merodontina robusta* Ramachandra Rao & Parui resembles closely *M. sikkimensis* Enderlein in general colouration and chaetotaxy but differs from it by the scutellar disc with sparse, black setae, sickle-shaped secondary excrescence of aedeagus and robust size.

Distribution : India (Arunachal Pradesh)

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

99. *Merodontina sikkimensis* Enderlein

(Fig. 96)

1914a. *Merodontina sikkimensis* Enderlein, *Zool. Anz.*, **44** : 262. Type localities : Darjeeling, West Bengal and Sikkim.

1975. *Merodontina sikkimensis* : Oldroyd, *A Catalog of Dipter of the Oriental Region*, **2** : 130.

1990. *Merodontina sikkimensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 36.

A black species with grey tomentum, dark brown and pale yellow legs, distally infuscated wings, and dark brown abdomen. Male : length 19 mm, wing 11 mm.

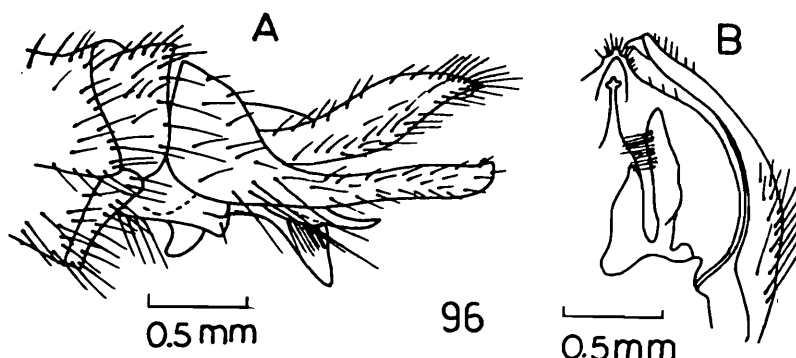


Fig. 96 : *Merodontina sikkimensis* Enderlein :
A, lateral view of male genitalia; B, ventral view of male genitalia.

Male : Head broader than thorax, black with grey tomentum; mystax white amidst which with 3 black bristles, fronto-orbitals white, ocellar bristles black, postocular bristles black, postcranium white setose, postgena with dense white setae. Antenna black, scape with black and white bristles, pedicel with white bristles, scape subequal to pedicel, first flagellomere longer than pedicel. Palpus and proboscis black, former with black setae while the latter pale yellow setose.

Thorax black with rather dense, grey tomentum; pronotum with sparse, white setae, medially with a transverse row of 4 black bristles; mediolongitudinal stripe indistinct, laterally with 2 black spots in a longitudinal row; chaetotaxy: 2 notopleurals, 2 postalars, 3 supra-alars, 3 dorsocentrals; vestiture sparse, black setae medially and white setae laterally, bristles black; scutellar border with 4 black bristles, anterior to which with 1 black bristle, disc with sparse, pale yellow setae. Haltere pale yellow.

Legs dark brown and pale yellow, coxa and trochanter dark brown, fore and mid femora dorsally and anteriorly dark brown and the remainder pale yellow, tibia pale yellow, basitarsus pale yellow and the remainder dark brown, hind femur wholly dark brown, tibia pale yellow with apical dark brown, tarsus dark brown, hind femur with the usual projection and an anteroventral row of black bristles, vestiture predominantly pale yellow with some black setae, bristles black and pale yellow.

Wing basally hyaline and distally infuscated, its anterior border medially dark brown.

Abdomen dark brown with hind border of terga 2 and 3 pale yellow, terga 1-3 laterally with long, white setae, tergum 1 also with 2 black bristles, vestiture white. Genitalia (Fig. 96) black with pale yellow and black setae.

Material examined : 1 ♂, Uttar Pradesh : Garhwal District: Maudali, 2438 m, Coll. B.S. Lamba (Z.S.I.).

Discussion : *Merodontina sikkimensis* Enderlein resembles closely *M. robusta* Ramachandra Rao & Parui but the former can be easily recognised by the smaller size, scutellar disc with sparse pale yellow setae, together with the differences in the structural details of the aedeagus.

Distribution : India (Sikkim, Uttar Pradesh and West Bengal)

Types : In the Collection of Stettin's Zoological Museum.

100. *Merodontina spinulosa* Joseph & Parui

(Fig. 97)

1997. *Merodontina spinulosa* Joseph & Parui, *Colemania, Insect Biosystematics*, No. 5:9. Type locality : Nongpog, Meghalaya.

A black species with yellow legs with black markings, a weakly developed projection in hind femur, distally infuscated wing, and apically spinose epandrium. Male : length 16 mm, wing 13 mm.

Male : Head narrower than thorax, black with dense greyish-white tomentum; mystax white, fronto-orbital setae white, ocellar bristles black, postocular bristles black and confined to above, postcranium white setose, postgena with dense white setae. Antenna dark brown, scape with black bristles, pedicel with black and a few pale yellow bristles, both nearly equal in length, first flagellomere about one-third longer than scape or pedicel, style long with elongate filaments ventrally. Palpus and proboscis black, former with black and a few basal, pale yellow and white setae, latter white setose.

Thorax black, greyish-yellow or grey tomentose; pronotum white setose with a transverse row of 4 pale yellow bristles; scutum with the mediolongitudinal stripe faintly marked, extending from anterior border to midway between transverse suture and hind border, dividing stripe faint, lateral spots contiguous, vestiture pale yellow, bristles golden yellow and black; chaetotaxy: 1 notopleural, 3 postalar, 3 supra-alar, 3 dorsocentrals; laterotergite and meron with a transverse row of long, pale yellow, bristly setae. Haltere pale yellow.

Legs yellow with black markings, coxa black with dense grey tomentum, trochanter black, femur yellow with black apex, tibia yellow with light brown mark basally, hind tibia black at apex, tarsal

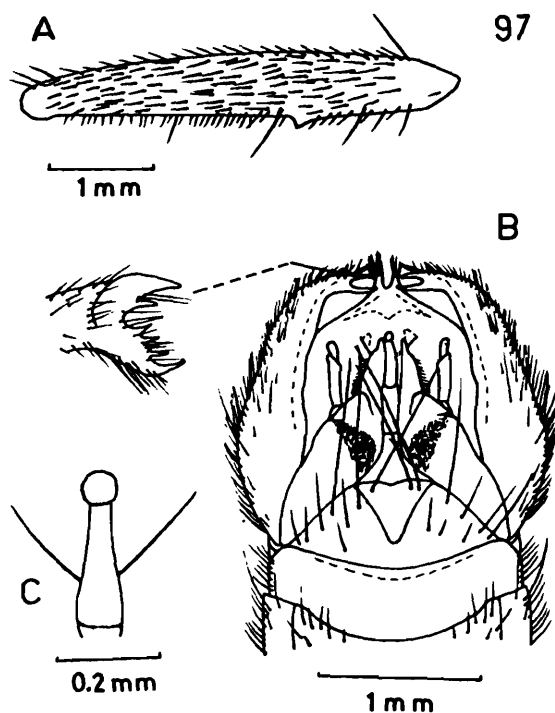


Fig. 97 : *Merodontina spinulosa* Joseph & Parui

A, anterior view of hind femur; B, ventral view of male genitalia; C, ventral view of aedeagus.

segments yellow with black distally to varying extent, hind femur (Fig. 97A) basally with a weakly developed projection ventrally, vestiture golden yellow or white and black, bristles golden yellow and black.

Wing basally hyaline and distally infuscated, infuscation gradually becoming lighter coloured.

Abdomen black with tergum 2 laterally and on hind border yellowish-brown, terga 3-4 similarly coloured but lateral markings lighter, tergum 1 with a bunch of pale yellow setae, a few amidst which form bristles, terga 2-3 laterally with pale yellow setae, vestiture golden yellow and black. Male genitalia (Fig. 97B, C) black, epandrium spinose at apex.

Material examined : Holotype ♂, No. B 284, India : Meghalaya: Nongpoh, 2 km S., 5.v.1985, Coll. K. Ghorpade.

Discussion : *Merodontina* Enderlein is so far represented by five species from India and adjacent countries, viz. *M. indiana* Joseph & Parui, *M. robusta* Ramachandra Rao & Parui, *M. sikkimensis* Enderlein, *M. carmichaeli* (Bromley) and *M. spinulosa* Joseph & Parui. From the remaining four species, *M. spinulosa* Joseph & Parui can be readily told by the spinose apex of epandrium together with the weakly developed projection of hind femur.

Distribution : India (Meghalaya).

Type : In the Collection of Dr. K. Ghorpade, Bangalore.

Genus 24. *Michotamia* Macquart, 1838

1838. *Michotamia* Macquart, *Dipt. exot.*, 1 (2) : 75. Type-species : *Michotamia analis* Macquart, monotypic.
1866. *Allocotosia* Schiner, *Verh. zool.-bot. Ges. Wien.*, 16 : 845. Type-species: *Asilus auratus* Fabricius, 1794, original designation.
1975. *Michotamia* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 130.
1990. *Michotamia*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 36.

Medium sized flies; face distinctly widened below; mystax a medial triangular patch of thick bristles at the lower third of face; vertex distinctly narrowed, ocellarium small with a pair of short, rather stout, anteriorly curved bristles, postcranium with dense setae below, postocular bristles extending from the upper fourth to the middle of head. Antenna with scape and pedicel quite short, each about as long as wide or slightly longer, first flagellomere very long, at least four times the combined length of scape and pedicel, base as broad as pedicel and gradually narrowed to apex, style shorter than first flagellomere and bears about a dozen plumes in two rows or in an apical tuft. Palpus one segmented, long, moderately stout with dense, fine pile all over and at apex bearing long, stout bristles, proboscis moderately long and somewhat tapered from distal two-thirds. Pronotum with a few stout bristles; scutum moderately convex, humeri with scattered long setae; chaetotaxy: usually with 2 notopleurals, 1 postalar, 1 supra-alar; scutellum with sparse setae on the disc or rarely bare, border usually without bristles or rarely with a pair of bristles; pleura with dense yellow tomentum, anepisternum, katepisternum and laterotergite bear bristles. Legs with the hind pair slightly elongate, all femora distinctly stout with the hind femur slightly narrower basally; legs bear rather dense, subappressed setae. Wing hyaline with

brown or yellow marking; marginal cell closed and stalked, fourth posterior cell closed and usually with a short stalk, posterior cross-vein absent. Abdomen elongate, often nearly clavate; tergum 1 laterally with a few bristles and some bristly setae, tergum 2 laterally with some bristly setae; male genitalia with well developed epandrium, hypandrium short.

Discussion : It can be readily distinguished from all the other known genera of Ommatini by the elongate first flagellomere, which is at least four times the combined length of scape and pedicel. It is separated from *Ommatius* Wiedemann by the long, attenuate, first flagellomere together with the short style.

Distribution : India ; Bangladesh: Burma (Myanmar); Celebes; Java; Malaya; Moluccas; Nepal; Pakistan; Sri Lanka; Sulawasi; Sumatra; Taiwan.

Type species: Location of types not known.

Key to species of *Michotamia* Macquart

1. All femora black.....2
- All femora not wholly black..... 3
2. Hypandrium ends in a pair of projections, tibia wholly pale yellow, antenna black.....*indiana* Joseph & Parui
- Hypandrium truncate at apex, tibia pale yellow with black apex, scape and pedicel yellowish-brown, rest dark brown.....*pruthii* Joseph & Parui
3. Fore femur wholly yellow to yellowish-brown.....4
- Fore femur yellowish and black.....8
4. Antennal scape black..... 5
- Antennal scape orange yellow.....6
5. Fore and mid femora wholly pale yellow, hypandrium ends in a pair of projections.....*fuscifemorata* Joseph & Parui
- Mid femur yellowish-brown with a black line dorsally.....*annulata* Bigot
6. Abdominal terga 5-7 black, femora and tibiae yellow except broad black band on hind femur, first flagellomere black but golden ventrally..... *compedita* (Wiedemann)
- Abdominal terga 5-6 black, 7 yellow.....7
7. Legs brick red, scape and pedicel brick red, male genitalia uniformly yellowish-brown.....*analisis* Macquart
- Legs pale yellowish-brown, scape and pedicel yellow, male genitalia dark brown and yellowish-brown.....*aurata* (Fabricius)
8. Disc of scutellum with sparse pale yellow setae, border without bristles, epandrium suddenly narrowed at apex.....*macquarti* Joseph & Parui
- Disc of scutellum with sparse black setae, border with a pair of bristles, epandrium uniformly broad.....*assamensis* Joseph & Parui

101. *Michotamia analis* Macquart*

1838. *Michotamia analis* Macquart, *Dipt. exot.*, 1 (2) : 72. Type locality: Java
 1975. *Michotamia analis*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 130.
 1990. *Michotamia analis*: Joseph & Parui, *Rec. Zool. Surv. India Occ. Paper No.* 113 : 36.

Length 61. ♂

Front of head, mystax and top of head are yellow. Setae on top of mouth are whitish. Scape and pedicel are scaly. Eyes are dark brown, thorax is black, covered with fine yellowish-white setae. Abdomen is light rust-coloured yellow, fifth and sixth segments are black, seventh is scaly, posterior margin is yellow, female genitalia covered with brownish scales. Legs are scaly, wings are brownish-yellow.

Found in Java.

The one from Bengal differs slightly; the posterior margin of fifth and sixth segments of the abdomen are fawn.

Material : Details not given, but described from Java. Also recorded from Bengal.

Discussion : The species is closely similar to *Michotamia aurata* (Fabricius) but differs in the colouration of antenna and legs. It is also similar to *M. fuscifemorata* Joseph and Parui but can be recognised by the larger size, and by the colouration of legs and antenna. Male genitalia of *M. analis* Macquart is not available for comparison.

Distribution : India ("Bengal"); Java.

Types : Location of types not known.

102. *Michotamia annulata* Bigot*

1878. *Michotamia annulata* Bigot, *Ann. Soc. Ent. Fr.*, (5) 8 : 239. Type locality : Burma (Myanmar).
 1975. *Michotamia annulata* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 130.
 1983. *Michotamia annulata* : Joseph & Parui, *Oriental Ins.*, 17 : 327.

Female : Length 14 mm. Varying from black to pale fawn: scape black, pedicel fawn (the others missing); front of head and setae on top of mouth are pale golden colour, a few black bristly setae (present) above the setae on the top of mouth, bristles of palpus are black, mystax are short, setae behind the head are whitish; thorax is black, humeri and base of scutum are fawn, sides and pleura are covered with fine powdery yellowish setae, halteres are fawn with a black dot at the ends; abdomen is pale fawn, the first segment has a blackish base, the second has two similar bands, the first one being narrower, third and fourth have fairly broad bands which do not touch the margins, fifth and sixth are blackish, base of the seventh is mostly brownish, the others are fawn; legs are fawn, tibial spines are black, ends of the tarsi are brown, middle femora have a blackish line on top, posterior ones have a broad, curved blackish band on top towards the centre, a short blackish band underneath, fawn pulvilli; wings light yellow, with brown veins, fawn at the base.

Material. ♀, Burma (Myanmar).

Discussion : *Michotamia annulata* Bigot is similar to *M. fuscifemorata* Joseph & Parui but differs in the colouration of legs. Male genitalia of the former is not available for comparison.

Distribution : Burma (Myanmar).

Type : In the Collection of the Hope Department, Oxford.

103. *Michotamia assamensis* Joseph & Parui

(Fig. 98)

1994. *Michotamia assamensis* Joseph & Parui, *Wasmann J. Biol.* **50** (1-2) : 14. Type locality : Amsoi Forest, Assam.

A medium species with black thorax and abdomen, black and pale yellow or yellowish-orange legs, brown wings, and black and pale yellow abdomen. Male : length 15 mm, wing 12 mm; female : length 15 mm, wing 13 mm.

Male : *Head* as broad as thorax, black with greyish-yellow and grey tomentum; mystax white, also with a few black bristles above, fronto-orbital setae and ocellar bristles black, postcranium below pale yellow setose and postgena with white setae, postocular bristles black and confined to upper half. Antenna with the pedicel yellowish-brown and the remainder black, scape and pedicel with black setae, the latter also with an elongate ventral bristle, scape slightly longer than pedicel, first flagellomere a little longer than twice the combined length of scape and pedicel. Palpus and proboscis black, former black setose while latter white setose.

Thorax black with black and greyish-yellow and grey tomentum; pronotum with a pair of black bristles on either side, laterally white setose; scutum black, laterally and posteriorly greyish-yellow tomentose; chaetotaxy : 2 notopleurals, 2 postalars, 1 supra-alar, 3 dorsocentrals; vestiture and bristles black but for a few pale yellow setae on humeri; scutellum greyish-yellow and grey tomentose, disc with sparse black setae, border bears a pair of black bristles, which are quite close; pleura grey and greyish-yellow tomentose. Haltere with light brown stalk and chocolate brown head.

Legs black and pale yellow or yellowish-orange, coxa black with dense grey tomentum, trochanter yellowish-brown and black, fore femur yellowish-orange, dorsally and anteriorly black extending from base to near apex, mid femur similar but black colour slightly more extensive, hind femur black with lesser than basal one-fourth yellowish-orange, fore tibia pale yellow with dark brown shade apically, mid femur similar but distinctly dark brown which narrowly extends posteriorly upto middle, hind tibia basally pale yellow for less than half and the remainder black, tarsus black, hind femur with a posteroventral row of black bristles, vestiture black and pale yellow, bristles black.

Wing dark brown, but comparatively lighter coloured medially and posteriorly, basal one-third of axillary cell hyaline.

Abdomen black and pale yellow, tergum 1 black with a narrow pale yellow hind border, tergum 2 with less than half basally black and remainder pale yellow, tergum 3 pale yellow, tergum 4 with its base narrowly pale yellow and the remainder black, terga 5 and 6 black, terga 7 and 8 somewhat yellowish-brown, tergum 1 laterally with some black setae and a few black bristles. Genitalia (Fig. 98) pale yellow and black with similarly coloured setae.

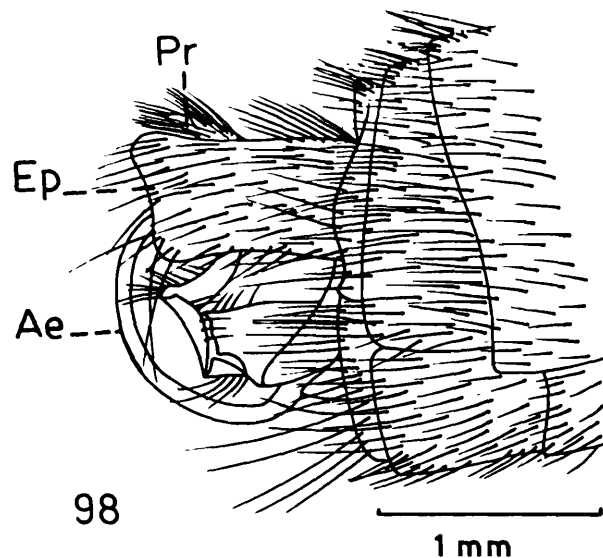


Fig. 98 : *Michotamia assamensis* Joseph & Parui, lateral view of male genitalia.

Female : Similar to male, but with the following differences: mystax pale yellow and black; hind tibia on basal half pale yellow; abdominal terga 7-8 pale yellow; genitalia with the eighth sternum shallowly concave medially.

Material examined : *Holotype* ♂, India: Assam : Amsoi Forest Res. 50 m, 5.v.1961, Coll. E.S. Ross and D.Q. Cavagnaro. *Allotype* ♀, details as in holotype.

Discussion : *Michotamia aurata* (Fabricius), *M. analis* Macquart, *M. fuscifemorata* Joseph & Parui and *M. macquarti* Joseph & Parui have their abdomen basally and distally black, and medially pale yellow. *M. assamensis* Joseph & Parui has also similarly coloured abdomen but has distinctive male genitalia.

Distribution : India (Assam)

Types : Holotype in the Collection of the California University, California, and allotype in the National Zoological Collection of the Zoological Survey of India, Calcutta.

104. *Michotamia aurata* (Fabricius)

(Fig. 99)

- 1794. *Asilus aurata* Fabricius, *Ent. Syst.*, 4 : 387. Type locality : East India.
- 1878. *Lochites testaceus* Bigot, *Ann. Soc. Ent. Fr.*, (10) 1 : 425. Type locality : Burma (Myanmar).
- 1975. *Michotamia aurata* (Fabricius) : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 130.
- 1990. *Michotamia aurata* (Fabricius) : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 36.

A medium sized black species with pale yellow to yellowish-brown legs, pale yellow and infuscated wings, and yellowish-brown and black abdomen. Male : length 12-13 mm, wing 10 mm; female : length 13-14 mm, wing 11-12 mm.

Males : *Head* as broad as thorax, black with dense greyish-yellow and greyish-white tomentum; mystax pale yellow, fronto-orbitals dense, golden yellow, ocellar bristles pale yellow, postocular

bristles brown above and pale yellow below, postcranium sparsely white setose, postgena with dense white setae. Antennal scape and pedicel orange yellow, remainder black, scape and pedicel with black setae, latter slightly shorter than former, combined length of scape and pedicel less than half of first flagellomere. Palpus and proboscis black with pale yellow setae and bristles.

Thorax black with dense greyish-yellow and grey tomentum; pronotum pale yellow setose and with a transverse row of 4 pale yellow bristles; scutum with a mediolongitudinal black stripe extending the entire length which is divided by a faint, greyish-yellow median stripe, laterally with 2 black spots; chaetotaxy: 2 notopleurals, 1 postalar, 1 supra-alar; vestiture sparse, pale yellow coloured, bristles black and pale yellow; scutellum devoid of bristles and setae; laterotergite with a transverse row of about 4 pale yellow bristles. Haltere dark brown with the base of stalk pale yellow.

Legs yellowish-brown and pale yellow, vestiture predominantly black, also with some pale yellow setae, bristles black.

Wing with anterior basal half pale yellow and the rest infuscated.

Abdomen yellowish-brown and black, segments 1-4 and 7 yellowish brown, segments 5 and 6 black, in former both anterior and posterior borders and in the latter hind border yellowish-brown, tergum 1 posterolaterally with a few pale yellow bristly setae, vestiture golden yellow and black. Genitalia (Fig. 99) dark brown and yellowish-brown, vestiture black and pale yellow.

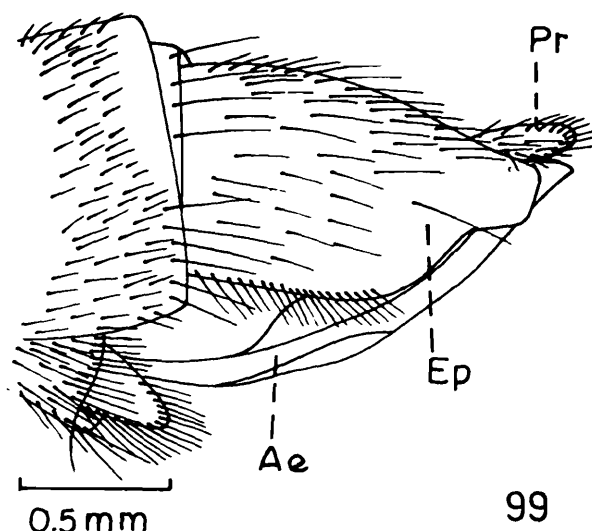


Fig. 99 : *Michotamia aurata* (Fabricius), lateral view of male genitalia.

Females : Similar except that some of the setae on palpus black. Genitalia yellowish-brown, sternum 8 concave at apex with its middle slightly projected.

Material examined : 1 ♀, India : West Bengal: Calcutta environs, 6.x.1904, Coll. Brunetti (B.M.N.H.). 1 ♂, Bihar: Pusa, vii.1907, Coll. H.N. Sharma (S.I.). 1 ♂, Tamil Nadu: Coimbatore, ix. 1908, Coll. T.V.R. (B.M.N.H.). 1 ♂, Tamil Nadu : Coimbatore, on cotton, 23.iii.1915, Coll. C.K.S. 1 ♀, Coimbatore, 8.vii.1924, Coll. Krishnan. 1 ♂, 1 ♀, Orissa: Chilka Lake : Balugan, 16.iv.1944, Coll. D.E. Hardy (S.I.). 1 ♂, Bangladesh : Ichamati : E. Chittagong, 28 m, 14.ix.1961, Coll. E.S. Ross and D.Q. Cavagnaro; 1 ♂, Sri Lanka : Anuradhapur District: Illupullansa Research Farm, 4.iii.1968, Coll. T.F. Halestad (C.A.S.). 1 ♂ Pondicherry : Karaikal, x.1968. Coll. P.S. Nathan

(B.P.B.M.). 1 ♂ Kerala : Thekkady, 884 m, 27.iii.1977; 1 ♂ Karnataka, Bangalore, 916 m, 11.x.1978, all Coll. K.D. Ghorpade (Ghorpade C.). 1 ♂, India; Orissa: Myurbhang District: Baripada: Balidiya, 9.viii.1983; 3 ♂ 4 ♀, Sundargarh, 16.viii. 1983; 1 ♂, 1 ♀, Sundargarh District; Sagbahal, 18.viii.1983; 8 ♂ 3 ♀, Sambalpur District: Rangli, 21.viii.1983; 1 ♂ Sambalpur-District: Jhuripara, 23.viii.1983; 2 ♂ 2 ♀, Sambalpur District; Rangli B.D.O. Office compound, 24.viii.1983; 1 ♀, Dhenkanal District; Kapilas Deer Park, 28.viii.1983, all Coll. P. Parui (Z.S.I.).

Discussion : It is similar to *Michotamia analis* Macquart but differs in the colouration of antenna and legs.

Distribution : India (Andaman Islands, Andhra Pradesh, Bihar, Karnataka, Kerala, Madhya Pradesh, Orissa, Pondicherry, Tamil Nadu, Uttar Pradesh, and West Bengal); Bangladesh; Burma (Myanmar); Celebes; Pakistan; Sri Lanka; Sulawasi; Taiwan.

Type : Location of type not known.

105. *Michotamia compedita* (Wiedemann)*

1828. *Ommatius compeditus* Wiedemann, *Aussereurop. zweifl. Insekt.*, 1 : 419. Type locality : East India.

1975. *Michotamia compedita* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 130.

1983. *Michotamia compedita* : Joseph & Parui, *Oriental Ins.*, 17 : 327.

The (grated) thorax black; abdomen honey yellow, black at the base and at the tip, legs yellow; hind femur with black bands. 7 mm. From East India.

Similar to *Ommatius auratus*, but abdominal tip totally black and the legs yellow. Antennal base rusty brown, first flagellomere black, below golden upper lip setae and bristles light golden yellow, mystax yellowish, postcranium blackish, in certain directions with yellow sheen. Scutum (grated) black, the grated sides of thorax black (on untouched specimens probably bands are to be seen as in the case of *Ommatius auratus*). Tergum 1 (of abdomen) short, black, terga 2-4 honey yellow, the remaining black; similar ventrally; wings yellow, in the middle along borders hyaline; legs yellow, coxa with black bristles so much so they shimmer quite black, the black bands on hind femur broad, at the tip a little bit nearer than at the base. (In Vienna Museum).

Material : East India.

Discussion : The species is similar to *Michotamia aurata* (Fabricius) but hind femur with a broad black band, and tip of abdomen wholly black.

Distribution : East India.

Types : In the Vienna Museum.

106. *Michotamia fuscifemorata* Joseph & Parui

(Fig. 100)

1984c. *Michotamia fuscifemorata* Joseph & Parui. *Rec. zool. Surv. India*, Occ. Paper No. 66 : 26. Type localities : Karnataka and Kerala

1990. *Michotamia fuscifemorata* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 37

A small species with black thorax, black and yellowish-brown abdomen, almost wholly yellowish-brown legs and lightly infuscated wings. Male : length 9-12 mm, wing 7-9 mm; female : length 9 mm, wing 8 mm.

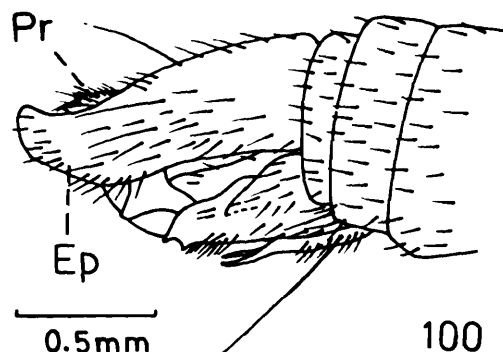


Fig. 100 : *Michotamia fuscifemorata* Joseph & Parui, lateral view of male genitalia.

Male : Head broader than thorax, black with sparse grey tomentum; mystax pale yellow, sometimes one or two bristles black above; fronto-orbitals and ocellar bristles pale yellow, postocular bristles pale yellow or black, postcranium below with dense white setae. Antenna black but for the yellowish-brown pedicel, bristles on scape and pedicel black, pedicel about two-thirds of scape, first flagellomere more than twice the combined length of scape and pedicel as well as style. Palpus and proboscis black, the former with black setae, black bristles and some basal pale yellow setae, while the latter pale yellow setose.

Thorax black with greyish-yellow tomentum; pronotum with one or two pairs of pale yellow bristles, sides bearing a few pale yellow setae; scutum with humeri yellowish-brown, mediolongitudinal stripe absent or faintly marked, greyish-yellow, extending beyond the transverse suture, the stripe medially separated by the bare black background, vestiture pale yellow, bristles black; scutellum greyish-yellow tomentose, setae on disc sparse, pale yellow, border devoid of bristles; pleura covered with sparse greyish-yellow tomentum, laterotergite bearing a longitudinal row of three to five black bristles. Haltere pale yellow.

Legs pale yellow, but mid coxa black, hind femur with a dorsal black brown mark or V-shaped black mark near the middle, and tarsal segments distally yellowish-brown; vestiture predominantly dark with some pale yellow setae, bristles black.

Wing lightly infuscated, basal one-third or lesser than that of hyaline.

Abdomen pale yellow to yellowish-brown, tergum 1 medially on either side with a dark brown spot, tergum 2 without or with a pair of median black spots, terga from 5 or from middle of 5 to middle of 7 black, vestiture black with some pale yellow setae also. Male genitalia (Fig. 100) pale yellow to yellowish-brown with the apex of epandrium light brown, hypandrium ending in two narrow projections.

Material examined : *Holotype* ♂ No. A 74, India: Kerala: Walayar, 305 m, 31.xii.1973, Coll. Ghorpade. *Paratypes* 1 ♂, No. A 35, Karnataka: Bangalore, 916 m, 2.xi.1973, Coll. Ghorpade; 1 ♀, No. A 85, Karnataka: Bannerghata Park, 6.i.1974, Coll. Ghorpade; 1 ♂, No. A 427, Kerala: Thekkadi, 884 m, 27.iii.1977, Coll. Ghorpade; 1 ♂, No. A 484, Karnataka : Bangalore, 916 m, 7-9.x.1977, Coll. K.D. Ghorpade; 1 ♂, 1 ♀, No. A 880, Karnataka : Mudigore, 900 m, 6.iv.1980, Coll. K.D. Ghorpade; 1 ♂, No. A 882, Karnataka: 2-11 Km N. Kottogahar, 950m, Coll. K.D. Ghorpade.

1 ♂, Bangladesh : Harbang Forest: 9.7 km N. Chiringa, 15 m, 18.ix.1961; 1 ♀, Nepal: 14.5 km W. Hitaura, 400 m, 23.xi.1961, all Coll. E.S. Ross and D.Q. Cavagnaro (C.A.S.). 1 ♀, Kerala: Idukki: Kumili, 13.xii.1979; 1 ♀, Trichur District: Chalakudi, 23.xii.1979. all Coll. Joseph & Parui (Z.S.I.).

Discussion : It is generally similar to *Michotamia analis* Macquart from which it differs in the smaller size, dark brown marking of hind femur and the colouration of scape and pedicel, the scape being dark brown and the pedicel yellowish-brown. Male of *M. analis* Macquart is not available for comparison of genitalia.

Distribution : India (Andhra Pradesh, Karnataka and Kerala); Bangladesh; Nepal.

Types : Holotype and 5 paratypes in the Collection of Dr. K. Ghorpade, Bangalore, and two paratypes in the National Zoological Collection of the Zoological Survey of India, Calcutta.

107. *Michotamia indiana* Joseph & Parui

(Fig. 101)

1981b. *Michotamia indiana* Joseph & Parui, *Oriental Ins.*, 15 (1) : 109. Type localities : Calicut District, Kerala and Coorg District, Karnataka.

1990. *Michotamia indiana* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 37.

A large species with black thorax and abdomen and dark brown wings. Male : length 21-22 mm, wing 17 mm; female : length 18 mm, wing 15 mm.

Males : *Head* broader than thorax, black with grey tomentum; mystax grey or pale yellow, some black bristles also present both anteriorly and posteriorly, fronto-orbital and ocellar bristles black, postocular bristles black above and white below, occipital setae white. Antenna black but in holotype pedicel orange, bristles of scape and pedicel black, pedicel about two-thirds of scape, first flagellomere about thrice the combined length of scape and pedicel and about twice the length of style. Palpus and proboscis black, the former with black bristles and some basal pale yellow setae while the latter with white setae.

Thorax black with grey tomentum; pronotum with two pairs of black bristles and sides bearing white setae; scutum entirely black with grey tomentum on sides and hind region, vestiture black with a few pale yellow setae, bristles black; scutellum grey tomentose, hind border bearing a pair of black bristles; pleura to a considerable extent or most of it grey tomentose. Haltere brownish tinged, stalks slightly lighter coloured.

Legs black except for tibia being pale yellow to a varying extent, the extent of pale yellow colouration decreases from fore to the hind tibia; fore coxa bearing dense white setae ventrally and mid coxa sparsely setose ventrally, hind femur with a row of anterior and another row of posteroventral bristles, bristles black while vestiture black and pale yellow.

Wing dark brown, slightly lighter posteriorly, especially the anal cell.

Abdomen black, vestiture black and white, sides of tergum 1 with a bunch of black bristles, 2-4 bearing long white setae. Male genitalia (Fig. 101) black with mostly black and some pale yellow setae, hypandrium ending in a pair of projections.

