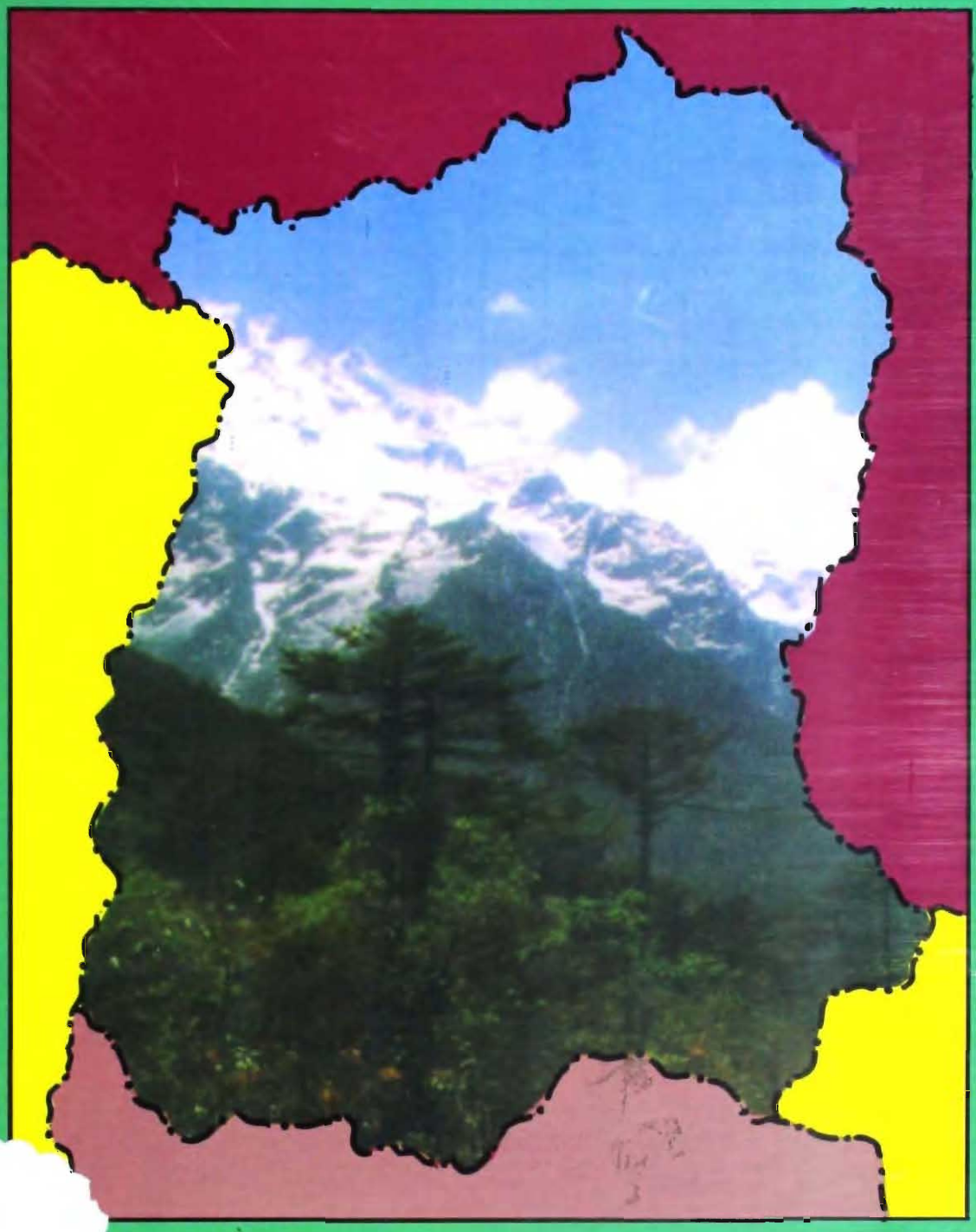
State Fauna Series - 9

FAUNA OF SIKKIM

(PART-4)



Zoological Survey of India

State Fauna Series 9

FAUNA OF SIKKIM

PART-4
(INSECTS)

Edited by
The Director
Zoological Survey of India, Kolkata



Zoological Survey of India
Kolkata

CITATION
Editor-Director, 2003. *State Fauna Series* 9, *Fauna of Sikkim* (Part-4) : 1-512, (Published by the Director, *Zool. Surv. India,* Kolkata)

Published : June, 2003

ISBN 81-8171-006-1

Project Co-ordinator

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(Director, Zoological Survey of India, Kolkata)

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PRICE
India : Rs. 850.00
Foreign : $ 65 £ 53

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 Krishna Printing Works, 106, Vivekananda Road, Kolkata 700 006.

STATE FAUNA SERIES

FAUNA OF SIKKIM

PART-4 **2003** **1–512**

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Zool. Surv. India.
State Fauna Series 9, Fauna of Sikkim (Part-4) : 1-25, 2003

INSECTA : LEPIDOPTERA : PAPILIONIDAE
DANAINAE (NYMPHALIDAE), LASIOCAMPIDAE, LYMANTRIIDAE AND RATARDIDAE

D.R. MAULIK
Zoological Survey of India, M-Block, New Alipore, Kolkata-700 053

INTRODUCTION

Sixty nine species and subspecies from the state of Sikkim distributed over 24 genera and five families of butterflies-Papilionidae, Danainae (Nymphalidae) and moths-Lasiocampidae, Lymantriidae and Ratardidae have been systematically accounted for along with a table of their distribution. In addition, 135 species and subspecies in 50 genera under these five families have been reviewed from literature. The studies are based on the material collected from all the four districts of the state during February–November between 1962-1995 by different faunistic survey parties of the Zoological survey of India and also specimens available in the collection of N.Z.C.

Earlier works on the faunistics of Lepidoptera from Sikkim range is of East Himalaya, as under report date back to de Nicville (1881-1885). In (1884) De Niceville contributed to the annotated glimpses of the State fauna in the form of a Gazzetteer and further studies on the group were continues by Elwes (1882, 1888) and Dudgeon (1898, 1900-1901). Elwes (1988) prepared a catalogue of Lepidoptera of Sikkim, supplemented by addition, corrections and distribution by Otto Moeller in the same work. Saiunders (1955) and Haribal (1992) dealt with lepidopteran accounts particularly on butterflies of the state.

The family Papilionidae includes two subfamilies, viz., Papilioninae and Parnassiinae of which the former is represented in Sikkim by 6 genera and 40 species and subspecies. 29 species and subspecies of moths from Sikkim belong the family Lasiocampidae (5 spp.), Lymantriidae (23 spp.) and Ratardidae (1 sp.).

The studies indicates that eight (* – marked) lymantrids constitute new locality records for Sikkim, including one new record for the whole of the mainland. The species *Princeps elephenor* (Doubleday) of the family Papilionidae, *Dasychira virescens* (Moore) of the family Lymantriidae are represented in the collection by only a specimens of each species. A consolidated list of 204 species and subspecies in 55 genera has been in the Appendix –I.

SYSTEMATIC ACCOUNT

Family PAPILIONIDAE

Subfamily PAPILIONINAE

Key to genera

1. Fore wing basal spur weak. Tibiae and tarsi scaled ..... *Graphium* Scopoli

– Fore wing basal spur strong. Tibiae and tarsi not scaled 2

2. Tibio-tarsal rows of spines irregular. Hind wing precostal vein forked 3

– Tibio-tarsal rows of spines regular. Hind wing precostal vein not forked 4

3. Pattern black with white and red spots. Fore wing R_2 arising opposite Cu1a. Hind wing tailed. never with golden transparent scales .... *Atrophaneura* Reakirt

– Pattern dark with pale spots. Fore wing R arising opposite Cu1b. Hind wing not tailed. golden transparent scales present .... *Troides* Huebner

4. Hind wing upperside at base with a white dot or spot and tailless ..... *Chilasa* Moore
- Hind wing upperside without white dot or spots at base and often tailed 5
5. Head and pronotum with white dots. Fore wing with transparent dot or band. Abdomen underside with thin white lines ..... *Princeps* Huebner
- Head and thorax with white dots. Fore wing of male often with wooly-scent stripes. Abdomen without white dots ..... *Papilio* Linnaeus

Genus *Graphium* Scopoli

1777. *Graphium* Scopoli, *Intr. Hist. Nat.*, : 433.

Seven species of this genus are treated from Sikkim.

Key to species

1. Fore wing middle discocelluar much shorter than upper discocelluar; hind wing with submarginal blue scales ..... *eurous* (Heron)
- Fore wing middle discocellular not much shorter than upper discocellular; hind wing without submarginal blue scales 2
2. Pattern primitive banded or mimetic. Tail present in non-mimetic species 3
- Pattern modified or specialised, never mimetic. Tail reduced or absent 5
3. Fore wing upperside with three dark cell bars ..... *agetes* (Westwood)
- Fore wing upperside with four dark cell bars 4
4. Hind wing underside with a discal rows of red spots ..... *aristeus* (Cramer)
- Hind wing underside without any discal rows of red spots ..... *antiphates* (Cramer)
5. Thorax with dorso-lateral grey stripes. Fore wing upperside dark bars angled, underside costal base with dark scales; hind wing underside with red spots never in M_3 or Cu1a area. Tail present ..... *agamemnon* (Linnaeus)
- Thorax without dorso-lateral grey stripes. Fore wing upperside dark bars not angled, underside costal base with white scales; hind wing underside with red spots never in M_1 area. Tail absent 6
6. Fore wing underside with dark bars straight. Hind wing underside with dark costal band. Tail absent ..... *eurypylus* (Linnaeue)
- Fore wing underside with a single cell spot; hind wing underside with a red-centered costal bar ..... *doson* (C. & R. Felder)

1. *Graphium (Pazala) eurous sikkimica* (Heron)

1899. *Papilio sikkimica* Heron, *Ann. Mag. Nat. Hist.*, (7) **3** : 120.

1997. *Graphium (Pazala) eurous sikkimica* (Heron) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal*, Part–7 : 757.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 70 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Assam and Meghalaya, Elsewhere : Nepal.

2. *Graphium (Pathysa) agetes agetes* (Westwood)

1843a. *Papilio agetes* Westwood, *Arc. Entom.*, : 1-64.

1983. *Graphium (Pathysa) agetes* (Westwood) : Hancock, *Smithersia*, **2** : 22.

Material examined : Sikkim, 1ex., (no data), *Wing expanse* : 75 mm.

Distribution : India : Sikkim, Arunachal Pradesh, (Betts, 1950) and Assam. Elsewhere : Annan, Bhutan, Hainan, Myannar and Tonkin.

Remarks : Talbot (1939) mentioned nominate subspecies *agets* occuring in the Sikkim.

3. *Graphium (Pathysa) aristeus anticrates* (Doubleday)

1946. *Papilio anticrates* Doubleday, *Ann. Mag. Nat. Hist.*, **18** : 371-376.

1983. *Graphium (Pathysa) aristeus* (Doubleday) : Hancock, *Smithersia*. **2** : 22.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 70 mm.

Distribution : India : Sikkim, Assam and Manipur. *Elsewhere* : Bangladesh, Myanmar, and Jordan.

Remarks : Talbot (1939) mentioned its status 'rare' and stated occurance of subspecies *anticrates* in the Sikkim.

4. *Graphium (Pathysa) antiphates pompilius* (Fabricus)

1787. *Papilio pompilius* Fabricius. *Mont. Ins.*, **2** : 8.

1997. *Graphium (Pathysa) antiphates pompilius* (Fabricius) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal*, Part–7 : 760.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 75 mm.

Distribution : India : Sikkim, Meghalaya and Manipur. *Elsewhere* : Annan, Bhutan, Hainan, Myanmar and Thailand.

5. *Graphium (Graphium) agamemnon agammenon* (Linnaeus)

1758. *Papilio agamemnon* Linnaeus, *Syst. Nat.*, ed. **10** : 462.

1997. *Graphium (Graphium) agamemnon agamemnon* (Linnaeus) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal*, Part–7 : 762.

Material examined : 3exs. : 2 exs., Torengthus, 1 km. West of Nayabazar, South district, 5.xi.94, G.C.Sen and party coll. : 1ex., Rabangla, South district, 16.x.95, S.C. Mitra and Party Coll. *Wing expanse* : 75–80 mm

Distribution : India : Sikkim (South district). Anunachal Pradesh, Manipur, Uttar Pradesh and West Bengal. *Elsewhere* : Sino–Malayan.

6. *Graphium (Graphium) eurypylus cheronus* (Fauhstorer)

1903. *Papilio eurypylus acheron* f. *cheronus* Fruhstorer, *Berl. Ent. Zett.*, **47** : 167–264.

1983. *Graphium (Graphium) eurypylus* (Fruhstorer) : Hancock, *Smithersia*, **2** : 47.

Material examined : Sikkim, 1ex., (no data), Wing expanse : 95 mm.

Distribution : India : Sikkim and Assam. *Elsewhere* : Hainan, Indo-China, Myanmar, Thailand and Tonkin.

Remarks : Talbot (1939) mentioned nominate subspecies *cheronus* occuring in the Sikkim.

7. *Graphium (Graphium) doson axion* (C. & R. Felder)

1864. *Papilio axion* C. & R. Felder, *ver. zool. Bat. Gen. Wein.*, **14** : 305.

1997. *Graphium (Graphium) doson axion* (C. & R. Felder) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal*, Part–7 : 762.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 75 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Manipur, Orissa, Tripura, West Bengal and West Himalaya. *Elsewhere* : Myanmar, South-East China, Thailand and Vietnam.

Genus *Atrophaneura* Reakirt

1864. *Atrophaneura* Reakirt, *Proc. ent. Soc. Phil.* **3** : 45.

Five species of this genus are known from Sikkim.

