

Handbook on
Common Indian Dragonflies
(Insecta : Odonata)

Tridib Ranjan Mitra



Zoological Survey of India



Handbook on
COMMON INDIAN DRAGONFLIES
(Insecta : Odonata)

(For Nature lovers and Conservationists)

TRIDIB RANJAN MITRA

Zoological Survey of India, M-Block, New Alipore, Kolkata 700053



Zoological Survey of India
Kolkata

CITATION

Mitra, T.R. 2006. *Handbook on – Common Indian Dragonflies (Insecta : Odonata)* : 1-124.
(Published by the Director, *Zool. Surv. India*, Kolkata)

Published : January, 2006

ISBN 81-8171-088-6

© *Government of India*, 2006

ALL RIGHTS RESERVED

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

PRICE

India : Rs. 500.00
Foreign : \$ (U.S.) 35, £ 25

Published at the Publication Division by the Director, Zoological Survey of India, 234/4, A.J.C. Bose Road, 2nd MSO Building (13th Floor), Nizam Palace, Kolkata-700020 and printed at Power Printers New Delhi 1100 002.

ACKNOWLEDGMENTS

The author is highly obliged to Dr. J.R.B. Alfred, Director, Zoological Survey of India, for the facilities provided for preparation of this book.

The author acknowledges the interest shown by Dr. S.M. Ali, Scientist-SD (Retd.), Dr. G.K. Srivastava, Scientist-SG (Retd.), Dr. Mahabir Prashad, Scientist-C (Retd.), Shri Inderjit Gupta, Scientist-C (Retd.), Shri Srikumar Chatterjee, Scientist-E of Zoological Survey of India in the preparation of the book. The author is highly thankful to Shri Rati Ram, Production and Publication Officer and his staff taking sufficient pains in the production of the book.

The author gratefully acknowledge the help of Dr. C. Radhakrishna and Dr. Kailash Chandra, both Scientist-E by providing several beautiful photographs of odonata. My thanks are also due to Sri Babu Kambarth, Photographer and Naturalist, Malabar Natural History Society, Kozhikode, Kerala for his photographs which are taken from the book 'Pictorial Handbook- Dragonflies and Damselflies of Kerala' published by Director, *Zool. Surv. India*.

The author expresses his gratefulness to Shri S.K. Roy, Chief Artist, Pradip Saha, Subrata Biswas of the Art Section of the Zoological Survey of India for making black and white drawings. The author acknowledges the contribution of Sudip Rakshit, Secretary, Creative Wave for helping in preparation of coloured diagrams.

The author thanks his wife, Mrs. C. Mitra, son Tamoghna Mitra, daughter Smt. Amita Mitra for tolerating his peculiar idiosyncrasis regarding Odonata.

My sincere thanks to Kiyoshi Inoue and Kôzô Tani and Publisher Tombow Publishing Co. Ltd., Osaka, Japan for giving permission for the use of photographs from the book 'All About Dragonflies' Finally, the author expresses his gratefulness to Prof. Dr. B. Kiauta editor, *Odonatologica*, Holland and K. Inoue, President Japan, President Societas Internationlis Odonatologica (S.I.O.) for constant encouragement in the project.

TRIDIB RANJAN MITRA

Zoological Survey of India
M-Block, New Alipore, Kolkata 700053

CONTENTS

<i>Acknowledgments</i>	iii
INTRODUCTION	1
SYSTEMATIC LIST	9
Suborder ZYGOPTERA	16
Family CALOPTERYGIDAE	16
1. <i>Matrona basilaris basilaris</i> Selys	16
2. <i>Neurobasis chinensis chinensis</i> Linnaeus	16
3. <i>Vestalis smaragdina smaragdina</i> Selys	18
4. <i>Vestlis gracilis</i> (Rambur)	18
5. <i>Vestalis apicalis apicalis</i> Selys	20
6. <i>Echo margarita margarita</i> Selys	21
Family EUPHAEIDAE	21
7. <i>Euphaea cardinalis</i> (Fraser)	21
8. <i>Euphaea guerini masoni</i> Selys	22
9. <i>Euphaea ochracea ochracea</i> Selys	22
10. <i>Bayadera indica</i> (Selys)	23
11. <i>Anisopleura comes</i> Selys	24
12. <i>Anisopleura subplatystyla</i> Fraser	24
Family CHLOROCYPHIDAE	25
13. <i>Rhinocypha cuneata</i> Selys	25
14. <i>Rhinocypha immculata</i> Selys	26
15. <i>Rhinocypha bisignata</i> Selys	26
16. <i>Rhinocypha bifasciata</i> Selys	27
17. <i>Rhinoaypha trifasciata</i> Selys	28
18. <i>Rhinocypha unimaculata</i> Selys	29
19. <i>Rhinocypha ignipennis</i> Selys	30
20. <i>Rhiniocypha spuria</i> Selys	31
21. <i>Rhinocypha quadrimaculata quadrimaculata</i> Selys	32
22. <i>Rhinocypha fenestrella fenestrella</i> Rambur	33
23. <i>Libellago lineata</i> (Burmeister)	34
Family PROTONEURIDAE	35
24. <i>Disparoneura quadrimaculata</i> (Rambur)	35
25. <i>Caconeura gomphoides</i> (Rambur)	35

Family PLATYCNEMIDIDAE	36
26. <i>Cocliecia bimaculata</i> Laidlaw	36
27. <i>Copera marginipes</i> (Rambur)	37
28. <i>Copera vittata serapica</i> (Selys)	38
29. <i>Copera vittata assamensis</i> Laidlaw	40
30. <i>Copera ciliata</i> (Selys)	41
31. <i>Calicnemia miniata</i> (Selys)	42
32. <i>Calicnemia miles</i> Laidlaw	43
33. <i>Calicnemia eximia</i> Selys	44
Family LESTIDAE	45
34. <i>Lestes elatus</i> Hagen	45
35. <i>Lestes viridulus</i> Rambur	46
37. <i>Lestes umbrinus</i> Selys	48
Family SYNLESTIDAE	49
38. <i>Megalestes major</i> Selys	49
Family COENAGRIONIDAE	50
39. <i>Pseudagrion microcephalum</i> (Rambur)	50
40. <i>Pseudagrion decorum</i> (Rambur)	51
41. <i>Pseudagrion rubrices</i> Selys	52
42. <i>Pseudagrion hypermelas</i> Selys	53
43. <i>Psudagrion australasiae</i> Selys	54
44. <i>Ceriagrion coromandelianum</i> (Fabricius)	55
45. <i>Ceriagrion cerinorubellum</i> (Brauer)	56
46. <i>Ceriagrion olivaceum</i> Laidlaw	57
47. <i>Ischnura senegalensis</i> Rambur	58
48. <i>Ischnura forcipata</i> Morton	59
49. <i>Ischnura aurora aurora</i> (Brauer)	60
50. <i>Rhodischnura nursei</i> (Morton)	61
51. <i>Agriocnemis femina femina</i> (Brauer)	62
52. <i>Agriocnemis lacteola</i> Selys	63
53. <i>Agriocnemis pygmaea pygmaea</i> (Rambur)	64
54. <i>Onychargia atrocyana</i> Selys	65
55. <i>Enallagma parvum</i> Selys	66
56. <i>Cercion malayanum</i> (Selys)	67
57. <i>Aciagrion azureum</i> Fraser	68
58. <i>Aciagrion hisopa hisopa</i> (Selys)	69
59. <i>Aciagrion approximans</i> (Selys)	70
60. <i>Aciagrion pallidum</i> Selys	71

Suborder ANISOPTERA	72
Family GOMPHIDAE	72
61. <i>Macrogomphus montanus</i> Selys	72
62. <i>Paragomphus lineatus</i> (Selys)	73
63. <i>Stylogomphus inglisi</i> Fraser	74
64. <i>Phaenandrogomphus aureus</i> (Laidlaw)	75
65. <i>Onychogomphus striatus</i> Fraser	76
66. <i>Ictinogomphus rapax</i> (Rambur)	77
Family AESHNIDAE	78
67. <i>Hemianax ephippiger</i> (Burmeister)	78
68. <i>Anax parthenope parthenope</i> Selys	79
69. <i>Anaciaeschna jaspædia</i> (Burmesister)	80
70. <i>Anax guttatus</i> (Burmeister)	81
71. <i>Gynacantha dravida</i> Lieftinck	82
72. <i>Gynacantha bainbriggei</i> fraser	83
73. <i>Gynacantha bayadera</i> Selys	84
74. <i>Gynacantha basiguttata</i> Selys	85
Family CORDULEGASTERIDAE	86
75. <i>Chlorogomphus preciosus preciosus</i> Fraser	86
76. <i>Chlorogomphus atkinsoni</i> (Selys)	87
77. <i>Anotogaster nipalensis</i> Selys	88
Family CORDULIIDAE	89
78. <i>Epophthalmia vittata vittata</i> Burmeister	89
79. <i>Macromia moorei moorei</i> Selys	90
Family LIBELLULIDAE	91
80. <i>Macrodiplax cora</i> (Brauer)	91
81. <i>Potamarcha congener</i> (Rambur)	92
82. <i>Acisoma panorpoides panorpoides</i> Rambur	93
83. <i>Lathrecista asiatica asiatica</i> (Fabricius)	94
84. <i>Neurothemis tullia tullia</i> (Drury)	95
85. <i>Neurothemis fluctuans</i> (Fabricius)	97
86. <i>Neurothemis intermedia intermedia</i> (Rambur)	98
87. <i>Neurothemis fulvia</i> (Drury)	99
88. <i>Brachydiplax farinosa</i> Kruger	100
89. <i>Brachydiplax chalybea chalybea</i> Brauer	101
90. <i>Brachydiplax sobrina</i> (Rambur)	102
91. <i>Indothemis carnatica</i> (Fabricius)	103
92. <i>Tramea basilaris burmeisteri</i> Kirby	104

93. <i>Tramea virginia</i> Rambur	105
94. <i>Pantala flavescens</i> (Fabricius)	106
95. <i>Tholymis tillarga</i> (Fabricius)	107
96. <i>Zyxomma petiolatum</i> Rambur	108
97. <i>Diplacodes trivialis</i> (Rambur)	109
98. <i>Diplacodes nebulosa</i> (Fabricius)	110
99. <i>Urothemis signata signata</i> Rambur	111
100. <i>Aethriamanta brevipennis brevipennis</i> (Rambur)	112
101. <i>Nannophya pygmaea</i> Rambur	113
102. <i>Orthetrum pruinatum neglectum</i> (Rambur)	114
103. <i>Orthetrum sabina sabina</i> (Drury)	115
104. <i>Orthetrum triangulare triangulare</i> (Selys)	116
105. <i>Orthetrum chrysis</i> Selys.....	117
106. <i>Orthetrum glaucum</i> (Brauer)	118
107. <i>Orthetrum taeniolatum</i> (Schneider)	119
108. <i>Orthetrum cancellatum cancellatum</i> (Linnaeus)	120
109. <i>Orthetrum japonicum internum</i> MacLachlan	121
110. <i>Orthetrum luzonicum</i> (Brauer)	122
111. <i>Palpopleura sexmaculata sexmaculata</i> (Fabricius)	123
112. <i>Crocothemis servilia servilia</i> (Drury)	124
113. <i>Bradinopyga geninata</i> (Rambur)	126
114. <i>Brachythemis contaminata</i> (Fabricius)	127
115. <i>Sympetrum hypomelas</i> (Selys)	128
116. <i>Trithemis pallidinervis</i> (Kirby)	129
117. <i>Trithemis aurora</i> (Burmeister)	130
118. <i>Trithemis festiva</i> (Rambur)	131
119. <i>Rhyothemis variegata variegata</i> (Linnaeus)	132
SUMMARY	133
REFERENCES	133

INTRODUCTION

The order Odonata is a primitive group of insects, and have first appeared about 220 million years ago in the carboniferous age. Popularly they are known as dragonflies and damselflies; although several local names are available in India and in different parts of the world. The modern dragonflies which we often see have evolved in the Mesozoic period in the era of dinosaurs along with the first reptile-bird *Archaeopteryx*.

Dragonflies (Order Odonata) move near water bodies. They breed near water and lay eggs in water, whatever may be the amount of water available. Adults are terrestrial and larvae are aquatic.

These insects are good friends of man, especially of the people of the tropical countries like India. In the words of the late Lt. Col. F.C. Fraser, IMS., the acknowledged father of Indian Odonatology, "*Economically they are of great importance in destroying noxious flies and mosquitoes, as well as smaller moths which are regarded as pests. Life in the tropics would soon become unbearable were it not for the beneficent work of vast numbers of dragonflies acting as scavengers of the atmosphere. Some species which take to the wing only after dark or at dusk live entirely on mosquitoes.*" As adults they take a heavy toll of adult insects, viz., mosquitoes, flies, moths, affids, termites small beetles etc. As larvae they feed on mosquito larvae and other soft bodied aquatic invertebrates.

Fishes, toads and frogs, lizards, birds and sometimes bats feed on them. Some mites and parasitic helminths are dispersed by certain species of dragonflies.

Dragonflies have no defensive mechanism excepting the flight power. Some of them mimic hymenopterous insects, although it has got survival value but it cannot be said what is the evolutionary priority of cause and effect. Sometimes dragonflies are supposed to sting, but in reality they are harmless. Forceps at the end of the abdomen are accessory sexual appendages.

The body of an Odonata is divided into three parts – Head, Thorax and Abdoman like other insects. The extant forms are divided into three suborders – Zygoptera, Anisozygoptera and Anisoptera. The head of an odonate are provided with, like other insects, labrum, or upper lip, the labium or the lowerlip, clypeus, frons, vertex, vesicle, eyes, ocellus and occiput. They have the highest development of compound eyes. It has been estimated that eye of an adult Odonata may contain 10,000 to 28,000 facets and occupy almost whole of the head. The head is movable and is set on the neck of the prothorax. The head can be twisted side ways 180°, backward 70°, forward and downward 40°.

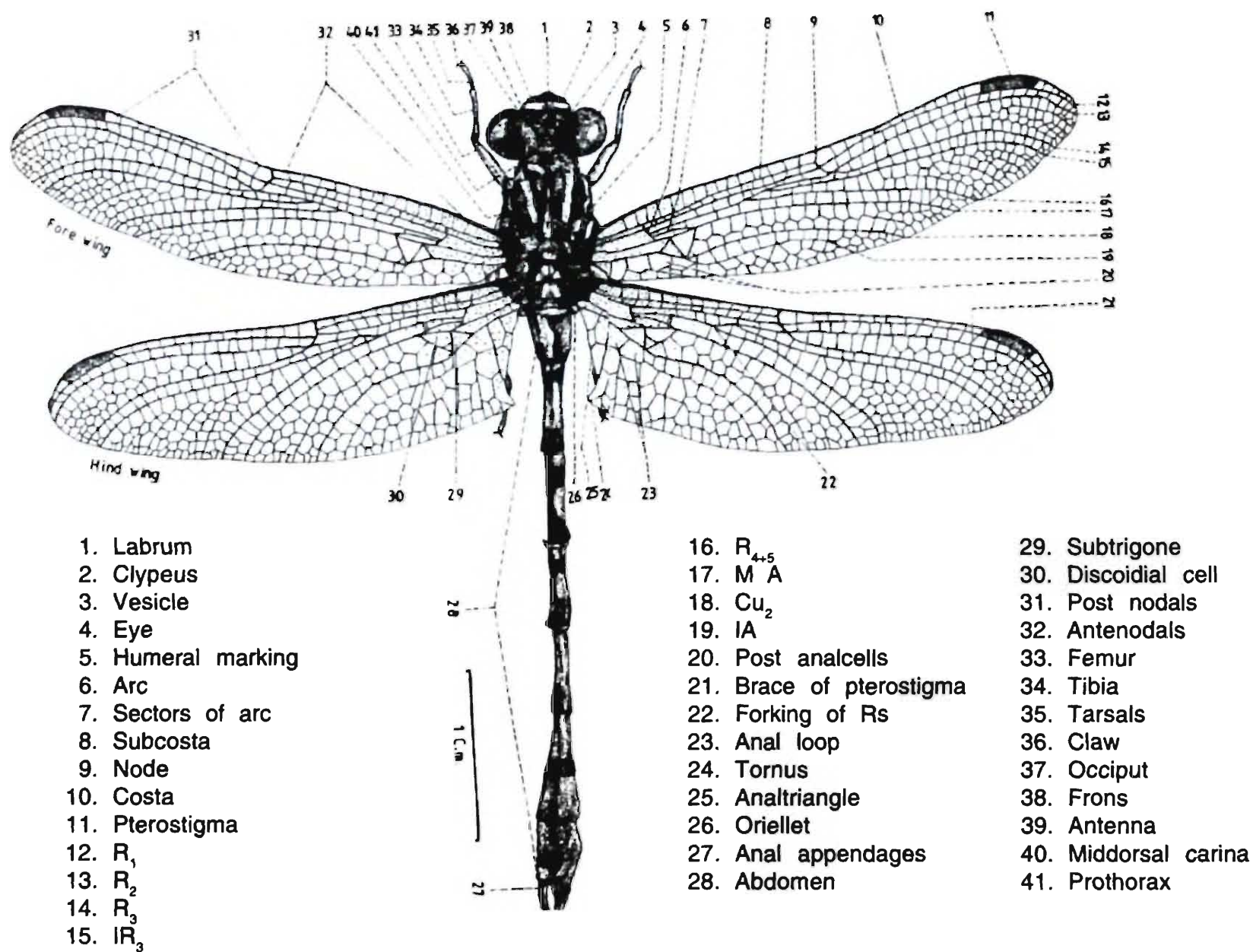
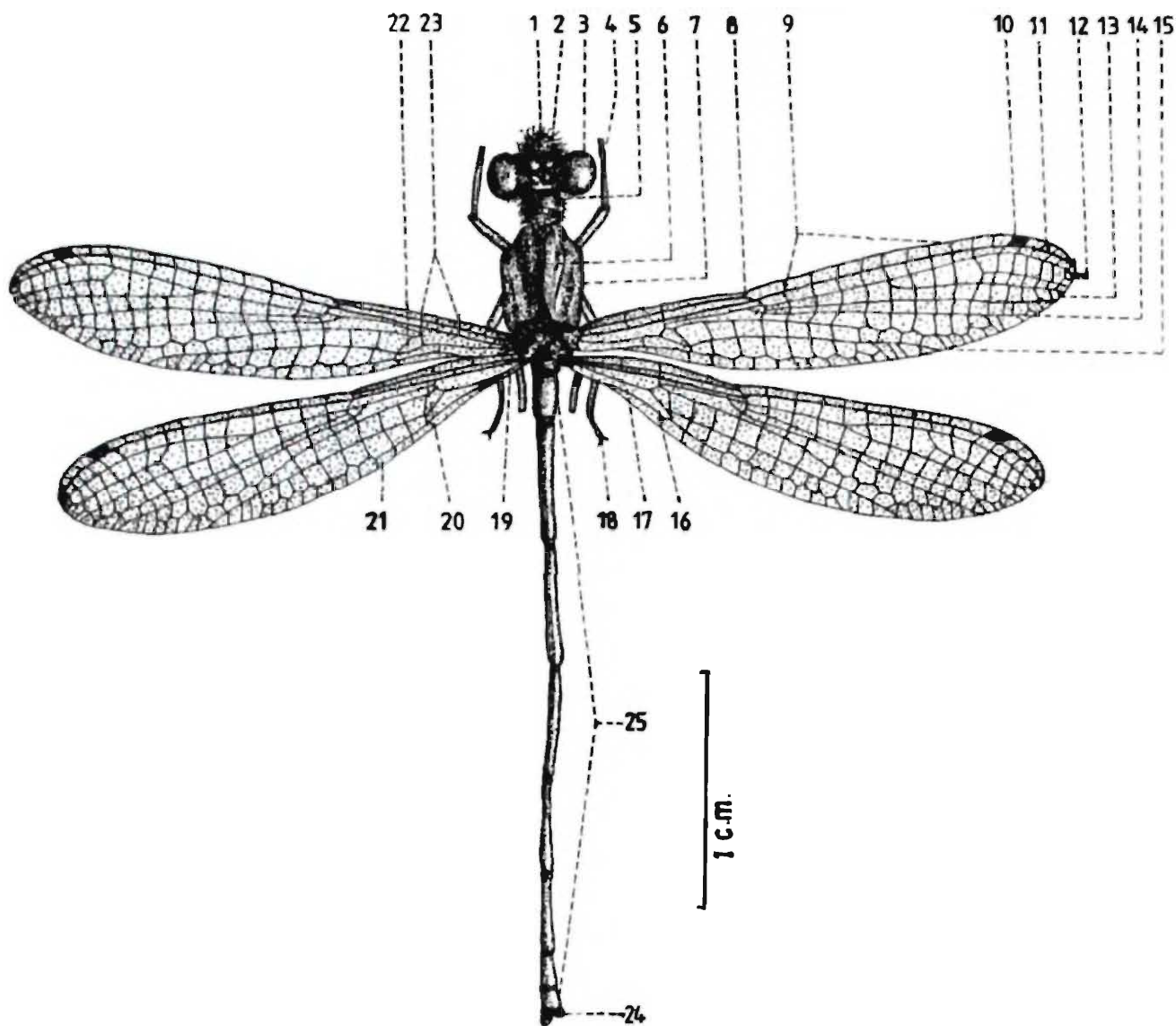


Fig. 1. External morphology of a dragonfly (after Mitra, 2002)



- | | |
|-----------------------------|----------------------|
| 1. Labrum | 13. IR ₃ |
| 2. Frons | 14. R ₄₊₅ |
| 3. Eyes | 15. Cu ₂ |
| 4. Legs | 16. Anal bridge |
| 5. Middle lobe of Prothorax | 17. Anal crossing |
| 6. Dorsal carina | 18. Claws |
| 7. Thorax | 19. Petiole |
| 8. Node | 20. Sectors of Arc |
| 9. Postnodals | 21. IA |
| 10. Pterostigma | 22. Discoidal cell |
| 11. R ₁ | 23. Antenodals |
| 12. R ₂ | 24. Anal appendages |
| | 25. Abdomen |

Fig. 2. External morphology of a damselfly (*Onchargia atrocyana*)

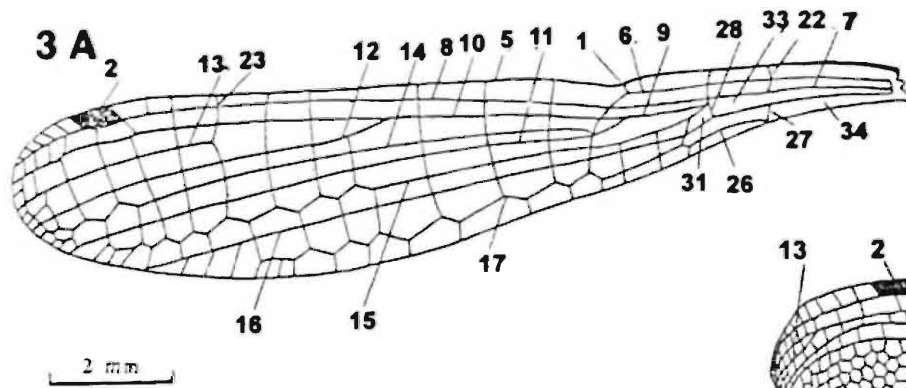


Fig. 3. A. Left hind wing of a damselfly

1. Nodus; 2. Pterostigma; 3. Tomus; 4. Membrane;
5. Costa; 6. Subcosta; 7. R+M (radius and medius combined at base of wing); 8. R1 (1st branch of radius); 9. Rs (radial sector); 10. R2 (2nd branch of radius); 11. R4+5 (4th and 5th branches of radius combined); 12. R3 (3rd branch of radius); 13. IR2 (intercalated branches of radius and medius); 14. IR3 (intercalated branches of radius and medius); 15. MA (medius or anterior median vein); 16. Cu2 (Posterior cubital vein); 17. IA (Anal vein); 18. Rspl (redial supplementary vein); 19. Mspl (medial supplementary vein); 20. Costal cross vein; 21. Subcostal cross vein; 22. Antenodals; 23. Postnodals; 24. Primary antenodals; 25. O (oblique cross-vein); 26. Anal bridge; 27. Anal cross vein; 28. Arc (arculus); 29. Br (brace of pterostigma); 30. Sn (subnode); 31. St (subtrigone); 32. discoidal cell; 33. Ht (hypertrigone); 34. median space; 35. Cubital space; 36. Bg (Bridge); 37. Anal area; 38. Anal loop.

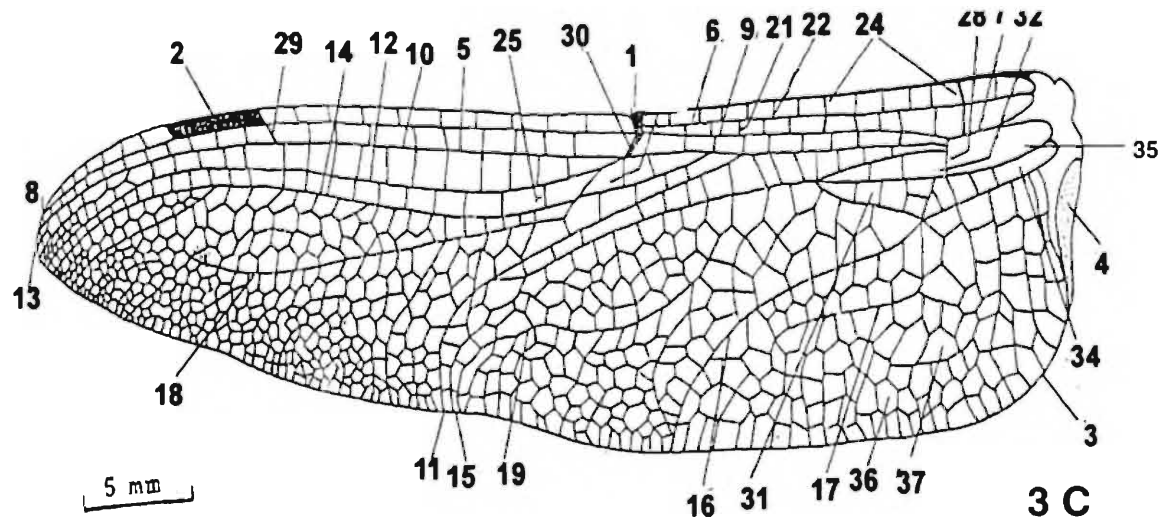
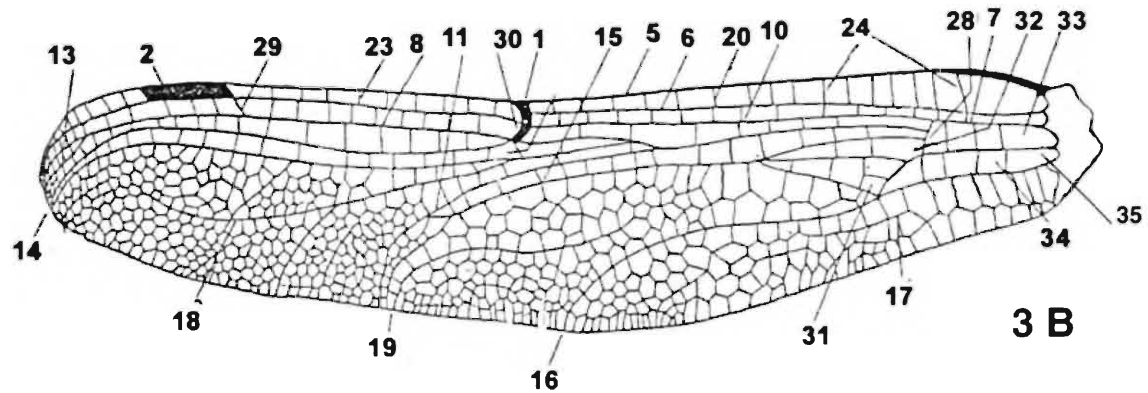


Fig. 3. B&C. Left fore and hind wing of a dragonfly

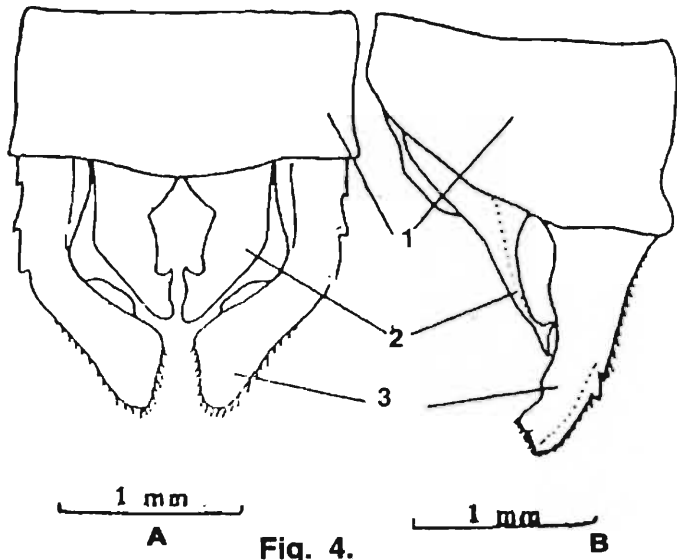


Fig. 4.

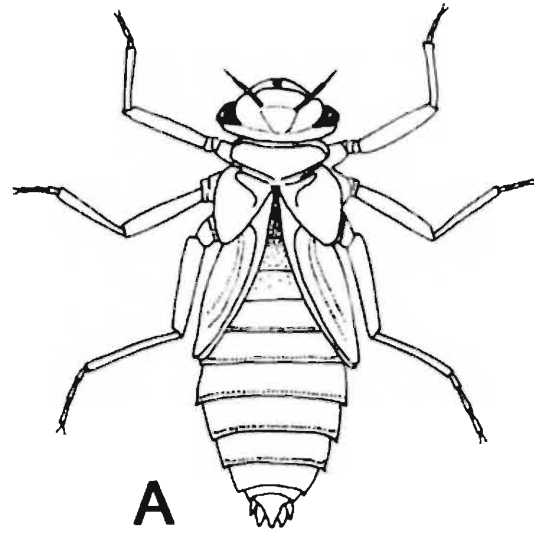


Fig. 6.

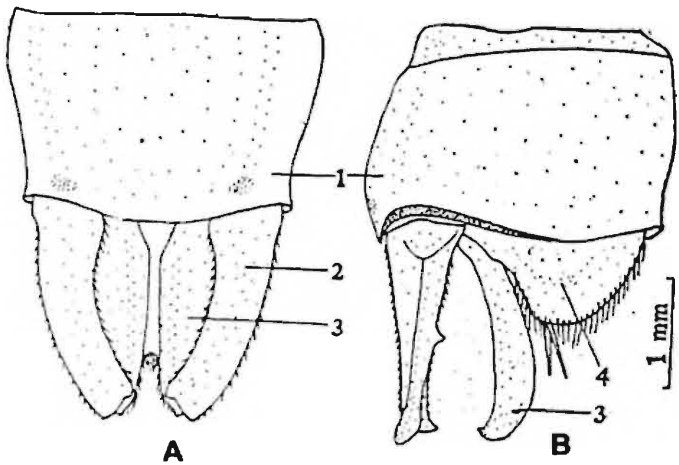


Fig. 5.

Fig. 4. : Male anal appendages of a damselfly

A. Dorsal view; B. Lateral view.

1. Tenth abdominal segment
2. Inferior anal appendage
3. Superior anal appendage

Fig. 5. : Male anal appendages of a dragonfly

A. Dorsal view; B. Lateral view.

1. Tenth abdominal segment
2. Superior anal appendage
3. Inferior anal appendage
4. [Structure in lateral view]

Fig. 6. A. : Nymph of a dragonfly

Fig. 6. B. : Nymph of a damselfly

The thorax (synthorax) has been formed due to fusion of meso- and metathorax. Legs are provided with spines and they have been shifted forward during fusion of thorax. As a result legs and spines form basket and help the odonate to capture insects while on wings. Unlike other insects, they can adjust the centre of gravity between the bases of wings. Hence these insects can fly backward, move vertically upward like a helicopter or stop in turn in the midst of the rapid progression. The abdomen is slender. At the tip of the abdomen lies the genitalia and anal cerci or appendages before breeding the male transfers sperm to the accessory genitalia in the second abdominal segment and try to establish a territory; some species show courtship behaviour. The male as soon as get a female in the territory he catches the females neck with anal appendages and the female bends its abdomen and touches the genitalia of male with its on genitalia at the tip of the abdomen forming "wheel" to receive the sperm from the male accessory genitalia. The female then lays eggs either in water or in the tissues of aquatic weeds. During this time the male may or may not accompany the female.

Zygotera are thin bodied insects, with widely separated eyes, identical fore- and hind-wings, remain folded over the back during rest. Anisozygotera are thick bodied with long abdomen, eyes are slightly separated, wings petiolated and remain folded over the back during rest. Anisoptera thick bodied insects, with dissimilar fore- and hind-wings, wings remain perpendicularly stretched to the thorax while at rest.

Dragonflies and other invertebrates : The protodonate, *Meganeura monyi* Brön, is the recognised ancestor of the modern odonates. The fossil has been collected from the upper carboniferous rocks along with ancestors of mayflies and cockroaches. Those odonates with their wingspan of about 70 cms probably have devoured the ancestors of may flies. In the mesozoic the evolution of modern odonata has started and the dragonflies have to devour the dipterans, lepidopterans, hymenopterans etc. after their evolutions. Salticids (jumping spiders) sometimes attack odonates. Larvae of dragonflies feed on larvae of aquatic invertebrates. A parasitic mite attacks some dragonflies, and one parasitic helminth enter in the bodies of dragonflies which when fed by ducks and chicks, the birds stop laying their eggs.

Odonata and some vertebrates : Fishes, especially the catfishes, tilapia; frog and toads attack odonate larvae and adults, House gecko (*Hemidactylus brookei*), Garden lizard (*Catotes versicolor*) are famous predators; among birds, House sparrow (*Passar domesticus*), Myna (*Acridotheres tristis*), House crow (*Corvus splendens*) take a heavy toll of dragonflies. Sometimes bat and domestic cat also feed on them.

Odonates and plants : Relation of odonata with plants have not been studied properly, although fossil record is available since Miocene. It has been observed that in England *Anax imperator* Leach prefers environment with *Pinus*, *Betula* and *Colluna* vegetation. In Calcutta *Pseudagrion microcephaleem* Rambur visits and roosts on *Clitorea ternatea* to capture aphids; *Lestes viridiss* produces gall on tissues of plants by laying eggs in the plant tissues. In summer and rainy season, *Tholymis tillarga* Hagen, *Pantala flavescens*

(Fabricius.) take shelter under broad leaves, smaller odonates rest and roost in the bushes. Larvae of *Rhinocypha* in the western Himalayas remain hidden under covers of mosses and other vegetation, species of *Copera*, *Platycnemis*, *Mortonagrion* prefer dark undergrowth of jungles; *Ceriagrion* and *Agriocnemis* mainly prefer open canopy.

Odonata and water bodies : Water bodies play important roles in odonata life and distribution. Odonates lay eggs in aquatic medium. They prefer permanent water bodies where sources of perennial water is available. For example, deserts support lesser number of species than water regions. In case of rain forest areas like Arunachal Pradesh and the Andaman and Nicobar islands, it has been recorded that Arunachal Pradesh has got large number of permanent perennial water sources and supports 91 species and subspecies, while in the oceanic islands like the Andamans and Nicobars perennial water resources are scanty only 47 species occur there; on the otherhand Calcutta city is provided with large number of aquatic bodies and supports nearly 60 species and subspecies.

Odonates and meteorological condition : Odonates are active mainly in the daytime, with the change of seasons the activity during 24-hour cycle changes. In summer due to early sunrise and late sun set dragonflies remain active longer period of the day while in winter this is reverse due to short duration of day-light. Migratory season for different species vary with the variation of the season. For example, *Pantala flavaescens* migrates from Calcutta in September, while *Hemianax ephippiger* (Burn) reaches Calcutta in Summer (May-June).

Dragonflies and environment : Dragonfly is an indicator of quality of environment. Since these insects prefer humid-tropics, they are more in number in the tropical environment. These insects do not prefer to remain with dove and peafowls since they are arid zone forms. These insects also do not occur in the salforsts due to lack of undergrowth. The number of species in the Ganga basin is more than that of other ecosystem in India, due to occurrence huge number of breeding areas and their preys including the predators. Due to rise of industrial enterprises the reduction in number of wild areas have exterminated; five species of Odonata in the last sixty years from Calcutta.

Diversity and peculiarities of Indian Odonata :

All the forms resemble
Yet none is same as another.
Thus the whole of the throng
points at a deep hidden law.

India supports five hundred species and subspecies, it is just slightly more than fifty per cent of the species and subspecies recorded from the continental South Asia. These five hundred species and subspecies are distributed in 140 genera, 17 families and three suborders.

It is interesting to note that most of the genera are reported by one or a few species and never more than fifteen species.

It is believed that the fauna has largely borrowed from the Indo-Malayan area, and to a less extent from Palaearctic, Eithiopean as well as Australian and Sri Lanka. It has 200 forms of its own (40%). The chain of the Western Ghats, has rich fauna, some of these are endemic to the area, so is the case with the north-eastern frontier (Indo-Myanmar border). The south Indian fauna bears close relationship with the fauna of Sri Lanka; eastern Indian forms bear direct relationship with the Malayasian fauna, Himalayan and the relicts of the peninsula. The fauna of the Western part is the product of the mediterranean elements with considerable admixture of Turkmenian forms. A few ethiopean namely *Zygonyx torrida isis* Fraser, and Australian forms viz *Hemicerdulia asiatica* Selys have made their way to India. According to Kiauta species of the family Chlorocyphidae have originated from the Indonesian areas, and according to Lieftinck the species of *Calicnemia* Strand, have radiated from the Himalayan regions.

SYSTEMATIC LIST

Class INSECTA

Order ODONATA

Suborder ZYGOPTERA

Super Family CALOPTERYGOIDEA

Family CALOPTERYGIDAE

1. Genus *Matrona* Selys, 1853

1. *Matrona basilaris nigripectus* Selys

2. Genus *Neurobasis* Selys, 1853

1. *Neurobasis chinensis chinensis* (Linnaeus)

3. Genus *Vestalis* Selys, 1853

1. *Vestalis smaragdina smaragdina* (Selys)

2. *Vestalis gracilis* (Rambur)

3. *Vestalis apicalis apicalis* Selys

4. Genus *Echo* Selys, 1853

1. *Echo margarita margarita* Selys, 1853

Family EUPHAEIDAE

1. Genus *Euphaea* Selys, 1840

1. *Euphaea cardinalis* (Fraser)

2. *Euphaea guerini masoni* Selys

3. *Euphaea ochracea ochracea* Selys

2. Genus *Anisopleura* Selys, 1853

1. *Anisopleura comes* Selys

2. *Anisopleura supplatystyla* Fraser

Family CHLOROCYPHIDAE

1. Genus *Rhinocypha* Rambur, 1842

1. *Rhinocypha cuenata* Selys

2. *Rhinocypha immaculata* Selys

3. *Rhinocypha bisignata* Selys

4. *Rhinocypha bifasciata* Selys

5. *Rhinocypha trifasciata* Selys

6. *Rhinocypha unimaculata* Selys

7. *Rhinocypha ignipennis* Selys
8. *Rhinocypha spuria* Selys
9. *Rhinocypha quadrimaculata* Selys
10. *Rhinocypha fenestrella* Rambur

2. Genus *Libellago* Selys, 1840

1. *Libellago lineata lineata* (Burmeister)

Super Family COENAGRIONOIDEA

Family PROTONEURIDAE

1. Genus *Disparoneura* Selys, 1860

1. *Disparoneura quadrimaculata* (Rambur)

2. Genus *Caconeura* Kirby, 1890

1. *Caconeura gomphoides* (Rambur)

Family PLATYCNEMIDIDAE

1. Genus *Coeliccia* Kirby, 1890

1. *Coeliccia bimaculata* Laidlaw

2. Genus *Copera* Kirby, 1890

1. *Copera marginipes* (Rambur)
2. *Copera vittata serapica* (Selys)
3. *Copera vittata assamensis* Laidlaw
4. *Copera ciliata* (Selys)

3. Genus *Calicnemia* Strand, 1926

1. *Calicnemia miniata* (Selys)
2. *Calicnemia eximia* Selys
3. *Calicnemia miles* Laidlaw

Family COENAGRIONIDAE

1. Genus *Pseudagrion* Selys, 1876

1. *Pseudagrion microcephalum* (Rambur)
2. *Pseudagrion decorum* (Rambur)
3. *Pseudagrion rubriceps rubriceps* Selys
4. *Pseudagrion hypermelas* Selys
5. *Pseudagrion australasiae* Selys

2. Genus *Ceriagrion* Selys, 1876

1. *Ceriagrion coromandelianum* (Fabricius)
2. *Ceriagrion cerinorubellum* (Brauer)
3. *Ceriagrion olivaceum* Laidlaw

3. Genus *Ischnura* Charpentier, 1840

1. *Ischnura senegalensis* Rambur
2. *Ischnura forcipata* Morton
3. *Ischnura aurora* Brauer

4. Genus *Rhodischnura* Laidlaw, 1919

1. *Rhodischnura nursei* (Morton)

5. Genus *Agriocnemis* Selys, 1877

1. *Agriocnemis femina femina* (Brauer)
2. *Agriocnemis lacteola* Selys
3. *Agriocnemis pygmaea pygmaea* (Rambur)

6. Genus *Onychargia* Selys, 1865

1. *Onychargia atrocyana* Selys

7. Genus *Enallagma* Selys, 1876

1. *Enallagma parvum* Selys

8. Genus *Cercion* Navas, 1907

1. *Cercion malayanum* (Selys)

9. Genus *Aciagrion* Selys, 1891

1. *Aciagrion azureum* Fraser
2. *Aciagrion hisopa hisopa* (Selys)
3. *Aciagrion approximans* (Selys)
4. *Aciagrion pallidum* Selys

Super Family LESTOIDEA

Family LESTIDAE

1. Genus *Lestes* Leach, 1815

1. *Lestes elatus* Hagen
2. *Lestes viridulus* Rambur

3. *Lestes nodalis* Selys
4. *Lestes umbrinus* Selys

Family SYNLESTIDAE

1. Genus *Megalestes* Selys, 1862

1. *Megales major* Selys

Suborder ANISOPTERA

Super Family AESHNOIDEA

Family GOMPHIDAE

1. Genus *Macrogomphus* Selys, 1857

1. *Macrogomphus montanus* Selys

2. Genus *Paragomphus* Cowley, 1934

1. *Paragomphus lineatus* (Selys)

3. Genus *Stylogomphus* Fraser, 1922

1. *Stylogomphus inglisi* Fraser

4. Genus *Phaenandrogomphus* Liefelinck, 1964

1. *Phaenandrogomphus aureus* (Laidlaw)

5. Genus *Onychogomphus* Selys, 1854

1. *Onychogomphus striatus* Fraser

6. Genus *Ictinogomphus* Cowley, 1934

1. *Ictinogomphus rapax* (Rambur)

Family AESHNIDAE

1. Genus *Hemianax* Selys, 1883

1. *Hemianax ephippiger* (Burmeister)

2. Genus *Anax* Leach, 1815

1. *Anax parthenope parthenope* Selys

2. *Anax guttatus* (Burmeister)

3. Genus *Anaciaeschna* Selys, 1878

1. *Anaciaeschna jaspedia* (Burmeister)

4. Genus *Gynacantha* Rambur, 1842

1. *Gynacantha dravida* Liefelinck

2. *Gynacantha bainbriggei* Fraser
3. *Gynacantha bayadera* Selys
4. *Gynacantha basiguttata* Selys

Super Family CORDULEGASTEROIDEA

Family CORDULEGASTERIDAE

1. Genus *Chlorogomphus* Selys, 1854

1. *Chlorogomphus praeciosus praeciosus* Fraser
2. *Chlorogomphus atkinsoni* (Selys)

2. Genus *Anotogaster* Selys, 1854

1. *Anotogaster nipalensis* Selys

Super Family LIBELLULOIDEA

Family CORDULIIDAE

1. Genus *Epophthalmia* Burmeister, 1839

1. *Epophthalmia vittata vittata* Burmeister

2. Genus *Macromia* Rambur, 1842

1. *Macromia moorei moorei* Selys

Family LIBELLULIDAE

1. Genus *Macrodiplax* Brauer, 1868

1. *Macrodiplax cora* (Brauer)

2. Genus *Potamarcha* Karsch, 1890

1. *Potamarcha congener* (Rambur)

3. Genus *Acisoma* Rambur, 1842

1. *Acisoma panorpoides panorpoides* Rambur

4. Genus *Lathrecista* Kirby, 1890

1. *Lathrecista asiatica asiatica* (Fabricus)

5. Genus *Neurothemis* Brauer, 1868

1. *Neurothemis tullia tullia* (Drury)
2. *Neurothemis intermedia intermedia* (Rambur)
3. *Neurothemis fluctuans* (Fabricius)
4. *Neurothemis fulvia* (Drury)

6. Genus *Brachydiplax* Brauer, 1868

1. *Brachydiplax chalybea chalybea* Brauer
2. *Brachydiplax farinosa* Kruger
3. *Brachydiplax sobrina* (Rambur)

7. Genus *Indothemis* Ris, 1911

1. *Indothemis carnatica* (Fabricius)

8. Genus *Tramea* Hagen, 1861

1. *Tramea basilaris burmeisteri* Kirby
2. *Tramea virginia* Rambur

9. Genus *Trithemis* Brauer, 1868

1. *Trithemis festiva* (Rambur)
2. *Trithemis pallidinervis* (Kirby)
3. *Trithemis aurora* (Burmeister)

10. Genus *Pantala* Hagen, 1861

1. *Pantala flavescens* (Fabricius)

11. Genus *Tholymis* Hagen, 1867

1. *Tholymis tillarga* (Fabricius)

12. Genus *Zyxomma* Rambur, 1842

1. *Zyxomma petiolatum* Rambur

13. Genus *Diplacodes* Kirby, 1889

1. *Diplacodes trivialis* (Rambur)
2. *Diplacodes nebulosa* (Fabricius)

14. Genus *Urothemis* Brauer, 1868

1. *Urothemis signata signata* (Rambur)

15. Genus *Aethriamanta* Kirby, 1889

1. *Aethriamanta brevipennis brevipennis* (Rambur)

16. Genus *Nannophya* Rambur, 1842

1. *Nannophya pygmaea* (Rambur)

17. Genus *Orthetrum* Newman, 1853

1. *Orthetrum pruinatum neglectum* (Rambur)

2. *Orthetrum sabina sabina* (Drury)
 3. *Orthetrum triangulare triangulare* (Rambur)
 4. *Orthetrum chrysis* (Selys)
 5. *Orthetrum glaucum* (Brauer)
 6. *Orthetrum taeniolatum* (Schneider)
 7. *Orthetrum cancellatum cancellatum* (Linnaeus)
 8. *Orthetrum japonicum internum* Maclachlan
 9. *Orthetrum luzonicum* (Brauer)
18. Genus *Palpopleura* Rambur, 1842
1. *Palpopleura sexmaculata sexmaculata* (Fabricius)
19. Genus *Crocothemis* Brauer, 1868
1. *Crocothemis servilia servilia* (Drury)
20. Genus *Bradinopyga* Kirby, 1893
1. *Bradinopyga geminata* (Rambur)
21. Genus *Brachythemis* Brauer, 1868
1. *Brachythemis contaminata* (Fabricius)
22. Genus *Sympetrum* Newman, 1833
1. *Sympetrum hypomelus* (Selys)
23. Genus *Rhyothemis* Hagen, 1867
1. *Rhyothemis variegata variegata* (Linnaeus-Johannsen)

Suborder ZYGOPTERA

Family CALOPTERYGIDAE

1. *Matrona basilaris basilaris* Selys

Male and female differ in size and colouration.

Male : Abdomer 42-55 mm; Hindwing 36-42 mm

Female : Abdomen 50-54 mm; Hindwing 44-46 mm

Head : Vertex of head dark metallic green; in male labrum steely blue, in female labrum bright yellow. Prothorax metallic emerald green in both sexes. Thorax metallic emerald green with bluish reflections on the dorsum in both sexes; humeral and antero-lateral sutures black; postero-lateral and postero-ventral border of the metepimeron (posterior part of thorax) bright yellow with black spots on the ventral surface in male. In female the yellow is more extended on the sides. Abdomen in male brilliant glossy emerald metallic green on dorsum, black beneath. In female dorsal surface of abdomen dull brown, save segments 8 to 10 yellowish brown, 10 with a well developed dorsal keel ending in a robust apical spine and with a small tubercle surmounted with minute teeth on either side. Wings in male rounded at apices, very broad, colour varies from dark brown to blackish blue, distal part of the forewing hyaline with opaque brown nerves, costa and other nervures black, but the transverse nervures from base to node bluish white. In female the wings are uniform dull dark brown, apices in forewings much as in male. Pterostigma absent in male, in female creamy white transversed by a number of veins. Anal appendages in male black, in female it is brown.

The species occurs in North-East India (Arunachal Pradesh and Meghalaya). It also occurs in Bangladesh, China, Japan, Laos, Myanmar, Taiwan, Vietnam.

Remarks : The eastern Indian forms vary from Fraser's description because of the possession of dull black labium in male, blackish brown anal appendages in female.

2. *Neurobasis chinensis chinensis* Linnaeus
Chinese dragonfly

Habit : The species breeds in montane and submontane streams; both male and female are often seen flying up and down the stream; their flight pattern changes with the ripples and undulations of the water surface. Wings flash with a brilliant play of emerald-green and peacock blue as the plane of wings is altered to sustain the dragonfly's balance in the air. They rest on over hanging vegetation near the stream; sometimes they perch with closed wings on nearby objects. Oviposition in tandem in swift running water.



Neurobasis chinensis chinensis Linnaeus – Female

Abdomen 44-50 mm; Hind wing 32-42 mm.

Head : Head of male with coppery-green reflex on vertex and occiput; while in female vertex and occiput with shining green. Prothorax of the neck of both sexes bronzed-green with a coppery reflex, sides white. Thorax in both sexes brilliant metallic green, with humeral and antero-lateral stripes blackish brown; posterolateral suture white with a black border, which sometimes cut the white line into dots. Legs long and slim, tibiae of the last pair of legs white on flexor surface. Forewings in male with brilliant emerald green neuration; node thick and brown; costa pale yellowish green. Hind wing opaque, based two-thirds appearing brilliant metallic green or peacock-blue according to angle of view, apical third blackish brown with violaceous reflections and green metallic nervures. Pterostigma practically absent in all wings. In female wings tainted with yellow, palely suffused with brown especially at apices, and along costa from base to node in forewing and in hindwing the tint is deeper and extends throughout the wing. A creamy yellow spot on the node, and a creamy white pterostigma in hindwings. Abdomen narrow and cylindrical much longer than wings, metallic bronzy-green above and at sides, segments 9 and 10 whitish in male. In female abdomen dull metallic bronzy-metallic green with golden reflections on dorsum, black beneath but thinly pruinosed.

This is the only species described on the basis of a picture. The species occurs in northern (except desert tract), southern India including the Himalaya, the Western Ghats, Eastern Ghats and North-east Indian Hills.

The species also occurs in south and southeastern Asia, southern China, Malayasia, Philippines and Australia.

Remarks : Specimens from Arunachal Pradesh, Assam and, Manipur differ from Frasers description since their males have dirty white labium, bluish-yellow in female; Orissa specimens agree with the description in the Fauna of British India.

3. *Vestalis smaragdina smaragdina* Selys

Habit : The species is as much a woodland insect as in riverine one; for food the members spread for inland; breeds in montane and submontane streams; exophytic oviposition.

Female is slightly smaller than male.

Male : Abdomen 42-45 mm; Hindwing 32-35 mm

Female : Abdomen 34-38 mm; Hindwing 30-34 mm

Head : Vertex dark metallic green or peacock blue in both sexes. Prothorax or neck metallic emerald green. Thorax brilliant metallic emerald green with a blue reflection. On dorsum lower half, sides and whole of metepimeron under surface of throax, coxae bright yellow. Wings hyaline, immature specimens tainted with yellow throughout in mature specimens yellow at base and otherwise with a pale greenish tinge in male. In female venation rich ocare, wing evenly saffronated. Abdomen metallic emerald green on the dorsal surface and sides, black beneath; sides of segment broadly citron yellow, other segments, especially the terminal ones dull metallic, in female abdomen of segment 3 and lower sides of segments 8 to 10 yellow.

The species is distributed in North-East India (Tripura and Meghalaya) and central India; Myanmar, China, Tibet, Formosa, Vietnam.

Remarks : Segment 1 of the eastern India specimen not broadly citron-yellow; in female abdominal segments 3 to 10 light yellow in eastern Indian specimens.

4. *Vestlis gracilis* (Rambur)

Habit : The species breeds in montane and submontane streams; gregarious colonies are often visible in open spaces of forests. The female oviposits in blades of grass; and juicy stems, overhanging a stream. The newly hatched larvae fall from thence to water.

Abdomen 32-56 mm; Hindwing 34-40 mm

Male and female are almost same.



Vestlis gracilis (Rambur) – Male

Head : Vertex and occiput brilliant metallic green; sometimes with golden greenish yellow. Prothorax or neck metallic emerald green on dorsum and sides, yellow in lower parts and beneath. Thorax brilliant metallic emerald green on dorsum, undersurface and ventrolateral borders yellow-ochre. Mid-dorsal carina finely black, humeral and anterolateral suture finely yellow. Metepimeron with a metallic green triangle, at its centre. Abdomen metallic green or blue, usually peacock-blue in teneral specimens emerald green when mature, with a narrow interrupted basal yellow ring on segments 2 to 6, sides 1 to 2 and base of segment 3 yellow. Superior anal appendages longer than segment 10, widely separated, broad at base.

The species occurs in plains and hills of 'Assam Region', the North-East India; Singhbhum district of Jharkhand state, Western and Eastern Ghats and Andaman Islands in the India, it occurs in South-East Asia, southern China and Bangladesh.



5. *Vestalis apicalis apicalis* Selys

Habit : The species is often seen in company with *Vestalis gracilis gracilis* and has similar habit.