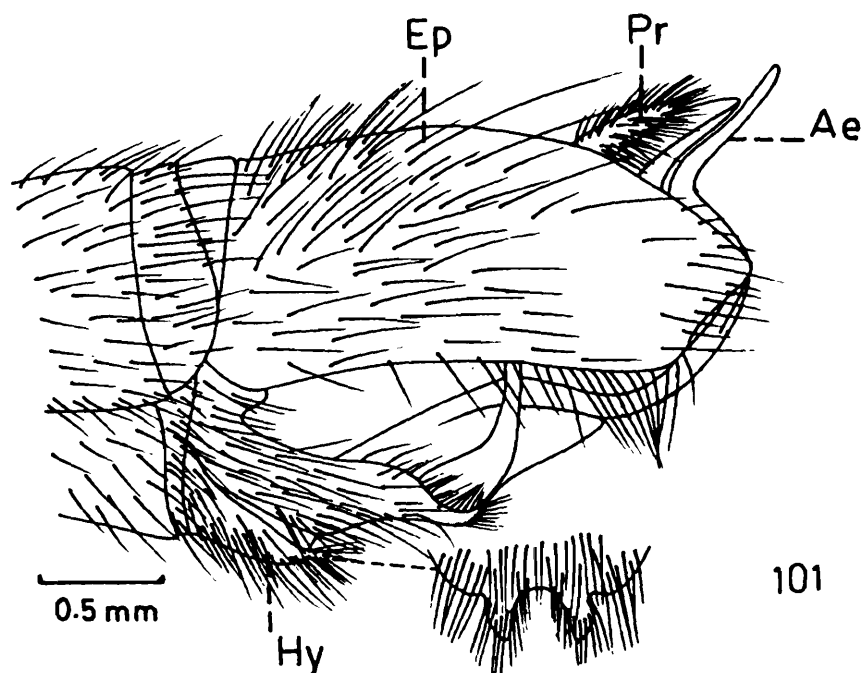


Fig. 101 : *Michotamia indiana* Joseph & Parui, lateral view of male genitalia.

Female : Similar to male.

Material examined : *Holotype* ♂, India : Kerala: Calicut District: Chembra Peak area; 1067 m, v.1970, Coll. T.R.S. Nathan. *Paratypes* 1 ♂, details as in holotype; 1 ♀, Karnataka: Coorg District : Mercara, 1220 m, v.1973, Coll. T.R.S. Nathan.

Discussion : *Michotamia indiana* Joseph & Parui is closely similar to *M. pruthii* Joseph & Parui but can be readily distinguished by its hypandrium which ends in a pair of projections.

Distribution : India (Karnataka and Kerala)

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

108. *Michotamia macquarti* Joseph & Parui

(Fig. 102)

1984c. *Michotamia macquarti* Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 66 : 28. Type locality : Pilibhit, Uttar Pradesh.

1990. *Michotamia macquarti* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 37.

A medium species with black thorax, black and yellowish-brown abdomen, pale yellow and black legs, and wholly infuscated wings. Male : length 14 mm, wing 11 mm.

Male : *Head* broader than thorax, black with sparse grey tomentum; mystax pale yellow; frontoorbital and ocellar bristles black, postocular bristles black and pale yellow, postcranium on lower side bearing dense pale yellow setae. Antenna with scape and pedicel yellowish-brown, first flagellomere black, bristles on scape and pedicel black, pedicel slightly shorter than scape, combined length of scape and pedicel shorter than half of first flagellomere, style longer than half of first flagellomere. Palpus and proboscis black, the former with black bristles and setae while the latter pale yellow setose.

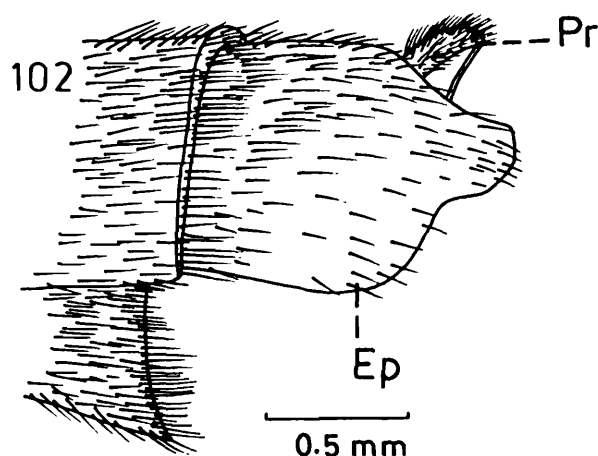


Fig. 102 : *Michotamia macquarti* Joseph & Parui, lateral view of male genitalia

Thorax black, sparsely grey tomentose; pronotum with a transverse row of median black bristles, sides almost bare; scutum devoid of mediolongitudinal stripe, vestiture pale yellow and bristles black; scutellum black, grey tomentose, setae on the disc pale yellow, sparse, hind border without bristles; laterotergite with a longitudinal row of black bristles. Haltere yellowish-brown with the stalk pale yellow.

Legs pale yellow and black; fore coxa anteriorly pale yellow while the rest black, fore femur pale yellow except for a dorsal dark brown mark at base, tibia uniformly pale yellow, basitarsus basally yellowish-brown and distally dark brown, remaining tarsomeres dark brown; mid coxa completely black, mid femur pale yellow but dorsally black from base to more than two-thirds, tibia and tarsus similar to the preceding; hind coxa uniformly black, hind femur pale yellow with a broad black ring from the middle to near apex, hind tibia with black bristles.

Wing infuscated, deeper apically and lighter basally, at the border in the cells with hyaline marks.

Abdomen pale yellow and black, tergum 1 and from tergum 5 to tip black, tergum 2 pale yellow, terga 3 and 4 yellowish-brown. Male genitalia (Fig. 102) black with black and pale yellow setae.

Material examined : Holotype ♂, No. R 32, India: Uttar Pradesh: Pilibhit, 450 m, 6.iv.1977, Coll. M. Rathore.

1 ♀, India: Bihar: Pusa, 19.x.1908, no other data (S.I.).

Discussion : The species is allied to *Michotamia aurata* (Fabricius), but differing in the structural details of male genitalia together with the black ring of hind femur.

Distribution : India (Bihar and Uttar Pradesh).

Type : In the Collection of Dr. K. Ghorpade, Bangalore.

109. *Michotamia pruthii* Joseph & Parui

(Fig. 103)

1987a. *Michotamia pruthii* Joseph & Parui, *Bull. zool. Surv. India*, 8 (1-3) : 95. Type locality : Bhim Tal, Kumaun Hills, Uttar Pradesh.

1990. *Michotamia pruthii* : Joseph & Parui, *Bull. zool. Surv. India* Occ. Paper No. 113 : 37.

A small black species with black and pale yellow legs and infuscated wings. Male : length 9 mm, wing 6 mm.

Male : *Head* broader than thorax, black with grey and greyish-yellow tomentum; mystax pale yellow with a few black bristles above; frontoorbital plate with a few black bristles, ocellar bristles black, postcranium pale yellow setose. Antenna with scape and pedicel yellowish-brown, first flagellomere dark brown, bristles on scape and pedicel black, pedicel slightly shorter than scape, first flagellomere about twice the combined length of scape and pedicel, style slightly longer than half of first flagellomere. Palpus dark brown with pale yellow setae, proboscis black with white setae.

Thorax black, grey tomentose; pronotum with pale yellow setae with a transverse row of black bristles, scutum damaged, black, setae black with some pale yellow ones on humeri, bristles black; scutellum with the disc bearing sparse pale yellow setae, hind border without bristles, pleura grey tomentose. Haltere pale yellow.

Legs black and pale yellow; coxa, trochanter, femur and tarsus black, fore and mid tibiae pale yellow with black apex, hind tibia with the basal one-third pale yellow and the remaining two-thirds black, setae pale yellow and black, bristles black.

Wing infuscated.

Abdomen black, tergum 1 laterally with a few pale yellow setae and three or four black bristles, terga 2 and 3 with some long pale yellow setae. Male genitalia (Fig. 103) black with black and pale yellow setae.

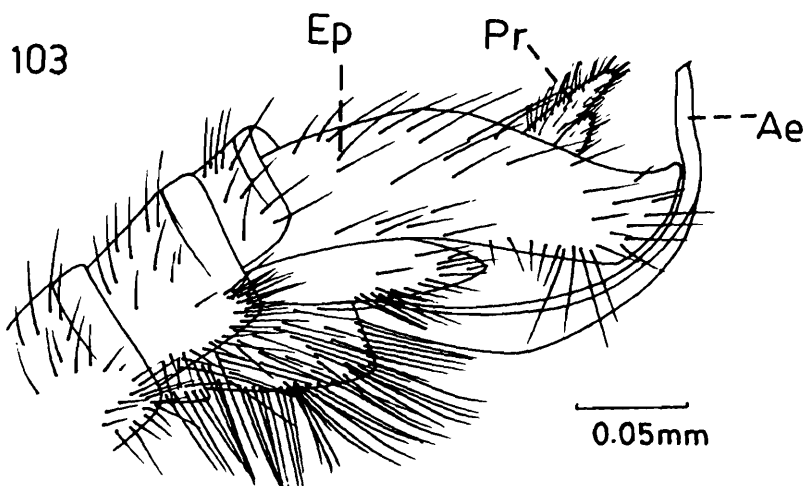


Fig. 103 : *Michotamia pruthii* Joseph & Parui, lateral view of male genitalia.

Material examined : Holotype ♂, Z.S.I. Reg. No. 7246/H6, India : Kumaun Hills: Bhim Tal, grassy part of the bed of the lake, station 36, 1356 m, 17.v.1930, Coll. H.S. Pruthi.

Discussion : Of all the known species of *Michotamia* Macquart from India and adjacent countries, *M. pruthii* Joseph & Parui is closer to *M. fuscifemorata* Joseph & Parui in the shape of epandrium, but differs from it in the shape of hypandrium, which is bifurcate in the latter.

Distribution : India (Uttar Pradesh)

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

Genus 25. *Ommatius* Wiedemann, 1821

1821. *Ommatius* Wiedemann, *Dipt. exot.*, **1** : 213. Type-species : *Asilus marginellus* Fabricius, designated by Coquillett (1910 : 579).
1866. *Emphysomera* Schiner, *Verh. Zool. Bot. Ges. Wien.*, **16** : 649-722. Type-species : *Asilus conopsoides* Wiedemanni, original designation.
1925. *Ommatinus* Becker, *Ent. Mitt.* **14** : 78. Type -species : *Asilus pinguis* van der Wulp, designated by Engel (1926: 3†).
1975. *Ommatius* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 131.
- 1990 *Ommatius* : Joseph & Parui, *Rec. zool. Surv. India*. Occ. Paper No. 113 : 37.

Small to large flies; face anterior to antennae narrow but gradually diverged below with scattered pile on middle and upper portion, and with bristly pile above epistome; front short and pubescent; vertex narrow, deeply excavated; ocellarium large with a few minute pile and a pair of stout, long bristles; occiput prominent with stiff pile which are abundant below, postocular bristles usually strongly proclinate; antenna short, first flagellomere short and conical, style long with one or two rows of plumes throughout. Pronotum with a few, stout bristles; scutum quite high, densely pubescent and with lateral pile; acrostichal and dorsocentral bristles distinct in postsutural region; humeri, propleuron, anepisternum and katepisternum with scattered pile callosity of postnotum bare. Legs with femora stout, hind femur mostly distinctly swollen, fore femur usually without stout bristles but with bristles all over, tibiae without bristles. Wing with marginal cell, fourth posterior cell and anal cell closed and stalked, marginal and submarginal cells often greatly widened, costa may be distinctly bulged in male. Abdomen cylindrical, usually parallel sided, dorsum setate, terga with lateral bristles; male genitalia with well developed appendages, epandrium curved and apposed apically; female genitalia short, proctiger slightly produced beyond eighth segment.

Discussion : The genus *Ommatius* Wiedemann is most similar to *Cophinopoda* Hull. Their affinities are discussed earlier under the latter.

Distribution : It enjoys wide distribution, being recorded from all the zoogeographical regions. The genus occurs in abundance in the Oriental, Ethiopian, Neotropical and Australian Regions; it is scarce in the Palearctic and Nearctic Regions, especially in the latter. From India and adjacent countries so far 51 species have been recorded. In India they are reported from all the larger states, except from Gujarat and Maharashtra, which may be due to lesser exploration

Type species : Location of types not known.

Key to species of *Ommatius* Wiedemann

1.	All femora wholly black.....	2
–	All femora not wholly black.....	24
2.	Wing of male distinctly and deeply infuscated back to stem of radial fork.....	3
–	Wing of male not dilated and not so deeply infuscated.....	4
3.	Hypandrium simple, hind femur strongly dilated.....	<i>peregrinus</i> Wulp
–	Hypandrium distinctly bifurcated, hind femur not so dilated.....	<i>conopsoides</i> Wiedemann

4. Antenna wholly black..... 5
- Antenna not wholly black.....21
5. All tibiae uniformly yellowish-brown to dark brown or black..... 6
- Tibiae differently coloured.....9
6. Mystax mixed black and white.....7
- Mystax wholly black.....8
7. Hind femur bears anterodorsal row of spines and three posterodorsal spines at distal half, apex of epandrium with a pair of pea-shaped structures.....*dravidicus* Joseph & Parui
- Hind femur without spines, apex of epandrium thumb-shaped.....*ramakrishnai* Joseph & Parui
8. Abdomen linear, terga 1 and 2 laterally with long, white setae.....*jonesi* Joseph & Parui
- Abdomen comparatively robust, terga 1 and 2 with long, yellowish-grey setae.....*ater* Bromley
9. All tibiae yellowish-brown with dark brown to black apex.....10
- All tibiae with different colour pattern.....12
10. Male genitalia brownish, mystax predominantly white with a few black bristles above.....*femorata* (Bigot)
- Male genitalia black, mystax not predominantly white.....11
11. Epandrium obtuse at apex and with a bunch of stout bristles dorsally.....*truncatus* Joseph & Parui
- Epandrium gradually narrowed towards apex, and with profuse pile all over ventrally.....*gopalpurensis* Joseph & Parui
12. Hind tibia uniformly ochraceous yellow or dark brown to black.....13
- Hind tibia bicoloured.....16
13. Hind tibia yellowish, lateral sides of scutum and scutellum reddish-yellow.....
-*leucopogon* Wiedemann
- Hind tibia dark brown to black.....14
14. Humeri and scutum laterally brownish-yellow, abdomen club-shaped.....*spathulatus* Doleschall
- Scutum wholly black.....15
15. Mystax black, tibia pitch brown at basal half, rest black.....*nigra* (Schiner)
- Mystax pale yellow, fore tibia pale yellow, remaining pairs brownish to dark brown.....*jabalpurensis* Joseph & Parui
16. Epandrium bears a dorsoapical finger-like projection.....17
- Epandrium without such projection.....18
17. Genitalia black and yellowish-brown, hypandrium more or less sickle-shaped
-*minor* Doleschall

- Genitalia black, hypandrium straight and with a transverse row of bristly setae*meghalayensis* sp. nov.
18. Hypandrium bifurcated, hind femur ventrally bears a row of pale yellow bristles, fore tibia with a fringe of long, fine setae.....*pillaii* Joseph & Parui
Hypandrium not bifurcated.....19
19. Eighth sternum oval-shaped with bristly pile all around, pedicel, globular, hind femur with scattered black bristles.....*tandoni* Joseph & Parui
Eighth sternum of different shape.....20
20. Epandrium ventrally with a nearly rectangular projection, apex of hind tibia dark brown, rest yellowish-brown.....*singhi* Joseph & Parui
Upper arm of epandrium with a finger-like projection ventrally, hind tibia more than one-fourth black apically, rest yellowish-brown.....*tamenensis* Joseph & Parui
21. Wing iridescent, mystax predominantly black with a few white bristles below*singlensis* Oldroyd
Wing not iridescent, mystax not predominantly black.....22
22. Epandrium with deep invagination at apex.....23
Epandrium twisted and truncate at apex, hind femur with anteroventral and posteroventral rows of pale yellow bristles.....*bengalensis* Joseph & Parui
23. Hypandrium broad and truncate at apex, hind femur bears a row of short spine-like bristles anteroventrally and an anterior row of bristles from middle to apex.....*hradskyi* Joseph & Parui
Hypandrium linear and curved upwards, hind femur with an anteroventral and a posteroventral row of short bristles.....*pseudodraavidicus* Joseph & Parui
24. Thorax other than black colour.....25
Thorax black.....29
25. Mystax uniformly yellow or white.....26
Mystax mixed coloured.....27
26. Mystax yellowish, fourth abdominal tergum black, scape and pedicel black with reddish bases.....*auratus* Wiedemann
Mystax white, abdominal terga brown, scape and pedicel uniformly brownish*fuscus* Joseph & Parui
27. All femora uniformly yellowish-brown, epandrium boat-shaped with long bristly piles.....*malabaricus* Joseph & Parui
Femora mixed yellow and black coloured.....28
28. Antenna rusty yellow with tip of segments black, male genitalia pitch brown with its appendages linear*frauenfeldi* Schiner
- Scape and pedicel pale yellow, first flagellomere dark brown, male genitalia black with stout appendages*jairajpurii* sp. nov.

29. Fore femur brown, other 2 pairs pale yellow, base and apex of all tibiae dark brown, rest pale yellow, scutellum posteriorly with a few pale yellow setae.....*lividipes* Bigot
 Colour pattern of femora different.....30
30. Hypandrium with a brush of bristly piles at apex.....31
 Hypandrium without such bristly piles.....35
31. Epandrium with brush of dorsoapical bristles, male genitalia black and yellowish-brown.....*subgracilis* Bromley
 Epandrium bare of such bristles at apex.....32
32. Proctiger in lateral view truncate at apex, mid femur with posteroventral bristles basally, scutellum with brownish setae on disc.....*nicobarensis* Joseph & Parui
 Proctiger in lateral view gradually narrowed towards apex.....33
33. Epandrium bifurcated, fore femur with a posteroventral row of bristles.....*andamanensis* Joseph & Parui
 Epandrium not bifurcated.....34
34. Fore and mid femora pale yellow with brown tips, epandrium without bristles ventrally.....*nilgiriensis* Joseph & Parui
 Fore and mid femora black, epandrium with a row of bristles ventrally at mid region.....*shishodiai* Joseph & Parui
35. Epandrium dorsally produced at apex.....36
 Epandrium not dorsally produced.....43
36. Mid femur with a tubercle bearing a few bristles on it.....*tuberculatus* Joseph & Parui
 Mid femur without such tubercle.....37
37. Fore and mid femora uniformly yellowish to yellowish-brown.....38
 Fore and mid femora bicoloured.....40
38. Epandrium with long piles ventrally at apex.....39
 Epandrium with fine setae ventrally at apex, mystax pale yellow
*arunachalensis* Joseph & Parui
39. Scape and pedicel yellow, first flagellomere dark brown, epandrium with long, stout piles dorsally.....*hulli* Joseph & Parui
 Antenna yellowish-brown with paler scape, epandrium without such dorsal piles.....*pashokensis* Joseph & Parui
40. Hypandrium with a few spinous bristles at apex, mystax golden yellow above and white below.....*kodaikanalensis* Joseph & Parui

- Hypandrium without such bristles.....41
41. Proctiger uniformly broad in lateral view, humeri greyish-yellow, gonostylus with 5 small spines ventrally.....*indicus* Joseph & Parui
- Proctiger gradually narrowed towards tip.....42
42. Epandrium well projected both dorsally and ventrally at apex, fore and mid tibiae with sparse setae.....*genitalis* Joseph & Parui
- Epandrium dorsally projected, fore and mid tibiae with dense, long setae above.....*kempi* Joseph & Parui
43. Fore femur brown, other two pairs pale yellow, and all with dark brown apex, antenna brown, scutellar disc with pale yellow setae.....*lividipes* Bigot
- Femora differently coloured.....44
44. Epandrium bifurcated at apex.....45
- Epandrium not bifurcated at apex.....47
45. Epandrium with a ventral spine subapically, all femora pale yellow.....*ponti* Joseph & Parui
- Epandrium without such spine.....46
46. Antennal scape and pedicel yellowish-brown, first flagellomere black, fore and mid femora yellowish-brown with black apex, hind femur basally one-third yellowish-brown, rest black.....*rajani* n. sp.
- Antenna black, fore femur black except pale yellow apex, other two pairs black.....*pseudojabalpurensis* Joseph & Parui
47. Mystax wholly white, hind femur about one-fourth yellowish-brown, rest black, hypandrium with a few bristles apically..... *nanus* Walker
- Mystax mixed coloured.....48
48. Antenna wholly black, ...49
- Antenna not wholly black.....50
49. Hypandrium pedunculate, hind femur with a posteroventral row of short bristles.....
-*mitrai* Joseph & Parui.
- Hypandrium of usual shape and with a row of spinous bristles at apex, hind femur without row of bristles.....*pseudokempi* Joseph & Parui.
50. Legs yellow except coxae being black, scutellum with sparse white setae on disc, proctiger curved and pointed at apex.....*tenellus* van der Wulp
- Legs differently coloured.....51
- 51 First flagellomere attenuate, much longer than the combined length of scape and pedicel, hypandrium sickle-shaped, shape of epandrium like that of *Michotamia*.....*dubius* Joseph & Parui
- First flagellomere a little longer than pedicel, hypandrium straight, shape of epandrium typical of the genus.....*biharensis* Joseph & Parui

110. *Ommatius andamanensis* Joseph & Parui

(Fig - 104)

1983b. *Ommatius andamanensis* Joseph & Parui, *Ent. scand.*, 14 : 90. Type locality : Mannarghat, S. Andaman.

1990. *Ommatius andamanensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 37.

A comparatively small species with pale yellow fore and mid legs and pale yellow and dark brown hind legs, fore femur bearing a row of posteroventral bristles and the wings lightly brownish tinged. Male: length 10 mm, wing 8 mm; female: length 9 mm, wing 7 mm.

Male : *Head* black infuscated with grey tomentum; mystax white but with a few black bristles, frontoorbital and ocellar bristles black; postcranium grey tomentose with white setae, a few pale yellow bristles present above. Antenna yellowish-brown, first flagellomere darker than scape and pedicel, bristles on scape and pedicel dark brown, scape subequal to pedicel, the latter shorter than first flagellomere. Palpus and proboscis dark brown, their setae white to pale yellow.

Thorax dark brown with grey tomentum; pronotal setae white, one pale yellow bristle present on either side; scutum devoid of mediolongitudinal stripe, humeri and sides grey tomentose, bristles black; pleuron grey tomentose; scutellum dark brown, pale yellow setae on the disc and a pair of similarly coloured bristles on the border. Haltere pale yellow.

Legs pale yellow; fore femur brownish tinged dorsoapically, the area and intensity of colouration increases from the fore to the hind femur so much so that about the distal half of hind femur is dark brown, apex of hind tibia dark brown, tarsomeres dark brown but the basal segment pale yellow in fore and mid legs; vestiture black and yellow, bristles black, fore femur with a posteroventral row of pale yellow bristles, mid femur bearing posteroventral and anteroventral rows of setae but the latter not so well developed, hind femur with both anteroventral and posteroventral rows of setae.

Wing very lightly brownish tinged beyond the base.

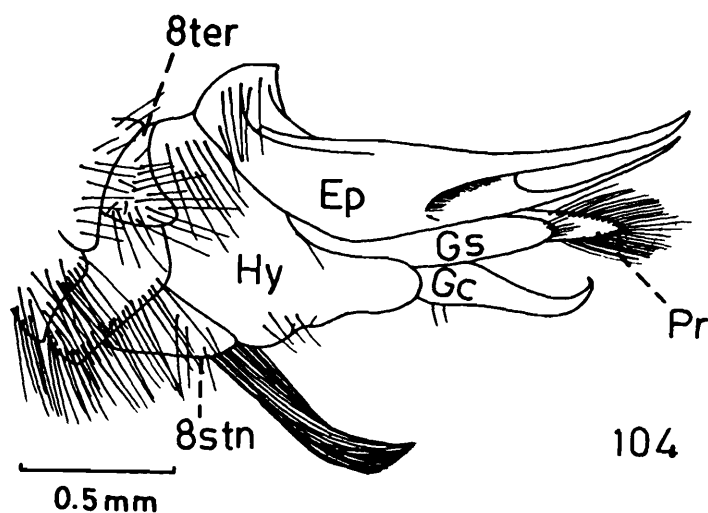


Fig. 104 : *Ommatius andamanensis* Joseph & Parui, lateral view of male genitalia

Abdomen dark brown, sides pale yellow, setae pale yellow and dark brown. Male genitalia (Fig. 104) dark brown, but apically slightly lighter coloured, setae dark brown but with some pale yellow setae also.

Female : Similar but with the following differences: posteroventral row of fore femur with well developed setae rather than bristles; sides of abdomen not pale yellow and the pregenital segments with a few strong dark brown bristles.

Material examined. *Holotype* ♂, Z. S. I. Reg. No. 7641/H6, India: South Andaman: Mannarghat, 1. iv. 1964, Coll. B. S. Lamba. *Paratype* ♀, data as in holotype.

Discussion : This species has a distinct male genitalia and can be separated from all the other known species of the genus by the genitalia together with the posteroventral row of bristles of the fore femur.

Distribution : India (S. Andaman).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

111. *Ommatius arunachalensis* Joseph & Parui

(Fig. 105)

1983b. *Ommatius arunachalensis* Joseph & Parui, *Ent. scand.*, 14 : 94. Type locality: Tamen, Subansiri Division, Arunachal Pradesh, N. E. India.

1990. *Ommatius arunachalensis*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 37.

A comparatively small, black and yellowish-brown species with pale yellow legs and infuscated wings. Male: length 10 mm, wing 6.5 mm.

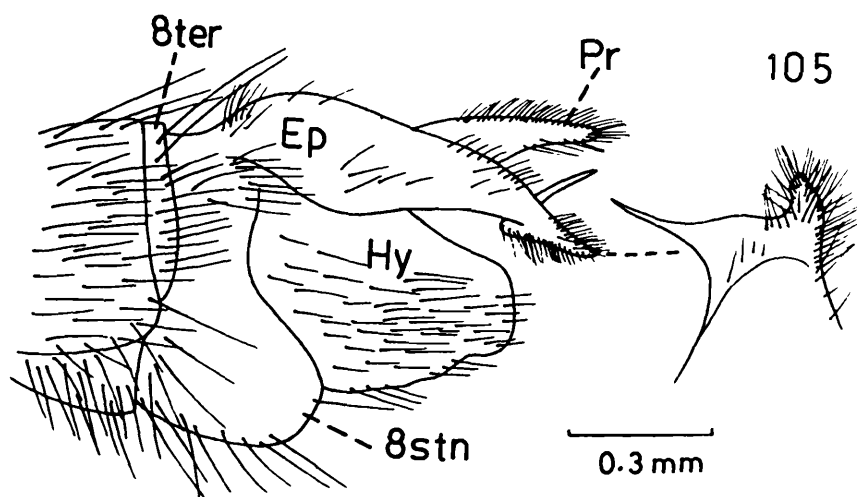


Fig. 105 : *Ommatius arunachalensis* Joseph & Parui, lateral view of male genitalia.

Male : *Head* black infuscated with sparse greyish-yellow tomentum; mystax pale yellow and black; fronto-orbital and ocellar bristles black; postcranium sparse grey tomentose, the tomentum comparatively distinct above, setae white below and pale yellow above, a few pale yellow postocular bristles present above. Antenna with scape and pedicel yellowish-brown, first flagellomere dark brown,

bristles on scape and pedicel dark brown, scape and pedicel almost equal in length, first flagellomere slightly longer than scape and pedicel. Palpus yellowish-brown, proboscis dark brown, their setae pale yellow.

Thorax black with sparse grey tomentum; pronotum dark brown with pale yellow setae, four pale yellow bristles present in a transverse row; scutum devoid of mediolongitudinal stripe, humeri and sides yellowish-brown, above which the tomentum comparatively distinct, bristles yellowish-brown but also with a few black ones; pleuron yellowish-brown with an anterior black transverse band; scutellum grey tomentose, dark brown medially and yellowish-brown laterally, pale yellow setae present on the disc and pair of similarly coloured bristles on the border; laterotergite with pale yellow bristles. Haltere yellowish to dark brown, stalk lighter coloured.

Legs pale yellow, tarsomere I apically and the subsequent ones to a large extent dark brown, more distinctly so in hind legs; setae and bristles black and pale yellow, femur with dense black setae above imparting a dark brown shade, hind femur with a ventral row of long bristles.

Wing infuscated distally and along the hind border, remaining hyaline.

Abdomen yellowish-brown, hind border of terga dark brown, sterna comparatively paler, tergum I posterolaterally with a few pale yellow bristles, vestiture predominantly pale yellow with also a few black ones, but in the terminal two segments vice versa. Male genitalia (Fig. 105) dark brown with pale yellow and white setae.

Material examined : Holotype ♂, N. E. India: Arunachal Pradesh: Subansiri Division: Tamen, 457 m, 18. v. 1966, Coll. A. N. T. Joseph.

Discussion : It is quite similar to *Ommatius indicus* Joseph & Parui but can be easily distinguished by the presence of a ventral row of long bristles of hind femur and the differences in the shape of the structures of male genitalia.

Distribution : India (Arunachal Pradesh).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

112. *Ommatius ater* Bromley

1935. *Ommatius ater* Bromley, *Rec. Indian Mus.*, **37**: 227. Type locality: Singla, Bengal.

1975. *Ommatius ater* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 131.

1990. *Ommatius ater* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 38.

A small black species with black legs, iridescent wings and metallic black abdomen. Female: length 10 mm, wing 9 mm.

Female. *Head* black, heavily infuscated with grey and greyish-yellow tomentum; mystax wholly black; frontoorbital setae and ocellar bristles black, postcranium bare above, sparsely black setose below, postocular bristles black, postgena with dense white setae. Antenna black with the pedicel partly yellowish-brown, bristles of scape and pedicel black, pedicel subequal to scape, first flagellomere and scape nearly equal in length. Palpus and proboscis black with black setae.

Thorax black, sparsely grey to yellowish-grey tomentose; pronotum heavily grey tomentose with sparse, white setae, medially with four black bristles in a transverse row; scutum with a faint

mediolongitudinal black stripe, vestiture black but for some pale yellow ones anterolaterally, bristles black; scutellar disc with fine white setae and border with a pair of black bristles; laterotergite and meron with a transverse row of pale yellow bristles. Haltere yellowish-brown, stalk lighter coloured.

Legs wholly black, fore and mid femora with elongate pale yellow setae ventrally, hind femur with a ventral row of pale yellow bristles, fore and mid tibiae below with a median pair of elongate pale yellow bristles, in fore leg distal part of tibia and basitarsus with a mat of golden yellow setae ventrally, in hind leg distal part of tibia and basitarsus with the mat of golden yellow setae both ventrally and posteriorly, vestiture predominantly white with some black setae also, bristles pale yellow and black.

Wing almost hyaline, iridescent.

Abdomen metallic black, tergum 1 on sides with a bunch of pale yellow setae, tergum 2 on sides with some pale yellow setae, vestiture black but for a few pale yellow ones on sides of terga 3 and 4.

Material examined: Holotype ♀, Z. S. I. Reg. No. 657/H6, W. Himalayas: Simla, in jungle, viii-ix. 25, Coll. B. N. Chopra.

Discussion : It resembles *Ommatius jonesi* Joseph & Parui but can be distinguished by its metallic black abdomen, terga 1 and 2 with long setae and hyaline wing.

Distribution : India (Himachal Pradesh).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

113. *Ommatius auratus* Wiedemann*

1821 *Ommatius auratus* Wiedemann, *Dipt. exot.*, 1 : 213. Type locality: India Or.

1983. *Ommatius auratus*: Joseph & Parui, *Oriental Ins.*, 17 : 330.

Shining golden thorax, dark bands, with brownish abdomen and legs, two segments are black. Length 6-7 mm. Female. India Or.

Fabr. *Ent. scand.* IV. 387. 48. *Asilus auratus* : golden thorax with setae and dark back, brownish abdomen: two black segments.

Size as the previous one (*A. lineatus*). Setate head, golden proboscis and black eyes. Golden setate thorax, dark back barely striped. Flat abdomen with thick apex, the fourth segment is brick colour, the fifth is black. Brick colour legs, black apex.

Fabr. *Syst. Antl.* 167. 12. *Dasypogon auratus*.

The bases of antennae are reddish, the first flagellomere is black and elongated, the apex of the styli has short setae, white beard, yellowish mystax, golden below the mouth. Thorax with little seta, though covered with golden scales has also spiny bristle, usually dark bands, golden pleura. Two segments of the abdomen are black and those at the apex are brick colour. The wings are brownish-yellow. The apices of hind legs have on both the sides a black spot, in other legs femora are all over brownish-yellow, the back is black. Mus. Fabr. et n.

Material : ♀, India Or.

Discussion : According to the present key the species comes to couplet 26: *Ommatius auratus* Wiedemann and *O. fuscus* Joseph & Parui. The former differs from the latter in the yellow mystax, fourth abdominal tergum brick coloured, and scape and pedicel black with reddish bases.

Distribution : India (no other details); Burma (Myanmar); Celebes; Formosa; Pakistan.

Types. Location of types not known.

114. *Ommatius bengalensis* Joseph & Parui

(Fig. 106)

1987b *Ommatius bengalensis* Joseph & Parui, *Bull. zool. Surv. India*, 8 (1-2) : 228. Type locality : Sukna, 55 km. S. of Darjeeling, West Bengal.

1990. *Ommatius bengalensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 38.

A small black species with black and yellowish-brown legs, brownish tinged wings and clavate abdomen. Male: length 9 mm, wing 7 mm.

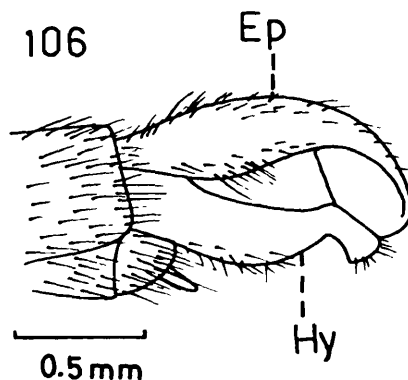


Fig. 106 : *Ommatius bengalensis* Joseph & Parui, lateral view of male genitalia.