Key to species

1. Hind wing tail long and spatulate; anal region in male with a white scent-wool 2
– Hind wing tail short and pointed; anal region in male with white scent scales 3
2. Hind wing upperside with submarginal spot in area M_2; cilia from tornus to Cu1a black; tail tipped black ..... *latreilei* (Donovan)
– Hind wing upperside in male without white spot anterior to the quadrate spot on M_2. Frons and abdomen in both sexes pale black .... *polyeuctes* Doubleday

3. Male scent-organ well developed and wooly; abdominal fold very broad and rolled-up 4

– Male scent-organ reduced or absent; abdominal fold narrow or vestigial .... *aristolochiae* Fabricius

4. Fore wing underside in male with entirely bluish-black; in female with uniformly grey brown; hind wing upperside with rounded anal fold being red or pink on the tormen and with indistinct sheen ..... *aidoneus* Doubleday

– Fore wing underside in male not entirely bluish-black only in the basal half, in the female with a large pale posterior patch; hind wing upperside with metallic blue. Male with black-brown scent-fold with long frings .... *varuna* (white)

8. ***Atrophaneura* (*Atrophaneura*) *latreilei*** (Donovan)

1826. Papilio latreilei Donovan, *Nat. Repos.*, 2 : 140.

1983. *Atrophaneura* (*Atrophaneura*) *latreilei* (Donovan) : *Hancock, Smithersia*, **2** : 47.

Material examined : Sikkim, 1ex., (no data). Wing expanse : 105 mm.

Distribution : India : Sikkim (C 2150–3000m.) and Arunachal Pradesh and West to North-West Himalaya. *Elsewhere* : Nepal.

Remarks : Talbot (1939) stated occurance of subspecies *latreilei* in the Sikkim.

9. ***Atrophaneura (Atrophaneura) philoxenus polyeuctes*** (Doubleday)

1942. *Papilio polyeuctes* Doubleday, *Zool. Misc.*, : 74.

In Press : *Atrophaneura* (*Atrophaneura*) *Philoxennus polyeuctes* (Doubleday) : State Fauna series. Manipur.

Material examined : Sikkim, 1ex., (no data). Wing expanse : 140 mm.

Distribution : India : Sikkim, Assam and Manipur. *Elsewhere* : Annan, Myanmar, Thailand and Tonkin.

Remarks : Talbat (1939) mentioned nominate subspecies *polyeuctes* occuring in the Sikkim.

10. ***Atrophaneura* (*Atrophaneura*) *aristolochiae aristolochiae*** (Fabricius)

1775. *Papilio aristolochiae* Fabricius, *Syst. Ent.* : 443.

1997. *Atrophaneura* (*Atrophaneura*) *aristolochiae aristolochiae* (Fabricius) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal*, Part–7 : 765.

Material examined : 2exs. Rabibagan, South district, 19. x. 95. S.C. Mitra and party coll. *Wing expanse* : 88–95 mm.

Distribution : India : Sikkim (South District); Widely distributed in India.

11. ***Atrophaneura* (*Atrophaneura*) *aidoneus*** (Doubleday)

1845. *Papilio aidoneus* Doubleday, *Ann. Mag. nat. Hist.* **16** : 178.

1983. *Atrophaneura (Atrophaneura) aidoneus* (Doubleday) : Hancock, *Smithersia*, **2** : 47.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 110

Distribution : India : Sikkim (c. 1500 m.), Arunachal Pradesh, Meghalaya and North-West Himalaya, *Elsewhere* : Bhutan, Myanmar, Hainan and Tonkin.

Remarks : Talbot (1939) stated occurance of subspecies *aidoneus* in the Sikkim.

12. ***Atrophaneura* (*Atrophaneura*) *varuna astorion*** (Westwood)

1842. *Papilio asterion* Westwood, *Ann. Mag. nat. Hist.*, **9** : 37.

1997. *Atrophaneura (Atrophaneura) varuna astorion* (Westwood) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal*, Part-7 : 764.

Material examined : Sikkim, 1ex., (no data), *Wing expanse* : 125 mm.

Distribution : India : Sikkim, Assam, Arunachal Pradesh, Manipur, Meghalaya, Uttar Pradesh and West Bengal. *Elsewhere* : Myanmar.

Genus ***Troides*** Huebner

1819. *Troides* Huebner, *Ver. bek. Schmett.*, : 88.

Two species of this genus are reported from Sikkim.

Key to species

Hind wing upperside with prominent proximal suffusion the marginal spots in area 2 to 4. Male with area 7 yellow to the marginal spots.

– Female with area 1b black at the base; a white area in cell of fore wing .... *aeacus* (C.&R. Felder)

Hind wing upperside without any black suffusion to the marginal spots in area 2 to 4. Male with area 7 without yellow to the marginal spots. Female with area 1b entirely black; without white spots area in cell of forewing ..... *helena* (C.&R. Felder)

13. ***Troides (Troides) aeacus*** (C. & R. Felder)

1860. *Ornithoptera aeacus* C. & R. Felder, *Wein. Ent. Mon.*, **4** : 47.

1983. *Troides (Troides) aeacus* (C. & R. Felder) : Hancock, *Smithersia.* **2** : 47.

Material examined : Sikkim, 4 exs., (no data), *Wing expanse* : 110-170 mm.

Distribution : India : Sikkim; extended to Garhwal in the North-West India. *Elsewhere* : Myanmar, Taiwan and West China.

Remarks : Talbot (1939) mentioned nominate subspecies *aeacus* occuring in the Sikkim.

14. ***Troides (Troides) helenacerberus*** (C. & R. Felder)

1864. *Papilio cerberus* C. & R. Felder, *Verz. zool. Bat. Ges.*, **14** : 291.

1997. *Troides (Troides) helena cerberus* (C. & R. Felder) : Mondal & Maulik State Fauna *Series 3* : *Fauna of West Bengal*, Part-7 : 766.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 120 mm.

Distribution : India : Sikkim to Orissa and North-East India. *Elsewhere* : Borneo, the Natuna Island, Malayasia, Myanmar and Tonkin.

Genus ***Chilasa*** Moore

1881a. *Chilasa* Moore, *Lep. Ceylon.*, **1** : 153.

One species of this genus is dealt with from Sikkim.

15. ***Chilasa (Chilasa) clytia clytia*** (Linnaeus)

1758. *Papilio clytia* Linnaeus, *Syst. Nat.* ed., **10** : 479.

1997. *Chilasa (Chilasa) clytia clytia* (Linnaeus) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal*, Part-7 : 767.

Material examined : 4 exs.; 3exs., Jorethang, South district, 15.x. 95. S.C. Mitra and party coll.; 1ex., Sikkim. (no data). *Wing expanse* : 95-105 mm.

Distribution : India : Sikkim (South district) : widely distributed in the mainland.

Genus ***Princeps*** Huebner

1806-19. *Princeps* Huebner, *Samml. Exot. Schmett.*, **1** : pl. (116).

Thirteen species of this genus are known from Sikkim.

Key to species

1. Frons, thorax and abdomen overlaid with metalic green scales 2

– Frons, thorax and abdomen not overlaid with metalic scales 6

2. Hind wing upperside with a green patch in inner area and a series of claret-red submarginal lunules. Hind wing with tail .... *polyctor* (Boisd)

– Hind wing upperside with green or blue patches or band and without submarginal red lunules, Hind wing without tail 3

3. Hind wing upperside with a series of submarginal red or yellowish-red lunules. Male without scent-streak on fore wing. 4

– Hind wing upperside without submarginal red lunules. Male with wooly-scent-streak on fore wing ..... *elephenor* (Doubleday)

4. Hind wing upperside with prominent submarginal red lunules 5
- Hind wing upperside with a complete row of red or yellowish-red submarginal lunules .... *paris* Linnaeus
5. Hind wing upperside with a large discal blue patch; a submarginal row of 3 to 6 red spots and a red anal ring .... *arcturus* (Westwood)
- Hind wing upperside with a large blue spots; four submarginal spots and a large purplish-red anal eye spot ..... *krishna* (Moore)
6. Hind wing upperside of male in area 7 with cream or white or with dispersed blue scales; underside at base of wing without red markings. Male without and Iroconia. Hind wing tailless ..... *protenor* (Fruhstofer)
- Hind wing upperside of male in area 7 with dark or blue-green-sheen; underside a white discal markings. Male with and Iroconia. Hind wing with tail 7
7. Head red and abdomen with lateral red stripes. ..... *janaka* (Moore)
- Head and abdomen without red stripes 8
8. Fore wing upperside black with greenish or blueish sheen. Hind wing upperside with a large white discal band; underside with a large dull red basal spot. Hind wing without tail 9
- Fore wing upperside with white transverse or oblique band. Hind wing upperside with white discal band. Hind wing with tail 10
9. Hind wing with anal white-edged occillus .... *alcmenor* (C. & R. Felder)
- Hind wing without anal white-edged occillus ..... *memnon* (Linnaeus)
10. Fore wing upperside of male black with a white transverse or oblique band; hind wing upperside with white or greenish-blue discal band, Male with and Iroconia .... *helenus* (Linnaeus)
- Fore wing upperside of male black with yellowish-brown streak; hind wing upperside with elongate white discal spot. Male without and Ireconia 11
11. Hind wing upperside with four chalky-white band; underside with yellow submarginal lunules ..... *nephelus* (Westwood)
- Hind wing upperside with a white discal band; underside with a series of white discal spots and without submarginal white lunules .... *polytes* (Cramer)
- Hind wing upperside with a large discal spots in area 4 to 6. and a small spot in area 7. Fore wing upperside in female with submarginal spots. Hind wing with submarginal lunules ... . *castor* Westwood

16. *Princeps (Princeps) polyctor ganesa* (Doubleday)

1842. *Papilio ganesa* Doubleday, In Gray's *Zool. Miscell.*, : 73.

1997. *Princeps (Princeps) polyctor ganesa* (Doubleday) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal*, Part–7 : 774.

Material examined : 13exs. : 2 exs., Phodang, North district, 31. x. 92, M.S. Shishudia and party coll. : 1ex., Jorethang, 1ex., Melli, 1ex., Namchi, South District, 10-12, x.95, S.C. Mitra and party coll. : 4 exs. Pakyong, 1ex., Ranipool, 1ex., Rangpo, East district 13-15-x. 95 S. C. Mitra and party coll.; 2 exs., Sikkim (no data). *Wing expanse* : 110-135 mm.

Distribution : India : Sikkim (East, North and South districts), Widely distributed in the North-East India. *Elsewhere* : Myanmar.

17. *Princeps (Princeps) elephenor elephenor* (Doubleday)

1845. *Papilio elehenor* Doubleday, *Ann. Mag. nat. Hist.*, **16** : 305.

In Press : Princeps (Princeps) elephenor elephenor (Doubleday) : Mondal & Maulik, *State Fauna Series, Founa of Manipur.*

Material examined : Sikkim, 1ex., (no data), *Wing expanse* : 110 mm.

Distribution : India : Sikkim, Manipur, Meghalaya and Negaland. *Elsewhere* : Bangladesh, Mynmar and North Thailand.

Remarks : This species is very rare butterfly of extreme aesthtic value. Talbot (1939) mentioned nominate subspecies *elephenor* occuring in the Sikkim.

18. ***Princeps (Princeps) paris decorosa*** (Fruhstorfer)

1909. *Papilio paris decorosa* Fruhstorfer, *Ent., Zeit.*, **23** : (25) : 116.

1983. *Princeps (Princeps) paris* (Fruhstorfer) : Hancock, *Smithersia*, **2** : 48.

Material examined : 4exs., : 1ex., Tumin, C. 1475m., East district, 10.x.88, V.C. Agrawal and party coll. : 2 exs., Dentam, Srigutam, South district, 18. x. 95, S. C. Mitra and party coll.; 1ex., Sikkim (no data) *Wing expanse* : 100–112 mm.

Distribution : India : Sikkim (East district) widespred in the Himalaya and adjoining belts of the East Himalaya. *Elsewhere* : Japan, Philippines, S.E. Asia and Sundaland.

Remarks : Talbot (1939) stated occurance of subspecies *decorosa* in the Sikkim. It shows seasonal variation and dry season form is called *splendorifer* (Fruhstorfer).

19. ***Princeps (Princeps) arcturus arcturus*** (Westwood)

1842. *Papilio arcturus* Westwood, *Ann. Mag. Nat. Hist.*, **9** : 37.

1997. *Princeps (Princeps) arcturus arcturus* (Westwood) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part-7 : 775.

Material examined : 2 exs.; 1ex., Tumin, C. 1475. m., East district, 30. ix. 88, V.C. Agrawal and party coll.; 1ex., Sikkim, (no data). *Wing expanse* : 110-120 mm.

Distribution : India : Sikkim (East district), widespread in the North-East India and West Bengal. *Elsewhere* : Bhutan, Myanmar and Nepal.

20. ***Princeps (Princeps) krishna krishna*** (Moore)

1857. *Papilio krishna* Moore, *Cat. Lep. Mus. E.I.C.* **1** : 108, pl. 2a, fig. 6.

1997. *Princeps (Princeps) Krishna Krishna* (Moore) : Mondal & Maulik, *State Fauna Series 3* : *Fauna of West Bengal*, Part-7 : 775.

Material examined : Sikkim, 1ex., (no data), *Wing expanse* : 95 mm.

Distribution : India : Sikkim, Assam, Manipur, Nagaland, and West Bengal. *Elsewhere* : Bhutan and Myanmar.

21. ***Princeps (Menelaides) protenor euprotenor*** (Fruhstorer)

1908c. *Papilio protenor euprotenor*, Fruhstorer, *Ent. Zeit., Stutt.*, **22** (11) : 46-47.

1998. *Princeps (Menelaides) protenor euprotenor* (Fruhstorer) : Mondal & Maulik, *State Fauna Series* **4**, *Fauna Meghalaya*, Part- 6 : *230*

Material examined : 6 exs., : 3exs., Soem, 2 exe., Mangan, North district, 28.iv.95, T.K. Pal and party cell.; 1ex., Dentam, West district, 29.iv.94, S.K. Saha and party coll. *Wing expanse* : 110-120m.

Distribution : India : Sikkim (North and West district), Arunachal Pradesh and Meghalaya. *Elsewhere* : North Myanmar.

22. ***Princeps (Menelaides) janaka janaka*** (Moore)

1857. *Papilio janka* Moore, *Cat. Lep. Mus. E.I.C.* **1** : 97.