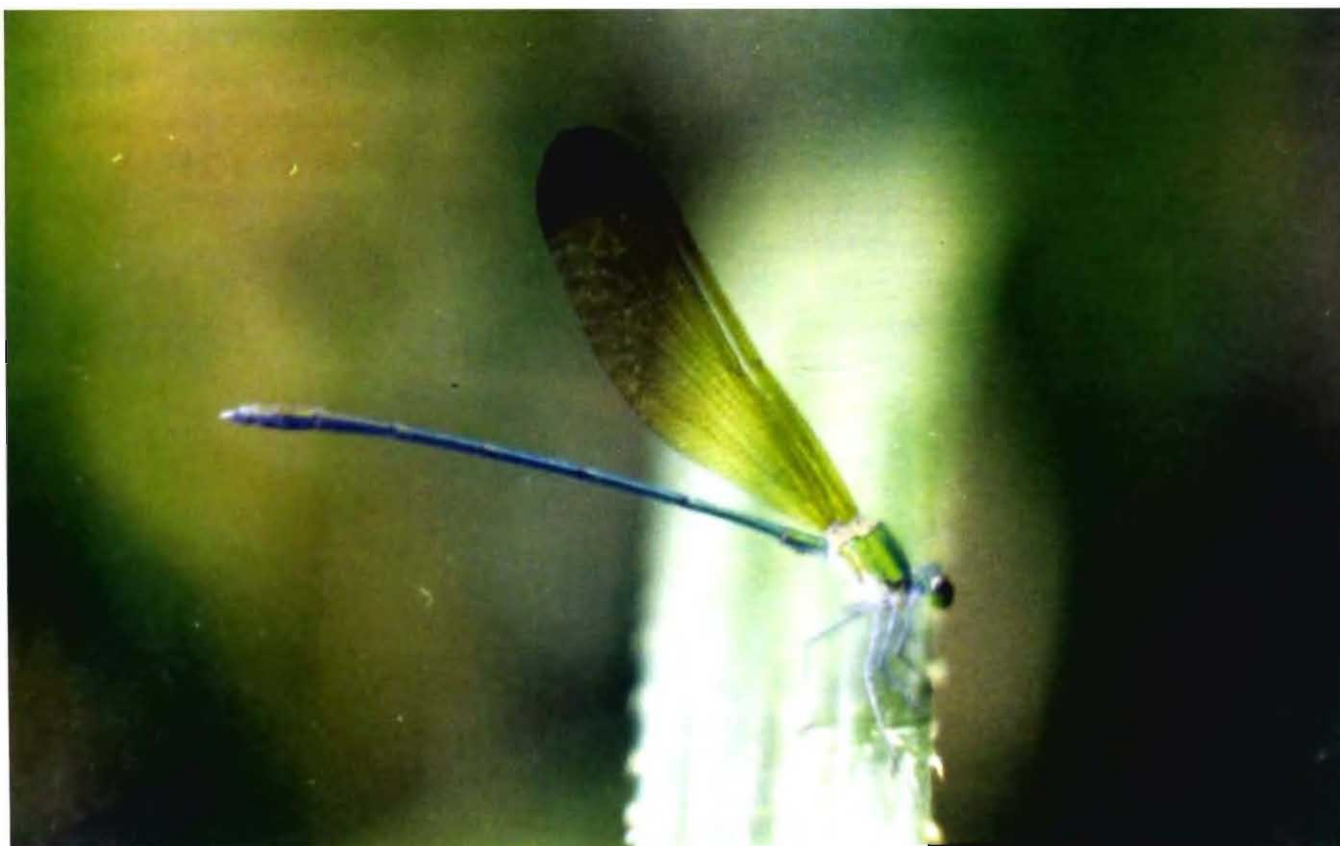
Male and female are almost similar.

Abdomen 46-55 mm; Hindwing 36-40 mm

Head : Vertex brilliant metallic emerald green. Prothorax distinctly bordered with yellow. Thorax like *Vestalis gracilis* brilliant, metallic, emerald green with black dorsal carina and yellow antehumeral sutures. Metepimerom with a narrow elongate metallic green triangle at the centre of the yellow ochre colour. Wings hyaline, mature specimens are coloured like *Vestalis gracilis*, apices of all wings broadly tipped with brown. Anal appendages black. Abdomen metallic emerald green, marked with yellow as in *Vestalis gracilis*.

The species is endemic to India. It occurs in the 'Assam Region', West Bengal, Western and Eastern Ghats.

Remarks : Eastern Indian specimens vary from Fraser's description in having brown coloured labium, labrum, cheeks, face, frons, bases of antennae and lateral and antehumeral suture of thorax.



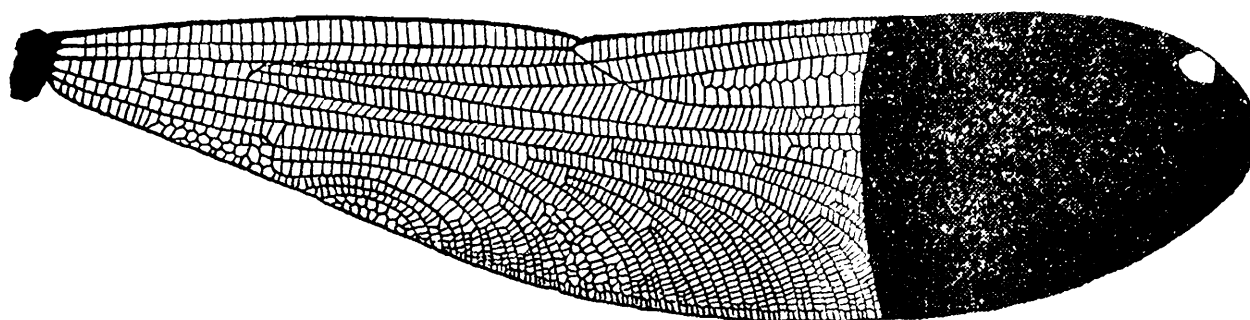
Vestalis apicalis apicalis Selys – Male

6. *Echo margarita margarita* Selys

Habit : It breeds in montane streams; adults are often visible along the banks; it rests on nearly vegetation and with a slow flying up and down the streams.

Male : Abdomen 37-46 mm; Hindwing 35-37 mm

Female : Abdomen 37-41 mm; Hindwing 35-37 mm



Hind-wing of *Echo margarita margarita* Selys

Head : Labrum glossy black, vertex dull metallic dark bronzy-green. Prothorax shiny metallic dark green in both sexes. Thorax on dorsum and of sides dark metallic green with coppery reflex, undersurface black and thinly pruinose. Wings hyaline, mature female specimens have the hyaline area variably enfumed; apical part is dark blackish-brown; slight brownish in the nodes; hyaline area, in male, with a beautiful bluish purple iridescence. Pterostigma white. Abdomen non metallic dark blackish brown, under surface pruinose.

The species is endemic to North-East India (Arunachal Pradesh, Manipur, Meghalaya).

Remarks : Pterostigma in some specimens may be yellowish white, abdomen may be blackish brown instead of dark blackish brown.

Family EUPHAEIDAE

7. *Euphaea cardinalis* (Fraser)

Habit : Found in numerous sholas, frequents montane streams from April to October.

Male : Abdomen 41-45 mm; Hindwing 36-37 mm

Female : Abdomen 36 mm; Hindwing 37 mm

Head : Head black, some parts are coloured. Thorax bright reddish ochreous and black, in female bright yellow marked with black. The antehumeral and humeral stripes

are ochreous; humeral suture narrowly black; laterally entirely ochreous; a black oral spot between humeral and lateral sutures, beneath ochreous. Abdomen in male bright vermillion-red as far as basal parts of segment 6, rest black, segment 10 with carinal spine, 8 and 9 with tuft of hairs. In female abdomen is black, marked with yellow, sides of segment 1 to 3 broadly, segments 4 to 7 with longitudinal strips, 8-9 with a subquadrate apico-lateral spots; 10 unmarked. Forewings hyaline, faintly enfumed and with a greenish tinge, tinted with yellow at extreme base. Hind-wings with apices black, Pterostigma black.

The species occurs mainly in the Western Ghats and rare in North-East India.

Remarks : Colours of Assam specimens is lighter than those of South Indian specimens.

8. *Euphaea guerini masoni* Selys

Habit : It is dark black dragonfly. Occurs from April to September and breed in hill streams.

Male : Abdomen 28-35 mm; Hindwing 24-30 mm

Female : Abdomen 33 mm; Hindwing 31 mm

Head : Head black in male; in female it is marked with several colours. Thorax velvety black, marked with fine yellowish brown markings in antehumeral, humeral and posthumeral areas; in case of female the markings are broader. Prothorax black; in female this is marked with yellow. Abdomen black in male and in female black marked with greenish-yellow. Wings opaque blackish brown; hind-wing with extreme apex hyaline or occasionally hyaline as far as distal end of pterostigma. In female wings long and narrow uniformly enfumed greenish-brown. Pterostigma long and narrow black in male; brown or dark in female.

It occurs in Nagaland, and Indo-China subregion.

9. *Euphaea ochracea ochracea* Selys

Habit : These insects are commonly found in hill streams and often perch on exposed boulders in the streams. it can be collected from April to October, i.e. during the rainy season in the North-East India.

Male : Abdomen 33-35 mm; Hindwing 30-33 mm

Female : Abdomen 29-30 mm; Hindwing 28-29 mm

Female differs from the male by much broader and more extensive yellow markings, wings only palely and diffusely saffronated at base.

Head : Vertex of head mat black, in female it is marked with yellow. Thorax mat black, marked with bright ochreous of a series of four pairs of stripes on each side and a large semilunar lateral spot. The first pair of antehumeral stripe confluent above and nearly so below; the second pair lies between humeral and first lateral sutures confluent above. The third and fourth lie between lateral sutures and two pairs. In female the markings are more extensive and cover mesepimeron and metepimeron except their centres which are clouded with black. Wings broadly saffron or amber-tinted in fore-wings, it extends more than their basal halves and in the hind-wings it extends up to the petrostigma. Pterostigma black in male, bright ochreous in female. Abdomen black marked with ochreous, in case of female it is black marked with yellow.

The species occurs in North-East India and Indo-malayan subregion.

Remarks : Male specimens from Darjeeling differ from specimens from Arunachal Pradesh, Manipur and Fraser's description having thoracic marking dull ochreous.

10. *Bayadera indica* (Selys)

Habit : The species breeds in montane streams; males usually perch on rocks, or twigs projecting from the water in the mid-stream, a very shy species, difficult to catch.

Males and females agree in colour markings.

Male : Abdomen 38-40 mm; Hindwing 34 mm

Female : Abdomen 36 mm; Hindwing 37 mm

Head : Vertex mat black; labrum, bases of mandibles, cheeks and bases of antennae torquoise-blue. Prothorax black, sides of middle and posterior lobe with large yellow spots. Thorax black, marked with bright greenish yellow as follows : the broad lateral irregular stripes on each suture; the third one covers the greater part of the metepimeron; all three broadly confluent above; the first and second slightly separated by black tongue on the upper part of the second. Humeral stripe broad, antehumeral stripe thin. Wings hyaline, apices blackish brown to the middle of the pterostigma, which is black.

The species occurs in the Himalayas and foothills (Western Himalaya, Sikkim, Darjeeling), Meghalaya in India. In outside India it has been reported from Bangladesh, China, Nepal, Lt. Col. F.C. Fraser in his Fauna of British India (Vol. 2. p. 81) cast doubts on its occurrence in Khasi Hills. But Dr. A.R. Lahiri (1987 : Studies on the Odonata of Meghalaya, P. 38 reported one specimen from Barapani (Khasi Hills).

Remarks : In some specimens from Sikkim the number of antenodals and postnodals vary from Fraser's description.

11. *Anisopleura comes* Selys

Habit : It breeds in montane and submontane streams. Sometimes it breeds in irrigation channels. It remains on trees or bushes bordering the streams. Only occasionally these insects descend to the river bed, but immediately retreat to vegetations if disturbed, colour markings of male female are almost similar. Male is larger than female.

Male : Abdomen 36-40 mm; Hindwing 29-34 mm

Female : Abdomen 32-33 mm; Hindwing 33 mm.

Head : Vertex of head mat black, with a small oval spot of greenish-yellow on outside of each lateral ocellus. Thorax black, with broad humeral fascia, metepimeron narrowly framed in black, lateral sides and undersurface pruinose white. Posterior lobe and middle lobe of prothorax with large citron yellow spot in immatures, in matures these are pruinosed white. Abdomen black, marked with greenish-yellow, segments 9 and 10 chalky-white with pruinescence. In female segments 8 and 9 have got lateral spots. Wings hyaline, in male extreme apices of fore-wings dark brown. Pterostigma black.

The species occurs in eastern Himalaya (Darjeeling and Sikkim), Assam, Western Himalaya. Bangladesh, Nepal, China.

12. *Anisopleura subplatystyla* Fraser

Habit : It occurs near streams, as well as comparatively drier habitats, inside bushes, and forests far away from the aquatic regime.

Male : Abdomen 34-38 mm; Hindwing 28-30 mm

Female : Abdomen 30-32 mm; Hindwing 29-30 mm

Male and female differ in colour markings.

Head : Vertex of head black except for a small rounded greenish-yellow spot. Thorax black marked with citron-yellow, narrow antehumeral stripes running close to and parallel with middorsal carina, upper end of stripes curved outward; a narrow humeral stripe running parallel to the former and broadly confluent with it below only not above although they are very close. A small upper spot lying close to the outer side of the humeral stripe. In case of females antehumeral and humeral bands confluent above as well as below; upper humeral spot triangular instead of linear. Laterally broadly yellow, metepimeron narrowly framed in black, beneath and lower parts of its sides are pruinosed white. Abdomen black, dorsal side of segments 9 and 10 pruinosed white. Greenish-yellow on sides of segment 1 broadly, a broad lateral stripe on 2, a basal ring broadly interrupted on the middorsum and narrow lateral stripe on segments 3 to 6. Wings hyaline and tipped with black; in female wings saffronated at base. Pterostigma dark blackish brown.

The species is endemic to North-East India (Meghalaya and Sikkim). It is one of common species in Khasi Hills.

Family CHLOROCYPHIDAE

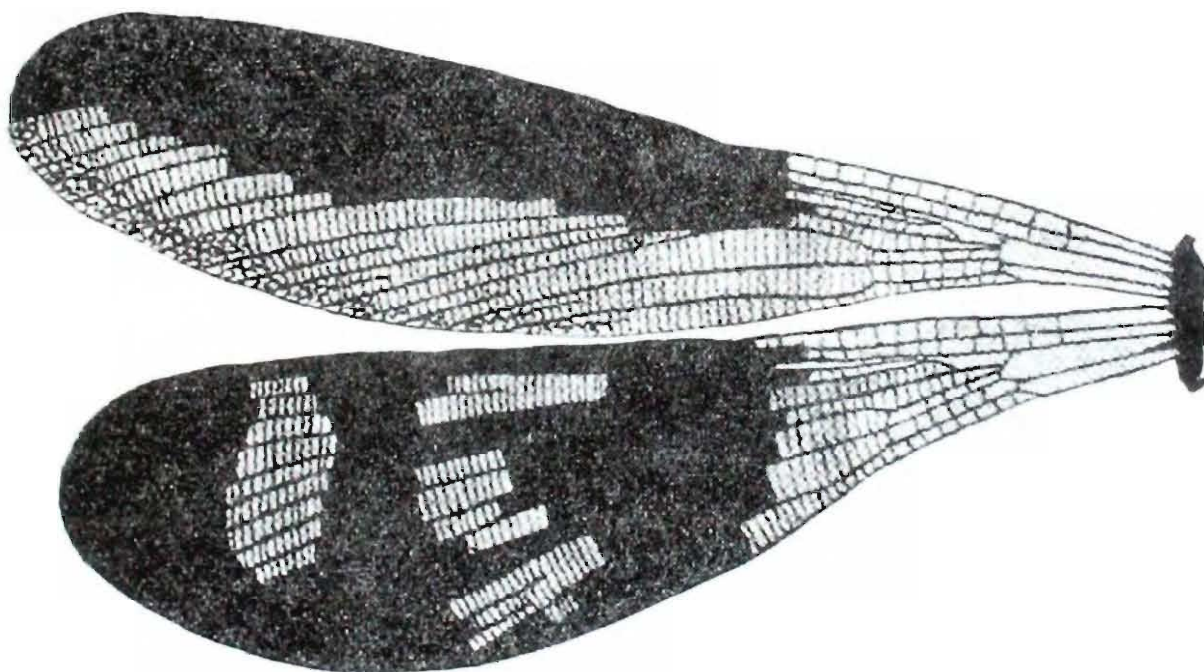
13. *Rhinocypha cuneata* Selys

Habit : Remain near water, during mating the male performs nuptial dance, females lay eggs on broken reeds floating vegetation.

Male : Abdomen 24 mm; Hindwing 27-28 mm

Female : Abdomen 21 mm; Hindwing 28-30 mm

Head : Black, blue spots in different parts and rust red spot on outer side of the ocelli Thorax black, meso-thoracic triangle large, palest blue in colour, a small humeral spot just behind the upper end of humeral suture, a linear streak along anterior border of second lateral suture, lastly an upper short streak on metepimeron, all reddish-yellow. In female thorax black marked with bright ochreous. Legs in male black, parts are pruinose white; in female pruinoscence is absent. Abdomen black unmarked in male, in female it is marked with ochreous. Wings hyaline at base, palely suffonated, opaque in the distal part from a few cells proximal to node. In fore-wing the opaque area extends from the costa to almost half of the width of the wing and in hind-wing total width. In the middle a number of violaceous streaks.



Wings of *Rhinocypha cuneata* Selys – male

The species occurs in North-East India and Chinese areas.

Remarks : In case of specimens from Arunachal Pradesh the throat is brownish-black in male, in female the spot in front of the ocellus is very small.

14. *Rhinocypha immculata* Selys

Habit : It is visible in the hilly areas during the period from August to November.

Male : Abdomen 22-25 mm; Hindwing 27-28 mm

Female : Abdomen 22 mm; Hindwing 28-30 mm.

Head : Black, marked with blue and ochreaous spots, Thorax black, marked with yellow, a fine lower antehumeral stripe incomplete below; a small upper spot near first suture, a triangular spot on metepimeron. A number of spots on the underside of the throat. Mesothoracic triangle very large, pale blue, extends from the another border of throat to alar sinus. In case of female the mesothoracic triangle black, other markings broad. Abdomen black marked with yellow; a small spot on each side of the segment; a lateral stripe and an apical spot in line in the former in each side of segments 2 to 5; finally a ventro-lateral stripe on each side of the segments 3 to 6. Wings hyaline, occasionally.

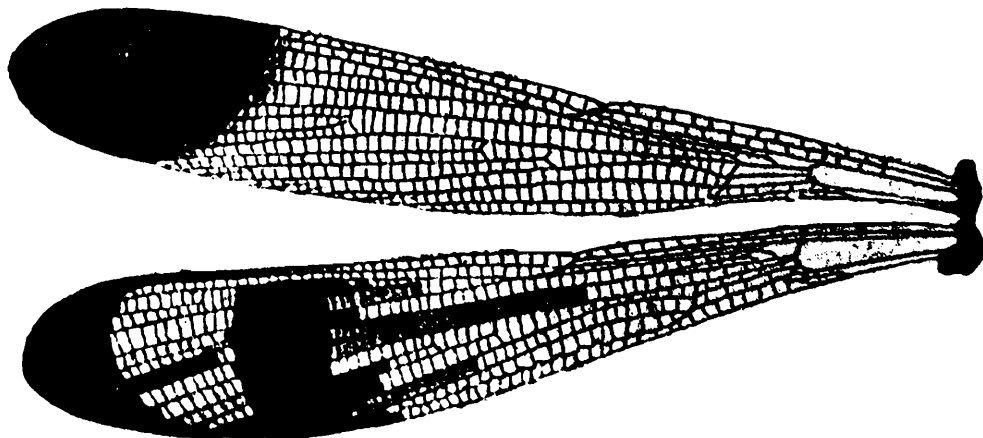
The species is distributed in North East India only.

15. *Rhinocypha bisignata* Selys

Habit : Females congregate on bare twigs of trees near the breeding areas in large number, sometimes they are seen to lay eggs on floating twigs in midstream.

Male : Abdomen 20 mm; Hindwing 24-26 mm

Female : Abdomen 16 mm; Hindwing 22 mm.



Wings of *Rhinocypha bisignata* Selys – male



Rhinocypha ? bisignata Selys – male

Head : Black, bright ochreous occipital spots, in female rounded postocular posts on sides. A mid-occipital spot triangular shaped and all ochreous. Thorax black, marked as follows mesothoracic triangle rose-pink, a large spot of the same colour lies between the mesothoracic triangle and the humeral suture, a small upper bordering the spot, a narrow yellow stripe bordering the upper half of the humeral suture behind; a broad, very broken stripe on the posterior half on mesepimeron and whole centre of metepimeron golden yellow. In female a fine antehumeral line, incomplete; mesothoracic triangle black outlined in yellow. Abdomen black, marked with yellow, female colour agrees with the male's one. Wings hyaline at basal part where they are tinted with yellow, opaque blackish-brown in apical area. The hind-wing is provided with a large and thinner vitreous spot. Fore-wings with outer-fourth or more opaque, brilliant coppery. Hind-wing with outer third opaque and marked with two series of vitreous spots. Wings in female entirely hyaline.

The species occurs in the hilly regions of Orissa and the Western Ghats.

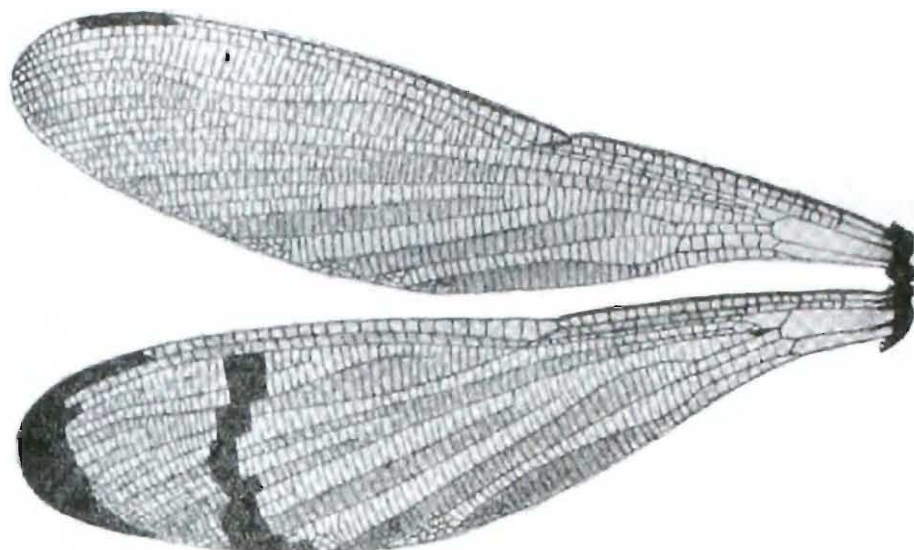
16. *Rhinocypha bifasciata* Selys

Habit : The species prefers hilly areas; and mainly in the postmonsoon period.

Male : Abdomen 22 mm; Hindwing 25 mm

Female : Abdomen 18 mm; Hindwing 28 mm

Head : Black, oval spot on outside of each posterior ocellus, and small rounded postocular spots. In female marking is same as in male; but with a medial spot on the hind border of the occiput and moderately a bright yellow spot on each cheek near the eye.



Wings of *Rhinocypha bifasciata* Selys - male

Theroax glossy black, marked on sides with broken yellow band, made up of small serrate spot on metepimeron, and an elongate pyriform spot on mesepimeron capped by a u-shaped spot anteriorly. Mesothoracic triangle large, pale azure blue. In female mesothoracic triangle yellow in its upper half, lateral marking broad. Abdomen glossy black, marked with small apical yellow spot on sides of the segments 1 and 2. In female abdomen black, marked with ochreous, variable in segments 1 to 5. Wings partially hyaline, from discoidal cell to apex greyish by transmitted light palely yellow at base. The darkened area by reflected light is a beautiful violet blue or emerald-green according to the angle from which it is viewed. The wings in this area have a stony gloss and the hind-wings area traversed by two brown bands from costa to hinder border, one at apex and the second at a short distance of the inside of the pterostigma. In female wings evenly suffused with a faint greenish-tint.

The species is distributed in West Bengal (Darjeeling) and Assam (Brahmaputra Valley) in India and Bangladesh outside India.

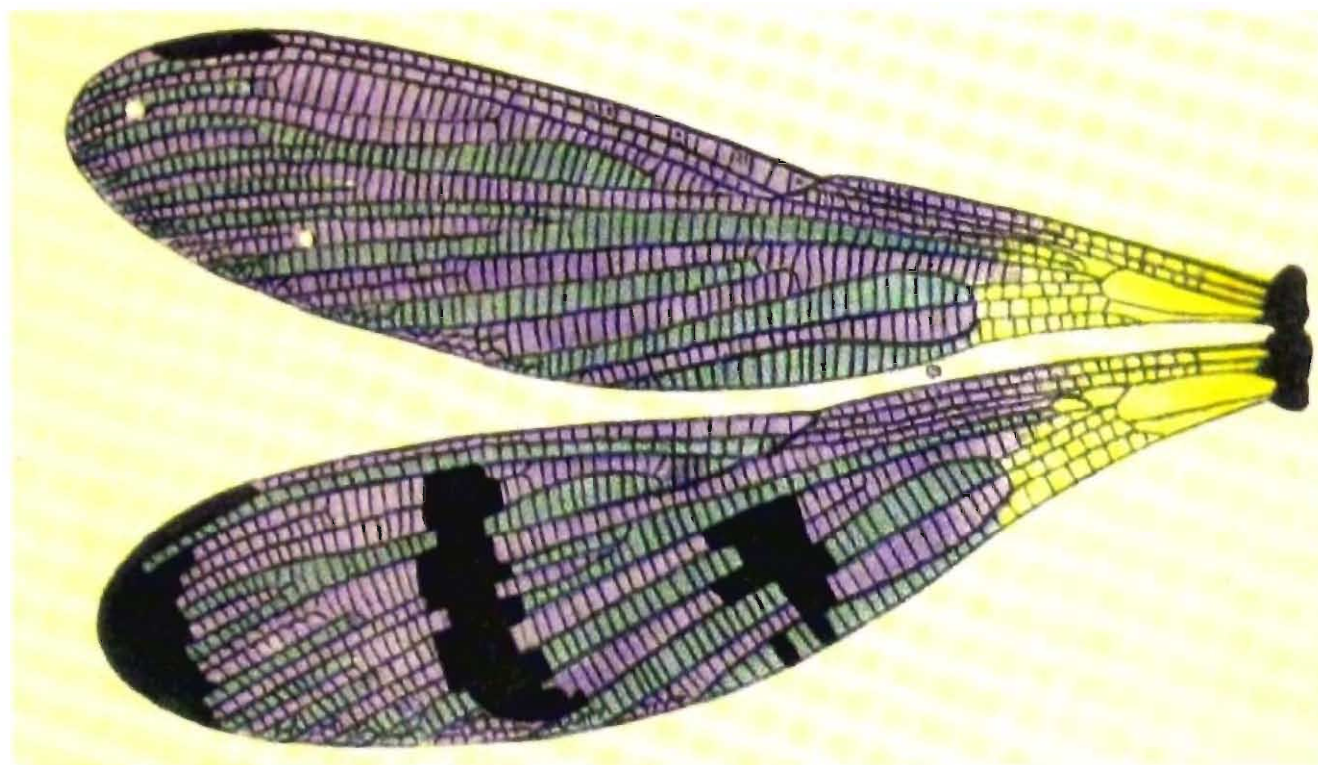
17. *Rhinocypha trifasciata* Selys

Habit : Breeds in hilly stream, perches near water on overhanging vegetation.

Male : Abdomen 24 mm; Hindwing 27 mm

Female : Abdomen 22 mm; Hindwing 29 mm

Head : Glossy black in front, velvety black, large oval spot on each side of the posterior ocellus and small rounded postocular spot on each side of the occiput. Thorax black, marked on sides with a broad broken yellow band, made up of small serrate spot on metepimeron like *Rhinocypha bifasciata* Selys. Mesothoracic triangle very large, pale



Wings of *Rhinocypha trifasciata* Selys

blue extending from alar sinus to anterior border of thorax. A fine yellow line on first lateral suture, broken above, a shorter line on second lateral suture, incomplete below, a small spot below root of fore-wing, small spots on metepimeron, elongate spot on mesepimeron. The mesothoracic triangle dark ochreous in female. Abdomen black marked on each side of the segments 1 to 3 with a small apico-lateral spot of yellow. Wings partially hyaline, from discoidal cell to apex, greyish by transmitted light, palely yellow at base. A blue violaceous emerald-green, according to angle from which the vitreous area is seen. Three blackish brown bands traverse the hind-wings from apex to the level of the node in the hind-wings.

It occurs from the Western Himalaya to the Eastern Himalaya including Nepal.

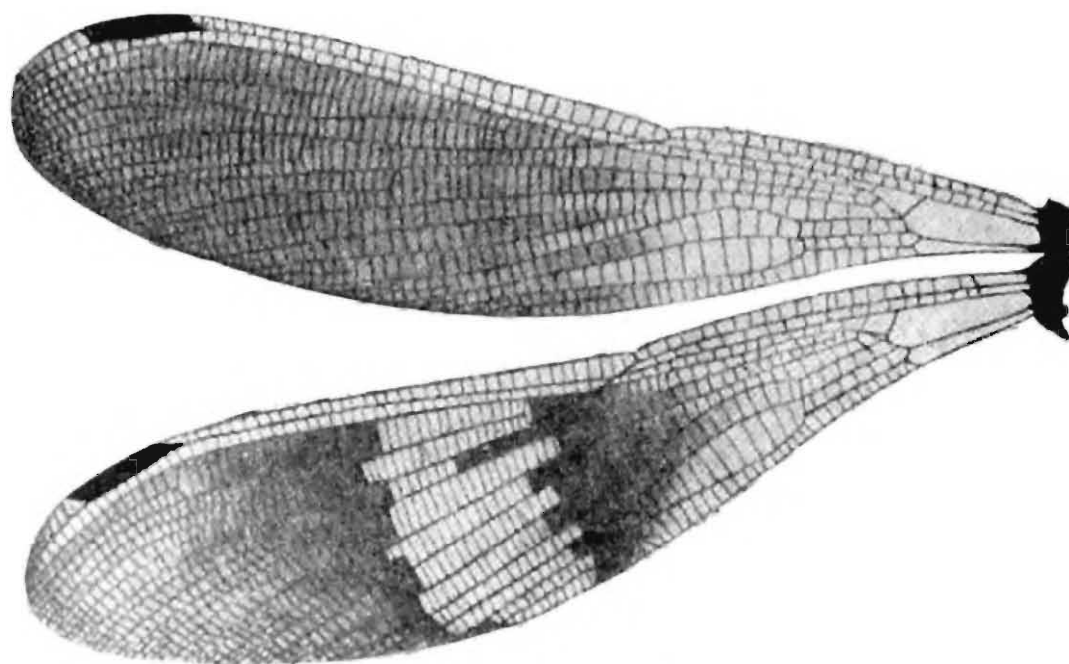
18. *Rhinocypha unimaculata* Selys

Habit : The imago perches on rocks in the midstream, it occurs usually up to 1200 meters.

Male : Abdomen 24 mm; Hindwing 27-30 mm

Female : Abdomen 22 mm; Hindwing 31-32 mm

Head velvety black, chrome yellow rounded spots on each side of the occiput, one on outside of each posterior ocellus and a central spot on the posterior border of the occiput. Thorax glossy black, marked with bright yellow lines; a long antehumeral line,



Wings of *Rhinocypha unimaculata* Selys - male

incomplete above, markedly angulate below, a fine post humeral line broken above, a short upper on the first lateral suture and finally broad broken oblique stripes on lower part of sides of thorax. In female thorax glossy black, marked as in male. Abdomen black, marked with yellow. Segments 1 to 3 with an apical lateral spot on each side, intersegmental nodes narrowly yellow. The first six segments with a ventral stripe. In female abdomen glossy black, marked with parallel stripes of yellow on ventral side and a lateral stripe of each side on the segments 1 to 7; an apical spot on each segment from 4 to 7. Wings enfumed brown slightly proximal to the same level in hind-wings, where this area is prolonged as a diffused tongue in the space between IR_3 and R_{4+5} . Both pairs of wings contain brilliant fiery red colour in the area. In hind-wings the middle of this coppery area bears a quadrate vitreous spot which glow emerald green or peacock blue, according to the angle from which it is viewed.

The species occurs in the Himalayan region, Assam and Punjab in India, and in Nepal.

19. *Rhinocypha ignipennis* Selys

Habit : The imagos are often seen along streams and fairly open places up to an altitude 1100 m.

Head : Head black, with a small oval orange spot on outside of each posterior ocellus and a small rounded post ocular spot on each side of the occiput, in case of female black head is marked by yellow orange. Thorax black, marked with orange in different parts of thorax, a tiny antehumeral spot, fine posthumeral stripes, a short linear

spot fine post humeral stripe, a short linear spot on upper part of first lateral suture, elongate stripe on each side of the lower part of the thorax. Abdomen black or steely blue marked with orange spots; in female abdomen is black marked with yellow or ochreous. Wings semi-opaque from node to apices, with dark-brown by transmitted light and brilliant fiery coppery by reflected light. Hind-wings with two rows of vitreous spots, which vary in tint from the mother of pearl to palest peach-blossom pink or pale blue. In female wings palely suffused greenish-yellow.

The species is distributed in Darjeeling (West Bengal), Shillong (Meghalaya), Bangladesh, Myanmar.

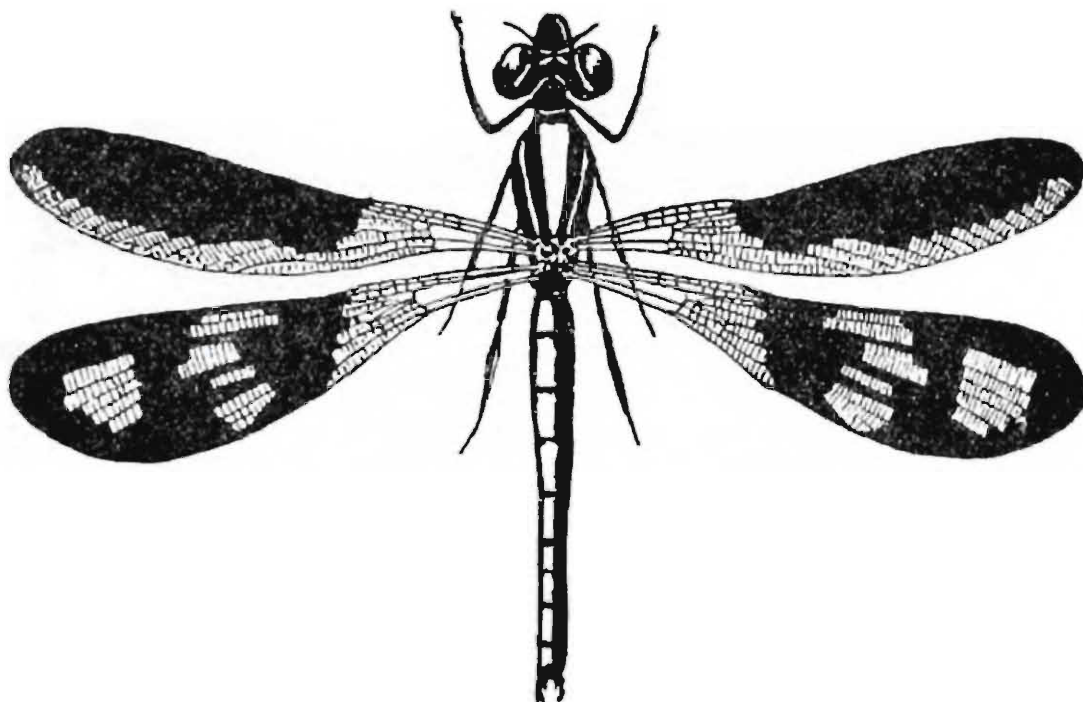
20. *Rhinocypha spuria* Selys

Habit : It flies in the open areas in the forest.

Male : Abdomen 24 mm; Hindwing 27-28 mm

Female : Abdomen 16 mm; Hindwing 22 mm

Head : Black marked with citron-yellow, in female velvety black marked with bright-ochreous spot. Thorax black marked with yellow as follows : an upper linear antehumeral spot and a humeral stripe, broken above, close to the suture; a broad irregular stripe on sides of the mesepimeron and an elongate triangular streak on hind part of the metepimeron, which is often broken into two; lastly and occasionally a small spot on upper part of



Rhinocypha spuria Selys – male

mesepimeron and a tiny streak along upper of part of the first lateral suture. Mesothoracic triangle lilaceous, very long and broad. In female yellow markings in male are replaced by greenish-yellow; the upper and anterior lines bordering the humeral and first lateral suture are usually complete, antehumeral markings are well marked, mesothoracic triangle are outlined with yellow. Abdomen black with dark metallic reflex, segment 1 with small lateral yellow spot; 2 and 3 with linear streak along the ventral border. In female abdomen metallic black with yellow markings—middorsal carina narrowly yellow on segments 2 to 7; segment 1 with a large lateral spot; segments 2 to 5 with a longitudinal basal stripe and an apical spot and ventrolateral stripe; segments 2 to 6 with apical border laterally yellowish. Wings opaque black, with steely blue or green reflexes in outer three-fourths marked with vitreous spots and areas of lilaceous purple; in some light mother-of-peral reflexes, in fore-wing the opaque area covers central three-fourths. In female wings hyaline, palely saffronated throughout.

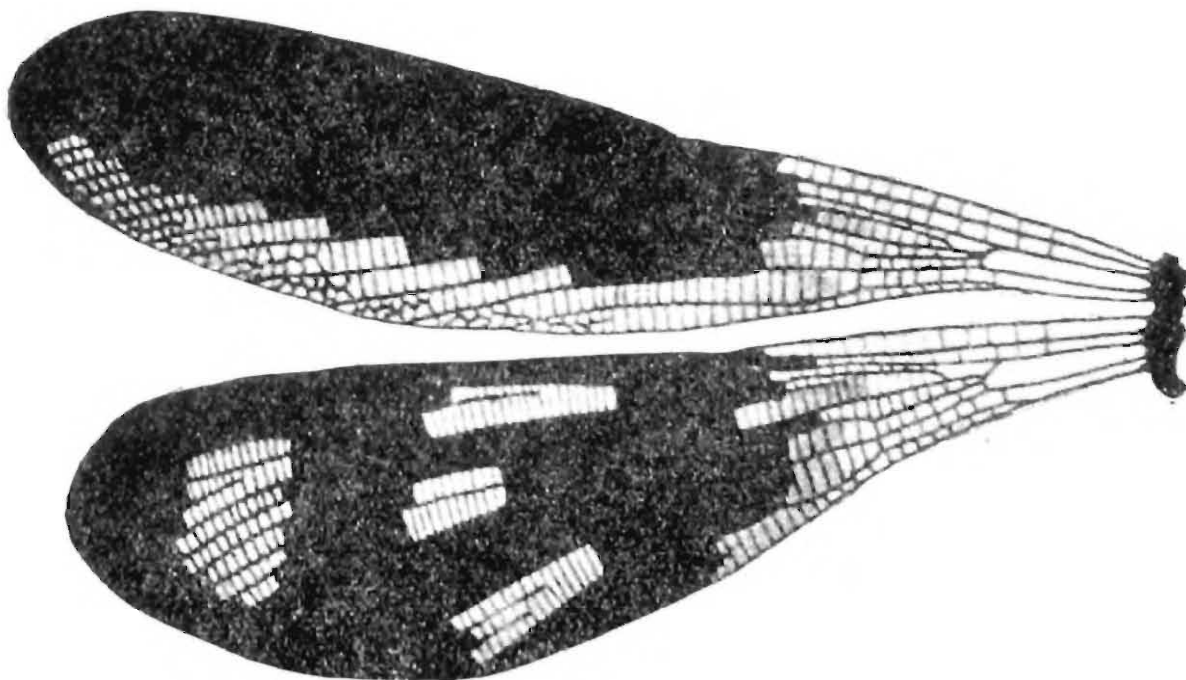
The species occurs in the Brahmaputra Valley (Assam) Meghalaya, Mizoram, Nagaland and Myanmar.

21. *Rhinocypha quadrimaculata quadrimaculata* Selys

Habit : It prefers cooler region in India; it rests on overhanged twigs near water.

Male : Abdomen 19 mm; Hindwing 21 mm

Female : Abdomen 20 mm; Hindwing 25 mm



Wings of *Rhinocypha quadrimaculata quadrimaculata* Selys

Head : Black with small spots near ocellus, in female head velvety black marked with ochreous. Thorax black, marked with yellow. A fine humeral line interrupted below and moderately broad lateral stripe on anterior of lateral suture. Mesothoracic triangle narrow long and pink. In female the thorax is black marked with ochreous. Mesothoracic triangle finely mapped out in yellow. Abdomen black with vestigeal markings; in female the abdomen is black but marked with yellow. Wings opaque black, with dark plum coloured steely reflex, and hindwings marked with vitreous areas and spots as follows: an apical spot, much broader than long bounded by R_2 costal wards, overlapping by one row of cells IR 3 posteriorly, its inner and outer borders serrate; a medial row of spots usually three in number, sometimes four; the costal spot made up of 2 rows of cells, the second or the middle one is the smallest. In the forewing the opaque area covers the costal three-fourths, the hinder border is serrate and the proximal border dentate. In female wings enfumed with brown.

The species is Oriental in distribution occurring in eastern and cooler regions of India, Nepal also in Bangladesh and Thailand.

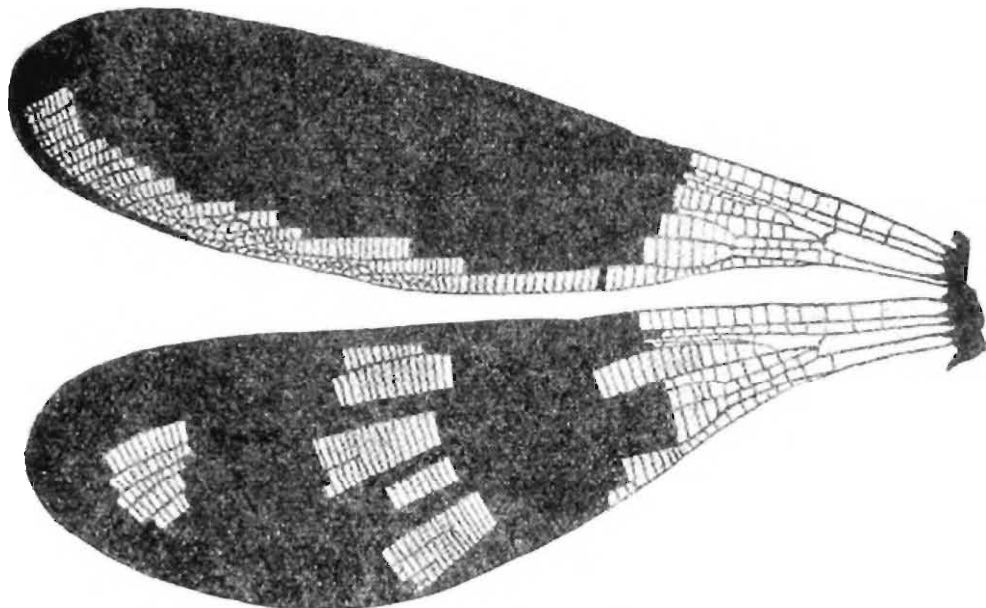
Remarks : The intensity of colour of the mesothoracic triangle in specimens from Arunachal Pradesh. Darjeeling, Meghalaya, Dehra Dun is deeper than those from Brahmaputra Valley, Manipur and Orissa.

22. *Rhinocypha fenestrella fenestrella* Rambur

Habit : It breeds in hilly streams. Male performs nuptial dance.

Male : Abdomen 19 mm; Hindwing 21 mm

Female : Abdomen 17-19 mm; Hindwing 24-28 mm



Wings of *Rhinocypha fenestrella fenestrella* Rambur

Head : Velvety black, oval spots on outsides of each ocellus, and another spot on each side of the occiput. In female the head black, marked with ochreous. Thorax black marked with bright citron-yellow, irregular stirpe bordering second lateral suture anteriorly and an elongate spot on metepimeron. Mesothoracic triangle extended to antalar sinus, palest pink or lilaceous. Four yellow spots beneath thorax. In female a fine antehumeral line bordering below, and curved out above along border of antalar sinus as far as upper end of humeral suture. Abdomen glossy black with steely reflex, first segment with a small bright citron-yellow spot on each side. In female the black dorsum is marked with ochreous. Wings hyaline at base, hyaline area tinted with yellow. The opaque area steely-green or blue marked with vitreous spots which glow emerald-green, lilaceous, mother of pearl, or beautiful rose-pink, according to angle from which viewed. In female wings faintly and evenly suffused tinted with yellow at base.

The species occurs in North-East India, scattered in southern Asia.

Remarks : Male specimens from Arunachal Pradesh and Assam vary from Fraser's description since they have dark black head, small olivaceous yellow spot on abdomen.

23. *Libellago lineata* (Burmeister)

Habit : These breed in hilly streams. During mating the male performs nuptial dance, the female usually perches on a stick near the hilly stream.

Male : Abdomen 15 mm; Hindwing 17 mm

Female : Abdomen 13-16 mm; Hindwing 18-22 mm

Head : Vertex black, epistome black with frontal surface shining blue black, in female frontal surface of epistome black. Thorax black, marked with number of greenish yellow lines beneath yellow. Abdomen black marked with bright greenish or golden yellow, the black colour is more in posterior segments. In case of female the abdomen is black marked with yellow, segment 10 unmarked wings in male hyaline, apices of fore-wings are tinted with black; bases of all, nearly to the level of the node palely tinted with amber. Male lacks pterostigma in fore-wings and pterostigma black in hind-wing. In female pterostigma present in all wings.

The species is distributed in the plains of North-East India. In the western India, it occurs in Dehra Dun and Rajasthan. The specimen, studied by Laidlaw was reported as *Libellago lineata* from the Nicobars may be *Libellago lineata blanda* (Selys) which is endemic as well as only *Libellago* in the Nicobars. In some north Indian specimens blackmark at the apex of wings extends beyond pterostigma towards base. In this regard it is similar to *L. l. indica*.

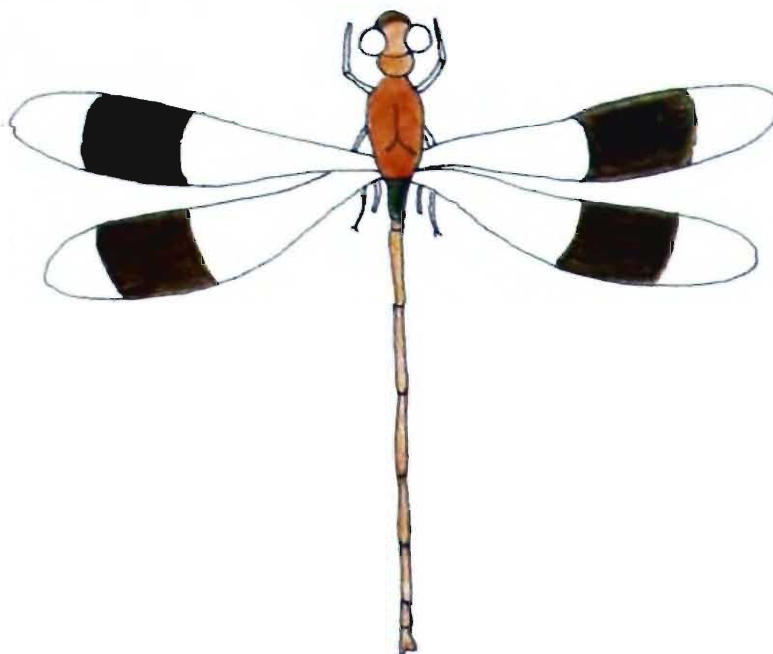
Family PROTONEURIDAE

24. *Disparoneura quadrimaculata* (Rambur)

Habit : Occurs in hilly areas, breeds in stagnant pools during the period from May to October.

Male : Abdomen 32 mm; Hindwing 22 mm
Female : Abdomen 29-30 mm; Hindwing 22 mm

Head : Vertex and occiput dull brick red; black lines along the vertex; occiput traversed behind by two transverse black stripes. Thorax brick red on dorsal, paler at the sides marked with black. Dorsal carina finely, a narrow antehumeral and a broken humeral stripe, a broader irregular stripe on the mesepimeron; beneath pale ochreous, often pruinose. In female dorsum broadly black, the sides olivaceous green shaded with ochreous and marbled with black, sides (lower part) and beneath pruinose. Abdomen brick-red, marked with white, brown and black.



In female abdomen pale olivaceous tinted with ochreous dorsally and marked and shaded with black and brown. Wings hyaline, the both pair traversed by a broad blackish brown fascia. In female there is no such fascia.

The species is endemic to India occurring in Susunia hill in West Bengal, Chhota Nagpur plateau of Bihar (Jharkhand State), Rajasthan and peninsular upland.

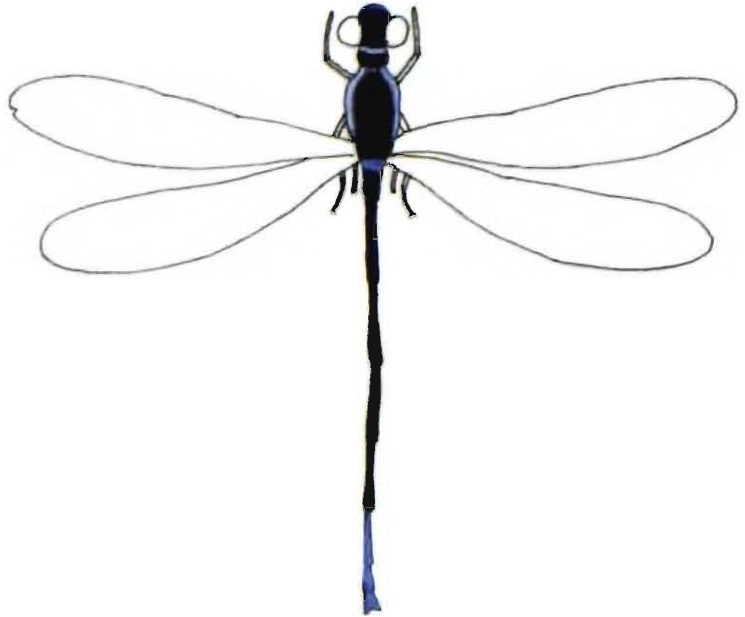
Remarks : Certain male specimens from Chhota Nagpur region have pale ochreous labium, light brown legs.

25. *Caconeura gomphoides* (Rambur)

Habit : Confined to grassy lands, may occur up to 2500 m, gregarious; breeds in small streams with fern, flight short and weak.

Male : Abdomen 34-35 mm; Hindwing 26-27 mm
Female : Abdomen 36-37 mm; Hindwing 28 mm

Head : Head with steely metallic blue-black post clypeus, vertex black. Thorax black on dorsum, azure blue on sides, a black stripe on the postero-lateral suture on each side of the dorsum; beneath white or the palest blue. Abdomen black, azure blue on segment broadly at the sides, segment 2 with azure blue stripe on each side, segments 3 to 6 with small basal spots, segments 8 to 10 almost entirely azure blue. In female segment 8 with the ventral border of narrowly blue, segment 9 with T-shaped mark, segment 10 with apical border broadly black. Wings hyaline, evenly enfumed in adults.

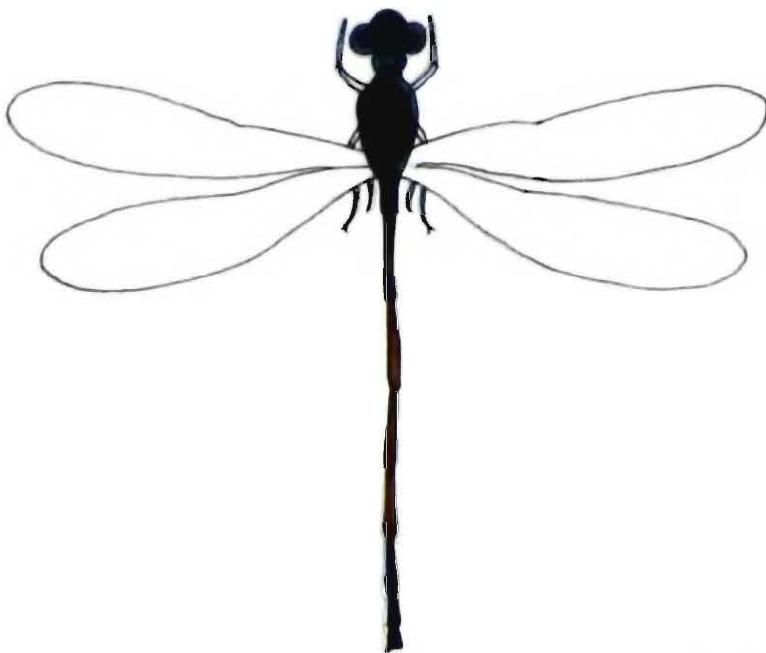


The species occurs in peninsular India from Orissa to Nilgiri Hills and the Western Ghats.

Remarks : Sometimes atypical yellow specimens are visible.

Family PLATYCNEMIDIDAE

26. *Coclicia bimaculata* Laidlaw



Habit : It occurs mostly in Garo hills, in the altitude of nearly 500 m. during the rainy season, prefers open forested areas.

Head : Vertex black, a broken blue stripe traverses the black colour; pale yellow postocular spot. In female markings are creamy-white, fascial marking and lower half of eyes are blue. Thorax black on dorsum, palest blue laterally, the former with a pair of oval pale blue spots lying in close apposition to the anterior half of the middorsal carina. In female dorsal thoracic marking present as narrow stripes lying closely apposed to the

middorsal carina and prolonged and narrowing as far as antealar sinus. Abdomen dark reddish brown on dorsum, segments 2 and 7 to the segments 10 the colour deepens to

black; the lateral sides pale yellow in all segments. In female segment 8 with its apical two-thirds palest yellow, wings hyaline, pterostigma blackish-brown.

This is endemic to North-East India (Assam-Meghalaya).

Remarks : Some specimens from Brahmaputra valley have dark brown labium and dirty white anal appendages.