Male : **Head** black, grey tomentose; mystax wholly white; fronto-orbital setae pale yellow, ocellar bristles black, postcranium sparsely grey tomentose, bare above, postocular bristles black, postgena white setose. Antenna broken off from first flagellomere onwards, scape black, pedicel lighter coloured with brown bristles, the latter shorter than the former. Palpus and proboscis dark brown, setae dark brown on the former and white on the latter.

Thorax black with grey and greyish-yellow tomentum; pronotum with sparse, grey setae; scutum with the mediolongitudinal stripe faintly marked and extending from the anterior border to well beyond the transverse suture, devoid of the narrow dividing line, laterally and posterior border greyish-yellow tomentose, bristles black; pleuron grey tomentose; scutellum grey tomentose, hind border with a pair of yellowish-brown bristles; laterotergite with pale yellow bristles. Haltere yellowish-brown, stalk lighter coloured.

Legs black and yellowish-brown; coxa, trochanter and femur black, tibia yellowish-brown, hind tibia apically darkened, tarsomere 1 yellowish-brown, in hind legs apically darkened, remaining tarsomeres dark brown; vestiture pale yellow; also with some black setae, bristles black and pale yellow, hind femur with anteroventral and posteroventral rows of pale yellow bristles.

Wing brownish tinged with the base hyaline.

Abdomen black with the hind border of terga 2-5 narrowly yellowish-grey, tergum 1 laterally with a bunch of pale yellow setae, vestiture pale yellow and black. Male genitalia (Fig. 106) yellowish-brown and dark brown with pale yellow setae.

Material examined : *Holotype* ♂, B. P. B. M. Reg. No. 13099, India: Sukna, 55 km. S. of Darjeeling, v. 1966, Coll. J. and M. Sedlacek.

1 ♂ 3 ♀, India: Meghalaya: South Garo Hills District: Sibbari, 26. iv. 1991; 1 ♂ 1 ♀, South Garo Hills District: Gasupara, 28. iv. 1991, all Coll. B. N. Das (Z. S. I.)

Discussion : *Ommatius bengalensis* Joseph & Parui is generally similar to *O. pseudodraavidicus* Joseph & Parui differing from which in the wholly white mystax and differences in the shape of epandrium and hypandrium.

Distribution : India (Meghalaya and West Bengal).

Type : In the Collection of the B. P. Bishop Museum, Honolulu.

115. *Ommatius biharensis* Joseph & Parui

(Fig. 107)

1987e. *Ommatius biharensis* Joseph & Parui, *Oriental Ins.*, **21** : 151. Type locality: Pusa, Bihar.

A medium sized black and yellowish-brown species with yellowish-brown and pale yellow legs, swollen femora, light-brown wings and clavate abdomen. Male: length 11-12 mm, wing 7-8 mm.

Males : *Head* black, infuscated with dense greyish-white or greyish-yellow tomentum; mystax white with some black bristles above in holotype and a pair in paratype; frontoorbital bristles and ocellar bristles black, postocular bristles black, postcranium with dense, white setae, postgena densely white setose. Antennal scape and pedicel dark brown with dark brown bristles, first flagellomere black, scape subequal to pedicel, first flagellomere a little longer than pedicel. Palpus and proboscis black, the former black setose while the latter white setose.

Thorax black, densely grey tomentose; pronotal setae white, dense laterally, two black and two white bristles present in a transverse row; scutum with a mediolongitudinal brown or grey stripe extending from anterior border to three-fourths, the stripe medially divided by a broad, black stripe, laterally with one small and two large black spots in a longitudinal row which are confluent, laterally grey tomentose; chaetotaxy: 1 supra-alar, 1 intra-alar, 1 postalar, 4-6 prescutellar dorsocentrals; vestiture white and bristles black, pleuron greyish-white tomentose; scutellar disc with long, sparse, white setae and elongate white setae; laterotergite with elongate white setae arranged transversely, a few of which above may be black. Haltere yellowish-brown with its head lighter coloured.

Legs yellowish-brown and pale yellow; coxa, trochanter and femur yellowish-brown, tibia pale yellow, tarsus pale yellow with its apex dark brown, the latter colour increasing in distal segments so much so the distal segments almost completely dark brown; vestiture white with black bristles; hind femur inflamed with one anteroventral and one posteroventral row of spiny bristles, outer to the anteroventral row with one to three spiny bristles near the middle.

Wing light brown with the base hyaline.

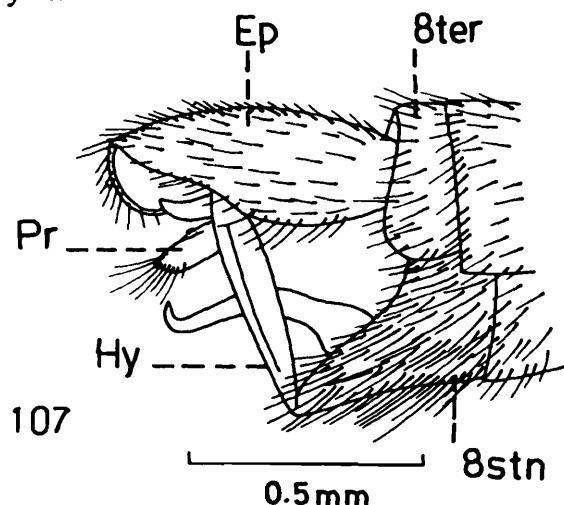


Fig. 107 : *Ommatius biharensis* Joseph & Parui, lateral view of male genitalia.

Abdomen dark brown, terga 1-4 laterally and posteriorly grey tomentose, remaining terga only on sides grey tomentose, tergum 1 laterally with dense, elongate, pale yellow setae, terga 2 and 3 laterally with rather short pale yellow setae, vestiture white with a few black setae on posterior terga. Male genitalia (Fig. 107) yellowish-brown with black and white setae.

Material examined : Holotype ♂, Bihar: Pusa, 19. viii. 1980, Coll. H. N. S. Paratype ♂ Bihar: Pusa, 7. iii. 1961, Coll. M. S.

Discussion : *Ommatius dravidicus* Joseph & Parui, *O. pseudodrauidicus* Joseph & Parui and *O. biharensis* Joseph & Parui have a similar pattern of male genitalia, all of which can be identified by the differences in the shape of epandrium and hypandrium.

Distribution : India (Bihar).

Types : Holotype in the Collection of the Smithsonian Institution, Washington, and paratype in the National Zoological Collection of the Zoological Survey of India, Calcutta.

116. *Ommatius conopsoides* Wiedemann

1882. *Ommatius conopsoides* Wiedemann, *Aussereurop. zweifl. Insekt.*, 1: 422. Type locality: Sumatra.

1975. *Ommatius conopsoides*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2: 131.

1990. *Ommatius conopsoides*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113: 38.

A medium sized black species with greyish-white tomentum, contrasting black and yellowish-brown legs, brownish wings, and clavate abdomen. Female: length 11 mm, wing 9 mm.

Female : *Head* black, infuscated with dense greyish-white and white tomentum; mystax sparse, bristles white except for one black bristle above; fronto-orbitals absent, ocellar bristles black, upper side of postcranium sparsely white setose, postocular bristles black, postgena white setose. Antenna black, scape and pedicel with black bristles, pedicel subequal to scape, first flagellomere longer than scape. Palpus and proboscis black, the former pale yellow setose, while the latter white setose.

Thorax black, greyish-white and greyish-brown tomentose; pronotum white setose with two bristles on either side, median bristle white while the other pale yellow; scutum with a broad mediolongitudinal stripe extending from anterior border, whose hind end cannot be ascertained as that part is damaged, the stripe faintly divided by a narrow grey stripe, on sides with two lateral black spots in a longitudinal row, laterally tomentose which behind the humeri forming a large patch, vestiture white, bristles black; scutellum with the disc sparsely white setose, border with a pair of black bristles; pleura densely greyish-white tomentose, laterotergite and meron with a transverse row of bristles which are pale yellow on the former and white on the latter. Haltere pale yellow marked with light brown.

Legs contrasting black and yellowish-brown, coxa black with dense greyish-white tomentum, trochanter and femur black, tibia yellowish-brown with apex dark brown, especially of hind tibia, tarsomeres yellowish-brown, basitarsus apically dark brown and rest of tarsomeres mostly dark brown, hind femur with an anteroventral row of pale yellow bristles and posteroventrally with two to three similarly coloured bristles basally, vestiture predominantly white with some black ones also, bristles pale yellow and black, mat of golden yellow setae present anteroventrally on fore femur and ventrally on fore tarsus.

Wing brownish, deeper coloured anteromedially, lighter on posterior half, especially basally.

Abdomen black, grey tomentose, tergum 1 posterolaterally grey tomentose, terga 2-7 laterally grey tomentose which extends both anteriorly and posteriorly, especially posteriorly, tergum 1 laterally with a bunch of elongate white setae, about three-fourths of which well developed and form bristles, vestiture black and white.

Material examined. Type ♀, Reg. No. 2241, Sumatra, date of collection and Collector's name not given.

Discussion. It is closely similar to *Ommatius peregrinus* Wulp but it can be readily told by the bifurcated tip of hypandrium and not so dilated hind femur.

Distribution. India (West Bengal); Borneo (E. Malaysia and Kalimantan); Sumatra.

Type. In the Collection of the Zoologisches Museum, Berlin.

117. *Ommatius dravidicus* Joseph & Parui

(Fig. 108)

1983b. *Ommatius dravidicus* Joseph & Parui, *Ent. scand.*, **14** : 87. Type localities: Karnataka State and Kerala State, South India.

1990. *Ommatius dravidicus*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 38.

A medium sized black species with black and yellowish-brown legs, inflated femora, fuscous wings and clavate abdomen. Male: length 11 mm, wing 8 mm; female: length 10 mm, wing 7 mm.

Males : *Head* black with grey to greyish-yellow tomentum; mystax white, fronto-orbitals and ocellar bristles black; postcranium above with sparse yellowish tomentum, laterally greyish-white tomentose, face white to pale yellow but with a few black bristles and setae above. Antenna including bristles black, pedicel nearly equal to scape, first flagellomere longer than scape. Palpus and proboscis black, the former with black and the latter with white setae.

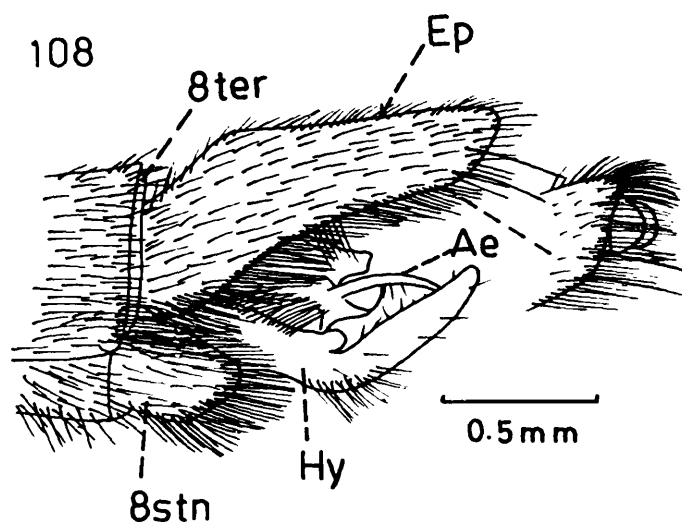


Fig. 108 : *Ommatius dravidicus* Joseph & Parui, lateral view of male genitalia.

Thorax black with greyish-yellow tomentum; pronotal setae white and pale yellow with a transverse row of four black bristles; scutum without mediolongitudinal stripe but at the posterior half behind the transverse suture faintly marked, humeri and laterally greyish-yellow; pleuron grey tomentose; scutellum greyish-yellow tomentose, yellow setae present on the disc and two black bristles on the border; laterotergite with black and pale yellow bristles. Haltere brownish with the stalks pale yellow.

Legs black and yellowish-brown to dark brown; coxa, trochanter and femur black, tibia yellowish-brown, tarsus dark brown, the colouration becoming darker from the basal to the distal tarsomeres; setae and bristles golden yellow and black; femur swollen which gradually increases from the fore to the hind legs, hind femur with a row of anteroventral spines and three posterolateral spines on the distal half.

Wing infuscated but basally hyaline for a considerable area, the infuscation deeper anteriorly.

Abdomen black, hind border of terga 2-4 light brownish, setae of terga black medially and pale yellow laterally. Male genitalia (Fig. 108) black with black or black and yellow setae.

Females : Similar but the mystax black with a few white or black and yellowish-brown bristles; femur not swollen.

Material examined : *Holotype* ♂, South India: Karnataka State: Shimoga District: Agumbe Ghat, v. 1974, Coll. T. R. S. Nathan. *Paratypes* 2 ♀, (including allotype), South India: Kerala State: Anamalai Hills: Cinchona, 1067 m, v. 1969, Coll. T. R. S. Nathan; 1 ♂ 1 ♀, Anamalai Hills: Cinchona, 1067 m, v. 1968, Coll. P. S. Nathan.

Discussion : It is similar to *Ommatius miror* Doleschall from which it can be easily distinguished by the differences in male genitalia. Further, in the latter the legs are not so thick and the wings are paler.

Distribution : India (Karnataka and Kerala).

Types : Holotype and 2 paratypes in the Collection of the California University, California, and 2 paratypes in the National Zoological Collection of the Zoological Survey of India, Calcutta.

118. *Ommatius dubius* Joseph & Parui

(Fig. 109)

1987a *Ommatius dubius* Joseph & Parui, Bull. zool. Surv. India, **8** (1-3): 96. Type locality: India (no other details).

1990. *Ommatius dubius*: Joseph & Parui, Rec. zool. Surv. India, Occ. Paper No. 113: 38.

A medium sized black species with black, dark brown, yellowish-brown and pale yellow legs, infuscated wings and a trifold aedeagus. Male: length 12 mm, wing 9 mm.

Male : *Head* black with sparse grey and greyish-yellow tomentum; mystax pale yellow with a few black bristles above; fronto-orbital bristles and ocellar bristles black, postcranium above sparsely and below densely grey tomentose, postocular bristles black, postgena white setose. Antenna with scape and pedicel yellowish-brown, first flagellomere and style dark brown, pedicel slightly shorter than scape, first flagellomere attenuate, much longer than the combined length of scape and pedicel. Palpus and proboscis black, the former with black bristles, while the latter white setose.

Thorax black with grey tomentum; pronotum sparsely white setose with a transverse row of four black bristles; scutum black but anterolaterally and posterolaterally dark brown, sparsely grey tomentose, mediolongitudinal stripe lacking; scutellum damaged; pleura sparsely grey tomentose, laterotergite with a transverse row of black bristles, meron bare. Haltere pale yellowish-brown.

Legs variable in colour; coxa black, trochanter yellowish-brown to dark brown, femur yellowish-brown, tibia pale yellow but in hind leg posteriorly yellowish-brown, tarsus dark brown, hind tibia and two basal tarsomeres posteriorly with mat of golden yellow pubescence, vestiture mostly black with some pale yellow setae, bristles black.

Wing infuscated.

Abdomen black, posterior of terga 2-4 dark brown and 5-7 with pale yellow bands, posterolateral angle of tergum 1 with pale yellow and black bristles, setae pale yellow and black. Male genitalia (Fig. 109) dark brown and yellowish-brown with black and pale yellow setae; aedeagus trifold.

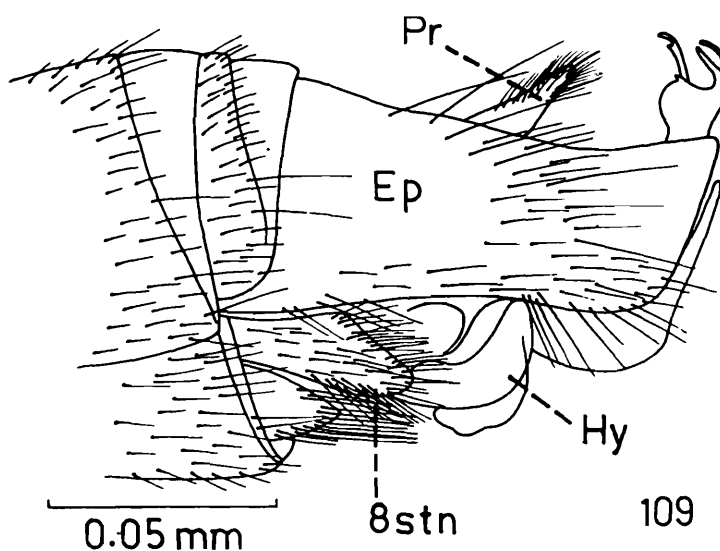


Fig. 109 : *Ommatius dubius* Joseph & Parui, lateral view of male genitalia.

Material examined : Holotype ♂, India, Coll. T. R. Bell, 1934-394, no other details.

Discussion : This species has a distinctive male genitalia with trifid aedeagus, which readily separates it from all the other known regional members of the genus *Ommatius* Wiedemann. The long, attenuate first flagellomere and the shape of epandrium are similar to those seen in *Michotamia* Macquart.

Distribution : India.

Type : In the Collection of the Natural History Museum, London.

119. *Ommatius femorata* (Bigot)*

1875. *Emphysomera femorata* Bigot, *Annls Soc. ent. Fr.*, (5) 5: 245. Type locality: Sri Lanka.

1975. *Ommatius femorata*: Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2: 132.

1983. *Ommatius femorata*: Joseph & Parui, *Oriental Ins.*, 17: 331.

Male : Length 10 mm. All femora are slightly swollen, particularly the hind ones which have numerous bristles below; the first flagellomere is a little shorter than the combined length of scape and pedicel; the wings do not bulge on the anterior margin.

Black antennae; front of head, setae on top of mouth and mystax are white, the latter with a few long black bristles above; thorax is black, sides, pleura and scutum are grey; abdomen is black, markings are a subtle greyish colour; brownish male genitalia; lightly scaly halteres; black femora, black bristles, scaly tibiae with blackish ends, blackish tarsi, basitarsus is darkly scaly, pulvilli are brownish; wings are almost hyaline but slightly greyish; some black sparse tibial bristles and grey setae.

Material : ♂, Sri Lanka.

Discussion : The brownish male genitalia and the predominantly white mystax separates the species from the generally similar *Ommatius truncatus* Joseph & Parui.

Distribution : Sri Lanka.

Types : Location of types not known.

120. *Ommatius frauenfeldi* Schiner*

1868. *Ommatius frauenfeldi* Schiner, *In: Reise der Osterreichischen Fregatte Novara. Dipt.* : 193. Type locality: Kombul, Nicobar Islands.

1975. *Ommatius frauenfeldi* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 132

1990. *Ommatius frauenfeldi*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 38.

Brown; nota of thorax at the joints, around the humeri and before the scutum rusty red; pleura similarly coloured and white dense sprinkled. Scutum yellow brownish. Abdomen uniformly broad, brighter than scutum, each segment posteriorly and laterally almost rusty yellow, anteriorly blackish-brown; the boundaries nowhere sharp; the second segment is brighter even anteriorly, abdomen

ventrally rusty yellow. Male genitalia shiny pitch brown, very complicated; the outer and inner appendages thread-like, rusty yellow; the odd mid piece jutting out at the top, thick, densely setate at the ends. Head light brown, front very narrow, golden yellow with black gleaming mid stripes. Face broader at the bottom than at the top, somewhat setate, upper lip seta yellow, all segments blackish at the tips; the proboscis pitch black, shiny. Legs rusty yellow, femur and tibia somewhat darker at the upper side near the ends, at the apex of femur and base of tibia with a black patch, tarsi around the apex darkened, claws black. Wings yellow, veins brownish-yellow tinged, only at the tip deep brown, at the base almost hyaline; the second hind edge cell jutting out rather prominently into the first one. The body setae nowhere prominently bright; at the posterior side of scutum two black bristly setae, similar setae around the wing base and two at the edge of scutum; first abdominal segment with a few black bristly setae, a few long black bristly setae at the mid and hind femur region especially conspicuous.

Material : 5 ♂ 1 ♀, Nicobar Islands: Kombul.

Discussion : According to the present key *Ommatius frauenfeldi* Schiner and *O. jairajpurii* Joseph & Parui come under the couplet 28. The species under consideration differs from the other by all the antennal segments being rusty yellow with black tips and by the complicated male genitalia.

Distribution : India (Nicobar Islands).

Types : Location of types not known.

121. *Ommatius fuscus* Joseph & Parui

(Fig. 110)

1984b. *Ommatius fuscus* Joseph & Parui, *Oriental Ins.*, **18** : 57. Type locality: Dhimbam, Biligirirangan Hills, Tamil Nadu, India.

1990. *Ommatius fuscus*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 38.

A small brown species with brown and pale yellow legs and hyaline wings. Male: length 7 mm, wing 4 mm.

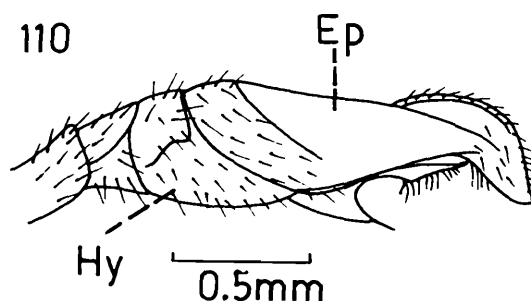


Fig. 110 : *Ommatius fuscus* Joseph & Parui, lateral view of male genitalia.

Male : Head brown infuscated heavily with grey tomentum; mystax white; a pair of dark brown bristles present below antenna, fronto-orbitals absent, ocellar triangle with dark brown and pale yellow bristles; postcranium with a median, grey tomentose stripe and below heavily tomentose, separated by a bare area, adjoining to the stripe on either side with 4 dark bristles, below which sparse, white setae

present. Antenna with scape and pedicel brownish with brownish bristles, both almost equal in length, rest of antenna lost. Palpus and proboscis dark brown, the former with dark brown and the latter with white setae.

Thorax brown with grey tomentum; pronotum sparsely pale yellow setose; scutum without mediolongitudinal stripe, vestiture sparse pale yellow, bristles dark brown and pale yellow; pleuron grey tomentose; scutellum sparsely grey tomentose; setae on the disc with sparse, pale yellow, hind border with a pair of pale yellow bristles; bristles on laterotergite pale yellow. Haltere white.

Legs light brown and pale yellow; coxa, trochanter and femur light brown, tibia pale yellow to whitish, tarsomere basally pale yellow and apically light brown, vestiture and bristles pale yellow and black; fore tibia arched with a short posteroventral spine at the beginning of arch.

Wing hyaline.

Abdomen brown, tergum 1 laterally with a bunch of long, pale yellow setae, vestiture pale yellow and black. Genitalia (Fig. 110) basally brown and distally pale yellow, vestiture dark brown and pale yellow.

Material examined : Holotype ♂ India: Tamil Nadu: Biligirirangan Hills: Dhimbam, 28. iv. 1937, B. M. C. M. Expedition to South India.

Discussion : *Ommatius fuscus* Joseph & Parui can be readily distinguished from all other known regional species of the genus by its smaller size together with its distinctive male genitalia. Its epandrium is somewhat similar to that of *Ommatius tandoni* Joseph & Parui.

Distribution : India (Tamil Nadu).

Type : In the Collection of the Natural History Museum, London.

122. *Ommatius genitalis* Joseph & Parui

(Fig. 111)

1987e. *Ommatius genitalis* Joseph & Parui, *Oriental Ins.*, **21** : 152. Type locality: Mussoorie, Uttar Pradesh, India.

A small black and dark brown species, with pale yellow legs with dark brown infuscation on femur, and light brown wings. Male: length 8 mm, wing 7 mm; female: length 8 mm, wing 9 mm.

Male. Head black, infuscated with greyish-white tomentum; mystax white with one pair on upper side being elongate; frontoorbital bristles sparse, pale yellow, ocellar bristles elongate and two in number, postocular bristles about four in number and black and white, occipital setae sparse, white, postgena with somewhat dense white setae. Antenna with scape pale yellow, remaining dark brown, scape and pedicel bearing black bristles, pedicel slightly longer than scape, first flagellomere slightly longer than pedicel. Palpus and proboscis black with white setae.

Thorax black, densely greyish-yellow and greyish-white tomentose; pronotum white setose with one bristle on either side; scutum with a faint mediolongitudinal stripe extending from the anterior end to slightly before the border, the stripe indistinctly divided the entire length by a black stripe, laterally with two longitudinal black spots in a longitudinal row, laterally greyish-yellow tomentose; chaetotaxy: 1

supra-alar, 1 postalar, 4 prescutellar dorsocentrals; vestiture white and bristles black; pleuron with dense greyish-white tomentum; scutellar disc with sparse white setae posteriorly, hind border with a pair of pale yellow bristles; laterotergite and meron with a transverse row of white bristles. Haltere yellowish-brown with white stalk.

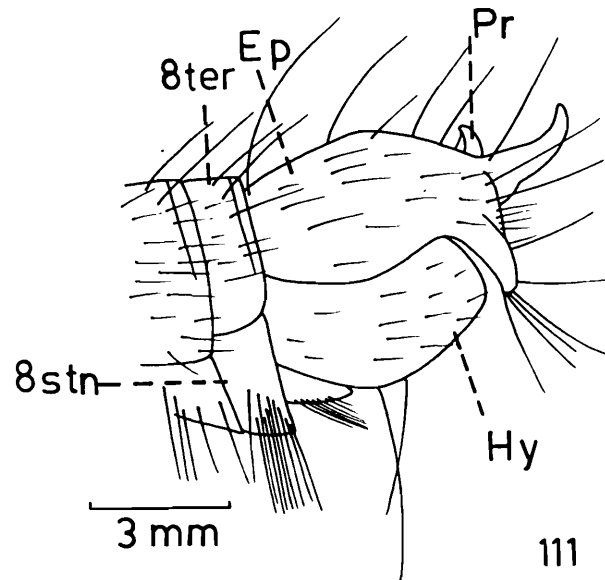


Fig. 111 : *Ommatius genitalis* Joseph & Parui, lateral view of male genitalia.

Legs pale yellow with dark brown infuscation; coxa heavily grey tomentose, trochanter dark brown, femur pale yellow with faint dark brown dorsally but in hind femur more than distal two-thirds infuscated with dark brown, tibia and tarsus pale yellow but in hind leg apex of tibia and tarsus yellowish-brown, mid femur with anteroventral row of bristles which gradually become shorter posteriorly, hind femur with a row of white setae which become gradually shorter posteriorly, fore tibia with a posterior row of bristles, three of which are elongate, mid tibia with three anterior bristles near middle and a row of bristles posteriorly, vestiture and bristles white and black.

Wing light brown with about one-third posterobasally hyaline.

Abdomen black, terga medially to a large extent dark brown, tergum 1 posterolaterally with a bunch of white setae, tergum 2 laterally with some long white setae, vestiture predominantly white with a few black setae medially on terga. Male genitalia (Fig. 111) black with black setae, epandrium short and broad, distinctive.

Female : Similar to male but with the following differences: msyntax with a few elongate bristles and most of which black; postocular bristles completely black, occiput nearly bare, postgena with a few white setae; first flagellomere pale yellow; thorax less tomentose, 3 presutural dorsocentrals; hind femur with the posteroventral row of setae limited to the basal half; vestiture and bristles of legs predominantly black; abdomen completely black. Female genitalia black, proctiger broad and medially apposing, eighth sternum yellowish-brown, semicircular and directed upwards.

Material examined : *Holotype* ♂ Uttar Pradesh: Mussoorie, 2042 m, 20. vii. 1944, Coll. D. E. Hardy. *Paratype* ♀, locality as in holotype but without altitude, 17. vii. 1944.

Discussion : *Ommatius genitalis* Joseph & Parui can be readily recognised from all other known regional species by the distinctive epandrium, which is short and broad.

Distribution : India (Uttar Pradesh).

Types : In the Collection of the Smithsonian Institution, Washington.

123. *Ommatius gopalpurensis* Joseph & Parui

(Fig. 112)

1987a. *Ommatius gopalpurensis* Joseph & Parui, *Bull. zool. Surv. India*, **8** (1-3) : 98. Type locality: Gopalpur, 24 Parganas, West Bengal, India.

1990. *Ommatius gopalpurensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 38.

A small black species with black and yellowish-brown legs, distally infuscated wings and clavate abdomen. Male: length 9-10 mm, wing 6-8 mm.

Males. *Head* black infuscated with greyish-yellow and grey tomentum; mystax black above, pale yellow below; frontoorbital bristles and cellular bristles black, postcranium above sparsely grey tomentose, below densely grey tomentose, setae white, sparse above and dense below, postocular bristles black. Antenna including bristles black, pedicel slightly shorter than scape, first flagellomere and scape subequal in length. Palpus and proboscis black, the former black setose with also a few pale yellow setae, proboscis wholly white setose.

Thorax black with grey tomentum; pronotum sparsely white setose with a transverse row of four bristles, inner pair black and outer pair pale yellow; scutum without mediolongitudinal stripe, tomentum sparse and restricted to sides; scutellar disc sparsely white setose with a pair of black bristles on border; pleura grey tomentose, laterotergite and meron with a transverse row of black and pale yellow bristles. Haltere yellowish-brown.

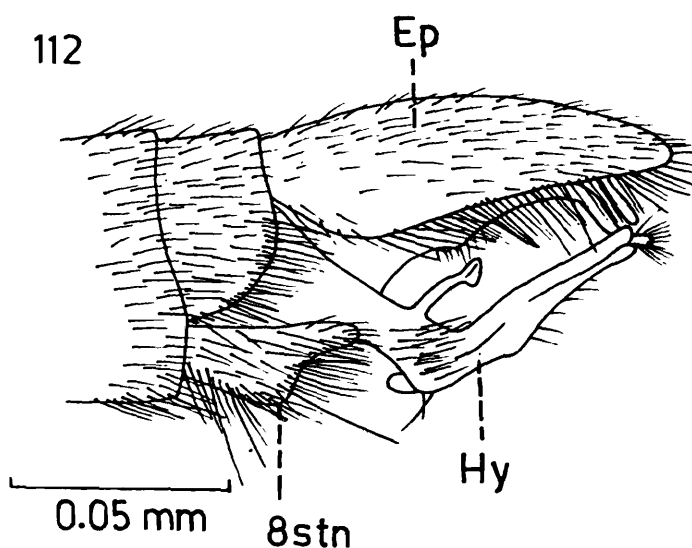


Fig. 112 : *Ommatius gopalpurensis* Joseph & Parui, lateral view of male genitalia.

Legs black and yellowish-brown; coxa, trochanter and femur black, tibia yellowish-brown, black apically, basitarsus yellowish-brown with black apex, remaining tarsomeres black or yellowish-brown and black, fore and mid femur ventrally with long, white setae, hind femur with anteroventral and posteroventral row of black spines, setae intermixed black and white, bristles black.

Wing infuscated but basally and medially hyaline, the infuscation deeper anteriorly.

Abdomen clavate, black with its sides yellowish-brown in holotype and grey in paratype, terga 1 and 2 with some long, white or pale yellow setae laterally, setae intermixed black and white. Male genitalia (Fig. 112) black with black and pale yellow setae.

Material examined : *Holotype* ♂ Z. S. I. Reg. No. 7259/H6, India: West Bengal: 24 Parganas: Gopalpur, 24. vi. 1983, Coll. P. Parui. *Paratype* ♂, Reg. No. 7260/H6, rest of data as in holotype.

Discussion : The male genitalia of *Ommatius gopalpurensis* Joseph & Parui and *O. peregrinus* (Wulp) are similar in shape but they differ widely in structural details. It has some superficial resemblance with *O. truncatus* Joseph & Parui.

Distribution : India (West Bengal).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

124. *Ommatius hradskyi* Joseph & Parui

(Fig. 113)

1983b. *Ommatius hradskyi* Joseph & Parui, *Ent. scand.* **14** : 93. Type locality: Coimbatore, Tamil Nadu, South India.

1990. *Ommatius hradskyi*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 38.

A comparatively small species with dark and pale yellow legs, the hind femur bearing anteroventral row of spine-like bristles and brownish and hyaline wings. Male: length 10.5 mm, wing 7 mm.

Male : *Head* black with greyish-yellow tomentum; mystax pale yellow, fronto-orbital and ocellar bristles black; postcranium tomentose, dense on upper side, setae pale yellow, postocular bristles black. Antenna with scape and pedicel yellowish-brown, first flagellomere dark brown, bristles of scape and pedicel black, pedicel slightly longer than half of scape, first flagellomere shorter than scape. Palpus and proboscis dark brown with pale yellow setae.

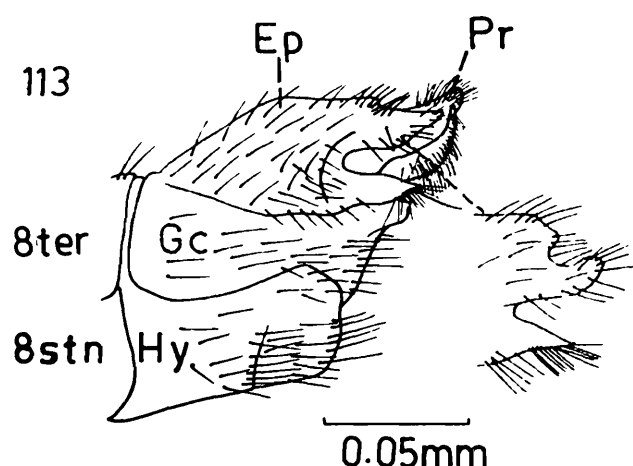


Fig. 113 : *Ommatius hradskyi* Joseph & Parui, lateral view of male genitalia.

Thorax black with grey tomentum; pronotal setae pale yellow, a transverse row of two bristles present on either side; scutum damaged and hence the presence of mediolongitudinal stripe cannot be ascertained, tomentum dense laterally and posteriorly; scutellum dark brown with sparse grey tomentum, pale yellow setae on the disc and a pair of black bristles on the border; laterotergite with pale yellow and a few black bristles. Haltere pale yellow.