1997. *Princeps (Menelaides) janaka janaka* (Moore) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 769.

Material examined : Sikkim, 1ex., (no data). *Wing* expanse : 110 mm.

Distribution : India : Sikkim; East Himalaya including Arunachal Pradesh, Assam and West Himalaya including Uttar Pradesh; Garhwal to Mussoorie and West Bengal.

23. ***Princeps (Menelaides) alcmenor rhetenor*** (Westwood)

1841. *Papilio rhetenor* Westwood, *Arcana Ent.*, **1** : 59.

1997. *Princeps (Menelaides) alcmenor rehetenor* (Westwood) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part-7 : 769.

Material examined : 4exs. : 3exs., Tumin, C. 1475m., East district, 30.ix.95, V.C. Agrawal and party coll.; 1ex., Sikkim (no data). *Wing expanse* : 116 mm.

Distribution : India : Sikkim (East district); Widespread in both East and West Himalaya. *Elsewhere* : Bhutan, Myanmar and Nepal.

24. ***Princeps (Menelaides) memnon agenor*** (Linnaeus)

1758. *Papilio agenor* Linnaeus, *Syst. Nat.*, ed. **10** : 460.

1997. *Princeps (Menelaides) memnon agenor* (Linnaeus) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part-7 : 770.

Material examined : 10 exs. : 3exs., Melli, 20 km. of Rangpo, *C.* 500m., East district, 18.ix.93, T.K. Pal and party coll.; 2 exs., 1 km. West of Rangpo F.R.H. South district, 3.iv.94, G.C. Sen and party coll.; 5 exs., Sikkim (no data). *Wing expanse* : 125-150 mm.

Distribution : India : Sikkim (East and South district), Widely distributed in the East Himalaya and adjoining belts, Andaman and South Nicobar Island.

Elsewhere : Myanmar.

25. ***Princeps (Menelaides) helenus helenus*** (Linnaeus)

1758. *Papilio helenus* Linnaeus, *Syst. Nat.*, ed., **10** : 459.

1997. *Princeps (Menelaides) helenus helenus* (Linnaeus) : Mondal & Maulik, *State Fauna Fauna Series* **3** : *Fauna of West Bengal*, Part-7 : 771.

Material examined : 10 exs., : 6 exs., Singtam, East district, 29. x. 92, M.S. Shshodia and party coll. : 1ex., Saramsa, 3 km. South of Rangpo, East district, 7.iv. 94, P.H.Roy and party coll.; 1ex., Soem *C.* 1260 m. Mangan, North district, 28.iv.93, T.K.Pal and party coll.; 1ex., Pedang, South district, 11.x.95, S.C. Mitra and party coll.; 1ex., Geyzing, West district, 17.x. 95, S.C. Mitra and party coll. *Wing expanse* : 115-130 mm.

Distribution : India : Sikkim (North, South, East and West district), wide spread in the East Himalaya and adjoining belts. *Elsewhere* : Myanmar, Malaya Peninsula and Thailand.

26. ***Princeps (Menelaides) nephelus chaon*** (Westwood)

1845. *Papilio chaon* Westwood, *Arc. Entom.*, **2** : 97. pl. 72.

1997. *Princeps (Menelaides) nephelus chaon* (Westwood) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part-7 : 772.

Material examined : Sikkim, 1ex., (no data), *Wing expanse* : 115 mm.

Distribution : India : Sikkim, Wide spread in India. *Elsewhere* : Myanmar and Nepal.

27. ***Princeps (Menelaides) polytes romulus*** (Cramer)

1775. *Papilio romulus* Cramer, *Pap. Exot.*, **1** : 67, pl. 43.

1997. *Princeps (Menelaides) polytes romulus* (Cramer) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part-7 : 771.

Material examined : 5 exs., 3exs., Marchak village, *C.* 1600 m., Gangtok, East district, 3.x. 93, T.K. Pal and party coll.; 1ex., Jorethang, F.R.H. compound, South district, 5.x.94, G.C. Sen and party coll.; 1ex., Torengthus, Nayabazar, West district, 10.x.94, G.C. Sen and party coll. *Wing expanse* : 75–100 mm.

Distribution : India : Sikkim (East, South and West district), Widespread in India including Lakhsadweep Island. *Elsewhere* : Malayasia.

28. ***Princeps (Menelaides) castor polias*** (Jordan)

1909. *Papilio castor polias* Jordan, In Seitz, *Macrolep.* Fauna of Indo-Austral., **9** : 17-109.

1983. *Princeps (Menelaides) castor* (Jordian) : Hancock, *Smithersia*, **2** : 48.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 115 mm

Distribution : India : Sikkim. *Elsewhere* : Myanmar.

Remarks : Jardon (1909) and Talbot (1939) mentioned nominate subspecies *polias* occuring in the Sikkim.

Genus ***Papilio*** (Linnaeus)

1758. *Papilio* Linnaeus, *Syst. Nat.* ed. **10** : 448.

One species of this genus known from Sikkim.

29. ***Papilio machon annae*** (Gistal)

1857. *Papilio annae* Gistal, Vacuna, **2** (2) : 603.

1983. *Papilio machon* (Gistal) : Hancock. *Smithersis.* **2** : 48.

Material examined : Sikkim, (no data). *Wing expanse* : 80 mm.

Distribution : India : Sikkim. *Elsewhere* : Bhutan and Tibet.

Remarks : Gistal (1857) stated nominate speceis *annae* and Hemming (1925) mentioned nominated species *machaon.* Talbot (1939) stated nominate subspecies annae occuring in the Sikkim.

Family NYMPHALIDAE

Subfamily DANAINAE

Key to genera

1. Pulvilli and paronychia of mid and hind legs vestigial; tarsal claws curved at tips only 2

– Palvilli and paronychia of mid and hind legs fucntional; tarsal claws evenly curved throughout their length ..... *Euploea* Fabricius

2. Hind wing precostal vein simple; hind wing in male with a pouched or pocketed cubital organs 3

– Hind wing prescostal vein forked or elbowed; hind wing in male lacking cubital pouch or pocket ..... *Parantica* Moore

3. Hind wing submarginal series of spots evenly aligned and close to marginal ..... *Danaus* Kluk

– Hind wing submarginal series of spots irregularly displaced from marginals ..... *Tirumala* Moore

Genus ***Euploea*** Fabricius

1807. *Euploea* Fabricius, Magazin (Illiger), *Braumshweing,* **6** : 280.

Four species of this genus are treated from Sikkim.

Key to species

1. Hind wing with a scent patch 2

– Hind wing without a patch of and Iroconia ..... *sylvestor* (Fabricius)

2. Hind wing upperside in male with a small off-white or light brown alar patch within discal cell and discal area being covered with dense apatulate scales ..... *mulciber* (Cramer)

– Hind wing upperside in made without such alar patch in the cell area, but fore wing with a androconial brand in cell area 3

3. Male and Iroconial brand short, distally displaced from point of origin of Cu1b ..... *core* (Cramer)

– Male and Iroconial brand long, commencing level with or proximal to point of origin of Cu1b ..... *algea* (Godart)

30. ***Euploea sylvestor hopei*** C. & R. Felder

1865. *Euploea sylvestor hopei* C. & R. Felder, *Reise Nov. Lep.* **2** (2) : 328.

1997. *Euploea sylvestor hopei* C. & R. Felder : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal,* Part–7 : 783.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 99 mm.

Distribution : India : Sikkim, Assam, Nagaland and West Bengal. *Elsewhere* : Bangladesh and Myanmar.

31. *Euploea mulciber mulciber* (Cramer)

1797. *Papilio mulciber* Cramer, Pap. Exot. **2** : 45, pl. figs. C. N.

1977. *Euploea mulciber mulciber* (Cramer) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal,* Part–7 : 783.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 90 mm

Distribution : India : Sikkim, widespread in the Oriential Region.

32. *Euploea core core* (Cramer)

1780. *Papilio core* Cramer, *Pap. Exot.*, **3** : 133.

1997. *Euploea core core* (Cramer) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal,* Part–7 : 786.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 90 mm.

Distribution : India : Sikkim, widespread in the Oriental Region.

33. *Euploea algea deione* Westwood

1848. *Euploea deione* Westwood, *Cab. Or. Ent.*, P. 76.

1997. *Euploea algea deione* Westwood : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal.* Part–7 : 786.

Material examined : 3exs., 1ex., Marchak, *C.* 1600 m. 12 km. off Gangtok, 3.x.93, T.K.Pal and party coll.; 1ex., Singtok, South district, 9.x.95, S.C. Mitra and party coll.; 1ex., Sikkim. (no data) *Wing expanse* : 95 mm.

Distribution : India : Sikkim (South district), widespread in the North-East belts. Elsewhere : Myanmar and Tibet.

Genus *Parantica* Moore

1880a. Parantica Moore, *Lep. Ceylon.*, **1** : 7

Three species of this genus are dealt with from Sikkim.

Key to species

1. Hind wing upperside in male with a scent-patch on vein 2 near margin and a smaller one underside on vein 1b. Smaller species .... *aglea* Moore

– Hind wing upperside in male with a scent-patch on vein 1b near margin and a smaller one on vein 1a. Larger species 2

2. Hind wing upperside marginal border bright chesnut, obscurely spotted .... *sita* (Kollar)

– Hind wing upperside marginal border broad, dark, chocolate, prominently spotted..... ..... *melaneus* (Cramer)

34. *Parantica aglea melanoides* Moore

1883. *Parantica melanoides* Moore, *Proc. Zool. Soc. London.*, : 247.

1997. *Parantica aglea melanoides Moore* : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal.* Part–7 : 777.

Material examined : 5 exs. : 1ex., Culvert No. 72/1 Singhik *C* 2000 m., North district, 3.xi.92, A.K. Hazra and party coll.; 2 exs., Karfakfar, Jorethang, South district, 20.ix.93, T.K. Pal and party coll.; 1ex., 1. km West of Rangpo F.R.H., East district, 3.ix.94, G.C.Sen and party coll.; 1ex., Sikkim (no data). *Wing expanse* : 70-85 mm.

Distribution : India; Sikkim (North, South and East districts) throughout India including Andaman and Nicobar Island. *Elsewhere* : Annan, Formosa, Hainan, Malayasia, Myanmar, Thailand, South China and Tonkin.

35. *Parantica sita sita* (Kollar)

1844. *Danaus sita* Kollar, in Hugel, *Kasch. Reich. Sick.*, **4** : 424.

1998. *Parantica sita sita* (Kollar) : Mondal & Maulik, *State Fauna Series* **4** : *Fauna of Meghalaya,* Part - 6 : 234.

Material examined : 2 exs. 1ex., Tumin, East district, 30. ix. 88, V.C. Agrawal and party coll.; 1ex., Sikkim (no data). *Wing expanse* : 90-100 mm.

Distribution : India : Sikkim (East district), throughout the Himalaya. *Elsewhere* : Bhutan, Mismir Hills and South-East Tibet.

36. ***Parantica melaneus plataniston*** (Fruhstorer)

1910. *Danaida melaneus plataniston* Fruhstorfer, in Seitz, *Macrolep. World.* **9** : 210.

1997. *Parantica melaneus plantaniston* (Fruhstorfer) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal,* Part–7 : 777.

Material examined : Sikkim, 1ex., (no data). Wing expanse : 90 mm.

Distribution : India : Sikkim : Eastern Himalaya and Uttar Pradesh. *Elsewhere* : Myanmar and Sino-Malayan.

Genus ***Danaus*** Kluk

1802. *Danaus* Kluk, *Zwierzat Hist. Nat. poez. gospod.*, **6** : 84.

Two species of this genus are reported from Sikkim.

Key to species

Apex of fore wing underside with ground colour uniformly dark brown distal to white precostal transverse bar .... *genutia* (Cramer)

Apex of fore wing underside with some light brown markings distal to pale precostal transverse bar .... *chrysippus* (Linnaeus)

37. ***Danaus genutis genutia*** (Cramer)

1779. *Papilio genutia* Cramer, *Pap. Exot.*, **3** : 23, pl. 206, figs. C.D.

1997. *Danaus genutia genutia* (Cramer) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal,* Part–7 : 780.

Material examined : 2 exs., : 1ex., Ranipool, East district, 25.v.94, B.C. Saha and party coll.; 1ex., Sikkim (no data), *Wing expanse* : 85-90 mm.

Distribution : India : Sikkim (East district), widespread in the Oriental Region. *Elsewhere* : China, Malayasia and Tonkin.

38. ***Danaus chrysippus chrysippus*** (Linnaeus)

1778. *Papilio chrysippus* Linnaeus, *Syst. Nat.* ed., **10** : 471.

1997. *Danaus chrysippus chrysippus* (Linnaeus) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal,* Part-7 : 781.

Material examined : 2 exs., Rangpo, P.W.D. R.H. campus, East district, 12.xi.92, A.K. Hazra and party coll.; 1ex., 1 km. West of Nayabazar, Jorethang, South district, 6.xi.94, G.C. Sen and party coll. *Wing expanse* : 72 mm.

Distribution : India : Sikkim (East and South district). Widespread in the Oriental Region, extending to Asia Minor.

Genus ***Tirumala*** Moore

1880a. *Tirumala* Moore, *Lep. Ceylon.* **1** : 4.

Two species of this genus are known from Sikkim.

Key to species

Lager species less boldly marked than limniac ..... *septentrionis* (Butler)

Smaller species being more boldly marked... ..... *limniace* (Cramer)

39. ***Tirumala spetentrionis septentrionis*** (Butler)

1874. *Danaus septentrionis* Butler, *Ent. Mo. Mag.*, **11** : 163-4.

1997. *Tirumala septentrionis septentrionis* (Butler) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal,* Part–7 : 779.

Material examined : 2 exs., : 1ex., 1 km., South of Jorethang F.R.H. South district, 8.xi.94 G.C. Sen and party coll.,; 1ex., Singtok, South district, 15.x.95, S.C. Mitra and party coll. *Wing expanse*: 88-95 mm.

Distribution : India : Sikkim (South district). widespread in the Oriental Region.