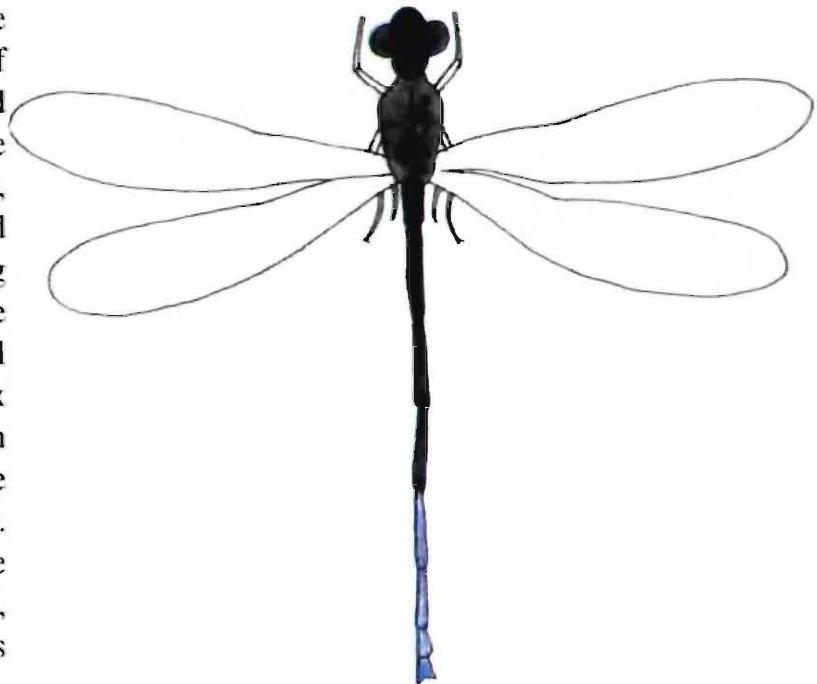
27. *Copera marginipes* (Rambur)

Habit : Both hilly and plain dweller; in plains it breeds in pools and dams, in hills it breeds in streams.

Male : Abdomen 28-31 mm; Hindwing 16-18 mm

Female : Abdomen 29-30 mm; Hindwing 20 mm

Head : Vertex with a bronzed black fascia, from eye to eye, followed by a greenish-white sripe. A broken black line on vertex. Thorax black on dorsum, more than half way to the humeral suture, the middorsal carina and a border of antealar sinus very finely lined with yellow; a narrow pale greenish-yellow humeral stripe, split into two; the stripe followed by a broad black fascia, narrowing above on the middle of the mesepimeron peppered with small pale yellow spots. In female thorax violaceous-brown on dorsum with bronzed black fascia on the middorsum, pale brown laterally. Abdomen black as far as the middle third of the segment 8, from this to the end the colour is pale blueish-white or creamy-white, lateral side pale or pale greenish-white. In female warm-brown on dorsum, markings similar to male on segments 1 to 7; 8 to 10 pale brownish-white wings hyaline, pterostigma brown with in the frame of yellow.



The species occurs throughout India and in all ecosystems. Outside India it occurs in Bangladesh, China, Mynamar, Nepal and from the Indio-Chinse to malayasian subregien.

Remarks : Male specimens from Andaman Is. have obtusely triangular anal appendages.



Copera marginipes (Rambur) – Male

28. *Copera vittata serapica* (Selys)

Habit : It inhabits bushes near stagnant dirty water bodies.

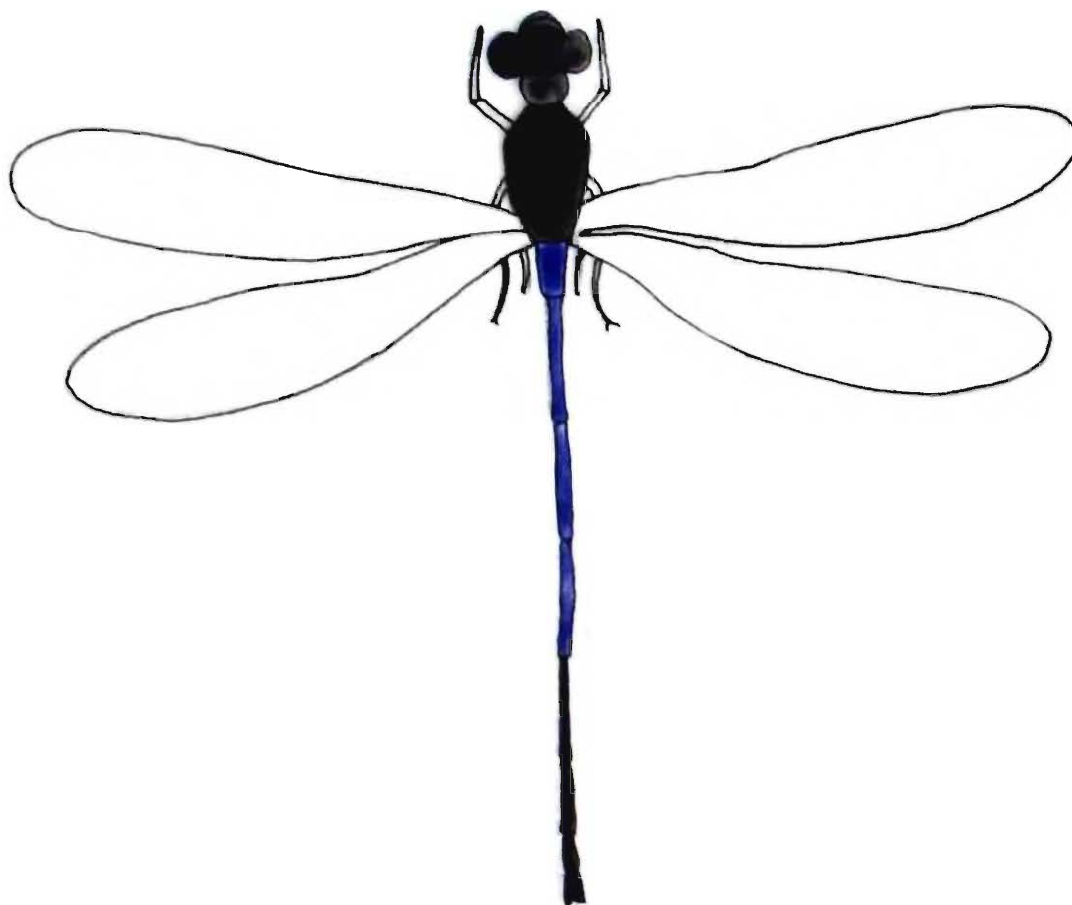
Male : Abodmen 28-34 mm; Hindwing 16-18 mm

Female : Abdomen 28-30 mm; Hindwing 18 mm

Head : Vertex black traversed by a broad pale bluish-green stripe from eye to eye. In female vertex purplish brown traversed by a black band. Thorax bronzed black on dorsum to nearly as far as humeral suture the space between the humeral suture and first lateral



Copera vittata ? serapica (Selys) – Female



Copera vittata serapica (Selys)

suture marked chocolate brown to black, stippled with yellow spots; a narrow humeral ochreous stripe; the sides, the posterior to the antero-lateral suture; bluish or yellowish, a brown stripe on the middle of the metepimeron. In female thorax pale brown marked very similarly to the male; middorsal carina and antealar sinus very finely yellow. A black spot on the upper part of the humeral suture. Posthumeral lateral suture very broad. Abdomen black on dorsum and sides as far as segment 10. Segments 1 and 2 with middorsal carina finely blue, segments 3 to 7 narrow pale blue basal annules, segments 9 to 10 provided with blue spots. In female abdomen dark purplish-brown changing to black on segments 7 to 10; segments 1 and 2 similar to male, 3 to 7 with basal pale-yellow or whitish annules segment 9 with a T-shaped marking on the dorsum, segment 10 is brownish-white. Wings hyaline, in both sexes.

This form of the species is endemic to India, occurring in West Bengal, Assam, Arunachal Pradesh Meghalaya and Nicobar.

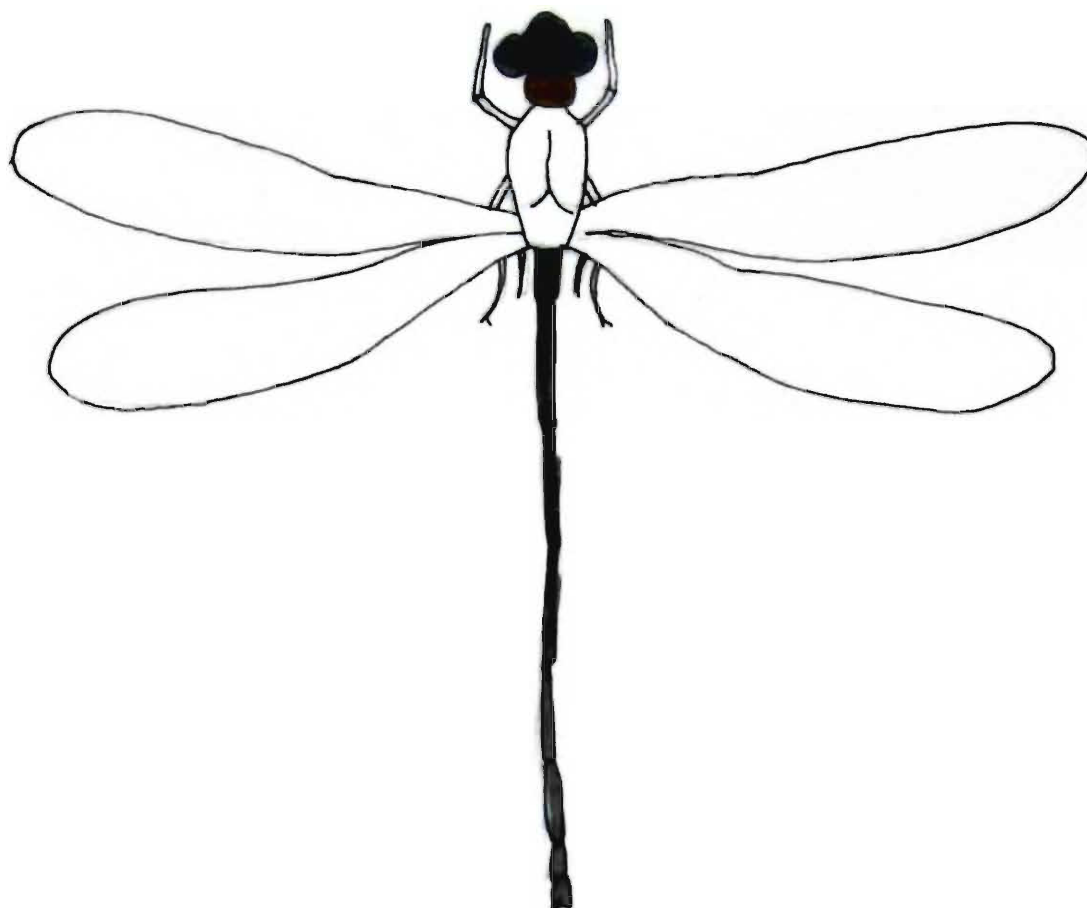
Remarks : Female specimen from the Nicobar islands varies from Fraser's description in having dark brown thorax, reddish-yellow middorsal carina, yellowish-blue antehumeral stripe.

29. *Copera vittata assamensis* Laidlaw

Habit : It usually remains in forests and visible during the period from February to June and breeds in diversified water bodies.

Male : Abdomen 32-34 mm; Hindwing 17-18mm

Female : Abdomen 30 mm; Hindwing 17 mm



Head : Vertex black, markings on dorsum of head brownish or blackish. Thorax brown or ochreous marked irregularly with black. A broad bronzed-black band on middorsum approaching the humeral suture. The humeral suture is finely black to a certain extent, short black stripe on metepimeron. In female the humeral and lateral black markings are more extensive and mottled with yellow spots. Abdomen black, ringed with pale blue basal annules. Segments 2 with a pale creamy-white stripe on middorsum; in female the abdomen is blackish-brown to black on terminal segments, the 9th and 10th bearing brown dorsal spots. Wings hyaline, pterostigma dark reddish-brown framed in yellow.

This form of the species occurs from North-East India to Indo-Chinese subregion.

Remarks : Male specimens from Brahmaputra valley, Arunachal Pradesh, and Manipur differ from Fraser's description in having faint bluish-yellow labium.

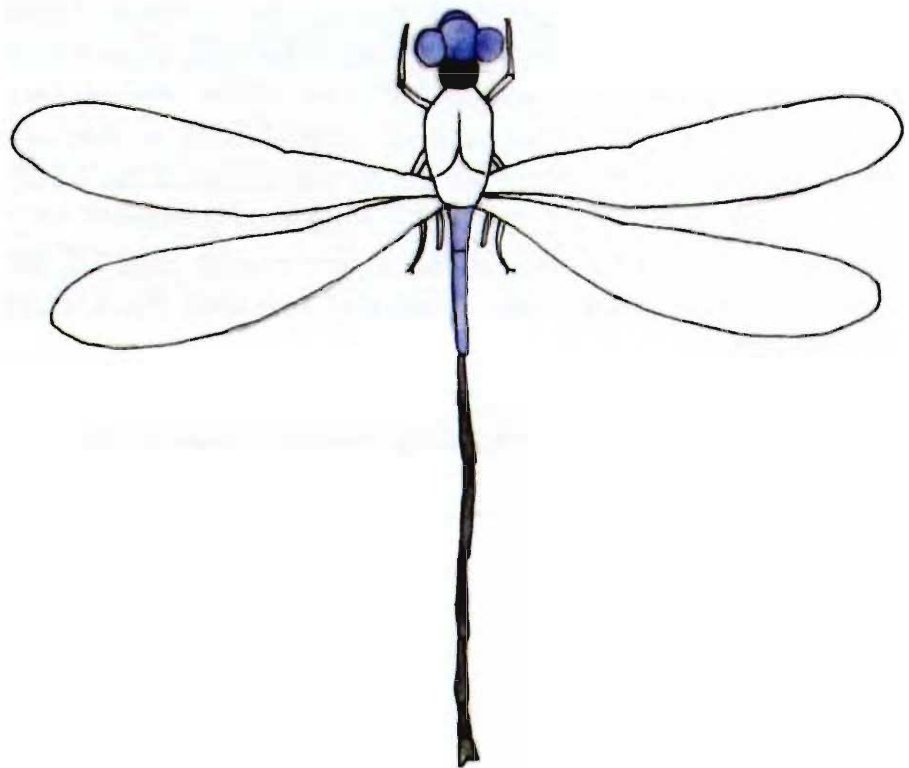
30. *Copera ciliata* (Selys)

Habit : Breeds in dirty water with mud, rests on twigs overhanging the water body, flies for a short distance.

Male : Abdomen 35-37 mm; Hindwing 22-23 mm

Female : Abdomen 33-37 mm; Hindwing 22-24 mm

Head : Frons and vertex in front and laterally pale blue with a broad black triangular area which begins near front margin of frons and extends to back of occiput. In female frons broadly blue and more or less confluent with a series of spots on the ocellar space. Thorax dark bronzed blackish-green on dorsum, marked with a narrow pale antehumeral stripes, lying close to the humeral suture; a post humeral white spot; postero-lateral suture mapped out in black. Abdomen bronzed black on dorsum



except segments 1 and 2 blue, 3 to 6 narrow pale blue. In female segments 9 and 10 are not similar to male; segments 9 with two large bronzed greenish-black spots broadly confluent at base and along basal half of middorsum; segment 10 pale blue. Wings hyaline pterostigma reddish-brown framed in white and thick black nervures.

The species occurs in Eastern and North-Eastern India; Nicobar islands, Indo-chinese, Malayasian subregions, China and Japan.

Remarks : Male specimens from West Bengal differ from the description in the Fauna of the British India in having faint brown labrum, frons; vertex bluish-yellow while in female specimens bluish-yellow regions are replaced by pale blue colour.

31. *Calicnemia miniata* (Selys)

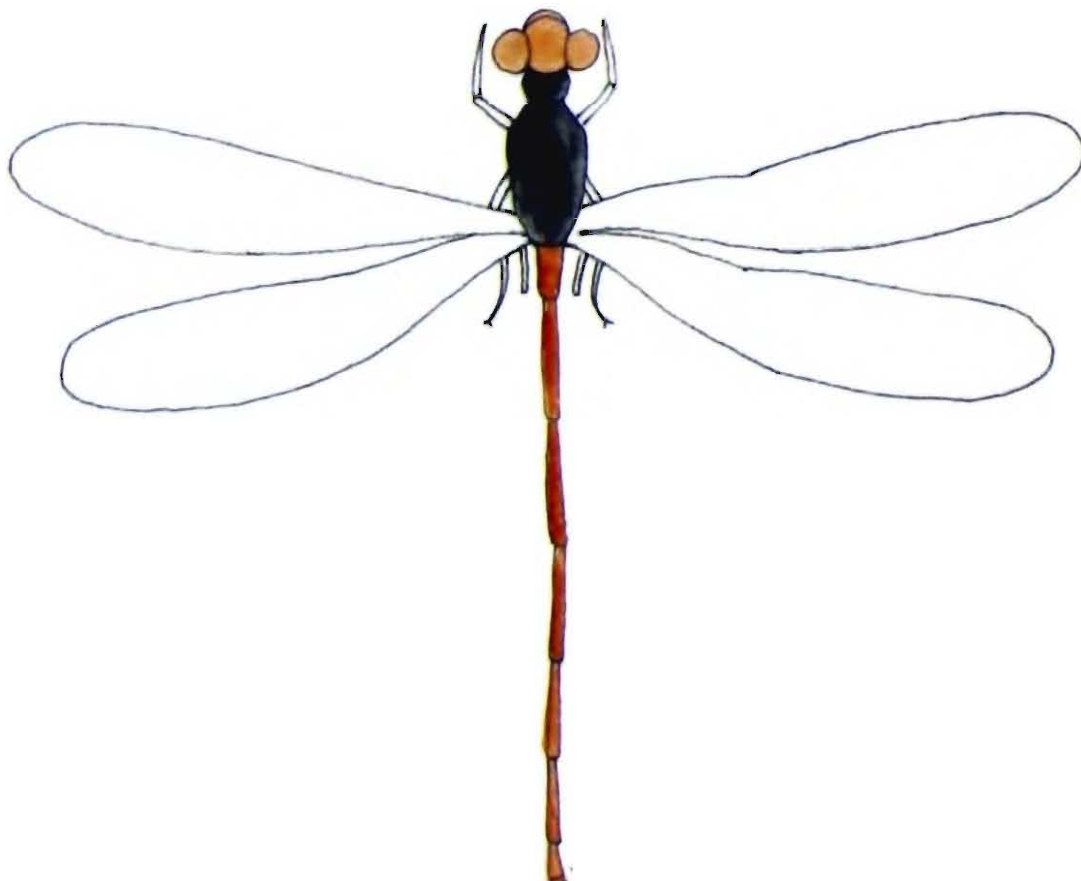
Habit : Occurs in solitary near hilly rivers like Teesta (in North Bengal & Sikkim) during May to June.

Male : Abdomen 30-32 mm; Hindwing 25-26 mm

Female : Abdomen 27-29 mm; Hindwing 23-24 mm

Head : Brick-red, vertex traversed by a black band. Thorax black, bright red antehumeral stripe on the dorsum, the sides with a yellow stripe on the lower half of the border of metepimeron, in case of old adults pruinescence cover the above marks. In female sides bright citron-yellow, marked with a narrow oblique black stripe on the postero-lateral suture. Abdomen blood-red as far as the basal third of segment 7; segments 5 to 6 with fine apical rings, the remaining segments black. In female the abdomen is dilated at end, ferruginous as far as the middle third of the segment 6, segments 3 to 6 with fine apical black rings, remaining segments black except lateral side. Wings hyaline in both sexes.

The species occurs in Darjeeling, Sikkim, Nepal in the Himalayas, Bangladesh and China.



32. *Calicnemia miles* Laidlaw

Habit : Flight season November to May, solitary, breeds in hilly streams and Nallah.

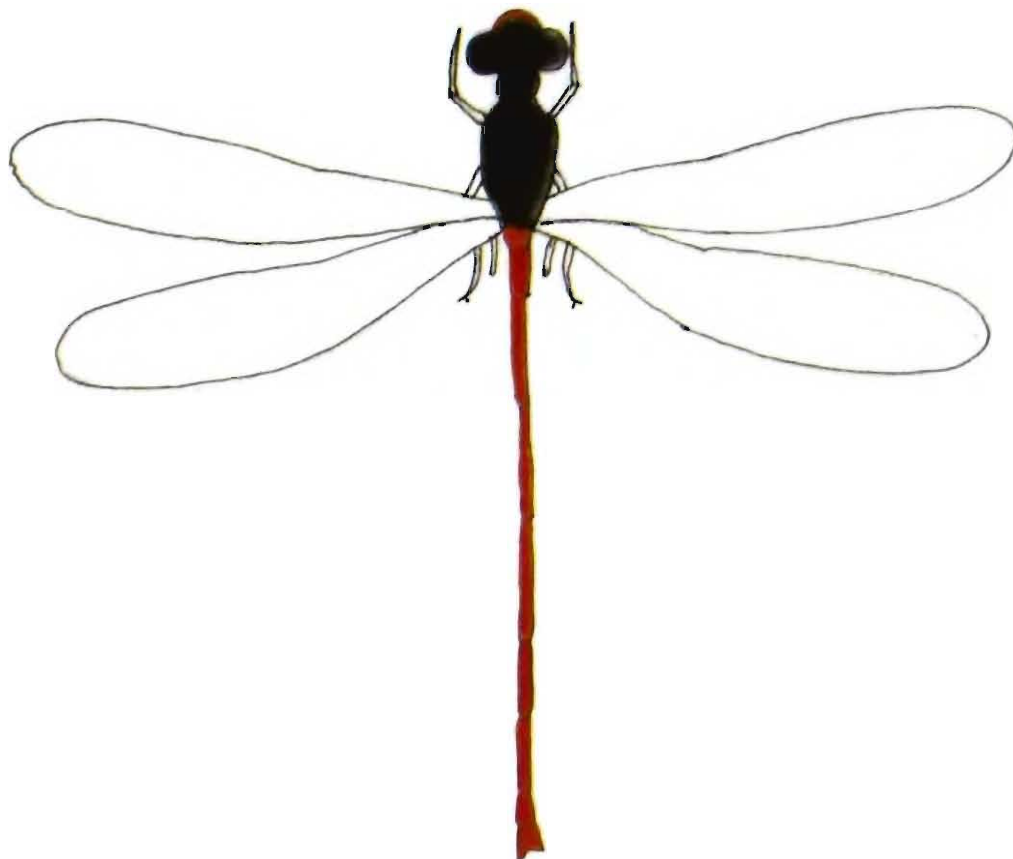
Male : Abdomen 33 mm; Hindwing 25 mm

Female : Abdomen 31 mm; Hindwing 25 mm

Head : Red, vertex traversed by a black band. Thorax black on dorsum as far back as the middle of the mesepimeron, marked with narrow bright brick-red antehumeral stripes. Laterally pale yellow with a broad black stripe. In female the ground colour on sides and the antehumeral stripes bright citron-yellow, black stripe on thorax narrow. Abdomen blood-red except for segment 1 which is pale greenish-yellow with large brown spot on dorsum; segment 8 with a lateral black stripe, segment 9 with a subdorsal black spot and 10 with another black spot. In female abdomen bright, clouded with brown or reddish-brown on dorsum; segment 1 with a small black dorsal spot middorsal carina black, segments 2 to 7 with yellow annules at base. Wings hyaline, with reddish-brown pterostigma in both sexes.

The species occurs from the Western Himalaya to Assam Myanmar frontier. It also occurs in Bhutan, Myanmar and Thailand.

Remarks : Some specimens from eastern India have brown labium and anal appendages.



33. *Calicnemia eximia* Selys

Habit : During May and June it is very commonly seen in Darjeeling Himalayas (West Bengal); breeds in small brooks-flowing through the marshes; flight weak and short.

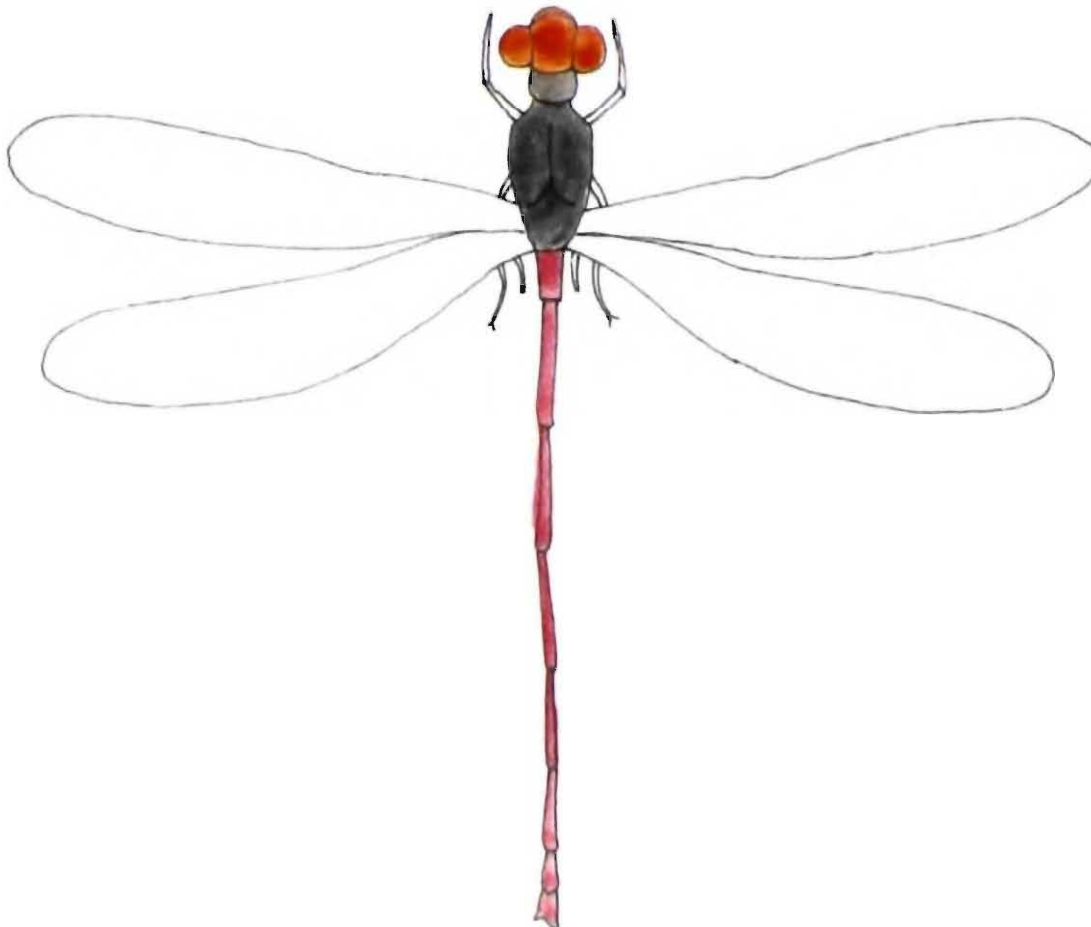
Male : Abdomen 30-34 mm; Hindwing 21-23 mm

Female : Abdomen 28-20 mm; Hindwing 23-25 mm

Head : Ochreous to red, in female black band traversing the vertex and frons. Thorax in both sexes black on dorsum as far as middle of mesepimeron, laterally marked with a pair of bright citron yellow or bright vermilion antehumeral stripe. Abdomen bright vermilion red, without any markings. In female the abdomen is enfumed dark ochreous, segment 1 yellow, middorsal carina segment 2 black. Wings hyaline and pterostigma brown.

The species occurs in the hilly areas of the northern India; Afghanistan, Bangladesh, China, Nepal, Taiwan.

Remarks : In some Himalayan specimens labrum, bases of mandibles and vertex brick red.



Family LESTIDAE

34. *Lestes elatus* Hagen

Habit : It occurs throughout the year near ponds and lakes in monsoon months, hiding in scrub jungles during the dry season. It also visits paddy cultivation.

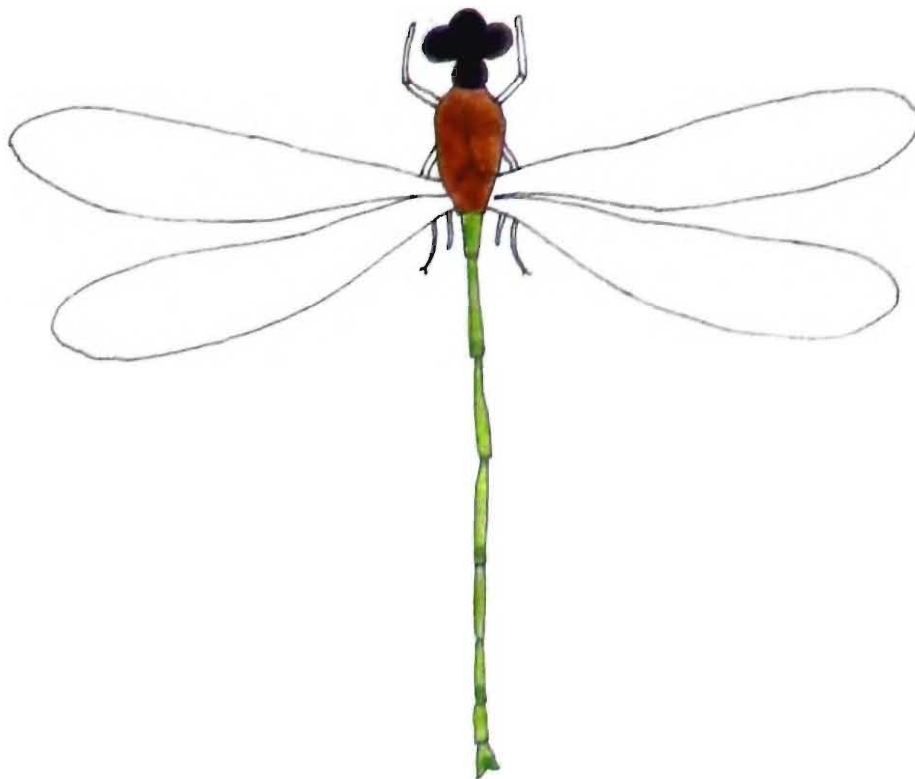
Male : Abdomen 34-36 mm; Hindwing 23-24 mm

Female : Abdomen 34 mm; Hindwing 24 mm

Head : Mat black on upper surface. Metallic colours on labrum. Thorax reddish-brown to almost, pruinose at sides, chalky-white below; dorsum marked with a pair of narrow antehumeral metallic green stripes expanded outwardly abruptly above. In immatures thorax warm brown on dorsum. In female a spot on the upper part of lateral sutures; five spots on the mesepimeron, three of which are post humeral, one elongate and on the spiracle. Two spots on ventral border of metepimeron. Abdomen pale bluish-green in adults marked broadly on dorsum with metallic green or bronze changing to dull black on terminal segments. In very old specimens all the terminal segments black. Segments 9 and 10 white with pruinescence. In female adults with coppery reflex on dorsum; segments 9 and 10 bluish, Wings hyaline, pterostigma black in adults brown in teneral.

The species mainly occurs in the peninsular India, and Sri Lanka.

Remarks : Male specimens from Orissa have yellowish white labrum, brown vertex, pale yellow anal appendages.



35. *Lestes viridulus* Rambur

Habit : It is one of the commonest dragonflies during the dry seasons; where found usually quite common in a colony. It is visible among dry tall grasses; the colour of which it simulates closely.

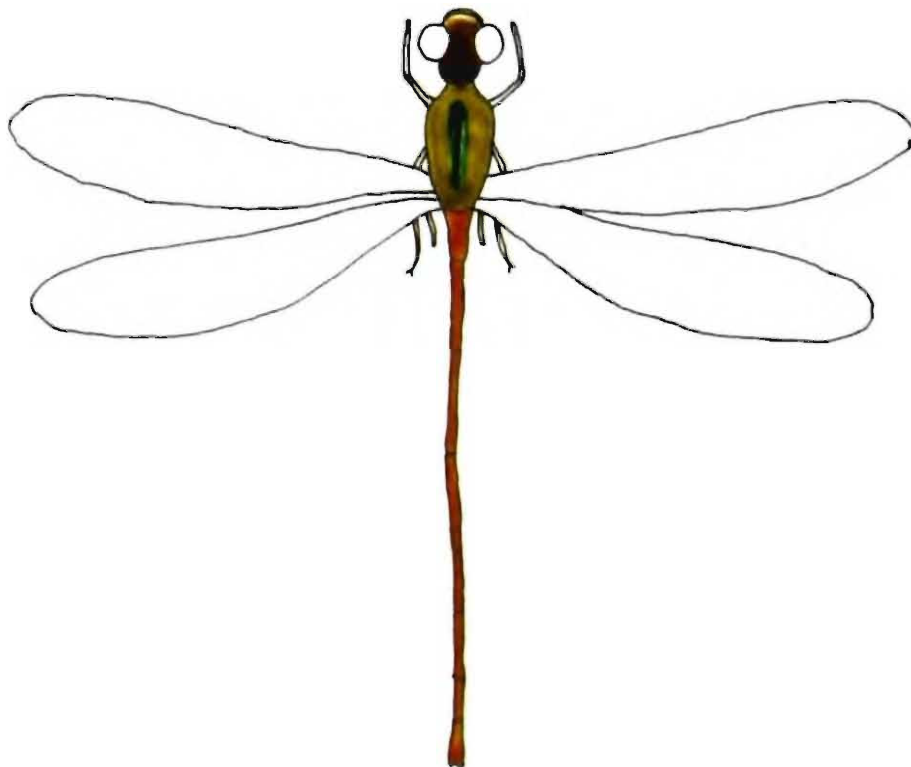
Male : Abdomen 3-35 mm; Hindwing 23-24 mm

Female : Abdomen 34 mm; Hindwing 24 mm

Head : Head with chocolate brown vertex; behind eyes pale yellow. Thorax pale khaki brown, or fawn, paling to creamy-white low down on the sides and beneath, which the latter is pruinose, metallic green stripes running closely parallel to middorsal carina, the area between them warm reddish-brown. Abdomen warm reddish-brown on dorsum yellow at sides and pale almost white beneath. Pale colour on segments 1, 9 and 10, the latter very pale brown or yellow; segmental joints ringed narrowly with blackish-brown. In female the segment 8 with a narrow blackish-brown middorsal spot on the carina; a broader and more extensive on the segment 9, segment 10 very pale brown. Wings hyaline and pterostigma khaki brown.

The species has been recorded from Bihar to Punjab including the Himalayas and in the southern direction from Orissa to Maharashtra including the central India. It also occurs in Myanmar (Burma).

Remarks : Male specimen from Orissa have brown frons, vertex lack golden tinge on the bases of mandibles; yellowish brown thorax.



36. *Lestes nodalis* Selys

Habit : It is visible from February to June, In forested areas.

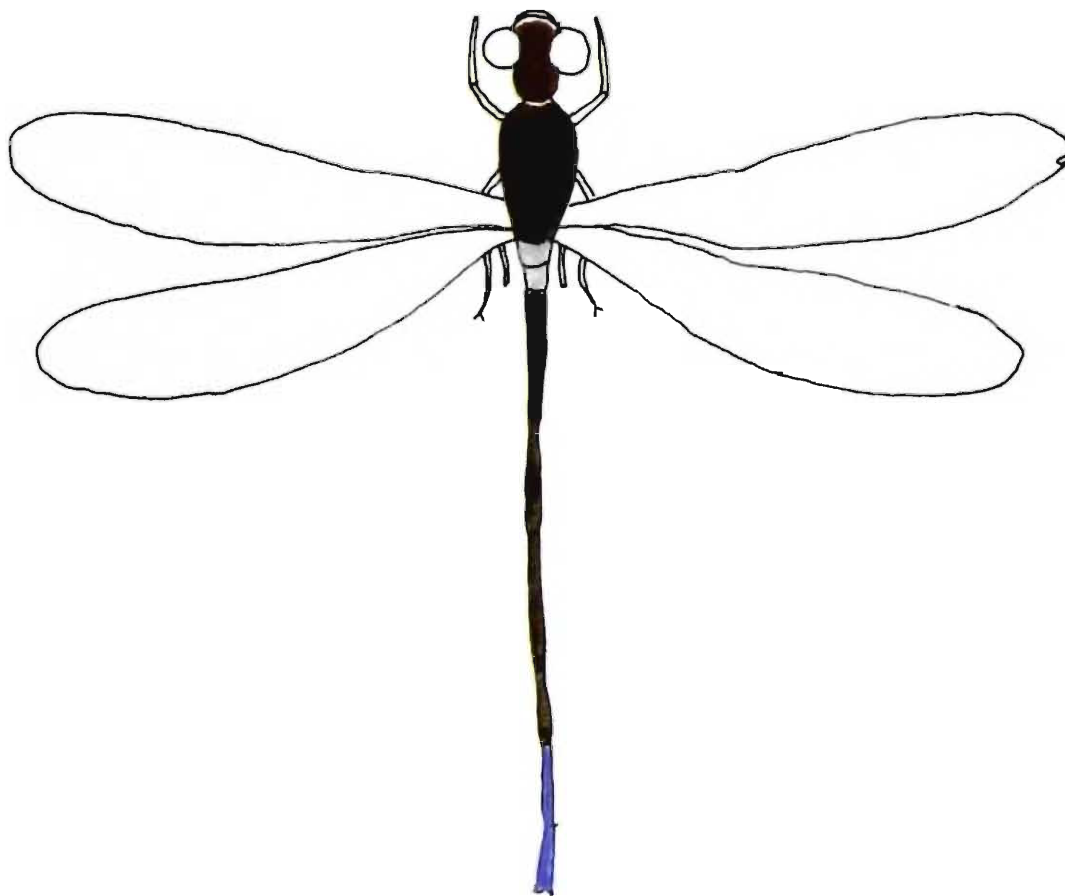
Male : Abdomen 30-35 mm; Hindwing 19-21 mm

Female : Abdomen 28-32 mm; Hindwing 20-21 mm

Head : Blackish-brown in dorsum, and paler behind the eyes. Thorax dark brown on dorsum as far as the humeral suture, laterally pale blue or palest olivaceous in the dried state; a small black spot on upper part of the postero-lateral suture, and a large more conspicuous spot near the ventral border on the forepart of the metepimeron; beneath olivaceous with a black triangular spot. Abdomen light olivaceous brown on the dorsum of the segments 1 and 2 and apical ends of segments 3 to 6, on the segments 7 and 8 dark brown; 9 and 10 bluish in live specimens, pale olive in dry specimens. In female the mark of the segment 2 is reduced, and on segment 9 large black spots on both sides. Wings palely and evenly tinted with yellow, dark conspicuous neuration. Petrostigma bicolourous, blackish-brown at the centre, yellow along costal and inner borders. In female wings are more deeply tinted a pale golden brown.

The species is distributed in North-East India, Bihar, Orissa, Myanmar and China.

Remarks : Male specimens from Manipur and Orissa have brownish labium and distal ends of femora brown.



37. *Lestes umbrinus* Selys

Habit : The species occurs in dry open areas during the period from September to December.

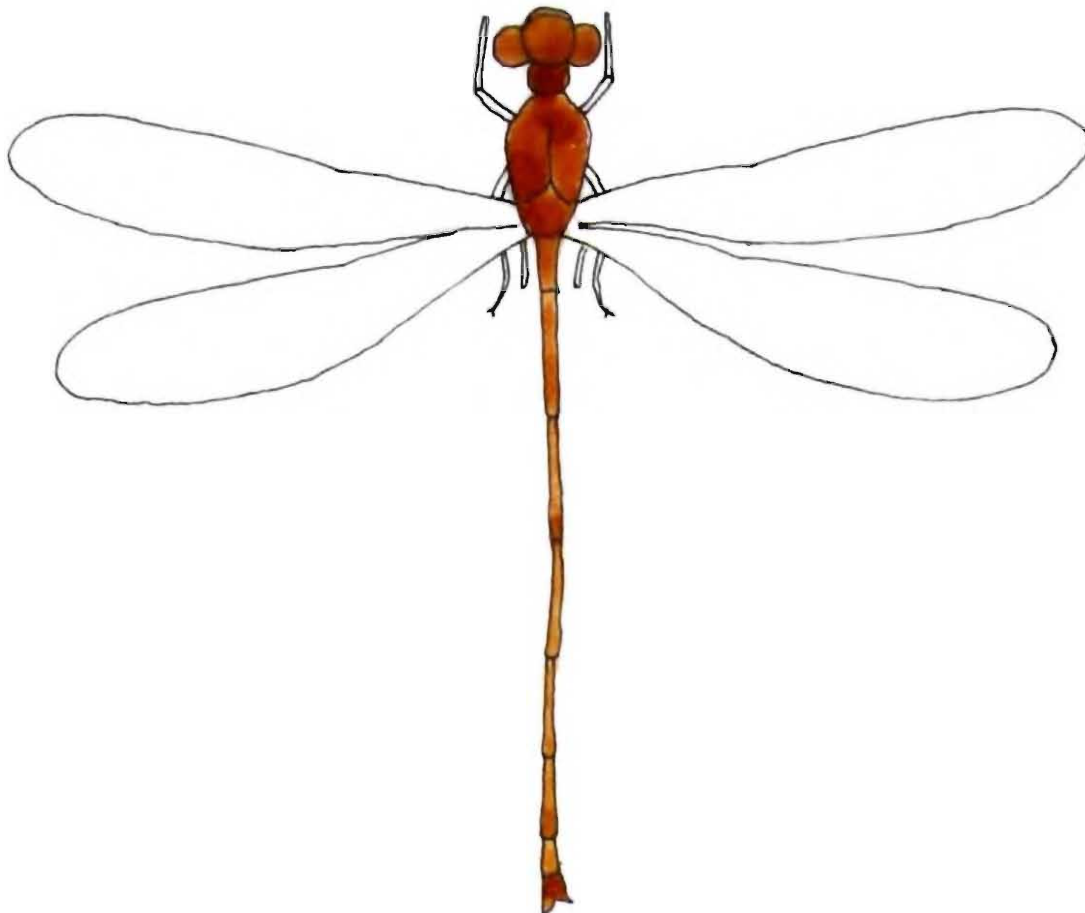
Male : Abdomen 32 mm; Hindwing 20 mm

Female : Abdomen 29-30 mm; Hindwing 21 mm

Head : Head pale reddish-brown. Thorax dark reddish brown on dorsum, pale yellowish-brown laterally without markings. Abdomen reddish-brown, the dorsum darker brown but paler in some specimens; the inter segmental sutures dark brown. In female the abdomen is dark on the dorsum on segments 3 to 7, with a pair of comma-like spots placed transversely; segments 8 to 10 broadly blackish-brown spot on each side of the ventral border. Wings palely suffused, hyaline, pterostigma elongate pale brown.

The species occurs in West Bengal, Bihar to Punjab and peninsular uplands from Orissa to Gujarat.

Remarks : Male specimens from Orissa have reddish-brown prothorax (neck) and thorax; pale ochreous abdomen; females of Bihar and Orissa have got distinct comma-shaped mark on segment 3 to 7.



Family SYNLESTIDAE

38. *Megalestes major* Selys

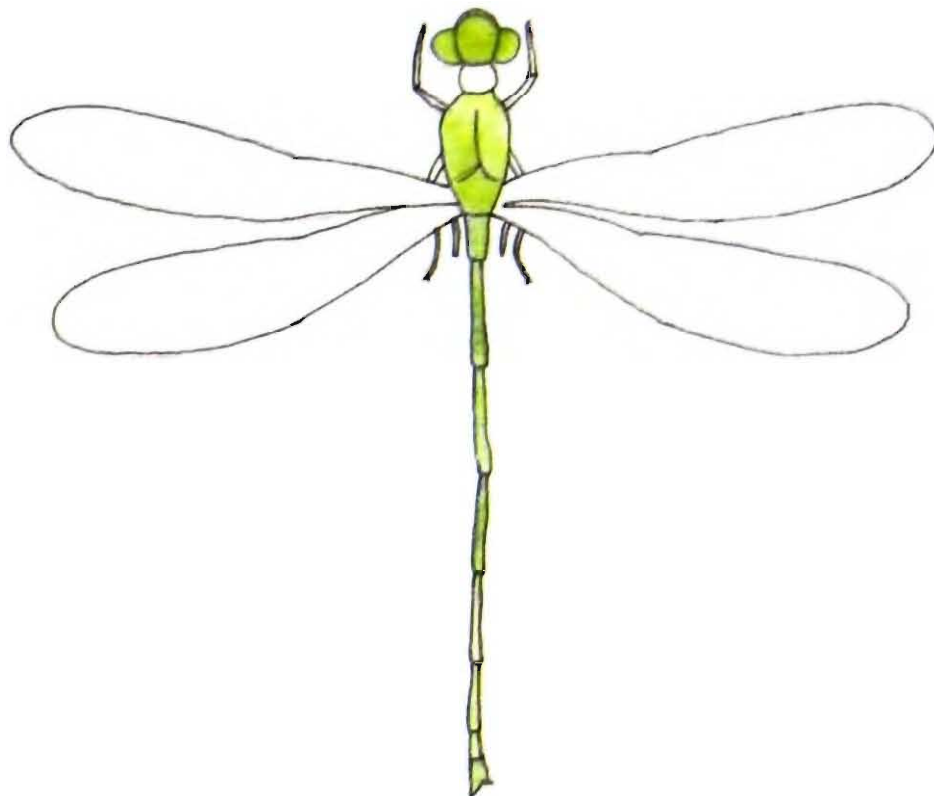
Habit : Moderately common amongst bushes below 150 m. slow unsustained flight, rests with half expanded wings; occurs from August to October.

Male : Abdomen; Hindwing
Female : Abdomen; Hindwing

Head : Vertex, frons and postclypeus glossy metallic emerald green with royal blue reflex when viewed from certain angles behind ocelli and eyes metallic green with coppery reflex. Thorax brilliant glossy, metallic emerald green on dorsum; anterior sinus, laterally as far as the postero-lateral suture, middorsal suture, and lateral suture finely black; also a narrow stripe along the anterior border of the metepimeron, posterior to which the rest of the metepimeron bright yellow. Under surface of the adults is pruinose white. Abdomen dull metallic green on dorsum and sides; more brilliantly metallic segments 1, and 2; sides pruinose white in adults. Wings hyaline, uncoloured or palely suffused specially at apices. Pterostigma variably yellow to brown in teneral, black in adults.

The species occurs in North-East India, Himalayas, Myanmar and China.

Remarks : The male specimen from Mizoram and Sikkim are delicate; the females are robust built.



Family COENAGRIONIDAE

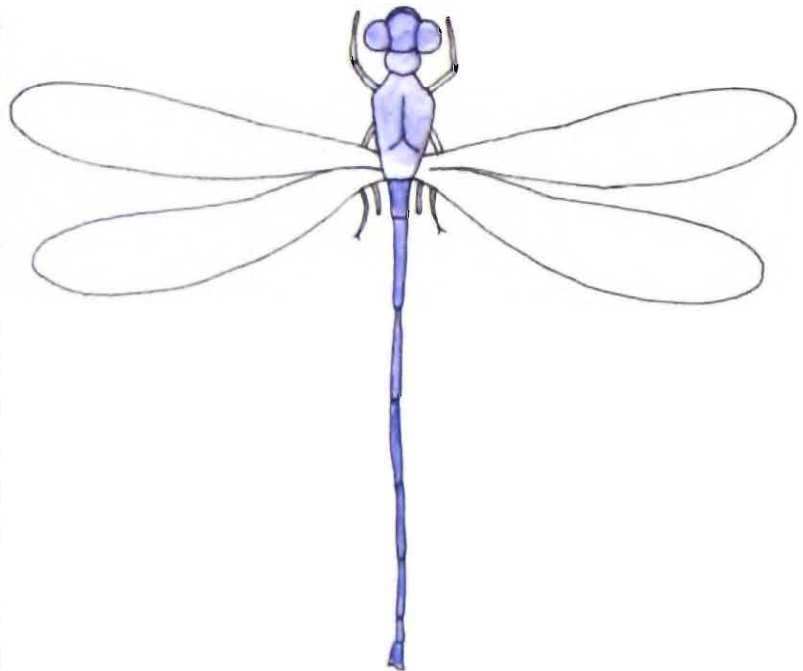
39. *Pseudagrion microcephalum* (Rambur)

Habit : It inhabits diverse localities, breeds in stagnant pools, during the period from June to November; sometimes form pair with *Pseudagrion rubriceps* Selys.

Male : Abdomen 27 mm; Hindwing 17 mm

Female : Abdomen 29 mm; Hindwing 20 mm

Head : Forepart of vertex pale azure blue, the hindpart brown; in female whole of face and vertex olivaceous suffused with orange. Thorax azure blue paling to white below and beneath. Middorsal carina black; humeral suture and lateral ones are mapped out in black; In female thorax bluish-green, richly suffused with golden orange on dorsum especially in the humeral area laterally azure blue. Abdomen azure blue, marked with black segment 1 with a quadrate spot, segment 2 with a goblet shaped spot; segments 3 to 7. With a broad



Pseudagrion microcephalum (Rambur) – Male

dorsal marking, segment 8 with a thick ring, segment 9 with a narrow black line and segment 10 with a broad saddle shaped mark. In female abdomen coloured similar to male; but segment 2 with a thick black mark dumbbell shaped, segments 8 with a black band, segment 9 with a bifid spot, segment 10 deeply and narrowly notched at apex. Wings hyaline, pterostigma greenish framed in black nervures.

The species occurs throughout India and the Oriental region.

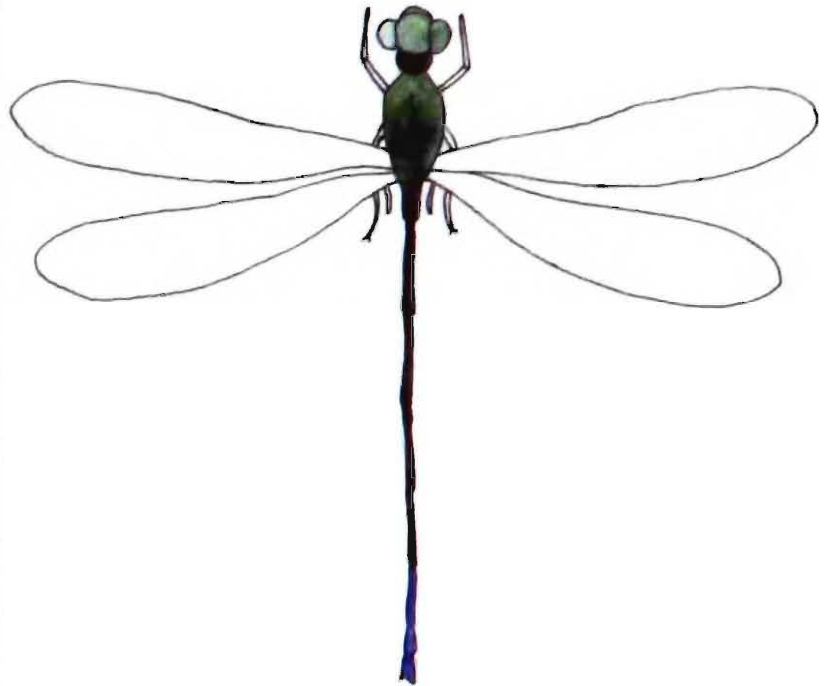
40. *Pseudagrion decorum* (Rambur)

Habit : It inhabits diverse types of water bodies from sea level to the high latitudes in Western Ghats, it undertakes migratory flights during September.

Male : Abodmen 28-30 mm; Hindwing 18-20 mm

Female : Abdomen 31 mm; Hindwing 20 mm

Head : Vertex pale bluish-green, a thick black band on vertex. In female golden-green on vertex. Thorax bluish-green on dorsum, laterally azure blue, middorsal carina finely black, narrow black lines parallel to the middorsal carina. Humeral stripe black, beneath white, tergum azure blue. In female thorax pale blue mapped out with golden yellow. Abdomen pale azure blue, except segments 8 to 10 which are deeply blue; and segment 2 which is bluish-green on dorsum, black marking on each segment. In female abdomen pale blue with greenish tinge at base, and on terminal segments black markings on each segment. Wings hyaline, pterostigma narrow diamond shaped.



The species has been recorded from Ganga basin to the Western Himalaya and the Western Ghats; Nepal, Bangladesh, Myanmar, Pakistan, Omman.

Remarks : Some male specimens from Maharashtra are more olivaceous than those from eastern Indian states.

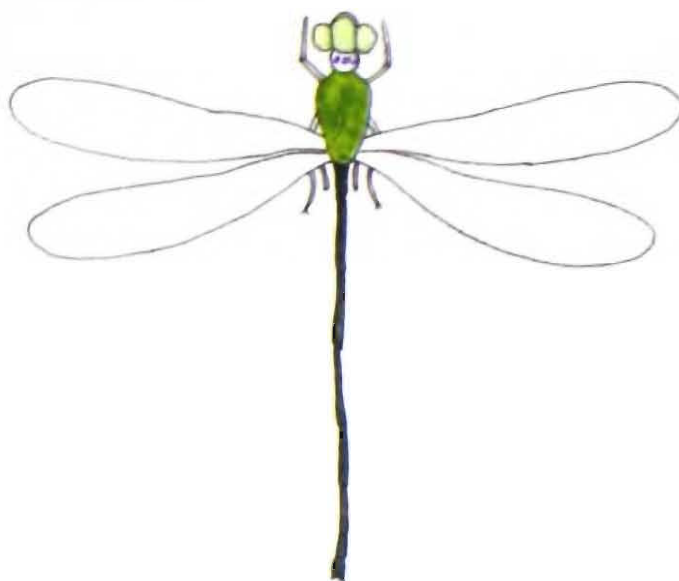
41. *Pseudagrion rubrices* Selys

Habit : It occurs in different altitudes from sea level to high altitudes. It commonly perches on grassy plains, near and away from water, sometimes on reeds and shaded places and fly along edges of water. Sometimes male catches female of *Pseudagrion microcephalum* (Rambur).

Male : Abdomen 29 mm; Hindwing 18-20 mm

Female : Abdomen 29 mm; Hindwing 21 mm

Head : Vertex and occiput dark olivaceous; in female vertex and occiput uniform dark olivaceous. Thorax olivaceous green, with a golden tinge as far back as the first lateral suture, sides azure blue, middorsal carina finely black and thicker black lines parallel and close to in. In female prothorax with spines, thorax with ground colour on dorsum dull bluish-green markings similar to male. Abdomen marked broadly with black on dorsum; segments 1 and 2 olivaceous green above, azure blue laterally. Segments 3 to 7 black, bronzed green on dorsum, pale greenish laterally; segment 8 with broad black dorsum; segments 9 and 10 azure blue unmarked. Wings hyaline, pterostigma reddish-brown diamond shaped, in female pterostigma paler than that of male.



The species is distributed in India and South and South-Eastern Asia.