Legs dark brown and pale yellow; coxa, trochanter and femur dark brown to black, tibia pale yellow in fore and mid legs, dark brown in hind leg, tarsomeres pale yellow in fore leg with dark brown apical marking which increases from the basal to the distal tarsomeres so much so the apical tarsomere for about three-fourths its length dark brown, intensity and extent of dark brown marking of tarsomeres increases from the fore to the hind legs, vestiture and bristles black and pale yellow; femur and tibia in fore and mid legs ventrally bear dense, long, thin setae, in hind leg these setae not conspicuously developed, hind femur stout with a row of short spine-like bristles anteroventrally and an anterior row of four bristles from some distance before the middle to the apex.

Wing brownish, but basally hyaline.

Abdomen black with grey tomentum, hind border narrowly dark brown, setae pale yellow and white. Male genitalia (Fig. 113) dark brown and brown with pale yellow and black setae.

Material examined : Holotype ♂, Z.S.I. Reg. No. 7858/H6, South India: Tamil Nadu: Coimbatore, vii. 1957. Coll. P.S. Nathan.

Discussion : *Ommatius hradskyi* Joseph & Parui is very closely similar to *O. jabalpurensis* Joseph & Parui from which it can be separated by the differences in the shape and in the structural details of male genitalia. It has some superficial resemblances with *O. pseudodraavidicus* Joseph & Parui, but differs in the colouration of tibia and in the male genitalia.

Distribution : India (Tamil Nadu).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

125. *Ommatius hulli* Joseph & Parui

(Fig. 114)

1983b. *Ommatius hulli* Joseph & Parui, *Ent. scand.*, **14** : 88. Type localities: Karnataka State and Kerala State, South India.

1990. *Ommatius hulli*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 38.

A medium sized black species with yellowish-brown legs, hind tibia dark brown to varying extent, and distally infuscated wings. Male : length 14-16 mm, wing 10-12 mm.

Males : *Head* black infuscated with grey tomentum; mystax wholly white or rarely with a few black bristles, fronto-orbital and ocellar bristles black; postcranium sparsely or densely grey tomentose, in the former tomentum distinct at lower ends and above, setae pale yellow, postocular bristles black. Antenna with scape and pedicel pale yellow, first flagellomere dark brown, bristles on scape black or black and white, bristles on pedicel black, scape subequal to pedicel, first flagellomere longer than scape or pedicel. Palpus and proboscis dark brown to black, in a few examples yellowish-brown, the former with pale yellow and the latter with white setae.

Thorax black with greyish-yellow tomentum, pronotal setae pale yellow; scutum with the mediolongitudinal stripe faintly marked, the extent of which varies from the hind border to slightly before the transverse suture or beyond it or almost the entire length, humeri, laterally and hind border broadly greyish-yellow tomentose, bristles black; pleuron sparsely grey tomentose; scutellum dark brown, the border lighter than the rest, tomentum indistinct to dense, pale yellow setae on the disc and a pair of black bristles on the border; laterotergite with yellow bristles. Haltere yellowish-brown to brown and dark brown mingled, stalks lighter coloured.

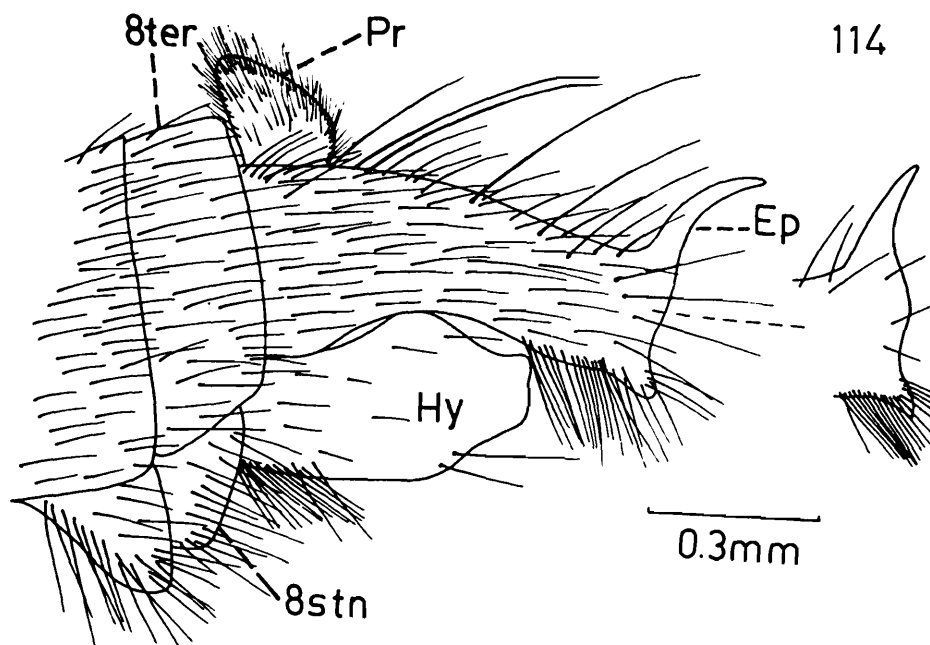


Fig. 114 : *Ommatius hulli* Joseph & Parui, lateral view of male genitalia.

Legs yellowish-brown; hind femur comparatively darker, hind tibia dark brown to a varying extent, tarsomeres dark brown from 2 onwards, vestiture black and yellow, bristles mostly black, also with a few pale yellow ones.

Wing infuscated for about half the length or more than half distally.

Abdomen black with the hind border of terga 1-4 or more brown, setae black and pale yellow.

Male genitalia (Fig. 114) black with some pale yellow setae.

Females. Similar.

Material examined : Holotype ♂, S. India: Anamalai Hills: Cinchona, 1067 m, iv. 1969, Coll. T.R.S. Nathan. Paratypes 6 ♂, v. 1964, rest of details as in holotype; 2 ♂ S. India: Kerala State: Trivandrum District: Poonmudi Range, 914 m, iv. 1971; 1 ♂, v. 1971, rest of data as in preceding; 1 ♂ v. 1972, rest of data as in preceding; 3 ♂, S. India: Karnataka State: Shimoga District: Agumbe Ghat, 610 m, v. 1974, Coll. T.R.S. Nathan.

1 ♂ 1 ♀, India: Tamil Nadu: Shevaroy Hills: Yercaud, 1372 m, 21. iv-1. v. 1913, Coll. Y. R. 1 ♀, 23. iv-4. v. 1913, Coll. Fletcher, other details as in preceding (B. M. N. H.). 1 ♀, Karnataka: Mudigore, 700 m, 23. v. 1967, Coll. K. D. Ghorpade. 1 ♂ 2 ♀, 21-22. v. 1976, rest of data as in preceding (Ghorpade C.).

Discussion : It is closely similar to *Ommatius tuberculatus* Joseph & Parui in the structure of male genitalia but can be readily distinguished by the absence of tubercle with its bristles of mid femur and ventral setae on mid tibia.

Distribution : South India (Karnataka State, Kerala State and Tamil Nadu).

Types : Holotype and 11 paratypes in the Collection of the California University, California, and 2 paratypes in the National Zoological Collection of the Zoological Survey of India, Calcutta.

126. *Ommatius indicus* Joseph & Parui

(Fig. 115)

1983b. *Ommatius indicus* Joseph & Parui, *Ent. scand.*, **14** : 86. Type locality: Kerala State, South India.

1990. *Ommatius indicus*: Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 39.

A medium sized black species with infuscated wings and pale yellow legs. Male: length 10-12 mm, wing 8-9 mm; female: length 12 mm, wing 10 mm.

Males. *Head* black infuscated with golden yellow to grey tomentum; mystax golden yellow to grey and rarely with some black bristles, fronto-orbitals golden yellow to grey, a few of them may be black, ocellar bristles black or pale yellow or both mixed; postcranium devoid of tomentum above except for a mediolongitudinal golden yellow to grey stripe, laterally grey tomentose, setae grey except for a few black bristles above. Antenna with scape and pedicel pale yellow to brownish, first flagellomere black, bristles of scape and pedicel black and pale yellow, scape and pedicel nearly equal in length, first flagellomere longer. Palpus and proboscis black, their setae pale yellow.

Thorax black with greyish-yellow to grey tomentum; pronotum pale yellow setose; scutum with mediolongitudinal stripe faint but extending the entire length, humeri and sides greyish-yellow to grey, bristles black; pleuron grey to yellowish-grey; scutellum greyish-yellow to grey, with or without an anteromedian black spot, bare but in one example a pair of black bristles present on the border; laterotergite with wholly pale yellow or pale yellow and black bristles. Haltere yellowish-brown.

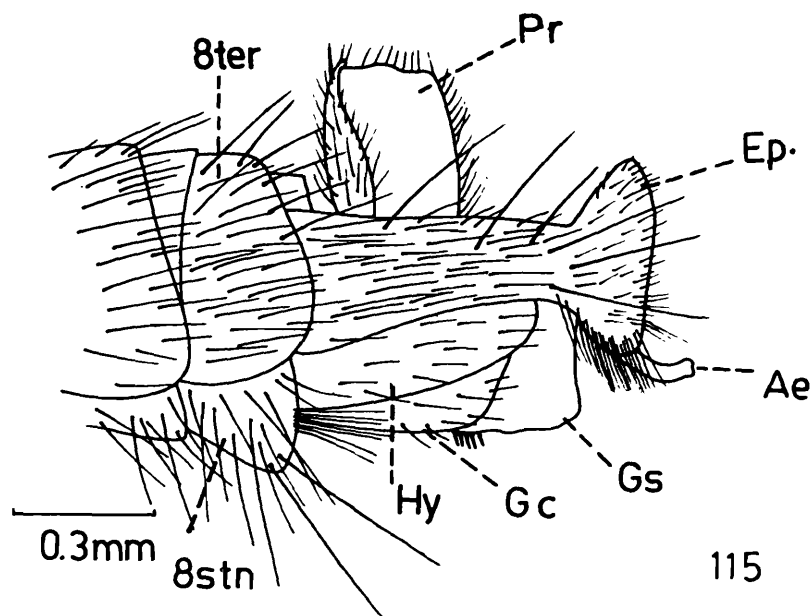


Fig. 115 : *Ommatius indicus* Joseph & Parui, lateral view of male genitalia.

Legs pale yellow; fore and mid legs brownish, the colour gradually becomes deeper from base to apex; hind leg brownish to varying extent, femur dorsally and tibia almost wholly brownish; vestiture and bristles pale yellow and black.

Wing infuscated but base hyaline.

Abdomen black, apex of terga 2-5 or more narrowly pale yellow to brownish, sterna 1-3 or more yellowish-brown, tergum 1 postero laterally with long, pale yellow setae, vestiture predominantly golden yellow with also a few black setae, but on the terminal two segments vice versa. Male genitalia (Fig. 115) black with black setae and bristles except the proctiger being pale yellow setose.

Females : Identical but lighter coloured.

Material examined : *Holotype* ♂, South India: Kerala State: Trivandrum District, Poonmudi Range, 914 m, v. 1971, Coll. T.R.S. Nathan. *Paratypes* 5 ♂, 5 ♀, (including allotype), same data as for holotype; 2 ♂, South India: Kottayam District: Peermade, 1280 m, vi. 1975, Coll. T. R. S. Nathan.

1 ♂, India: Tamil Nadu: Nilgiri Hills: Singayeo, 1020 m, v. 1948, Coll. P. S. Nathan (S.I.). 1 ♂ 1 ♀, Kerala: Poonmudi Range, 914 m, v. 1971, Coll. T. R. S. Nathan (C. A. S.). 1 ♀, Karnataka: Bannerghata Park, 12. ix. 1976; 5 ♂, 8 ♀, Karnataka: Bandipur, 1100 m, 13. v. 1978; 1 ♂ Karnataka: Bangalore, 916 m, 4. ix. 1978; 1 ♂, Tamil Nadu: 8 km S. Yercaud, 1060 m, 21. ix. 1978, all Coll. K. D. Ghorpade (Ghorpade C.). 2 ♀, Kerala: Idukki: Periyar, 900 m, 12. xii. 1979; 2 ♂ 2 ♀, Kerala: Ernakulam District: Malayatur, 16. xii. 1979; 2 ♂, Ernakulam District: Pandupara, 16. xii. 1979; 8 ♂, 11 ♀, Ernakulam District : Idamalaya, 18. xii. 1979; 3 ♂, 3 ♀, Kerala: Truchur District: Anamalai Hills; Poringalkuth, 21. xii. 1979, all Coll. Joseph & Parui (Z.S.I.). 1 ♀, Karnataka: Bangalore, 916 m, 19 vii. 1980; 1 ♀, Bangalore, 26. vii. 1980; 1 ♀, Karnataka: Bangalore, 27. vii. 1980; 1 ♀, Bangalore, 26 vii. 1980; 1 ♂, 1 ♀, Bangalore, 27. vii. 1980; 1 ♀, Gulbarga, 450 m, 21. xi. 1980; 1 ♀, 9 km Arekal, 900 m, 15. vi. 1984; 1 ♂, 12 km N. E. Bavali, 28. x. 1984; 1 ♂ 1 ♀, Kerala: 10 km E. Nilambur, 30. x. 1984; 1 ♂, Calicut, 30. x. 1984; 1 ♀, Dhoni near Walayar, 1. xi. 1984; 2 ♀, 9 km N. Ranni, 200 m, 4. xi. 1984; 1 ♀, Andhra Pradesh: Lamsingi, 400-800 m, 24. viii. 1985; 1 ♀, Kerala, 10 km N. Munnar, 1860 m, 23. ix. 1985, all Coll. K. D. Ghorpade (Ghorpade C.).

Discussion : *Ommatius indicus* Joseph & Parui is similar to *O. rubicundus* van der Wulp from which it can be readily told by the structural details of male genitalia.

Distribution : India (Andhra Pradesh, Karnataka, Kerala and Tamil Nadu).

Types : Holotype and 10 paratypes (including female allotype) in the Collection of the California University, California, and 2 paratypes in the National Zoological Collection of the Zoological Survey of India, Calcutta.

127. *Ommatius jabalpurensis* Joseph & Parui

(Fig. 116)

1983b. *Ommatius jabalpurensis* Joseph & Parui, *Ent. scand.*, 14 : 90. Type locality : Jabalpur, Madhya Pradesh.

1990. *Ommatius jabalpurensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 39.

A comparatively small black species with dark and yellow legs, the hind femur bearing an anteroventral row of spine-like bristles and uniformly light brownish tinged wings. Male : length 13 mm, wing 9 mm; female : length 10-11 mm, wing 7-8 mm.

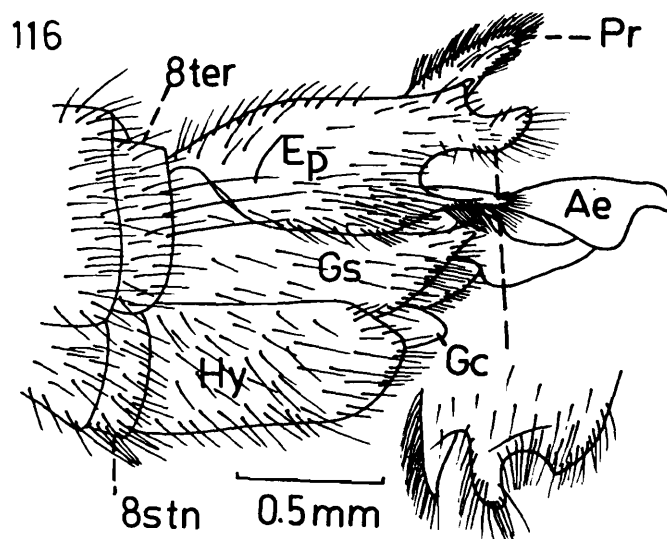


Fig. 116 : *Ommatius jabalpurensis* Joseph & Parui, lateral view of male genitalia.

Males : Head black with indistinct grey and greyish-yellow tomentum; mystax pale yellow, frontoorbital and ocellar bristles black; postcranium with sparse tomentum, setae white to pale yellow with a row of black bristles above. Antenna black with black bristles, pedicel about two-thirds the length of scape, length of first flagellomere variable, longer than, equal to or shorter than scape. Palpus and proboscis dark brown, the former with pale yellow and the latter with white setae.

Thorax black with greyish-yellow tomentum; pronotal setae pale yellow, a transverse row of 2-3 black bristles present on either side; in holotype scutum with the mediolongitudinal stripe extending the entire length and greyish-brown in colouration, in paratype the stripe indistinct as the specimens are greasy, laterally with two, large lateral greyish-brown, to greyish-yellow spots on either side of the transverse suture, laterally with sparse greyish tomentum, posteriorly broadly grey tomentose; scutellum black with or without sparse grey tomentum, pale yellow setae on the disc and a pair of black bristles on the border; laterotergite with wholly yellow or yellow and black bristles. Haltere yellowish-brown to pale yellowish-brown to pale yellow.

Legs black to brown; coxa, trochanter and femur black to dark brown, tibia pale yellow in fore leg, brownish to dark brown in hind leg and in between in mid leg; tarsomeres pale yellow with apical dark brown marking, the extent of latter colouration increasing from the basal to the distal tarsomere so much so the terminal tarsomere is almost wholly dark brown; vestiture pale yellow; bristles black and pale yellow, femur and tibia in fore and mid legs ventrally bear dense, long, thin setae, in hind legs not conspicuously developed, hind femur stout with a row of short, spine-like bristles anteroventrally and a row of 4 bristles from some distance before the middle to apex at the anterior side, in one of the paratypes a similar row also present posteroventrally.

Wing uniformly light brownish tinged.

Abdomen black, hind border of terga black or brown, setae black or pale yellow. Male genitalia (Fig. 116) black to dark brown and yellowish-brown with pale yellow and black setae.

Female : Similar but the setae on the disc of scutellum black; hind femora not thickened and hind tibia comparatively lighter coloured.

Material examined : *Holotype* ♂, Central India: Madhya Pradesh: Jabalpur, 488 m, ix.1957. Coll. P.S. Nathan. *Paratypes* 4 ♂, 1 ♀, (allotype), data as in holotype.

1 ♂ 1 ♀, India: Madhya Pradesh : Jabalpur, vii.1907, Coll. C.G. Nurse (B.M.N.H.). 1 ♂ India: Orissa: Sundargarh District: Panderipani, 17.viii.1983, Coll. P. Parui (Z.S.I.).

Discussion : The male genitalia and the row of anteroventral bristles of the hind femur are characteristic and allow this species to be easily separated from all the other known species. It has superficial resemblance with *Ommatius nigra* (Schiner).

Distribution : India (Madhya Pradesh).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

128. *Ommatius jairajpurii* Joseph & Parui

(Fig. 117.)

1997 *Ommatius jairajpurii* Joseph & Parui, *Colemania Insect Biosystematics*, No. 5:10. Type locality : Bokhaghat, Assam, India.

A rather small yellowish-brown, dark brown, and black species with pale yellow legs and black tinted wings. Male : length 9-10 mm, wing 7-8 mm; female : 11 mm, wing 8 mm.

Males : *Head* broader than thorax, black with dense greyish-white tomentum, mystax 3-5 black bristles and the rest white; frontoorbital bristles white, ocellar bristles black, postocular bristles black above and white below, postcranium with sparse white setae, postgena white setose. Antenna with scape and pedicel pale yellow and remaining dark brown, scape and pedicel with black bristles, both nearly equal in length, first flagellomere slightly shorter than the combined length of scape and pedicel. Palpus and proboscis black with white setae.

Thorax pale yellow with yellowish-brown above; pronotum with 4 bristles in a transverse row, laterally with white setae; scutum with the mediolongitudinal stripe faintly marked, vestiture a few white setae on sides, bristles black; chaetotaxy: 2 notopleurals, 2 postalars, 1 supra-alar, 3 dorsocentrals; scutellum with a pair of black bristles on border; laterotergite with a transverse row of black or white bristles. Haltere with pale yellow stalk and dark brown to black infuscated head.

Legs pale yellow, femur dorsally pale yellow to dark brown and apically black tipped, vestiture predominantly black, bristles black, fore and mid femora with a posteroventral row of pale yellow or black, weak bristles, hind femur with an anteroventral row of black bristles; bristles black and white, vestiture predominantly black with some yellow and white setae on tibia and tarsus.

Wing faintly black tinted.

Abdomen dark brown, tergum 1 laterally with long, white setae and 2 or more posterolateral black bristles, subsequent terga also with similar black bristles which gradually decrease in size posteriorly, vestiture black. Male genitalia (Fig. 117) black.

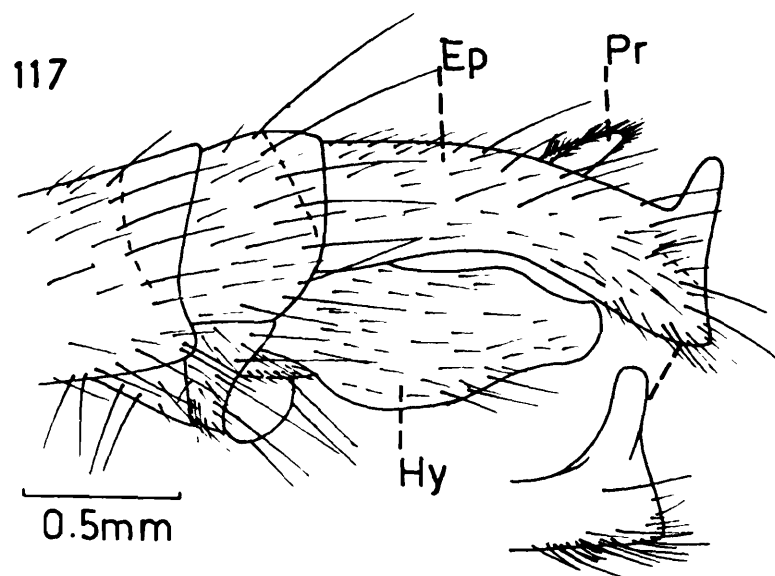


Fig. 117 : *Ommatius jairajpurii* Joseph & Parui, lateral view of male genitalia.

Female : Similar but with the following differences: mystax with 8 black bristles, fronto-orbital bristles black; abdominal tergum 9 hidden by tergum 8 and is visible only laterally, proctiger yellowish-brown, broad and with white setae, sternum 8 with abundant long, black setae, its hind border broadly projecting medially.

Material examined: Holotype ♂, No. B 268 India: Assam: 8 km. W. Bokhaghat, 100, 29.iv.1985, Coll. K. Ghorpade. Paratypes 1 ♂, details as in holotype; 2 ♂, 1 ♀, No. B 280, 3.v.1985, rest of details as in holotype.

Discussion : It is generally similar to *Ommatius kodaikanalensis* Joseph & Parui from which it differs in the pale colouration, in the shape of hypandrium and in the absence of bristles on it. It has also superficial resemblance with *O. frauenfeldi* Schiner. It is named in honour of Prof. M.S. Jairajpuri, Director, Zoological Survey of India, Calcutta, as a token of our appreciation for the various helps received by us during the course of our work on Asilidae.

Distribution : India (Assam).

Types : In the Collection of Dr. K. Ghorpade, Bangalore.

129. *Ommatius jonesi* Joseph & Parui

(Fig. 118)

1984b. *Ommatius jonesi* Joseph & Parui, *Oriental Ins.*, **18** : 57. Type locality : Ranikhet, Uttar Pradesh, India.

1990. *Ommatius jonesi* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 39.

A small sized black species with wings lightly infuscated apically and legs uniformly dark brown. Male : length 7 mm, wing 5 mm.

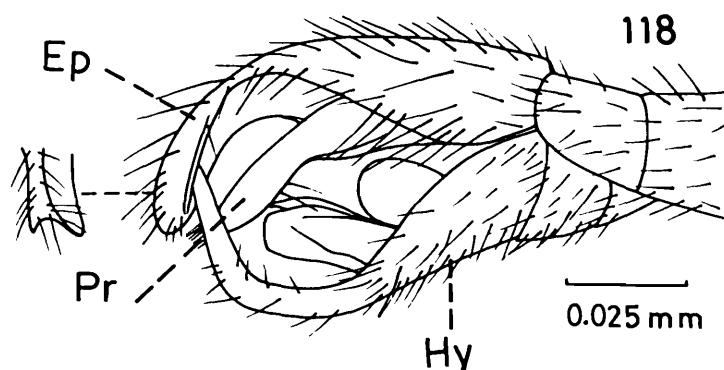


Fig. 118 : *Ommatius jonesi* Joseph & Parui, lateral view of male genitalia.

Male : *Head* black infuscated with grey and greyish-yellow tomentum; mystax black; frontoorbitals and ocellar bristles black, postcranium above devoid of tomentum and below with grey tomentum, postcranium above without setae, postocular bristles thin and black, below to which along outside with sparse, white setae. Antenna black, bristles of scape and pedicel black, scape subequal to pedicel, the latter nearly equal to first flagellomere. Palpus and proboscis black with black setae.

Thorax black with grey tomentum; pronotum white setose; scutum with the mediolongitudinal stripe indistinct, humeri with white setae and laterally with pale yellow setae, bristles black; pleuron grey tomentose; scutellum sparsely grey tomentose, disc bears a few pale yellow setae and hind border with a pair of long, black bristles; laterotergite with pale yellow and black bristles. Haltere pale yellow.

Legs dark brown; bristles black, vestiture pale yellow and black.

Wing distally lightly infuscated.

Abdomen black, terga 1 and 2 laterally with long white setae, vestiture black and pale yellow. Genitalia (Fig. 118) black and yellowish-brown, setae dark brown and pale yellow.

Material examined : *Holotype* ♂, India : Uttar Pradesh: Ranikhet, 1524-1821 m, 18.viii.1945, Coll. C.G. Jones.

Discussion : This species is close to *Ommatius ater* Bromley but differs from it by the not metallic, but black, coloured abdomen, terga 1 and 2 with long, white setae and distally infuscated wing. It is also close to *O. pseudodraavidicus* Joseph & Parui but can be readily separated by the wholly black mystax, complete dark brown legs and the structural details of male genitalia.

Distribution : India (Uttar Pradesh).

Type : In the Collection of the Natural History Museum, London.

130. *Ommatius kempi* Joseph & Parui

(Fig. 119)

1983b. *Ommatius kempi* Joseph & Parui, *Ent. scand.*, **14** : 96. Type locality : above Tura, Garo Hills, Meghalaya, N.E. India.

1990. *Ommatius kempi* : Joseph and Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 39.

A medium sized black species with dark brown and yellowish-brown legs, fore and mid tibia bearing dense, long setae above and uniformly brownish tinged wings. Male : length 12 mm, wing 10 mm.

Male : Head black infuscated with greyish-yellow tomentum; mystax pale yellow; fronto-orbitals and ocellar bristles black, postcranium grey tomentose, sparse above on either side of a mediolongitudinal grey band, setae pale yellow, postocular bristles black, nearly equal to scape, first flagellomere longer than scape. Palpus and proboscis dark brown, the former comparatively lighter coloured, their setae pale yellow.

Thorax black with greyish-yellow tomentum; pronotum pale yellow setose with four similarly coloured bristles arranged in a transverse row; scutum without mediolongitudinal stripe, tomentum dense laterally and on humeri, bristles black; pleuron black with dense grey tomentum, but posteriorly dark brown; scutellum grey tomentose, dark brown medially and yellowish-brown at border, pale yellow setae on the disc and a pair of black bristles on the border; laterotergite with pale yellow bristles. Haltere yellowish-brown with stalks lighter coloured.

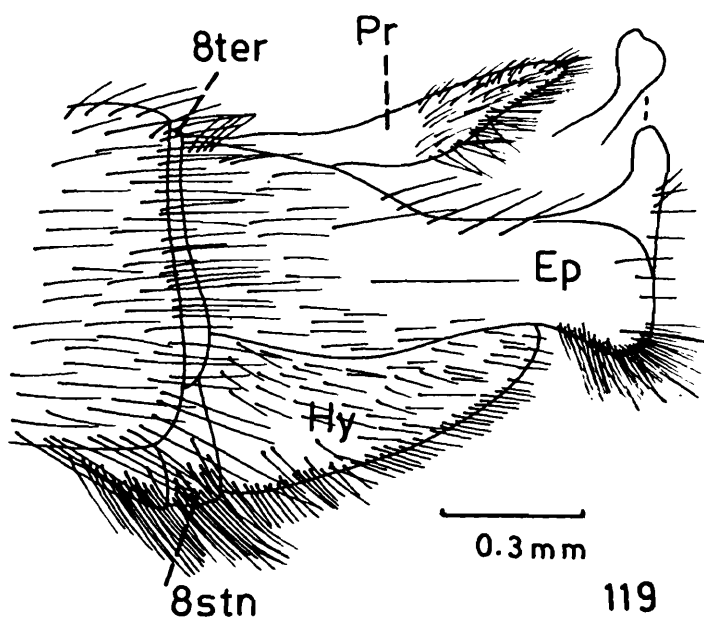


Fig. 119 : *Ommatius kemp* Joseph & Parui, lateral view of male genitalia.

Legs dark brown and yellowish-brown; coxa yellowish-brown, trochanter dark brown, femur dark brown but ventrally yellowish-brown, tibia yellowish-brown but hind leg apically dark brown, tarsomere 1 wholly yellowish-brown but in hind leg apically dark brown, following tarsomeres to a large extent dark brown; setae and bristles black and pale yellow, fore and mid tibia bear above dense, somewhat long setae.

Wing uniformly brownish tinged.

Abdomen black, terga posteriorly and laterally narrowly yellowish-brown, posterolaterally tergum 1 bearing yellowish-brown bristles, vestiture predominantly black dorsally amidst which also with some golden yellow setae, ventrally and laterally almost wholly golden yellow setose. Male genitalia (Fig. 119) black with black and pale yellow setae.

Material examined : Holotype ♂, N.E. India : Meghalaya: West Garo Hills District : above Tura, 1067-1189 m, 15.vii-30.viii.1917, Coll. S. Kemp.

Discussion : *Ommatius kempi* Joseph & Parui, *O. indicus* Joseph & Parui, *O. arunachalensis* Joseph & Parui, and *O. rubicundus* van der Wulp are generally similar species all of which can be separated by the structural details of male genitalia, especially by the shape of epandrium. Besides, *O. kempi* Joseph & Parui also has characteristic dense, somewhat long, pale yellow setae on fore and mid tibia dorsally. The epandrium of *O. pseudokempi* Joseph & Parui resembles somewhat the present species. This species is dedicated to late Dr. S. Kemp to whom we owe for collecting many interesting new species of flies.

Distribution : India (Meghalaya).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

131. *Ommatius kodaikanalensis* Joseph & Parui

(Fig. 120)

1994. *Ommatius kodaikanalensis* Joseph & Parui, *Wasmann J. Biology* **50** (1-2) : 17. Type locality : Kodaikanal grade, Tamil Nadu, South India.

A medium dark brown species with pale yellow and dark brown to black legs, snow-white mat of pubescence on tibia and basitarsus of fore leg, and light brown wings. Male : length 10 mm, wing 8 mm.

Male : *Head* black with dense grey or golden yellow tomentum; mystax golden yellow above and white below, frontoorbital setae and ocellar bristles black, postocular bristles black and three on either side, postcranium with sparse white setae, postgena with dense white setae. Antenna dark brown, scape and pedicel with black setae, three or four of which ventrally on the latter well developed and form bristles, pedicel subequal to scape, first flagellomere slightly longer than scape. Palpus and proboscis black, white setose.

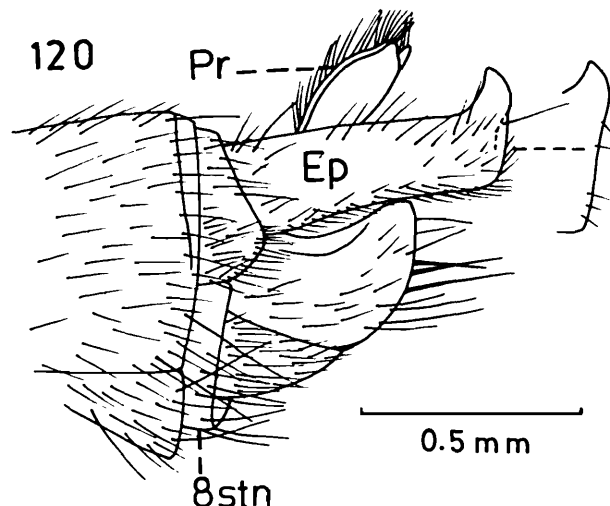


Fig. 120 : *Ommatius kodaikanalensis* Joseph & Parui, lateral view of male genitalia.

Thorax black with grey or greyish-yellow tomentum; pronotum white setose with a median pair of weakly developed pale yellow bristles; scutum medially greyish-yellow and laterally and posteriorly white tomentose, mediolongitudinal stripe extending from anterior border to midway between transverse suture and hind border which is divided by a narrow longitudinal black stripe; chaetotaxy: 2 notopleurals, 1 supra-alar, 1 postalar, 4 dorsocentrals; vestiture and bristles black but for some white

setae on humeri and posterolaterally; scutellum grey tomentose with a pair of weakly developed bristles on border; laterotergite with pale yellow bristles. Haltere pale yellow with light brown mark on head.

Legs pale yellow and dark brown to black; coxa and trochanter pale yellow, tarsus dark brown, but basitarsus pale yellow to white with dark brown apex, in fore leg femur pale yellow with black apex, tibia pale yellow with a dark brown ventral stripe, in mid leg femur dark brown with pale yellow at base and ventrally for most part which extends anteriorly and posteriorly beyond middle and before distal one-fifth, tibia dark brown, in hind leg femur dark brown above and pale yellow below but base narrowly pale yellow and apex narrowly dark brown, fore tibia with 3 and mid tibia with 2 long, black posteroventral bristles, fore tarsus also with a few elongate black bristles, vestiture black and pale yellow, bristles black, fore tibia and basitarsus above with a dense mat of snow-white setae.

Wing light brown apically and the rest hyaline.