40. ***Tirumala limniace leopardus*** (Butler)

1866b. *Danaus limniace* var *leopardus* Butler, *Proc. Zool. Soc. London*, : 52.

1997. *Tirumala limniace leopardus* (Butler) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal.* Part–7 : 778.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 90 mm.

Distribution : India : Sikkim, widespread in the Oriental Region.

Suborder HETEROCERA

Key to families

Both wings without cell veinlet. Hind wing without frenulum; no bar between Sc + R_1 and Rs; accessary costal veinlet present..... .....LASIOCAMPIDAE

Both wings with cell veinlet. Hind wing with frenulum; a bar between Sc + R_1 and Rs; accessory costal veinlet absent..... ..... LYMANTRIIDAE

Family LASIOCAMPIDAE

Key to genera

1. Hind wing vein Sc running nearer to vein Rs; no bar between Rs and Sc; accessory costal veinlet present 2

– Hind wing vein Sc remote from vein Rs; a bar between vein Rs and Sc forming a large precostal cell; no accessory costal veinlet.... ..... *Cosmotriche* Walker

2. Both wings cell open. Fore wing broad, apex rounded; hing wind without accessory costal veinlet. Mid and hind tibiae with a pairs of terminal spurs ..... *Trabala* Walker

– Both wings cell closed. Fore wing broad, apex not rounded; hind wing with accessory costal veinlet. Mid and hind tibiae with a minute terminal pairs of spurs 3

3. Fore wing elongate, apex rounded; hind wing with two accessory costal veinlet. Mid and hind tibiae with a minute terminal pairs of spurs ..... *Dendrolimus* Germer

– Fore wing broad or narrow, apex rounded or not rounded; hind wing with one or slightly accessory costal veinlet. Mid and hind tibiale with a pairs of spurs. 4

4. Fore wing broad, apex rounded; hind wing costa excised and with slightly accessory costal veinlet. Mid and hind tibiae with a minute terminal pairs of spurs..... *Lebeda* Walker

– Fore wing long and narrow, apex rectangular; hind wing with one slight accessory costal veinlet. Mid and hind tibiase without terminal pairs of spurs ..... *Suana* Walker

Genus ***Cosmotriche*** Huebner

1811. *Odonestis* Germer, *Syst. Glose.Prod.*, **2** : 35.

One species of this genus is recorded from Sikkim.

41. ***Cosmotriche laeta decisa*** (Walker)

1856. *Lasiocampa laeta* Walker, *Cat. Lep. Het. Brit., Mus.*, **6** : 1441.

In Press : *Cosmotriche laeta decisa* (Walker): Mondal & Maulik, *State Fauna Series, Manipur.*

Material examined : Sikkim, 1ex., (no data), *Wing expanse* : 75 mm.

Distribution : India : Sikkim; North-West Himalaya and adjoining belt of East Himalaya. *Elsewhere* : Bangladesh, Java, Myanmar and Sumatra.

Genus ***Trabala*** Walker

1856. *Trabala* Walker, *Cat. Lep. Het. Brit. Mus.*, **7** : 1785.

One species of this genus is known from Sikkim.

42. ***Trabala vishnou*** Lefebvre

1827. *Trabala* vishnou Lefebvre, *Zool. Jurn.* **3** : 207.

1997. *Trabala vishnou* Lefebvre : Mondal & Maulik, *State Fauna Series* **3** *: Fauna of West Bengal,* Part-7 : 646.

Material examined : 2 exs., : 1ex., Pedang, South district, 11.x.95, S.C. Mitra and party coll.; 1ex., Dentam, South district, 18.x. 95. S.C. Mitra and party coll. *Wing expanse* : 80-90 mm.

Distribution : India : Sikkim (South district);

throughout India. *Elsewhere* : China, Java, Myanmar and Sri Lanka.

Genus ***Dendrolimus*** Germer

1811. *Dendrolimus* Germer, *Systematia Glossatonum Prodromus.*, **2** : 35.

One species of this genus is dealt with from Sikkim.

43. ***Dendrolimus latipennis*** (Walker)

1855. *Lebeda latipennis* Walker, *Cat. Lep. Het. Brit. Mus.*, **6** : 1457.

1997. *Dendrolimus latipennis* (Walker) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal*, Part–7 : 650.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 75-130 mm.

Distribution : India : Sikkim, North-East Himalaya including Himachal Pradesh. *Elsewhere* : Myanmar, Sri Lanka and Sundaland.

Genus ***Lebeda*** Walker

1855. *Lebeda* Walker, *Cat. Lep. Het. Brit. Mus.*, **6** : 1456.

One species of this genus is reported from Sikkim.

44. ***Lebeda nobilis*** Walker

1855. *Lebeda nobilis* Walker, *Cat. Lep. Het. Brit. Mus.*, **6** : 1456.

1997. *Lebeda nobilis* Walker : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 649.

Material examined : 2 exs., : 1ex., Geyzing, near Power I.B., West district, 17.x. 95, S.C. Mitra and party coll.; 1ex., Sikkim (no data). *Wing expanse* : 135-170 mm.

Distribution : India; Sikkim (West district); widespread in the North-West and East Himalayas. *Elsewhere* : Bangladesh and Nepal.

Genus ***Suana*** Walker

1855. *Suana* Walker, *Cat. Lep. Het. Brit. Mus.* **6** : 1502.

One species of this genus is treated from Sikkim.

45. ***Suana concolor*** Walker

1855. *Suana concolor* Walker, *Cat. Lep. Het. Brit. Mus.*, **6** : 1463.

1997. *Suana concolor* Walker : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 649.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 70-170 mm.

Distribution : India : Sikkim; widespread in India. *Elsewhere* : Malayasia and Sri Lanka.

Family LYMANTRIIDAE

Subfamily LYMANTRIINAE

Key to genera

1. Fore wing R_2 originating from cell.; areole very often present 2

– Fore wing R_2 not originating from cell; areole very often absent 6

2. Atennae with pinnae longer in both sexes. Fore wing R_3 given off from R_2 and anastomising with R_4 to form areole 3

– Antennae with pinnae longer in male than in female. Fore wing R_{3+4} anastomosing with R_2 to form an areole ..... *Leucoma* Stephens

3. Palpi porrect. Antennae with pinnae usually longer in male than in female 4

– Palpi upturned. Antennae with pinnae uniform length in both sexes ..... *Numenes* Walker

4. Fore wing producced, outer margin oblique. Fore tarsi with lateral tufts of hair to the joints. Hind tibiae with two pair of spurs .... *Dasychira* Stephens

– Fore wing not produced, outer margin nearly erect. Fore tarsi without lateral tufts of hair to the joints. Hind tibiae with one or two pair of spurs 5

5. Hind tibiae with two pairs of spurs .... *Aroa* Walker

– Hind tibiae with one pair of spurs .... *Pantana* Walker

6. Palpi upturned. Antennae in male serrate, in female bipectinate. Fore wing apex rounded; R_2 given off nearer the cell than from the origin of R_5 ..... *Lymantria* Huebner

– Palpi porrect. Antennae-bipectinate in both sexes. Fore wing R_2 given off nearer the apex than from the origin of R_5 7

7. Palpi obliquely porrect. Antennae bipecinate in both sexes, branching long in male than in female. Fore wing R_2 given off towards the apex than from the origin of R_5 .... *Euproctis* Huebner

– Palpi porrect. Antennae bipectinate, branching long in both sexes. Fore wing R_2 given off nearer the cell, or from the same point as R_2 ..... *Cispia* Walker

Genus ***Leucoma*** Stephens

1827. *Leucoma* Stephons. *Ill, Brit. Ent. Haust.* **2** : 64

Four species of this genus are known from Sikkim.

Key to species

1. Fore wing silvery white 2

– Fore wing being orange 3

2. Antennae brownish yellow. Fore wing silvery white, apex without yellow, no cell spot. Fore legs with black dotted ..... *divisa* (Walker)

– Antenae brownish. Fore wing silvery white, apex with yellow, a black cell spot. Legs with black spotted ..... *submarginata* (Walker)

3. Antennae being orange. Fore wing with orange, in costa, a few hair like scales present. Legs tinged with orange .... *diaphana* Moore

– Antennae brownish. Fore wing whitish, irrorated with silvery scales; outer area of fore wing with slight indication of corrugations ....*flavescens* Moore

* 46 ***Leucoma divisa*** (Walker)

1855. *Euproctis divisa* Walker. *Cat. Lep. Het. Brit. Mus.*, **4** : 836.

1997. *Leucoma divisa* (Walker) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part-7 : 661.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 52 mm.

Distribution : India : Sikkim; West Bengal. *Elsewhere* : Bangladesh, Malayan and Myanmar.

47. ***Leucoma submarginata*** Walker,

1855. *Leucoma submarginata* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 826.

1997. *Leucoma submarginata* Walker : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 661.

Material examined : Sikkim, 12 exs., (no data), *Wing expanse* : 45 mm.

Distribution : *India* : Sikkim; Widespread in India. *Elsewhere* : Java, Myanmar and Sri Lanka.

48. ***Leucoma diaphana*** Moore

1879. *Leucoma diaphana* Moore. *Descr. new. Indian Lep. Coll. Atkinson*,; 46.

1997. *Leucoma diaphana* Moore : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal*, Part–7 : 661.

Material examined : Sikkim, 10 exs., (no data). *Wing expanse* : 40–45 mm.

Distribution : India : Sikkim; Meghalaya and West Bengal, *Elsewhere* : Myanmar and Sino–Malayan.

* 49 ***Leucoma flavescens*** (Moore)

1877. *Redoa cericea* Moore, *Proc. Zool. Soc. London* : 600.

1934. *Leucoma flavescenes* (Moore) : Bryk. *Lep. Cat.*, **20** (62) : 128.

Material examined : Sikkim, 3exs., (no data), *Wing expanse* : 55 mm.

Distribution : India : Sikkim; Andaman Island.

Genus ***Numenes*** Walker

1855. *Numenes* Walker, *Cat. Lep. Het. Brit. Mus.*, **3** : 662.

One species of this genus is reported from Sikkim.

50. *Numenes patrana* Moore

1855. *Numenes patrana* Moore, *Cat. Lep. E.I. Co.*, **2** : 367.

1997. *Numenes patrana* Moore : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 663.

Material examined : 1ex., Tadang, 5 km. off Gangtok, East district, 21.viii.77, M. Soota and party coll. *Wing expanse* : 45 mm.

Distribution : India : Sikkim (East district); Meghalaya and West Bengal. *Elsewhere* : Bhutan and Taiwan.

Genus *Dasychira* Stephens

1829. *Dasychira* Stephena, Syst. *Cat. Brit. Ins.*, **2** : 56.

Seven species of this genus are from Sikkim.

Key to species

1. Abdomen clothed with long hair and without dorsal crests ..... *complecata* Walker
- Abdomen smoothly scaled and with or without dorsal crests 2
2. Abdomen with dorsal crests 3
- Abdomen without dorsal crests .... *lineata* Walker
3. Fore wing without reniform spot 4
- Fore wing with prominent reniform sport 5
4. Head and thorax wtitish grey. Fore wing greyish white irrorated with dark scales; reniform spot with dark outline; hind wing white with inner area orange. Abdomen orange in male, white in female ..... *horsfieldi* Sander
- Head and thorax being whiter. Fore wing pure white; female slightly irrorated with dark scales. Hind wing pale brown; in female pure white. Abdomen pale brown without any orange 5
5. Head and thorax being whiter. Fore wing pure white, postmedial lines double near the margin; submarginal lines absent ..... *thwaitesi* Moore
- Head and thorax being tinged with brown. Fore wing silky white, antimedial and postmedial black patch on the costa; submarginal lines present ..... *cinctata* Moore
6. Head and thorax paler green. Fore wing paler green with grey reniform spot; hind wing orange; a large black cell spot at the end of cell ..... *virescens* Moore
- Head and thorax dark brown. Fore wing dark brown with six indistinct waved dark lines; a submarginal series of dark lunules. Hind wing fuscous brown ..... *bhana* More

51. *Dasychira complecata* Walker

1855. *Dasychira complecata* Walker, *Cat. Lep. Het. Brit. Mus.*, **32** : 365.

1997. *Dasychira complecata* Walker : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 656.

Material examined : 15 exs., : 7 exs. Lachen, ICRD, North district, 25.vii.89, S. Chatterjee and party cell.; 8 exs., Sikkim, (no data), *Wing expanse* : 55-72mm.

Distribution : India : Sikkim (North district), Manipur and West Bengal.

52. *Desychira lineata* (Walker)

1855. *Lymantria lineata* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 875.

1998. *Dasychira lineata* (Walker) : Mondal & Maulik, *State Fauna Series 4* : *Fauna of Meghalaya*, Part - 6 : 474.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 90 mm.

Distribution : India : Sikkim. *Elsewhere* : Bangladesh.

*53. *Dasychira horfieldi* (Saunder)

1851. *Arctia horsfieldi* Saunder, *Trans. ent. Soc. London* (2) **1** : 162, pl 12.

1997. *Dasychira horsfieldi* (Saunder) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 654.

Material examined : 1ex., Zena Transit camp, North district, 25. vii. 89, S. Chatterjee and party coll. *Wing expanse* : 52 mm.

Distribution : India : Sikkim (North district); Meghalaya, Tamil Nadu and West Bengal. *Elsewhere* : Austro-Malayan.

*54 ***Dasychira thwaitesi*** Moore

1883. *Dasychira thwaitesi* Moore, *Lep. Ceylon.*, **2** : 98, pl. 116, fig. 1, 1a-b.

1997. *Dasychira thwaitesi* Moore : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 655.

Material examined : Sikkim, (no data), *Wing expanse* : 65 mm.

Distribution : India : Sikkim, Manipur and West Bengal.

55. ***Dasychira cinctata*** Moore

1879a. *Dasychira cinctata* Moore, *Descr. New Indian Lep. Coll. Atkinson*, p. 59.

1997. *Dasychira cinctata* Moore : Mondal & Maulik. *State Fauna Series* **3** : *Fauna of West Bengal*. Part–7 : 656.