Remarks : Certain male specimens from the central India have the black line on the middorsum of thorax thinner than that of specimens from the eastern India.



Pseudagrion rubrices Selys – Male

42. *Pseudagrion hypermelas* Selys

Habit : It haunts the grassy banks of small stream, canals. It breeds in rainy season especially during the monsoon.

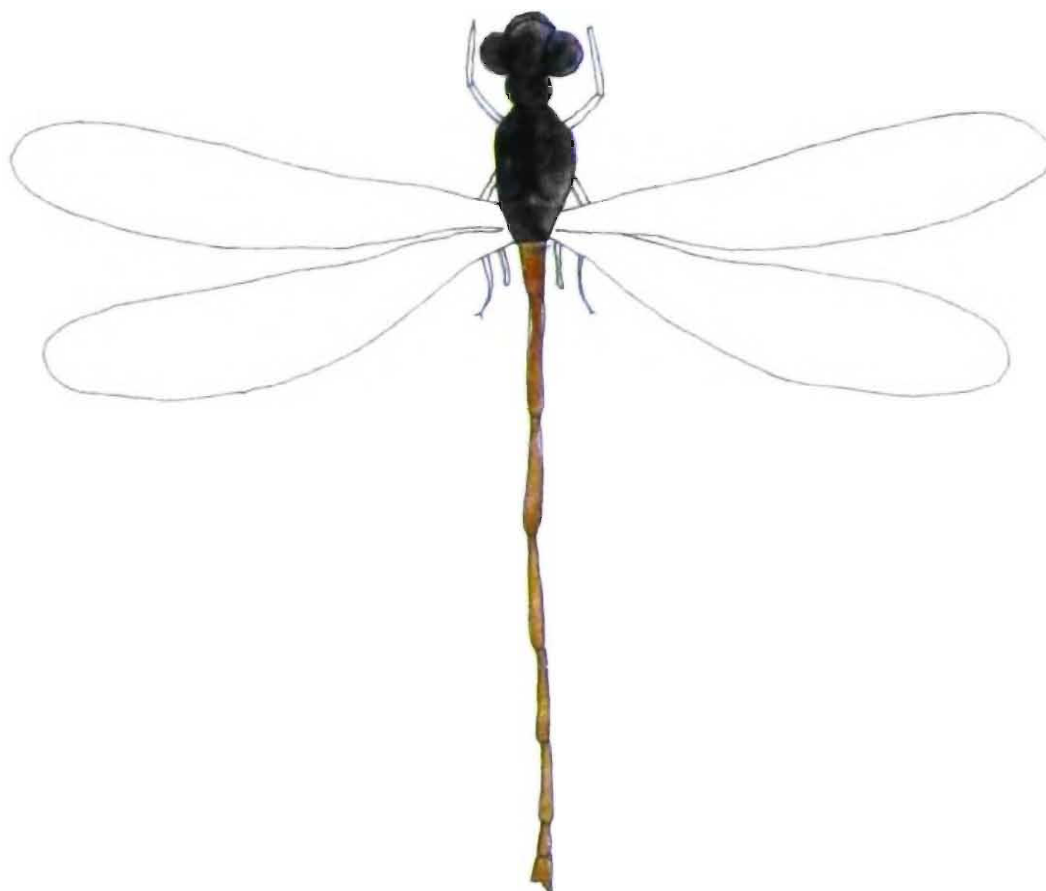
Male : Abodmen 23-24 mm; Hindwing 14-15 mm

Female : Abdomen 23 mm; Hindwing 15-16 mm

Head : Vertex black, in old adults frons and front part of vertex pruinose. In female vertex and occiput palest olivaceous. Thorax black on middorsum, humeral sutures laterally purplish brown, with obscure blackish fascia largely obscured by pruinoscence, beneath white densely pruinose. In female thorax pale olivaceous, with middorsal carina, and humeral suture mapped out in black, the parallel black lines near the middorsal carina; humeral and middorsal lines are suffused laterally with bright ochreous. Abdomen violaceous brown marked with black on dorsum. In female abdomen pale greenish-yellow on the basal half palest blue on the distal segments, marked black on dorsum. Wings hyaline, pterostigma black finely bordered with yellow. In female the pterostigma is uniform yellow.

The species occurs throughout India, mainly the drier parts.

Remarks : Specimens from West Bengal vary from the description of the species present in the Fauna of British India due to their citron-yellow labium and orange coloured bases of mandibles.



43. *Psudagrion australasiae* Selys

Habit : Breeds and visits different types of water bodies, patrols rapidly over the water surface, and rests for a short time.

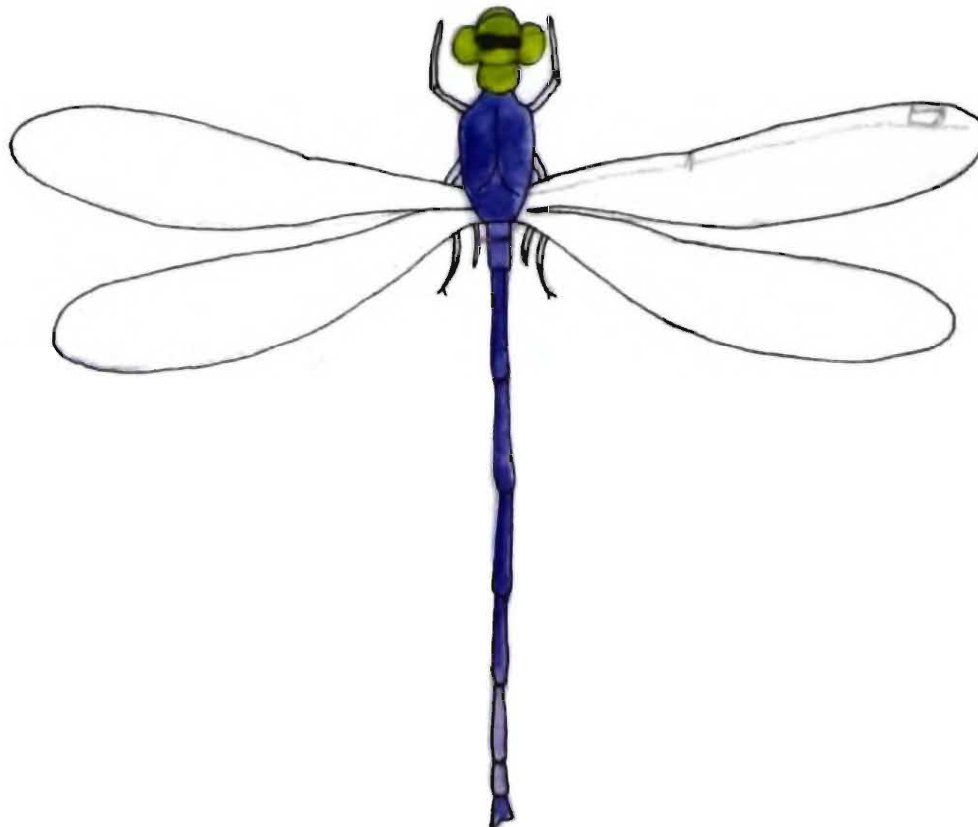
Male : Abdomen 30-33 mm; Hindwing 20-21 mm

Female : Abdomen 29 mm; Hindwing 20 mm

Head : Front of vertex pale greenish-yellow, traversed by a black band in female front of vertex greenish-blue. Thorax azure blue, the middorsum with a broad black band and narrow humeral stripes, beneath palest blue. In female thorax pale blue on dorsum, tinted with ferruginous and three black stripes, sides pale greenish-blue. Abdomen pale azure blue. Marked with black—segment 1 with a dorsal spot, segment 2 with an elongate spot, segments 3 to 7 narrow middorsal stripe, segment 8 and 9 entirely blue except an apical fringe of dorsal spines; segment 10 with an X-mark. In female segment 2 with a dorsal marking, segments 3 to 9 the dorsum black, segment 10 blue. Wings hyaline. Pterostigma in male pale yellow to brown; in female golden-yellow.

The species occurs from Bengal (West Bengal), Bangladesh, Nepal to Australia via Assam region, Myanmar, Indo-chinese and Malayasian areas.

Remarks : Goblet shaped mark on the segment 2 of the abdomen is present in specimens from Manipur.



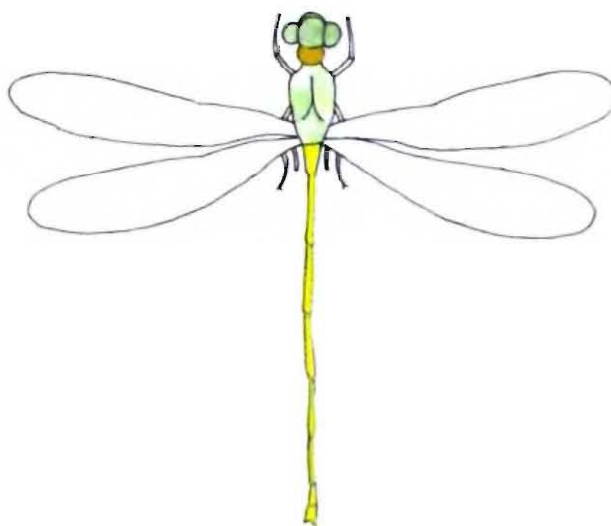
44. *Ceriagrion coromandelianum* (Fabricius)

Habit : The specimens fly among bushes, it breeds in stagnant pools. The female usually remain away from water.

Male : Abdomen 28-30 mm; Hind-wing 18-20 mm

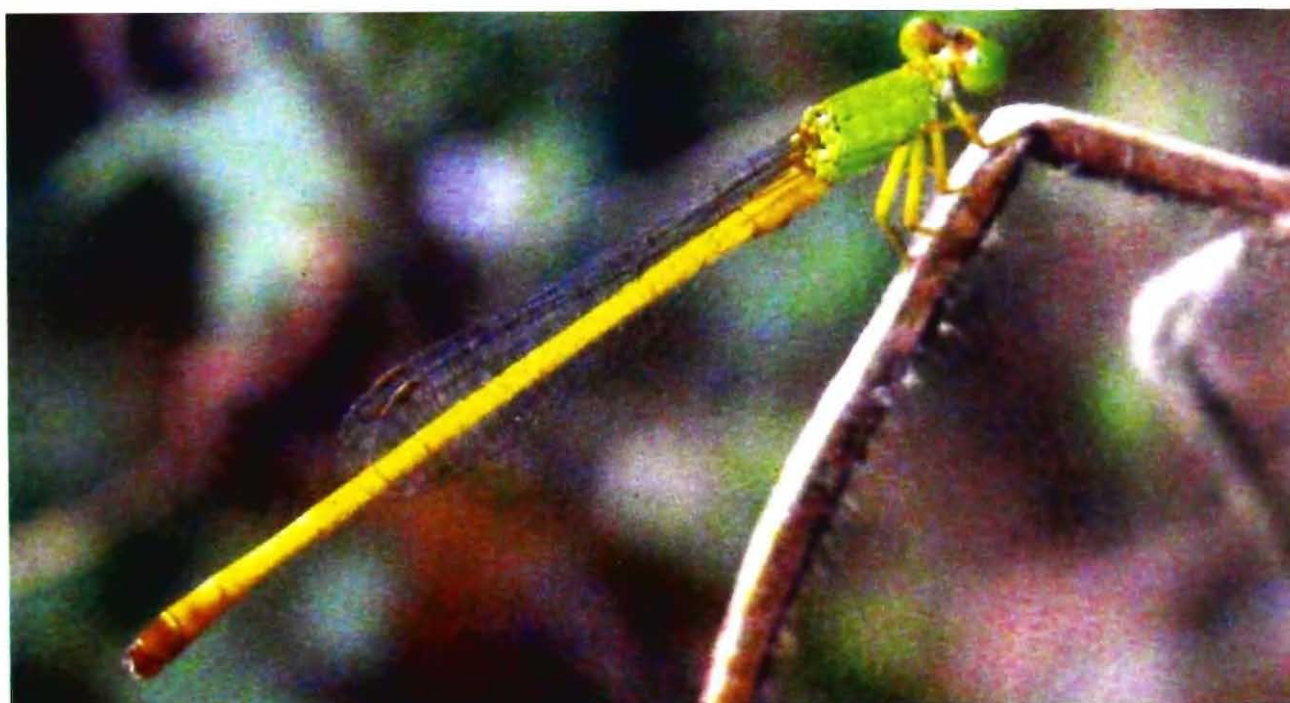
Female : Abdomen 29-32 mm; Hind-wing 20 mm

Head : Vertex olivaceous, other parts more or less yellow; in female vertex olivaceous brown, face pale olivaceous; other parts are like males. Thorax olive-green, dorsum tinted with ochreous, laterally citron-yellow, beneath more or less thinly pruinosed. Abdomen uniformly citron-yellow; in female the abdomen uniformly olivaceous, with an ochreous or golden brown tint on dorsum. Wings hyaline, pterostigma golden yellow framed in brown nervures.



The species occurs throughout India, outside India it has been recorded from China, South-East Asia.

Remarks : Specimens from Bihar and Orissa lack black spots on their abdominal segments 5 to 7; Manipur specimens agree with specimens from the peninsular India.



Ceriagrion coromandelianum (Fabricius) – Male

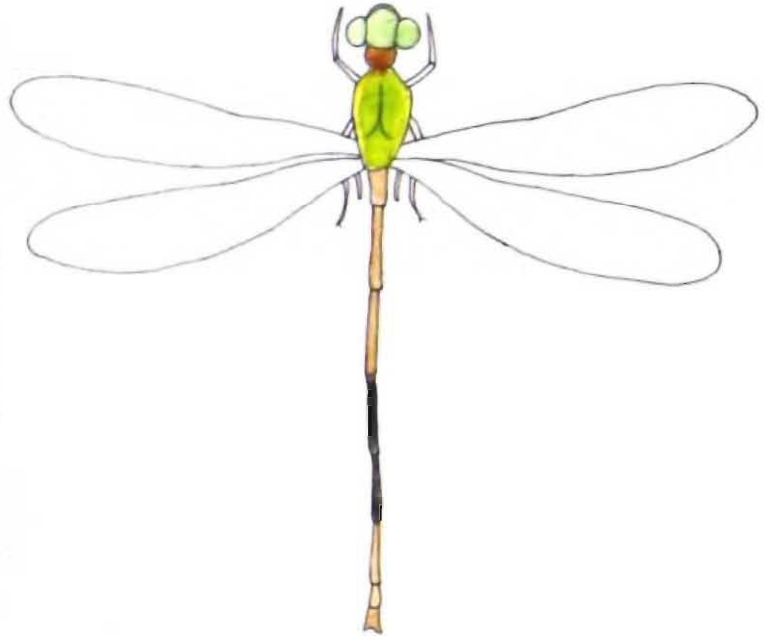
45. *Ceriagrion cerinorubellum* (Brauer)

Habit : It moves along grasses and bushes near and away from water bodies during the rainy season.

Male : Abdomen 31-33 mm; Hind-wing 20-21 mm

Female : Abdomen 31-35 mm; Hind-wing 20-21 mm

Head : Front of frons pale greenish-yellow, dorsum of frons and vertex dark reddish-brown, occiput bright ochreous. Thorax green changing to blue on the sides yellow beneath. In female thorax often suffused with ochreous or golden brown. Whitest beneath thorax is pruinose white in adults. Abdomen multicolored; segments 1, 2 and part of 3 bright brick red; from segment 3 to 6 black on dorsum; segments 7 to 10 brick-red, sides of segments 3 to 7 blue. Wings hyaline; pterostigma amber tinted.



The species is distributed in Ganga plain, the Western Ghats, Himalayas and in different parts of South-East Asia.

Remarks : In specimens from Orissa colours are lighter in comparison to colours of specimens from Calcutta.



Ceriagrion cerinorubellum (Brauer) – Female



Ceriagrion cerinorubellum (Brauer) – Male

46. *Ceriagrion olivaceum* Laidlaw

Habit : It visits diverse water bodies drains, canals, ponds etc; moves along edges. rests on grasses near water bodies, visible during the monsoon.

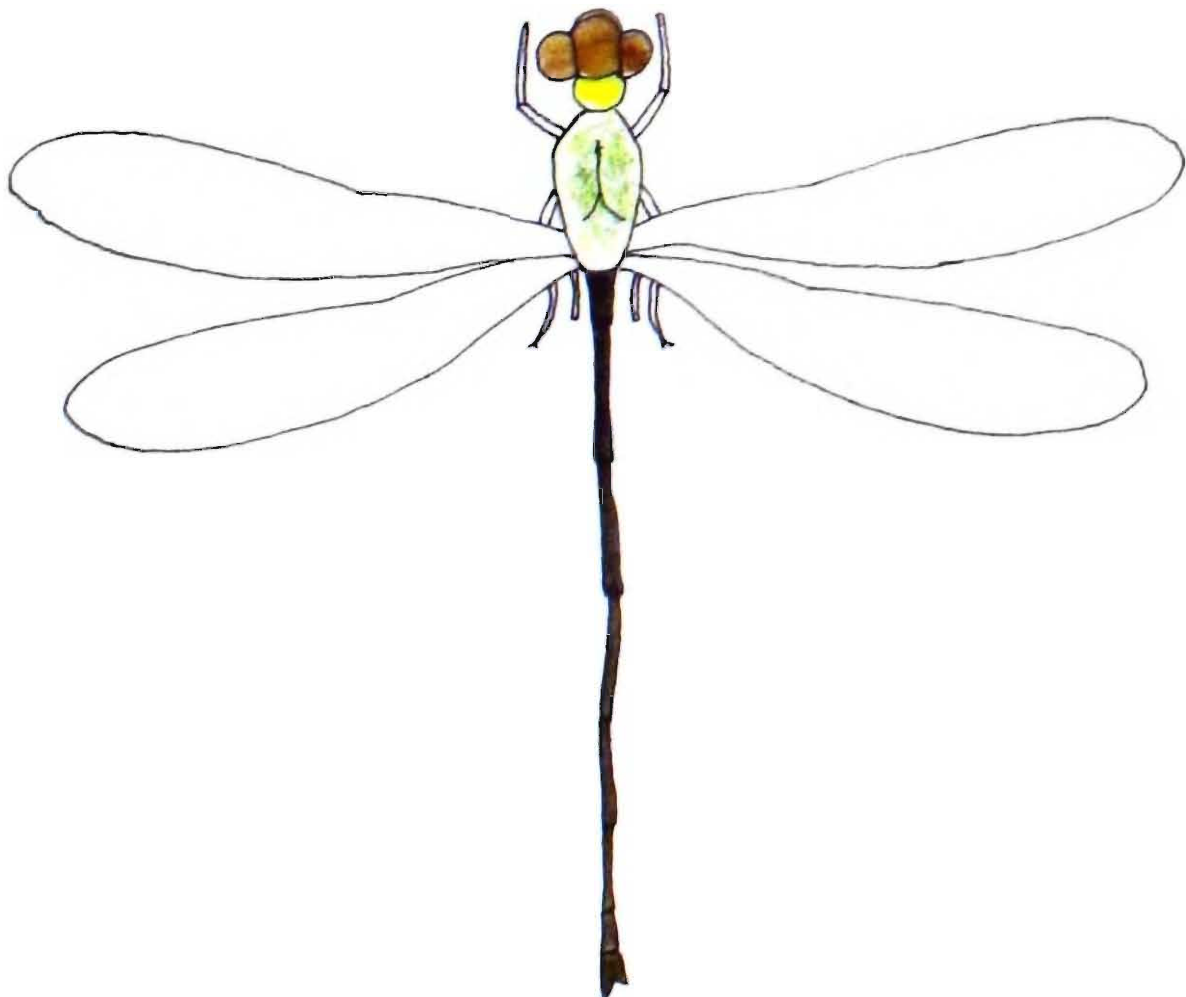
Male : Abdomen 34-38 mm; Hindwing 22-23 mm

Female : Abdomen 33-35 mm; Hindwing 22 mm.

Head : Pale olivaceous brown in both sexes. Thorax olivaceous, paler on the sides and beneath white on both sexes. Abdomen uniform olivaceous brown paling to yellowish beneath. Wings hyaline, palely enfumed in adults; pterostigma palest brown, pale yellow around the circumference, framed in darker brown nervures oblique diamond shaped.

The species occurs throughtout India and South-East Asia.

Remarks : Sometimes male specimens from Assam may have reddish-brown anal appendages, males from Darjeeling with bluish-yellow legs; females from Maharashtra have lighter thorax colour than those from eastern India.



47. *Ischnura senegalensis* Rambur

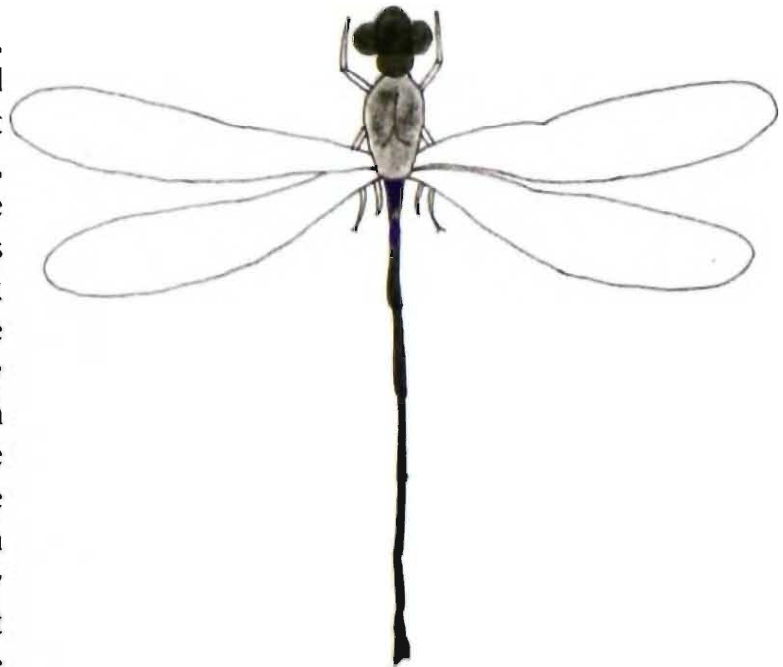
Habit : It breeds in stagnant water in plains and hills; breeding season extends from June to March, prefers rainy season.

Females occur in heterochromatic and isochromatic forms. Isochromatic forms does not differ from the male.

Male : Abdomen 21-23 mm; Hindwing 13-15 mm

Female : Abdomen 20-24 mm; Hindwing 14-16 mm

Head : Vertex and occiput black, blue post ocular spots; in teneral and heterochromatic female head bright orange with a black band on vertex, in mature females head markings are like males, blue postocular spots poorly defined. Thorax bronzed black on dorsum, sides palest green, pale yellow beneath, narrow citron-yellow or pale green antehumeral stripes. In teneral female thorax bright orange except the dorsum between the humeral suture, which is black. In heterochromatic female thorax broadly black on dorsum, may or may not have humeral stripes, sides pale carneous or suffused with ochreous.



Ischnura senegalensis Rambur

Abdomen black, dorsum of segment 1 and 2 metallic, segments 2 laterally azure blue, segments 3 to 7 citron-yellow at sides, black on dorsum; segment 8 azure blue, segment 9 broadly black on dorsum, azure blue laterally, segment 10 black on dorsum, sides yellow, the end part with two dorsal tubercle. In teneral female the segments 1 and 2 orange, 3 to 6 and part of 7 dorsum like males, sides pale blue, 8 to 10 orange and fading to yellow beneath. In mature female segment 1 to 10 black on dorsum

with blue apical rings. Wings hyaline, pterostigma in fore-wing black, oblique, outer angle and costal border narrowly white tinted with blue on upper surface; in hind-wing smaller than that of fore-wing pale brown or carneous.

It occurs throughout India; other parts of Asia, Africa including Madagascar.

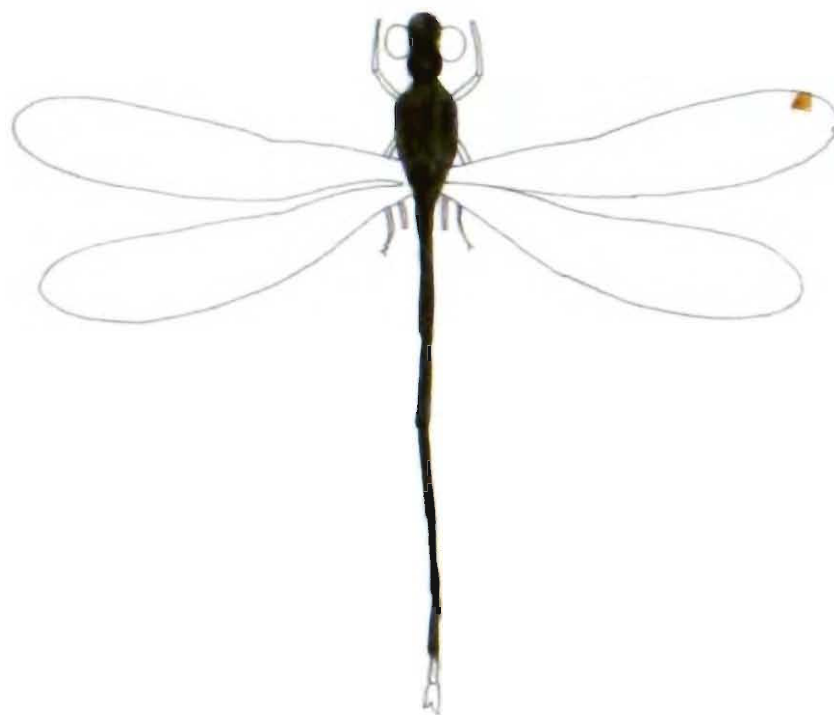
48. *Ischnura forcipata* Morton

Habit : The species occurs from deserts to high altitude including drier hilly areas from April to September. It breeds in pools and slow-moving streams.

Male : Abdomen 22-23 mm; Hindwing 13-14 mm

Female : Abdomen 23 mm; Hindwing 13 mm

Head : Vertex and occiput black, small rounded blue postocular spots. In female ocreous traverses the vertex. Thorax black on dorsum to well beyond the humeral suture, with blue antehumeral stripes, laterally pale blue, white beneath. In female a black bar on middorsum in matured specimens, in teneral bright orange on dorsum changing to pale greenish-yellow laterally and bright yellow beneath. On the other hand in the matured ones pale blue at the sides and greenish beneath. Abdomen basal and apical segments blue,



segments 4 to 6 bright chrome-yellow, segments 7 to 10 azure blue; dorsum of all except of segments 8 and 9 black. In female segments 1 and 2 bright orange changing to pale yellow to greenish-yellow in adult stage. Black markings on dorsum of all segments. Wings hyaline, pterostigma of fore-wings longer than those of hind-wings; costal side is smaller than the proximal and posterior, the latter rounded, inner half black, outer half blue; pterostigma of hind-wing either colourless or grey in the middle. In female the pterostigma resembles that of male.

The species occurs in northern part of India, its southern limit is Orissa state. Outside India it has been recorded from Pakistan to Iran.

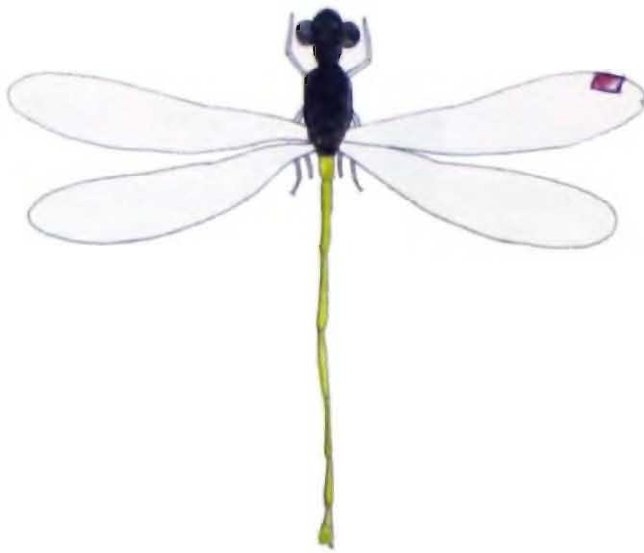
Remarks : Males from Orissa sometimes labium yellowish-white labrum olivaceous, legs whitish yellow, abdominal segments 7 to 10 olivaceous.

49. *Ischnura aurora aurora* (Brauer)

Habit : It is commonly found in marshy area flying through grasses and weeds; after the rain the species spreads away from water bodies.

Male : Abodmen 16-20 mm; Hindwing 10-12 mm

Female : Abdomen 18-20 mm; Hindwing 14-15 mm



Head : Vertex black as also occiput and with blue postocular spots. In female behind occiput ochreous. Thorax bronzed black on dorsum, grass-green antehumeral stripe, laterally grass green, with a black streak white beneath. In female palest on the sides, with a black streak white beneath. In female palest on the sides, almost white beneath, antehumeral stripe citron-yellow. Abdomen citroneyellow excepting segments 1 to 3 are more or less red on dorsum; segment 1 with black spot on dorsum, segment 2 dorsum narrowly

black, segments 6 and 7 bronzed black on dorsum, 8 to 10 entirely azure blue, segment 10 with quadrate black dorsal spot; dorsal tubercles white at borders. In female the black stripe on the abdomen is interpted by narrow yellow annules on segments 1, 8, 9 and 10; sides yellow and greenish beneath. Wings hyaline, pterostigma differing in fore-and hind wings; that of fore-wing broader than long, kite-shaped, rose-red for proximal half, hyaline for the distal, inner and postenor borders thick black, anterior border white, Outer border yellow; in the hind-wing pterostgima smaller, uniform pale grey, costal, border white, others thick black. In female pterostigma palest pink, differing in size like male.



Ischnura aurora aurora (Brauer) – Male

It occurs throughtout India mainland islands of Asia and Oceania.

Remarks : Male specimens from Bihar, Madhya Pradesh and Orissa sometimes contain azure-blue mark on segments 8 to 10.

50. *Rhodischnura nursei* (Morton)

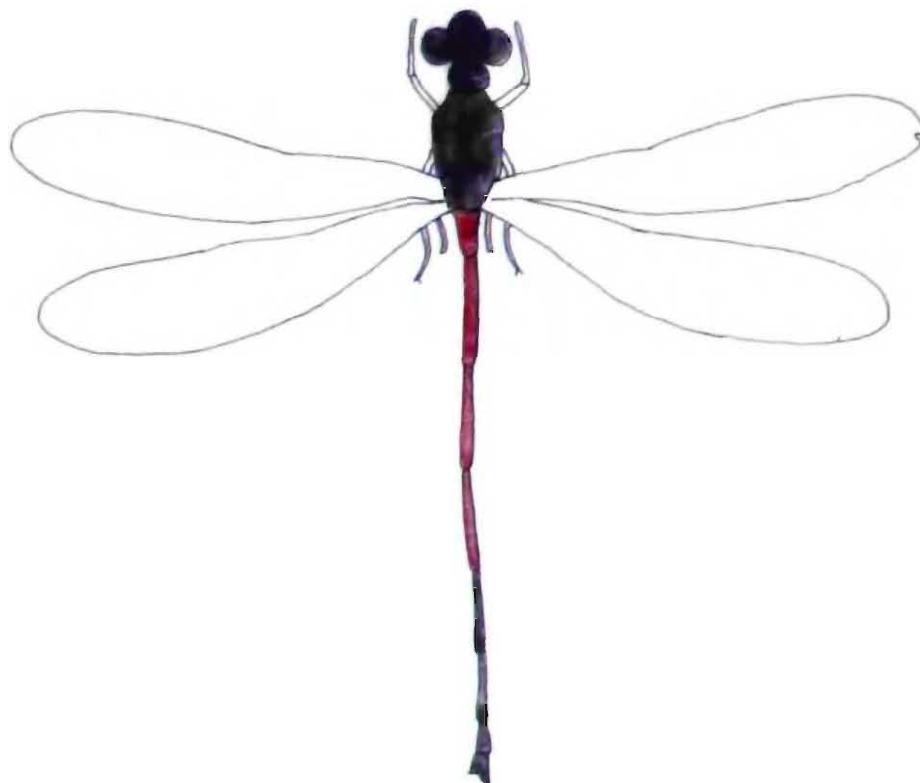
Habit : It inhabits mainly dry areas, but occurs in Himalayas as well as the Western Ghats. It is usually visible during the period from September to November.

Male : Abdomen 14 mm; Hindwing 10 mm

Female : Abdomen 15-17 mm; Hindwing 11 mm

Head : Vertex and occiput black in both sexes. Thorax broadly black on dorsum, narrow green antehumeral stripes, laterally green, paling to yellow. In adults beneath pruinose. In isochromatic female sides of thorax yellow, stripes on the upper parts changing to rich ochreous. In heterochromatic female antehumeral stripes pale bluish-green, dorsal black limited by the antehumeral stripes. Abdomen segments 1 to 4 bright crimson, segment 1 with two dorsal black spots, segment 2 occasionally has black spot, segments 5 and part of 6 with pale citron-yellow which sometimes become reddish, from part of 6 to the segment 10 black, in isochromatic female middorsal caudal black line on segment 2, segment 6 ochreous, ventral borders of segments 7 to 10 ochreous. In heterochromatic form black on the dorsum on all segments. Wings hyaline, pterostigma proximal part in forewings black costal pale yellow, red in the inner half changing to pink and hyaline. Pterostigma in hind-wing hyaline. In isochromatic female pterostigma of all wings pale but otherwise like male.

The species occurs from Pakistan to Orissa, *via*, Rajasthan, Uttar Pradesh, Central India and the Western Ghats.



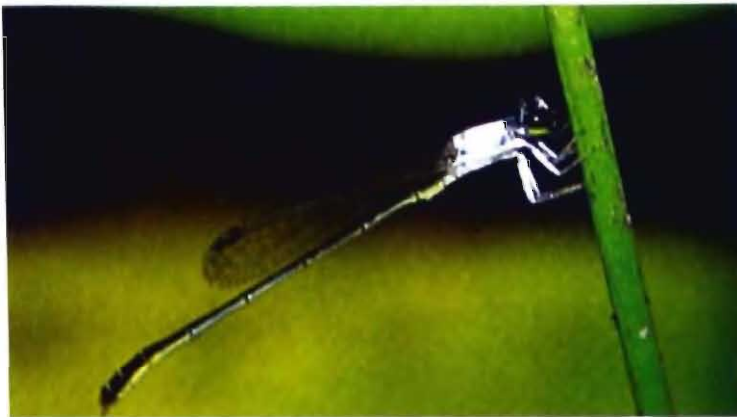
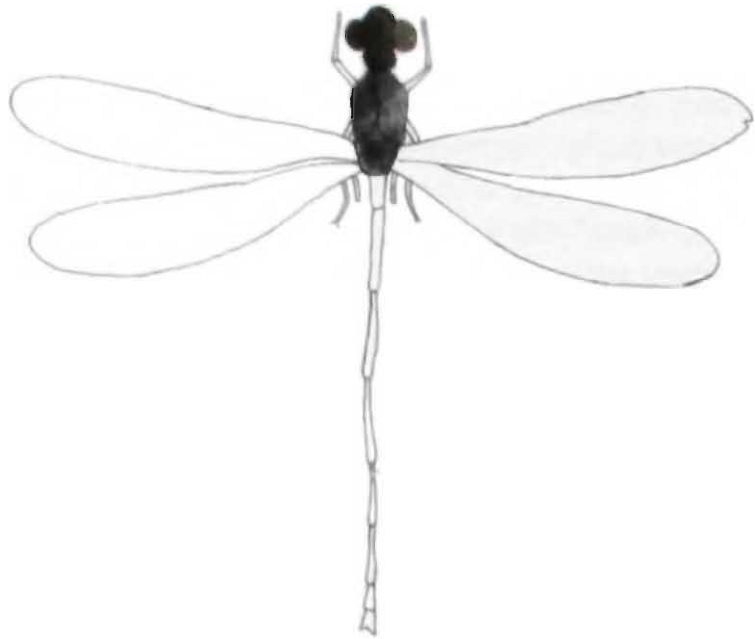
51. *Agriocnemis femina femina* (Brauer)

Habit : The species occurs in forests and breeds in stagnant pools in December.

Male : Abdomen 16-17 mm; Hindwing 11 mm

Female : Abdomen 18 mm; Hindwing 11 mm

Head : Vertex and occiput black with azure blue postocular spots; in teneral female occiput cherry red, postocular spots pale lilaceous, subadults like tenerals; adults occiput dark blood red, blue postocular spots. Thorax black on dorsum, marked with pale blue antehumeral stripes, laterally apple-green paling below to yellow. In adult female black on dorsum, sides pinkish-brown or fawn with a small black spot at the upper end of the postero-lateral suture. In subadult female thorax cherry-red with a broad



Agriocnemis femina femina (Brauer)

black band on dorsum. Abdomen with ground color of segments 1 to 6 blue or pale green, of segments 7 to 10 bright chrome-yellow, marked with black. Segment 1 with bright dorsal spot, sides blue or bluish-green; segment 2 with a thistle shaped mark on dorsum, segments 3 to 7 with a broad dorsal stripe, segment 8 with fine middorsal black stripe, 9 and 10 unmarked. In female segments 1 to 6

blue ground colour changing to ochreous on segment 7 marked with black. Wings hyaline, pterostigma yellow in both sexes.

The species occurs mainly in West India, Andaman and Nicobar islands; outside India, malayasian subregion and Australian region as well as in Oceania.

Remarks : Specimens from the Andaman and Nicobar islands agree with specimens from Micronesia, and they are close to *Agriocnemis femina oryzae* Lieftinck.

52. *Agriocnemis lacteola* Selys

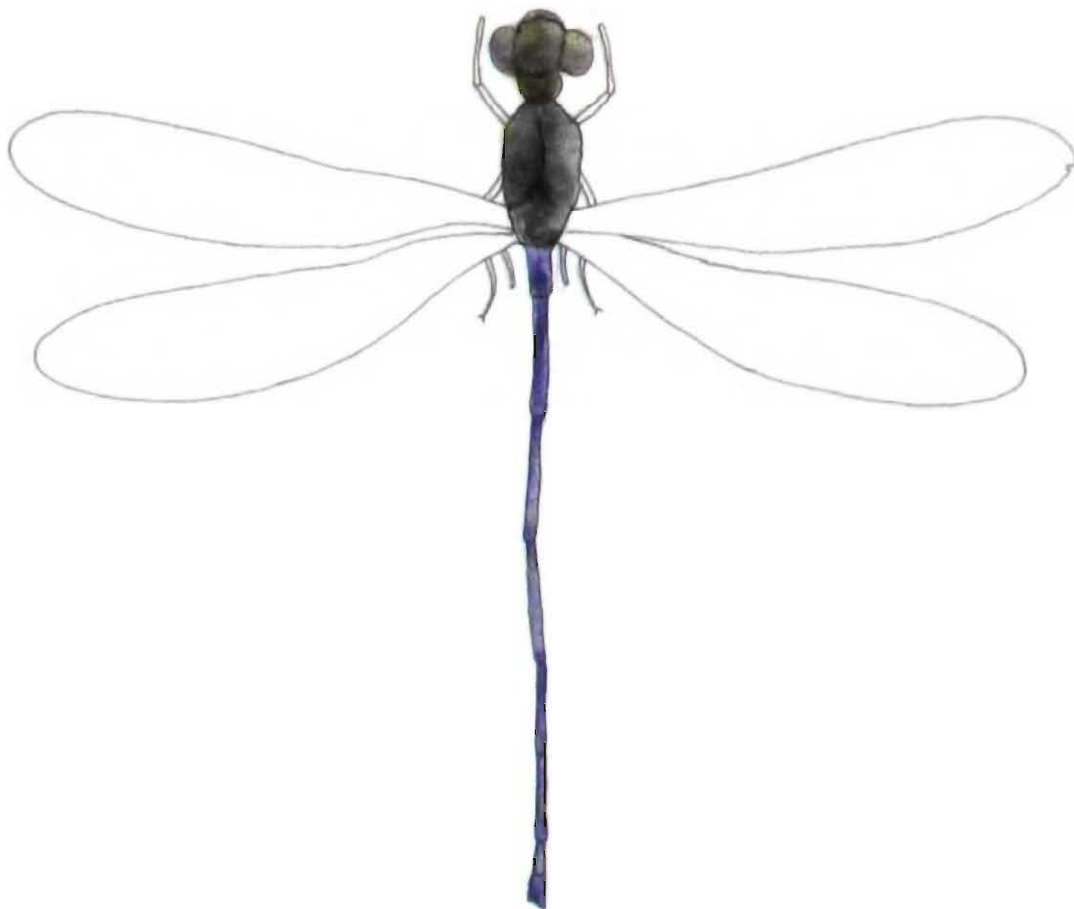
Habit : It moves in grassy fields near water bodies-river, ponds, rain water puddles etc.

Male : Abodmen 16-18 mm; Hindwing 10-11 mm

Female : Abdomen 16-18 mm; Hindwing 16-17 mm

Head : Vertex and occiput black, a narrow stripe across the occiput. In female postocular spots of beautiful azure blue. Thorax black on dorsum as far as the antero-lateral suture, with narrow antehumeral stripes; laterally pale blue marked with a small black spot on the postero-lateral suture, beneath white. In female antehumeral stripe bluish-green and sides blue. Abdomen pale blue almost white on the proximal segments, marked with black. Segment 1 with a dorsal spot, segment 2 with a middorsal stripes, segments 4 and 5 subapical triangular spots. In female all segments azure blue and, except the segment 10, are provided with black dorsal markings. Wings hyaline, pterostigma of fore-wing black; hind-wings with pale blue on the upper surface, black beneath, in some specimens pterostigma black on both wings. In female pterostigma pale yellow, centred with greyish and framed in thick black nervures.

The species is distributed almost througout India, Bangladesh, China, Hongkong, Napal, Thailand.



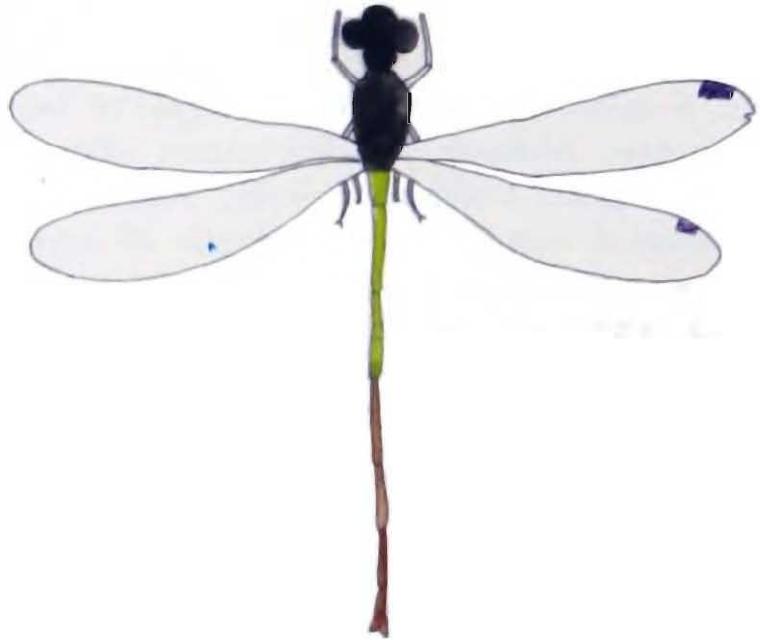
53. *Agriocnemis pygmaea pygmaea* (Rambur)

Habit : It inhabits in all types of environments and almost throughout the year. It wanders along the edges of water bodies; sometimes away from water-edge.

Male : Abdomen 16-17 mm; Hindwing 9-10 mm

Female : Abdomen 18 mm; Hindwing 11-12 mm

Head : Vertex black, frons and postocular spots green; females are variable, vertex black, in adult face and frons bright yellow. Thorax black on dorsum as far as the lateral suture, apple green antehumeral stripes, laterally apple green paling to yellow. In female the colour of thorax dark salmon pink (interneals), in subadults broad black stripe on dorsum pale blue antehumeral stripe, laterally pale green; in adults the antehumeral stripes bordered outwardly by a reddish brown or dark violaceous stripe, laterally green. Abdominal segments 1 to 6 with ground-colour pale greenish-yellow,



Agriocnemis pygmaea pygmaea (Rambur) - Female

terminal segments pink or brick red, marked with black. Abdomen in subadult female pale apple-green; in adults ground colour of segments 2 to 6 bright yellow. Wings hyaline; pterostigma pale yellow in forewings, black in hind-wings; in female pterostigma yellow in all wings.

The species occurs almost in all eco-systems in India; parts of Africa, Asia and Australia.

Remarks : Male examples from Rajasthan sometimes lack apple green colour on prothorax; females from the state sometimes lack the connecting isthmus between the postocular spots.

54. *Onychargia atrocyana* Selys

Habit : It occurs everywhere, swarms are not visible, throughout the year, sometimes enter houses.

Male : Abdomen 23 mm; Hindwing 17 mm

Female : Abdomen 23 mm; Hindwing 18 mm

Head : Vertex black, in subadults a narrow stripe of the citron-yellow on the upper surface of the head; in female the colour agrees with that of the sub adult, anteclypeus brownish and postclypeus black Thorax black, deep purplish reflexodorsum in female reflexisabsent; in tenerals and subadults narrow citron-yellow antehumeral stripe, often pruinosed. Abdomen black, sides of segments 1, a lateral stripe on the segment 2 a faint one on 3 bright citron-yellow; segments 3 to 6 with narrow bluish basal rings, In female the abdomen is like that of a subadult male with a yellow spot on the pleural surface of segment 8.

The species is distributed from Bengal (Bangla Desh & West Bengal) to East India. Orissa, Western Ghats; outside India it occurs in Myanmar, and Indo-malayan subregion.

Remarks : Male specimens from eastern India are attributed with yellowish-black labrum, deep blue abdomen.



55. *Enallagma parvum* Selys

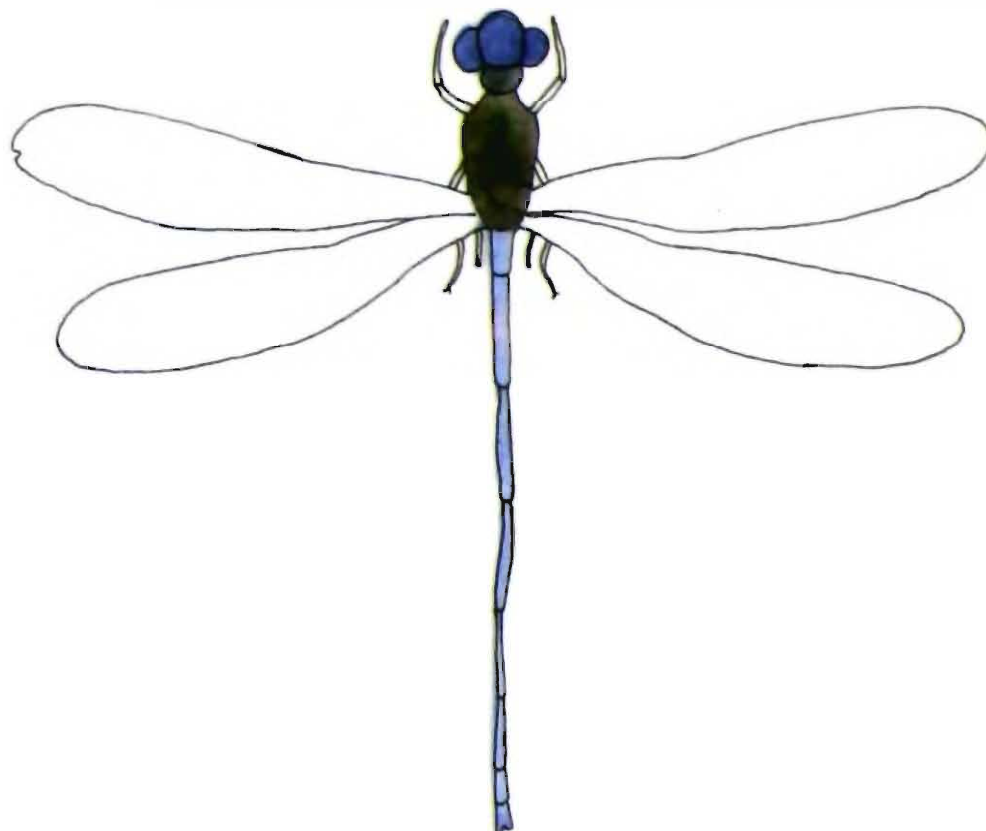
Habit : Breeds in weedy tanks in the greater part of the year. These are found commonly wandering in grassy fields near water bodies.

Male : Abdomen 17 mm; Hindwing 11 mm

Female : Abdomen 17 mm; Hindwing 11 mm

Head : Frons pale blue, vertex and occiput black, the latter with post ocular spots. In isochrome female the post ocular spots greenish, the stripe yellowish in the middle. In case of heterochrome from post ocular spots and stripe unenclosed. Occiput blue at the centre and black posteriorly. Thorax black on dorsum, broad azure blue antehumeral stripe bordered with black; laterally pale blue fading to white. In isochrome female the ground colour of thorax greenish-yellow paling to pale blue; antehumeral thick black in case of heterochrome female the antehumeral stripe unenclosed with black. Abdomen pale sky blue, marked with black. Segment 1 with broad dorsal spot and narrow blue apical annule; whole of segment 2 marked black; segments 3 to 7 with fine apical annule; 8 to 10 azure blue, segment 10 with black stripe on the middorsum. In female the middorsal black stripe thick; 8 to 10 broadly black on dorsum, lateral side of segment 10 blue. Wings hyaline, pterostigma yellow in immature forms; blackish in adults.

The species occurs from Uttar Pradesh to North-East India including Sikkim; the Western Ghats. Outside India, it occurs in Myanmar, Nepal, Sri Lanka, Thailand.

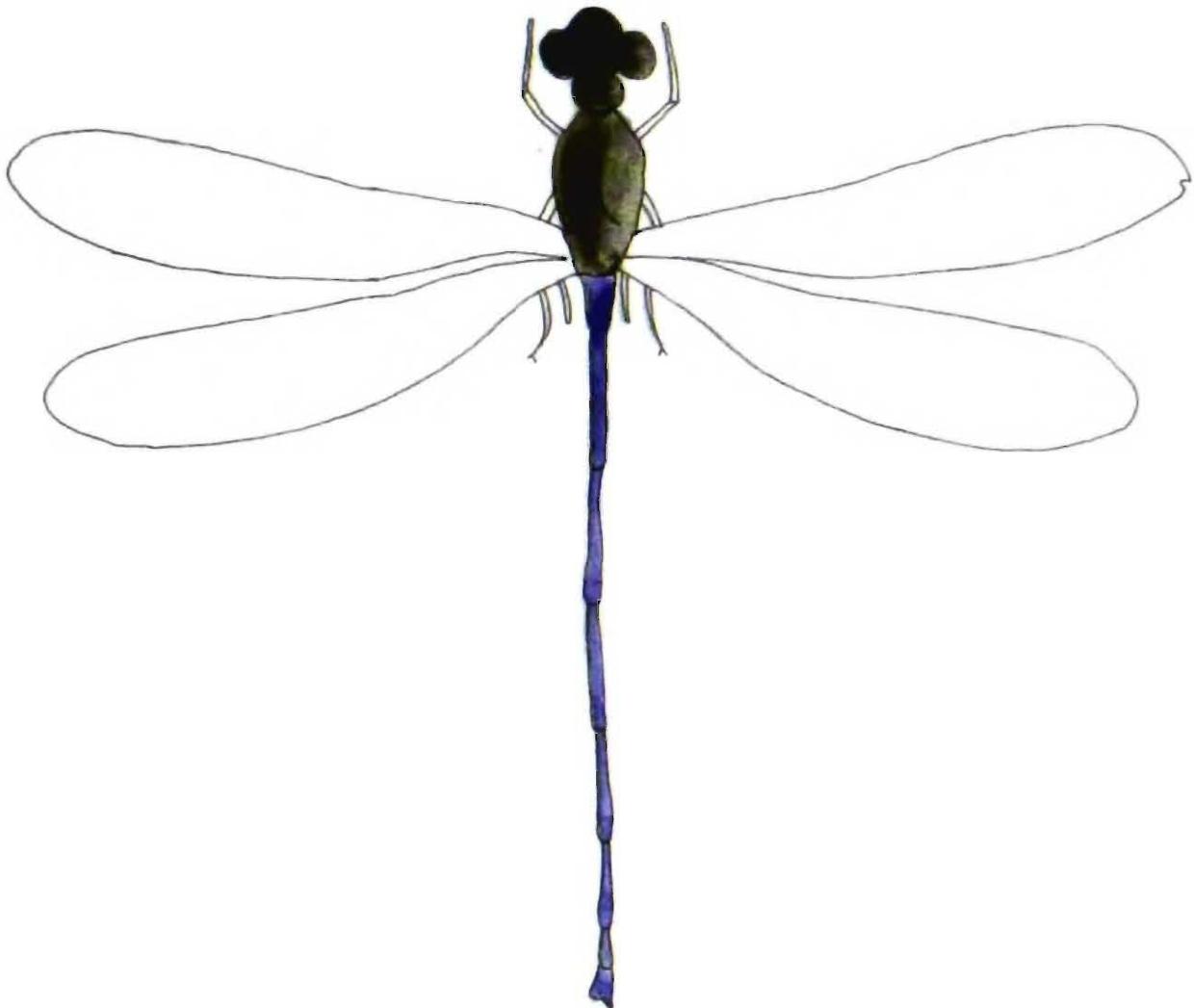


56. *Cercion malayanum* (Selys)

Male : Abdomen 22 mm; Hindwing 15 mm
Female : Abdomen 22 mm; Hindwing 15 mm

Head : Vertex and occiput black, bluish-green postocular spot, other parts of pale azure blue. Thorax bronzed black on dorsum, marked with a broad antehumeral stripe of even width, greenish yellow in colour, laterally bluish-green with a spot black streak on the upper part of each lateral suture; whitish beneath. Abdomen pale blue at sides changing to creamy-white marked with black, with varying shape and thickness. Wings hyaline, pterostigma yellowish-white, framed in thick black, nervures. The ground colour of the body of the female in greenish-yellow instead of blue of male.

The species is distributed in whole of India; outside India Myanmar, Nepal, Sri Lanka and South-East Asian countries.



57. *Aciagrion azureum* Fraser

Habit : It occurs in forested areas, on grassy patches; breeds in June.