Abdomen dark brown with hind border of terga 1-4 narrowly pale yellow, terga 1 and 2 with some pale yellow setae laterally, vestiture pale yellow. Male genitalia (Fig. 120) dark brown with pale yellow setae, epandrium posterodorsally projected, hypandrium bearing 3 apical black bristles.

Material examined : Holotype ♂, South India : Tamil Nadu: Kodaikanal grade, 1600 m, 30.iii.1962, Coll E.S. Ross and D.Q. Cavagnaro.

Discussion : It is similar to *Ommatius indicus* Joseph & Parui from which it differs in the shape of epandrium and in the presence of bristles on the hypandrium.

Distribution : India (Tamil Nadu).

Types : In the Collection of the Department of Entomology, California Academy of Sciences, San Francisco.

132. *Ommatius leucopogon* Wiedemann*

1824. *Ommatius leucopogon* Wiedemann, *Analecta Ent.*, : 25. Type locality : India orient.

1975. *Ommatius leucopogon* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 133.

1990. *Ommatius leucopogon* : Joseph & Parui, *Rec. zool. Surv. of India*, Occ. Paper No. 113 : 39.

Black, the bands of the thorax are barely separated, white beard, the hind legs are saffron yellow. Length 4 1/3 mm. India orient.

Black antennae; under the mouth, mystax and beard are white; on the head there are two antennae yellow-brownish in colour. Three black bands very broad on the thorax, separated in the front by yellowish ones; the lateral sides are reddish-yellow; the pleurae are whitish; scutellum and metathorax are reddish (like the red oxide of iron), in both the sides there is a white spot.

The abdomen is black and little shining. In both sides some parts are reddish. The wings are almost hyaline, with dark veins, in the middle is smoked yellow, the middle with many reddish transverse wrinkles, halteres yellowish. Black legs with whitish setae; the hind tibia and the front ones are almost entirely ochre-yellow in colour. In the the Royal Museum.

Material : Sex not stated, India orient.

Discussion : The species has reddish scutum and scutellum, which together with the almost entirely ochre-yellow fore and hind tibia separate the species from other known regional species.

Distribution : India (no other details).

Types : Location of types not known.

133. *Ommatius lividipes* Bigot

1891. *Ommatius lividipes* Bigot, *Proc. Asiat. Soc. Beng.*, 1890: 138. Type locality : Simla, Himachal Pradesh.

1975. *Ommatius lividipes* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 133.

1990. *Ommatius lividipes* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 39.

A small, black species with pale yellow and brown legs, femur with an anteroventral row of bristles, and wings almost hyaline. Specimen badly damaged.

Female : The specimen badly damaged. *Head* black, grey tomentose; mystax black, fronto-orbitals and ocellar bristles black, postocular bristles black above and white below, postgena white setose. Antenna brown, scape and pedicel nearly equal in length, first flagellomere slightly longer than scape. Palpus and proboscis black, former with black setae and latter with pale yellow setae.

Thorax black with dense grey tomentum; pronotum with a transverse row of 4 black bristles, laterally with white setae; scutum with a broad, faint, mediolongitudinal stripe extending from the anterior border to middle of transverse suture and hind border medially divided by a broad, black stripe, laterally with 3 black confluent spots; chaetotaxy: 2 notopleurals, 1 postalar, 2 supra-alars, 2 dorsocentrals; vestiture pale yellow and black; scutellum with a pair of black bristles on the border, anterior to which with a few pale yellow setae; pleuron with dense grey tomentum, laterotergite and meron with a longitudinal row of elongate, bristly setae. Haltere pale yellow with brown tinge.

Legs pale yellow but for the brown fore femur, tip of femur and base and tip of tibia dark brown, femora with an anteroventral row of bristles, vestiture and bristles pale yellow and black.

Wing almost wholly hyaline.

Abdomen black with hind border of tergum narrowly pale yellow, tergum 1 laterally with a bunch of pale yellow setae and a few similarly coloured bristles, vestiture pale yellow and black. Genitalia lost.

Material examined : 1 ♀, badly damaged, no data (Z.S.I.).

Discussion : From all the species of *Ommatius* with black thorax *O. lividipes* Bigot can be separated by its brown fore femur and pale yellow mid and hind femora, and pale yellow tibiae with dark brown apices.

Distribution : India (Himachal Pradesh).

Types : Location of types not known.

134. *Ommatius malabaricus* Joseph & Parui

(Fig. 121)

1984b. *Ommatius malabaricus* Joseph & Parui, *Oriental Ins.*, **18** : 59. Type locality : Thaliparamba, Malabar, Kerala, India.

1990. *Ommatius malabaricus* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 39.

A medium sized yellowish-brown species with anteriorly bulging wings which are lightly infuscated distally, and yellowish-brown and pale yellow legs. Male : length 12 mm, wing 10 mm.

Male : *Head* black, heavily infuscated with grey or greyish-yellow tomentum; mystax white with some black bristles above and along the sides; bristles of fronto-orbital plate and ocellarium black, postcranium bare above and densely white setose below, postocular bristles black. Antennal scape pale yellow while the rest black, bristles on scape and pedicel black, both equal in length, first flagellomere slightly longer. Palpus yellowish-brown, proboscis yellowish-brown and black, their setae pale yellow.

Thorax yellowish-brown; pronotal setae white, dense laterally, four black bristles present in a transverse row; scutum with a mediolongitudinal brown stripe divided by a narrow, greyish-yellow stripe, the stripe extending from anterior border to near hind border, sides with two yellowish-brown areas separated by narrow greyish-yellow lines, laterally grey tomentose, especially towards hind part, vestiture black but for the ones on humeri and posterolaterally which are pale yellow, bristles black; pleuron densely grey tomentose; scutellum grey tomentose with long, pale yellow setae on the disc and four long black bristles on the border; laterotergite bearing dense pale yellow setae, one or two of which may be black. Haltere pale yellow.

Legs yellowish-brown except the fore tibia, basitarsus of fore leg, most of mid tibia and slightly more than half of hind tibia pale yellow coloured; vestiture pale yellow and black, bristles black but for a few pale yellow ones; femur ventrally with long, pale yellow setae, especially on hind femur.

Wing distally lightly infuscated; anterior border bulging at about one-third distance from base.

Abdomen yellowish-brown, apical segments darker brown; tergum 1 with black and pale yellow bristles laterally, vestiture pale yellow and black. Genitalia (Fig. 121) similarly coloured like that of abdomen, setae black and pale yellow.

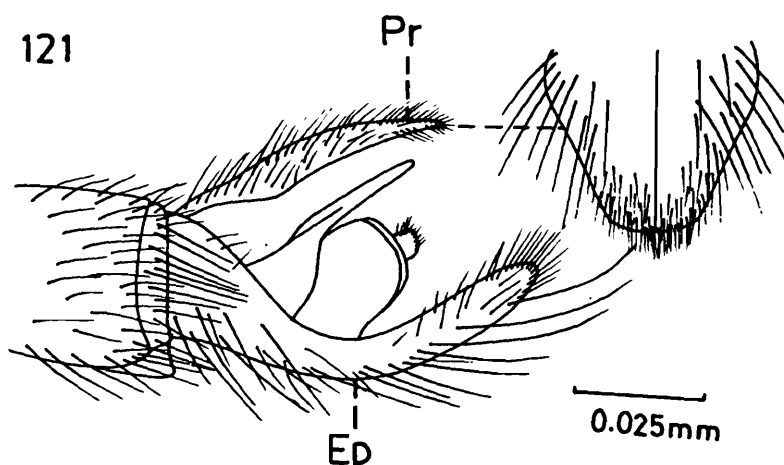


Fig. 121 : *Ommatius malabaricus* Joseph & Parui, lateral view of male genitalia.

Material examined : Holotype ♂, India : Kerala: Malabar: Taliparamba, 24-30.ix.1913, C.N.Coll.

Discussion : The only other Indian species with which *Ommatius malabaricus* Joseph & Parui somewhat resembles is *O. tamenensis* Joseph & Parui. It, however, differs from the latter in having yellowish-brown body colour, anteriorly bulging wing, and by the shape of epandrium, hypandrium and proctiger.

Distribution : India (Kerala).

Type : In the Collection of the Natural History Museum, London.

135. *Ommatius meghalayensis* Joseph & Parui

(Fig. 122)

1997. *Ommatius meghalayensis* Joseph & Parui, *Colemania Insect Biosystematics*, No. 5:11. Type locality : Nongpoh, Meghalaya.

A comparatively small black species with black and pale yellow legs, and hyaline and light brown wings. Male : length 11 mm, wing 8 mm; female : length 13 mm, wing 11 mm.

Male : *Head* slightly broader than thorax, black with sparse grey and greyish-yellow tomentum; mystax pale yellow with a pair of black bristles above, fronto-orbital bristles pale yellow, ocellar bristles black, postocular bristles black above and white below, postcranium with sparse white setae, postgena with white setae. Antenna black, scape and pedicel with black and white bristles, both nearly equal in length, first flagellomere subequal to preceding segments. Palpus and proboscis black with white setae.

Thorax black with dense greyish-white tomentum on pleura; pronotum with white setae and a transverse median row of 4 white or pale yellow bristles; scutum with a faint mediolongitudinal grey stripe extending from anterior border to midway between transverse suture and hind border, the stripe medially divided by a narrow black stripe, vestiture a few white setae on sides, bristles black; chaetotaxy: 2 notopleurals, 1 postalar, 1 supra-alar, 1 intra-alar, 3 dorsocentrals; scutellum with 2 pale yellow bristles on border, disc with sparse pale yellow and white setae; laterotergite with long, pale yellow, bristly setae, meron with a transverse row of pale yellow bristly setae. Haltere pale yellow.

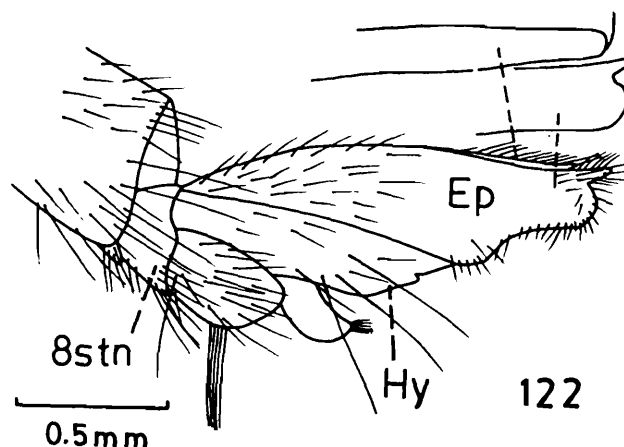


Fig. 122 : *Ommatius meghalayensis* Joseph & Parui, lateral view of male genitalia.

Legs black and pale yellow, coxa, trochanter and femur black, fore tibia and first and second tarsomeres pale yellow, rest of tarsus black, mid tibia and tarsus similar but first tarsomere black, hind tibia for more than apical one-fourth and complete tarsus black, vestiture and bristles pale yellow and black, fore tibia with 2 elongate, posteroventral, pale yellow bristly setae.

Wing basally hyaline and distally light brown.

Abdomen black, terga 1 and 2 laterally with long, white setae, vestiture white and black. Male genitalia (Fig. 122) black, hypandrium with a transverse row of black, bristly setae.

Female : Exactly similar, but mystax with 8 black bristles above, and vestiture of abdomen white. Genitalia with tergum 9 hidden by tergum 8 and is only visible laterally, proctiger yellowish-brown, broad, with white setae, sternum 8 with sparse black setae, hind border concave with its middle slightly produced posteriorly.

Material examined : Holotype ♂, No. B 284, India : Meghalaya : Nongpoh 2 km S., 5.v.1985, Coll. K. Ghorpade. *Paratype* ♀, details as in holotype.

5 ♂, 3 ♀, Meghalaya : South Garo Hills District : Siju Cave area, 27.iv.1991, Coll. B.N. Das (Z.S.I.).

Discussion : In the male genitalia *Ommatius meghalayensis* Joseph & Parui is closer to *O. ramakrishnai* Joseph & Parui from Andhra, but otherwise quite distinct in details. Besides, the former is a much larger fly.

Distribution : India (Meghalaya)

Type : In the Collection of Dr. K. ghorpade, Bangalore.

136. *Ommatius minor* Doleschall

(Fig. 123)

1857. *Ommatius minor* Doleschall, *Natuurk. Tijdschr. Ned. India*, **14** : 394. Type locality : Ambiona, Moluccas.

1859. *Ommatius noctifer* Walker, *J. Linn. Soc. Lond.* **3** : 88. Type Locality : Aru, Moluccas.

1872. *Ommatius spinibarbis* van der Wulp, *Tijdscher. Ent.* **15** : 265. Type localities : Halmahera, Ternate, Moluccas; Borneo (Kalemantan).

1975. *Ommatius minor* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 39.

1990. *Ommatius minor* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 39.

A medium, small, black species with sparse grey tomentum, black and pale yellow to yellowish-brown legs, and light brown wings. Male : length 13 mm, wing 10 mm; female : length 11 mm, wing 9 mm.

Male : *Head* black, greyish-white tomentose; mystax black above and white below, fronto-orbitals and ocellar bristles black, postocular bristles black with a few white ones below, postgena with white setae. Antenna black with black setae on scape and pedicel, pedicel slightly shorter than scape, first flagellomere and scape nearly equal in length. Palpus and proboscis black, former with black setae and latter with white setae.

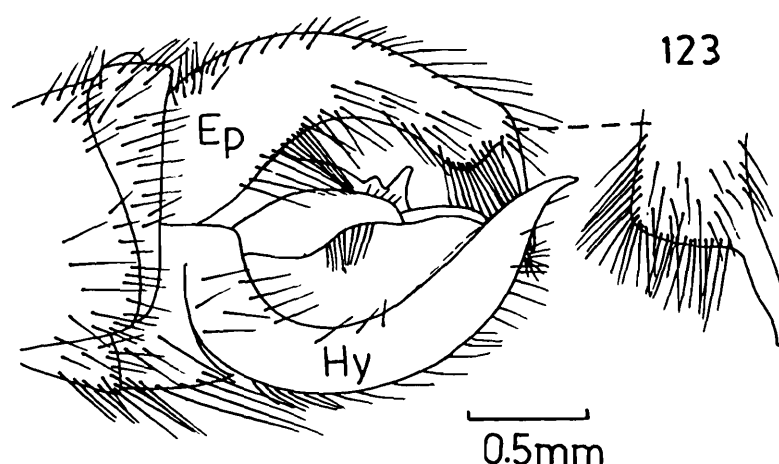


Fig. 123 : *Ommatius minor* Doleschall, lateral view of male genitalia.

Thorax black, grey tomentose; pronotum with pale yellow setae laterally, medially with a transverse row of 4 black bristles; scutum with the mediolongitudinal stripe faint, extending from anterior border to well beyond the transverse suture, lateral black spots faint; chaetotaxy : 2 notopleurals, 1 postalar, 1 supra-alar, about 9 dorsocentrals; scutellar disc with long setae, border with 8 long bristles; pleuron sparsely grey tomentose, laterotergite and meron with a longitudinal row of black and pale yellow bristly setae. Haltere yellowish-brown with pale yellow stalk.

Legs black and pale yellow to yellowish-brown, coxa, trochanter and femur black, tibia pale yellow to yellowish-brown with a black stripe anteriorly, tarsus dark brown, hind femur with an anteroventral row of bristles, vestiture predominantly pale yellow with some black setae, bristles black.

Wing brown with extreme base comparatively lighter coloured.

Abdomen black with hind border of terga 2-4 narrowly yellowish-brown, tergum 1 laterally with a bunch of white setae amidst which with a few black bristles, vestiture black and pale yellow. Genitalia (Fig. 123) black and yellowish-brown with black setae.

Female : Similar but with the following differences : antenna with first flagellomere slightly longer than scape; scutellar border with 6 bristles; bristly setae on laterotergite and meron wholly black; bristles on legs pale yellow and black. Female genitalia black, same length as tergum 8, tergum 9 a short plate, which is not noticeably projected posteriorly, proctiger pale yellowish-brown, sternum 8 broadly projected medially.

Material examined : 1 ♂, S. India: Nilgiri Hills: Hooker Estate, 2256 m, 5.xi.1950, Coll. P.S. Nathan, S. W. Bromley Collection 1955; 1 ♀, Nilgiri Hills: Naduvattum, 1829 m, v.1958, Coll. P.S. Nathan, det. Joseph & Parui (Z.S.I.). 2 ♂ 2 ♀, Kerala: Anamalai Hills: Cinchona, 1050 m, i.1967, Coll. P.S. Nathan (1 ♂ in Z.S.I., rest in B.P.B.M.). 1 ♂ Kerala: Calicut District: Chembra Peak area, 1067 m, v.1970. Coll. T.R.S. Nathan (B.P.B.M.).

Discussion : *Ommatius minor* Doleschall is similar to *Ommatius dravidicus* Joseph & Parui, but can be easily distinguished by the differences in the male genitalia. Further in the former, mystax is black and white, and tibiae pale yellow to yellowish-brown with a black stripe anteriorly.

Distribution : India (Karnataka, Kerala and Tamil Nadu); Borneo (Kalemantan); Moluccas; New Guinea.

Types : Location of types not known.

137. *Ommatius mitrai* Joseph & Parui

(Fig. 124)

1993. *Ommatius mitrai* Joseph & Parui, *Rec. zool. Surv. India* 93 (1-2) : 300. Type locality : Hut Bay and Ramakrishnapur, Little Andaman.

A medium black species with black and pale yellow legs, swollen femora, black wings and clavate abdomen. Male : length 10-11 mm, wing 7.5 -8 mm.

Male: Head black with greyish-yellow and grey tomentum; mystax black above and pale yellow below; frontoorbital setae and ocellar bristles black, postocular bristles black, postcranium with sparse white, or white and black setae, postgena densely white setose. Antenna black, scape and pedicel with black bristles, pedicel slightly shorter than, or subequal to scape, first flagellomere longer than scape. Palpus and proboscis black, former black setose while latter white setose.

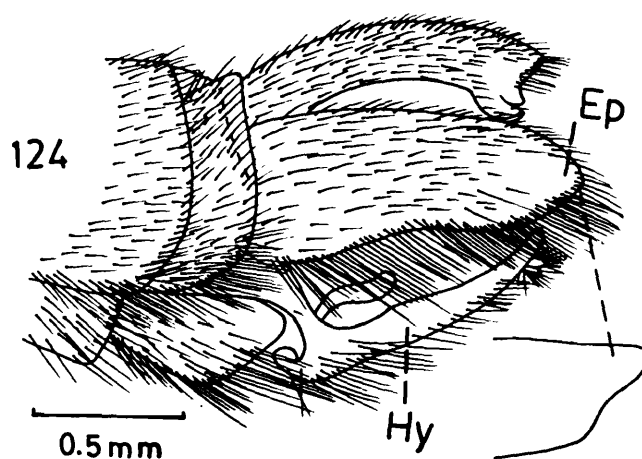


Fig. 124 : *Ommatius mitrai* Joseph & Parui, lateral view of male genitalia.

Thorax black, grey tomentose; pronotum sparsely white setose with 4 black bristles in a transverse row; scutum without mediolongitudinal stripe but with or without a very short, narrow, median grey band on anterior border, chaetotaxy: 2 notopleurals, 1 postalar, 1 supra-alar, 1 intra-alar, 3 or 5 dorsocentrals; vestiture black except for a few setae laterally on pronotum being white, bristles black, pleura with dense grey tomentum; scutellum with a pair of black bristles on border, disc with white setae in holotype, and black and pale yellow setae in paratype; laterotergite with black and pale yellow bristles. Haltere pale yellow and yellowish-brown.

Legs black and pale yellow; coxa and trochanter black, femur black with brown marking anteriorly, ventrally and posteriorly on fore and mid femora, and anteriorly on hind femur, in holotype brown marking not so distinct, tibia pale yellow with black apex, mid tibia or both fore and mid tibia, anterodorsally also black, tarsus black with basitarsus black and pale yellow, vestiture black and pale yellow, bristles black, hind femur with a posteroventral row of short bristles and an anteroventral row of about 4 similar bristles.

Wing black but gradually becoming lighter posteriorly, and posterolaterally almost hyaline.

Abdomen black, tergum 1 posterolaterally with pale yellow bristles, vestiture black and pale yellow. Male genitalia (Fig. 124) black with black, and a few pale yellow setae.

Material examined : Holotype ♂, Z.S.I. Reg. No. 7614/H6, Little Andaman: Hut Bay : Government School, 23.i.1988, Coll. A.N.T. Joseph & Party. **Paratype** ♂ Reg. No. 7615/H6, Little Andaman : Ramakrishnapuram, 19.i.1988, Coll. A.N.T. Joseph & Party.

Discussion : It is generally similar to *Ommatius pseudodraavidicus* Joseph & Parui differing from which in the comparatively stout built, darker colouration, swollen hind femur, black abdomen and in the shape of male genitalia. It is named in honour of our colleague, Sri Bulganin Mitra, who helped us in our Andaman survey of robberflies.

Distribution : India (Little Andaman).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

138. *Ommatius nanus* Walker

(Fig. 125).

1851. *Ommatius nanus* Walker, *Insecta Saundersiana*, 1 : 153. Type locality : East India

1975. *Ommatius nanus* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 133.

1990. *Ommatius nanus* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 39.

A comparatively small, black species with yellowish-brown and black legs, hind femur bearing a posteroventral row of bristles, and wings distally yellowish-brown. Male : length 9 mm, wing 6 mm.

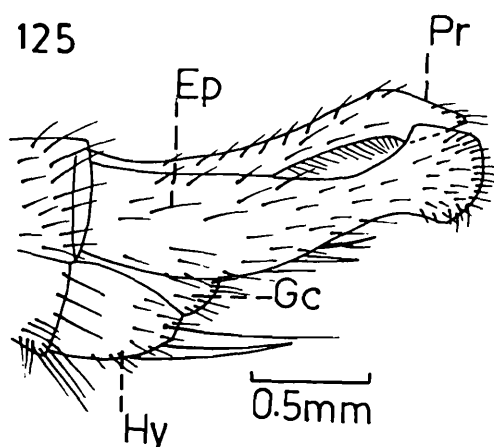


Fig. 125 : *Ommatius nanus* Walker, lateral view of male genitalia.

Male : **Head** black, heavily infuscated with grey tomentum; mystax white, fronto-orbitals white, ocellar bristles black, postocular bristles black above and pale yellow below, postgena white setose. Antennal scape and pedicel yellowish-brown with similarly coloured bristles, remainder black, pedicel subequal to scape, first flagellomere slightly more than one and-a-half times the length of scape. Palpus and proboscis black, former pale yellow setose and latter white setose.

Thorax black with dense grey tomentum; pronotum laterally with white setae, medially with a transverse row of 4 pale yellow bristles; scutum with a broad, mediolongitudinal black stripe extending from anterior border to well beyond transverse suture, the dividing stripe absent, laterally with 2 black

spots; chaetotaxy : 1 notopleural, 1 postalar, 2 supra-alars, 3 dorscentrals. Vestiture pale yellow, bristles pale yellow, bristles pale yellow and black; scutellar disc bare, border with a pair of bristles; pleuron with dense grey tomentum, laterotergite with a longitudinal row of elongate, pale yellow, bristly setae. Haltere yellowish-brown.

Legs yellowish-brown and black, coxa and trochanter black, fore femur and tibia yellowish-brown with apex of former black, basitarsus yellowish-brown and the remainder black, mid leg similarly coloured, in hind leg femur more than one-fourth yellowish-brown and the rest black, tibia and tarsus similar to that of other legs, fore tibia posteroventrally with 2-3 elongate bristly setae, mid tibia with similar setae both anteroventrally and posteroventrally, hind femur with a posteroventral row of bristles, vestiture golden yellow and black, bristles pale yellow.

Wing basally hyaline and distally yellowish-brown, anterior border bulging beyond middle.

Abdomen black with terga 3 yellowish-brown; tergum 1 laterally with white setae, some of which thickened to form bristly setae, vestiture black and pale yellow. Genitalia (Fig. 125) black with pale yellow setae.

Material examined : 1 ♂, Z.S.I. Reg. No. 5117/8, other details illegible, 1 ex. (abdomen lost), No. 5368/8, India : Assam: Mergherita, no other data (Z.S.I.).

Discussion : The species is closely similar to *Ommatius tandoni* Joseph & Parui but differs in the details of male genitalia.

Distribution : India (Assam).

Types : In the Collection of the Natural History Museum, London.

139. *Ommatius nicobarensis* Joseph & Parui (Fig. 126)

1983b. *Ommatius nicobarensis* Joseph & Parui, *Ent. scand.*, 14 : 92. Type locality : Campbell Bay, Great Nicobar.

1990. *Ommatius nicobarensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 39.

A comparatively small species with yellowish-brown legs, mid femur bearing three basal posteroventral bristles and wings distally pale brownish. Male : length 11 mm, wing 10 mm.

Male : *Head* black infuscated with greyish-yellow tomentum; mystax pale yellow with a few black bristles also; fronto-orbital bristles black and pale yellow and ocellar bristles black; postcranium grey and greyish-yellow tomentose, sparse above but well marked in the centre, postocular bristles black on upper side, setae white and pale yellow. Antenna with scape yellow, pedicel dark brown with yellowish-grey apex, first flagellomere grey with dark brown apex, pedicel subequal to scape, the latter and first flagellomere almost equal. Palpus yellowish-brown bearing similarly coloured setae, proboscis basally yellowish-brown while the rest dark brown, setae pale yellow.

Thorax black with grey tomentum; pronotum pale yellow setose with a pair of similarly coloured bristles on either side; scutum with the mediolongitudinal stripe faintly marked for almost the entire

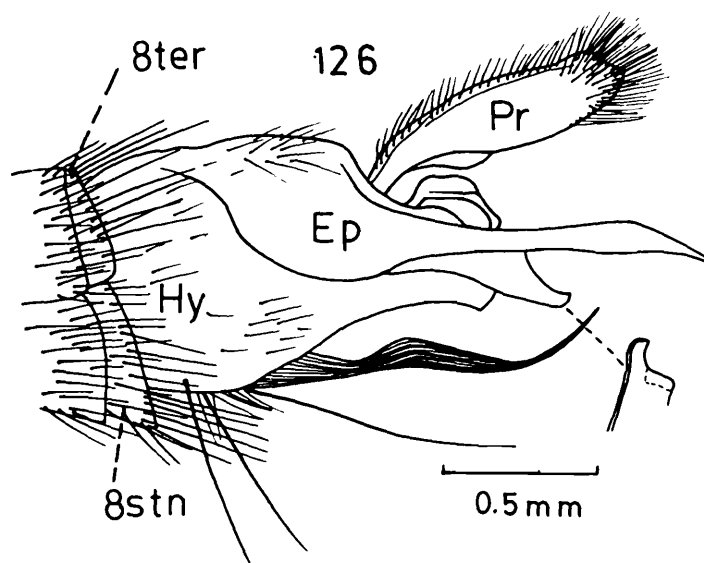


Fig. 126 : *Ommatius nicobarensis* Joseph & Parui, lateral view of male genitalia.

length, humeri and posterolateral sides yellowish-brown, humeri, sides and hind border grey tomentose, bristles black; pleuron sparsely grey tomentose; scutellum black with sparse tomentum, border yellowish-brown with dense tomentum, brownish setae on the disc and a pair of black bristles on the border; laterotergite with black and a few pale yellow bristles. Haltere yellowish-brown with stalks pale.

Legs yellowish-brown but tibia and basitarsus in fore and mid legs pale yellow, yellowish-brown colouration of legs gradually become deeper from the fore to the hind legs, setae and bristles black and yellow; mid femur basally bear 3 posteroventral pale yellow bristles.

Wing distally for less than half pale brownish.

Abdomen yellowish-brown, terga 1 and 2 medially dark brown, hind border lighter coloured, setae black but with some pale yellow ones also. Male genitalia (Fig. 126) dark brown, but terminally yellowish-brown, setae black and pale yellow.

Material examined : Holotype ♂ Great Nicobar : Campbell Bay, 14.iii.1966, Coll. A. Daniel and H.K. Bhowmik.

2♂ 1♀, South Andaman: Port Blair: Corbyn's Cove Beach, 14.i.1988; 1♂ Little Andaman: Ramakrishnapuram, 20.i.1988; 1♂ 1♀, Little Andaman: Hut Bay, 21.i.1988; 4♂ 11♀, Hut Bay, 22.i.1988; 2♀, Hut Bay, Government School Compound, 23.i.1988; 3♀, Hut Bay, 27.i.1988; 3♂ 2♀, Harmendar Bay, 28.i.1988; 1♂ 4♀, Vivekanandapuram, 29.i.1988, all Coll. A.N.T. Joseph (Z.S.I.).

Discussion : It is quite similar to *Ommatius andamanensis* Joseph & Parui from which the former can be separated by the structural differences of male genitalia, the absence of posteroventral row of bristles of fore femur and the presence of posteroventral bristles on the basal part of mid femur, the uniformly yellowish-brown hind femur and the lesser extension of infuscation of wings.

Distribution : India (Andaman and Nicobar Islands).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

140. *Ommatius nilgiriensis* Joseph & Parui

(Fig. 127)

1989a. *Ommatius nilgiriensis* Joseph & Parui, *Oriental Ins.*, **23** : 196. Type locality : Singara, Nilgiri, Tamil Nadu.

A comparatively small black species with pale yellow and dark brown legs, wholly pale yellow fore and mid tibiae, fore femur bearing a posteroventral row of bristles, and light brown tinged wings. Male : length 10 mm, wing 7 mm.

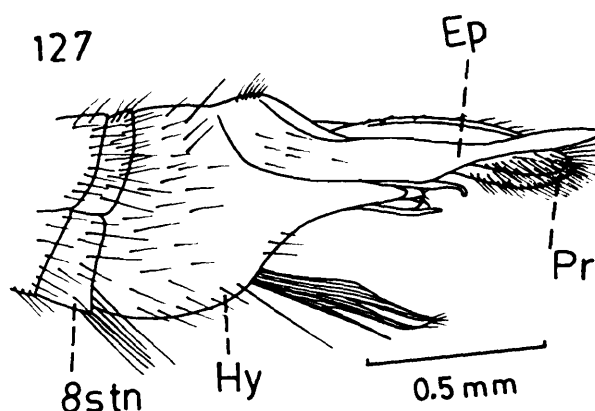


Fig. 127 : *Ommatius nilgiriensis* Joseph & Parui, lateral view of male genitalia.

Male : *Head* black with greyish-yellow and grey tomentum; mystax white with 4 black bristles above; frontoorbital bristles white, ocellar bristles black, postocular bristles black, postoccipt white setose. Antennal scape and pedicel black, first flagellomere dark brown, scape subequal to pedicel, the latter a little shorter than first flagellomere. Palpus and proboscis black, the former white and dark brown setose, and the latter completely white setose.

Thorax black, grey tomentose; pronotum white setose with a white bristle on either side; scutum grey tomentose, laterally and posteriorly greyish-white tomentose, mediolongitudinal stripe absent, vestiture white, bristles black but for a pair of pale yellow ones; chaetotaxy: 1 notopleural, 2 supra-alars, 1 postalar, 2 dorsocentrals; scutellum sparsely grey tomentose, disc with sparse, short, white setae, border with a pair of pale yellow bristles; laterotergite with a longitudinal row of pale yellow, long bristly setae. Haltere pale yellow.

Legs pale yellow; fore and mid femora pale yellow with brown tip, hind femur basally pale yellow and distal two-fifths dark brown, fore and mid tibiae pale yellow, hind tibia pale yellow with dark brown apex, tarsi black but basitarsus in fore and mid legs pale yellow, vestiture and bristles white and black. fore femur with a posteroventral row of setae, mid femur with anteroventral and posteroventral rows of bristly setae, the latter row of setae shorter, hind femur with a posteroventral row of bristly setae, and two long, ventral bristles.

Wing light brown, but basally hyaline.

Abodmen black, sides and hind border of terga narrowly pale yellow, but posterior terga completely black. Male genitalia (Fig. 127) black, but apically yellowish-brown, setae predominantly black with a few pale yellow ones also.

Material examined : *Holotype* ♂, S. India: Nilgiri Hills: Singara, 1036 m, v.1948, Coll. P.S. Nathan, S. W. Nathan, S.W. Bormley Collection.

Discussion : Of all the known regional species of the genus, *Ommatius nilgiriensis* Joseph & Parui is quite similar to *O. andamanensis* Joseph & Parui, both of which can be readily separated by the structural details of male genitalia. It has some superficial resemblance with *Ommatius shishodiai* Joseph & Parui.

Distribution : India (Tamil Nadu).

Type : In the Collection of the Smithsonian Institution, Washington.

141. *Ommatius nigra* (Schiner)*

1868. *Emphysomera nigra* Schiner, In : *Reise der Osterreichischen Fregatte Novara*, Dipt., : 195. Type locality : Sambelong, Nicobar Islands.

1975. *Ommatius nigra* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 134.

1983. *Ommatius nigra* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 39.

Female : Black with little shine. Scutum at the humeri and at the sides with thin, inconspicuous tomentum; thoracic pleura and upper side of scutum with grey spots. Adbomen with short, close setae, which is dense only at the sides, hind quarters lip-shaped. Setae at the sides as well as the bottom of face brassy yellow. Upper lip setae sparse, black brushes; antenna black, first flagellomere very short. Legs shining black, tibiae at the basal half pitch brown. Femur and tibia sparsely setate. Wings smoke borwn, hardly brighter at the base.

Material : 1 ♀, Nicobar : Sambelong.

Discussion : According to the present key *Ommatius nigra* (Schiner) and *O. jabalpurensis* Joseph & Parui come under couplet 15. The species under consideration differs from the other in the black mystax, and the basally pitch brown and distally black tibiae.

Distribution : India (Nicobar Islands); Sumatra; Moluccas.

Type : Location of type not known.

142. *Ommatius pashokensis* Joseph & Parui

(Fig. 128)

1983b. *Ommatius pashokensis* Joseph & Parui, *Ent. scand.*, 14 : 92. Type locality : Pashok, Darjeeling District, E: Himalaya.