Material examined : Sikkim; 4ex., (no data). *Wing expanse* : 70 mm.

Distribution : India; Sikkim; West Bengal.

56. ***Dasychira virescens*** (Moore)

1879. *Cadrusia viresscena* Moore, *Descr. new Indian Lep. Coll. Aktinson.*, p. 54, pl. 3, fig. 16.

1997. *Dasychira virescens* (Moore) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 655.

Material examined : Sikkim, 2exs., (no data). *Wing expanse* : 58 mm.

Distribution : India : Sikkim; West Bengal.

Remarks : This species is confined to the East Himalaya.

57. ***Dasychira bhana*** Moore

1865. *Dasychira bhana* Moore, *Proc. Zool. Soc. London* : 804.

1997. *Dasychira bhana* Moore : Mondal & Maunik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 657.

Material examined : 13exs. : 5exs., Toong, 1440m. North district; 10.vi.62, G. Ramakrishna and party coll.; 7exs., Lachen *C* 2717 m. North district, 24.vii.89. S. Chatterjee and party coll.; 1ex., Zena Transit camp–1, North district, S. Chatterjee and party coll. *Wing expanse* : 40–45mm.

Distribution : India : Sikkim (North district); Manipur, Meghalaya, Nilgiri Plateau and West Bengal.

Genus ***Aroa*** Walker

1855. *Aroa* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 791.

One species of this genus is treated from Sikkim.

*58 ***Aroa simplex*** Walker

1865. *Aroa simplex* Walker, *Cat. Lep. Het. Brit. Mus.*, **32** : 325.

1934. *Aroa simplex* Walker; Bryk, Lep. Cat., **20** (62) : 89.

Material examined : Sikkim, 9 exs., (no data). *Wing expanse* : 30 mm.

Distribution : India : Sikkim; Nilgiri Hills.

Genus ***Pantana*** Walker

1855. *Patana* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 819.

One species of this genus is reported from Sikkim.

59. ***Pantana albifascia*** (Walker)

1855. *Orgyia albifascia* Walker, *Cat. Lap. Het. Brit.*, **32** : 325.

1997. *Pantana albifascia* (Walker) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 613-687.

Material examined : Sikkim, 6 exe., (no data). *Wing expanse* : 250-50 mm.

Distribution : India : Sikkim, Meghalaya and West Bengal.

Remarks : This species is restricted to North-East India.

Genus ***Lymantria*** Huebner

1818. *Lymantria* Huebner, *Verz., bek. Schmett.*, p. 160.

Five species of this genus are dealt with from Sikkim.

Key to species

1. Fore wing in male with paler white ground colour; in female with white, a dark spot at the end of cell. Hind wing in male with orange, in female with crimson; hind wing in both sexes a dark post at the end of cell. .... *mathura* Moore

– Fore wing ground colour white with black markings. Hind wing white with a submarginal band 2

2. Fore wing in male white with black markings, antimedial line irregularly waved, a black streak at end of cell. Hind wing suffused with black ..... *concolor* Walker

– Fore wing white in both sexes 3

3. Fore wing white with black patch on costa; hind wing whitish with fuscous submarginal band and marginal spots..... *similis* Moore

– Fore wing dark black, a yellow cell spot; hind wing crimson with broad marginal black border 4

4. Fore wing deep black, a yellowish-white spot at the end of cell; hind wing with crimson, broad submarginal black border .... *semicincta* (Walker)

– Fore wing in male white, banded pattern partly broken up into spots; in female with a red and black basal spots, a dark transverse band partly broken up into spots. Hind wing in male pink with a greyish brown discal spot; in female crimson with dark discal spot .... *grandis* Walker

60. ***Lymantria mathura*** Moore

1865. *Lymantria mathura* Moore, *Proc. Zool. Soc. London* : 805.

1997. *Lymantria mathura* Moore : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 666.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 38 mm.

Distribution : India : Sikkim; Meghalaya, West Bengal and North-West Himalaya. *Elsewhere* : Japan.

61. ***Lymantria concolor*** Walker

1855. *Lymantria concolor* Walker, *Cat. Lep. Het. Brit. Mus.* **4** : 876.

1998. *Lymantria concolor* Walker : Mondal & Maulik, *State Fauna Series* **4** : *Fauna of Meghalaya*, Part-6 : 478.

Material examined : Sikkim, 2 exs., (no data). *Wing expanse* : 45 mm.

Distribution : India : Sikkim; Himachal Pradesh, Meghalaya and Nagaland. *Elsewhere* : Bangladesh, Myanmar, Taiwan and Sze-Chwan.

62. ***Lymantria similis*** Moore

1879. *Lymantria similis* Moore, *Proc. zool. Soc. London* : 402.

1997. *Lymantria similia* Moore : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 667.

Material examined : Sikkim, 2 exs., (no data). *Wing expanse* : 40 mm.

Distribution : India : Sikkim; Assam and West Bengal. *Elsewhere* : Bhutan, Philippines and Sundaland.

63. ***Lymantria semicincta*** (Walker)

1855. *Alope semicincta* Walker, *Cat. Lep. Het. Brit. Mus.*, **3** : 620.

1997. *Lymantria semicincta* (Walker) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 667.

Material examined : Sikkim, 5 exs., (no data). *Wing expanse* : 50-58 mm.

Distribution : India; Sikkim; Himachal Pradesh and West Bengal.

* 64. *Lymantria grandis* Walker

1855. *Lymantria grandis* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 874.

1997. *Lymantria grandia* Walker : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 668.

Material examined : Sikkim, 2 exs., (no data). *Wing expanse* : 45 mm.

Distribution : India : Sikkim; Himachal Pradesh and West Bengal. *Elsewhere* : Australia, Bhutan and Sri Lanka.

Genus *Euproctis* Huebner

1818. *Euproctis* Huebner. *Vers. bek. Schmett.*, : 159.

Four species of this genus are treated from Sikkim.

Key to species

1. Fore wing pure white or dull white, without trace of line or band 2
- Fore wing bright orange yellow or uniformly brown, diffused with red brown or dark scales 3
2. Head and thorax white. Abdomen deep black with orange anal tufts. ..... *divisa* (Walker)
- Head and thorax dull white or tinged with ochreous. Abdomen fuscouse black with brownish orange anal tufts ..... *latifascia* (Walker)
3. Fore wing uniformly brown or red brown diffused with dark scales; submarginal spot present ..... *atomaria* (Walker)
- Fore wing bright purlish-brown and diffused with red-brown or vinous brown band; submarginal spot absent ..... *plagiata* (Walker)

65. *Euproctis divisa* (Walker)

1855. *Larna divisa* Walker, *Cat. Lep. Hat. Brit. Mus.*, **4** : 836.

1997. *Euproctis divisa* (Walker) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 677.

Material examined : 21exs., : 2exs., Rangoli, *C* 810 m., East district, 2.v.62, G. Ramakrishna and party coll.; 5 exe., Rangoli, East district, 23.11.69, B. Biswas and party coll.; 4 exe., Gangtok, *C* 1700 m., East district, 25.iv.75, A.R. Bhowmik and party coll. : 10 exs. Zena Transit camp, North district, 27.iv.89, S. Chatterjee and party coll. *Wing expanse* : 30-40 mm.

Distribution : India : Sikkim (East and North district); Manipur, Meghalaya and West Bengal.

* 66 *Eurpctis latifascia* (Walker)

1855. *Leucoma latifascia* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 831.

1997. *Euproctis latifascia* (Walker) : Mondal & Maulik, *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 673.

Material examined : 3exs., Zena Transit camp, North district, 22.vi. 89, S. Chatterjee and party coll. *Wing expanse* : 52-55 mm.

Distribution : India : Sikkim (North district); Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya and West Bengal, *Elsewhere* : Hongkong, Taiwan and Vietnam.

67. *Euproctis atomaria* (Walker)

1855a. *Artaxa atomaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 777-796.

1981. *Euproctia atomaria* (Walker) : Gupta, Farooq and Chaudhuary, *Bull. Ent.* **22** : 46-60.

Material examined : 1ex., Mangan, North district, 30.v. 90, B.C.Das and party coll. *Wing expanse* : 30 mm.

Distribution : India : Sikkim (North district), North India, *Elsewhere* : Myanmar and Sri Lanka.

Remarks : Cotes & Swinhoe (1887) provided its distribution in North India. Myanmar and Sri Lanka. Hampaon (1892) and Gupta *et al.* (1981) did not mention its occurrence in North India and Myanmar, respectively. The species is a new record for the state of Sikkim.

* 68. ***Euproctis plagiatia*** (Walker)

1855. *Cispia plagiata* Walker, *Cat. Lep. Het. Brit. Mus.* **4** : 858.

1997. *Euproctis plagiata* (Walker) : Mondal & Maulik, *State Fauna Series 3 : Fauna of West Bengal*, Part–7 : 675.

Material examined : 3exs., Zena Transit camp. North district, 22.vi. 89, S. Chatterjee and party coll. *Wing expanse* : 70-75 mm.

Distribution : India; Sikkim (North district), Manipur, Meghalaya and West Bengal, *Elsewhere* : Nepal.

Genus ***Cispia*** Walker

1855. *Cispia* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 857

One species of this genus is known from Sikkim.

69. ***Cispia Venosa*** Walker

1869. *Cispia venosa* Walker, *Cat. Lep. Het. Brit. Mus.*, (3) **1** : 264.

1997. *Cispia venosa* Walker : Mondal & Maulik. *State Fauna Series* **3** : *Fauna of West Bengal*, Part–7 : 680.

Material examined : Sikkim, 1ex., (no data). *Wing expanse* : 30 mm.

Distribution : India : Sikkim, West Bengal.

Remarks : The species is endemic in the East Himalaya.

SUMMARY

Systematic account of 69 species and subspecies in 24 genera of five families viz. Papilionidae, Danainae (Nymphalidae), Lasiocampidae, Lymantriidae and Ratardidae are dealt with from Sikkim. A good number of species are not available in the collection but reviewed from literature. Keys to the taxa only for the material examined have been provided. Eight species constitute new records for Sikkim.

ACKNOWLEDGEMENT

The author is grateful to the Director, Zoological Survey of India for providing necessary facilities. He is also grateful to Dr. S.K. Mitra, Scientist–SF(retd.), Sri. D.K. Mondal, Scientist–SE (retired) and Sri I.J. Gupta, Scientist–B, for their valuable suggestions and going through the manuscript.

APPENDIX

List of species/ subspecies of butterflies and moths known from Sikkim for which material was not available for study.

Family PAPILIONIDAE

1. *Atrophaneura dasarada dasarada* (Moore, 1857)
2. *A.d. ravana* (Moore, 1857)
3. *A. plutonius pembertoni* (Moore, 1902)
4. *Chilasa agestor agestor* (Gray, 1832)
5. *C. epycides epycides* (Hewitson, 1862)
6. *C. slateri slateri* (Hewitson, 1859)
7. *Graphium chiron chiron* (Wallase, 1865)
8. *G. cloanthus cloanthus* (Westwood, 1841)
9. *G. macareus indicus* (Rothchild, 1895)
10. *G. mandarinus* Oberthur, 1893
11. *G. megarus megapenthes* (Fruhstorfer, 1902)
12. *G. nomius nomius* (Esper, 1785)
13. *G. sarpeden corbeti* Toxopeus
14. *G. xenocles phrontis* (de Niceville, 1897)
15. *Meandrusa payeni evan* (Doubleday, 1845)
16. *M. sciron* Leach, 1815
17. *Papilio machaon asiatica* Menetries, 1855
18. *Parnassius acco gemmifer* Fruhstorfer, 1904
19. *P. a. hannyngtoni* Avnoff, 1916
20. *P. delphius lampidius* Fruhstorfer, 1903
21. *P. d. lathonias* Bryk, 1913
22. *P. epithus sikkimensis* Elwes, 1882
23. *P. hardwickei albicans* Fruhstorfer, 1898
24. *P. imperator augustus* Fruhstorfer, 1903
25. *P. simo acconus* Fruhatorfer, 1903

26. *Princeps bootes* Westwood, 1842
27. *P. demoleus demoleus* (Linnaeus, 1758)
28. *P. polymnestor polymnestor* (Cramer, 1775)
29. *Teinopalpus imperialis imperialis* Hope, 1843
30. *Triodes minos* Cramer, 1779

Family NYMPHALIDAE
Subfamily DANAINAE

31. *Danaus melanippus indicus* (Fruhstorfer, 1899)
32. *Euploea doubledayi doubledayi* C. & R. Felder, 1865.
33. *E. klugii klugii* Horsfieldi & Moore, 1857
34. *E. k. kollari* C. & R. Felder, 1865
35. *E. midamus roepstorffi* (Moore, 1883)
36. *E.m. rogenhoferi* C. & R. Felder, 1865
37. *E. modesta* Butler, 1866
38. *E. radamanthus diocletianus* (Fabricius, 1793)
39. *E. r. ramsayi* (Moore, 1890)
40. *Parantica aspasia aspasia* (Fabricius 1787)
41. *P. agleoides agleoides* (C.&R. Felder, 1860)

Family LASIOCAMPIDAE

1. *Alompra ferruginea* (Moore, 1872)
2. *Arguda bheroba* Moore, 1859
3. *A. decurtata* Moore, 1879
4. *A. vinata* Moore, 1865
5. *Bharetta cinnamomea* Moore, 1865
6. *Cosmotriche castanes* Hampson, 1892
7. *C. divisa* Moore, 1882
8. *C. pyriformis* Moore, 1879
9. *C. signata* Moore, 1879
10. *Crinocraspeda torrida* Moore, 1879
11. *Dendrolimus aconyta* (Cramer, 1777)
12. *D. fulgens* (Moore, 1879)
13. *D. hyrtaca* Cramer, 1775
14. *Estigena pardalis* Walker, 1855
15. *Gastropacha divaricata* Moore, 1884
16. *Kosala flavosignata* Moore, 1879
17. *K. sanguinea* Moore, 1879
18. *Metanastria ampla* Walker, 1855
19. *M. lidderdalii* Butler, 1881
20. *M. lineata* Moore, 1879
21. *M. nanda* Moore, 1859
22. *M. obliguifascia* Swinhoe, 1887
23. *Paralebeda plagifera* (Walker, 1855)
24. *Stenophylloides sikkima* Moore, 1879
25. *S. sinuata* Moore, 1879
26. *Syrostrena minor* Moore, 1879
27. *Trichius khasiana* Moore, 1879