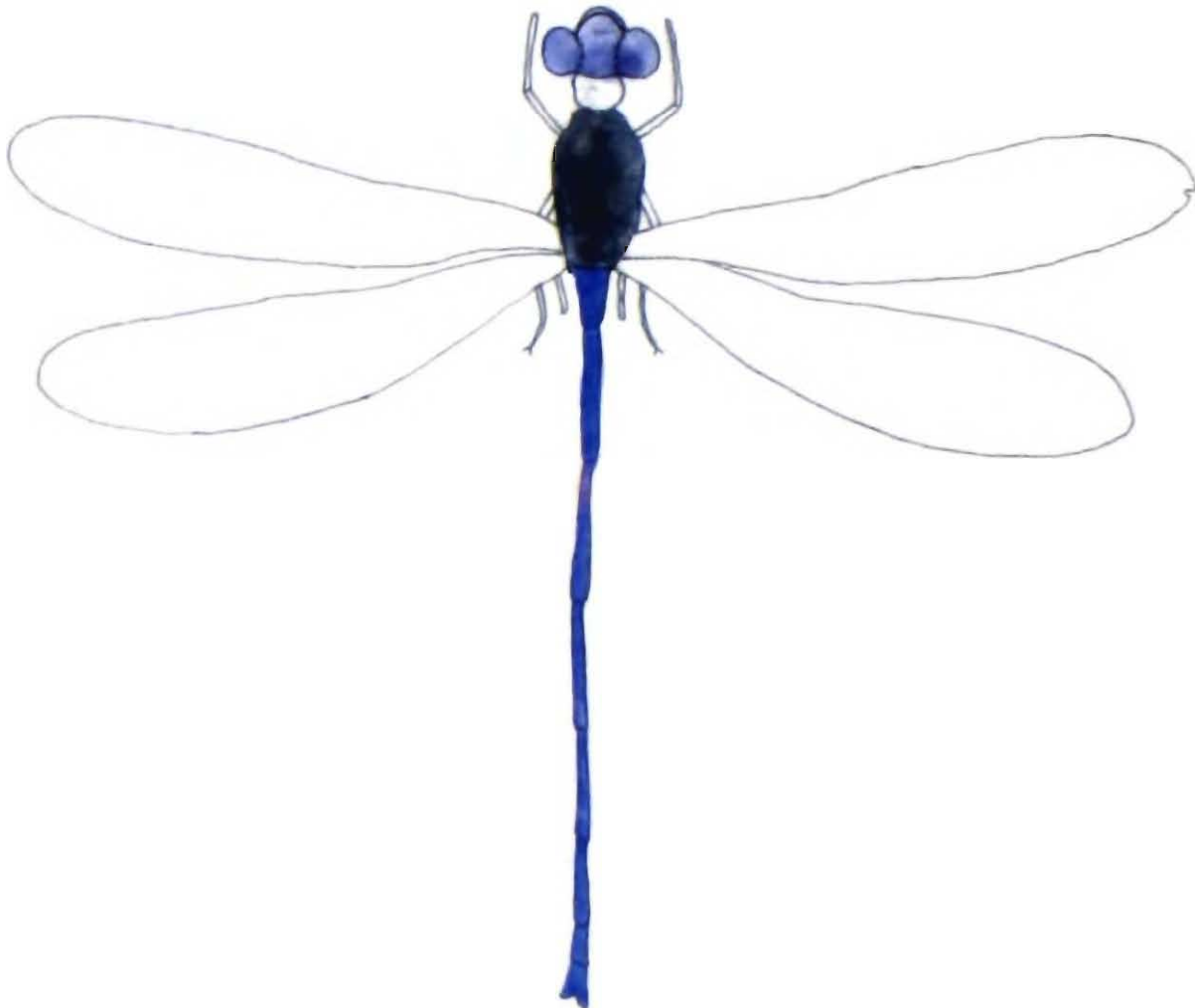
Male : Abdomen 30 mm; Hindwing 20 mm

Female : Abdomen 29 mm; Hindwing 21 mm

Head : Frontal part pale yellow, dorsal part black, postocular spots blue. Thorax black on dorsum, laterally pale blue changing to pale yellow on the sides and beneath; antehumeral stripes pale blue. Abdomen segment 1 azure blue, with large black spot; segment 2 blue at the sides, dorsum with a broad black band; segments 3 to 7 with broad black dorsal stripe; segments 8 to 10 azure blue without any marking. Wings hyaline, pterostigma reddish brown.

The species is distributed in Indo-Myanmar border (North-East India and Myanmar).

Remarks : The specimen from Assam (Brahmaputra Valley) have got very light yellow on frons.



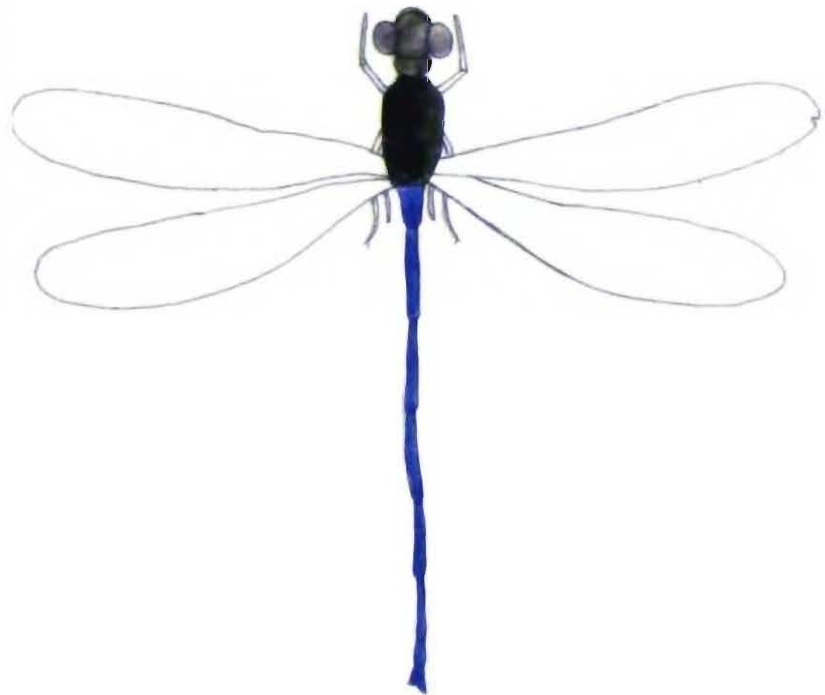
58. *Aciagrion hisopa hisopa* (Selys)

Habit : It breeds in paddy fields and water bodies of diverse qualities. It occurs from the plains to 250 m above MSL.

Male : Abdomen 24-26 mm; Hindwing 15-16 mm

Female : Abdomen 26 mm; Hindwing 17 mm

Head : Vertex and occiput black, the latter with blue postocular area confluent across the mid-occiput. In female post ocular spots narrow, transversely elongate. Thorax broadly black on dorsum to about halfway between humeral and antero-lateral sutures, marked with lilaceous violet antehumeral stripes; laterally lilaceous violet, fading to pinkish beneath; lower part of sides and beneath pulverulent white, in old specimens. In female greenish-blue antehumeral stripes and sides. Abdomen pale blue at sides marked broadly on dorsum with black.; dorsum of segment 1 black, segment 2 dorsum marking rounded basally, segments 3 to 7 with elongated stripes, 8 to 10 azure blue; 8 with a black line, 9 unmarked, 10 with a cross shaped marking on the dorsum. In female 8 and 9 segments black on dorsum, 9 with an azure blue apical ring, segment 10 azure with narrowly black base. Wings hyaline, pterostigma longer in fore-wing and black framed in yellow; in female pterostigma olivaceous.



The species has been recorded from Darjeeling and plains in West Bengal, Sikkim and Western Ghats in India and in Japan, China, South and South-East Asia.

Remarks : A few specimens from West Bengal are slightly larger than those of from Central India.

59. *Aciagrion approximans* (Selys)

Habit : It is common on grassy patches. It occurs in huge number in Khasi and Jaintia hills in Meghalaya. It breeds both in streams and stagnant pools.

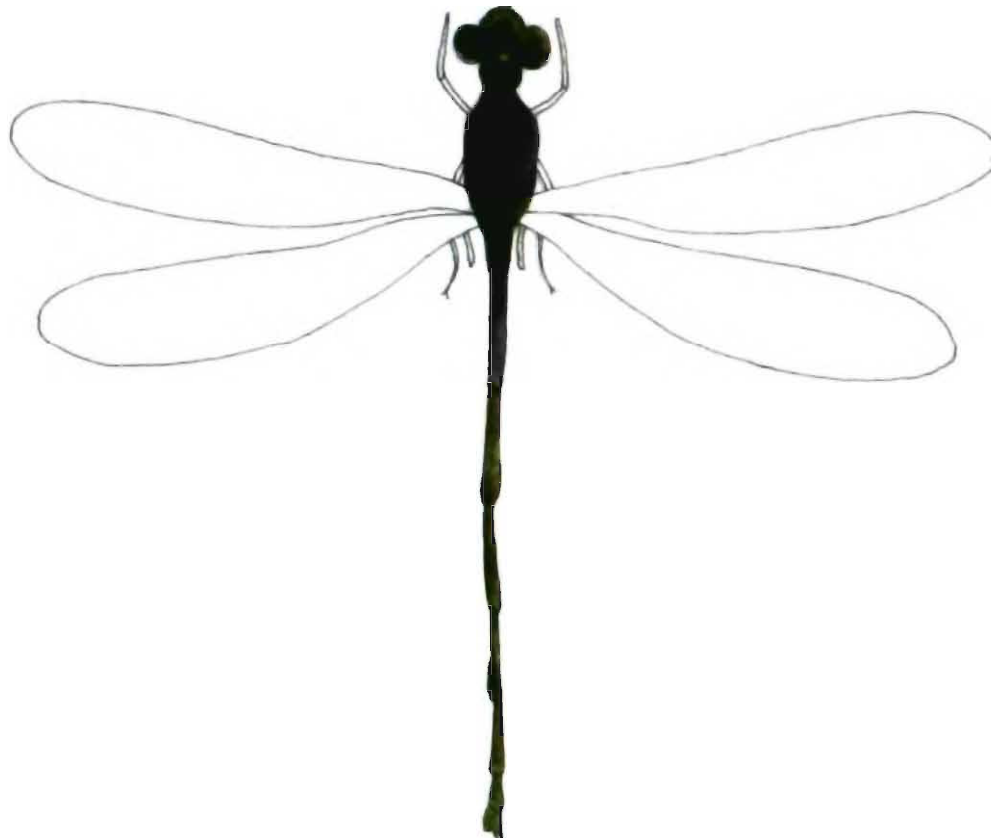
Male : Abodmen 22-24 mm; Hindwing 17 mm

Female : Abdomen 22-24 mm; Hindwing 15-18 mm

Head : Vertex and occiput black, with two small post ocular blue spots, connected to each other accross the midoccipt. Thorax broadly black on dorsum to nearly as far lateral as the antero-lateral sutures; marked with blue antehumeral stripes; laterally pale blue, obscured due to pruinescence in old specimens. The ground colour of female pale bluish-green, antehulmeral stripes pale greenish-yellow. Abdominal segment 1 broadly black on dorsum, overloaded with pruinescence at the sides; segment 2 broadly black on dorsum, pale blue or bluish-green laterally; segments 3 to 7 broadly black on dorsum, pale blue laterally; segments 8 and 9 azure blue; segment 10 entriely black, emarginate at apical border. In female segments 8 and 9 black on dorsum and segment 10 azure blue. Wings hyaline, pterostigma brownish, paler at the circumference.

The species is confined in the North-East India including Sikkim Himalayas.

Remarks : Lahiri's (1987) contention that in eastern India *Aciagrion tillyardi* occurs seems to be wrong.



60. *Aciagrion pallidum* Selys

Habit : It is a species of open lands, roosts near and away from water on tall grasses or bushes. Sometimes it remains with *Ceriagrion olivaceum*. It occurs from rainy season to December.

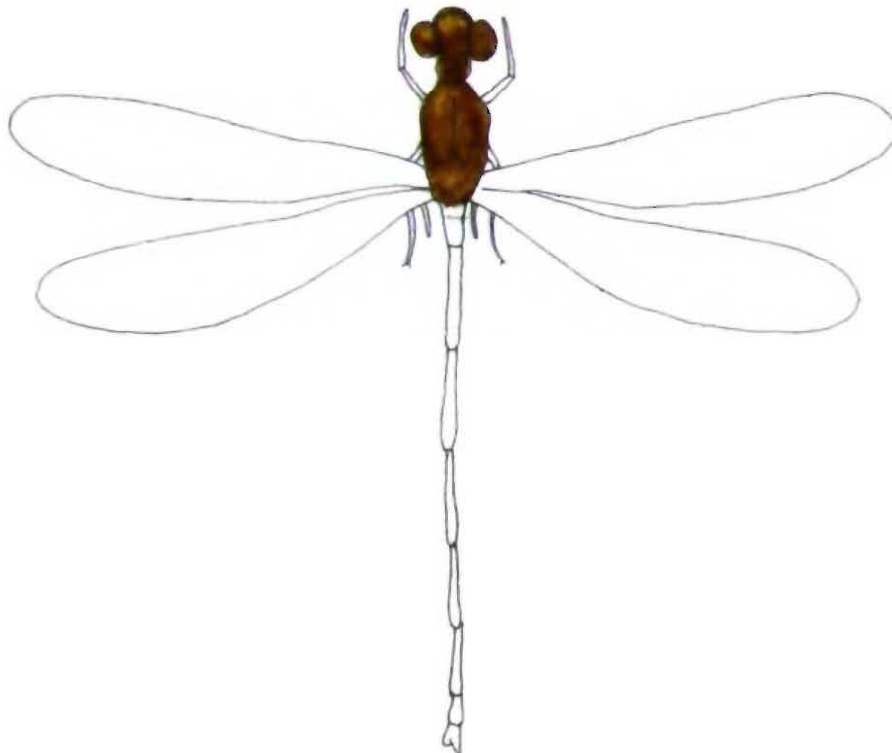
Male : Abdomen 31 mm; Hindwing 18 mm

Female : Abdomen 30 mm; Hindwing 20 mm

Head : Vertex and occiput brown with large triangular pale postocular spot narrowly connected to each other. Thorax brown on dorsum, slightly extended pale blue antehumeral stripe on dorsum and a similar one lying midway between the lateral sutures, white beneath in both sexes. Abdomen long, slender and dilating at the end. Segment 1 very light blue with a black spot on dorsum; segment 2 with a broad black spot near base of the dorsum; segment 3 to 7 like the segment 2 with black apical ring and white laterally, segments 8 to 10 pale azure blue, unmarked. In female segments 1 and 2 blue at the sides, the latter with an arrow-head black marking on the dorsum in the halo of reddish-browns. Segments 3 to 7 reddish-brown on dorsum bordered with black; the extents of black colour varies in different segments; segments 8 to 10 almost white, sometimes pinkish or palest blue; segment 9 with two black basal points. Wings hyaline, pointed at apices pterostigma pale brown.

The species occurs throughout India and in Indo-Chinese subregion.

Remarks : Male specimens from Assam may have dirty-white labium, brown occiput; male specimens from Duars of Bengal may have ventral part thorax, prothorax and legs yellow.



Suborder ANISOPTERA

Family GOMPHIDAE

61. *Macrogomphus montanus* Selys

Habit : It flies in open grassy fields, it breeds during monsoon.

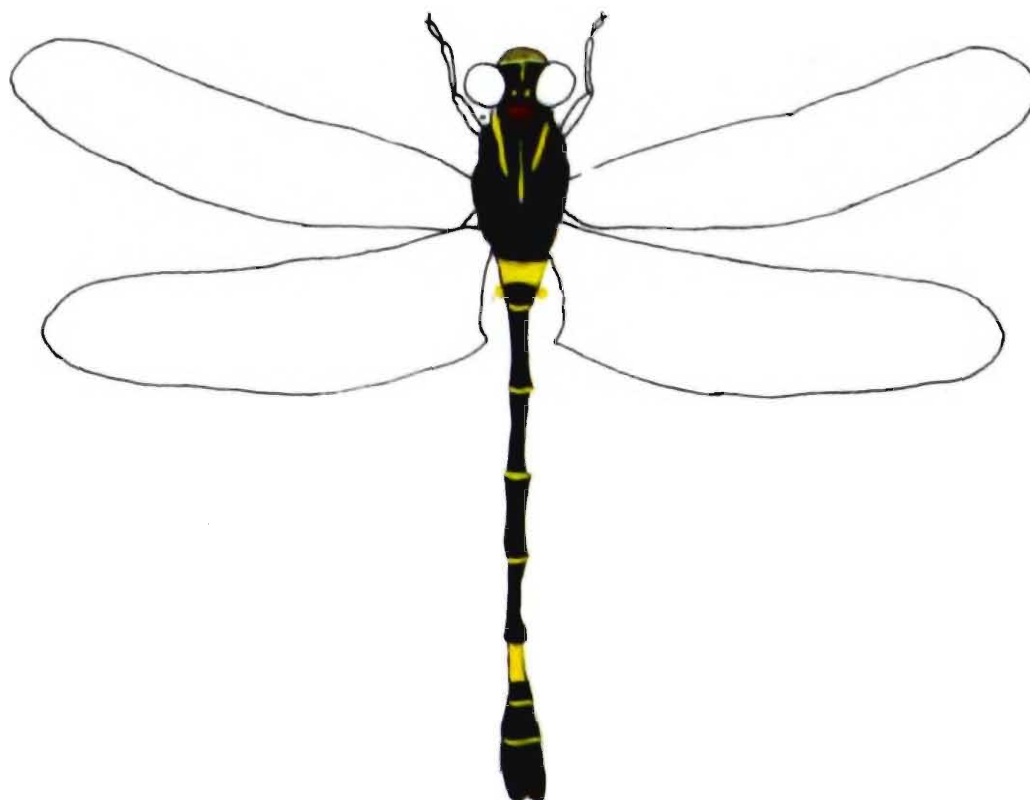
Male : Abdomen 50 mm; Hindwing 38-40 mm

Female : Abdomen 47 mm; Hindwing 40 mm.

Head : Black marked with yellow, occiput brown, its border raised into a small conical tubercle at the middle, thorax black marked with antehumeral citron-yellow stripe, broadly confluent with mesothoracic collar, narrow humeral stripe. Sides broadly yellow, the two lateral sutures finely mapped out in black. Abdomen black, marked with yellow; segment 1 almost entirely yellow; 2 with basal ring confluent with dorsal stripe and a broad spot on oreillets, 3 to 6 with basal rings occupying about one-third of the segments, 7 with a half yellow, 9 with a baso-lateral spot. In female segment 2 has dorsal stripe border and bilobate. Wings hyaline palely suffused brown, pterostigma dark brown. In female wings tinted with yellow at base and along costal margin pterostigma pale brown.

The species occurs in West Bengal; Bangladesh, China, Myanmar and Nepal.

Remarks : Specimens from West Bengal have got bluish yellow, reddish-brown occiput; the specimens from Uttar Pradesh have a bluish-yellow marking on thorax.



62. *Paragomphus lineatus* (Selys)

Habit : The species breeds in still and running waters, female sometimes lay eggs either at the edge of a sandy beach, over ripples flowing over gravely bottom.

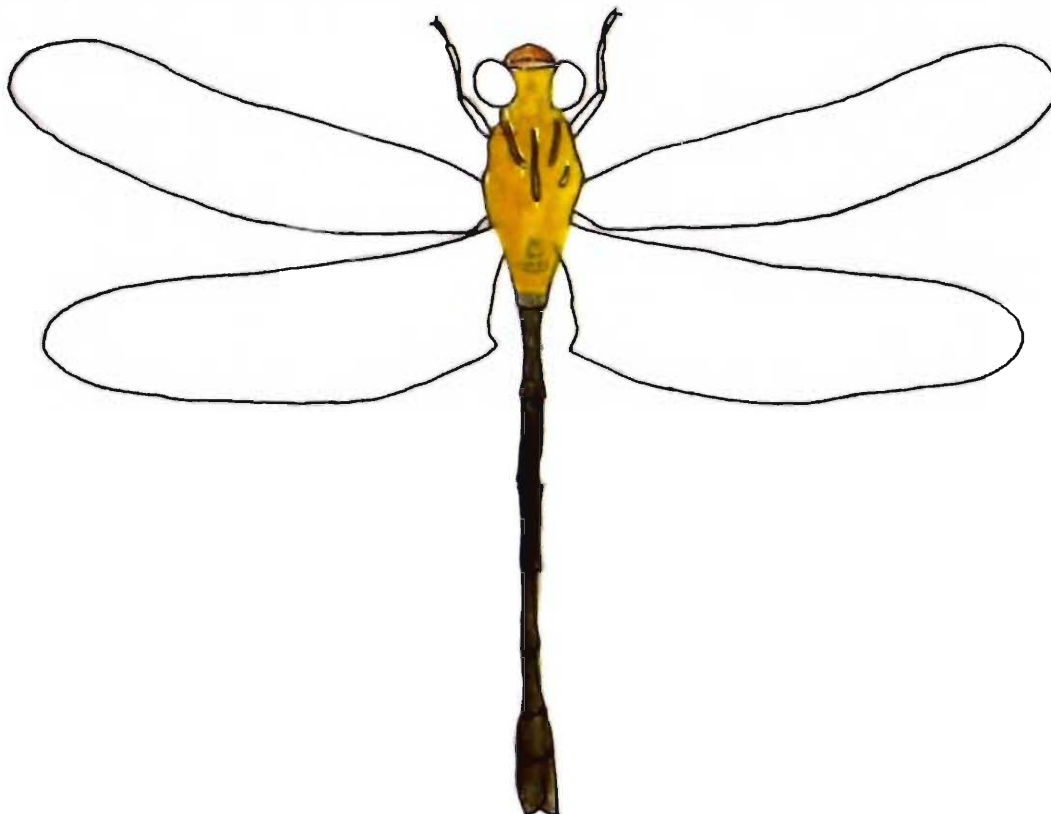
Male : Abdomen (with appendages) 32-37 mm; Hindwing 24-27 mm

Female : Abdomen 31-36 mm; Hindwing 24-27 mm

Head : Sandy-yellow. Thorax sandy-yellow marked with dull or dark brown or blackish-brown as follows : A dorsal line bordering the mesothoracic collar. On either side of the middorsal carina an oblique antehumeral line; a line on the humeral suture and two lateral lines close together, all are parallel, two lateral ones cross the spiracle and the other maps out the postero-lateral suture. Abdomen black marked with yellow variable space according to age. In female the lateral prolongation of black extend to the second segments; segments 8 and 9 are usually deep black. In some specimens segments 8 to 10 are yellow; segments 3 to 6, ventral to the lateral black stripes are shining silvery white. Wings hyaline costa yellow, pterostigma reddish-brown; in female wings saffronated at the base; costa and several nervures yellow.

The species occurs throughout India in the plains, hills, Himalayas and the Western Ghats. Outside India it has been recorded from Bangladesh, Pakistan, Myanmar, Nepal, Sri Lanka and Turkey.

Remarks : Specimens from Orissa have bluish-yellow labium, labrum bluish-white, frons olivaceous-yellow thorax dark brown anal appendages reddish-yellow, dark brown at the tip.



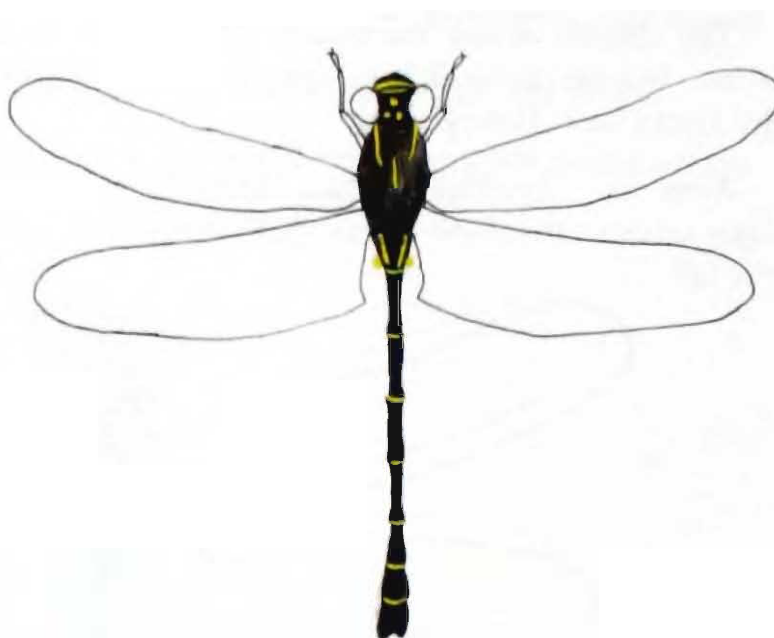
63. *Stylogomphus inglisi* Fraser

Habit : It perches and wanders around fast flowing stream and is visible usually during March to May.

Male : Abdomen 26 mm; Hindwing 21 mm
Female : Abdomen 22 mm; Hindwing 27 mm



Head : Occiput simple black, frons black, crest of frons traversed with yellow. Thorax black on dorsum marked with yellow as follows : mesothoracic collar, oblique mapped out in black; two fine stripes connected by a short stripe at their middle, tergum spotted with a yellow. In female black stripes on sides of thorax not joined in the middle. Abdomen black marked with yellow as follows : segment 1 with sides and dorsal spot, 2 with sides broadly, including the orcilllets and a middorsal fusiform stripe; 3 with its base laterally and middorsal oval spot;



segments 4 to 6 with narrow rings slightly interrupted on the dorsum, remaining segments black. In female abdominal segment 7 with a pair of basal dorsal spots. Wings hyaline, pale saffron at base; pterostigma black. In female wings deeply tinted with yellow at extreme base.

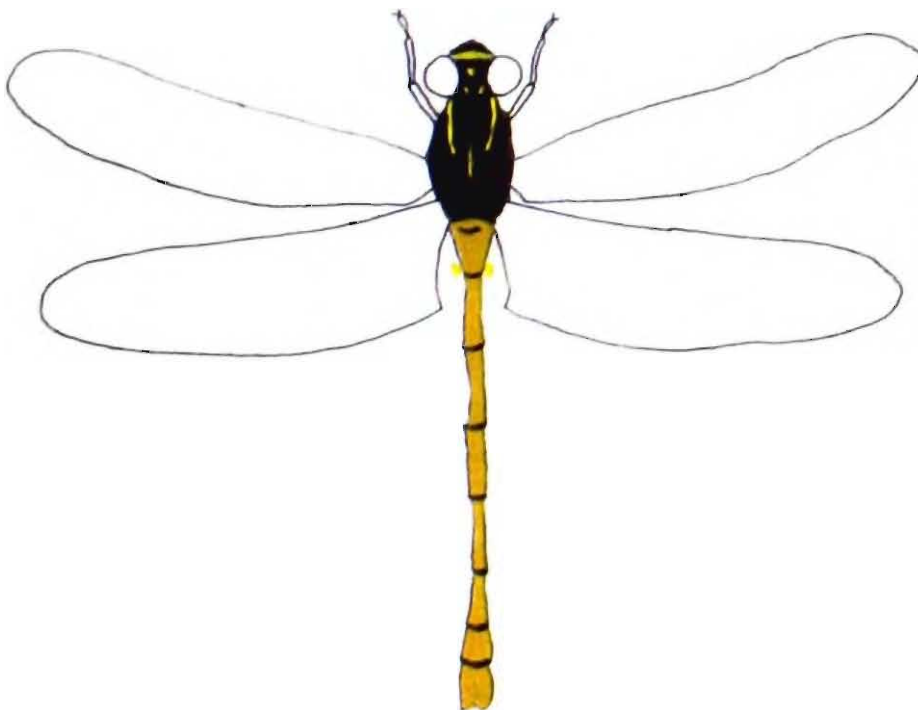
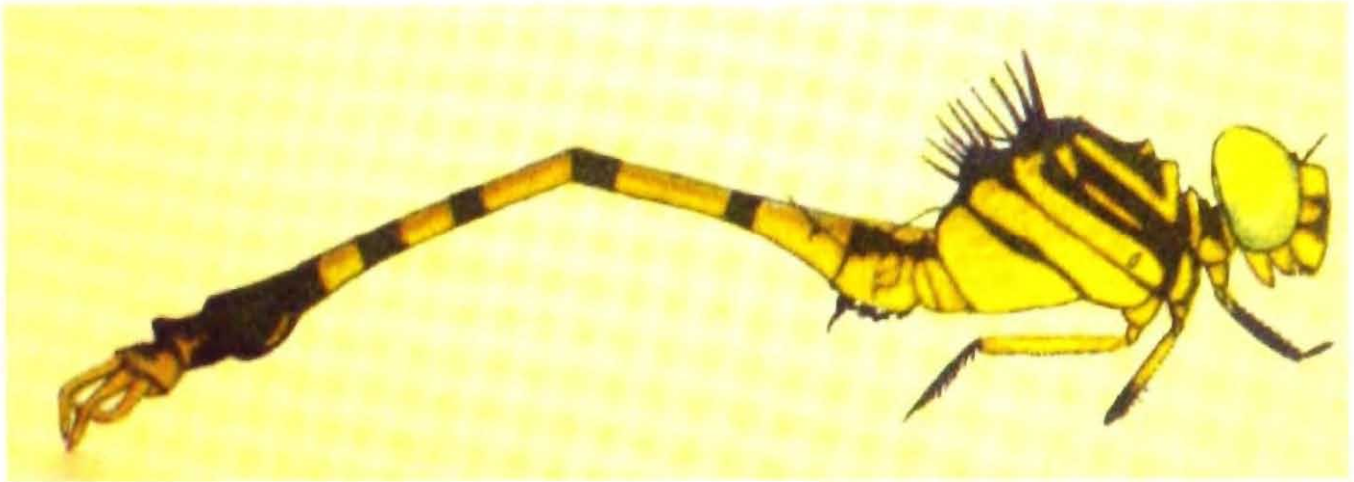
The species is distributed in the North-West Bengal (Darjeeling), Bangladesh, Nepal.

Remarks : Variations in the nodal index is sometimes met with.

64. *Phaenandrogomhus aureus* (Laidlaw)

Habit : It wanders about the edges of streams, large number of specimens are visible during April-May. The female is identical to male.

Abdomen 38 mm; Hindwing 31 mm



Head : Vertex black, occiput with a raised point froms greenish-yellow. Thorax black on dorsum, marked with yellow. A narrow mesothoracic collar; incomplete humeral stripe laterally broadly yellow. Postero-lateral suture bearing a narrow black stripe. Abdominal segments 1 and 2 bright yellow, with a broad subdorsal black stripe on each side, enclosing a trilobate stripe of the ground colour on the middorsum of segment 2, segments 3 to 7 with broad apical black rings and an oval black spot

on middorsum, 7 without the spot, but black extends up to 9; 10 bright ochreous, wings hyaline, pterostigma dark ochreous framed in black.

The species occurs in the Himalayan parts of Arunachal Pradesh, Garo Hills.

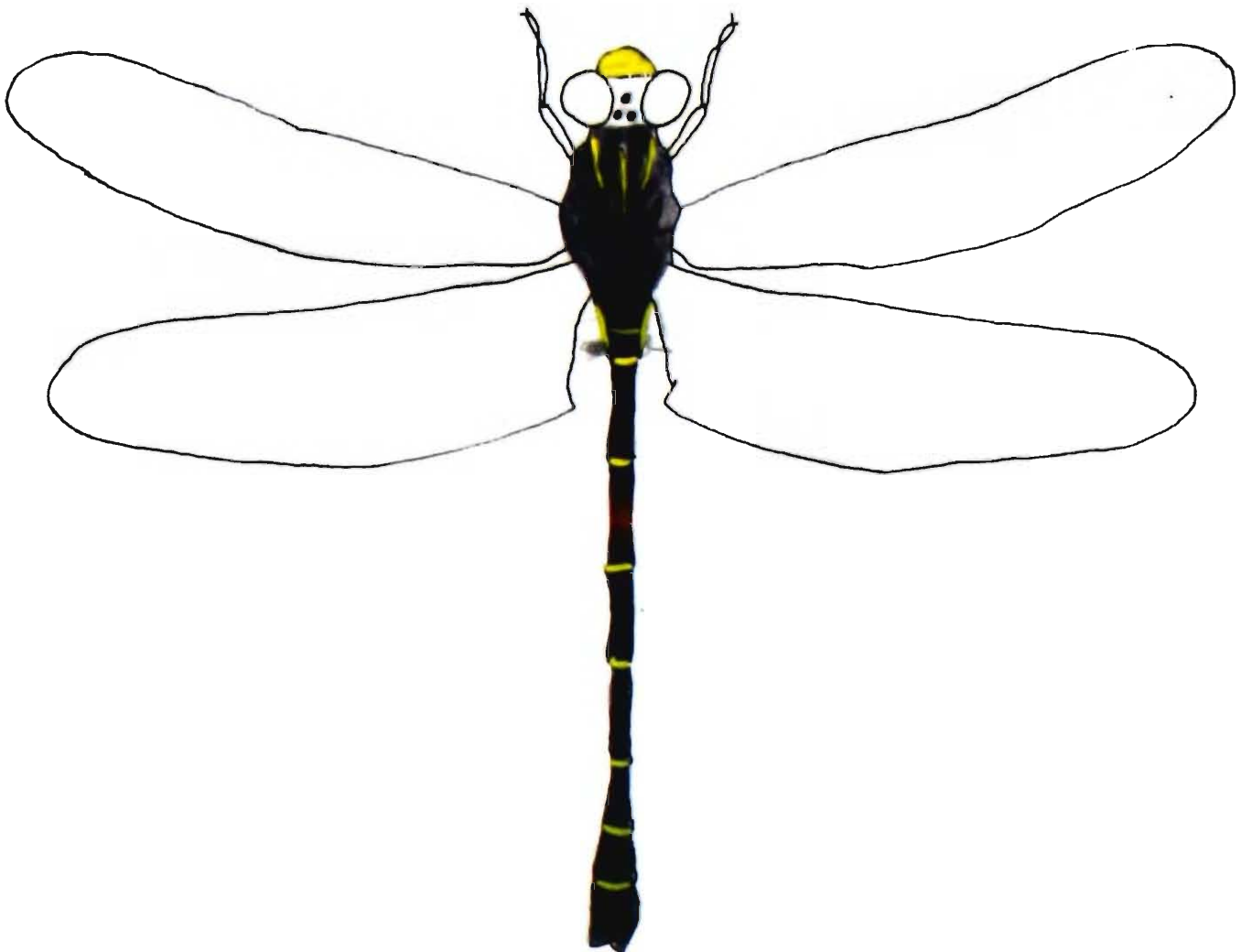
65. *Onychogomphus striatus* Fraser

Habit : It moves about the edges of hilly rivers and streams, forested areas. It is visible mainly during July and August.

Male : Abdomen 37 mm; Hindwing 28 mm

Head : Black in most parts, with yellow border on occiput; thorax black on dorsum marked with yellow humeral stripes tapering to a point below, black lines on lateral sutures thick. Middle part of the dorsal carina narrowly, a mesothoracic collar slightly interrupted, oblique antehumeral stripes joined the mesothoracic collar, laterally yellow. Abdominal segment 1 black, with large lateral yellow spot, 2 with a narrow complete basal black ring and broad subdorsal black stripe; 3 to 6 with a yellow reduced to basal ring, 7 basal half yellow, 8 and 9 black with yellow spot on each side 10 black. Wings with black reticulation, pterostigma pale brown.

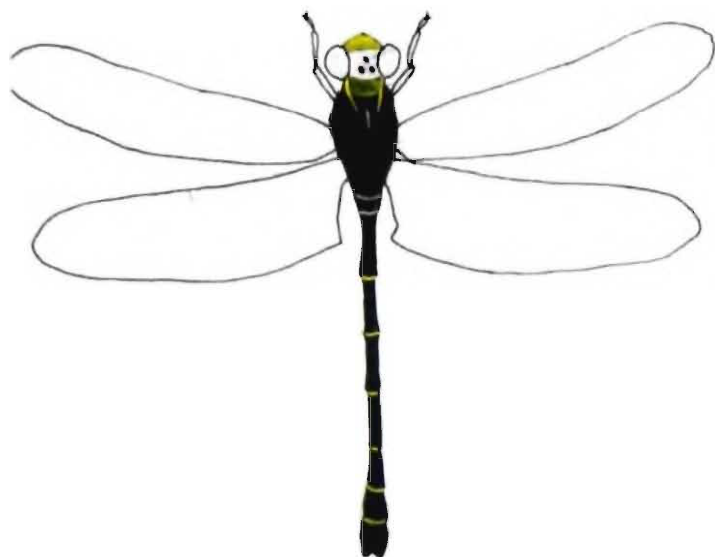
The species occurs in Darjeeling, Nilgiris and Nepal.



66. *Ictinogomphus rapax* (Rambur)

Habit : It is a common dragonfly in India, prefers to breed in stagnant water bodies, sometimes lay eggs in running waters. It perches on twigs on the banks of water bodies, keeping the head down. When disturbed it flies towards the water. Females are common during the breeding season in the monsoon; sometimes follows mobile objects.

Male : Abdomen (with anal appendages) 52 mm; Hindwing 40 mm
Female : Abdomen 50 mm; Hindwing 42-44 mm



Head : Eyes widely separated, vertex black, occiput greenish yellow, fringed with yellow hairs. In female occiput may have a spine or a bifid one. Thorax black marked with yellow or greenish yellow as follows : a complete meso-thoracic collar; oblique dorsal spot, a large coloured spot on alar sinus; spots on tergum; humeral upper triangular, laterally yellowish-green with a median broad black stripe and posterior border of the metepimeron narrowly yellow. In female the humeral stripe is nearly always complete and the lateral black band is

always spotted and an almost complete yellow stripe may be here. Abdomen black marked with bright yellow as follows : segment 1 with an apical dorsal stripe, on segment 2 a dorsal triangular mark and a broad lateral spot; segment 3 half yellow; segments 4 to 6 with large dorsal spots confluent on the middle line, basal half of segment 7 and 8; segment 9 with lateral basal stripe, 10 unmarked or with spot on either side; in female segment 10 black. Anal appendages black. Wings in male hyaline, in female with a small dark brown basal marking, pterostigma black long. In female vulvar scale black, deeply cleft.

The species occurs almost throughout India. Outside India it has been recorded from Bangladesh, China, Myanmar, Nepal.

Remarks : Male specimens from Rajasthan have bluish-yellow labrum, with deep brown base, deep brown on the upper surface of frons; distinctly bifid occipital spine, yellow on the lateral side of the thorax.



Ictinogomphus rapax (Rambur) – Male

Family AESHNIDAE

67. *Hemianax ephippiger* (Burmeister)

Habit : Migratory species. It breeds in still waters such as marshes, and shallow, weedy tanks. It visits lower Bengal in summer.

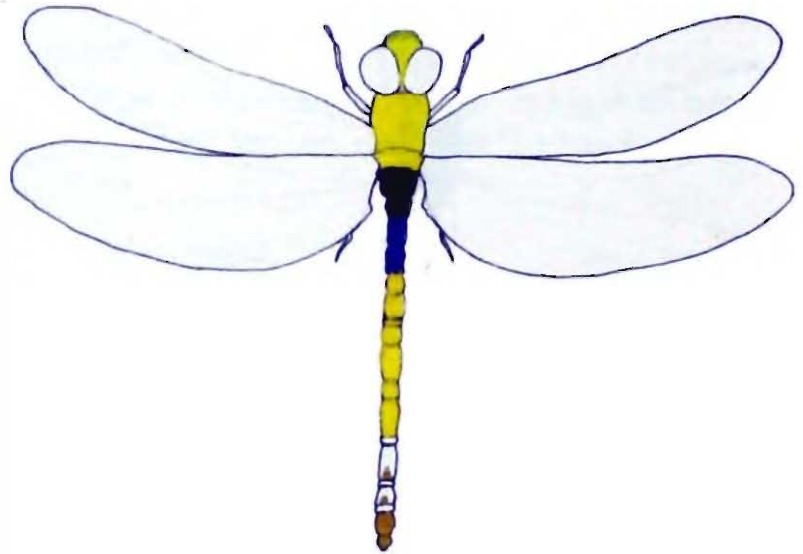
Male : Abodmen 42-43 mm; Hindwing 44 mm

Female : Abdomen 40-41 mm; Hindwing 46 mm

Head : Labium, labrum and face bright golden or citron-yellow occiput bright yellow. In female labrum sometimes with dark reddish-brown border; upper surface sometimes with dark reddish-brown border; upper surface of fons greenish. Thorax palest brown, or olivaceous paling to yellow beneath. Abdomen bright ochreous marked with blue and reddish or blackish-brown as follows :

segment 1 and base and sides of 2 pale olivaceous-green or yellow, dorsum suffused with reddish-brown; dorsum and subdorsum azure-blue with suture black; segment 3 with a triangular subdorsal basal azure-blue spot; below this pearly-white; rest of the segment olivaceous; segments 4 to 7 bright olivaceous yellow with reddish-brown stripe on middorsum deepening to black at apical end of segments; a small sharply defined blackish-brown spots on the sides of the segments 3 to 7; broad middorsal blackish brown stripe on segments 8 and 9; a triangular yellow spot at the apical end; segment 10 bright yellow white, black base.

In female segment 1 laterally broadly white, segment 2 azure-blue on dorsum, segments 3 to 7 reddish brown. Wings hyaline or palely enfumed, hind-wing with a patch of amber-yellow, some yellow tints at extreme base of wings; pterostigma ochreous. In female amber tintng extends along the costal half in both wings distal to node.



Hemianax ephippiger (Burmeister) – Male

The species is widely distributed in India, China, Central Asia, Africa and Europe.

Remarks : Female specimens from Rajasthan sometimes lack reddish-brown colour in the region between MA and IA.

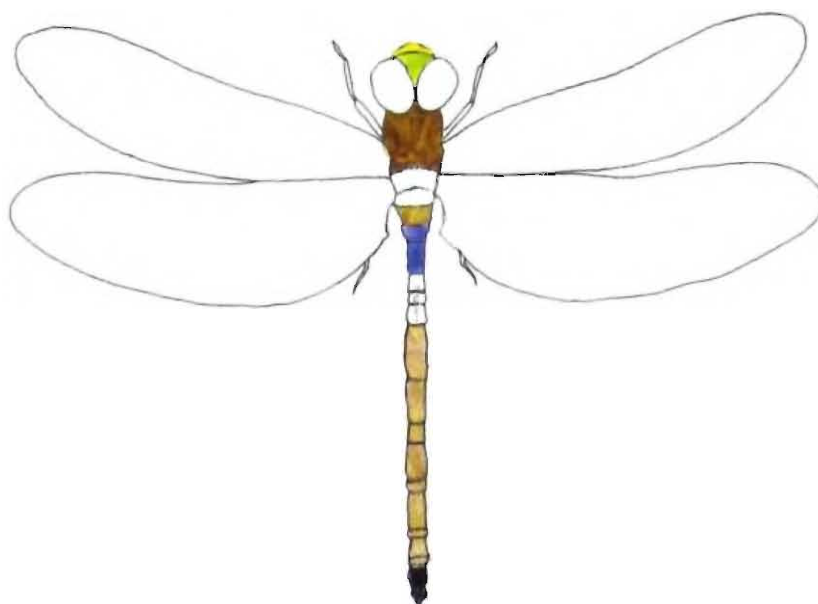
68. *Anax parthenope parthenope* Selys

Habit : It is crepuscular in habit. It is found to hawking over large tanks or reservoirs.

Male : Abodmen 47-49 mm; Hindwing 46-50 mm

Female : Abdomen 46-48 mm; Hindwing 48-50 mm

Head : Labrum golden-yellow, face and frons olivaceous or greenish-yellow. Thorax pale olivaceous brown with dark-brown sutures. Abdomen : segment 1 olivaceous-brown, dark-brown spot on each side; segment 2 turquoise blue traversed by a dark-brown bridge; segment 3 with a triangular blue patch, and an irregular broad black stripe, segments 4 to 9 with suture and ridges finely black, with its sides and apical border bluish-grey. In



Anax parthenope parthenope Selys

female blue on segment 2 on dorsum, sides pearly-white, reddish-brown on dorsum. Wings hyaline, enfumed with warm-brown or yellowish-brown, apices generally paler. In female Wings traversed by a very broad pale blackish-brown fascia, limited to the distal end of the pterostigma.

The species is distributed from Europe, Central Asia to Assam, West Coast of India and Deccan.

69. *Anaciaeschna jaspedia* (Burmesister)

Habit : Flies freely at dusk, in the daytime the specimens remain in dark areas of bamboo jungles.

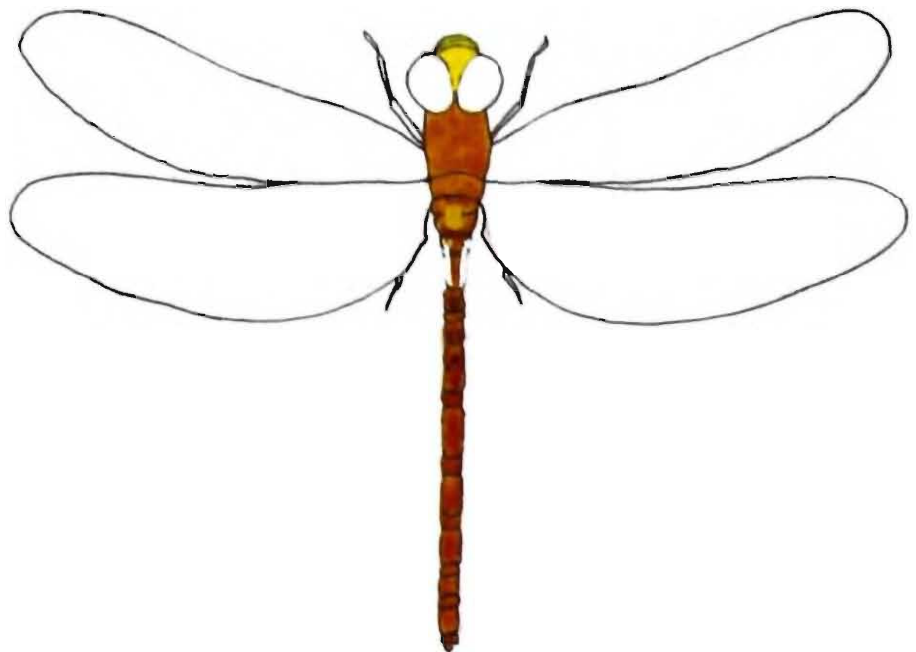
Male : Abdomen 43-48 mm; Hindwing 41-46 mm

Female : Abdomen 43-46 mm; Hindwing 41-43 mm

Head : Face pale ochreous, or dull olivaceous-brown, upper surface of frons and sides of face golden yellow, vertex and occiput yellow, crest of frons bordered with blackish-brown. Thorax reddish-brown with broad greenish-yellow stripes on each side. Abdomen reddish-brown marked with azure-blue, pearly-white and yellow as follows : segment 1 with a large quadrate pale yellow spot on each side; segment 2 with sides glistening pearly-white; subdorsum and dorsum azure-blue with a broad reddish-brown quadrate spot on middorsum, sutures black; segment 3 with blue and white, dorsum reddish-brown, with a pair of dorsal yellow spots, segments 4 to 7 without blue mark; 8 with a pale spot on each side; 9 and 10 darker brownish on dorsum. Wings hyaline, suffused with pale amber-yellow limited to subcostal space of forewing; costa and central area in hind-wing, anal triangle deep amber-yellow, pterostigma reddish ochreous, neuration ferruginous; costal border yellow. In female wings deeply tinted with amber-yellow, in some the wings suffused with pale brown.

The species is distributed in West Bengal, Assam, the Western Ghats, Myanmar, South-East Asia, Micronesia, Tahiti and New Guinea to the Pacific.

Remarks : Male specimens from the Great Nicobar Is. sometimes possess reddish-brown labrum, face, the lateral yellow marking on the thorax extends up to the first abdominal segment; yellow suffusion present in the centre of the hind-wing.

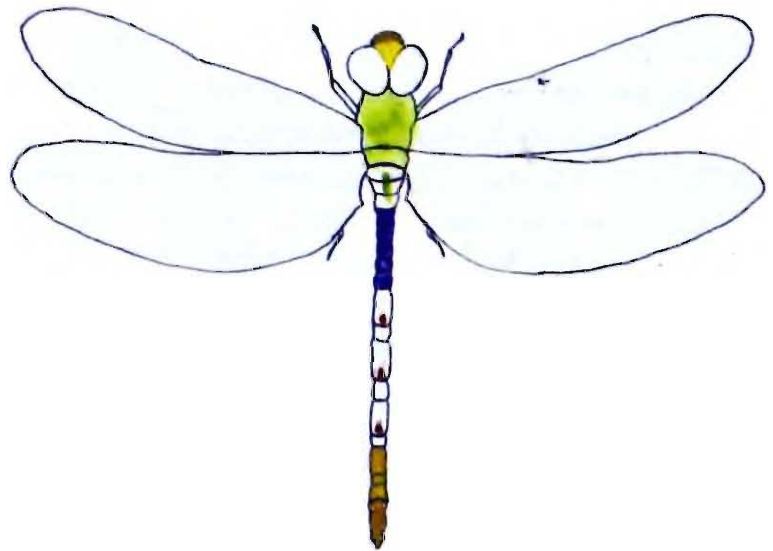


70. *Anax guttatus* (Burmeister)

Habit : It is common in the plains, sometimes visible in High attitudes. It breeds in small weedy tanks and jhils, sometimes hawk around the border of the aquatic bodies, rarely wanders away from the water.

<i>Male</i> : Abodmen 56-62 mm;	Hindwing 50-54 mm
<i>Female</i> : Abdomen 56-58 mm;	Hindwing 52-54 mm

Head : Face and frons-yellow or sometimes bright greenish-yellow. Thorax pale green, sutures reddish brown beneath. Abdomen segment 1 pale green, base narrowly reddish-brown; segment 2 dorsum coated thickly with long grey hairs; turquoise blue on dorsum and subdorsum; segment 3 pale green at base, a triangular turquoise blue spot subdorsally, a pair of orange or greenish-yellow spots, segments 4 to 7 with pairs of bright orange spots; 8 and 9 only jugal apical spots; 10 entirely yellow. In female the turquoise-blue of segment 2 is broken; spots on 8 and 9 longer; 10 yellow with reddish middorsal spot. Wings hyaline, a large patch of amber yellow on hind-wing. In female hind-wing often without amber tinted patch, if present is paler. Pterostigma ferruginous.



Anax guttatus (Burmeister)

It occurs in the plains of North-Eastern India and the Western Ghats; different parts of Asia; Seychelles and Australia.

Remarks : Specimens from Arunachal Pradesh and Orissa possess rust red labium, labrum; frons pale blue and wings membrane pale brown.

71. *Gynacantha dravida* Lieftinck

Habit : It occurs from June to August. It inhabits hills and plains. It is very swiftflier, and wanders about water bodies.

Male : Abodmen 50-58 mm; Hindwing 43-50 mm

Female : Abdomen 48-55 mm; Hindwing 44-50 mm

Head : Face olivaceous brown, frons with a "T"- shaped mark on the upper surface of the latter. Thorax is violaceous brown, with upper dorsum and an obscure humeral stripe darker reddish-brown. Abdomen swollen at 1-2 segment, segment 3 markeally constricted; the colour of abdomen palest brown, marked with blackish brown as follows : segment 1 half of dorsum blackish brown; segments 3 to 8 with jugal suture finely dark reddish-brown bordered apically with yellow and a broad blackish-brown fascia running from the apex; remaining segments palest

brown; with defined darker brown fasciae and striae. In old specimens thorax fine olivaceous-green shade on dorsum and upper parts and sides below the wings, middorsal carina black, antealar sinus bright green, tergum marked with grass-green, bright azure-blue spots on each axillary and a larger blue spot posteriorly. Abdomen : segment 1 marked with azure blue, segment 2 with oreiltlets azure blue, segment 3 with latero-basal azure blue spot, 4 to 6 have smaller spots, 7 to 10 reddish-brown. Wings palely tinted throuhout with reddish-brown; pterostigma palest ochreous, framed in reddish-brown nervures.



The species is visible in the lower Ganga plain, Meghalaya, the Western Ghats and the Nicobars.

Remarks : Male specimens from the Great Nicobar Island have face, labrum and labium ochreous, wings deeply enfumed with reddish-brown.

Gynacantha dravida Lieftinck - Female

72. *Gynacantha bainbriggei* Fraser

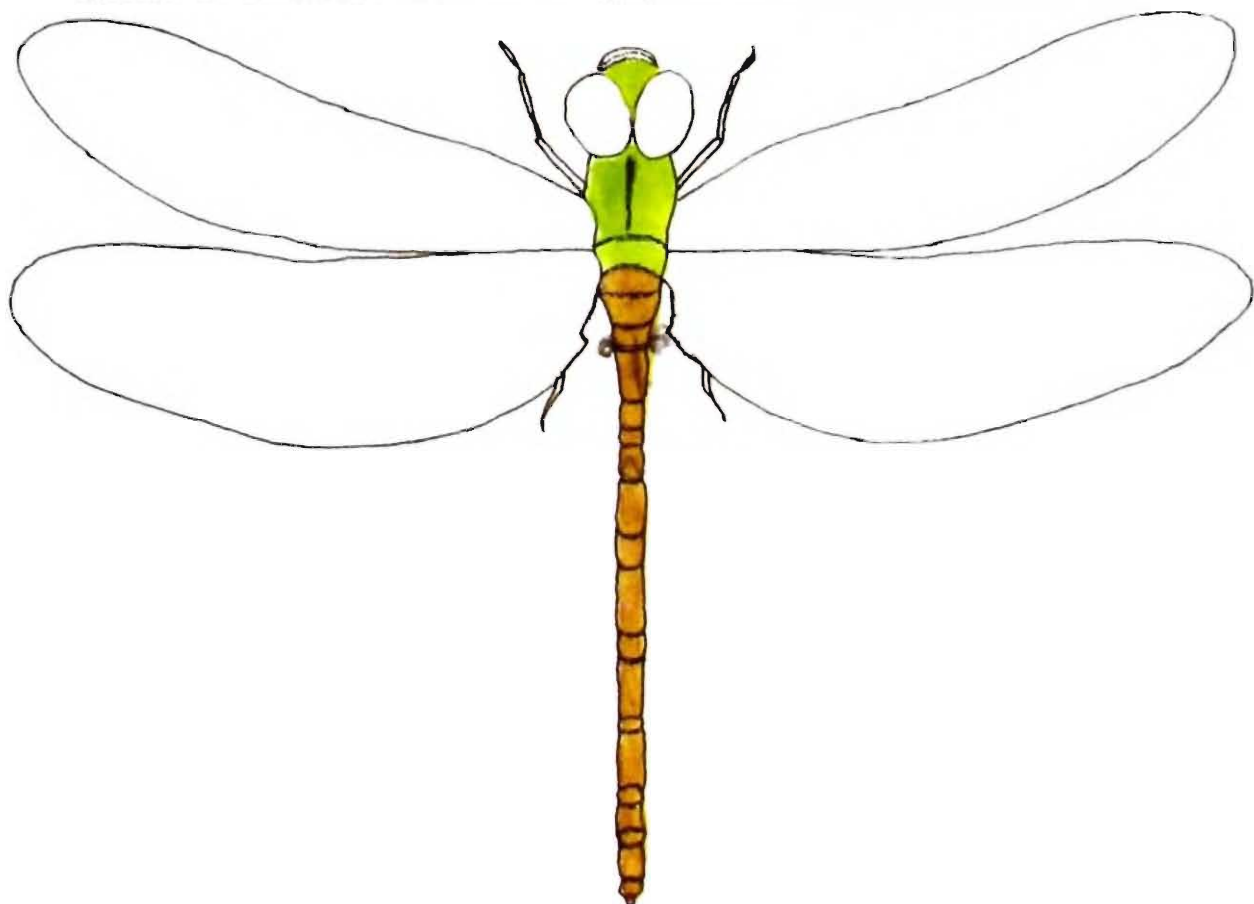
Habit : It is mainly a jungle dweller; but sometimes it comes out of the jungle. It breeds during May to July.