1990. *Ommatius pashokensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 40.

A large black species with yellowish-brown legs except the hind femur dorsally beyond the middle being dark brown and the mid and hind femora bearing anteroventral and posteroventral rows of setae from the base to beyond the middle. Male : length 18 mm, wing 14 mm.

Male : Head black with greyish-yellow tomentum; mystax pale yellow but for a few dark brown upper bristles, frontoorbital and ocellar bristles pale yellow to yellowish-brown, postcranium densely

greyish-yellow tomentose, postocular bristles black and confined to above, setae pale yellow. Antenna yellowish-brown, scape paler than pedicel and first flagellomere, scape with pale yellow bristles and pedicel with dark brown bristles, pedicel and first flagellomere nearly equal in length, scape longer than pedicel and first flagellomere. Palpus yellowish-brown with pale yellow setae, proboscis dark brown with pale yellow setae.

Thorax black with greyish-yellow tomentum; pronotal setae white with a pair of pale yellow bristles on either side; scutum greasy and so the mediolongitudinal stripe cannot be ascertained, humeri and sides greyish-yellow tomentose, pleuron greyish-yellow tomentose; scutellum yellowish-brown with grey tomentum, pale yellow setae present on the disc and a pair of black bristles on the border; laterotergite with pale yellow bristles. Haltere dark brown with the stalk lighter coloured.

Legs yellowish-brown; apex of hind femora dorsally dark brown, tarsal segments dark brown to a varying extent except the basitarsus, setae and bristles black and yellow, mid and hind femora anteroventrally and posteroventrally with yellow setae from the base to beyond the middle.

Wing colouration cannot be ascertained as both wings are flood damaged.

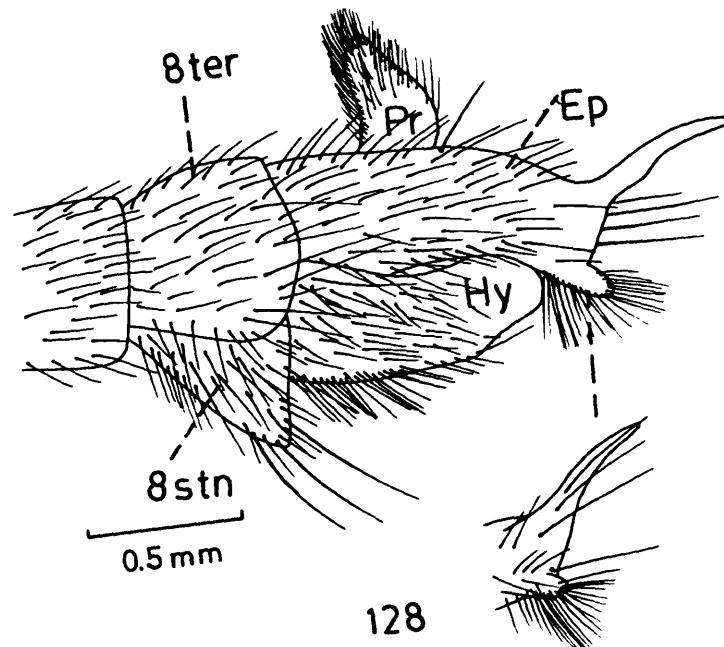


Fig. 128 : *Ommatius pashokensis* Joseph & Parui, lateral view of male genitalia.

Abdomen black, hind border of terga lighter, vestiture golden yellow. Male genitalia (Fig. 128) black with golden yellow setae.

Material examined : Holotype ♂, Eastern Himalaya : Darjeeling District : Pashok, 610 m, 26.v-4.vi.1916, Coll. F.H. Gravely.

Discussion : The male genitalia of this species is similar to *Ommatius tuberculatus* Joseph & Parui but differs in the structural details, especially in the shape of epandrium. Further more in *O. pashokensis* Joseph & Parui the mid and hind femora bear anteroventral and posteroventral rows of setae from the base to beyond the middle, and the mid femur is devoid of tubercle.

Distribution : India (West Bengal).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

143. *Ommatius peregrinus* (van der Wulp)

(Fig. 129)

1872. *Emphysomera peregrinus* van der Wulp, *Tijdschr. Ent.*, **15** : 253. Type locality : Borneo; Ambon and Ternate, Moluccas.
1975. *Ommatius peregrinus* : Oldroyd, *A Catalog of Diptera of the Oriental Region* **2** : 134.
1990. *Ommatius peregrinus* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 40.

A medium black species with sparse grey tomentum, black and yellowish-brown legs, hind femur bearing anteroventral and posteroventral rows of bristles, and wings posterobasally hyaline and the rest brown. Male : length 13 mm, wing 10 mm.

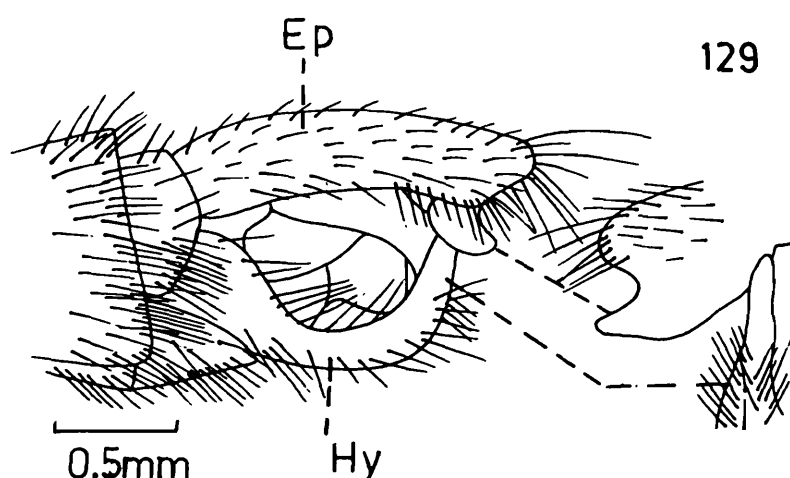


Fig. 129 : *Ommatius peregrinus* (Wulp), lateral view of male genitalia.

Male : Head black with grey tomentum; mystax black above and white below, frontoorbital bristles and ocellar bristles black, postocular bristles black above and white below, postgena white setose. Antenna black, scape and pedicel with black setae, pedicel subequal to scape, first flagellomere and pedicel nearly equal in length. Palpus and proboscis black, former black setose and latter white setose.

Thorax black with sparse grey tomentum; pronotum with a transverse row of 4 black bristles, laterally white setose; scutum with a faint mediolongitudinal black stripe extending from anterior border to well beyond transverse suture, the dividing stripe indistinct, laterally with 3 confluent spots; chaetotaxy: 1 notopleural, 1 postalar, 3 supra-alars, 6 dorsocentrals; vestiture black and pale yellow, bristles black; scutellum with sparse, long, pale yellow setae laterally, border with 4 long bristles; pleuron sparsely grey tomentose, laterotergite with black and pale yellow, long, bristly setae. Haltere brown.

Legs black except tibia being yellowish-brown with black apex, fore femur with a row of bristles anteroventrally, hind femur with row of bristles anteroventrally and posteroventrally, vestiture black and white, bristles black.

Wing brown with hyaline posterolaterally, anterior border slightly bulging beyond middle.

Abdomen black, hind border of terga 1-3 narrowly brown, tergum 1 laterally with a bunch of long, pale yellow setae, a few of which form bristly setae, terga 2 and 3 laterally with a few, long pale yellow

setae, vestiture predominantly pale yellow with some black setae on posterior terga. Genitalia (Fig. 129) black with black and pale yellow setae.

Material examined : 1 ♂, (badly damaged), West Bengal: Darjeeling District : Singla, vi.1913, Coll. Carmichael. 1 ex. (abdomen lost), Burma (Myanmar) : Nyaungbin : Myitkyina District : Indawgyi Lake, 7-10.xi.1926, Coll. B. Chopra. 1 ♂, India : NEFA (Arunachal Pradesh): Subansiri District: Dejoo, 183 m, 10.v.1966, Coll. A.N.T. Joseph. 1 ♂, Manipur - Burma (Myanmar) border, 65 m, 28.ix.1975, Coll. M.S. Shishodia (Z.S.I.).

Discussion : It is closely similar to *Ommatius conopsoides* Wiedemann, but unlike that of latter in *O. peregrinus* (van der Wulp) the hind femur is more dilated and the tip of hypandrium is not bifurcate.

Distribution : India (Arunachal Pradesh, Manipur and West Bengal); Borneo (E. Malaysia and Kalimantan); Burma (Myanmar); Sumatra.

Types : Location of types not known.

144. *Ommatius pillaii* Joseph & Parui

(Fig. 130)

1986. *Ommatius pillaii* Joseph & Parui, *Rec. zool. Surv. India*, 84 (1-4) : 158. Type locality : Silent Valley, Kerala.

1990. *Ommatius pillaii* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 40.

A small black species with black legs marked with a little yellowish-brown, and infuscated wings. Male : length 7-8 mm, wing 6 mm; female : length 7 mm, wing 6 mm.

Male : *Head* black infuscated with grey tomentum; mystax black above and pale yellow below, fronto-orbital and ocellar bristles black, postcranium sparsely grey tomentose with black bristles and setae above and white setae below. Antenna black, bristles of scape and pedicel yellowish-brown, scape and pedicel nearly equal, first flagellomere longer. Palpus and proboscis black, the former with black and the latter with pale yellow setae.

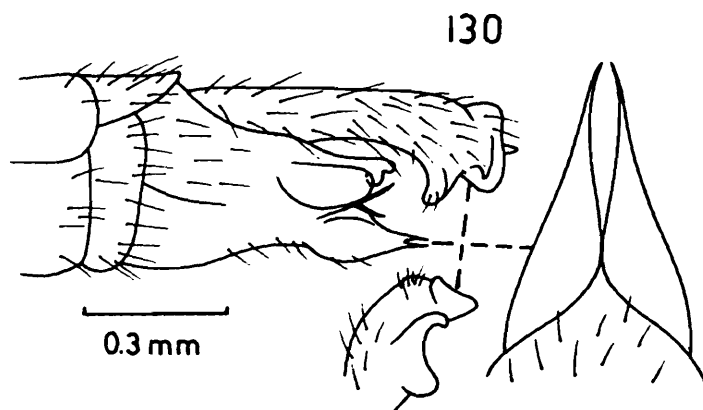


Fig. 130 : *Ommatius pillaii* Joseph & Parui, lateral view of male genitalia.

Thorax black with greyish-yellow to grey tomentum; pronotum pale yellow setose; scutum with the mediolongitudinal stripe indistinct, pleuron sparsely grey tomentose; scutellum sparsely tomentose, disc bears sparse pale yellow setae and the hind border with a pair of pale yellow bristles; bristles of laterotergite pale yellow. Haltere light yellowish-brown.

Legs predominantly black with slight yellowish-brown mark; tibia basally light yellowish-brown, more so in the fore leg so much so for considerable part of it light yellowish-brown basally and black distally, in the mid and hind legs basitarsus lighter coloured but not yellowish-brown; hind femur with a ventral row of pale yellow bristles, vestiture and bristles black and pale yellow, basitarsus of all legs ventrally bears dense, golden yellow mat of setae.

Wing infuscated except for the extreme base being hyaline.

Abdomen black, posterolateral sides of tergum 1 and to a lesser extent the succeeding terga bear long, pale yellow setae, vestiture pale yellow. Male genitalia (Fig. 130) black to dark brown with similarly coloured and pale yellow setae.

Female : Similar, but the mediolongitudinal stripe of scutum faintly marked and the hind basitarsus black.

Material examined : *Holotype* ♂, Z.S.I. Reg. No. 6625/H6, S. India: Kerala State; Silent Valley, 5 km towards Mukkali, 12.xii.1980, Coll R.S. Pillai. *Paratypes* 1 ♂, Reg. No. 6626/H6, 2 km towards Mukkali, 6.xii.1980, rest of data as in preceding; 1 ♀, Reg. No. 6627/H6, details as in holotype.

Discussion : There are a number of similarly coloured apparently looking alike, species of *Ommatius* Wiedemann, all of which can be recognised mainly by the structural details of male genitalia. *O. pillaii* Joseph & Parui is quite distinct in the details of male genitalia from all the other known species under the genus. It shows some similarity to *O. nanus* Walker in this character. The species is named in honour of Dr. R.S. Pillai, who explored the little known, difficult, Silent Valley.

Distribution : India (Kerala).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

145. *Ommatius ponti* Joseph & Parui

(Fig. 131)

1984b. *Ommatius ponti* Joseph & Parui, *Oriental Ins.*, 18 : 58. Type localities : Muttia, Pakistan; and N.W.India.

1990. *Ommatius-ponti* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 40.

A small black and yellowish-brown species with pale yellow legs and hyaline wings. Male : length 8 mm, wing 6 mm; female : length 8-10 mm, wing 6-8 mm.

Males : **Head** black, heavily infuscated with grey tomentum; mystax white with 4 black bristles; fronto-orbital and ocellar bristles black; postcranium more or less entirely covered with white setae; postoculr bristles black and 5 on either side. Antenna with scape light yellow, pedicel pale yellow with apex yellowish-brown, first flagellomere and style yellowish-brown, setae on scape and pedicel dark

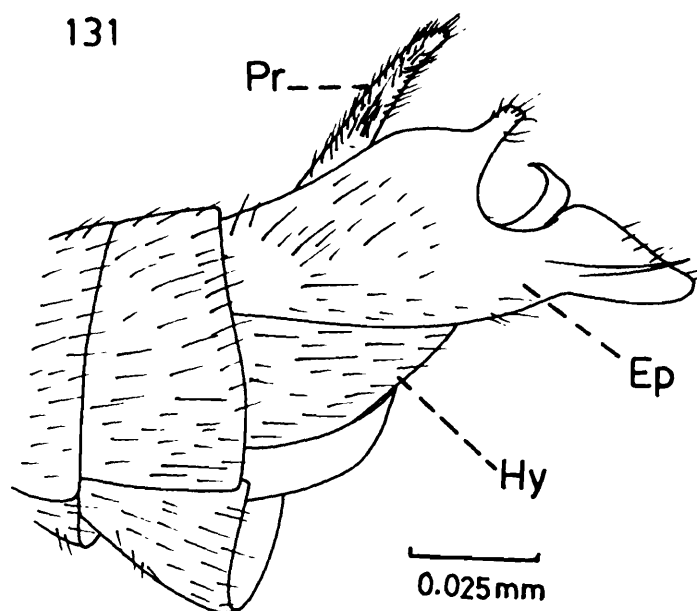


Fig. 131: *Ommatius ponti* Joseph & Parui, lateral view of male genitalia.

brown, both equal in length, first flagellomere slightly longer than scape or pedicel. Palpus yellowish-brown with pale yellow setae, proboscis black with white setae.

Thorax black, densely grey tomentose; pronotum with 4 pale yellow bristles in a transverse row, setae white, dense laterally; scutum with mediolongitudinal stripe divided by a narrow grey stripe, the stripe extending from the anterior end to a little before the hind border, posterolateral sides yellowish-brown, vestiture black and pale yellow, bristles black; scutellum sparsely grey tomentose, setae on disc sparse, pale yellow, hind border with one pair of black bristles; laterotergite with pale yellow bristles. Haltere pale yellow, its apex brown tinged.

Legs pale yellow, tarsal segments especially that of hind leg distally yellowish-brown to dark brown; vestiture and bristles pale yellow and black; hind femur with one row of anteroventral and another incomplete row of 3-4 anterodorsal dark brown bristles, some pale yellow bristles also more or less in a row posteroventrally.

Wing hyaline.

Abdomen yellowish-brown with some brown marking on basal two segments, sides of tergum 1 with some long, pale yellow setae, vestiture pale yellow and black. Genitalia (Fig. 131) similarly coloured like that of the rest of the abdomen, setae black and pale yellow.

Females : Similar to male but with the following differences : mystax with 6 black bristles; postocular bristles dark brown, 6 or more on either side.

Material examined : *Holotype* ♂, Pakistan : Muttia, 24.vii.1905, presented by E. Brunetti to B.M. (1927). *Paratypes* 1 ♀, data as in holotype; 1 ♀, N.W. India, no further data.

1 ♂, India : Uttar Pradesh: Agra, 13.viii.1944, Coll. D.E. Hardy (S.I.); 1 ♂, Rajasthan: Sirohi District : Kiarali, 19.ix.1986, Coll. A.N.T. Joseph (Z.S.I.).

Discussion : *Ommatius ponti* Joseph & Parui has distinctive male genitalia. It superficially resembles *O. pashokensis* Joseph & Parui, differing in the shape of epandrium, hypandrium, and proctiger of genitalia, and in the presence of anteroventral and anterodorsal rows of bristles of hind femur. It is named after Dr. A.C. Pont who loaned the material.

Distribution : India (Rajasthan and Uttar Pradesh) ; Pakistan.

Types : Holotype and 1 paratype in the Collection of the Natural History Museum, London, and 1 paratype in the National Zoological Collection of the Zoological Survey of India, Calcutta.

146. *Ommatius pseudodraavidicus* Joseph & Parui

(Fig. 132)

1983b. *Ommatius pseudodraavidicus* Joseph & Parui, *Ent. scand.*, **14** : 91. Type locality : Jabalpur, Madhya Pradesh.

1990. *Ommatius pseudodraavidicus* : Joseph & Parui, *Rec. zoo. Surv. India*, Occ. Paper No. 113 : 40.

A medium sized black species with black and yellowish-brown legs, uniformly brownish tinged wings and clavate abdomen. Male : length 10 mm, wing 7.5 mm; female : length 10 mm, wing 8 mm.

Male : Head black with grey tomentum; mystax white with a few black bristles also; frontoorbital and ocellar bristles black, postcranium sparse grey tomentose, bare above but well marked in the centre, setae grey and pale yellow, a few black setae and bristles present above. Antenna dark brown, but scape slightly lighter, bristles of scape and pedicel dark brown, scape long, pedicel slightly longer than half of scape, first flagellomere shorter than scape. Palpus and proboscis dark brown, the former with yellow and dark brown and the latter with white setae.

Thorax black with grey tomentum; pronotal setae light yellow with a pair of black bristles on either side; scutum without the mediolongitudinal stripe, humeri, sides and hind border grey tomentose, bristles black; pleuron sparsely tomentose; scutellum sparsely grey tomentose with light yellow setae on the disc and a pair of black bristles on the border; laterotergite with pale yellow and black bristles. Haltere light yellow with stalk lighter coloured.

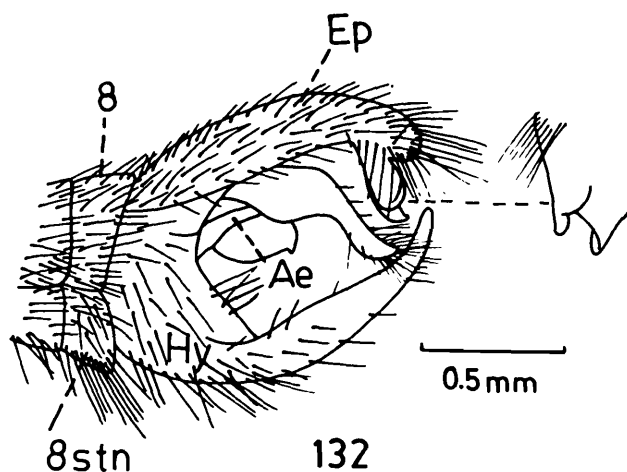


Fig. 132 : *Ommatius pseudodraavidicus* Joseph & Parui, lateral view of male genitalia.

Legs black and yellowish-brown; coxa, trochanter and femur black, tibia yellowish-brown with the apex dark brown, tarsal segments yellowish-brown to dark brown, vestiture and bristles black and pale yellow, hind femur with anteroventral and posteroventral rows of short bristles, the latter not so well developed.

Wing uniformly light brownish tinged with the anterior border slightly deeper coloured.

Abdomen dark brown with the hind border of 1 - 4 and terminal 2 terga yellowish-grey, setae black and pale yellow. Male genitalia (Fig. 132) yellowish-brown with black and a few pale yellow setae.

Female : Similar but with the following differences : upper part of postcranium devoid of black setae; mediolongitudinal stripe of scutum faintly marked; and anterior border of wing similarly coloured like that of the rest of the wing.

Material examined : Holotype ♂, Central India : Madhya Pradesh : Jabalpur, 488 m, ix. 1957, Coll. P.S. Nathan. Paratype 1 ♀, data as in holotype.

Discussion : In male genitalia this species is generally similar to *Ommatius dravidicus* Joseph & Parui, but differs in the structural details and, in the proportional length of scape and first flagellomere, in the absence of a swollen femur in the male and in the uniformly brownish tinged wings. It is somewhat similar to *O. hradsnyi* Joseph & Parui.

Distribution : India (Madhya Pradesh).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

147. *Ommatius pseudojabalpurensis* Joseph & Parui

(Fig. 133)

Ommatius pseudojabalpurensis Joseph & Parui, *Rec. zool. Surv. India* (in press). Type locality : Hyderabad, Andhra Pradesh.

A comparatively small black species with black and pale yellow legs, hind femur stout in males, and brown wings. Male : length 9-11 mm, wing 7-8 mm; female : length 9-11 mm, wing 7-8 mm.

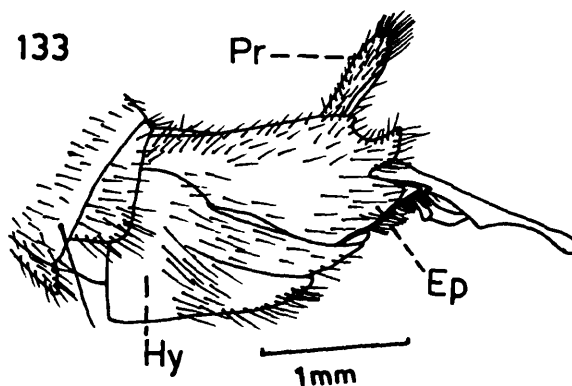


Fig. 133 : *Ommatius pseudojabalpurensis* Joseph & Parui, lateral view of male genitalia.

Males : Head black with dense greyish-yellow or greyish-white tomentum; mystax pale yellow with a few black bristles above, fronto-orbital setae black, ocellar bristles black, postocular bristles mostly black but 2 or 3 pale yellow below, postcranium and postgena white setose. Antenna black, scape and pedicel with black setae, former also with 1 or 2 black bristles, pedicel about two-thirds length of scape

or slightly more, first flagellomere equal to or longer than scape. Palpus and proboscis black, former white and pale yellow setose, latter white setose.

Thorax black with greyish-yellow and greyish-white tomentum; pronotum white setose, medially with a transverse row of 4 pale yellow or black bristles; scutum with a mediolongitudinal black stripe extending from anterior border to middle of transverse suture and hind border, the stripe divided by a median, narrow, greyish-yellow stripe, laterally with 2 large black spots on each side; chaetotaxy: 2 notopleurals, 1 postalar, 1 supra-alar, 3-5 dorsocentrals anterior to scutoscutellar suture; vestiture black but on sides white, bristles black; scutellar disc with sparse white setae and border with 2 black bristles; laterotergite with a transverse row of pale yellow or black or mixed bristles, epimeron with 1 black bristle. Haltere pale yellow to yellowish-brown.

Legs black and pale yellow with stout hind femur; coxa and trochanter black, fore femur apically pale yellow and remainder black, mid and hind femora black, tibia pale yellow but hind tibia apically dark brown, tarsus pale yellow with apex of tarsomeres black; fore and mid femora ventrally with dense white setae, hind femur with an anteroventral row of short, spiny bristles, similar bristles present more or less in a row posteriorly, and about another 5 in a row anteriorly; vestiture black, pale yellow and white, bristles black and pale yellow.

Wing brown, but medially lighter coloured.

Abdomen black, tergum 1 laterally with a bunch of white or pale yellow setae, a few of which form bristles, tergum 2 with some long, pale yellow setae posterolaterally, vestiture pale yellow. Male genitalia (Fig. 133) black, with black and pale yellow setae.

Females : Similar but with the following differences: hind femur not thickened; femur and tibia pale yellow except hind tibia apically dark brown. Female genitalia black, sternum 8 ending in very short, one median and two lateral projections; tergum 8 with 2 black bristles on each side, proctiger broadly obtuse with pale yellow setae.

Material examined : *Holotype* ♂, Z.S.I. Reg. No. 7526/H6, Hyderabad: Manjira Barage, 6.viii.1986, Coll. A.N.T. Joseph. *Paratypes* 9 ♂, 9 ♀, Reg. No. 7527/H6 to 7544 /H6, rest of data as in *holotype*; 1 ♂, 1 ♀, Reg. No. 7545/H6, 7546/H6, Hyderabad: Chilkur Deer Park, 4.iv.1986, Coll. A.N.T. Joseph.

Discussion : It is closely similar to *Ommatius jabalpurensis* Joseph & Parui from which it differs in the comparatively stout hind femur and shape of aedeagus.

Distribution : India (Andhra Pradesh).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

148. *Ommatius pseudokempi* Joseph & Parui

(Fig. 134).

1987f. *Ommatius pseudokempi* Joseph & Parui, *Bull. zool. Surv. India*, 8 : (1-3) : 210. Type locality : Jhuripara, Sambalpur District, Orissa.

1990. *Ommatius pseudokempi* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 40.

A small black species with yellowish-brown legs, femur marked with a small black spot anteriorly and wings wholly hyaline or apically pale brownish. Male : length 9 mm, wing 6 mm; female : length 10-11 mm, wing 7 mm.

Male : *Head* black with sparse grey tomentum; mystax black and pale yellow coloured, fronto-orbital bristles pale yellow and that of ocellarium black, postcranium sparsely grey tomentose, setae pale yellow, postocular bristles pale yellow and black. Antenna black, bristles of scape and pedicel black, both nearly equal in length, first flagellomere much longer than scape and pedicel. Palpus and proboscis black, the former with black setae while the latter pale yellow setose.

Thorax black with grey and greyish-yellow tomentum; pronotum pale yellow setose with one black bristle on either side; scutum without mediolongitudinal stripe, tomentum though sparse covering most of scutum, bristles black and pale yellow; pleuron black with sparse grey tomentum, scutellum scarcely grey tomentose, sparse pale yellow setose on disc and a pair of black bristles on the border; laterotergite with pale yellow bristles. Haltere pale yellow with brownish marking.

Legs predominantly yellowish-brown, coxa black, remaining segments yellowish-brown with apex of tarsal segments dark brown, apex of femur anteriorly with a black spot; vestiture and bristles black and pale yellow.

Wing hyaline but apically pale brownish.

Abdomen black, sides of tergum 1 with pale yellow setae and bristles, 2 and 3 with lesser number of pale yellow setae, vestiture pale yellow and black. Male genitalia (Fig. 134) yellowish-brown with pale yellow and some black setae.

Females : Similar but with the following differences : head greyish-yellow and pale yellow tomentose or completely pale yellow tomentose; postocular bristles pale yellow and black or wholly pale yellow; scutellar bristles black and pale yellow; wing wholly hyaline. female genitalia black, tergum 9 hidden by tergum 8 and only slightly projected out laterally, proctiger broad, gradually narrowed at apex and projected upwards with abundant black setae.

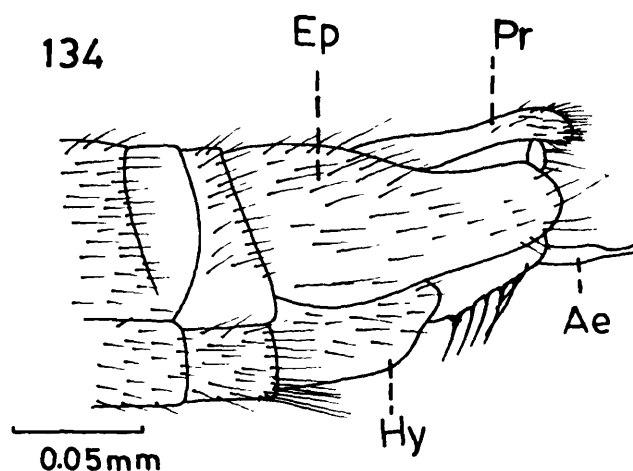


Fig. 134 : *Ommatius pseudokempi* Joseph & Parui, lateral view of male genitalia.

Material examined : *Holotype* ♂, Z.S.I. Reg. No. 7239/H6, Orissa : Sambalpur District : Jhuripara, 23.viii.1983, Coll. P. Parui. *Paratypes* 2 ♀, Reg. No. 7240/H6 and 7241/H6, rest of details as in holotype.

2 ♂, India : Tamil Nadu: Muddimathanagudam, vii-viii.1924, Coll. C.K.S. (S.I.). 1 ♂, 1 ♀, India : Rajasthan : Sirohi District : Kiarali, 19.ix.1986, Coll. A.N.T. Joseph (Z.S.I.).

Discussion : The epandrium of male genitalia in the species under consideration possesses an upper projection like that of *Ommatius kempi* Joseph & Parui but otherwise a quite distinct species with

mixed coloured mystax and details of male genitalia. It has superficial resemblance with *O. kodaikanalensis* Joseph & Parui.

Distribution : India (Orissa, Rajasthan and Tamil Nadu).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

149. *Ommatius rajani* n. sp.

(Fig. 135)

A small, black species with greyish-yellow and grey tomentum with black and yellowish-brown or pale yellow legs, and distally infuscated wings. Male : length 8 mm, wing 6 mm; female : length 9 mm, wing 6 mm.

Male : *Head* black with grey tomentum; mystax white below and black above; frontoorbital setae white, ocellar bristles black, postocular bristles pale yellow and white, postcranium bare. Antennal scape and pedicel yellowish-brown, first flagellomere black, scape slightly shorter than pedicel, first flagellomere a little longer than the combined length of scape and pedicel. Palpus and proboscis black with white setae.

Thorax black, predominantly greyish-yellow tomentose; pronotum with white setae and a transverse row of 4 pale yellow bristles; scutum with a broad, black mediolongitudinal stripe extending from anterior border to midway between transverse suture and hind border, the stripe not divided medially, laterally with 2 large, black spots; chaetotaxy: 1 notopleural, 1 postalar, 3 supra-alars, 2 dorsocentrals; vestiture pale yellow and black, bristles pale yellow but for a pair of black bristles, disc with sparse white setae; laterotergite and meron with a transverse row of long, pale yellow and white bristly setae. Haltere pale yellow to yellowish-brown.

Legs black and yellowish-brown or pale yellow; coxa and trochanter black, fore and mid femora yellowish-brown with black apex, fore and mid tibiae pale yellow with dark brown apex, hind femur basally for one-third yellowish-brown and the remainder black, tibia basally for more than half pale yellow and the remainder black, basitarsus of fore and mid legs pale yellow with black apex, the remaining segments black, hind tarsus completely black, vestiture black and pale yellow, bristles predominantly black with a few, pale yellow ones.

135

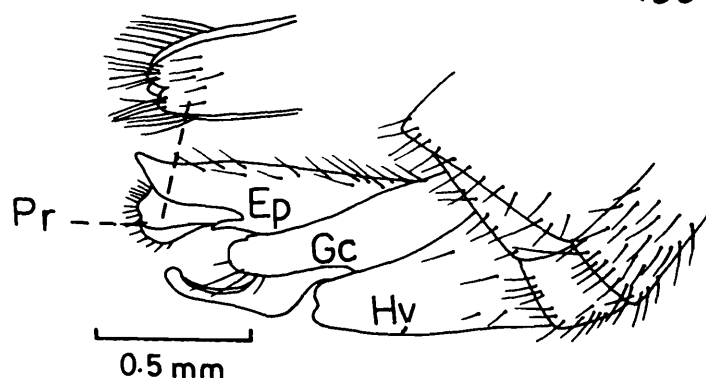


Fig. 135 : *Ommatius rajani* sp. nov., lateral view of male genitalia.

Wing basally hyaline and distally infuscated.

Abdomen black, tergum 1 laterally with a few, long, pale yellow setae, vestiture predominantly white with some black setae also. Male genitalia (Fig. 135) black with yellowish-brown apically, setae black and pale yellow.

Female : Quite similar to male but for the first flagellomere being comparatively long. Female genitalia yellowish-brown with pale yellow setae, sternum 8 wavy at apex, proctiger broadly obtuse at apex.

Material examined : *Holotype* ♂, Z.S.I. Reg. No. 7859/H6, Andaman Island : Barren Island, 26.iii.1990, Coll. B. Mitra. *Paratype* ♀, Reg. No. 7860/H6, rest of data as in holotype.

Discussion : The genus *Ommatius* is represented by 6 species in Andaman and Nicobar Islands. *O. rajani* n. sp. differs from these as well as other regional species by the male genitalia, the epandrium being distinctive. It is named in honour of our colleague, Sri P.T. Rajan, of Port Blair, for the various helps rendered to us during our field trip to Andamans in January 1988.

Distribution : India (Andaman Island).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

150. *Ommatius ramakrishnai* Joseph & Parui

(Fig. 136)

1998. *Ommatius ramakrishnai* Joseph & Parui, *Rec. zool. Surv. India* **97** (1&2) : 1-28. Type localities : Warangal and Vizagapatnam Districts, Andhra Pradesh.

A small black species with black and pale yellow to yellowish-brown legs, light brown tinged wings and distinctive epandrium. Male : length 5-6 mm, wing 4 mm; female : length 6 mm, wing 5 mm.

Male : *Head* black infuscated with grey tomentum; mystax white below and black above with their extent quite variable, fronto-orbital setae and ocellar bristles black; postcranium sparsely grey tomentose medially and densely grey tomentose laterally, postocular bristles black above and white below. Antenna black, scape and pedicel with black bristles, scape slightly shorter than pedicel, first flagellomere subequal to pedicel. Palpus and proboscis black with white setae.

Thorax black with sparse grey or greyish-yellow tomentum; pronotum white setose and with 1 or 2 pale yellow and black bristles on each side; scutum with the mediolongitudinal stripe faintly marked from anterior border to beyond middle of transverse suture and hind border, laterally with three faint black spots in a longitudinal row, scutum comparatively with more tomentum on sides; chaetotaxy: 2 notopleurals, 1 postalar, 1 supra-alar, 2-3 dorsocentrals anterior to scutoscuteellar suture, vestiture and bristles black and white; scutellar border with a pair of white bristles, disc with sparse white to pale yellow setae; laterotergite with a few long, white to pale yellow bristly setae, 2-3 similar setae also present on meron. Haltere pale yellow.