Family LYMANTRIIDAE

1. *Aroa atrella* Hampson, 1892
2. *A. pyrrhochroms* Walker, 1865
3. *Aruta flavepes* Hampson, 1892
4. *Caviria clara* Walker, 1865
5. *C. ochripes* Moore, 1879
6. *C. sericea* Moore, 1879
7. *Cifusa cervina* Moore, 1879
8. *C. locuples* Walker, 1855
9. *Cispia punctifascia* Walker, 1855
10. *Daplasa irrorata* Moore, 1879
11. *Dasychirs albescens* Moore, 1879
12. *D. brunnescens* Moore, 1879
13. *D. flavimacula* Moore, 1865
14. *D. mendosa* Huebuer, 1823
15. *D. pedrix* Moore, 1879
16. *D. pennatula* Fabricius, 1781
17. *D. strigata* Fabricus, 1781
18. *D. varia* Walker, 1855
19. *Dura alba* Moore, 1879
20. *Euproctis albopunctata* Hampson, 1892
21. *E. arenacea* Hampson, 1892
22. *E. basalis* Moore, 1879

23. *E. bimaculata* Walker, 1855
24. *E. bipartita* Moore, 1879
25. *E. diagramma* Guerin, 1829-38
26. *E. dispersa* Moore, 1879
27. *E. flavinata* Walker, 1865
28. *E. fraterna* Moore, 1882
29. *E. guttata* Walker, 1855
30. *E. inconcisa* Moore, 1865
31. *E. lativitta* Moore, 1879
32. *E. lunata* Walker, 1855
33. *E. madana* Moore, 1859
34. *E. marginata* Moore, 1879
35. *E. plana* Walker, 1856
36. *E. negrita* Hampson, 1892
37. *E. postincisa* Moore, 1879
38. *E. subfasciata* Walker, 1865
39. *E. uniformis* Moore, 1879
40. *E. venosa* Moore, 1879
41. *E. varians* Walker, 1855
42. *E. varia* Walker, 1855
43. *E. variegata* Hampton, 1892
44. *Euzora costalis* Moore, 1865
45. *Heracula discivitta* Moore, 1865
46. *Himala argentes* Walker, 1855
47. *Imaus munda* Walker, 1855
48. *Laelia atestacea* Hampson, 1892
49. *L. exclamationis* Kollai, 1848
50. *L. litura* Walker, 1855
51. *L. venosa* Moore, 1877
52. *Leucoma thyridophora* Hampson, 1892
53. *Lymantia ampla,* Walker, 1855
54. *L. bivitta* Moore, 1879
55. *L. grisea* Moore, 1879
56. *L. lepcha* Moore, 1879
57. *L. marginata* Walker, 1855
58. *L. serva bhascara* Moore, 1859
59. *Mardara calligramma* Walker, 1865
60. *M. irrorata* Moore, 1879
61. *M. plagidotata* Walker, 1862
62. *Numenes silleti* Walker, 1855
63. *Orgyia australis postica* Walker, 1865
64. *Pida apicalis* Walker, 1865
65. *P. strigipennis* Moore, 1879
66. *Pantana bicolor* Walker, 1855
67. *P. interjecta* Swinhoe, 1891
68. *Perina nuda* Fabricius, 1781
69. *Porthesia aurantica* Hampson, 1892
70. *P. scintillans* Walker, 1856
71. P. xanthorrhoea Kollar, 1848

Family RATARDIDAE

72. *Ratarda marmorata* Moore, 1879

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List of Species / Subspecies of Butterflies and Moths Represented in the collection made from Sikkim

Sl No.	Name of species/subspecies	District of Sikkim			
		North	East	West	South
	Family PAPILIONIDAE				
1.	*Atrophaneura aidoneus aidoneus* (Doubleday)				
2.	*A. aristolochiae aristolochiae* (Fabricius)				+
3.	*A. latreilei latreilei* (Donovan)				
4.	*A. polyeuctes polyeuctes* (Doubleday)				
5.	*A. varuna astorion* (Westwood)				
6.	*Chilasa clytia clytia* (Linnaeus)				
7.	*Graphium agamemnon agamemnon* (Linnaeus)				
8.	*G. agetes agetes* (Westwood)				
9.	*G. aristeus anticrates* Doubleday				
10.	*G. doson axion* (G. & R. Felder)				
11.	*G. eurypylus cheronus* (Fruhstorfer)				
12.	*G. eurous sikkimica* (Heron)				
13.	*G. antinphates pompilius* (Fruhstorfer)				
14.	*Papilio machaon annae* Gistal				
15.	*Princeps alcmenor alcmenor* (C.& R. Felder)		+		
16.	*P. arcturus arcturus* (Westwood)		+		
17.	*P. castor polias* (Jordan)				
18.	*P. elephenor elephenor* (Doubleday)				very rare
19.	*P. helenus helenus* (Linnaeus)	+	+	+	+
20.	*P. janaka janaka* (Moore)				
21.	*P. krishna krishna* (Moore)				
22.	*P. memnon agenor* (Linnaeus)			+	
23.	*P. nephelus chaon* (Westood)				
24.	P. *paris paris* (Linnaeus)		+		+
25.	*P. polyctor ganesa* (Doubleday)	+	+		+
26.	*P. polytes polytes* (Linnaeus)		+	+	+
27.	*P. protenor euprotenor* (Fruhstofer)	+			
28.	*Troides aeccus aeacus* (C. & R. Felder)				
29.	*T. helena cerberus* (C. & R. Felder)				

Sl	Name of species/subspecies	District of Sikkim			
		North	East	West	South
	Family NYMPHALIDAE				
	Subfamily DANAINAE				
30.	*Danaus chrysippus chrysippus* (Linnaeus)			+	
31.	*D. gemutia genutia* (Cramer)		+		
32.	*Euploea algea deione* (Westwood)				+
33.	*E. core core* (Cramer)				+
34.	*E. mulciber mulciber* (Cramer)				
35.	*E. sylvestor hopei* (C. & R. Felder)				
36.	*Parantica aglea melanoides* Moore	+	+		+
37.	*P. melaneus plataniston* (Fruhstorfer)				
38.	*P. sita sita* (Kollar)		+		
39.	*Tirumala limniace leopardus* (Butler)				
40.	*T. septentrionis septentrionis* (Butler)				
	Family LASIOCAMPIDAE				
41.	*Cosmotriche leata decisa* (Walker)				
42.	*Dendrolimus latipennis* (Walker)				
43.	*Lebeda nobilis* Walker				
44.	*Suana concolor* (Walker)				
45.	*Trabala vishnou* (Lefebvre)				+
	Family LYMANTRIIDAE				
* 46.	*Aroa simplex* (Walker)	+			
47.	*Cispia venosa* Walker				
48.	*Dasychira bhana* Moore	+			
49.	*D. cinctata Moore*				
50.	*D. complicata* Walker				
*51.	*D. horsfieldi* (Sander)				
52.	*D. lineata* (Walker)				
*53.	*D. thwaitesi* Moore				
54.	*D. virescens* (Moore)				
55.	*Euproctis atomaria* (Walker)	+			
56.	*E. divisa* (Walker)	+	+		
*57.	*E. latifascia* (Walker)				
*58.	*E. plagiata* (Walker)				
59.	*Leucoma diaphana* Moore				

Sl No.	Name of species/subspecies	District of Sikkim			
		North	East	West	South
*60.	*L. divisa* (Walker)				
*61.	*L. flavescens* (Moore)				
62.	*L. submarginata* (Walker)				
63.	*Lymantria concolor* Walker				
*64.	*L. grandis* (Walker)				
65.	*L. mathura* Moore				
66.	*L. semicincta* (Walker)				
67.	*L. similsi* Moore				
68.	*Numenes patrana* Moore		+		
69.	*Pantana albifascia* (Walker)				

* Indicates new records for the state of Sikkim.

\+ Indicates the species known from the particular district.

Zool. Surv. India.
State Fauna Series 9, Fauna of Sikkim (Part-4), 27-91, 2003

INSECTA : LEPIDOPTERA : NYMPHALIDAE

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INTRODUCTION

Of the more than 17,000 species of butterflies known in the world, 1500 occur in India. The state of Sikkim alone abounds about 700 species of which 155 are represented by six subfamilies, *viz.*, Acraeinae, Calinaginae Morphinae, Libytheinae, Charaxinae and Nymphalinae of the family Nymphalidae.

The earlier well known works on butterflies of India of the family Nymphalidae are by Marshall and De Nicèville (1883), De Nicèville (1886), Bingham (1905), Evans (1912), Antram (1924), Evans (1932), Piele (1937), Talbot (1947) and Wynter-Blyth (1957). The significant contributions to the butterfly fauna, particularly, from Sikkim are due to De Nicèville (1881, 1882, 1883, 1885, 1894), Elwes (1882), Elwes and Moeller (1888) and, later on, by Haribal *et al.* (1988) and Haribal (1992).

The present studies on nymphalids are based on the collections made over the last 40 years by several survey parties of the Zoological Survey of India, *viz.*, A.G.K. Menon (1959), B.K. Tikadar (1959), S.N. Prasad (1962), G.K. Srivastava (1975, 1983), M.S. Shishodia (1975), S.S. Saha (1975), R.K. Varshney (1981), A.K. Sanyal (1992) and D.K. Mandal (1992). The specimens available in the old collections of Zoological Survey of India have also been examined.

Altogether, 155 species/subspecies spread over 66 genera and six subfamilies have been dealt with from Sikkim. The definitive records of species of butterflies in all the four districts of Sikkim are : East Sikkim (31 spp.), North Sikkim (39 spp.), South Sikkim (48 spp.) and West Sikkim (19 spp.).

The caterpillars or larvae of these butterflies feed upon several food plants. The increasing pressure of human population and its growing demands have led to deforestation thereby causing loss of their natural habitats and food. Consequently, there has been decline in their population and diversity. A number of species referred in literature and their specimens available in the old collections of musea are not represented among the butterflies collected during the recent surveys of the state. Such not collected or observed species have become rare and endangered. Thus, these butterflies of the latter category along with their habitats need protection. Accordingly, the Wild Life (Protection) Act of 1972 amended from time to time includes species which require protection. Of the 155 species, 55 listed are in–Schedule-1, Part–4 (15 spp.); Schedule-II, Part -2 (39 spp.) and Schedule-IV (1 sp.)

The keys to identification of species and genera, not given by Haribal (1992), have been provided. The common name, fore wing length, distribution and remarks for each species/subspecies have been included. An appendix listing species/ subspecies and showing their district-wise distribution in Sikkim have been given.

SYSTEMATIC ACCOUNT

Family NYMPHALIDAE

Antennae completely or partially scaled. Palpi not more than twice as long as the head execpt in Libytheinae. Fore wing with all the 12 veins present, one vein usually dilated at base, R_2 arising

nearer apex of cell of wing, vein 1A+2A may or may not be bifurcated at base. Hind wing cell closed by a tubular or non-tubular vein, precostal vein present. Fore legs imperfect in both sexes and not used for walking except in the female of Libytheinae. In male, fore tarsus always reduced to a single segment clothed with hair like scales resembling a small brush; in female fore tarsus with a variable number of segments.

Corbet and Pendleburry (1992) have been followed for treating subfamilies under the family Nymphalidae. At present, following six subfamilies have been dealt with from Sikkim.

Subfamily MORPHINAE
Subfamily CALINAGINAE
Subfamily ACRAEINAE
Subfamily NYMPHALINAE
Subfamily CHARAXINAE
Subfamily LIBYTHEINAE

Subfamily MORPHINAE

The subfamily includes very large and showy species. The majority of the species have enormous size of wings as compared to that of the body. The subfamily has three tribes, *viz.*, Morphini, Brassolini and Amathusiini. Only the tribe Amathusiini is represented in the tropics of the Oriental Region (including the Papuan subregion).

Tribe **Amathusiini**

Eyes smooth; labial palpi usually long, prominent and laterally compressed; termen of wings usually entire, underside of hind wing usually with submarginal ocellus in each of areas Cu_{1b} and M_1; fore legs imperfect in the both sexes.

The tribe is represented in India by 24 species and subspecies belonging to eight genera. Of these, 10 species and subspecies in seven genera are dealt with from Sikkim.

Key to genera

1. Fore wing with discocellular veins tubular throughout. Hind wing with vein 3A longer than abdomen. In male, abdomen not compressed 2
– Fore wing with middle discocellular vein absent. Hind wing with vein 3A shorter than abdomen. In male, abdomen basally at base ventrally compressed 6
2. In hind wing, cell more or less closed ..... ***Amathuxidia*** *Staudinger*
– In hind wing, cell completely open 3
3. In fore wing, vein Cu_{1a} arising about midway between Cu_{1b} and M_3; M_3 not strongly curved proximad 4
– In fore wing, vein Cu_{1a} arising much nearer M_3 than to Cu_{1b}, M_3 strongly curved proximad 5
4. In fore wing, R_1 and Sc anastomosed ..... ***Aemona*** Hewitson
– In fore wing, R_1 and Sc free ..... ***Faunis*** Huebner
5. In fore wing, R_2 absent, veins R_1 and Sc free ..... ***Stichophthalma*** C. & R. Felder
– In fore wing, R_2 and R_1 anastomosed with Sc ..... ***Thaumantis*** Huebner
6. In fore wing, veins R_2 and R_1 anastomosed with Sc. In male, upperside of hind wing with rounded discal black brand extending into areas Cu_{1b}, Cu_{1a} and M_3 ..... ***Discophora*** Boisduval
– In fore wing, vein R_2 absent, R_1 anastomosed with Sc. In male, upperside of hind wing with area of cell strongly hairy ..... ***Enispe*** Doubleday

I. Genus ***Amathuxidia*** Staudinger

1887. *Amathuxidia* Staudinger, *Exot. Schmett.*, **1** : 188.