Male : Abdomen 45 mm; Hindwing 43-44 mm

Female : Abdomen 48 mm; Hindwing 46 mm

Head : Face and frons olivaceous green with a black band arrow like on the upper surface of the frons. Thorax grass-green, with middorsal carina and a large spot on each side between the roots of the wing black; a transverse reddish-brown fascia also dividing up the green on dorsum and a finer line, of the same colour on its lower border; tergum and axillaries spotted with azure-blue. In female coloured spots and markings are absent. Abdomen pale lilaceous-brown laterally, darker brown and dorsum marked with green or blue as follows : segments 1 and 2 azure blue, segments 3 with triangular baso-lateral blue, a pair of apical lunules green, jugal spots green, segments 4 to 7 with green apical lunules only; remaining segments unmarked, dark reddish-brown on dorsum. In female abdomen usually olivaceous, with darker reddish-brown dorsal fascia deepening in colour apically. Wings hyaline but usually more or less deeply enlumed with reddish-brown; pterostigma ochreous to pale reddish-brown, bordered posteriorly with black.

The species is distributed in West Bengal, Assam and Myanmar.



73. *Gynacantha bayadera* Selys

Habit : It is usually seen in the late afternoon and dusk, remain on feeding the mosquitoes, sometimes enter houses.

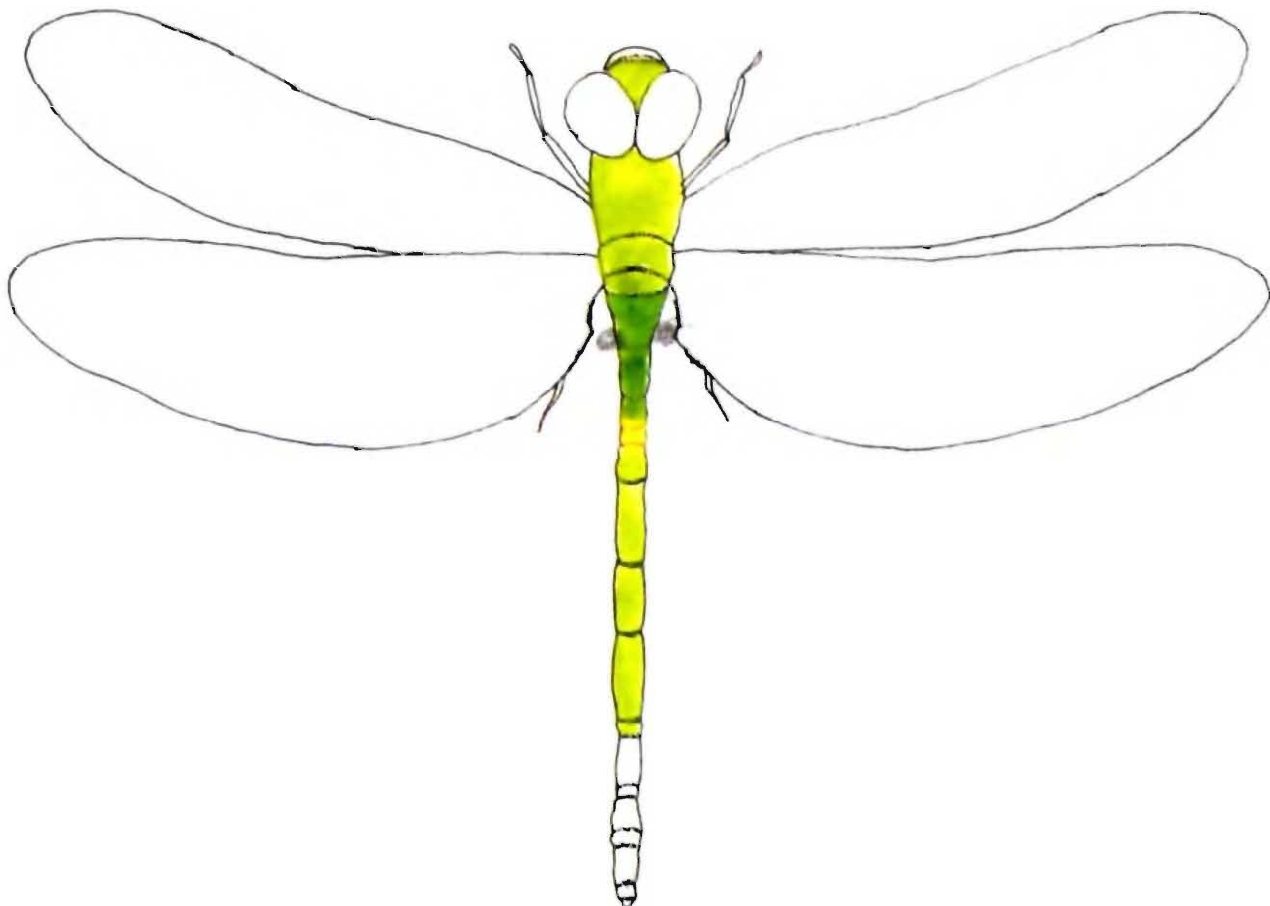
Male : Abodmen 45 mm; Hindwing 38 mm

Female : Abdomen 44 mm; Hindwing 41-43 mm

Head : Labrum bright ochreous, rest of head-face, frons olivaceous-green; in some case the latter may be ochreous or ferruginous. Thorax olivaceous-green unmarked. Abdomen slightly tumid at base, constricted at segment 3 of even width and cylindrical from segment 4 to end. Segments 1 to 3 bright grass-green; sides of the segment 1 and 2 yellow; 3 to 7 olivaceous, 8 to 10 ochreous; segments 8 and 9 shaded with reddish-brown dorsally. Wings hyaline, palely tinted at base especially subcostal and cubital space; pterostigma bright ochreous between black nervures.

The species occurs in West Bengal, Sikkim, Meghalaya in India, Myanmar, China, Formosa. Vietnam, Celebes, Taiwan, New Guinea, Sundaic Archipelago.

Remarks : Specimens from West Bengal sometimes have labium, labrum dull ochreous, thorax olivaceous-brown, wings enfumed with yellow, 8 cubital nervures in fore-wings and 7 in hind-wings.



74. *Gynacantha basiguttata* Selys

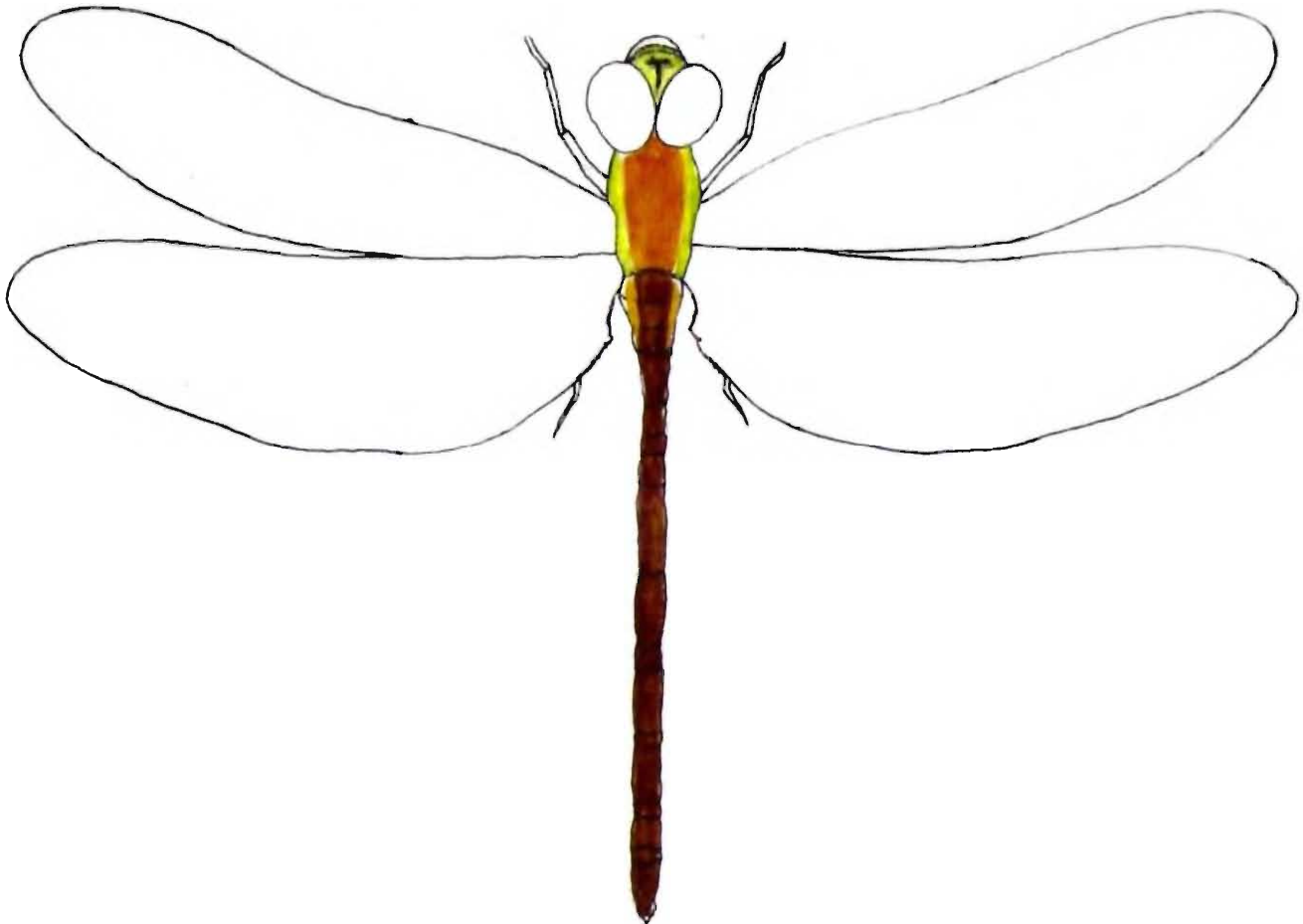
Habit : A swift flier, occurs in forests and breeds in cool seasons.

Male : Abdomen 45 mm; Hindwing 43-44 mm

Female : Abdomen 48 mm; Hindwing 46 mm

Head : Labrum bright ochreous, face, frons olivaceous-green, with a broad black arrow like mark on the upper surface of frons. Thorax grass-green with middorsal carina and a large spot on each side between the roots of the wings black, a broad reddish-brown fascia also dividing the green on dorsum and a fine line of the same colour on the lower border; tergum and axillaries spotted with azure blue. Spots absent in female. Abdomen pale olivaceous brown, laterally darker brown on dorsum marked or bordered with green. Segment 1 azure blue, segment 2 with oreillets azure blue bordered with black; segment 3 with a triangular basolateral blue spot; segments 4 to 7 with green marks; remaining segments unmarked dark reddish brown dorsum. In female abdomen olivaceous with darker reddish brown, dorsal fasciae deepening colour apically. Wings hyaline, usually enfumed with reddish-brown; pterostigma ochreous to pale reddish brown.

The species is distributed in Arunachal Pradesh, Assam, Meghalaya, West-Bengal in India, Indonesia, Malaysia Myanmar, Philippines and Thailand.



Family CORDULEGASTERIDAE

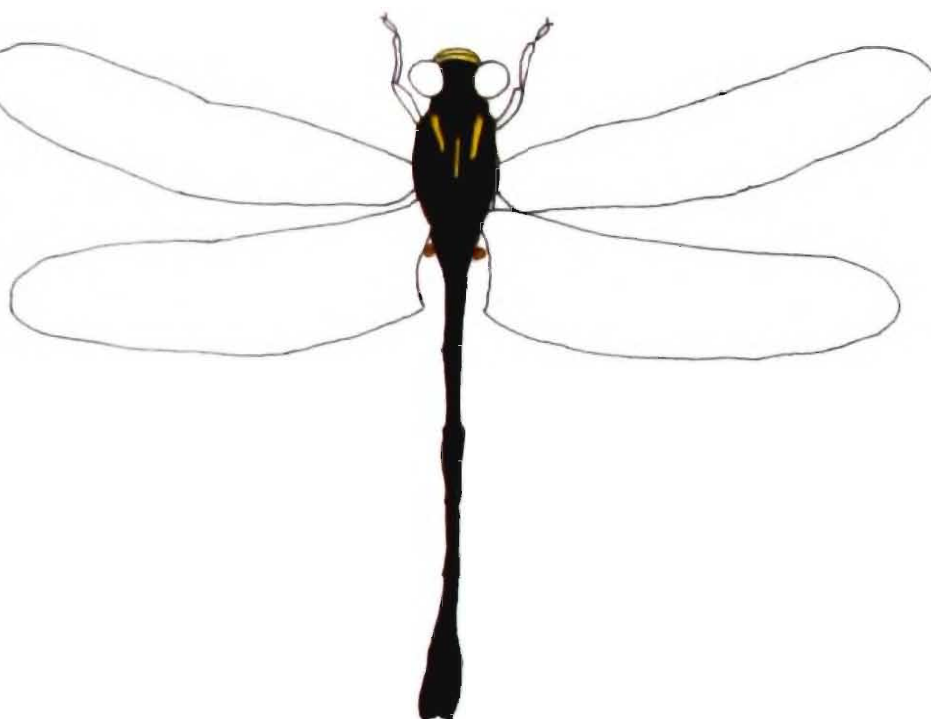
75. *Chlorogomphus preciosus preciosus* Fraser

Habit : It is visible from April to June; its flight is soaring in character, but often hawks at low level over grassy patches in hilly areas.

Male : Abdomen 59 mm; Hindwing 42 mm

Female : Abdomen 55 mm; Hindwing 44 mm

Head : Vertex and occiput black, the occiput faintly yellow at the centre, fringed with black hairs; in female frons reddish-brown in front and above; occiput yellow fringed with yellow hairs. Thorax black marked with citron-yellow as follows; an oblique antehumeral stripe, narrow humeral stripe, very narrow post humeral stripe, a median broad stripe, narrowly separated from an equally thick stripe. In female yellow markings broader, the antehumeral stripe usually confluent above at a point. Abdomen black marked with citron-yellow as follows : segment 1 with a dorsal spot and the sides broadly; segment 2 with a pair of middorsal lunules finely separated by a middorsal carina; but confluent outwardly with a large lateral spot, extends along the ventral border of the segment; segment 3 with extreme base at sides yellow; segments 4 to 7 with similar apical lunules, but that on segment 7 double the width of the others. Other segments unmarked. Wings hyaline, pterostigma black. In female wings tinted with golden yellow, pterostigma black.



The species occurs in Darjeeling (West Bengal), Sikkim and Nepal in the Himalayas and Myanmar.

Remarks : Female specimens from Darjeeling sometimes have rust-red frons.

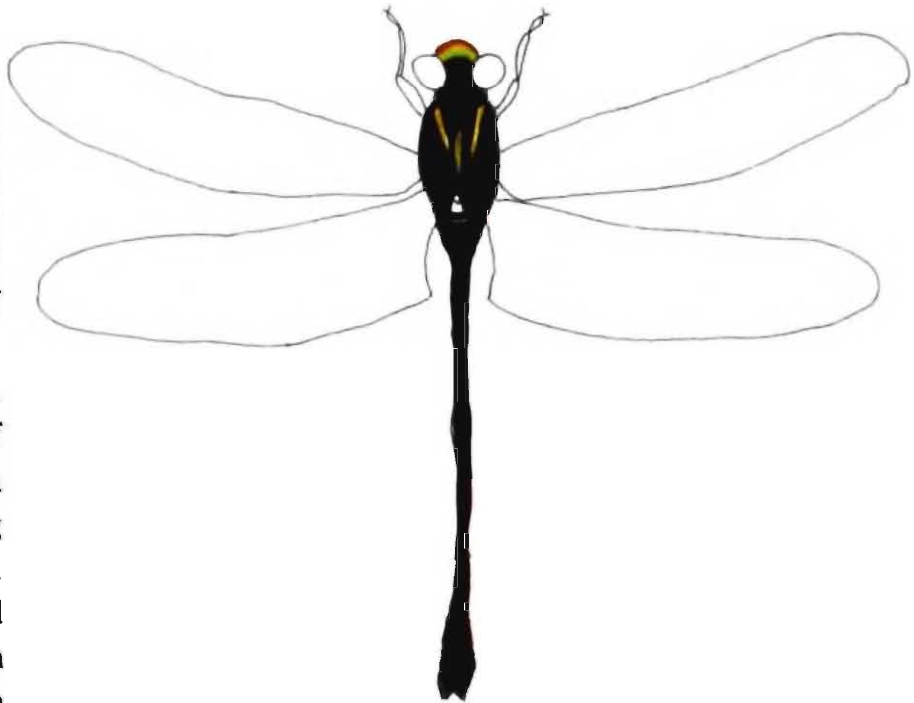
76. *Chlorogomphus atkinsoni* (Selys)

Habit : It occurs from April to July, soaring in the air, strong sustained flight, sometimes patrols along the courses of the rivers.

Male : Abdomen 55-58 mm; Hindwing 39-40 mm

Female : Abdomen 54-58 mm; Hindwing 40-44 mm

Head : Labrum, face and frons light brown unmarked with yellow, occiput dark reddish-brown fringed with black hairs. Thorax as follows : a narrow antehumeral stripe, a pair of broad lateral stripes on each side – the first post humeral and second covering most of the metepimeron; lastly a small upper spot lying midway between the stripes. Beneath a bright rounded citron-yellow spot framed in dark brown, this again in a triangle of bright ochreous



bordered by dark brown. Abdomen longer than wings, tumid at base, narrow and cylindrical at segment 3 & 4. then even width to the end; coloured black marked with citron-yellow as follows : segment 1 brownish-yellow; segment 2 with a pair of small post jugal widely separated lunules, a small spot on the small oreillets, segments 5 to 7 without lunules, 8 with narrow apical ring, remaining segments unmarked. Wings hyaline, and uncoloured, in female extreme base tinted with golden yellow as far out as basal antenodal vein.

The species is distributed in Darjeeling. (West Bengal), Meghalaya, Uttaranchal, Nepal in the Himalayas and Assam plains.

Remarks : Male specimens from Darjeeling possess brown labium rusty brown prothorax and blackish-brown thorax.

77. *Anotogaster nipalensis* Selys

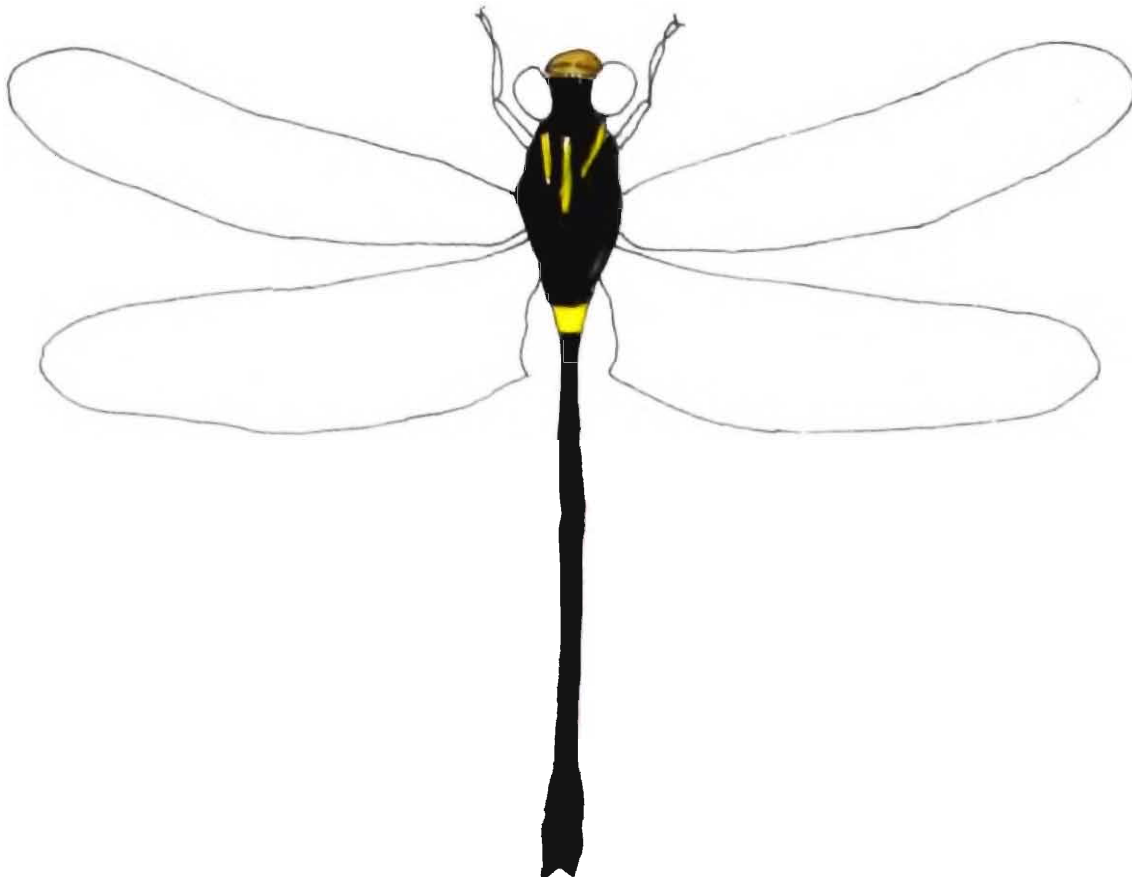
Habit : It breeds during the rainy season (April to June) above Teesta valley (1000 m); moves in open land near watery bodies.

Male : Abodmen 54 mm; Hindwing 45 mm

Female : Abdomen 58-60 mm; Hindwing 48-50 mm

Head : Labrum dark, ochreous, face and frons dark brown-yellow, occiput black densely fringed with black hairs. Thorax black changing to reddish-brown, beneath marked with bright citron-yellow as follows : two antehumeral spots, broadening above and tapering bellow; two oblique narrow lateral stripes, some spots on tergum at bases of wings. Abdomen black, marked with bright citron-yellow rings bordering the jugal suture behind on segments 2 to 8, segment 9 with occasional basal subdorsal spot, segment 10 unmarked. In female the abdomen is tumid from segment 1 to 3; tapering on segment 4 of even width thereafter; segment 9 with an enormous (10 mm) ovipositor with dark-brown spot at base. Wings hyaline, reticulation close; in female wings slightly enfumed, amber tinted basal fascia. Pterostigma blackish-brown.

The species occurs in Darjeeling (West Bengal), Sikkim, Nepal in the Himalayas; Assam and Bangladesh in the plains.



Family CORDULIIDAE

78. *Epophthalmia vittata vittata* Burmeister

Habit : The species breeds in plains although prefer to live in the hills, flies in swamps from May to November.

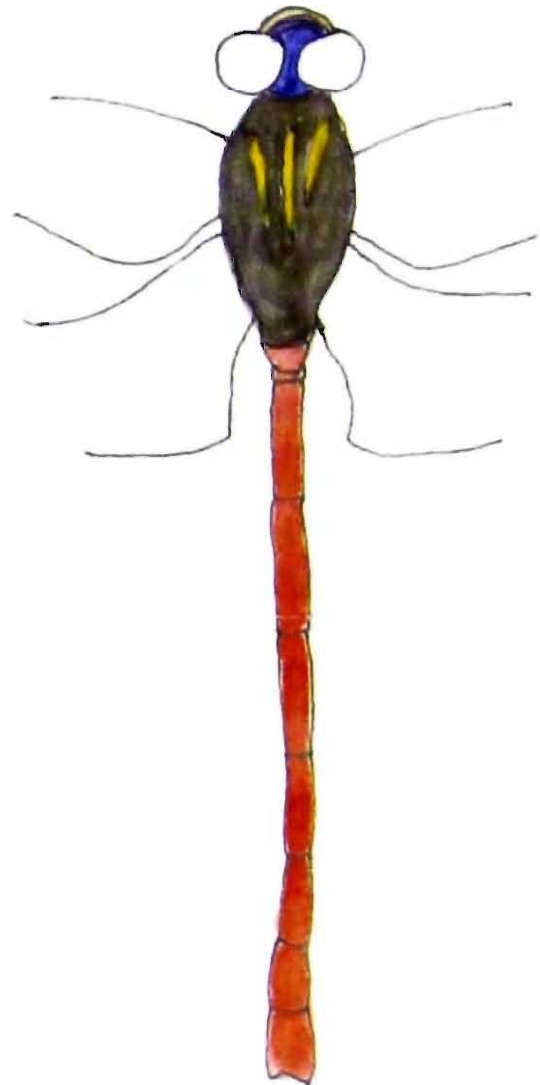
Male : Abodmen 50-57 mm; Hindwing 48-52 mm

Female : Abdomen 56-60 mm; Hindwing 50-51 mm

Head : Head with ochreous, yellow markings, frons and vesicle dark metallic blue. Thorax dark reddish-brown with upper part of the dorsum, darker on the sides with a bluish-green metallic reflex and marked with citron-yellow as follows : the antelar sinus, antehumeral stripes curved, an oblique broad stripe on each side at the level of the spiracle. Abdomen dark reddish-brown to dark ochreous, marked with bright ochreous annules; segment 2 with a moderately narrow annule bordering the jugal suture; segment 3 with much broader ring; segments 4 to 6 with the annules filling the whole area between jugal suture and on segment 7 to 9 gradually overlapping the sutures until the ochreous extends to the apical border of segments but clouded with dark reddish-brown, segment 10 brighter yellow on dorsum; its sides broadly, its apical border very narrowly markedly compressed abdomen. Wings hyaline, extreme apices slighty enfumed, tornal angle bearing a patch of amber-yellow; pterostigma short, dark blackish-brown. In female wings tinted with amber in the costal, sub costal and cubical spaces.

The form of the species is distributed in Bihar, West Bengal, Uttaranchal, Decan plateau, Eastern and Western Ghats, Tibet.

Remarks : Specimens from Bihar have reddish-brown labium, labrum.



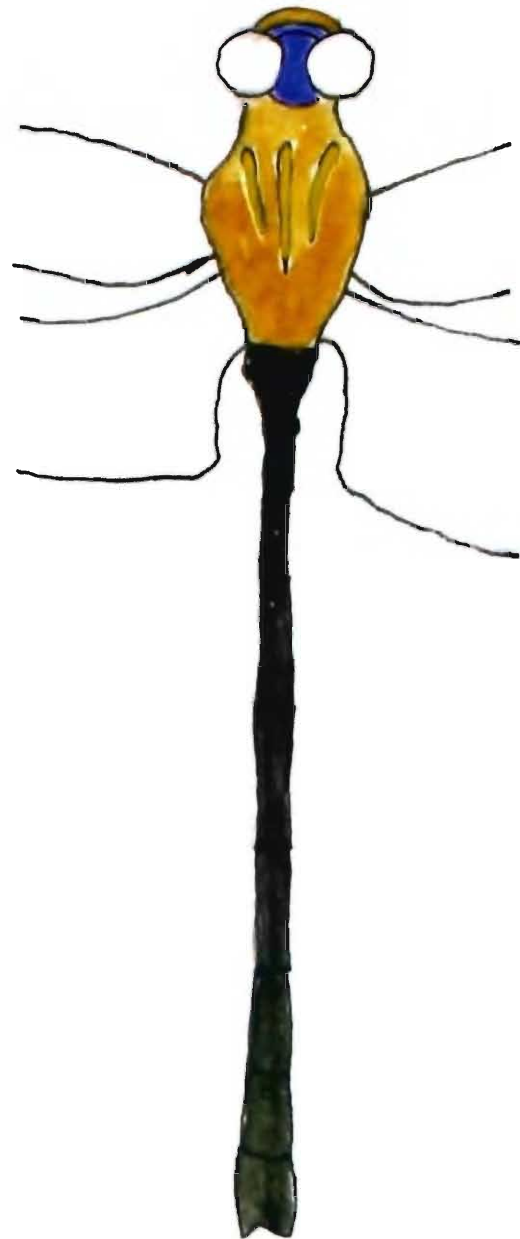
79. *Macromia moorei moorei* Selys

Male : Abodmen 48-52 mm; Hindwing 43-45 mm
Female : Abdomen 48-51 mm; Hindwing 46-50 mm

Head : Labrum and face dark ochreous, frons brown, marked with metallic blue reflex, occiput black, in female metallic reflex is less evident. Thorax reddish-brown, with dark golden-metallic reflex; antearlar sinus an oblique stripe on each side citron-yellow, the latter stripes meeting over dorsum of thorax between the wings. In female metallic reflex less evident. Abdomen black marked with citron-yellow as follows : segment 2 with a narrow annule, segment 3 with a submedian annule, segment 4 and 5 with submedian dorsal spots, segment 6 usually immaculate; segment 7 with a broad annule covering its basal half, segment 8 immaculate or with a basal triangular basal spot on dorsum; segments 9 and 10 unmarked, with a middorsal keel and a pair of small tubercles at its origin. In female the annules broader, segments 3 to 6 confluent on dorsum. Wings hyaline, sometimes tinted with brown; pterostigma very small and narrow, blackish-brown; in female brown marking is deeper.

The species is distributed in West Bengal, North-East India, Uttaranchal, Himachal Pradesh and Deccan plateau.

Remarks : Male specimens from Assam possess yellow labuim rudiment of dark rays in the wings.



Family LIBELLULIDAE

80. *Macrodiplax cora* (Brauer)

Habit : It breeds in marshes and quite commonly may be seen breeding in brackish water in the neighbourhood of estuaries. Makes short darting flight in chase of prey.

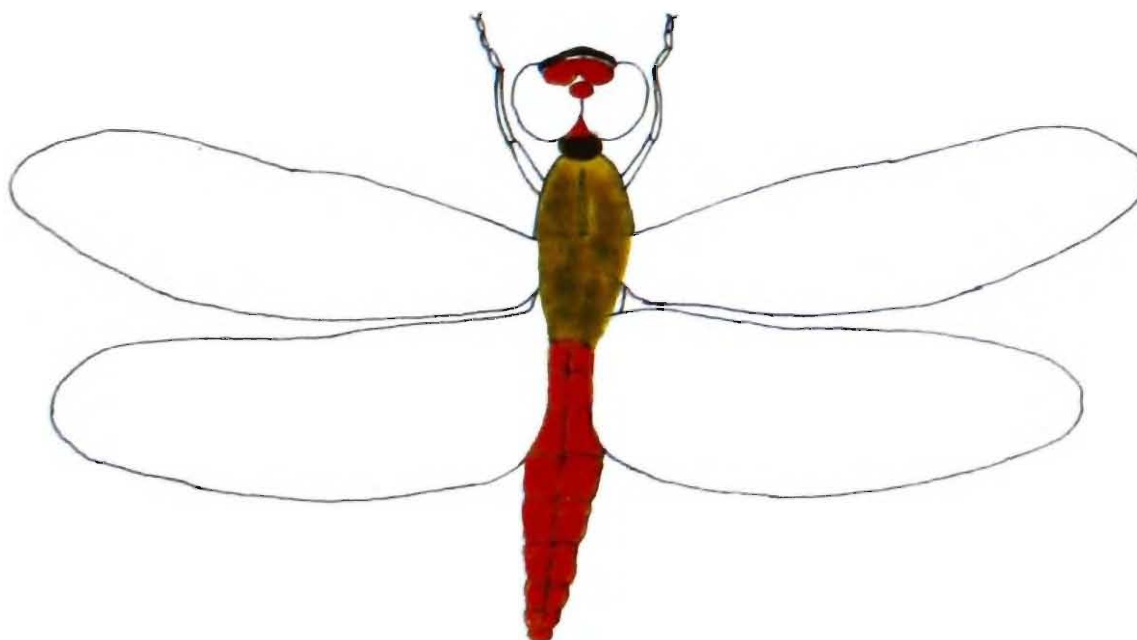
Male : Abdomen 15-17 mm; Hindwing 30-32 mm

Female : Abdomen 24-25 mm; Hindwing 32 mm

Head : Frons bright ochreous, suffused with red, sides of face and frons yellow, vesicle red. In female face frons and vesicle creamy-white. Thorax golden olivaceous brown on dorsum, olivaceous or bluish-green on sides, some black spots on upper part of humeral and postero-lateral suture, a small line over the spiracle. In female thorax light golden-olivaceous on the dorsal part and pale greenish-yellow on sides; small black markings. Abdomen bright ochreous with black middorsal black marking, blood-red on dorsal side. The black markings varies as follows : a triangular dorsal spot on the segment 1, whole of segments 2 and 3 on mid-dorsal part; hour-glass shaped mark on segments 4 to 7, a broader stripe on segments 8 and 9 but 10 with a dot only. In female abdomen ochreous, but no red mark and the black mark like male is present. Wings hyaline, amber-yellow mark at the extreme base may or may not remain in the hind-wing.

In India the species has been reported from West Bengal, Orissa, Tamil Nadu and the Western Ghats. Outside India the species has been recorded from the east coast of Africa, to Oceania, Australia, throughout southern Asia.

Remarks : Antennodials are complete although Fraser (1936) included in the group which has incomplete antennodials.



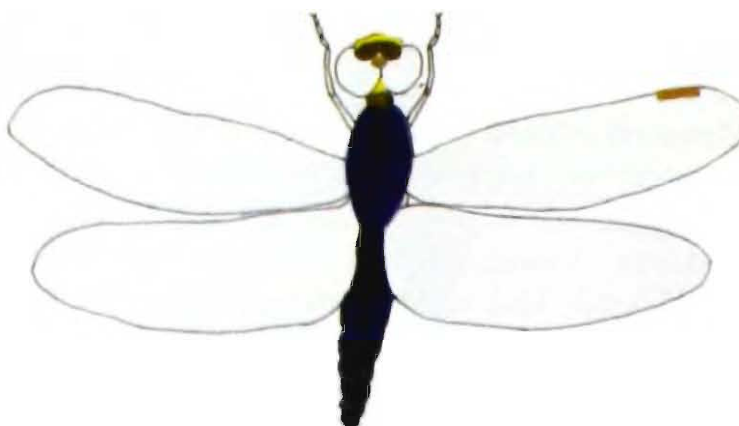
81. *Potamarcha congener* (Rambur)

Habit : It breeds in small weedy ponds and marshes and is not strictly confined either in the jungles or near water; although often large colonies being met within patches of jungles or scrubs near water bodies.

Male : Abdomen 29-32 mm; Hindwing 33-35 mm

Female : Abdomen 29-31 mm; Hindwing 33-37 mm

Head : Face and frons olivaceous-yellow, frons in adults steely black or brown or blackish-brown; in teneral and females face frons unmarked. Thorax in adults black, pruinose more or less densely and appears dark violaceous or blackish-blue. In female and subadults yellow markings are visible obscurely through the pruinoscence. In female thorax reddish-brown on dorsal part, ochreas on sides marked with yellow.



Potamarcha congener (Rambur) – Male

Abdomen variable, according to age, in colour; in old adults abdomen completely pruinose, in younger ones partially pruinose especially in the basal segments. The rest of the segments black marked with ochreous, segments 3-8 with fine stripes bordering the ventral border of the segments and middorsal carina. The ventral yellow stripes on sides of segments much broader between it and the yellow stripe bordering the middorsal carina, segment 10 and the anal appendages

black. Wings hyaline, tipped with brown in old adults; in subadults costal area of both wings yellow, in female yellow colour is prominent and brown in apex more defined.

The species is distributed almost throughout India; outside India it has been recorded from other parts of the Oriental region, China and Australia.

Remarks : Sometimes males vary from Fraser's description in having labium bluish-yellow, labrum olivaceous; occiput, pterostigma anal appendages dark brown; sometimes females have got inconspicuous yellow stripe on femora.

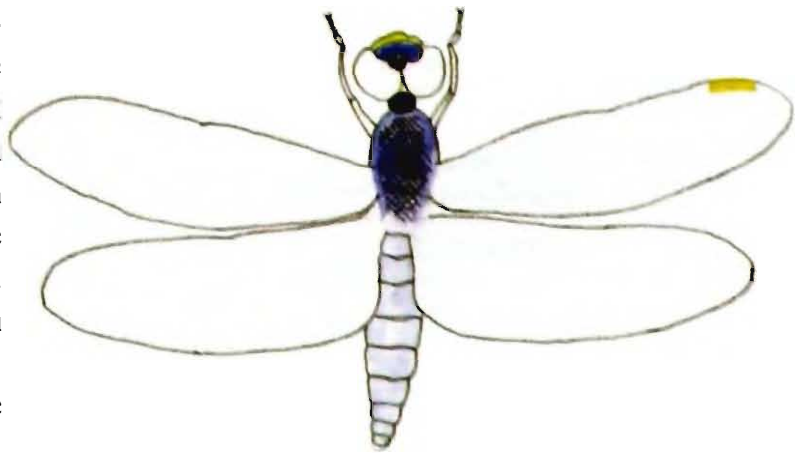
82. *Acisoma panorpoides panorpoides* Rambur

Habit : Very weak and short flier, keeps closely to rank herbage and reeds in haveily weeded tanks and ponds; usually it remains near water but some times fly away from water.

Male : Abodmen 15-18 mm; Hindwing 16-21 mm

Female : Abdomen 15-18 mm; Hindwing 17-22 mm

Head : Face and frons light azure-blue, vesicle and occiput black; the latter with a yellow spot. Thorax azure-blue, which colour forms an intricate pattern of heiroglyphics on dorsal side and lateral sides; the sutures on throax finely black. Abdomen azure blue, marked with black as follows : segments 1 to 5 with black sutures, sutures on the ventral side broadly black; a dorsal stripe at jugal sutures and apical



borders of segments, so as to have deeply serrate edge, a speckled stripe on subdorsum of segments 1 to 4, interrupted irregularly, and finally a ventro-lateral spot on each segment from 3 to 5; segments 6 and 7 black with a large spot of the ground colour on each side; segments 8 to 10 black segments 1 to 5 dialated abruptly slimmed and cylindrical from segments 6 to 10. Wings hyaline, pterostigma pale yellow.



The species occurs throughout India, Oriental region China, Japan, Celebes and Moluccas.

Remarks : Eastern Indian specimens sometimes differ from Frasers's description in having labrum brownish-yellow, abdomen brownish-red, the visicle and occiputs of the female are bluish-yellow.

Acisoma panorpoides panorpoides Rambur – Subadult female

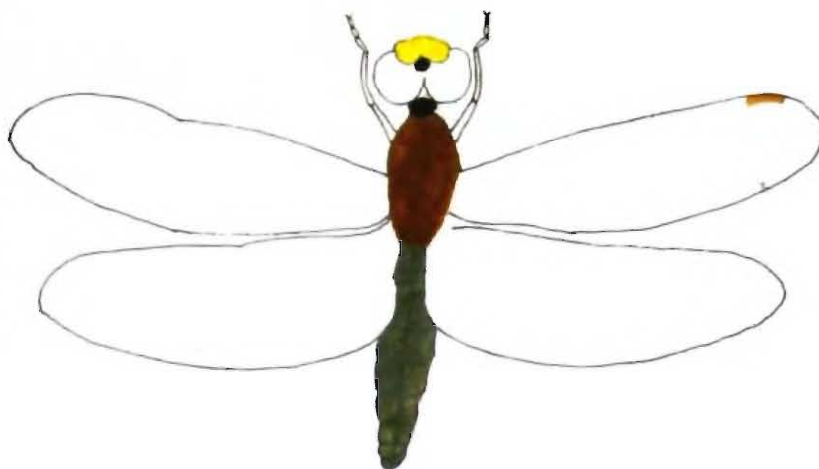
83. *Lathrecista asiatica asiatica* (Fabricius)

Habit : It is a species of moist zones crowded populations are seen near dirty pools, where they breed; shy insects have rapid flight power, sometimes enter houses.

Male : Abdomen 27-32 mm; Hindwing 33-37 mm

Female : Abdomen 27-32 mm; Hindwing 34-36 mm

Head : Face, lower border of frons and sides creamy yellow, upper surface of frons steely black or metallic blue-black. Thorax dark coppery-brown on the dorsal side, yellow laterally; in subadult dorsum bright coppery-brown with a pair of parallel yellow stripes apposed to the middorsal ridge; two small yellow spots in anteoralar sinus, a narrow humeral stripe. Laterally two black Y-shaped



markings; a narrow black stripe between the anterior "Y" which forms the posterior border of the humeral stripe; the posterior "Y" situated on the lateral suture and metepimeron. Old adults are pruinosed and rarely visible. Abdominal segments 1 and 2 have broad lateral stripe and a fine middorsal stripe which is bisected by the black middorsal carina of the segment 2; segments 3 to 8 crimson red with apical sutures finely black; segments 9 and 10 black. In female abdomen olivaceous-brown; segments 1 to 8 with greenish-yellow middorsal stripe. Wings hyaline with apices more or less enfuned, sometimes dark reddish-brown to proximal end of pterostigma, pterostigma reddish-brown.



The species is widely distributed in India, it also occurs in other parts of Oriental region; Australian region.

Remarks : Specimens from Bihar, Assam, Orissa vary from specimens from Arunachal Pradesh, Manipur in having labium ochreous, lateral, lobes, black, face and frons bluish-yellow.

Lathrecista asiatica asiatica (Fabricius) - Female

84. *Neurothemis tullia tullia* (Drury)

Habit : Short and weak flier. It occurs in large colonies in swamps or heavily weeded tanks; it keeps closely to the shelter of the herbage; some times enter houses.

Male : Abdomen 16-20 mm; Hindwing 19-23 mm

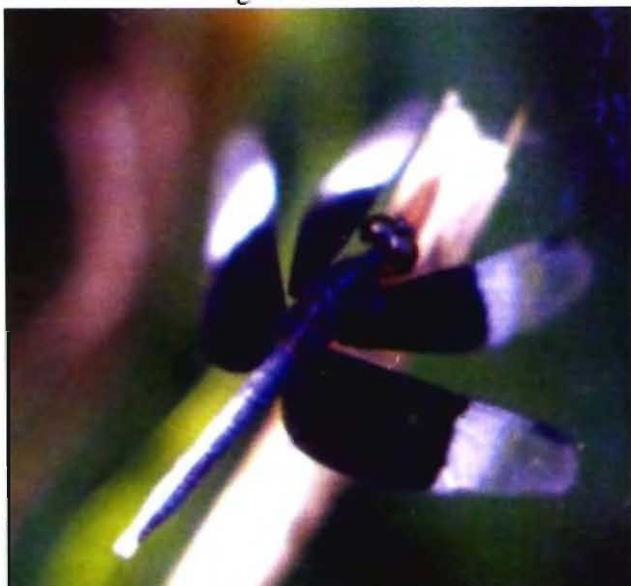
Female : Abdomen 16-19 mm; Hindwing 20-23 mm

Head : Face, frons vesicle and occiput black; in female face, frons, pale olivaceous or greenish-yellow, vesicle olivaceous brown; occiput olivaceous with yellow spot. Thorax black, middorsal carina narrowly yellow; in heterochrome female greenish-yellow, with bright yellow stripe on the mid dorsal carina; greenish-yellow is bordered blackish-brown throughout, antero-lateral suture and postero-lateral finely black. Abdomen black with a broad yellow on middorsal carina. In heterochrome female the abdomen is bright yellow with a broad black stripe extending from 1 to end black beneath. The two black marks unite at segment 7 or 8; yellow spots on segments 8 and 9. Wings hyaline for apical half opaque steely blue-black for basal half. In isochrome female, white fascia absent. In heterochrome female bright amber yellow from base to node; apices of wings broadly blackish-brown, pale yellow neuration in opaque areas.



The species is distributed in whole of India, Oriental region, China and Hongkong.

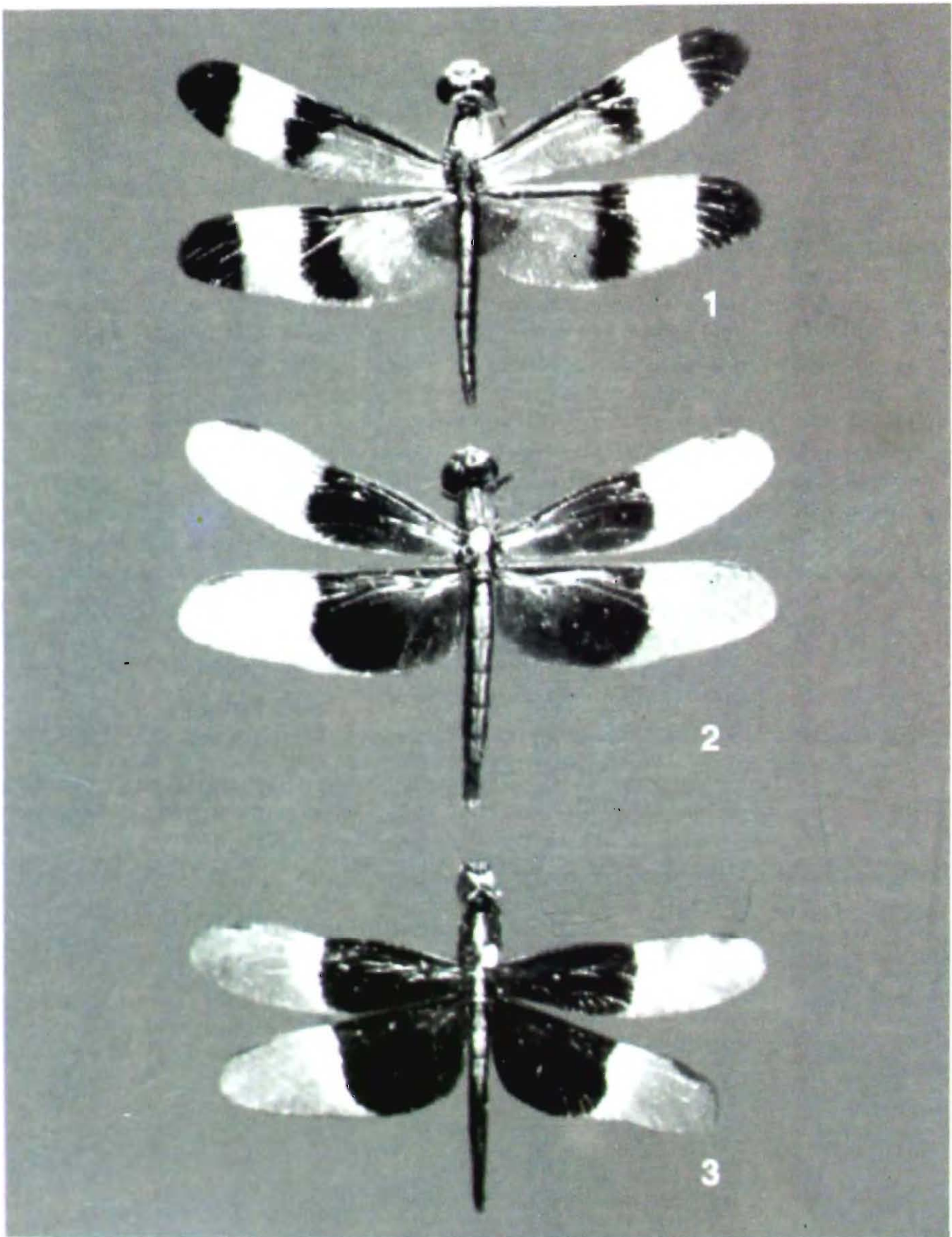
Remarks : The male specimens from Arunachal Pradesh vary from males of other localities in having labium brownish black. In female specimens the amber yellow colour of the fore-wing terminates to one or two cells prior to the node.



Neurothemis tullia tullia (Drury) – Male



Neurothemis tullia tullia (Drury) – Female



Neurothemis tulia tulia (Drury)

1. Normal female; 2. Andromorphic female; 3. Normal male

85. *Neurothemis fluctuans* (Fabricius)

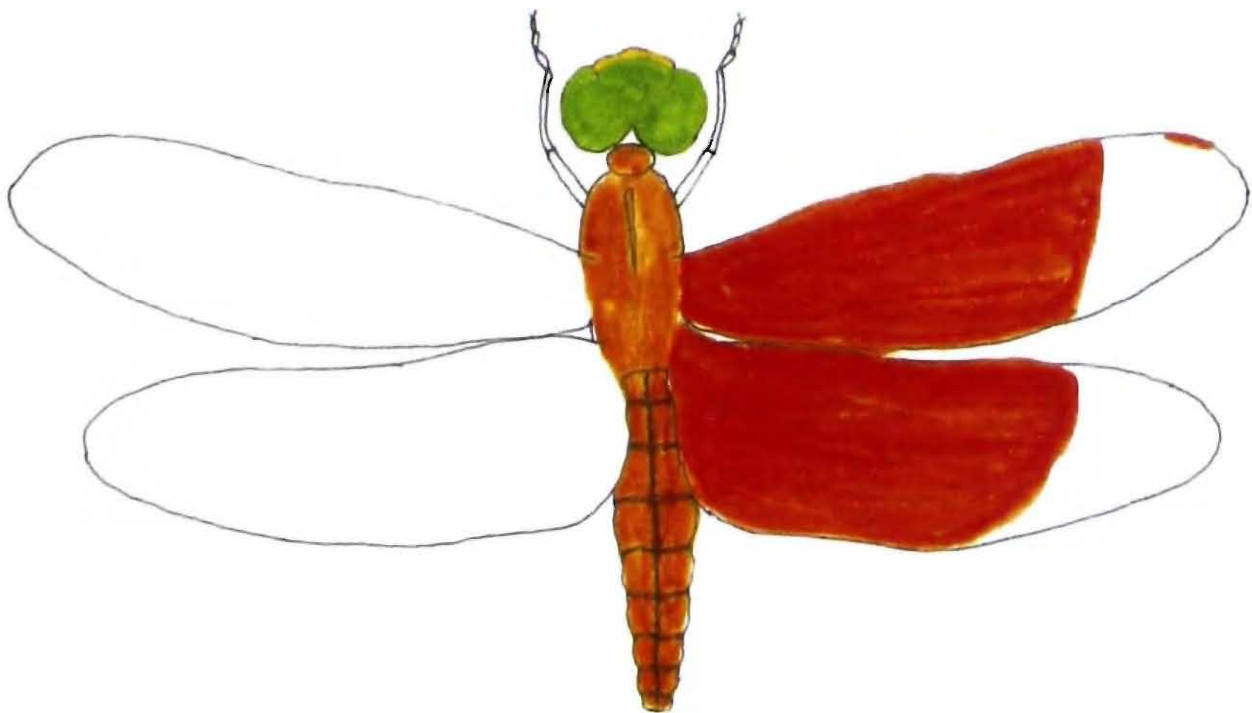
Habit : The species occurs in colonies, not a very strong flier, breeds in marshes or stagnant waters, usually avoid open canopy.

Male : Abdomen 17-22 mm; Hindwing 20-25 mm

Female : Abdomen 18-22 mm; Hindwing 22-28 mm

Head : Face, frons and vesicle olivaceous tinted often with ferruginous above; in female the colour is pale. Thorax dull reddish-brown. Abdomen reddish-brown with a diffused blackish-brown stripe on the sides of segments 2 to 9 very near the ventral border. In heterochromatic female abdomen olivaceous or ochreous, with similar dark elongate, ventro-lateral spots on segments 2 to 9, darker than in male. Wings dark reddish-brown from base to the proximal end of the pterostigma; outer border of dark area in fore-wing running straight back to the posterior border of the wing; in hind-wing, the outer border of the dark area strongly curved inwards so that the clear area is left along the posterior border of wing; pterostigma dark reddish-brown. In hetero-chromatic female the wing is hyaline, with diffusely limited pale amber-yellow marking at base of wings extending to discoidal cell or beyond. Usually costal space as far as pterostigma and subcostal as far as node tinted with yellow; apices of all wings diffusely pale brown.

In India the species is confined in North-east India and Nicobar while outside India it occurs in China and continental Asia.



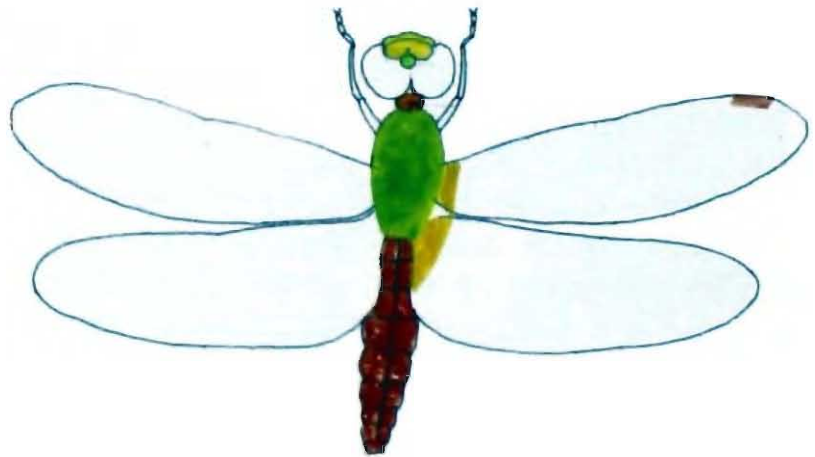
86. *Neurothemis intermedia intermedia* (Rambur)

Habit : The species prefers open canopy habitat, flies rapidly, but short. Usually rests on herbs and bushes; breeds in swamps, marshes or stagnant waters, occurs in large number in one place.