Legs black and pale yellow to yellowish-brown; coxa, trochanter and femur black, tibia pale yellow to yellowish-brown, in some cases apex dark brown, basitarsus pale yellow to yellowish-brown with apex dark brown, rest of tarsus dark brown, vestiture white and black, bristles predominantly black with a few white ones also.

Wing light brown tinged, but basally hyaline.

Abdomen black, tergum 1 laterally with a bunch of long, white setae, 3-4 of which form bristly setae, vestiture black and white. Male genitalia (Fig. 136) black with black setae, epandrium distinctive.

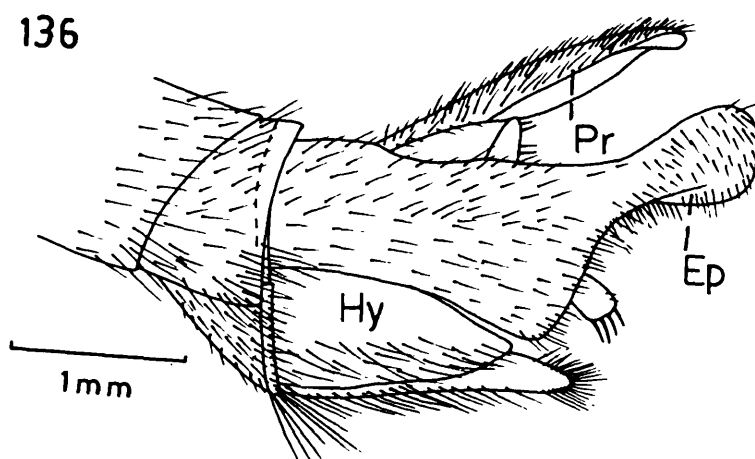


Fig. 136 : *Ommatius ramakrishnai* Joseph & Parui, lateral view of male genitalia.

Females : Similar but with the following differences : first flagellomere slightly longer than pedicel; bristles of scutellar border pale yellow in one paratype. Female genitalia black with black and a few pale yellow setae, eighth sternum apically wavy and with a pair of well developed bristles posterolaterally, proctiger broadly obtuse at apex with pale yellow and black setae.

Material examined : *Holotype* ♂, Z.S.I. Reg. No. 7547/H6, Warangal District : Pakhal Forest Rest House Compound, 4.viii.1985, Coll. P. Parui and Party. *Paratypes* 2 ♂, 4 ♀, Reg. No. 7548/H6 to 7553/H6, details as in holotype; 1 ♂, Reg. No. 7554/H6, Vizagapatnam District : Sanivarm Forest, 24.ii.1986, Coll. A.N.T. Joseph.

Discussion : It can be distinguished from all the other known Oriental species by the distinctive male genitalia, especially epandrium, together with black femora. It is named in honour of our colleague, Dr. Ramkrishna, Scientist, Zoological Survey of India, Hyderabad, who collected many interesting robberflies from Andhra Pradesh.

Distribution : India (Andhra Pradesh).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

151. *Ommatius shishodiai* Joseph & Parui

(Fig. 137)

1992. *Ommatius shishodiai* Joseph & Parui, *Rec. zool. Surv. India*, **92** (1-4) : 154. Type locality : Gulawthi, Buland Shahr, Uttar Pradesh.

A small black species with black and yellowish-brown legs, hyaline or hyaline with anterior border yellow tinged wings, and clavate abdomen. Male : length 4-6 mm, wing 3-4 mm; female : length 5-6 mm, wing 4-5 mm.

Male : *Head* black, grey tomentose; mystax wholly white or white with one or more upper bristles black; fronto-orbital setae white, ocellar bristles white or white and black, postocular bristles white, postociput almost bare, postgena with a few white setae. Antenna black, scape and pedicel with black or black and white bristles, length of scape variable from half to subequal to the length of pedicel, first flagellomere slightly longer than pedicel. Palpus and proboscis black with white setae.

Thorax black, sparsely grey tomentose; pronotum with a pair of pale yellow bristles and sparse white setae; scutum with the mediolongitudinal stripe indistinct except in one or two examples faintly discernible; chaetotaxy: 1 notopleural, 1 postalar, 2 supra-alars, 2 (but in one example 3) dorsocentrals; vestiture almost absent, bristles white and black; scutellar border with 2 short bristles, disc with scarce white setae; laterotergite with a few elongate, bristly white setae. Haltere pale yellow or yellowish-brown.

Legs black and yellowish-brown, in a few examples the latter becomes lighter and forms pale yellow; coxa, trochanter and femur black except the extreme base of hind femur being yellowish-brown, femur yellowish-brown with black apex, in typical case tibia pale yellow with black apex, the extent of colour variable, basitarsus yellowish-brown with its apex and remaining part of tarsus black, in hind basitarsus black often more extensive; vestiture white and black, latter predominant, bristles black, femur ventrally with bristly white setae, which form ventral and posteroventral rows in hind femur.

Wing hyaline, or hyaline with anterior border yellow tinged.

Abdomen clavate, black with hind border of terga narrowly pale yellow, tergum 1 laterally with a bunch of long, white setae, tergum 2 with similar setae but much less in number, vestiture white or black or both intermingled. Male genitalia (Fig. 137) black and yellowish-brown, setae white and black.

Females : Similar with the following differences : upper side of mystax with more black bristles and in majority of examples 6 in number, ocellar bristles in most cases wholly black; chaetotaxy: 2-3 dorsocentrals; in legs yellowish-brown more extensive. Female genitalia black with proctiger lighter coloured with dense grey tomentum, sternum 8 truncate at apex, on either side with an elongate, bristly seta, proctiger obtuse apically.

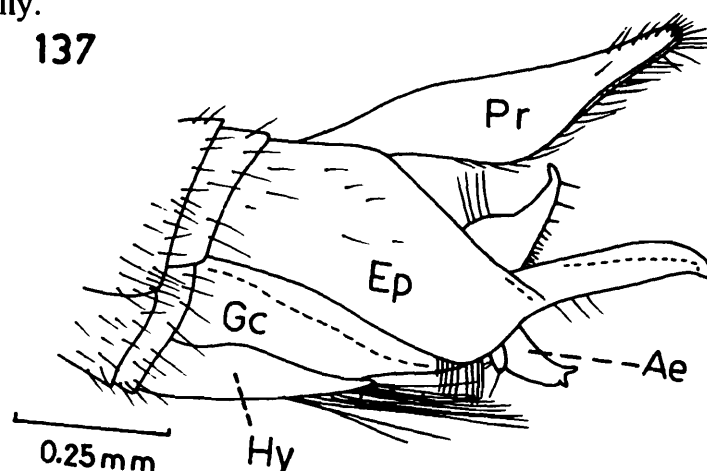


Fig. 137 : *Ommatius shishodiai* Joseph & Parui, lateral view of male genitalia.

Material examined : Holotype ♂ Z.S.I. Reg. No. 7716/H6, Uttar Pradesh: Buland Shahr: Gulawthi, 2.vi.1989, Coll. M.S. Shishodia. Paratypes 1 ♀, Reg. No. 7717/H6, 4.vi.1989, rest of details as in holotype; 2 ♂, 3 ♀, Reg. No. 7718/H6 to 7722/H6, 26.vi.1989, rest of data as in holotype; 11 ♂, 3 ♀, Reg. No. 7723/H6 to 7736/H6, remaining data as in holotype.

Discussion : *Ommatius andamanensis* Joseph & Parui, *O. nilgiriensis* Joseph & Parui and *O. shishodiai*, Joseph & Parui are closely similar, all of which can be separated by the details of male genitalia. Besides, *O. shishodiai* Joseph & Parui has black femur. It is named in honour of our esteemed colleague, Dr. M.S. Shishodia, who has helped us in our several field survey trips.

Distribution : India (Uttar Pradesh).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

152. *Ommatius singhi* Joseph & Parui

(Fig. 138)

1992. *Ommatius singhi* Joseph & Parui, *Rec.zool. Surv. India*, **91** (1) : 102. Type locality : Jodhpur, Rajasthan.

A very small black species with black and yellowish-brown legs, and distally infuscated wings. Male : length 4-5.5 mm, wing 4 mm; female : length 6 mm, wing 5 mm.

Males : *Head* black, grey tomentose; mystax white with 2-3 to the whole of upper half with black bristles, fronto-orbital setae black and white or wholly black, ocellar bristles white or black, postocular bristles black above and white below, postcranium bare above and with a few white setae below. Antenna black, scape and pedicel with black bristles, scape subequal to pedicel, first flagellomere and pedicel nearly equal in length. Palpus and proboscis black with white setae.

Thorax black with grey tomentum; pronotum white setose and with or without 1 or 2 pairs of pale yellow bristly setae in a transverse row; scutum with the mediolongitudinal stripe black, faintly marked, and extending from anterior border to beyond transverse suture; chaetotaxy : 1 notopleural, 1 postalar, 2 supra-alars, 1 or 2 dorso-centrals; vestiture white, bristles white with one or more pairs black; scutellum with a pair of white or black bristles on border, disc with a few white setae; laterotergite with a few, long, bristly white setae, meron also with a pair of similar setae. Haltere pale yellow or white.

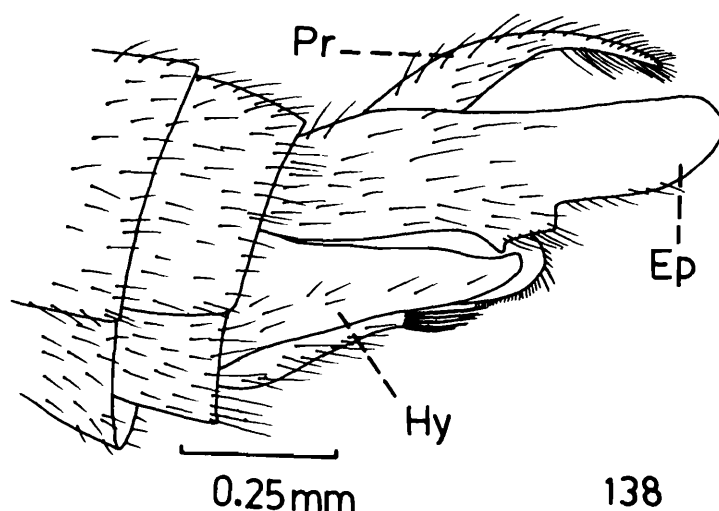


Fig. 138 : *Ommatius singhi* Joseph & Parui, lateral view of male genitalia.

Legs black and yellowish-brown, coxa, trochanter and femur black, tibia yellowish-brown with apex of hind tibia dark brown, basitarsus yellowish-brown with black apex or wholly yellowish-brown, remainder of tarsus black, hind femur with anteroventral and posteroventral row of weak bristles, vestiture predominantly white with some black setae, bristles white and black.

Wing more than half infuscated distally, the remainder hyaline.

Abdomen club-shaped, black, tergum 1 posterolaterally with a few, white bristles and setae, tergum 2 laterally with a few, long, white setae, vestiture white. Male genitalia (Fig. 139) black with black setae and bristles, epandrium ventrally with a nearly rectangular projection.

Female : Similar to the males. Female genitalia black with black and white setae, strenum 8 depressed medially, shallowly concave apically, and with a pair of long bristles laterally, proctiger narrow at apex.

Material examined : Holotype ♂, Z.S.I. Reg. No. 7678/H6, Rajasthan : Jodhpur : Mandar Garden, 11.ix.1986, Coll. A.N.T. Joseph. Paratypes 2 ♂, Reg. No. 7679/H6, 7680/H6, rest of data as in holotype; 1 ♀, Reg. No. 7681/H6, Jodhpur : Balsamandh, 14.ix.1986, Coll. A.N.T. Joseph & Party.

Discussion : It is typical of the genus *Ommatius* with black colouration and club-shaped abdomen, which can be separated from all the other known Indian species by the distinctive male genitalia. It has superficial resemblance with *O. tamenensis* Joseph & Parui. It is named in honour of Mr. R. K. Singh, our colleague at Jabalpur, who collected some interesting robberflies for us.

Distribution : India (Rajasthan).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

153. *Ommatius singlensis* Oldroyd

1935. *Ommatius nigrifemorata* Bromley, *Rec. Indian Mus.*, 37 : 226. Type locality : Singla, Darjeeling District, West Bengal.

1975. *Ommatius singlensis* Oldroyd. *A Catalog of Diptera of the Oriental Region*, 2 : 134 : (Preocc. *O. nigrifemorata* (Bigot) 1876, renamed).

1990. *Ommatius singlensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 40.

A small black species with black and pale yellow legs, iridescent wings and black with yellowish-brown marked abdomen. Female : length 8-9 mm, wing 7-8 mm.

Females : Head black, infuscated with dense grey and greyish-yellow tomentum; mystax black with some white bristles below, but sparse on paratype; fronto-orbital setae black, four or five in number, ocellar bristles black, upper side of postcranium sparsely white setose, and lower side with rather dense white setae, postocular bristles black. Antennal scape and pedicel yellowish-brown with black bristles, remaining black, pedicel subequal to scape and first flagellomere longer than scape. Palpus and proboscis black, former black setose while latter white setose.

Thorax black, grey and greyish-yellow tomentose; pronotum white setose with a pair of black bristles on either side; scutum devoid of mediolongitudinal stripe, vestiture black with some pale yellow ones anterolaterally, bristles black; scutellum densely greyish tomentose, disc with sparse fine white

setae and border with a pair of black bristles; pleura densely grey tomentose, laterotergite and meron with a transverse row of pale yellow bristles, some of which on femur may be black, in paratype nearly bare. Haltere pale yellow.

Legs black and pale yellow, coxa black with dense grey tomentum, trochanter and femur black, tibia pale yellow with dark brown apex, tarsus dark brown, hind femur with anteroventral and posteroventral row of pale yellow bristles, some of which of posteroventral row may be black, vestiture predominantly white with some black ones also, bristles black and pale yellow.

Wing nearly hyaline, iridescent.

Abdomen black with yellowish-brown mark on terga, incisures narrow and distinctly yellowish-brown, tergum 1 on sides with a bunch of white setae amidst which present a few pale yellow bristles, tergum 2 with some long white setae laterally, vestiture white with some black ones also.

Material examined : *Holotype* ♀, Z.S.I. Reg. No. 655/H6, India : Darjeeling District : Singla, 457 m, v.1913, Lord Carmichael's Collection. *Paratype* ♀, Reg. No. 656/H6, same data.

Discussion : The species can be distinguished from other regional species by its iridescent wing, predominant black mystax, pale yellow tibiae with dark brown apex.

Distribution : India (West Bengal).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

154. *Ommatius spathulatus* Doleschall *

- 1858. *Ommatius spathulatus* Doleschall, *Natuurk. Tijdschr. Ned. Indie*, **17** : 89. Type locality : Amboina, Moluccas.
- 1862. *Ommatius platymelas* Walker, *Journ. Linn. Soc. London*, **6** : 8. Type locality : Moluccas.
- 1975. *Ommatius spathulatus* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 134.
- 1990. *Ommatius spathulatus* : Joseph & Parui, *Rec. zool. Surv. India. Occ. Paper No. 113* : 40.

Sex not given. According to the form of the abdomen related to *Ommatius conopsoides* Wiedemann. Almost entirely black, with slight lustre and weakly setose. The eyes dark green. The thorax oval, the humeri and sides brownish-yellow; the scutellum small.

The abdomen flat, in the middle quick (?), towards the end getting gradually broader (club-shaped). The legs short and reasonably strong, black, posteriorly a bit paler.

Amboina : The whole year through, not rare.

Material : Details not given, but described from Moluccas : Amboina. Also recorded from Nicobar Islands.

Discussion : According to the shape of abdomen it resembles *Ommatius conopsoides* Wiedemann but can be distinguished by its brownish-yellow humeri and leg colouration.

Distribution : India (Nicobar Islands); Moluccas.

Type : Location of type not known.

155. *Ommatius subgracilis* Bromley

(Fig. 139)

1935. *Ommatius subgracilis* Bromley, *Rec. Indian Mus.*, **37** : 226. Type locality : Darjiling, Kalimpong, E. Himalayas.
1975. *Ommatius subgracilis* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, **2** : 135.
1990. *Ommatius subgracilis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 40.

A medium sized black species with pale yellow and yellowish-brown legs, and distally infuscated wings. Male : length 12 mm, wing 11 mm.

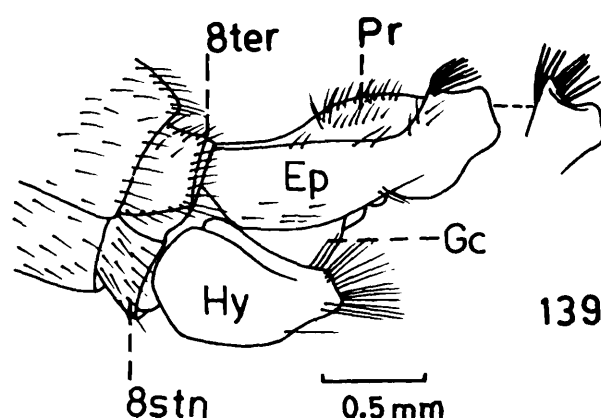


Fig. 139 : *Ommatius subgracilis* Bromley, lateral view of male genitalia.

Male : *Head* black, heavily infuscated with grey and greyish-yellow tomentum; mystax white with also a pair of black bristles above; frontoorbitals pale yellow, ocellar bristles black, postocular bristles black, postcranium with white and pale yellow setae. Antenna black with black bristles on scape and pedicel, the latter subequal to scape, first flagellomere slightly longer than scape. Palpus yellowish-brown with pale yellow setae whereas proboscis black with white setae.

Thorax black, grey tomentose; pronotal setae pale yellow with a pair of median pale yellow bristles; scutum devoid of mediolongitudinal stripe, sides grey tomentose, bristles black; scutellar disc sparsely pale yellow setose, hind border bearing a pair of black bristles; laterotergite and meron with a transverse row of pale yellow bristles. Haltere pale yellow.

Legs pale yellow and yellowish-brown; coxa and trochanter black, fore and mid legs pale yellow with apical dark brown marking, hind femur for basal one-fourth pale yellow and the remainder yellowish-brown, tibia pale yellow with apical yellowish-brown which is comparatively extensive in hind tibia, basitarsus pale yellow, remaining tarsal segments yellowish-brown to dark brown; mid and hind tibiae with a few elongate dark brown bristles, apex of tibia and tarsal segments ventrally and sides with mat of golden yellow setae, vestiture pale yellow and black.

Wing brown distally which gradually become pale yellow from middle to posterior border, and hyaline basally.

Abdomen black with the basal part of terga comparatively lighter coloured, tergum I posterolaterally with a bunch of pale yellow setae, a few of which form bristles, vestiture black and pale yellow. Male genitalia (Fig. 139) black and yellowish-brown, epandrium apically bearing some short bristles.

Material examined : *Holotype* ♂ Z.S.I. Reg. No. 653/H6, E. Himalayas Kalimpong Darjiling, 182-1372 m, coll. F.H. Gravely. *Allotype* ♀, Reg. No. 654/H6, same data as in holotype. *Paratype* ♀, same data.

Discussion : The species can be readily distinguished from any other regional species of *Ommatius* by the characteristic shape of epandrium which also bears a brush of spinous bristles dorsally at its subapical region.

Distribution : India (West Bengal).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

156. *Ommatius tamenensis* Joseph & Parui

(Fig. 140)

1983b. *Ommatius tamenensis* Joseph & Parui, *Ent. scand.*, **14** : 93. Type locality : Tamen, Subansiri Division, Arunachal Pradesh, North East India.

1990. *Ommatius tamenensis* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 41.

A small black species with black and yellowish-brown legs and light brownish subcostal cell.

Male : length 9.5 mm, wing 6 mm.

Male : *Head* black infuscated with sparse greyish-yellow tomentum; mystax pale yellow but also with one black bristle, fronto-orbital bristles and ocellar bristles black; postcranium sparsely grey tomentose with pale yellow setae and a few pale yellow bristles above. Antenna black, bristles of scape, pedicel black above and pale yellow below, scape, pedicel and first flagellomere nearly equal in length. Palpus and proboscis dark brown, their setae pale yellow.

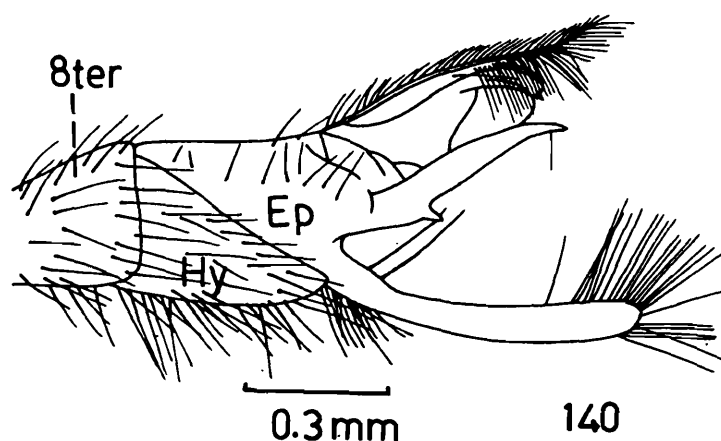


Fig. 140 : *Ommatius tamenensis* Joseph & Parui, lateral view of male genitalia.

Thorax black with sparse grey tomentum; pronotal setae pale yellow, a pair of bristles present on either side; scutum without mediolongitudinal stripe, sides grey tomentose, bristles black, pleuron devoid of tomentum; scutellum with pale yellow setae on the disc and one pair of black bristles on the border; laterotergite with pale yellow setae. Haltere yellowish-brown, stalk lighter coloured.

Legs black and yellowish-brown; coxa, trochanter and femur black, fore tibia wholly pale yellowish-brown, mid tibia yellowish-brown with apical brownish marking, hind tibia for more than one-fourth black apically; tarsal segments black but basitarsus in fore and mid legs lighter coloured; vestiture and bristles black and pale yellow.

Wing hyaline but for the light brownish subcostal cell.

Abdomen dark brown with pale yellow setae and bristles. Male genitalia (Fig. 140) black with black and pale yellow setae and bristles.

Material examined : *Holotype* ♂ North East India : Arunachal Pradesh : Subansiri Division : Tamen, 457 m, 20.v.1966 Coll. A.N.T. Joseph.

Discussion : The male genitalia readily distinguishes *Ommatius tamenensis* Joseph & Parui from all the known regional species. It is generally similar to *O. albatrus* Martin from Madagascar but otherwise a quite distinct species.

Distribution : India (Arunachal Pradesh).

Types : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

157. *Ommatius tandoni* Joseph & Parui

(Fig. 141)

1983b. *Ommatius tandoni* Joseph & Parui, *Ent. scand.*, 14 : 93. Type locality : Tachidoni, Siang Division, Arunachal Pradesh, North East India.

1990. *Ommatius tandoni* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 41.

A small black species with black and yellowish-brown legs and distally brownish wings. Male : length 7 mm, wing 5 mm.

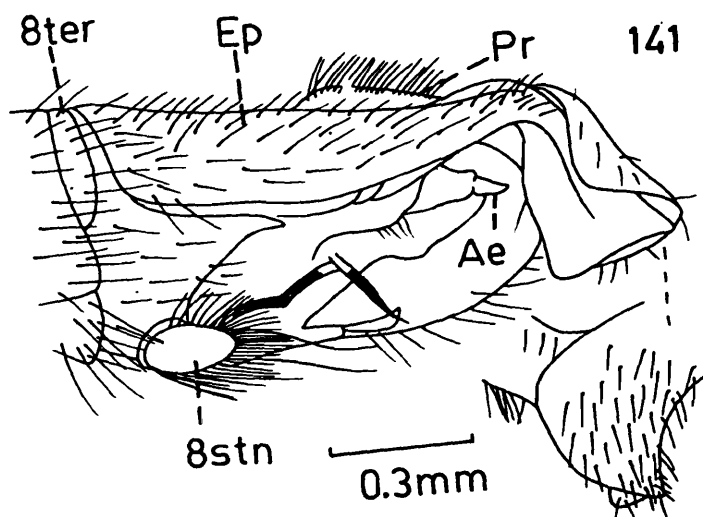


Fig. 141 : *Ommatius tandoni* Joseph & Parui, lateral view of male genitalia.

Male : *Head* black with sparse grey tomentum; mystax pale yellow and black; bristles of fronto-orbital plate and ocellarium black, postcranium sparsely grey tomentose with pale yellow setae, postocular bristles black. Antenna dark brown with the bristles of scape and pedicel similarly coloured, pedicel globular, subequal to scape, first flagellomere longer than scape. Palpus and proboscis dark brown with the former bearing dark brown and the latter pale yellow setae.

Thorax black with sparse greyish-yellow tomentum, pronotal setae pale yellow with a pair of dark brown bristles on either side; scutum without mediolongitudinal stripe, tomentum laterally and posteriorly distinct, pleuron black with sparse greyish-yellow tomentum, scutellum black, tomentum indistinct, setae on disc sparse, brownish coloured, hind border bearing a pair of black bristles, laterotergite with dark brown bristles. Haltere yellowish-brown.

Legs black and yellowish-brown; coxa, trochanter and femur black, tibia and basitarsus yellowish-brown, remaining tarsal segments dark brown to black, there is a gradual increase in the intensity of dark colouration of tibia and tarsus from the fore to the hind leg so much so that the hind leg is black except for the basal part of tibia and whole of basitarsus, vestiture black and pale yellow, bristles black.

Wing distally brownish tinged for more than half of their length, rest hyaline.

Abdomen black, slightly lighter ventrally, hind border of terga narrowly dark brown, tergum 1 posterolaterally bears a few black bristles, setae predominantly pale yellow, also with some black ones. Male genitalia (Fig. 141) with black and pale yellow setae.

Material examined : *Holotype* ♂, N.E. India : Arunachal Pradesh: Siang Division : Tachidoni, 400 m, 24.x.1966, Coll. S.K. Tandon and G.S. Arora.

Discussion : It is quite similar to *Ommatius nanus* Walker, but differs in the smaller size, darker colouration and details of male genitalia. It is named in honour of Dr. S.K. Tandon, the collector, a student of Indian Agromyzidae.

Distribution : India (Arunachal Pradesh).

Type : In the National Zoological Collection of the Zoological Survey of India, Calcutta.

158. *Ommatius tenellus* van der Wulp

(Fig. 142)

- 1899. *Ommatius tenellus* van der Wulp, *Trans. ent Soc. Lond.*, 1899: 97. Type localities : Haithalhim and Lahej, S. Yemen.
- 1938. *Ommatius tenellus* : Cherian, *Indian J. agric. Sci.* 8 (6) : 868.
- 1975. *Ommatius tenellus* : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 121.
- 1990. *Ommatius tenellus* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 41.

A small, black species with grey tomentum, yellow legs, hyaline wings and black abdomen with narrow transverse yellow bands on anterior terga. Male : length 8 mm, wing 5 mm.

Male : *Head* black with dense greyish-white tomentum; mystax black above and white below, frontoorbital bristles white, ocellar bristles lost, postocular bristles pale yellow except for one on either side being black, postcranium with sparse, white setae, postgena white setose. Antenna with scape and pedicel dark brown and the remainder black, scape with black and pedicel with black and pale yellow bristles, pedicel slightly longer than scape and shorter than first flagellomere. Palpus and proboscis black with white setae.

Thorax black with dense grey or greyish-yellow tomentum; pronotum with a pair of median, pale yellow, bristly setae with a mediolongitudinal stripe, the details of which cannot be ascertained as the pin passes through it, vestiture pale yellow and bristles black; chaetotaxy: 1 notopleural, 1 postalar, 2 supra-alars, 2 dorsocentrals; scutellum with a pair of black bristles on border and sparse, white setae on disc; laterotergite and meron with a transverse row of long, pale yellow, bristly setae.

Legs yellow except coxa being black; vestiture white and black, the former predominant, bristles black, fore and mid tibiae with 2 white, bristly setae posteroventrally, the latter also with 2 similar ones anterodorsally.

Wing hyaline.

Abdomen black, grey tomentose, terga 1-4 on hind border with a narrow, transverse yellowish-brown band which is not so distinct on tergum 1, vestiture black or pale yellow, tergum 1 posterolaterally with a bunch of long, pale yellow setae and a few similarly coloured bristly setae, tergum 2 laterally with a few, long setae. Male genitalia (Fig. 142) yellowish-brown with black and pale yellow setae.

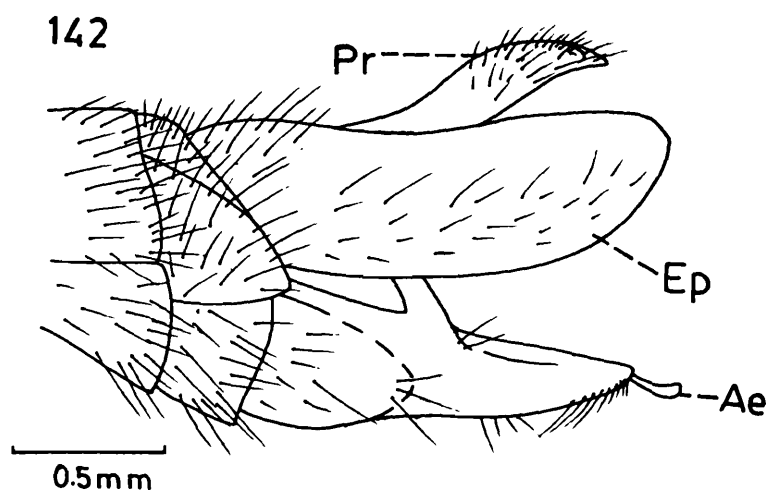


Fig. 142 : *Ommatius tenellus* van der Wulp, lateral view of male genitalia.

Material examined : 1 ♂, No. 64/35, determiner's name not given, S, India : Andhra Pradesh: Ellore Taluq, vii-viii.1924, C.K.S. Coll, Tamil Nadu Agricultural University, Coimbatore.

Discussion : The species can be distinguished from any other species of the genus by the shape of epandrium and proctiger together with the wholly yellow legs except coxae.

Distribution: India (Andhra Pradesh); S. Yemen.

Types : Location of types not known.

159. *Ommatius truncatus* Joseph & Parui

(Fig. 143)

1984c. *Ommatius truncatus* Joseph & Parui, *Rec. zool. Surv. India* Occ. Paper No. 66 : 19. Type localities : Devarayadurga and Namadachilume, Karnataka.

1990. *Ommatius truncatus* : Joseph & Parui, *Rec. zool. Surv. India*, Occ. Paper No. 113 : 41.

A medium sized black species with black and yellowish-brown legs and distally infuscated wings. Male : length 12 mm, wing 9 mm; female : length 12-13 mm, wing 10 mm.

Males : *Head* black, heavily infuscated with grey tomentum; mystax black above and white below; frontoorbital and ocellar bristles black, postocular bristles black, postcranium white setose. Antenna black, scape and pedicel with black bristles, both nearly equal in length, first flagellomere slightly longer than scape or pedicel. Palpus and proboscis black, the former with black and a few pale yellow setae while the latter wholly white setose.

Thorax black, heavily grey tomentose; pronotum with 4 black bristles in a transverse row, setae white, dense on sides; scutum devoid of mediolongitudinal stripe, humeri with dense, long, white setae, posterolaterally with a few pale yellow setae, vestiture and bristles black; scutellum with the disc pale yellow setose, hind border bearing a pair of black bristles; laterotergite with elongate pale yellow and a few black bristles. Haltere with the knob yellowish-brown, stalk white.

Legs black and yellowish-brown; coxa, trochanter and femur black, tibia yellowish-brown with dark brown apex, tarsus dark brown but comparatively lighter coloured in fore and mid legs; hind femur with a row of anteroventral pale yellow bristles and another row of posteroventral black bristles, vestiture pale yellow and black, bristle black.

Wing infuscated distally, but lesser than one-third of base hyaline.

Abdomen black, tergum 1 laterally with long, pale yellow setae and a few pale yellow bristles, terga 2-4 with long, pale yellow setae, terga 5 and 6 with a few black bristles, vestiture pale yellow and black. Male genitalia (Fig. 143) black with black and pale yellow setae, epandrium subapically bearing a bunch of short, black bristles.

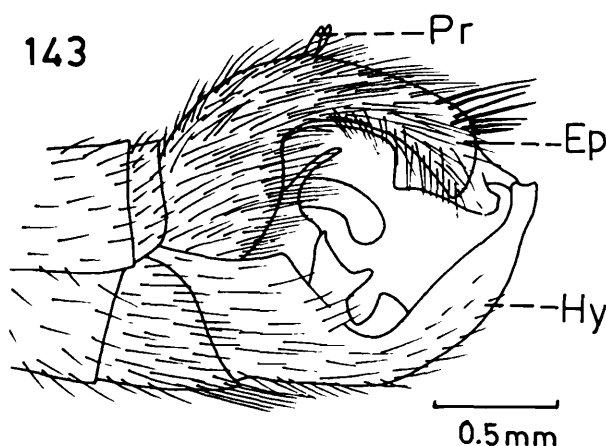


Fig. 143 : *Ommatius truncatus* Joseph & Parui, lateral view of male genitalia.

Females : Similar but with the following differences: mystax almost wholly black; pale yellow setae on the sides of abdomen restricted to terga 1 and 2; hind femur without posteroventral row of bristles.

Material examined : Holotype ♂ No. A 811, India : Karnataka: Devarayadurga, 1187 m, 8.vii.1979, Coll. K.D. Ghorpade. Paratypes 1 ♂, 1 ♀ No. A 811, details as in holotype ; 1 ♀, No. A 812, Karnataka: Namadachilume, 1000 m, 8.vii.1979, Coll. K.D. Ghorpade.