This genus is represented in India by a nominate subspecies, *Amathuxidia amythaon amythaon* (Doubleday).

I. ***Amathuxidia amythaon amythaon*** (Doubleday)

1847. *Amathusia amythaon* Doubleday, *Ann. Mag. nat. Hist.*, **19** : 175 (GE Sylhet).

Material examined : Nil.

Wing expanse : 110-130 mm.

Distribution : India : Sikkim. *Elsewhere* : Malaya and Myanmar.

Remarks : The upperside of wings is dark brown – fore wing bearing a broad pale blue band in male but yellow band in female. The underside of wings is pinkish lavender marked with prominent dark lines, and two ocelli are present on hind wing. The nominate subspecies is rare in status and it is enlisted in Schedule II (Part 2) of the Indian Wild Life (Protection) Act.

II. Genus ***Aemona*** Hewitson

1868. *Aemona* Hewitson, *Exot. Butts,* **4** : pl. figs. 3, 4.

There is only a nominate subspecies, *Aemona amathusia amathusia* (Hewitson) known from India.

2. ***Aemona amathusia amathusia*** (Hewitson) (Yellow Dryad)

1867. *Clerome amathusia* Hewitson, *Trans. ent. Soc. Lond.,* **5** (3) : 566, female.

1947. *Aemona amathusia amathusia* (Hewitson) : Talbot, *Fauna of British India,* (Butterflies), **2** : 113.

1992. *Aeomona amathusia amathusia* (Hawitson) : Haribal, *The Butterflies of Sikkim Himalaya,* : 128.

Material examined : Nil.

Wing expanse : 75-90 mm.

Distribution : India : Sikkim, Assam and Manipur. *Elsewhere* : Northern Myanmar.

Remarks : Its status is rare, particularly of the female. This butterfly has been listed in Schedule –II (Part 2) of the Indian Wild Life (Protection) Act.

III. Genus ***Faunis*** Huebner

1819. *Faunis* Huebner, *Verz. bekant. Schmett.,* : 55.

This genus is represented in India by two species, *viz., Faunis canens* Huebner and *F. eumeus* (Drury), of which the former is treated from Sikkim.

3. ***Faunis canens arcesilas*** Stichel (Common Faun)

1933. *Faunis canens arcesilas* Stichel, *Lep. Cat.,* **54** : 33,

1992. *Faunis canens arcesilas* : Haribal, *The Butterflies of Sikkim Himalaya,* : 128.

Material examined : Nil.

Wing expanse : 65-75 mm.

Distribution : India : Sikkim. *Elsewhere* : Bhutan, Malaya, Myanmar, Sumatra, Thailand (Siam) and Tonkin.

Remarks : Talbot (1947) referred to observations of De Nicèville (1894) that its occurrence was very rare in Sikkim.

IV. Genus ***Stichophthalma*** C.& R. Felder

1862. *Stichophthalma* C. & R. Felder, *Wien. Ent. Mon.,* **6** : 261.

The genus is represented in India by three species of which two are dealt with from Sikkim.

Key to species

Upperside of hind wing with submarginal markings small and slender .... *nourmahal* (Westwood)

– Upperside of hind wing with submarginal markings large and prominent .... *camadeva* (Westwood)

4. ***Stichophthalma nourmahal nourmahal*** (Westwood) (Chocolate Jungle Queen)

1851. *Thaumantis nourmahal* Westwood, In Doubleday, Hewitson, *Gen. diurn. Lep.,* : 337.

1947. *Stichophthalma nourmahal nourmahal* (Westwood) : (Talbot), *Fauna of British India,* (Butterflies), **2** : 417.

1992. *Stichophthalma nourmahal nourmahal* (Westwood) : Haribal, *The Butterflies of Sikkim Himalaya,* : 128.

Material examined : Sikkim, 1ex bearing two labels of Native Sikkim (De Nicèville Coll.) and Sikkim, Aug. 1889 (*Knyvett* Coll).

Fore wing length : 44 mm.

Distribution : India : Sikkim, Assam, Nagaland and West Bengal. *Elsewhere* : Myanmar.

Remarks : Only the nominate subspecies occurs in India. It is found upto 1100 m of altitude. De Nicèville (1886) considered it to be very rare in Sikkim. It has been collected by native collectors and O. Moeller from hot valleys. Its status is rare and it has been included in Schedule II (Part–2) of the Indian Wild Life (Protection) Act.

5. ***Stichophthalma camadeva camadeva*** (Westwood)
(Northern Jungle Queen)

1848. *Morpho camadeva* Westwood, *Cab. Oriental Entomology,* : **9,** pl. 4, fig. 1, 2.

1885. *Stichophthalma camadeva* (Westwood) : De Nicèville, *J. Asiat. Soc. Beng.*, **54 (1)** : 2.

1992. *Stichophthalma camadeva camadeva* (Westwood) : Haribal, *The Butterflies of Sikkim Himalaya,* : 128.

Material examined : Sikkim, 4 exs, no data, (*De Nicèville Coll*) : 1ex, (*purchased*), no further data, ; 1ex, (*purchased*) De Nicèville, 2 exs *J.A. Bourdillon* (purchased); 2exs, (*purchased*), no further data.

Fore wing length : 60-71 mm.

Distribution : India : Sikkim.

Remarks : There are four subspecies of this species occurring in India. This nominate subspecies has upperside of wings milky white and pale marginal area narrow in hind wing, thus, differing from the other three subspecies, *viz., S. camadeva nicèvillei* Roeber from Assam; *S. camadeva naganesis* Rothschild found in Nagaland; and *S. camadeva aborica* Tytler from Abor Hills (Arunachal Pradesh). The latter resembles *S. camadeva nicèvillei* except having ground colour of a warmer brown. De Nicèville (1885) reported it from Sikkim in June and July. Talbot (1947) mentioned its status not rare but Haribal (1992) referred to its status as rare in Sikkim with the comments 'Further east it is quite common. It is endemic to Sikkim.

V. Genus ***Thaumantis*** Huebner

1826. *Thaumantis* Huebner, *Samml. Exot. Schmett.*, **2** : Pl. 61.

This genus is represented in India by the nominate subspecies, *Thaumantis diores diores* (Doubleday).

6. ***Thaumantis diores diores*** Doubleday (Jungle Glory)

1845. *Thaumantis diores* Doubleday, *Ann. Mag. nat. Hist.*, **16** : 234.

1881. *Thaumantis diores* : De Nicèville, *J. Asiat. Soc. Beng.* **50** (1) : 57.

1992. *Thaumantis diores diores* : Haribal, *The Butterfiles of Sikkim Himalaya,* : 128-129.

Material examined : Sikkim, 1ex, –v–, ; 1ex, –ix, 3exs, no data, Sikkim (Singla), 1ex, no date (De Nicèville coll.).

Fore wing length : 49–56 mm.

Distribution : India : Sikkim (South Sikkim,) and Arunachal Pradesh.

Remarks : Previously, De Nicèville (1881) recorded it from South Sikkim (Rungeet Valley).

VI. Genus ***Discophora*** Boisduval

1836. *Discophora* Boisduval, (Roret's Suite a Buffon), *Hist. nat. Inst. Consid., Gen. Lepid,* **1** : pl. 4 (–4a) fig. 2. (larva et pupa) as (*Discophorus*) pl. 12 (–8B), fig. 3 (as *Discophora*).

Of the five species of this genus occurring in India, two are dealt with from Sikkim.

Key to species

Upperside of fore wing marked with ochraceous spots ..... *timora* Westwood

– Upperside of wing marked with blue spots .. .. *sondaica* Boisduval.

7. ***Discophora timora timora*** Westwood (Great Duffer)

1850. *Discophora timora* Westwood, In Doubleday & Westwood, *Gen. diurn. Lep.*, **2** : pl. 54, fig. 2 (male).

1851. *Discophora celinde* (Stoll) : De Nicèville, *J. Asiat. Soc. Beng.*, **50** (1) : 57.

1992. *Discophora timora timora* Westwood : Haribal, *The Butterflies of Sikkim Himalaya*, : 129.

Material examined : Sikkim, 1ex, –viii–; 1ex, –ix–, 3exs, –x– ; 1ex, no date; (*De Nicèville coll.*)

Fore wing length : 42-49 mm.

Distribution : India : Sikkim (South Sikkim) and West Bengal. *Elsewhere* : Assam, Bangladesh, Malaya, Myanmar and Tonkin.

Remarks : This nominate subspecies differs from its counterpart *D. timora andamanensis* Staudinger found in Andaman by upperside of fore wing bearing more or less prominent yellow spots in male and underside of wings marked with well defined markings in female. De Nicèville (1881) recorded it from South Sikkim (Rungeet Valley). Haribal (1992) mentioned its occurrence rarer than that of *D. sondaica zal* Westwood.

8. ***Discophora sondaica zal*** Westwood (Common Duffer)

1851. *Discophora zal* Westwood, In Doubleday & Westwood, *Gen. diurn. Lep.*, **2** : 331.

1882. *Discophora tullia* (Cramer) : De Nicèville, *J. Asiat. Soc., Beng.*, **51**(2-3) : 57.

1992. *Discophora sondaica zal* : Haribal, *The Butterflies of Sikkim Himalaya*, : 129.

Material examined : Sikkim, 1ex, –ix–; 3ex, –ix–; 4exs, no date, (De Nicèville coll.)

Fore wing length : 40-43 mm.

Distribution : India : Sikkim and West Bengal. *Elsewhere* : Myanmar.

Remarks : Evans (1932) and Talbot (1947) mentioned its status common whereas Haribal (1992) referred to its occurrence as rare.

VII. Genus ***Enispe*** Doubleday

1848. *Enispe* Doubleday, *Gen. diurn. Lep.* (2) : pl. 40, fig. 2.

Two species of this genus found in India are treated from Sikkim.

Key to species

Upperside of wings blackish brown, fore wing with a bluish white band .... *cycnus* Westwood.

– Upperside of wings bright ochraceous with blackish brown markings .... *euthymius* (Doubleday)

9. ****Enispe cycnus cycnus*** Westwood (Blue Caliph)

1851. *Enispe cycnus* Westwood, In Doubleday & Westwood, *Gen. diurn. Lep.*, **2** : 330.

1992. *Enispe cyncus* (sic) : Haribal, *The Butterflies of Sikkim Himalaya*, : 129.

1997. *Enispe cycnus cycnus* : Gupta, *State Fauna Series* 3, *Fauna of West Bengal, Zool. Surv. India*, Part-7 : 541-542.

Material examined : Nil

Wing expanse : 80-95 mm.

Distribution : India : Sikkim, Assam and West Bengal. *Elsewhere* : Bangladesh and Northern Myanmar.

Remarks : The nominate subpecies differs from its counterpart, *E. cycnus verbanus* Fruhstorfer from Assam and Bhutan, by upperside of fore wing bearing a broader bluish white band and in male hind wing is devoid of yellow spots. D'Abrera (1985) retained Bhutan only as abode of *E. cycnus verbanus*. De Nicèville (1884) referred to its very rare occurrence in Sikkim. Evans (*loc. cit*) and Talbot (*loc. cit.*) mentioned its status rare. It has been listed in Schedule-II (Part-2) of the Indian Wild Life Protection Act.

10. ***Enispe euthymius euthymius*** (Doubleday)

1845. *Adolias euthymius* Doubleday, *Ann. Mag. nat. Hist.*, **16** : 129.

1883. *Enispe euthymius* (Doubleday) : De Nicèville, *J. Asiat. Soc. Beng.*, **52** (2-4) : 93

1992. *Enispe euthymius euthymius* : Haribal, *The Butterflies of Sikkim Himalaya*, : 129.

Material examined : Sikkim, 3 exs, no date; 1ex, – iv–, 1ex, –v– (*De Nicèville coll*).

Fore wing length : 38-41 mm.

Distribution : India : Sikkim (South Sikkim), Assam, Meghalaya and Nagaland. *Elsewhere* : Myanmar.

Remarks : Only the nominate subspecies occurs in India. Talbot (1947) mentioned its two forms, *viz., tesselata* Moore and *melaena* Tytler, all these three forms occurring in Assam. De Nicèville (1883) mentioned its collection by Otto Moeller from South Sikkim (Rungeet Valley). Its status is not rare.

Subfamily CALINAGINAE

Thorax clothed in part with orange or red hairs. Both fore and hind wing with cells closed; in fore wing, vein R_2 arising from R_1; in hind wing, prediscoidal cell present.

Two genera, *viz*; *Calinaga* Moore and *Penthema* Doubleday represent this subfamily in India.

Key to genera

Eyes hairy. Antennae equal to one-third the length of costa of fore wing. Fore wing with lower discocellular vein straight. Hind wing with vein Sc + R_1 ending before apex .... ***Calinaga*** Moore

– Eyes not hairy. Antennae equal to one half the length of costa of fore wing. Fore wing with lower discocellular vein curved. Hind with with vein Sc+R_1 ending, as usual, at apex..... .....***Penthema*** Doubleday.

VIII. Genus ***Calinaga*** Moore

1857. *Calinaga* Moore, *Cat. Lep. Mus. East India Coy.*, **1** : 162.

Of the three species of this genus occurring in India, only *Calinaga gautama* Moore is dealt with from Sikkim.

11. ***Calinaga gautama*** Moore (Freak)

1901. *Calinaga gautama* Moore, *Lep. Ind.*, **5** : 46, pl. 390.

1992. *Calinaga buddha gautama* Moore : Haribal, *Butterflies of Sikkim Himalaya*, : 149.

1994. *Calinaga gautama* Moore : Varshney, *Oriental Insects*, **28** : 163.

Material examined : Sikkim, 3 exs, no date (De Nicèville coll).

Fore wing length : 46-48mm.

Distribution : India : Sikkim.

Remarks : Varshney (1994) treated it under Calinaginae of family Satyridae. This species is endemic to Sikkim. Its status is very rare and it has been included in schedule-I (Part-4) of the Indian Wild Life (Protection) Act.