Male : Abdomen 22-24 mm; Hindwing 24-27 mm

Female : Abdomen 21-24 mm; Hindwing 25-28 mm

Head : Face and frons light yellow, face sometimes become white and the frons often becomes olivaceous occiput reddish-brown. Thorax light greenish-yellow, dorsal part tinged with ferruginous and with a reddish-brown humeral stripe. Abdomen reddish-ochreous, sutures on segments 2 and 3 finely darker and more or less a distinct brownish stripe on ventro-lateral part, interrupted at apical end of segments



3 to 8; small dark points at base of segment 10. In female ventro-lateral stripe on abdomen sharply defined. Wings hyaline, very finely tinted with yellow and a broad yellow marking at base of all wings; costal and subcostal spaces tinted with yellow. Pterostigma dark ochreous. In female basal marking absent; uniformly tinted with pale yellow.



Neurothemis intermedia intermedia (Rambur) - Male

The species is very common in different ecosystems of India and the Oriental region.

Remarks : Females from Darjeeling and Tripura have dark spots on abdomen faint. The female specimens from Darjeeling possess bluish yellow labium, labrum frons. In specimens from Tripura yellow colouration of the forewing extends up to the subcostal space; while in the specimens from Bihar yellow basal marking in wings extends beyond the discoidal cell.

87. *Neurothemis fulvia* (Drury)

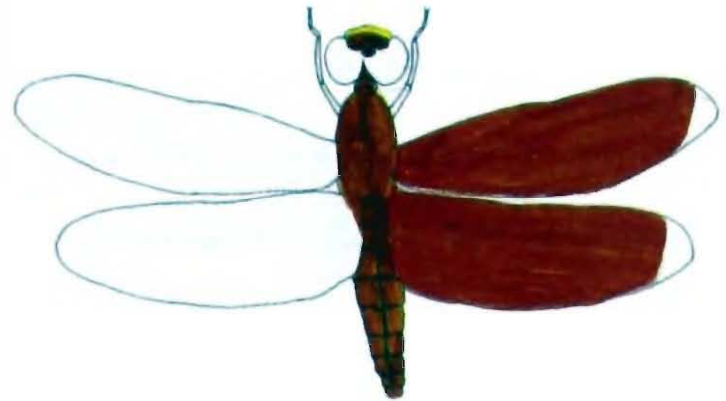
Habit : The species flies in large colonies in the ecotonal region usually in the lowlying swampy country. It breeds in weedy ponds or marshes, flies for a short distance.

Male : Abdomen 21-26 mm; Hindwing 27-32 mm

Female : Abdomen 20-24 mm; Hindwing 26-32 mm

Head : Face, frons, vesicle reddish-brown. Thorax and abdomen uniform reddish-brown, sutures and borders of abdomen finely black. In typical heterochromatic form the ground colour of head, thorax and abdomen paler or ochreous, some dark-brown cloudy effect at apical halves of segments 3 to 7. Wings almost opaque dark reddish-brown except for an irregular triangular area at apices of wings which is clear and uncoloured;

this area meets the border of the wing posteriorly, but bordered with dark-brown superimposed on amber-yellow narrowly outwards and costal wards; margin of dark area beginning slightly nearer proximal end of pterostigma and running straight backwards in fore-wing, obliquely basalwards in hind-wing, but with very irregular crenate margin, the dark area presenting clear amber tinted areas in costal and basal space, base of hypertrigones, space distal to arc and at node subnode, the whole of the dark area finely reticulated by yellow veins. In isochromatic females apex of fore-wing completely clear, and that of hind-wing bordered with amber-yellow; in heterochromatic forms wings clear amber-yellow with a dark ray in the subcostal space which encroaches on the costal space near the node and extend posteriorwards at the same level to form a large quadrate nodal spot; after a short clear postnodal area there is again some brown clouding at the costal; basal half of hind-wing more or less heavily clouded with dark reddish-brown or less



Neurothemis fulvia (Drury) – Male

heavily clouded with dark reddish-brown at border which extends to anal loop.

The species is distributed throughout India; outside India it occurs in China, Taiwan and continental Asia.

Remarks : Specimens from Orissa have bluish-yellow labium, specimens from Assam have pale olivaceous labium.

88. *Brachydiplax farinosa* Kruger

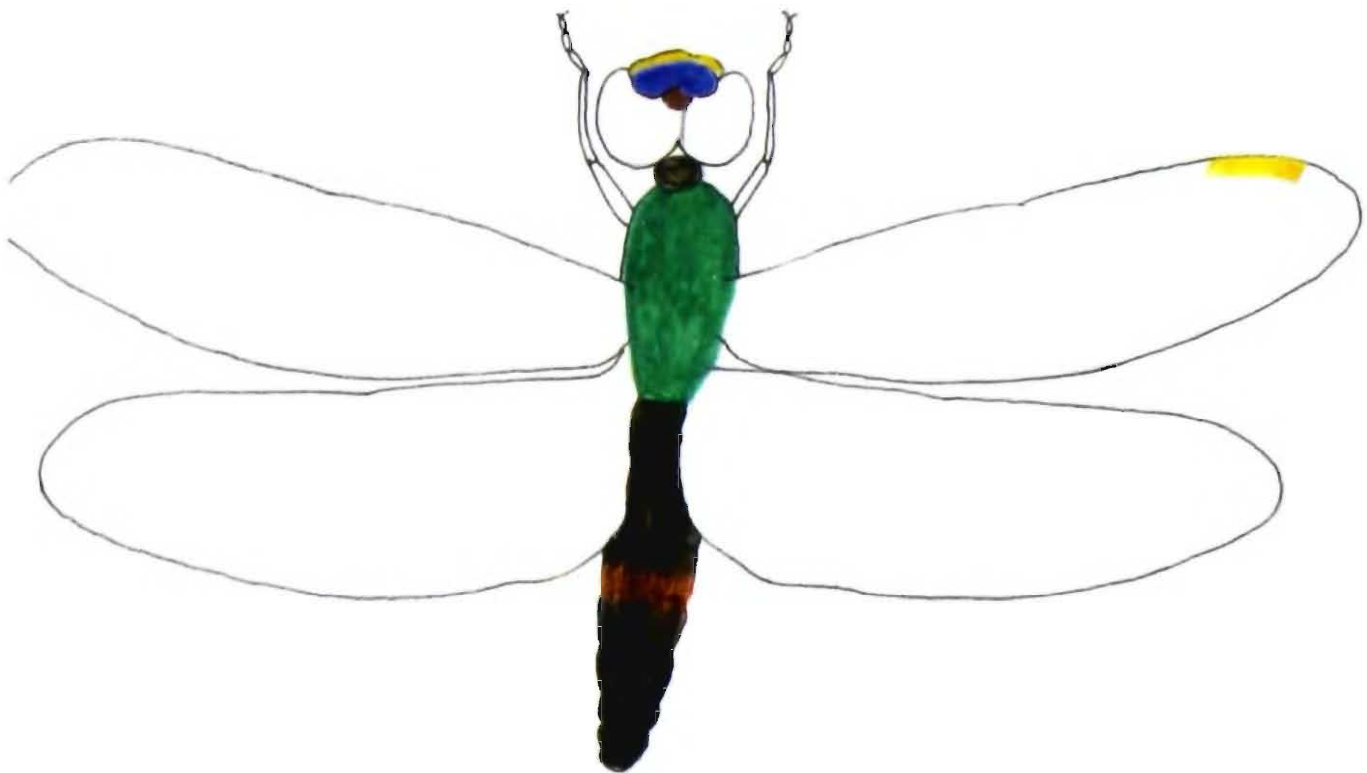
Habit : The species breeds in small weedy tanks and ponds and rarely leaves the place. Subadult or immature males and females rest on twigs in scrub jungle. Adults are very quick on wing and difficult to catch, wait on the twigs in the midst of water bodies.

Male : Abdomen 18-19 mm; Hindwing 22-25 mm

Female : Abdomen 17-18 mm; Hindwing 22-26 mm

Head : Face and frons creamy white, anterior surface of the frons margined with black. Thorax dark metallic green dorsal surface in matured imago powdered with white pruinescence. In female thorax entirely dark metallic green. Abdomen black, pruinosed in old adults. In female abdomen black without markings and pruinescence. Wings hyaline, palely tinted with yellow at base, especially the hind-wing.

The species occurs in West Bengal, Assam and from Myanmar to Malayasian area.



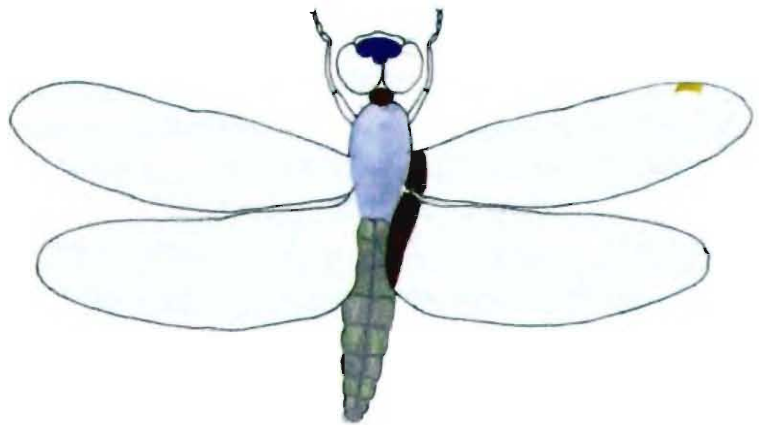
89. *Brachydiplax chalybea chalybea* Brauer

Habit : It is a shy insect, weak flier, but quick to be on the wing, breeds in weedy marshy tanks and ponds rests near water bodies.

Male : Abdomen 21-25 mm; Hindwing 26-30 mm

Female : Abdomen 21-23 mm; Hindwing 27-29 mm

Head : Face and frons pale ochreous upper surface of frons and vesicle metallic blue, occiput black with yellow spot. Thorax ochreous or ferruginous laterly, pruinosed white on dorsum, and with vestiges on lines on upper parts of postero-lateral sutures metallic black. In female thorax ochreous with semilateral markings as in male and an obscure curved antehumeral stripe. Abdomen black on dorsum, pruinosed white, segments 1



Brachydiplax chalybea chalybea Brauer

to 3 ferruginous on dorsum and laterally, sutures finely black, pruinescence extending on the dorsal part of segment 3 and base of 2. In female abdomen ochreous, with sutures and intersegmental joints finely black; segments 5 to 10 marked with black dorsally except at the base of the segments 5 and 6, apical half of segments 7, the whole of 8, excluding the extreme base, and 9 and 10. Wings hyaline,

bases tinted burnt brown fading to amber and extending nearly to the tornus in the hind-wing. In female base of wings tinted with yellow.

The species is common in Brahamaputra valley, rare in West Bengal. Outside India, it is distributed from Myanmar to Malayasian region.

Remarks : Burmese (Myanmar) specimens agree with above description but Calcutta specimens have face and frons greenish-yellow, occiput brown; thorax brown with thin pruinescence on the dorsum but turns greenish-yellow on the lateral sides.

90. *Brachydiplax sobrina* (Rambur)

Habit : Sometimes swarms in hundreds, sometimes remain solitary. Immatures and female rest on tall trees, adult males rest on vegetation in the midst of water bodies, very difficult to catch because of their power to be on wing very quickly. It breeds in weedy tanks.

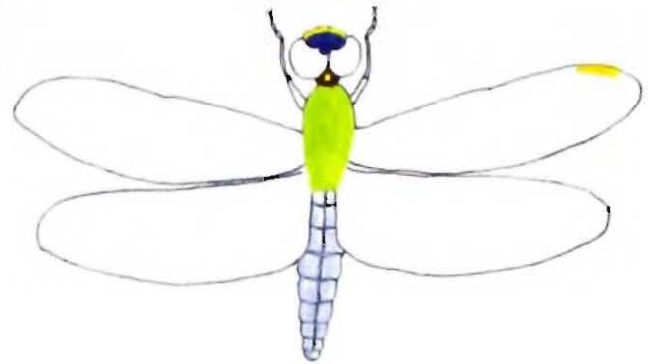
Male : Abdomen 20-24 mm; Hindwing 25-28 mm

Female : Abdomen 16-22 mm; Hindwing 25-26 mm

Head : Face, frons creamy white, upper surface of frons and vesicle metallic blue; occiput brown with a yellow spot. Thorax olivaceous-brown, to greenish-yellow with black or metallic markings more or less obscured by a thin pruinescence denser on the middorsal part. Markings steely metallic black on pale yellow back ground in subadult specimens as follows : middorsal and humeral stripes confluent on upper part of dorsum to form a capital "M", the middorsal carina finely yellow; three stripes on each side, one on humeral suture, one on postero-lateral suture and the third traverses the spiracle. In female the ground colour of the thorax brighter yellow and the metallic black stripes in some specimens so confluent as to blot-out most of the ground colour on dorsum of thorax and the medial and posterior stripes confluent above forming a "W"-shaped marking on each side. Abdomen black, pruinosed blue in old adults, but marked with yellow in subadults, teneral and females are as follows : segment 1, sides of segment 2 and 3 on which the sutures are finely black and the middorsum with a broad black stripe, segments 4 to 7 with broad lateral spots. Wings hyaline, pterostigma pale yellow between black veins.

The species occurs throughout South and South East Asia.

Remarks : Specimens from Orissa, Tripura and West Bengal have yellow labium. Lateral lobes of labium without any black marking, occiput black and narrowly separated two yellow spots.



Brachydiplax sobrina (Rambur) – Male

91. *Indothemis carnatica* (Fabricius)

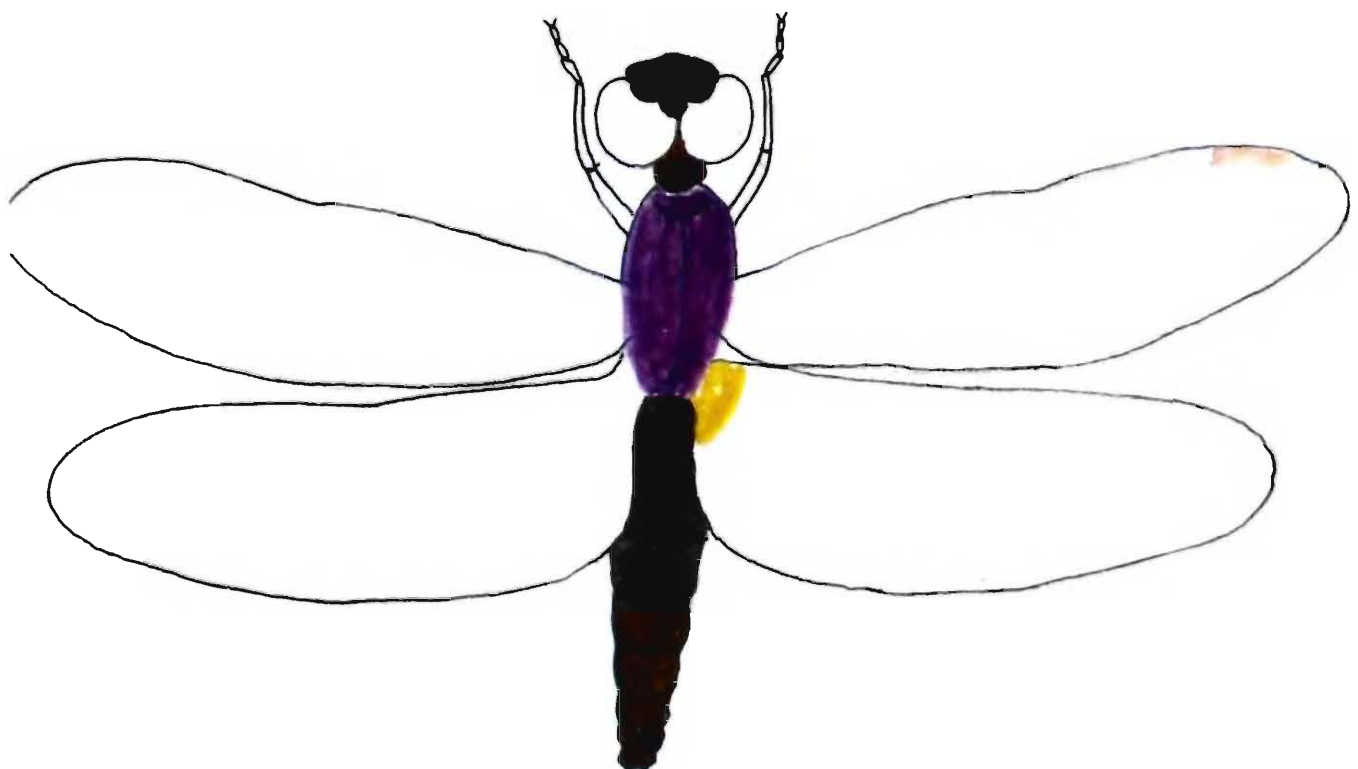
Habit : It breeds in weedy tanks and lakes and the imago usually remains near the water where they remain among scrub or tall grasses, settled in some depression of the ground.

Male : Abdomen 25-26 mm; Hindwing 28-31 mm

Female : Abdomen 24 mm; Hindwing 29 mm

Head : Frons vesicle metallic violet black with small yellow spot on each side of the frons. In female face, frons, vesicle and occiput bright yellow; occiput with greenish tint. Thorax blackish-brown, overlaid thinly with pruinescence and in full adults appears dark violaceous. Subadults with greenish-yellow ground colour showing obscurely through pruinescence, especially on metepimeron. In immature males and adult females thorax golden yellow on dorsal part, pale greenish-yellow on sides, a diffuse brown antehumeral stripe lying midway between humeral suture and middorsal carina. Abdomen dark violaceous or blackish-brown obscurely visible; in teneral male adult female golden yellow on dorsum fading to greenish-yellow laterally marked with black and reddish-brown. Wings hyaline, with a small point of amber-yellow at base of hind-wing; pterostigma bright ochreous.

The species has been described as *Indothemis caesia* (Rambur) in the Fauna of British India by F.C. Fraser. It occurs in West Bengal, Nilgiris, Bombay, Sri Lanka and Thailand.



92. *Tramea basilaris burmeisteri* Kirby

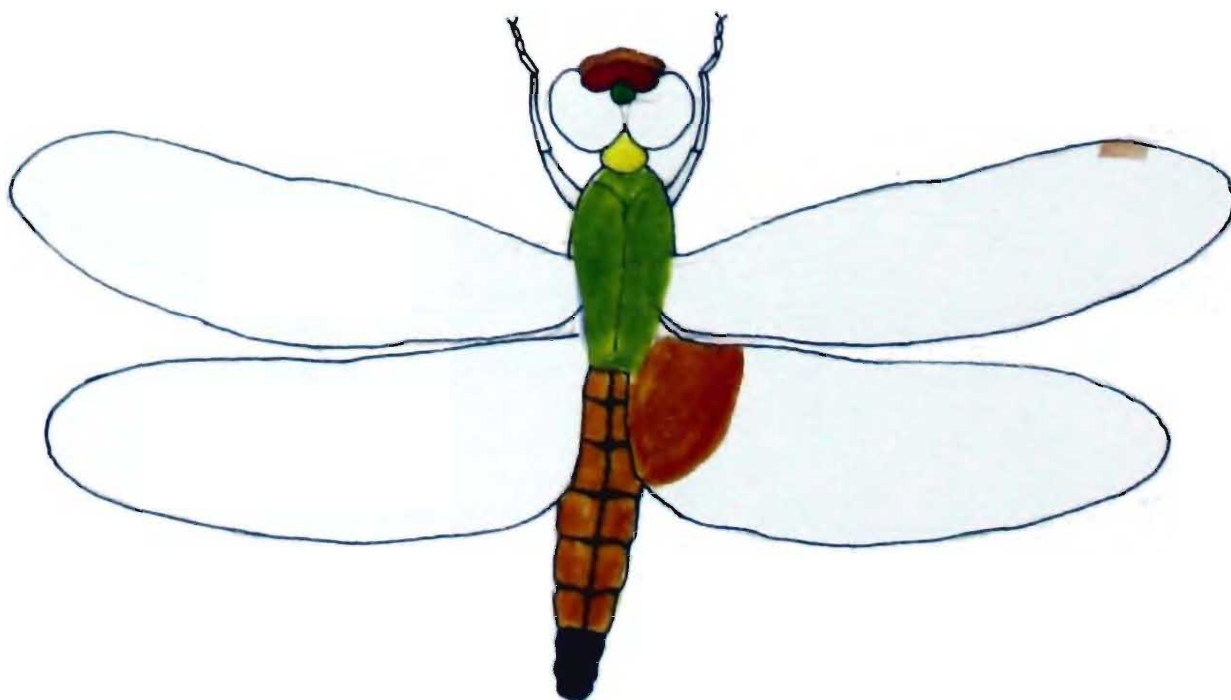
Habit : Remains near small weedy tanks or marshes; sometimes it breeds in small deep tank, on emergence these are found soaring away from their watery habitat. Sometimes the species flies with *Pantata flavescens*.

Male : Abdomen 30-35 mm; Hindwing 40-44 mm

Female : Abdomen 32-36 mm; Hindwing 38-45 mm

Head : Frons bright red, vesicle olivaceous or tipped with red; in female face and frons bright chrome-yellow. Thorax olivaceous with reddish tinge on dorsum and bluish-green tinge laterally; postero-lateral suture narrowly black and confluent with a second black stripe which traverses the spiracle. In female thorax bluish-green laterally, humeral suture finely black elongated spots above. Abdomen brick-red marked with black. Black apical annules from segments 4 to 7; segments 8 black, with variable number of yellow spots on each side; segment 9 black with a small spots on each side; apical joints of segments 7 to 9 yellow; under surface black ringed with yellow. In female abdomen olivaceous green or yellowish with black markings. Wings hyaline, hind-wings with a rather variable dark reddish-brown marking at base; this marking narrowly confluent with a larger broader and curved stripe running from the midrib of anal loop to tornal angle, but not quite reaching the latter, neuration in the dark area yellow; in female often tinted with yellow, basal black markings are separated.

Widely distributed in India and other parts of the Oriental region.



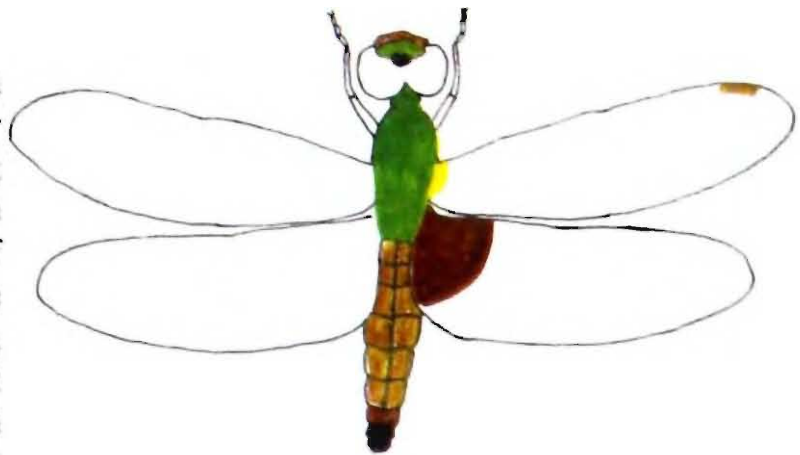
93. *Tramea virginia* Rambur

Habit : The species breeds in weedy tanks and lakes; on emergence the imago flies high above and on reaching full adulthood imago reaches the watery habitat and is found flying over the water surface; females are shy and usually during breeding season they become visible.

Male : Abdomen 34-38 mm; Hindwing 40-44 mm

Female : Abdomen 35 mm; Hindwing 49 mm

Head : Face and frons olivaceous, the latter suffused with bright vermillion red and with a border having metallic blue or violaceous reflex. Thorax dark olivaceous-green, with small obscure dark points at upper ends of humeral and postero-lateral suture and another over spiracle. Abdomen brick-red, marked with black on last three segments, segment 8 with large reddish spot at baso-lateral ventral angle; segment 9 with a small spot



on each side of same colour, segment 10 black. Wings hyaline, with reddish reticulation at basal half, tinted with amber-yellow and suffused more or less especially toward apices and along posterior border of wings; base of fore-wing tinted with golden-amber to as far as basal antenodal and cubital nervure; base of hind-wing with a very broad, very dark



burnt-brown or reddish-brown mark extending distally to one cell beyond outer angle of the discoidal cell to almost to the posterior border of the middle of the anal loop; venation in this part is very close net work of red cells; in female basal markings on hindwing is divided into two parts.

The species occurs in the Himalayas, West Bengal, Orissa, Tamil Nadu and Maharashtra. Outside India it has been recorded from South, south-eastern and eastern Asia.

Tramea virginia Rambur

94. *Pantala flavescens* (Fabricius)

Habit : Migratory species; diurnal, swift flier, sometimes enter houses and follow mammoth mobile objects, breeds in marshy and weedy tanks, emerge in huge number and undertakes migratory flight during September-October; sometimes makes attempt to lay eggs in small depressions with water.

Male : Abdomen 29-35 mm; Hindwing 38-40 mm

Female : Abdomen 30-33 mm; Hindwing 39-41 mm

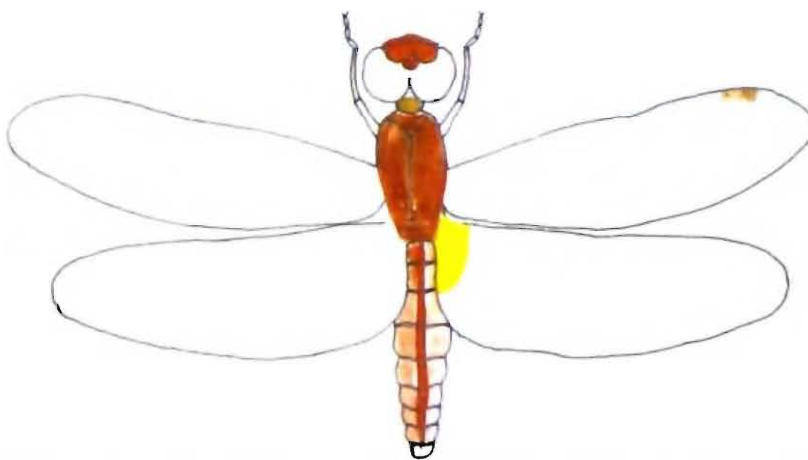
Head : Frons, postclypeus distinct golden-yellow or orange suffused with reddish in front vesicle bright ochreous; in female face chrome-yellow, reddish tinge absent.

Thorax olive colour or ferruginous, coated with yellowish hair, lateral side paler, and bluish green or greenish-white without any marking. Abdomen slightly enlarged in segments 1 and 2, and

constricted uniformly at end of segments 2 to 3 bright ochreous, dorsal side tinted with brick red, sides of segments 1 to 4 light yellow; segments 8 to 10 black middorsal spots; in female red colour and the constriction are absent. Wings hyaline, with base of hindwing light golden yellow; pterostigma ochreous or reddish-brown, and an apical brown spot on the posterior border of the wing. In female apical brown spot is absent and evenly enfeebled.

This is a migratory species, widely distributed in the Indian subcontinent, other parts of the Oriental region. China, Tibet; Africa and North America.

Remarks : The species show individual variations but have no definite variation in populations.



Pantala flavescens (Fabricius) – Male



Pantala flavescens (Fabricius)

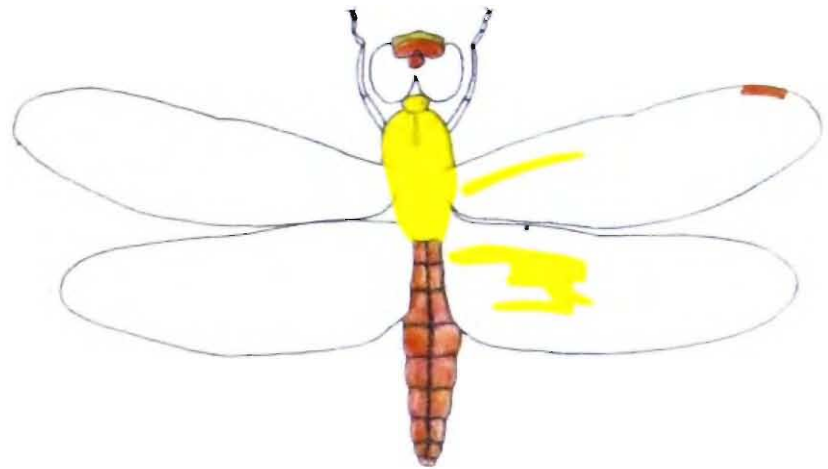
95. *Tholymis tillarga* (Fabricius)

Habit : It can adapt to diversified habitats, breeds in weedy and marshy tanks, crepuscular in habit, sometimes visible in the day time and appear on the wing before dusk, sometimes enter houses. House gecko does not attack probably due to its resemblance to hymenopterous insects.

Male : Abdomen 28-33 mm; Hindwing 33-37 mm

Female : Abdomen 27-31 mm; Hindwing 31-37 mm

Head : Labrum and face pale olivaceous colour, or pale yellowish-brown or ochraceous; frons and vesicle ochreous often with a crimson flush. Thorax yellow or olive colour with reddish suffusion on the dorsal part. In female the reddish tinge is not visible. Abdomen red with rusty tinge paler at sides of segments. In female abdomen olivaceous brown. Wings



Tholymis tillarga (Fabricius) – Female

hyaline. In male a broad smoky golden brown fascia in the hindwing extends from the base of hindwing to node; this fascia is bordered by an opalescent white spot; pterostigma reddish-brown. The opalescent white spot is absent and the fascia is pale.

The species is one of the common species occurring throughout India and in outside India it has been recorded from Africa, Australia, America (USA), and Asian (Oriental and Palaeartic) countries.

Remarks : The wing mark is very glaring in dry areas.

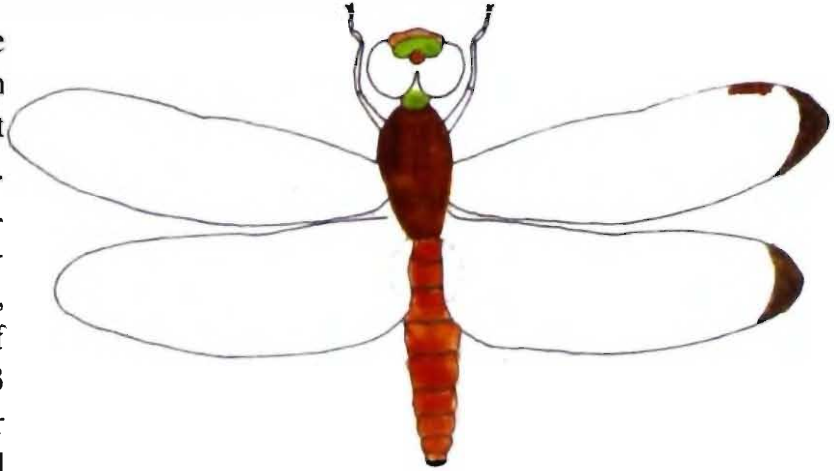
96. *Zyxomma petiolatum* Rambur

Habit : Crepuscular, comes out in the dusk, and fly till darkness conceals them. These breed in small stagnant pools, tanks, wells and sometimes enter houses and visits water bodies in the day time.

Male : Abdomen 37-42 mm; Hindwing 32-35 mm

Female : Abdomen 37-42 mm; Hindwing 32-35 mm

Head : Face and frons pale olive colour, generally reddish brown margined with bright golden-yellow below the front. Thorax brown, paling at sides. unmarked. Abdomen reddish-brown of variable shades, deeping to black, at the end of the segments. Segments 1 to 3 light brown swollen and the later segments abruptly contracted and becomes slim and cylindrical at the end; sutures dark brown to black. Wings hyaline, apices dark brown, Wings in adults enfumed with brown.



The species occurs throughout India (excepting the desert), the Western Ghats, not above 1000 m; Laccadives; outside India Myanmar, Malayasia, Sri Lanka.

Remarks : Eastern Indian female specimens sometimes have dull brown thorax instead of chocolate brown reported by Fraser; legs are yellow.



Zyxomma petiolatum Rambur - Female

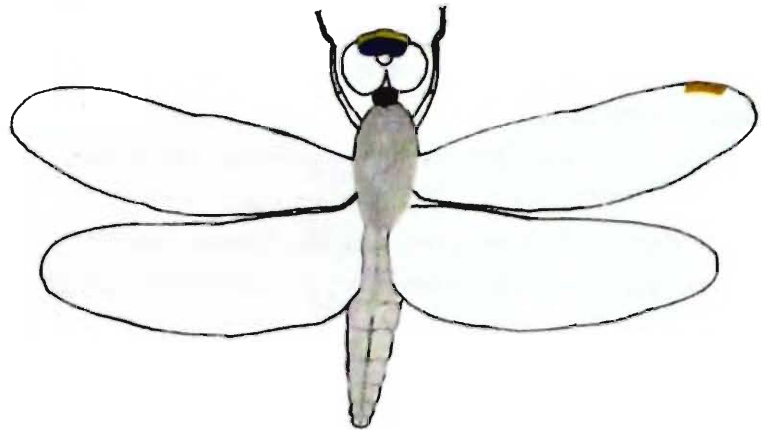
97. *Diplacodes trivialis* (Rambur)

Habit : Resides in widely diversified habitat but prefers open canopy, follows nearby mobile objects and breed in stagnant waters.

Male : Abdomen 19-22 mm; Hindwing 22-23 mm

Female : Abdomen 18-20 mm; Hindwing 22-24 mm

Head : Face, frons and vesicle very light azure-blue, fine black line at base of frons. Thorax olivaceous or greenish-yellow; suture finely black. The space between the middorsal carina and the humeral sutures is violaceous brown; in case of old adults this one is pruinosed. Abdominal segment 1 to 3 greenish-yellow, sutures finely black, mid-dorsal and subdorsal black stripes extends from segment 2 to segment 3. In old specimens the area is pruinosed. In



Diplacodes trivialis (Rambur)

female and subadults subdorsal yellow stripe on segments 4 to 7, segments 8 to 10 entirely yellow. Wings hyaline, a minute yellow spot at the extreme base of hind wings.

The species is widely distributed in India, South and South-East Asia, Australia.

Remarks : Male specimens from the Andaman Islands vary from the male specimens of eastern India due to the absence of prothoracic middorsal stripe in the former; while the females from Andaman Is. differs from those of eastern India due to possession of yellow frons, blackish brown on the lateral sides of the thorax and brown stripes on the lateral sides of the segment 10. Male specimens from Darjeeling, Sikkim and Manipur vary from Maharashtra, and Fraser's description having labium, labrum, bases of mandibles bluish-white; face frons, vesicile pale blue, prothorax black, legs bluish-yellow.

98. *Diplacodes nebulosa* (Fabricius)

Habit : It is visible in the rainy-season within grasses or bushes near water. It very rarely goes away from water bodies, marshes and weedy tanks are favourite habitats.

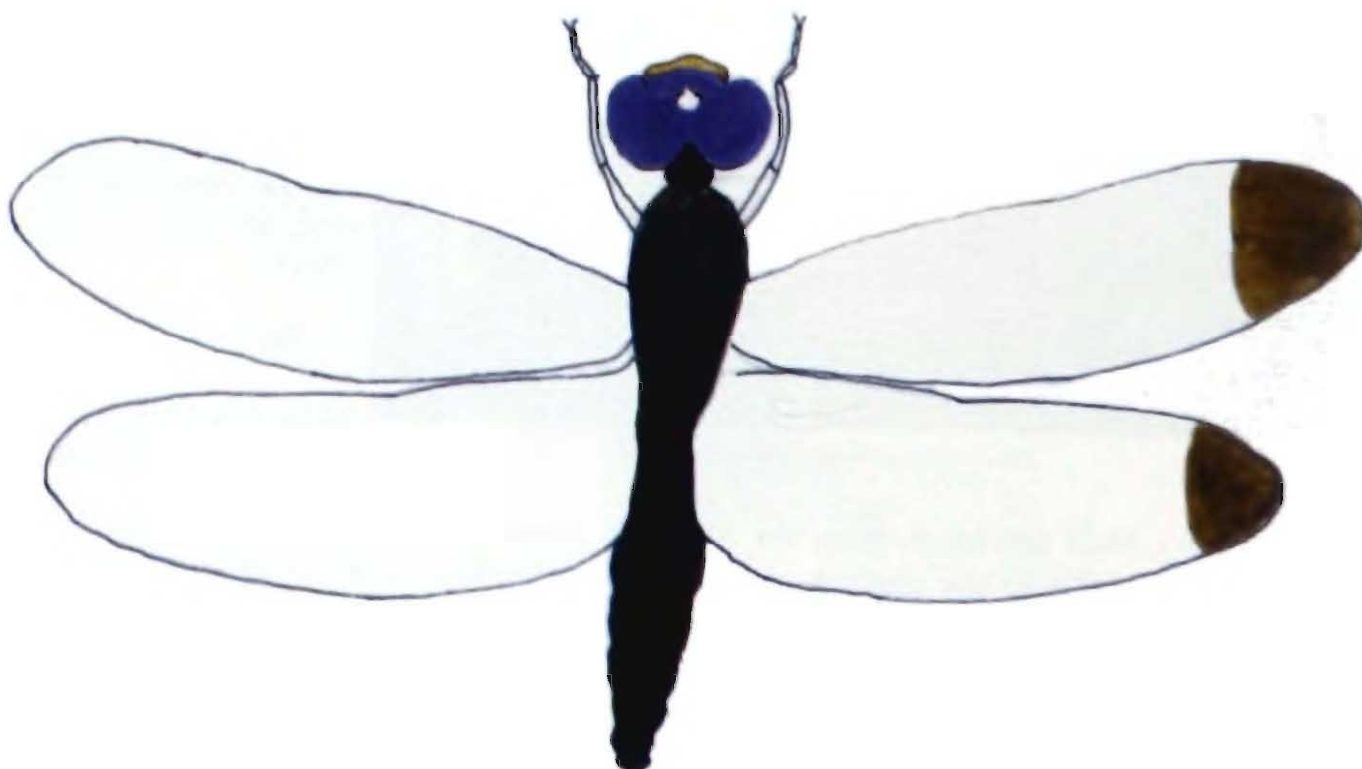
Male : Abdomen 15-17 mm; Hindwing 17-19 mm

Female : Abdomen 14-15 mm; Hindwing 18-19 mm

Head : Frons and vesicle and upper surface of eyes deep violet with brilliant metallic lusture. In female face, frons and vesicle creamy-yellow without any black mark. Thorax, neck, abdomen and legs are black; old adults are finely pruinose. Female, and subadult males and females are with yellow markings on sides thorax and abdomen. Wings are hyaline with apices blackish-brown with interior limitation up to the proximal end of pterostigma. Pterostigma reddish-brown, guarded by black veins. In female wings are without black mark at the apices, with small amber-yellow mark at the extreme base.

The species occurs almost throughout India; outside India it has been recorded from other parts of South Asia, South-East Asia and Australia.

Remarks : Specimens from Darjeeling Himalayas differs from Fraser's description since they bear dark brown labium and the apical mark of the male wing extends beyond the proximal end of pterostigma.



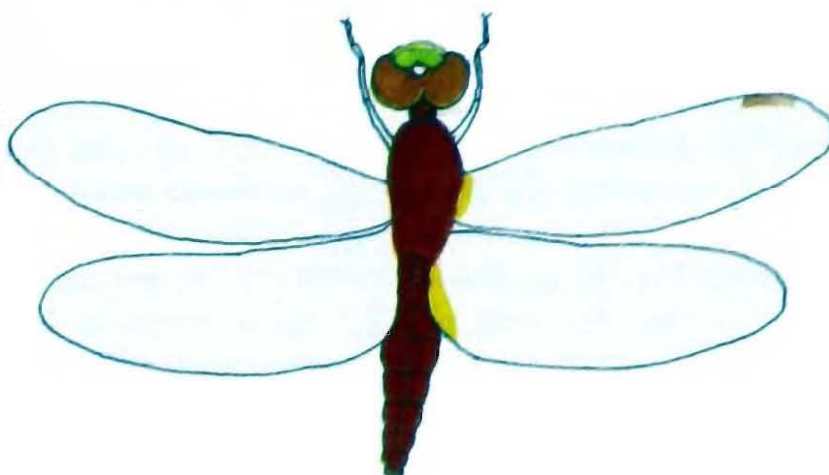
99. *Urothemis signata signata* Rambur

Habit : It is fairly common in the villages, suburban, flies slowly to medium speed, occurs in premonsoon to postmonsoon; breed, in stagnant water.

Male : Abdomen 27-28 mm; Hindwing 34-37 mm

Female : Abdomen 25-27 mm; Hindwing 34-36 mm

Head : Frons in front and above red, occiput reddish-brown. In female face, frons and vesicle bright lemon yellow; occiput ochreous. Thorax red on dorsum, olivaceous with a reddish suffusion laterally and with an obscure small black point at upper end of humeral and lateral sutures. In female thorax olivaceous green laterally, ochreous or golden-brown on



dorsum. Abdomen sharp red with some black markings on dorsum of segments 8 and 9. In female abdomen greenish-olivaceous, sometimes red, as in male on dorsum; black marking on segments from 3 to 9 as small subdorsal apical spots. Wings hyaline with crimson reticulation; extreme base of fore-wings golden-amber, a broader dark amber coloured spot at base of hind-wings, posteriorly in a curve to the tornal angle, in this spot and framed by it a blackish-brown spot, the veins in the region crimson or ochreous. In female wings tipped, basal marking variable, usually the blackish-brown spot in anal area well separated from that in the cubital space so that there are three distinct dark areas.



The species is distributed in India, (almost in every ecosystem); outside India it has been reported from Nepal, Myanmar, China, Indo-Chinese, Indo-malayan subregions and Sri Lanka.

Remarks : Male specimens from eastern India have red labium and labrum.

Urothemis signata signata Rambur – Male

100. *Aethriamanta brevipennis brevipennis* (Rambur)

Habit : It is shy and restless insect, only comes to rest at intervals on the tips of blades of grasses or reeds and usually keeping the body well out over water.

Male : Abdomen 17-20 mm; Hindwing 23-26 mm

Female : Abdomen 16 mm; Hindwing 23 mm

Head : Face, frons and vesicle and labrum heavily coated with short stiff black hairs. Thorax dark chocolate brown, darkening to black in humeral region and paling on sides to golden olivaceous-brown. In female thorax golden-olivaceous on dorsum, paler laterally; black on middorsal carina, anteclypeus, humeral and posterolateral sutures. Abdomen brilliant vermilion red throughout; in female abdomen green-olivaceous with all sutures mapped out in black. Wings hyaline, tinted with golden-amber at base and, in fore-wing to slightly beyond the first antenodal nervure and cubital nervure, but deficient in median space; in the hind-wing a broad fascia extending from costa to the posterior border, pterostigma blackish-brown. In female opaque black basal spot usually small; pterostigma greyish-white.

The species occurs throughout India, Bangladesh, Myanmar, Sri Lanka, Thailand, and Malaysian subregion.

Remarks : Male specimens from Orissa have brown labrum, anteclypeus and lower border of frons; the female specimens from Arunachal Pradesh and West Bengal have labrum without glossy black mark, dark brown anal appendages.



Aethriamanta brevipennis brevipennis (Rambur) – Male

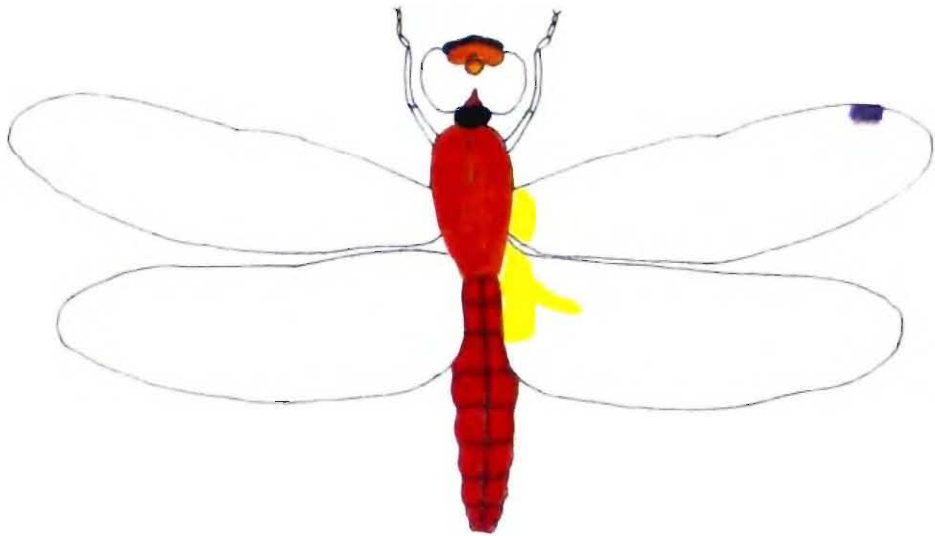
101. *Nannophya pygmaea* Rambur

Habit : In flight it resembles *Palpopleura sexmaulata* and hymenopterous insects especially the yellow striped females, the resemblance being heightened by the low short and circling flight.

Male : Abdomen 10 mm; Hindwing 13 mm

Female : Abdomen 9-11 mm; Hindwing 12-14 mm

Head : Face and frons including vesicle yellow or bright orange. Thorax bright yellow to bright red, humeral region and near antealar sinus black; a black stripe on each side of the mesepimeron and a small point on the upper parts of humeral, posterolateral sutures black. In female bright greenish-yellow marked



Nannophya pygmaea Rambur

with black; a narrow stripe on each side crossing humeral suture; a second stripe traversing the mesepimeron. Between the black stripes lies a yellow stripe. Abdomen bright scarlet red; in female segments 2 to 6 ringed with yellow at base, ferruginous or brownish thereafter; segments 7 to 10 black, but 8 sometimes reddish brown at base. Wings hyaline, a bright golden amber at bases; in female basal marking in hind-wing is less extent.

The species is distributed in Assam and Meghalaya and very common in Meghalaya among Indian habitats. Outside India, Pakistan, Myanmar, China, Nepal, Japan, Philippines, Malayasian, Indo-Chinses subregion and Australia.

102. *Orthetrum pruinosum neglectum* (Rambur)

Habit : The species breeds in still waters, in dry season sometimes breeds in deep waters. Larvae may be found in numbers sulking under weeds in shallows by the sides of the ponds, quick flier, rests every where.

Male : Abdomen 28-31 mm; Hindwing 32-36 mm

Female : Abdomen 30-31 mm; Hindwing 37-38 mm

Head : Face ochreous to pale reddish-brown; frons dark brown, vesicle and occiput dark reddish-brown. In female frons and face pale olivaceous brown; vesicle and occiput brown. Thorax reddish-brown to dull purple, depending on the amount of pruinescence present. In female thorax reddish-brown or dull ochreous with ill defined antehumeral stripe, never pruinosed. Abdomen purplish-red in adults; bright vermilion-red in subadults; in female abdomen dull ochreous with sutures and borders all finely black; sides of segment 8 which are dilated broadly black. Wings hyaline, reddish-brown basal marking close to the tornal angle in the hind-wing, a vestige of the marking in the base of the fore-wing, in adults, brown enfumation at the apices. In female basal marking palter and almost obsolete.



Orthetrum pruinosum neglectum (Rambur) – Male

The species occurs throughout India, Sri Lanka, Myanmar, extends to Tibet, Indo-Chinese region and Hongkong as well.

Remarks : Specimens from West Bengal, Assam, Bihar and Orissa have not labium ochreous, lateral lobes with black mark, face and lower border of frons bluish-yellow.



Orthetrum pruinosum neglectum (Rambur) – Male and Female

103. *Orthetrum sabina sabina* (Drury)

Habit : The species remains both in covered and open canopies, and usually near water. It breeds during the cold season in the plains and throughout the year in colder areas. It is the most predaceous dragonfly and sometimes hibernates in the cold regions.

Male : Abdomen 30-36 mm; Hindwing 30-36 mm

Female : Abdomen 32-35 mm; Hindwing 31-35 mm

Head : Frons deeply notched, labrum, face and frons yellowish to bright citron-yellow marked with brown or black.

Thorax greenish-yellow, marked with black as follows : suture, stripes all narrowly and finely black. Abdomen greenish-yellow, segments 1 to 3 enormously swollen dorso-ventrally and laterally, segments 4 to 6 very narrow, segments 7 to 9 dilated slightly, compressed laterally; segments 10 very small. Black markings vary in different segments as follows : apical borders, jugal sutures and middorsal carina finely; broad oval dorsal spot on segments 4 to 6; segments 7 to 9 black; 10 with base broadly so. Wings hyaline, rarely enfumed at apices in old adults.

The species is common in India and is distributed throughout the old World.

Remarks : Specimens from eastern India have brown labium, labrum; olivaceous face and frons, and their colour is lighter than those from the Nicobar Island.



Orthetrum sabina sabina (Drury) – Female

104. *Orthetrum triangulare triangulare* (Selys)

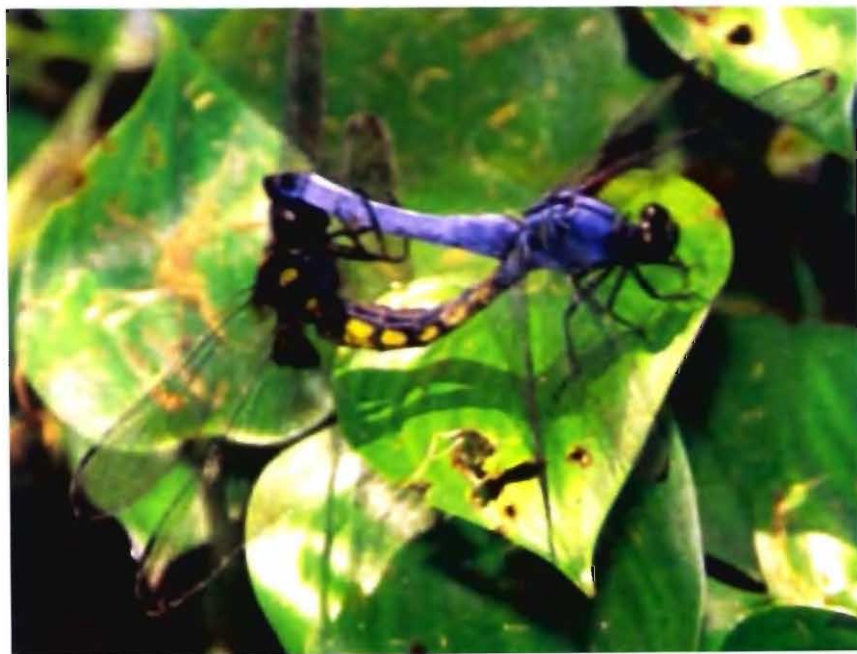
Habit : The species breeds in brooks; larvae remain hidden under aquatic vegetation. Adults strong fliers.

Male : Abdomen 29-33 mm; Hindwing 37-41 mm

Female : Abdomen 29-32 mm; Hindwing 37 mm

Head : Labrum face, frons, vesicle and occiput glossy black; in female face dark brown. Thorax velvety black with whole of the metepimeron and a broad bright applegreen stripe on mesepimeron. In female mid-dorsum of thorax olivaceous-green, often suffused at middorsal carina with reddish-brown, lateral stripes brighter yellow. Abdomen

broad at base, then tapered gradually to the end. Excepts segments 1, sides of 2 and whole of segment 8 to 10 the rest of abdomen pruinosed azure-blue. In female abdominal segments not pruinosed, black with an irregular middorsal olivaceous-green, or yellow stripe extending from segments 1 to 7, borders of segments 1 to 5 striped with olivaceous-green or yellow; segments 8 to 10 black. Wings hyaline with a broad triangular blackish-brown spot at base of hind-wing, a vestige is in the fore-wing base; in female black basal spot absent, the area is tinted yellow, enfumed with brown.



Orthetrum triangulare triangulare (Selys)



The species has been recorded from the Western Himalaya to North-eastern India-Myanmar border; the western and eastern ghats in southern India. Outside India it occurs from Afghanistan to Vietnam including China, Myanmar and Sri Lanka.

Remarks : Specimens from eastern Himalaya have labium uniformly dark reddish-brown, blackish-brown mark on the forewing extends up to the discoidal cells.

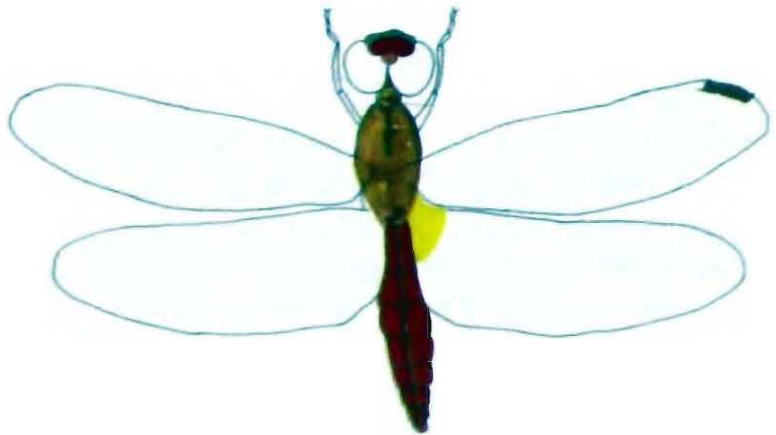
105. *Orthetrum chrysis* Selys

Habit : Sometimes flies in large numbers. It visits often small brooks and submontane streams and breeds in pools and marshes.

Male : Abdomen 28-33 mm; Hindwing 31-38 mm

Female : Abdomen 25-30 mm; Hindwing 31-36 mm

Head : Frons bright scarlet red, vesicle reddish, occiput brown in both sexes. Thorax dark ferruginous in both sexes. Abdomen bright blood red; in female bright ochreous, with sutures and ventral borders finely black. Wings hyaline, basal golden-amber colour marking not broad; in female wings without any vestige of a yellow basal marking.



The species extends from the West coast of India, to Myanmar, Sri Lanka, Celebes, Java and Borneo; common in Tranvancore border, Nilgiris.



Orthetrum chrysis Selys – Male

106. *Orthetrum glaucum* (Brauer)

Habit : The species is a strong flier, breed in still waters. Larvae have square head, hairy body, may remain under debris. In Sikkim it has been found do breed in May.