Discussion : It is generally similar to *Ommatius pseudodraavidicus* Joseph & Parui from which it differs in the robust body and the structural details of male genitalia especially in the presence of apical bristles on the epandrium and the truncate apex of hypandrium. It has superficial resemblance with *O. gopalpurensis* Joseph & Parui.

Distribution : India (Karnataka).

Type : Holotype and 1 paratype in the Collection of Dr. K. Ghorpade, Bangalore, and 2 paratypes in the National Zoological Collection of the Zoological Survey of India, Calcutta.

160. *Ommatius tuberculatus* Joseph & Parui

(Fig. 144)

1983b. *Ommatius tuberculatus* Joseph & Parui, *Ent. scand.*, **14** : 87. Type localities : Kerala State and Tamil Nadu, South India.

1990. *Ommatius tuberculatus* : Joseph & Parui, *Rec. Zool. Surv. India*, Occ. Paper No. 113 : 41.

A medium, black species with yellowish-brown legs, mid femur bearing a ventral tubercle and wings distally infuscated. Male : length 12-14 mm, wing 8-10 mm.

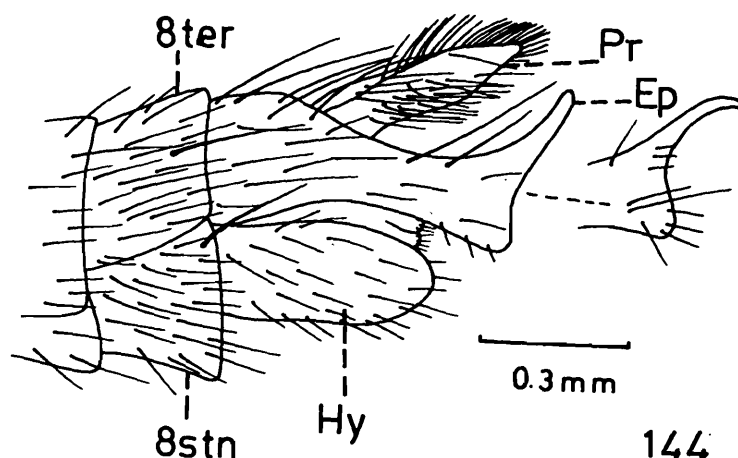


Fig. 144 : *Ommatius tuberculatus* Joseph & Parui, lateral view of male genitalia.

Males : Head black infuscated with whitish-grey to greyish-yellow tomentum; mystax wholly black or black and pale yellow; fronto-orbital and ocellar bristles black or pale yellow, postcranium with faint whitish-grey to greyish-yellow tomentum above but in the middle well marked, laterally grey tomentose, setae grey and pale yellow with some black setae and bristles above. Antenna with scape and pedicel pale yellow, the latter distally brown to a varying extent, first flagellomere dark brown, bristles

of scape and pedicel black, scape subequal to pedicel, the latter subequal to first flagellomere. Palpus and proboscis brown to black with white to yellow setae.

Thorax black with grey to greyish-yellow tomentum; pronotal setae white and pale yellow; scutum without mediolongitudinal stripe or in rare cases faintly marked, humeri, laterally and hind border broadly grey to greyish-yellow tomentose, bristles black, pleuron sparsely grey tomentose; scutellum almost wholly devoid of tomentum, pale yellow setae on the disc and a pair of black bristles on the border; laterotergite with black and light yellow bristles. Haltere yellowish-brown to light yellowish with stalk paler.

Legs yellowish-brown; hind leg comparatively deeper coloured, femur anterodorsally and terminally brownish, tarsus black from the distal half of basitarsus onwards, vestiture and bristles black and yellow, the predominant being black; mid femur with a ventral tubercle at the proximal one-third, the base of tubercle anteriorly bearing 1 short and 2 medium-sized black bristles; mid tibia bearing a row of black setae ventrally for more than distal half, the proximal setae being quite long.

Wing infuscated apically, the infuscation continues back along the anterior and posterior borders, rest hyaline.

Abdomen black with hind border of terga 1-5 or a lesser number brownish, setae black medially and pale yellow laterally. Male genitalia (Fig. 144) black with black and pale yellow setae.

Female : Similar.

Material examined : Holotype ♂, South India : Anamalai Hills : Cinchona, 1067 m, v. 1964, Coll. T.R.S. Nathan; Paratypes 5 ♂, details as in holotype, v. 1967; 1 ♂, same data as in holotype; 3 ♂, same locality, ix. 1967, Coll. P.S. Nathan; 2 ♂, same locality, v. 1968, Coll. T.R.S. Nathan; 14 ♂ same locality, iv. 1969, Coll. P.S. Nathan; 3 ♂, same locality, v. 1969, Coll. P.S. Nathan; 14 ♂ South India: Kerala State: Calicut District: Chembra Peak area, 1067 m, v. 1970, coll. T.R.S. Nathan; 3 ♂, Kerala State: Trivandrum District: Poonmudi Range, 914 m, iv. 1971; 2 ♂, v. 1971, 1 ♂ ix. 1971; 2 ♂, v. 1972, all Coll. T.R.S. Nathan; 1 ♂, ix. 1972, South India: Tamil Nadu : Nilgiri Hills : Kotagiri Hills, 1829 m, Coll. T.R.S. Nathan; 1 ♂, South India : Kerala State : Kottayam District : Peermade, 1820 m, v. 1975, Coll. T. R. S. Nathan ; 5 ♂, details as in preceding, vi. 1975.

2 ♂, India: Kerala : 11.3 Km W. Munnar, 1100 m, 21.iii.1962; 1 ♀, Kerala : Kuttikanam near Peermade, 1000 m, 22.iii.1962; 1 ♂, 2 ♀, Tamil Nadu : Kodaikanal Grade, 1150 m, 29.iii.1962; 1 ♂ Kerala : Marayoor, 43.4 Km N.E. Munnar, 900 m, 1.iv.1962; all Coll. E.S. Ross and D.Q. Cavagnaro (C.A.S.). 1 ♂, 2 ♀, Tamil Nadu : Anamalai Hills : Cinchona, 1050 m, i.1967, Coll. P.S. Nathan (Z.S.I.). 1 ♀, Anamalai Hills : Cinchona, 1067 m, ix.1967 (C.A.S.). 1 ♂, iv.1968, other details as in preceding (Z.S.I.). 1 ♂, 1 ♀, v.1968, rest of data as in preceding (C.A.S.); 1 ♂, Kerala; Idukki : Periyar, 900 m, 12.xii.1979, Coll. Joseph & Parui (Z.S.I.).

Discussion : *Ommatius tuberculatus* Joseph & Parui is readily distinguished from all known species of the genus in the region by the presence of a tubercle on mid femur, which bears three bristles on the anterior side, and mid tibia with a ventral row of setae at the distal half. In male genitalia it is similar to *O. docimus* Oldroyd.

Distribution : India (Kerala and Tamil Nadu).

Types : Holotype and 53 paratypes in the Collection of the California University, California, and 4 paratypes in the National Zoological Collection of the Zoological Survey of India, Calcutta.

Genus 26. *Pseudomerodontina* Joseph & Parui, 1976

1976. *Pseudomerodontina* Joseph & Parui, *Ent. scand.*, **7** : 303. Type-species : *Pseudomerodontina jayaraji* Joseph & Parui, original designation.
1990. *Pseudomerodontina* : Joseph & Parui, *Rec. Zool. Surv. India*, Occ. Paper No. 113 : 41.

Smaller to medium sized flies; mystax long, bristly setae, occupying considerable area of face, tubercle not so prominent; ocellarium with a pair of bristles, postcranium with sparse setae above and dense setae below. Antenna with scape and pedicel nearly equal or the former subequal to the latter, first flagellomere shorter than the combined length of scape and pedicel, style long with one or two rows of filaments. Palpus one segmented, proboscis of moderate length with swollen base. Pronotum setate, with or without bristles; scutum with the mediolongitudinal stripe entire or divided, extending the entire length or ending at half way between transverse suture and hind border; chaetotaxy; 3-6 prescutellar dorsocentrals, also with a few bristles posterolaterally; scutellum with 4-6 or more bristles on the border. Legs with hind femoral projection inwardly directed, in male hind tibia apically bearing a black spinous projection or a short, bent spine. Wing basally hyaline and distally infuscated. Abdomen narrow medially, at least on tergum 1 with long setae laterally; male genitalia characteristic.

Discussion : *Pseudomerodontina* Joseph & Parui is allied to *Merodontina* Enderlein from which it can be differentiated by the characteristic male genitalia. It also differs in shorter first flagellomere, which is shorter than the combined scape and pedicel, in the apically bent hind femoral projection, in the absence of costal bulging opposite to stigma, and in the medially narrow abdomen.

Distribution : It is a small genus of 2 species so far recorded only from South India.

Type Species : In the Collection of Entomology Division of the Tamil Nadu Agricultural University, Coimbatore, and in the National Zoological Collection of the Zoological Survey of India, Calcutta.

Key to species of *Pseudomerodontina* Joseph & Parui

1. The basal hind femoral projection large, directed inwards and distally compressed, male genitalia highly developed except the aedeagus.....*indica* Joseph & Parui
- Hind femoral projection straight, not compressed apically; aedeagus highly developed*jayaraji* Joseph & Parui

161. *Pseudomerodontina indica* Joseph & Parui

(Fig. 145)

1979. *Pseudomerodontina indica* Joseph & Parui, *Entomologist's mon. Mag.* **114** : 103. Type locality : Mercara, Coorg District, Karnataka.
1990. *Pseudomerodontina indica* : Joseph & Parui, *Rec. Zool. Surv. India*, Occ. Paper No. 113 : 41

A medium sized black species with yellow tibiae and distally infuscated wings. Male : length 19-20 mm., wing 14 mm; female; length 18 mm, wing 14 mm.

145

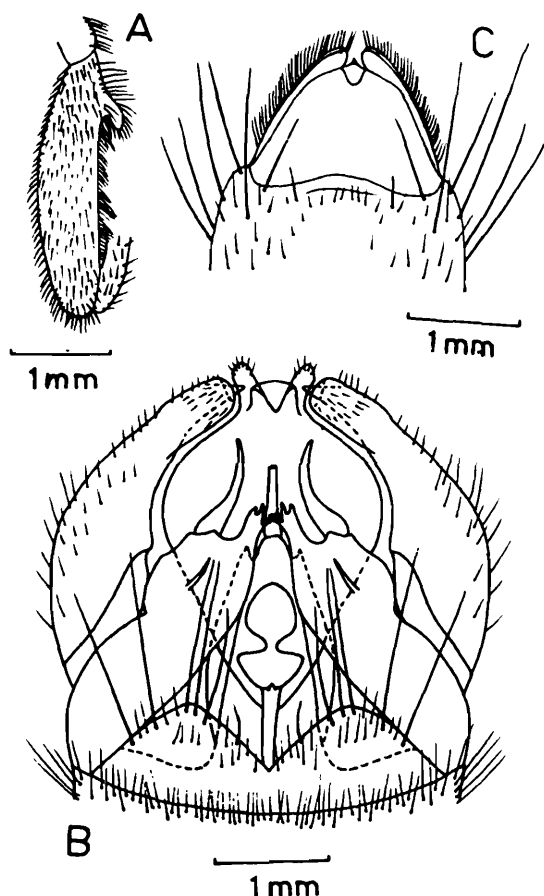


Fig. 145 : *Pseudomerodontina indica* Joseph & Parui :

A, posterior view of hind femur; B, ventral view of male genitalia; C, ventral view of female genitalia.

Males : Head broader than thorax; mystax black above, white or rarely yellowish below, of which a few anterior ones may be black, tubercle not so prominent with yellow tomentum; frontoorbital and ocellar setae black, postocular bristles black, pistcranium mostly covered with white tomentum with its upper half black with black bristles. Antenna with scape and pedicel nearly equal in length, first flagellomere shorter than the combined length of scape and pedicel, style as long as the combined length of scape and pedicel and flagellomere, and with a double row of filaments which gradually become longer from base to apex. Palpus and proboscis black, the former with black setae whereas the latter with white setae.

Thorax ground colour black with grey tomentum; pronotum white to black setose and with three black bristles, one medially and one on either side; scutellum with sparse, black bristles and setae, but some setae on humeri white, a pair of mediolongitudinal stripes extending from the anterior and to half way between the transverse suture and scutellum, sides grey but humeri yellowish tinged; chaetotaxy : 5-6 prescutellar dorsocentrals, a few black bristles at the sides on the posterior half from slightly beyond the transverse suture to hind border; scutellum black with grey tomentum, 4-6 bristles on the border and fine black setae on the distal half of disc. Haltere pale yellow.

Legs black and yellow; coxa black with white tomentum and similarly coloured setae, trochanter black with white setae; femur black, fore and mid femora with black setae dorsally and anteriorly, ventrally and posteriorly with white setae, hind femur with pale yellow and white setae, hind femur with pale yellow and white setae, but anteriorly black setose with 3-5 anteroventral black bristles arranged in a

row, posteroventral basal projection (Fig. 145A) inwardly directed, distally compressed and clothed with setae, tibia yellow with similarly coloured setae all over, hind tibia bearing posteroventrally a short apically bent black spine at apex : tarsus black except basitarsus being yellow, the latter with long yellow setae.

Wing infuscated, but basal one-third nearly hyaline in the middle; venation typical of the genus.

Abdomen black, dorsum black setose, laterally with long and white setae, prominent in terga 1-3, tergum 1 with a few black bristles in between and a transverse row of setae posteriorly. Male genitalia (Fig. 145B) figured.

Females : Similar to males but with the following differences: in one female mystax with a few sparse bristles extending to epistome; hind trochanter with some black posteroventral bristles in addition to white setae, hind tibia without apical spine; genitalia (Fig. 145C) illustrated.

Material examined : Holotype ♂, South India : Mysore (Karnataka) : Coorg District : Mercara, 1219 m, v. 1973, Coll. T. R. S. Nathan. Paratypes 2 ♂, 2 ♀, details in holotype; 2 ♂ South India : Kerala : Calicut District : Chembra Peak Area, 1067 m, v. 1970, Coll. T. R. S. Nathan.

Discussion : The male genitalia are highly developed except the aedeagus. The basal projection of the hind femur is large, directed inwards and distally compressed. By these characters *Pseudomerodontina indica* Joseph & Parui may be easily distinguished from *P. jayaraji* Joseph & Parui, the only other known species under the genus. The species is also similar to the closely allied genus, *Merodontina* Enderlein (1914), in the male genitalia, but both genera can be readily distinguished by the differences in the male genitalia, particularly by the aedeagus.

162. *Pseudomerodontina jayaraji* Joseph & Parui

(Fig. 146)

1976b. *Pseudomerodontina jayaraji* Joseph & Parui, *Ent. scand.* 7 : 303. Type localities : Tamil Nadu and Kerala.

1990. *Pseudomerodontina jayaraji* : Joseph & Parui, *Rec. Zool. Surv. India*, Occ, Paper No. 113 : 41.

A blackish-brown species with yellowish tomentum and wing shading at apex. Male : length 13 mm, wing 10mm; female : length 14mm, wing 11mm.

Males : *Head* broader than thorax, black with greyish tomentum; mystax white with 7-8 upper black bristles arranged in two lateral rows; face with scanty white setae, frontoorbital setae black and white, ocellarium black with black and white setae, postocular bristles black, postcranium white tomentose and white setose, the setae dense at the lower sides. Antenna dark brown with black setae except a few ventral pale yellow ones, scape subequal to swollen pedicel, first flagellomere tapering anteriorly, about one and-a-half times that of pedicel, style long and bearing a ventral row of long black filaments, which are almost equal in length to style. Palpus and proboscis black, the former black setose whereas the latter white setose.

Thorax black with yellow tomentum; pronotum bearing abundant white setae; scutum covered with sparse, fine, black setae, a greyish mediolongitudinal stripe extending its entire length, humeri white tomentose and long white setose; chaetotaxy : 3-4 prescutellar dorsocentrals, posterolaterally bearing a few long black bristles; scutellum black with white tomentose on the anterior half, a row of black bristles at the periphery and with fine long black and white setae on the disc. Haltere yellowish-brown.

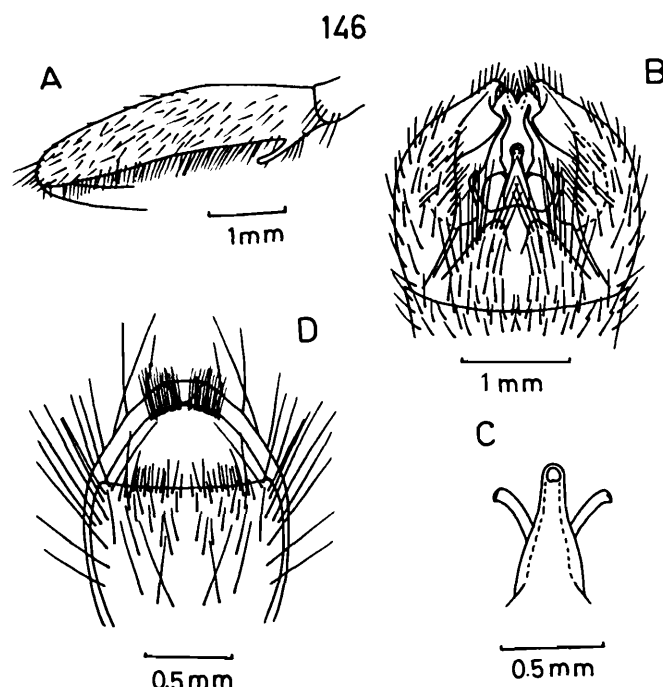


Fig. 146 : *Pseudomerodontina jayaraji* Joseph & Parui :
A, posterior view of hind femur; B, dorsal view of male genitalia;
C, dorsal view of aedeagus; D, ventral view of female genitalia.

Legs black and yellow; coxa black with white tomentum and white setae, trochanter black with white setae, femur black to dark brown with black and white setae, mid femur with anteroventral black bristles, hind femur with anterior pale yellow bristles and a basal posteroventral apically bent projection (Fig. 146A), tibia yellow, the hind one apically brownish, setae mostly with a few scattered setae in between, fore tibia with three long and one or two small white bristles posteroventrally, mid tibia bearing some black and white bristles, hind tibia at its posterior apex bearing a black spinous projection, the latter basally thick beyond which narrowed to a spine, tarsus brown with black and white setae and black bristles.

Wing hyaline with apical half greyish-brown, anterior half darker than the posterior half, stigma dark brown.

Abdomen blackish-brown with the hind border of the segments brownish, setae yellow and black, sides of tergum I bearing bunch of long, yellow setae. Male genitalia (Fig. 146B, C) characteristic.

Female : Similar to male but the apical spine of hind tibia absent; genitalia as in figure (Fig. 146D).

Material examined : *Holotype* ♂, South India : Tamil Nadu : Yercaud, 1372 m, 2-10. v. 1914, Coll. C.N. Coll. *Allotype* ♀, Z.S.I. Reg No. 5365/H6, South India : Travancore (Kerala) : Maddathoray, 19.xi.1908, Coll. Annandale. *Paratypes* 1 ♂ Reg. No. 5366/H6, 18.xi.1908, remaining details as for allotype; 1 ♂ South India : Tamil Nadu : Yercaud : Shevaroy, 1372 m, 21.iv.-4.v.1913, Coll. Y.R. Coll.

Discussion : It is the type species. Its affinities with the only other known species are given under *Pseudomerodontina indica* Joseph & Parui.

Distribution : India (Kerala and Tamil Nadu).

Types : Holotype and one paratype in the Collection of Entomology Division of the Tamil Nadu Agricultural University, Coimbatore; allotype and one paratype in the National Zoological Collection of the Zoological Survey of India, Calcutta.

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ABBREVIATIONS

Head and thorax : An, antenna; Aeps, anepisternum (metapleuron); Ce, compound eye; Cx, coxa; Epi, epimeron (pteropleuron); Flm, flagellomere; Fob, frontoorbital bristle; Fop, frontoorbital plate; Ht, haltere; Keps, katapisternum (sternopleuron); Lter, laterotergite; Mr, meron (hypopleuron); Mx, mystax; Oe, ocellarium; Oeb, ocellar bristle; Of, occipital foramen; Os, occipital setae; Pc, postcranium; Pe, pedicel; Pg, postgena; Pn, pronotum; Pob, postocular bristle; Pro, proboscis; Ps, palpus; Ptn, postnotum (metanotum); Sca, scape; Sct, scutum; Sctl, scutellum; Scts, scutoscuteellar suture; Sty, style.

Legs : Cx, coxa; Em, empodium; Fe, femur; Pu, pulvillus; Ta, tarsus; Ti, tibia; Tr, trochanter.

Venation : 1A, first anal vein; 2A, second anal vein; 3A, third anal vein; C, costa; Cu₂, second branch of cubitus; M, medius; M₁, first branch of medius; M₂, second branch of medius; M₃, third branch of medius; R, radius; R₁, first branch of radius; R₂₊₃, second and third branch of radius; R₄, fourth branch of radius; R₅, fifth branch of radius; R₄₊₅, fourth and fifth branch of radius; Sc, subcosta.

Male genitalia : Ae, aedeagus; Ep, epandrium (superior forceps); Gc, gonocoxite (gonopod); Gs, gonostylus (clasper); Hy, hypandrium; Lo, lobos; Pr, proctiger; stn, sternum; ter, tergum.

Female genitalia : la, lamella.

INDEX

Valid names of species and genera are printed in Roman type; synonyms are given in italics. Numbers in bold, indicate page containing detailed description.

A

*abci*ssa, *Laphria* 75
*abci*ssa, *Maira* **75**
Acurana 68, 73
adjustiventris, *Elaeotoma* 35
aequalis, *Nusa* 88, **89**, 90, 95, 99, 105, 115
albatus, *Ommatius* 242
albibarbis, *Laxenecera* 69, 73
albibasis, *Nusa* 89, **90**, 96, 109, 110, 117
albicincta, *Dyseris* 68
albimana, *Leptogaster* **20**, **23**
albimystax, *Stichopogon* **135**
Allocotosia 169
alternans, *Laphria* 42, **44**, 63
Ammophilomima **15**, 17
*anal*is, *Michotamia* 170, **171**, 173, 175, 177
andamanensis, *Heligmoneura* 3
andamanensis, *Ommatius* 184, **186**, 221, 223, 237
andamanensis, *Orthogonis* **118**,
andhraensis, *Nusa* 88, **91**
andhraensis, *Pseudonusa* **122**
Andrenosoma 33, **35**, 87, 120
Andrenosomini 2
annulata, *Michotamia* 170, **171**
Anoplothyrea 33, **124**
Apocleinae 2
arunachalensis, *Ommatius* 184, 187, 209,

Asilinae **158**

Asilini 158

Asilus 1

assamensis, *Laphria* 43, **45**, 49

assamensis, *Michotamia* 170, **172**

ater, *Ommatius* 182, 188, 209

Atomosia **124**

Atomosini 33

aurata, *Michotamia* 170, 171, **173**, 175, 179

auratus, *Ommatius* 183, 189, 190

aurifacies, *Laphria* 76

aurifacies, *Maira* 75, **76**

aurigena, *Choerades* 41

B

balaraji, *Nusa* 88, **93**

bandipurensis, *Lobus* 24, **25**, 27

basilaris, *Leptogaster* 20, **21**

basiti, *Stichopogon* 134, **136**, 156

bengalensis, *Clephyroneura* 5

bengalensis, *Laxenecera* 69, **71**, 74

bengalensis, *Nusa* 88, **95**, 96

bengalensis, *Ommatius* 183, 190

bengalensis, *Stichopogon* 135, 149

bhargavai, *Nusa* 88, **96**

bicolor, *Maira* **75**, 77

biharensis, *Ommatius* 185, **191**, 192

biharilali, *Stichopogon* 135, **139**

brevipennis, *Clephydroneura* 3

C

carmichaeli, *Merodontina* **162**, 164, 169

carmichaeli, *Ommatius* 162

cedrusa, *Pogonosoma* **120**

cheriani, *Leptogaster* 20, **21**

chinensis, *Asilus* 160

chinensis, *Cophinopoda* **160**

Choerades 41, 42, 45

choprai, *Andrenosoma* **36**

chrysonota, *Laphria* 43, **47**

Chrysopogonini 2

chrysotelus, *Laphria* 61

claripennis, *Laphria* 43, **47**, 48

Clephydroneura 5

Clinopogon 130, **131**

compedita, *Michotamia* 170, **175**

compeditus, *Ommatius* 175

compta, *Maira* 75, **78**, 82, 84

conopsoides, *Ommatius* 181, 192, 226

Cophinopoda 158, **159**, 183

Cormansis 33, 34, **37**

coryphe *Ommatius* 160

crabroniformis, *Asilus* 1

Ctenonini 2

cylindrica, *Leptogaster* 19

D

Damalini 130

Dasypogoninae **130**

Dasypogonini 2

Dasythrix 86

delfinadoi, *Maira* 75, 77, **79**

Dichaetothyrea 128

dimidiata, *Laphria* 42, 46, **48**

Diocetrini 2

docimus, *Ommatius* 247

dravidicus, *Ommatius* 182, 192, **193**, 217, 230

dubius, *Ommatius* 185, **195**

Dyseris 68

E

egregia, *Laphria* 41

Elaeotoma 35

elva, *Nusa* 88, **98**, 99

eluruensis, *Stichopogon* 134, **141**

Emphysomera 183

Enigmomorphipi 2

ephippium, *Laphria* 61

Epholkiolaphria 41

Euscelidia 17

evenhuisi, *Lobus* 24, **26**, 27

F

femorata, *Emphysomera* 196

femorta, *Ommatius* 182, **196**

flava, *Asilus* 49

flava, *Laphria* **49**

flavibarbis, *Laxenecera* 69, 71, **72**

flavescens, *Dasypogon* 160

formio, *Nusa* 88, 98, **99**, 102, 108

frauenfeldi, *Ommatius* 183, **196**, 208

frommeri, Laphria 42, 49, **51**
 fulva, Laphria 42, 62
fulvidus, Ommatius 160
 furva, Laphria 43, 52, 65
 fuscata, Laphria 43, **53**, 56
 fuscifemorata, Michotamia 170, 171, 172, 173, **175**, 180
 fuscus, Ommatius 183, 190, **197**

G

geniculata, Nusa 88, 102
 genitalis, Ommatius 185, **198**
 ghorpadei, Nusa 88, 96, **102**, 112, 117
 gibbosus, Asilus 41
 gibbosus, Laphria 41
 gigas, Laphria 41
 gilva, Laphria 55
 gilvodes, Laphria 43, 54, 64
 gloriosa, Maira 75, 78, **81**, 84
 gnavus, Neomochtherus 3
Gonypes 19
 gopalpurensis, Ommatius 182, **200**, 246
 gymnurus, Stichopogon 135, **142**, 146

H

halictides, Cormansis **38**
Halictosoma 86
 himalayae, Lobus 24, **27**, 30
 hispidella, Maira 77, 78
 Hoplistomerus 33, 34, **38**, 39
 horrida, Laphria 59, 63
 hradskyi, Ommatius 183, **201**, 230
 hulli, Ommatius 184, 202
 Hyperechia 33, 35, **40**

I

imitatrix, Ammophilomima 15
 inaequalis, Dasypogon 143
 inaequalis, Stichopogon 135, 136, 140, **143**
 indiana, Anoplothyrea **125**, 126
 indiana, Maira 75, **82**, 86
 indiana, Merodontina 162, **164**, 169
 indiana, Michotamia 170, **177**
 indica, Laphria 43, 54, **55**, 61, 65
 indica, Laphystia **66**, 68
 indica, Nusa 87, 99, **104**, 106
 indica, Pseudomerodontina **248**, 251
 indicus, Ommatius 185, 188, **204**, 211, 212
 indicus, Stichopogon 135, 139, 143, **145**, 149, 154

J

jabalpurensis, Ommatius 182, 202, **205**, 223, 231
 jairaji, Pseudomerodontina 248, **250**
 jairami, Lobus 24, **28**
 jairajpurii, Ommatius 183, 197, **207**
 javana, Anoplothyrea 126
 jonesi, Ommatius 182, 189, **208**

K

karikalensis, Nusa 87, **105**
 kempi, Ommatius 185, 211, 232
 keralae, Lobus 24, 28, **29**
 keralaensis, Laphria 43, 52, **56**, 60, 61
 kodaikanalensis, Ommatius 184, 208, **211**, 233

L

Laphria 33, 34, **41**, 42, 45, 74
 Laphriinae 33

Laphriini 33, 34, 124

Laphystia 33, 34, 65

Laphystiinae 2

Laphysuni 2

Laxenecera 33, 35, 68, 69

lehri, *Loewinella* 127

Leptogaster 16, 17, 19, 22, 24

Leptogasterinae 2

Leptogasterini 2

leucopogon, *Ommatius* 182, 212

limbinervis, *Laphria* 61

lividipes, *Ommatius* 184, 185, 213

Lobus 23

longirostrata, *Maira* 75, 81, 84

Loewinella 33

Lowinella 33, 124, 126

luteopilosa, *Laphria* 43, 58

M

macquarti, *Michotamia* 170, 173, 178

mahatoi, *Stichopogon* 134, 147, 148

Maira 33, 34, 42, 74, 75

malabaricus, *Ommatius* 183, 214

marion, *Euscelidia* 17, 18, 19

marion, *Leptogaster* 17

martini, *Lobus* 24, 26, 29, 30, 33

Megapodinae 1

meghalayensis, *Ommatius* 183, 215

menoni, *Stichopogon* 134, 148, 154

meridionalis, *Stichopogon* 134, 140, 150

Merodontina 158, 159, 161, 162, 250

Michotamia 158, 169, 170, 196

minor, *Ommatius* 182, 194, 216

mitrai, *Ommatius* 185, 218

mukherjeei, *Nusa* 88, 106

mukherjeei, *Stichopogon* 134, 151, 154

N

Nanilobus 27

nanus, *Ommatius* 185, 219, 227, 243

nathani, *Laphria* 43, 56, 58, 59, 61

nicobarensis, *Clinopogon* 131, 132, 220

nicobarensis, *Ommatius* 184

nicobarensis, *Stichopogon* 131

nigra, *Emphysomera* 223

nigra, *Ommatius* 182, 207, 223

nigrifemorata, *Ommatius* 238

nigripennis, *Laphria* 41

nigrohirsuta, *Laphria* 42, 49, 50, 61

nilgiriensis, *Ommatius* 184, 222, 237

Nusa 33, 34, 86, 122

O

odontoferus, *Clinopogon* 131, 132

oldroydi, *Stichopogon* 134, 153

Oldroydia 5

Ommatiinae 2

Ommatini 158, 170

Ommatinus 181

Ommatius 158, 159, 162, 170, 181

Opeatocerus 33, 124, 128

ophionea, *Leptogaster* 20, 21, 23

orientalis, *Laphria* 43, 45, 59, 62

Orthogonis 33, 34, 117

P

Pagidolaphria 41, 42

pandai, *Lobus* 24, 27, 32

paria, Maira 75, **85**
pashokensis, Ommatius 184, **223**, 224, 229
pennus, Ommatius 160
peregrinus, Emphysomera 201, 225
peregrinus, Ommatius 181, 193, **225**, 226
Phellini 2
pillaii, Ommatius 183, **226**
Pogonosoma 33, 34, 35, **119**
ponti, Ommatius 185, **227**
pruthii, Michotamia 170, 178, **179**
pseudoalbibasis, Nusa 88, **91**, 96
pseudodraavidicus, Ommatius 183, 191, 192,
 209, 219, **229**, 246
pseudoindiana, Maira 75, **85**
pseudojabalpurensis, Ommatius 185, **230**
pseudokempi, Ommatius 185, 211, **231**
Pseudomerodontina 158, 159, **248**
Pseudonusa 33, 34, **121**
purpurata, Atomosia 128
purpurata, Opeatocerus **128**

R

rajani, Ommatius 185, **233**
rajasthanensis, Nusa 89, **109**
ramakrishnai, Ommatius 182, 216
ramakrishnai, Stichopogon 134, 137, **155**
rapax, Euscelidia 17
reinwardtii, Laphria 41
robusta, Merodontina 162, **165**, 167, 169
Ropalocera 41

rubicundus, Asilus 3
rubicundus, Ommatius 205, 211
rufescens, Ammophilomima **16**

S

sabulicola, Laphystia 65
sahai, Nusa 87, **112**
Saliomima 41
Saropogonini 130
scapularis, Orthogonis 119
semifulva, Laphria 43, **63**
serripes, Laphria 38
setifer, Leptogaster 17
setosa, Nusa 89, **112**
sexfasciata, Laxenecera 69, 72, **73**
shevaroyensis, Nusa 87, **114**
shishodiai, Ommatius 184, 223, **235**, 237
sikkimensis, Merodontina 162, 164, 165, **166**, 169
simplex, Euscelidia 17, 18, 19
simplex, Leptogaster 17
singhi, Ommatius 183, **237**
singlensis, Ommatius 183, **238**
sirkari, Nusa 88, **115**
spathulatus, Ommatius 182, **239**
spinulosa, Merodontina 162, **168**
Stichopogon 130, **133**, 134
Stichopogonini 130
stigmatalis, Laphystia 66, **68**
subgracilis, Ommatius 184, **240**

T

- tamenensis, Ommatius 183, 215, 238, **241**
tandoni, Ommatius 183, 198, 220, **242**
tenellus, Ommatius 185, **243**
testaceus, Lochites 173
Thereutrini 2
tomentosus, Stichopogon 135, 139, 142, 148, **156**
Trigonomima 5
Trigonomiminae 2
trimucronata, Leptogaster 17
truncatus, Ommatius 182, 184, 196, **245**
tuberculatus, Ommatius 204, 224, **246**

U

- ursula, Laphria 61

V

- valparaiensis, Laphria 43, **64**
varia, Laphria 61
virescens, Atomosia 126
vulcanus, Choerades 41
vulpina, Laphria 61

X

- Xenomyza 3
Xenomyzinae 2
Xenomyzini 2
xylocopiformis, Hyperechia **40**
xylocopiformis, Laphria 40

Y

- yerburi, Nusa 88, 96, 104, **116**
yerburiensis, Promachus 4

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