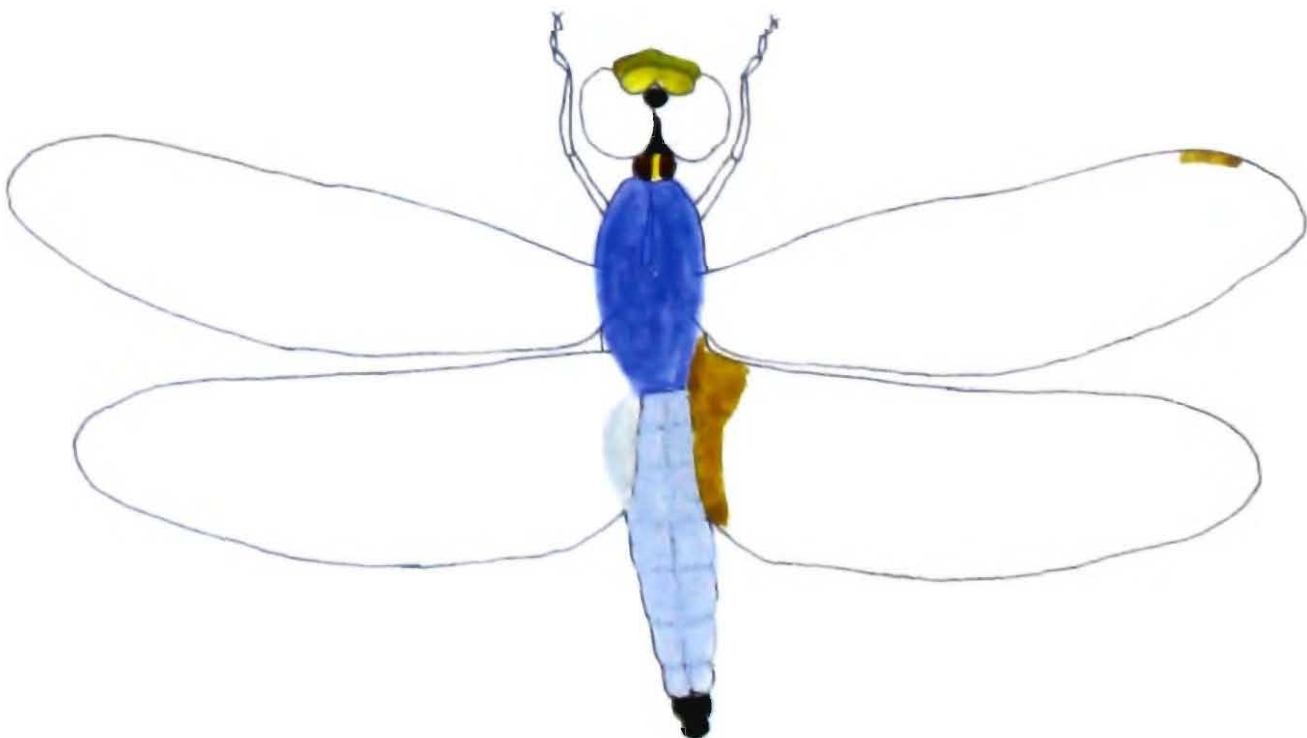
Male : Abdomen 29-35 mm; Hindwing 33-40 mm

Female : Abdomen 28-32 mm; Hindwing 32-37 mm

Head : Crest of frons dark reddish-brown; in old adults labrum, face, frons glossy black. In female labrum, face and frons usually pale olivaceous-brown or yellowish. Thorax in old adults pruinosed dark dull blue or black with a very thin pruinescence, in subadults and tenerals the colour varies from olivaceous on middle of the dorsal part, a broad reddish-brown humeral stripe, laterally warm reddish-brown with two yellowish white narrow stripes. Abdomen ventro-dorsally dilated at segments 1 to 3, then slim of even width to the end; pruinosed pale dirty blue from segment 1 to the apical end of segment 8, black for 9 and 10. In female reddish-brown with a broad greenish-yellow stripe on middorsum extending from segment 1 to 7 segments 8 to 9 and base of 10 black on middorsum, in old adults, pruinosed. Wings hyaline extreme base tinted with amber-yellow.

The species is distributed almost throughout India, and outside India it occurs in China, Japan, South and South-east asian countries.

Remarks : Specimens from North-eastern India differs from Fraser's description having labium, labrum and face bluish-brown, legs mostly dark brown.



107. *Orthetrum taeniolatum* (Schneider)

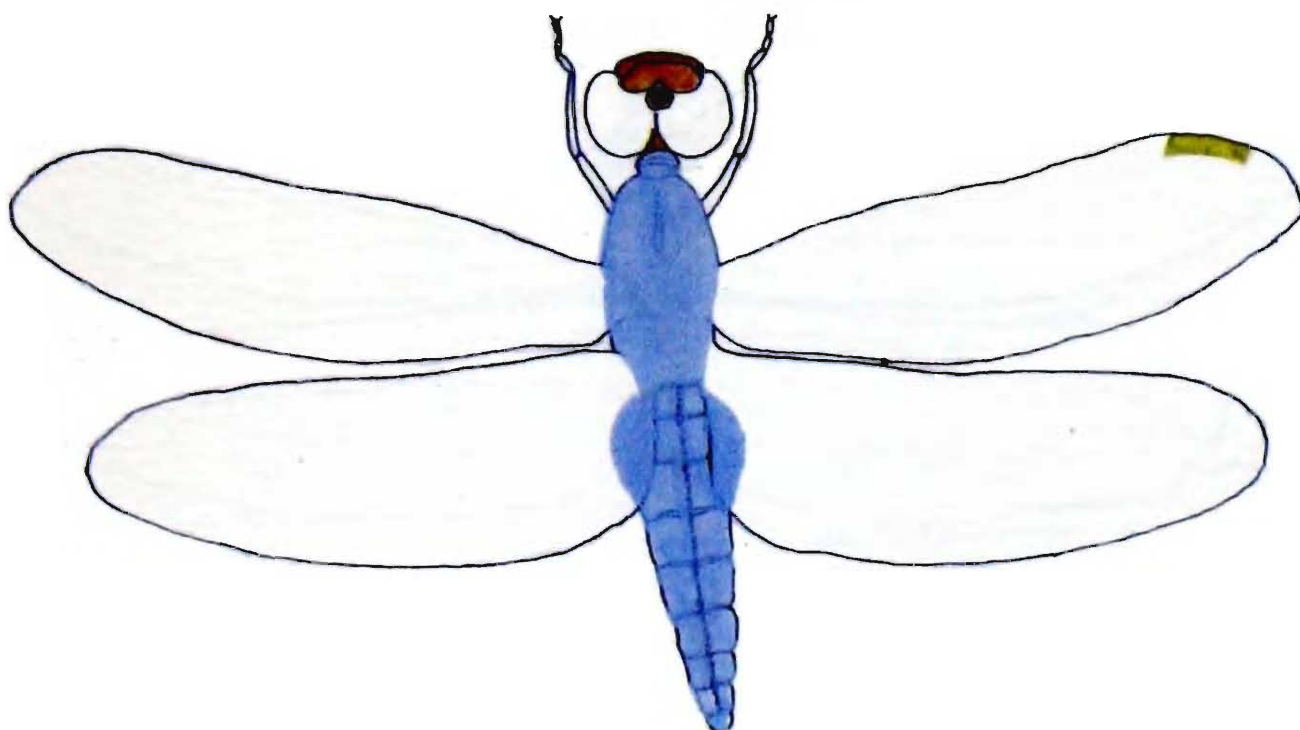
Habit : It is usually found in the beds of rivers, perched on the rocks or sandy foreshore with which its colour blends. It breeds in deep pools left by falling streams, and is, therefore, common during the drier part of the year or during the pre-monsoon period.

Male : Abdomen 22-25 mm; Hindwing 25-27 mm

Female : Abdomen 24 mm; Hindwing 28 mm

Head : Face, frons, vesicle pale brown, changing to dirty bluish-grey above. In female face pale olivaceous. Thorax uniformly pulverulent blue in full adults. In female thorax palest brown on middorsum, bordered outwardly with a vertical pale olivaceous stripe, a narrow blackish-brown stripe followed by a dark reddish-brown fascia, laterally olivaceous brown with a bright ochreous stripe on mesepimeron and another on metepimeron. Abdomen laterally and dorsoventrally broad at base and tapered gradually to the end, pulverulent blue throughout in adults; in subadults only basal segments pruinose. In female and teneral olivaceous-yellow with a narrow black stripe extending from the segments 2 to 9 along mid-dorsum. Wings hyaline, rarely enfumed, costal border finely yellow. In female wings hyaline but enfumed with brown.

The species is distributed in the Western Himalaya, from Rajasthan to Bihar, fairly common in Sikkim, rare in West Bengal in the northern India; Jabalpur in the central India; and the Western Ghats in South-west India. Outside India it has been recorded from Myanmar, Nepal, Baluchistan, Iran, Turkey, Greece.



108. *Orthetrum cancellatum cancellatum* (Linnaeus)

Habit : Strong flier, breeds in rocky pools and streams, rests on rocks. Usually prefers to remain close to water, larvae remain hidden under aquatic weeds.

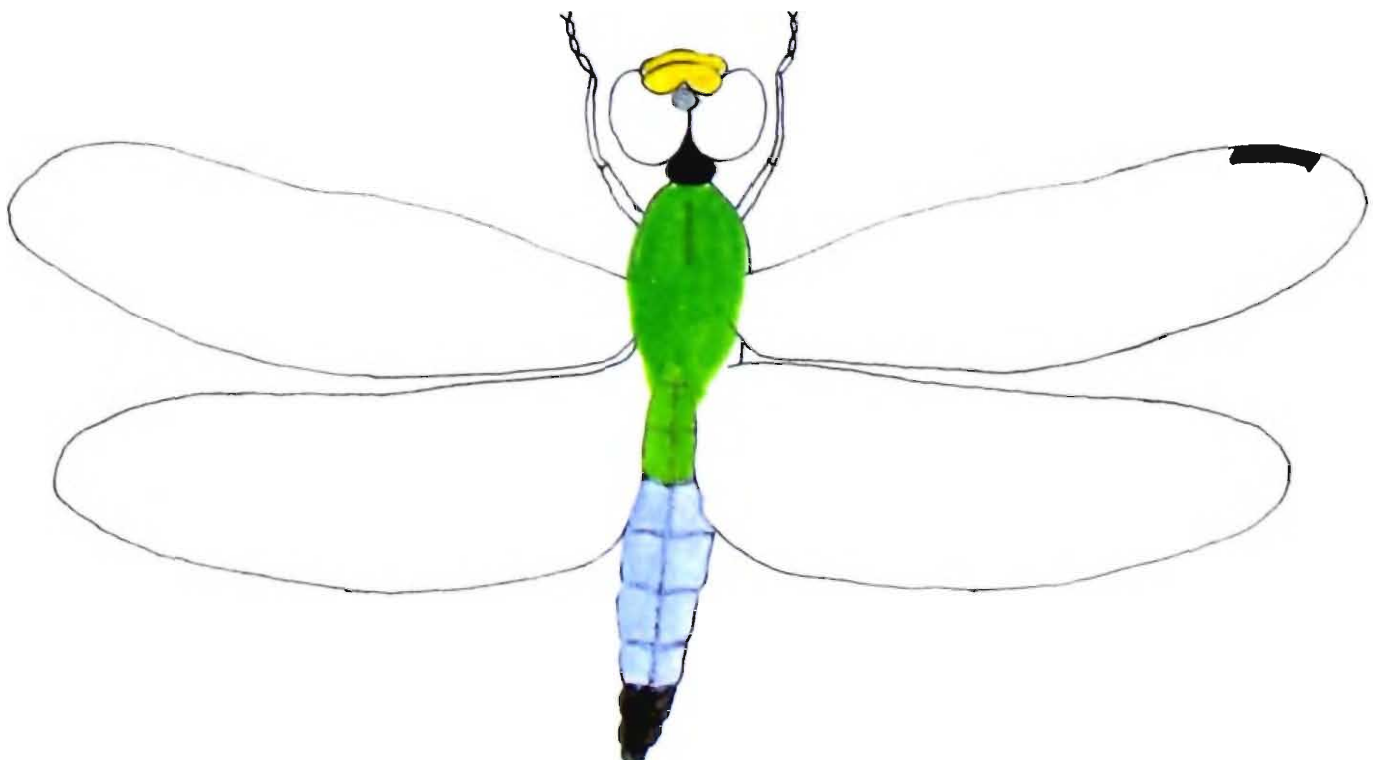
Male : Abdomen 30-33 mm; Hindwing 37-41 mm

Female : Abdomen 30-33 mm; Hindwing 38-39 mm

Head : Frons yellow, with black base, face olivaceous. In female face and frons bright-yellow. Thorax dark olivaceous with diffuse brownish antehumeral stripe, a narrow black humeral stripe, postero-lateral suture finely black. Thorax coated with grey hairs in both sexes. Abdomen broad at base, tapered from there to the anal end. Adult pulverulent blue in the segments 3 to 7; segments 1 and 2 olivaceous; segments 8 to 10 black. In case of female, teneral and subadults males ochreous, a black subdorsal stripe extending from segment 2 to 10. Wings hyaline, costal border of antenodals yellow; in female yellow at the extreme base.

The species is fairly common in the Himalayan areas from the Western to the eastern, and also occurs in the central India. It is known from the British Isles across Europe and North Africa to Asia Minor.

Remarks : Specimens from Madhya Pradesh, Arunachal Pradesh and Sikkim have got 12-14 antenodals in forewing, 8-10 in hind-wing; 10-11 postnodals in fore-wing, 12 in hind-wing.



109. *Orthetrum japonicum internum* MacLachlan

Habit : It wanders along the hilly seepages, breeds in the running water, with low speed; larvae usually remain under debris.

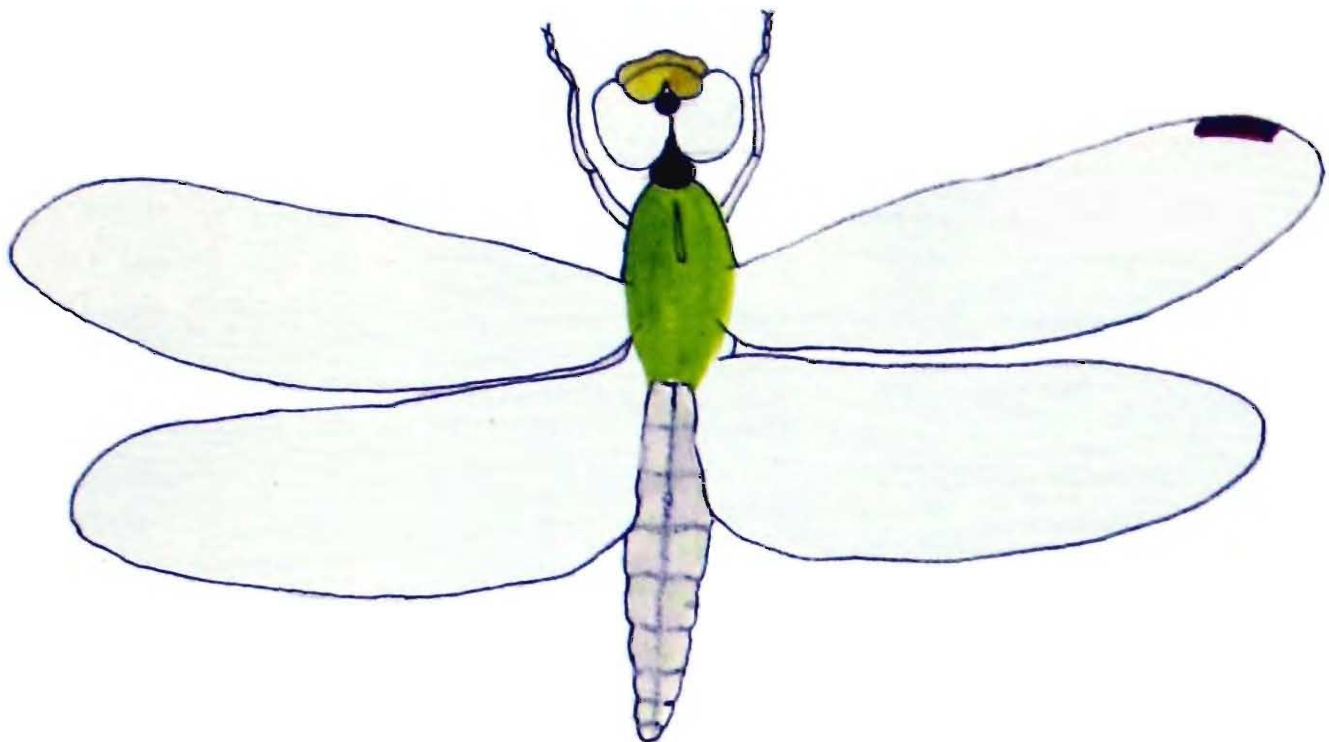
Male : Abdomen 28-30 mm; Hindwing 34-35 mm

Female : Abdomen 26-29 mm; Hindwing 32-34 mm

Head : Face and frons olivaceous-green, vesicle dark brown. Thorax olivaceous-green on middorsum and antelar sinus, humeral region with a broad stripe of warm reddish-brown, Laterally due to pruinescence pale whitish-green or bluish; with a broad oblique warm brown, beneath dark brown. In female pruinescence is absent. Abdomen broad at base, tapering to the end, entirely pulverulent bluish-white, almost chalky-white in adults. Segments 1 and 2 with ground colour and a broad subdorsal dark brown stripe showing deeply through the pruinescence. In female, teneral and subadult males abdomen bright yellow, a broad blackish-brown subdorsal stripe from segment 1 to the end. Wings in both sexes hyaline, amber-yellow tinting at the extreme base and in old adults uniform clouding with blackish brown especially towards apices.

The species is an Asian one. In India it has been recorded from the Western Himalaya and North-East India. Outside India the western limit is Pakistan, China the northern limit, Japan is for the far-east and Indo-Chinese subregion is the south-east Asian limit.

Remarks : Female specimens from Assam state have golden-brown thorax, ochreous abdomen, two-third of the ventro-ateral side of the segments 4-7 black.



110. *Orthetrum luzonicum* (Brauer)

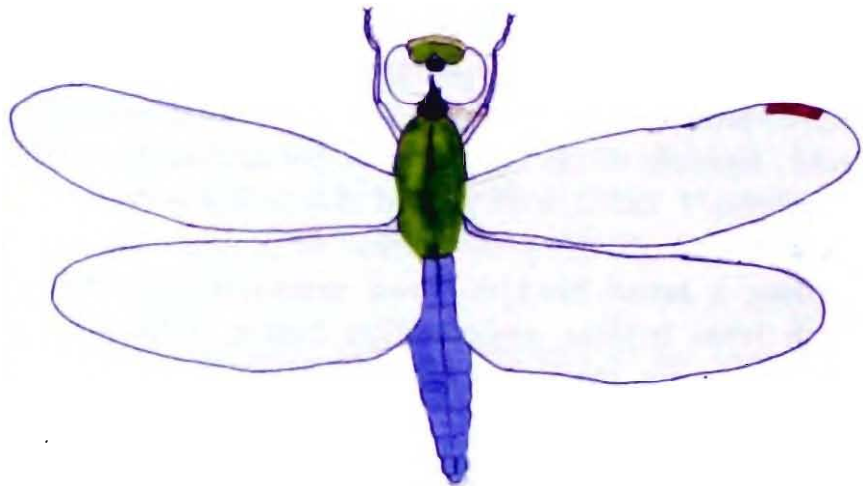
Habit : Medium flier, rests on twigs, common in the montane and submontane areas; breeds in hilly seepages.

Male : Abdomen 28-30 mm; Hindwing 30-32 mm

Female : Abdomen 28-32 mm; Hindwing 30-32 mm.

Head : Face and frons pale bluish or greyish-yellow; vesicle and occiput black. In female vesicle dark olivaceous, occiput ochreous or dark brown. Thorax middorsum pale olivaceous-green, broad reddish-brown humeral stripe, laterally three ill-defined brown stripes on the olivaceous-green back ground. In female palest green with fine black sutures, no lateral brown stripe. Abdomen dorso-ventrally dilated

at base and then narrow and tapered, pruinosed azure-blue except at sides of segments 1, 2 and basal of 3 which are bright yellow. In female abdomen greenish-yellow, a broad black stripe on each side, segments 9 and 10 with an oval yellow dorsal spot. Wings hyaline in both sexes.



Orthetrum luzonicum (Brauer) – Male

The species is an asiatic one. In India it has been recorded from the Western Himalaya to North-East India. West Bengal, Orissa, Western Ghats and Deesa, outside India Afghanistan is the Western limit, Japan in the far-east, China in North, Sri Lanka in the South, Malaysian subregion in south-east Asia.

111. *Palpopleura sexmaculata sexmaculata* (Fabricius)

Habit : Small, weak fliers for a short distance, occurring usually in large colonies in marshy spots, where they breed.

Male : Abdomen 14-16 mm; Hindwing 15-21 mm

Female : Abdomen 13-14 mm; Hindwing 18-21 mm

Head : Frons and vesicle brilliant metallic blue; In female face and frons bright yellow. Thorax pale greenish-yellow; marked with dark brown and black; warm reddish-brown on dorsal part, deeper on the antehumeral regions but paling to yellow along the anterior border of humeral suture which is finely black; a black stripe traverses the spiracle. In female dorsum of thorax ochreous, obsolete brown antehumeral stripe, a vestigial black stripe on the lateral sides. Abdomen pruinose light blue, sides of segments 1 and 2 as well as base of segment 3 yellow; undersurface yellow with a black stripe. Abdomen in female and in immature males bright ochreous with ventral borders and sutures finely black with a black middorsal stripe from segments 3 to 10. Wings hyaline, marked with black; hind-wing usually tinted with yellow from base to the proximal end of the pterostigma; a black dot at node in fore-wing, a black streak in the subcostal space which overlaps the costal space for a short distance, another streak between the sectors of arc in hind-wings similar streaks occur. In female wings more broadly marked with blackish-brown and black and more deeply tinted with amber-yellow. Forewing with subcostal stripe, confluent on inter sectors stripe by an interposition of a third stripe, cubital space stripe extending into whole of subtriangle, discoidal cell and variable area, hind-wings more closely resemble that of male; and amber-tinting extends to apex, neuration in dark areas golden yellow.

The species occurs in the plains and hills of eastern India, Himalayas in the northern India and in the Western Ghats in peninsular upland. In outside India it occurs in continental Asia.

Remarks : Specimens from North-East India may sometimes possess antenodals in fore-wings 9-11; in hindwings 6-8; postnodals in fore-wings 6-7 in hind-wings 5 to 6, male specimens from Sikkim may not contain white spot on pterostigma and females may have extra spot on wing.



Palpopleura sexmaculata sexmaculata (Fabricius) – Female

112. *Crocothemis servilia servilia* (Drury)

Habit : The species breeds in stagnant water, visible both near and away from water, occurs mainly in the rainy season.

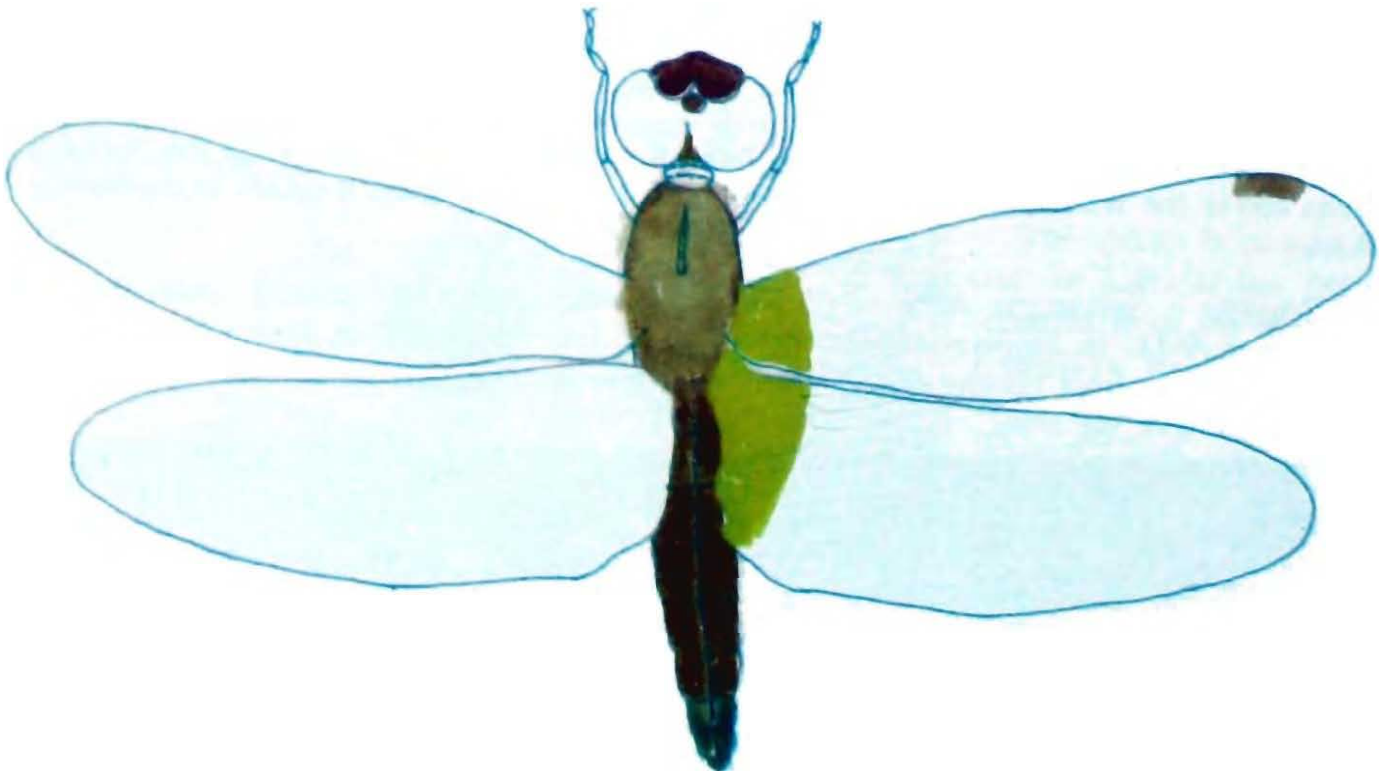
Male : Abdomen 24-35 mm; Hindwing 27-38 mm

Female : Abdomen 25-32 mm; Hindwing 31-37 mm

Head : Labrum blood-red, rest of face and frons also bright red, occiput bright orange, vesicle red. In female labrum, face, frons and vesicle olivaceous-yellow, occiput olivaceous-brown. Throat bright ferruginous often red on dorsum. In female thorax olivaceous brown, sometimes tinged with ferruginous. Abdomen red, segment 8 and 9 with black middorsal carina. In female abdomen ochreous, black middorsal carina on segments 8 and 9 as in male. Wings hyaline, bases of all wings marked with rich amber-yellow; bases of wings pale brown in adult specimens; pterostigma ochreous. In female basal marking paler and neuration in this part bright yellow.

The species is distributed throughout India and the old world; recently it has extended its distribution in North America through human agency.

Remarks : Mixture of complete and incomplete antenodals in the fore-wings is visible in some Nagaland specimens.





Crocothemis servilia servilia (Drury)



Crocothemis servilia servilia (Drury) – Male

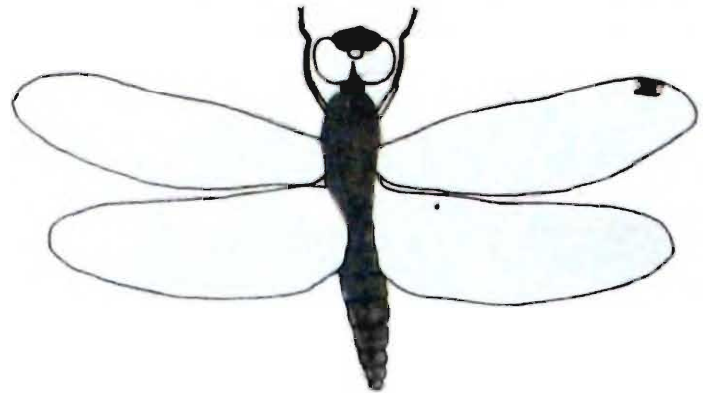
113. *Bradinopyga geninata* (Rambur)

Habit : It occurs throughout the year; but mostly from April to August. It is crepuscular in habit, rests on dark objects like old brick walls, old tree trunks, black rocks etc.

Male : Abdomen 26-29 mm; Hindwing 33-36 mm

Female : Abdomen 26-29 mm; Hindwing 32-36 mm

Head : Labrum faint yellow or dark brown, rest of face and frons olivaceous or cinereous. Thorax dirty pale yellow, black and dirty white granite in colour, Abdomen black marbled with faint yellow; segments 3 to 8 with pale basal annules which are interrupted on dorsum and formed by two elongate parallel spots, one ventro-lateral, the other subdorsal spot and faint middorsal spot. Wings hyaline, pterostigma bicolorous, black in the middle and white in sides.



It is oriental in distribution and occurs throughout India.

Remarks : Male specimens from Maharashtra have membrane brown; antenodal in fore-wing $10\frac{1}{2}$ - $11\frac{1}{2}$; in hind-wing 9-10; postnodals in fore-wing 8-10 and in hind-wing 8-9.



Bradinopyga geninata (Rambur) – Male

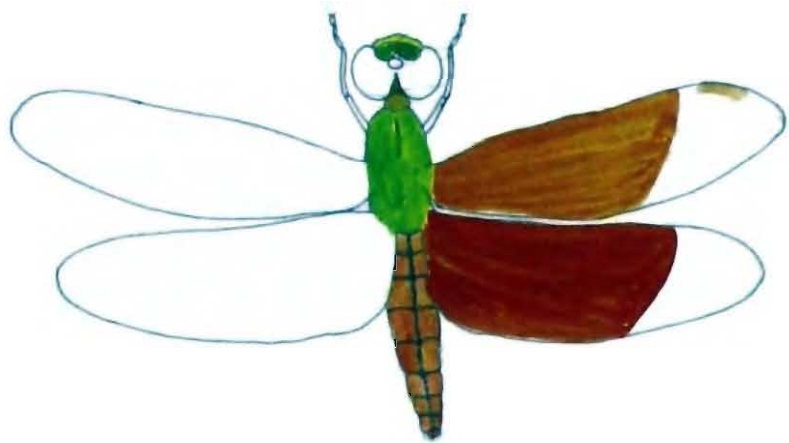
114. *Brachythemis contaminata* (Fabricius)

Habit : Visible near and away from water, roost near water, short flier, follows near by mobile objects.

Male : Abdomen 18-21 mm; Hindwing 20 mm

Female : Abdomen 18-20 mm; Hindwing 22-25 mm

Head : Face, frons and vertex olivaceous or faint greenish-yellow, occiput brown; in female face, ferruginous, dorsally marked with an obscure reddish-brown humeral stripe and obscure brownish stripe on each side. In female thorax faint greenish-yellow with a thin brown mark almost parallel to the middorsal carina, a brown stripe just internal to the humeral suture,



Brachythemis contaminata (Fabricius) – Female

blackish stripes in the middle of the mesepimeron and metepimeron, middorsal carina and lateral sutures thinly black. Abdomen reddish, marked with faint dorsal and subdorsal brown stripes. In female abdomen high olivaceous-brown, with a thin black stripe on middorsal carina. A subdorsal dark brown stripe, interrupted, on segments 2 to 6 yellow in between this and the middorsal carina. Wings hyaline, venation reddish, pterostigma red; a broad orange fascia extending from base to pterostigma. In female wings hyaline, hindwings very faintly

tinted with yellow at the extreme base; but orange fascia in male is absent; pterostigma ochreous.

This is Oriental in distribution and occurs throughout India, excepting the high altitude (above 2800 m.) and desert.

Remarks : Mixture of complete and incomplete antenodals in fore-wings in West Bengal specimens are sometimes visible.

115. *Sympetrum hypomelas* (Selys)

Habit : The species is found in the rather open country, it prefers hilly areas. It settles on bare patches.

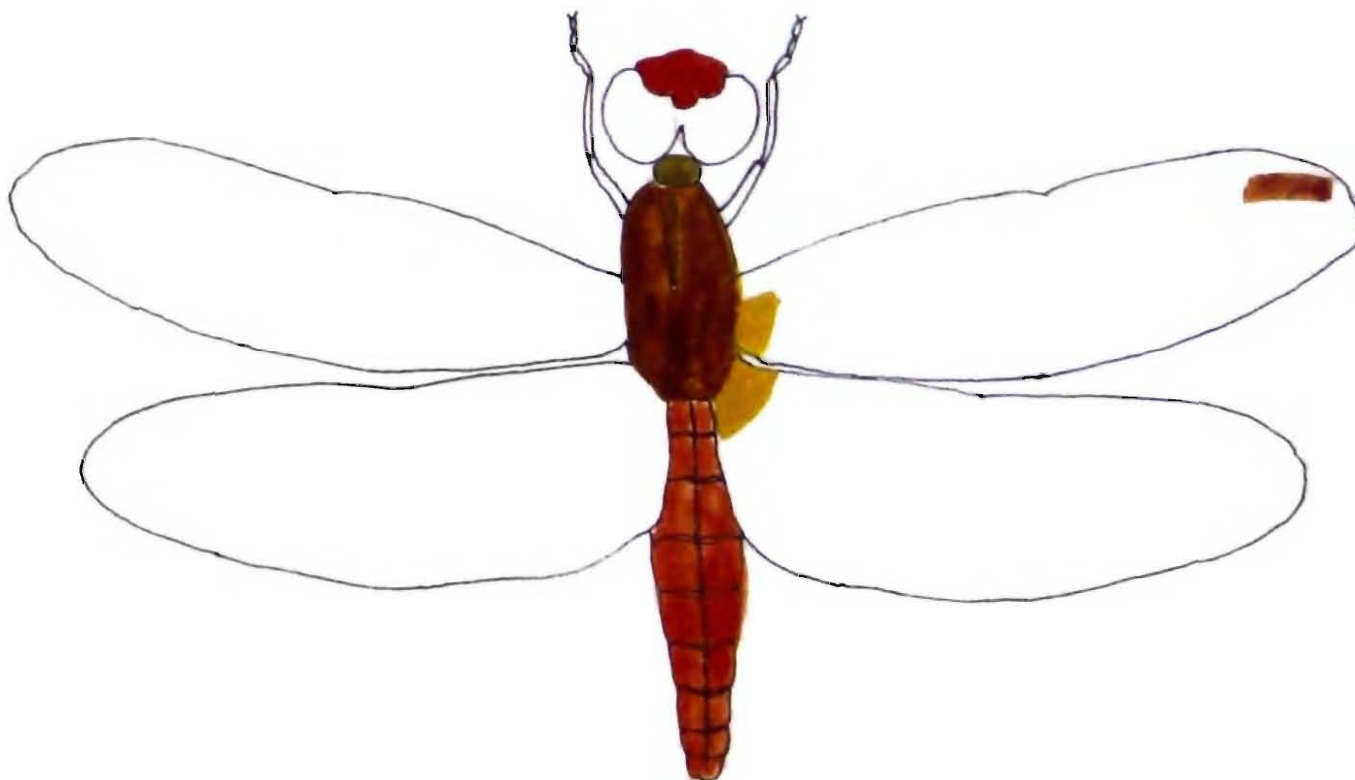
Male : Abdomen 25-26 mm; Hindwing 29-32 mm

Female : Abdomen 25-27 mm, Hindwing 31-35 mm

Head : Labrum, face, frons vesicle bright red, occiput and upper surface of eyes reddish-brown. Thorax golden brown on dorsal part, black humeral stripe; on the lateral sides two bright citron-yellow stripes, they are separated by a black band on postero-lateral suture, under surface and black Abdomen ochreous on dorsal surface and black on ventral. In female a subdorsal broad black band extends from the segment. to the segment 7; on segments 3 to 5 the band with black overlapping below cuts of narrow yellow stripe; and on segment 6 a narrow elongate spot is enclosed. Wings hyaline with extreme bases amber-yellow, pterostigma short, dark reddish-brown between black veins.

The species occurs in Darjeeling (West Bengal), Sikkim in the Himalayas, Assam and Myanmar.

Remarks : Male specimens from Manipur, Mizoram, and Sikkim have labium brownish-yellow; labrum, face and vesicle are suffused with brownish-red.



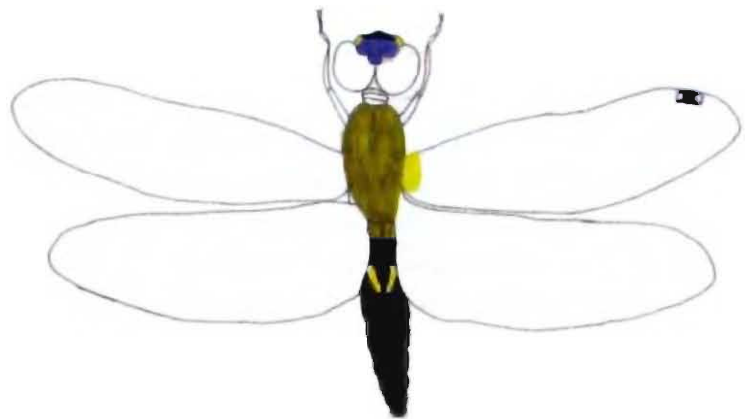
116. *Trithemis pallidinervis* (Kirby)

Habit : It occurs mainly in the rainy season; rests on reeds or aquatic vegetation in the midst of pools, keeps wings half open and breeds in stagnant waters.

Male : Abdomen 28-32 mm; Hindwing 30-36 mm

Female : Abdomen 26-28 mm; Hindwing 30-32 mm

Head : Front of frons yellow or light brown, upper surface of frons and vesicle shining or faint brown. In female frons with upper surface ochreous, basal half marked with shining bronzed golden-green. Thorax olivaceous-brown on dorsum, and part of sides olivaceous, dorsal part thickly coated with greyish hairs; a deep brown triangular mark on the middle of the dorsum; it reaches up to the antealar sinus; three black stripe-one on humeral suture, on the spiracle and the last on the postero-lateral suture; under surface black. Abdomen long, basal segment slightly tumid, the rest nearly of uniform width. They are black marked with yellow as follows: sides of segments 1 to 3 very broadly; segments 4 to 7 with wedge shaped spots, a small on segment 8; 9 and 10 black. In female segment 10 yellow. with black base. Wings hyaline, venation reddish, basal parts of wings yellow; pterostigma bicolorous, black in the middle, sides creamy white. In female wings may be tinted with yellow or reddish-brown at the apical ends.



The species occurs almost everywhere in the oriental region and parts of Formosa.

Remarks : Male specimens from eastern India labrum ochreous without brownish spot.



Trithemis pallidinervis (Kirby)



Trithemis pallidinervis (Kirby) – Male

117. *Trithemis aurora* (Burmeister)

Habit : Occurs throughout the year, prefer drier areas, short flier, often rests on shrubs or stones.

Male : Abdomen 21-29 mm; Hindwing 24-34 mm

Female : Abdomen 19-27 mm; Hindwing 24-31 mm

Head : Face and front of frons bright ochreous, upper surface of the frons and vesicle metallic shining violaceous frons and vesicle metallic shining violaceous. In female face and frons olivaceous or bright ochreous, frons yellow. Thorax with thin pruinescence dull purple, although the ground colour reddish. A faint superior humeral brown stripe, and a black stripe on the posterolateral suture, and a black line on the spiracle. In female thorax faint olivaceous on sides, deeper on dorsum, black stripes in addition, brownish on middorsal carina; a narrow brown stripe on humeral region. Abdomen swollen at base, slightly constricted at segment 3 and fusiformly dilated again; lateral sides of segment 9 and base of segment 10 marked with black. In female abdomen ochreous with black markings. Wings-hyaline, with crimson reticulation and amber-yellow fascia at base of wings with brown rays in subcostal cubital and spaces. In female wings hyaline, broadly tipped with brown as far as middle of pterostigma, venation yellow to brown; basal markings without rays.



The species occurs throughout India and Oriental region.

Remarks : Male specimens from the Andaman Is. and Rajasthan have dark brown labrum.



Trithemis aurora (Burmeister)



Trithemis aurora (Burmeister) – Male

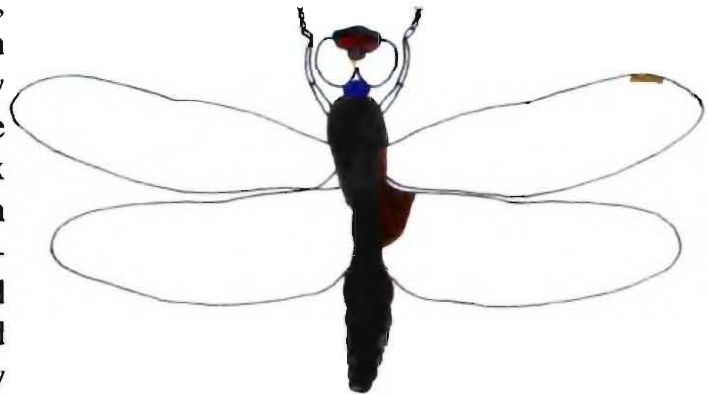
118. *Trithemis festiva* (Rambur)

Habit : The species breeds in still waters or sluggish waters and larvae found to hiding up in masses of water weed, they usually rest on rocks or stony objects, form 'obelisk' position in the sun.

Male : Abdomen 22-28 mm; Hindwing 26-32 mm

Female : Abdomen 21-24 mm; Hindwing 24-29 mm.

Head : Frons dark brown in front, metallic violet above and vesicle too. In female face and frons dirty yellow changing to dark brown on upper surface of frons, which is nonmetallic. Thorax black coated with thin purplish pruinescence. In female thorax greenish-yellow or olivaceous, with a broad blackish-brown humeral stripe, an inverted y-stripe on mesepimeron and a narrow stripe on postero-lateral suture which sends a short oblique stripe backwards across metepimeron. Abdomen black, segments 1 to 3 with a thin pruinescence. In female abdomen yellow and marked with black. Wings hyaline, with a dark opaque brown mark at base of hind-wing, dark rays in basal areas. In female apices broadly dark reddish-brown.



The species is distributed from North-West India to North-eastern India, Himalayas, western and eastern ghats; outside India from the middle east Asia to South-eastern Asia and New Guinea.



Trithemis festiva (Rambur)



Trithemis festiva (Rambur)

119. *Rhyothemis variegata variegata* (Linnaeus)

Habit : The species is gregarious and occur usually in large number over marshly area or large weedy tanks in which they breed, flight is weak, often soaring and flying low, the wing action is fluttering resemble butterflies.

Male : Abdomen 24-27 mm; Hindwing 35-37 mm

Female : Abdomen 22-24 mm; Hindwing 34-35 mm

Head : Frons and vesicle very dark metallic green. Thorax dark metallic green. Abdomen entirely black; wings palely tinted with yellow throughout, apices blackish brown; a big black spot on the node; an additional spot at the discoidal cell; hind-wing with two black fasciae with dark metallic blue reflex. In female fore-wing with apical half from the level of the node hyaline, basal half tinted with golden-yellow and marked with blackish-brown as follows : a stripe in the fore-wings which begins in the subcostal space extends gradually to the costal space and ends abruptly at node, where it is broadly confluent with a broad fascia which runs posteriorly nearly to border of wing and with outer border somewhat outwards and backwards; a triangular spot with the centre at the discoidal cell level, extends distally. Hind-wing broad, short, apex hyaline; rest of wing tinted with golden amber and broadly marked with blackish-brown.



This is the first species recorded from the Indian subcontinent based on example. It was recorded from East India. It has been recorded from the Western Himalaya to North-East India, the Western Ghats, Maharashtra, Tamil Nadu and in outside India China in North and Borneo in South.

Remarks : Male examples from eastern India have brown labrum, a spot on the hyper triangular space; the females possess brown spot on postclypeus.



Rhyothemis variegata variegata (Linnaeus) -- Female



Rhyothemis variegata variegata (Linnaeus) – Female

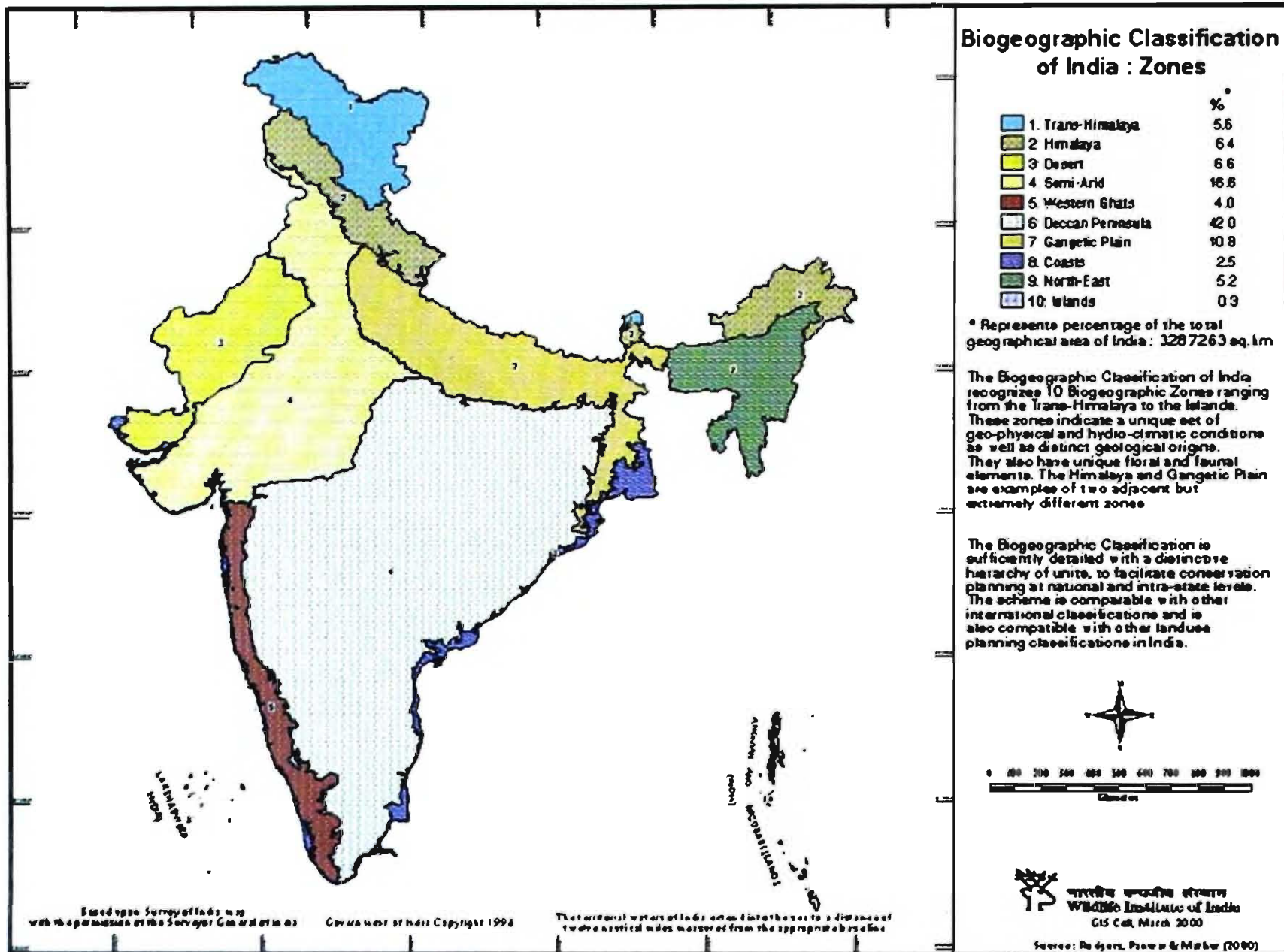
SUMMARY

The present book contains short description, geographical distribution and note on habit and habitats of 119 species of Indian dragonflies (Odonata). It contains coloured photographs either taken from nature or in laboratory and coloured sketches of important features of the species along with black & white diagrams, keeping in mind the conditions of specimens after post mortem change in colours.

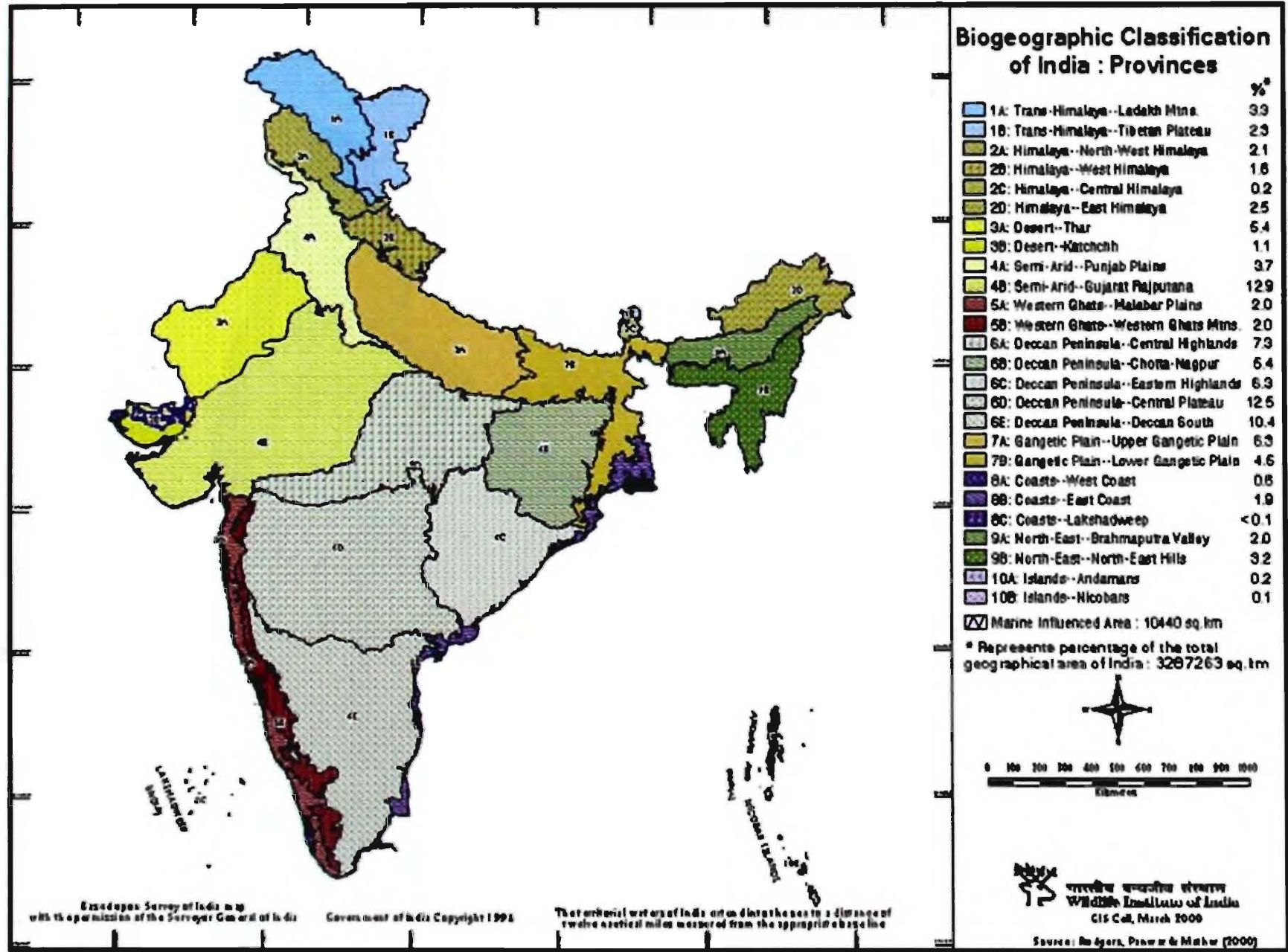
REFERENCES

- Corbet, P.S. 1962. *A biology of dragonflies*. H. F. & G. Witherby, London : xvi+1-247.
- Corbet, P.S. 1999. *Dragonflies : Behaviour and ecology of Odonata*. Cornell University Press, New York, Ithaca : xxxii+1-829.
- Emiliyamma, K.G.; Radhakrishna, C. and Muhamed Jafer Palot. 2005. *Pictorial Handbook on – Common Dragonflies and Damselflies of Kerala*. (Published by the Director, Zool. Surv. India, Kolkata) : 1-67
- Fraser, F.C. 1933, 1934, 1936. *Fauna of British India, including Ceylon & Burma*. Taylor & Francis Ltd., London.
- Kiauta, B. 1984. Aktuelle Probleme der Zytotaxonomie an Beispielen bei Sudasiatischen Prachtlibellen (Odonata : Chlorocyphidae) und schweizerischen Kocherfliegen (Trichoptera : Limnephilidae für die Umweltforschung. (English summary). *Opusc. zod.Flumin.*, 1 : 1-20
- Kumar, A. and Prasad, M. 1981. Field ecology, zoogeography and taxonomy of Odonata of Western Himalaya, India. *Rec. zool. Surv. India, Occ. Paper No. 20* : 1-118.
- Laheri, A.R. 1987. Studies on the Odonate fauna of Meghalaya. *Rec. zool. Surv. India, Occ. Paper No. 99* : 1-402.
- Lieftinck, M.A. 1984. Further notes on the specific characters of *Calicnemes* Strand, with a key to the specific characters of larval forms (Zygoptera : Platycnemidae). *Odonatologica*, 13 : 351-375.
- Mitra, T.R. 1994. Observation on the habits and habitats of adult dragonflies of eastern India with special reference to the fauna of West Bengal. *Rec. zool. Surv. India, Occ. Paper No. 166* : 1-40.
- Mitra, T.R. 1999. Geographical distribution and zoogeography of Odonata of Meghalaya, India. *Rec. zool. Surv. India, Occ. Paper No. 170* : 1-63.

- Mitra, T.R. 2002. Geographical distribution of Odonata (Insecta) of Eastern India. *Memoirs. zool. Surv. India*, Volume **19**(No. 1) : 1-208.
- Mitra, T.R. 2003. Ecology and biogeography of Odonata with special reference to Indian fauna. *Rec. zool. Surv. India, Occ. Paper No. 202* : 1-41.
- TSuda, S. 2000. A distributional list of World Odonata : vi+1-430.



Map 1. Biogeographic Classification of India : Zones (Source : Rodgers, Panwar and Mathur, 2000)



Map 2. Biogeographic Classification of India : Provinces (Source : Rodgers, Panwar and Mathur, 2000)

Dragonflies are very primitive group of insects. Technically they are known as the Order Odonata. Nearly 220 million years ago their ancestors appeared in the world along with the ancestors of roaches. In the present world about 7000 odd forms occur; India's contribution to that nearly 500 odds. They feed on insects sometimes larvae feed on earthworm. Birds, Lizards and Toads are predators.

Dragonflies move near water bodies. They breed near water and lay eggs in water, whatever may be the amount of water available. Adults are terrestrial and larvae are aquatic.