IX. Genus ***Penthema*** Doubleday

1848. *Penthema* Doubleday, *Gen. Diurn. Lep.*, (2) : pl. 39, fig. 3

This genus is known in India by a single species, *Penthema lisarda* Doubleday.

12. ***Penthema lisarda lisarda*** (Doubleday) (Yellow Kaiser)

1845. *Diadema lisarda* Doubleday, *Ann. Mag. nat. Hist.* (1), **16** : 233.

1992. *Penthema lisarda lisarda* (Doubleday) : Haribal, *Butterflies of Sikkim Himalaya*, : 157.

1994. *Penthema lisarda* (Doubleday) : Varshney, *Oriental Insects*, **28** : 163.

Material examined : Sikkim, 1ex, no more data; 1ex, –v–(*De Nicèville coll.*). Sikkim, 1ex, no more data; 1ex (purchased) no more data, 1ex, no date (*L. Mandelli coll*).

Fore wing length : 63-65 mm.

Distribution : India : Sikkim (East Sikkim and North Sikkim), Manipur, Meghalaya and Nagaland.

Remarks : Only the nominate subspecies occurs in India and differs from *P. lisarda*

mihintala Fruhsforfer found in Myanmar by underside of wings being reddish brown. Wood-Mason (1881) reported its occurrence in Sikkim Hills. Haribal (1992) recorded it from East Sikkim (Dikchu) and North Sikkim (Singhik) and treated it under Nymphalinae. Its status is rare and it has been included in Schedule II (Part 2) of the Indian Wild Life (Protection) Act.

Subfamily ACRAEINAE

Wings sparsely scaled and spotted; cell of fore wing and hind wing closed by tubular veins; hind wing flat; and fore legs imperfect in both sexes.

The subfamily is represented by a single genus *Acraea* Fabricius in India.

X. Genus ***Acraea*** Fabricius

1807. *Acraea* Fabricius, *Mag. f. Insektenk* (Illiger), **6** : 284.

Two species, viz., *Acraea violae* (Fabricius) and *A. issoria* Huebner occurring in India are dealt with from Sikkim.

Key to species

Antennae with a short abrupt club. Hind wing with veins M_1 and R_s not stalked, vein R_s arising from apex of cell ..... *violae* (Fabricius)

– Antennae with a gradually formed club. Hind wing with veins M_1 and R_s stalked well beyond upper apex of cell ..... *issoria* (Huebner).

13. ***Acraea violae*** (Fabricius)
(Tawny Coster)

1775. *Papilio violae* Fabricius, *Syst. ent.*, : 460.

1932. *Telchinia violae* (Fabricius) : Evans. *The Identification of Indian Butterflies*, : 192.

1992. *Acraea violae* (Horsfield) 1829 (Sic) : Haribal, *The Butterflies of Sikkim Himalaya*, : 186.

Material examined : Nil.

Wing expanse : 50-65 mm.

Distribution : India : Sikkim (South Sikkim, West Sikkim), widely distributed in India. *Elsewhere* : Sri Lanka.

Remarks : The upperside of wings is tawny with black spots. The white spots on black border on upperside of hind wing are more pronounced. Haribal (1992) mentioned its occurrence at lower altitudes up to 1500 m in South and West Sikkim.

14. ***Acraea issoria issoria*** (Huebner)
(Yellow Coster)

1818. *Telchinia issoria* Huebner, *Zutr. Z. Samml. exot. Schmett.*, **1** : 27.

1992. *Pareba vesta* (Fabricius) : Haribal, *The Butterflies of Sikkim Himalaya*, : 186.

1992. *Acraea issoria* (Huebner) : Corbet & Pendlebury, *The Butterflies of Malay Peninsula*, : 146.

Material examined : Sikkim : North Sikkim : Namnara, alt. 3661m, 1ex, 12-vii-1959, Manshitang, alt. 1516m, 2exs, 26-vii-1959, Teng, alt. 1515m, 1 ex, 30-vi-1959, Toong, alt. 1394m, 1ex, 1–viii–1959, Naga, alt. 1515 m, 2-viii -1959. Akrathong, alt. 970m, 1ex, 12-viii-1959, A.G.K. Menon coll. Sikkim (Terai), 1ex, 29–vii–1880, 2exs, –vi–1881, 1ex, 24-viii-1881 (De Nicèville Coll). East Sikkim; Tadong, Gangtok, 1676 m, 1ex, 18-vii-1977, 1ex, 20-viii-1997. Deorali–Gangtok, 1676 m, 2ex, 14-viii-1977, 1ex, 18-viii-1977, Kopethong, 5 km from Gangtok, 1524 m, 1ex, 23-viii-1977, Simichanday about 50 km from Gangtok, 1ex, 21-viii-1977 (T.D. Soota, K.N. Singh & Party Coll.)

Fore wing length : 35-38 mm.

Distribution : India : Sikkim (North Sikkim, East Sikkim), Assam, Meghalaya and West Bengal. *Elsewhere* : Bhutan and Myanmar.

Remarks : The nominate subspecies differs from its counterpart, *A. issoria anomala* Kollar from Kulu to Kumaon mainly by its larger wing expanse. It exhibits sexual dimorphism as black markings on uppreside of fore wing seen in male are broadened in female.

Subfamily NYMPHALINAE

Butterflies of medium to large size; antennae always at best partly scaled, with two grooves separated by a central ridge and bordered by two lateral carinae on the ventral surface; wings with terminal margins may be scalloped, crenulate or dentate, hind wing may be caudate; fore tarsi imperfect, brush like and useless for walking in both sexes, although usually longer and several segmented, often spined and rarely clawed in female; male secondary sexual characters not strongly developed except in Heliconiini.

These nymphalids have ground colour of wings bright brown or yellowish brown, some with striking or beautiful colour patterns. These are sun lovers and are often seen at flowering plants in the garden and forest. Some larger species are attracted by over ripe fruits, toddy, excreta of animals, etc.

There is no accord on the higher classification of the subfamily Nymphalinae but the widely accepted arrangement into tribes has been followed after Corbet and Pendleburry (1992). The following tribes are represented in Sikkim.

Tribe **Biblidini**
Tribe **Heliconiini**
Tribe **Nymphalini**
Tribe **Cyrestini**
Tribe **Limenitidini**
Tribe **Pseudergolini**
Tribe **Apaturini**

Tribe **Biblidini**

The tribe includes two genera., viz., *Ariadne* Horsfield and *Byblia* Huebner from India, of which the former is represented in Sikkim.

XI Genus *Ariadne* Horsfield

1829. Ariadne Horsfield, *Descr. Cat Lep. Ins. Mus. East India Coy.*, **(2)** : 33.

Two species, *viz., Ariadne ariadne* (Linnaeus) and *A. merione* (Cramer) found in India are reported from Sikkim.

Key to species

Upperside of wings with a single discal line just beyond cell, being regular. Outer margin of fore-wing concave between vein Cu_{1a} and M_2 ..... *ariadne* (Linnaeus)

– Upperside of wings with a double discal line just beyond cell, being highly irregular. Outer margin of fore wing faintly concave between veins Cu_{1a} and M_2 ..... *merione* (Cramer)

15. ***Ariadne ariadne pallidior*** (Fruhstorfer) (Angled Castor)

1911. *Ergolis pallidior* Fruhstorfer, *Berl. Ent. Zschr.*, **44** : 90.

1992. *Ariadne ariadne pallidior* (Fruhstorfer) : Haribal, *Butterflies of Sikkim Himalaya*, : 157.

Material examined : Sikkim, 3ex, no further data.

Fore wing length : 23-25 mm.

Distribution : India : Sikkim (South Sikkim), Arunachal Pradesh, Uttar Pradesh. *Elsewhere* : Myanmar.

Remarks : This subspecies differs from its conterpart, *A ariadne indica* (Moore) from South India to Bengal by upperside of hind wing with veins M_2 and M_1 not conspicuously white and discal lines run to costa. De Nicèville (1881, 1885) recorded it as *Ergolis ariadne* (Linnaeus) from South Sikkim (Rungeet Valley) and *E. indica* Moore during collection made from Rungeet Valley and road between it and Darjeeling.

16. ***Ariadne merione assama*** (Evans)

1924. *Ergolis merione assama* Evans, *J. Bombay nat. Hist. Soc.*, **30** : 95.

1992. *Ariadne merione assama* (Evans), *Butterflies of Sikkim Himalaya*, : 159.

Material examined : Sikkim, 1ex, no further data.

Fore wing length : 29 mm.

Distribution : India, Sikkim, Arunachal Pradesh and West Bengal. *Elsewhere* : Myanmar.

Remarks : The subspecies prefers forested areas and is distinguished from the nominate subpecies (South India to Maharashtra) by underside of hind wing with upper part of disc being not darkened and bands distinct, and from *A.merione tapestrina* (Moore) (Central Provinces to Orissa and Jammu & Kashmir to Uttar Pradesh) by its large wing expanse of 50-60 mm and dry season form never variegated.

Tribe **Heliconiini**

Labial palpi with second segment inflated. Fore wing vein not dilated at base, R_2 arising from R_5 or cell, apex of cell and origin of Cu_{1a} equidistant from wing base or former more distant; hind wing precostal vein arising beyond origin of vein.

This tribe represented in India by eight genera is dealt with from Sikkim.

Key to genera

1. Tarsal claws very long and without appendages ..... ***Cethosia*** Fabricius
- Tarsal claws normal and with appendages 2
2. Fore wing with lower discocellular vein, if present, ending beyond origin of vein Cu_{1a} 3
- Fore wing with lower discocellular vein ending before/at or only just beyond origin of vein Cu_{1a} 4
3. Cell open in hind wing .... ***Melitaea*** Fabricius
- Cell closed in hind wing .... ***Argynnis*** Fabricius
4. Fore wing vein R_2 arising from cell, R_3 ending on apex behind a line joining ends of veins R_4, R_3 and M_1 5
- Fore wing vein R_2 arising from R_5, R_3 ending on costa and R_2 behind a line joining ends of R_5 and M_1 6
5. Antennae longer than half the length of costa, club gradual. Fore wing with lower discocellular vein ending at or just beyond origin of vein Cu_{1a} ..... ***Vindula*** Hemming
- Antennae equal to half the length of costa, slender and clubless. Fore wing with lower discocellular vein ending before origin of vein Cu_{1a} ..... ***Cirrochroa*** Doubleday
6. Antennal club absent. Fore wing vein R_2 arising well beyond origin of R_5, R_4 very short; hind wing cell open ..... ***Cupha*** Billberg
- Antennal club moderate. Fore wing vein R_2 arising just beyond origin of vein R_5; hind wing cell closed 7
7. Hind wing with a spur from the angle of vein M_3 towards M_2 ..... ***Vagrans*** Hemming
- Hind wing without any spur from the angle of vein M_3 ..... ***Phalanta*** Horsfield

XII genus ***Cethosia*** Fabricius

1806. *Cethosia* Fabricius, *Mag. f. Insektenk* (Illiger), **6** : 280.

This genus is represented in India by three species of which two are known from Sikkim.

Key to species

Upperside of fore wing, in both sexes, marked with a broad oblique discal white or yellowish band ..... *cyane* (Drury)
- Upperside of fore wing, in either sex, without a broad oblique discal white or yellowish band ..... *biblis* (Drury)

17. ***Cethosia cyane*** (Drury) (Leopard Lacewing)

1770. *Papilio* cyane Drury, *Ill. exot. Ent.*, **1** : Pl. 4. fig. 1.

1882. *Cethosia cyane* (Drury) : De Nicèville, *J. Asiat. Soc.*, **51** (2-3) : 57.

1997. *Cethosia cyane* (Drury) : Gupta, *Zool. Surv. India, State Fauna Series* **3** : *Fauna of West Bengal*, Part-7 : 563.

Material examined : Sikkim, 1ex, 20-xii-1886, 5 exs, no data, (De Nicèville Coll.). Sikkim, 1ex, no further data.

Fore wing length : 40-42 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Uttar Pradesh and West Bengal. *Elsewhere* : Myanmar.

Remarks : Evans (1932) mentioned its status 'not rare' but Haribal (1992) commented about it to be rather rare in Sikkim.

18. ***Cethosia biblis tisamena*** Fruhstorfer (Red Lacewing)

1909. *Cethosia tisamena* Fruhstorfer, In Seitz *Macrolepidoptera of the world*, **9** : 725.

1997. *Cethosia biblis tisamena* : Gupta, *Zool. Surv. India, State Fauna Series 3 : Fauna of West Bengal*, Part-7 : 563.

Material examined : Sikkim, 8exs, no date, 2100-2590 m, 1ex, no date; East Sikkim, Rungeet Valley, 305 m, 4exs, no date (De Nicèville Coll). North Sikkim, Manshithing, alt. 1576m, 1ex, 25-vii-1959 (A.G.K. Menon Coll). South Sikkim, Namchi, 1620m, 1ex, 25-ix-1983 (G.K. Srivastava & Party Coll.).

Fore wing length : 31-38 mm.

Distribution : India : Sikkim (East, North and West Sikkim). Arunachal Pradesh and West Bengal. *Elsewhere* : Myanmar.

Remarks : This subspecies is distinguished from its two counterparts, *viz.*, *C. biblis andamana* Stichel found in Andaman, *C. biblis nicobarica* Felder occurring in Nicobars by upperside of fore wing bearing a complete discal row of white horseshoes from area Cu_{1b} or Cu_{1a} to M_1; female varying from red, as in male to moss green. De Nicèville (1881) recorded it from east Sikkim (Rungeet Valley). Haribal (1992) reported it from East Sikkim (Rangpo), North Sikkim (Mangan, Singhik) and West Sikkim, (Legship, Naya Bazar). Its status is not rare.

XIII Genus ***Melitaea*** Fabricius

1807. *Melitaea* Fabricius. *Mag. f. Insektenk* (Illiger), **6** : 284.

This genus represented in India by a single species, *Melitaea arecesia* Bremer is dealt with from Sikkim.

19. ***Melitaea arcesia sikkimensis*** Moore (Blackvein Fritillary)

1901. *Mellita* (sic) *sikkimensis* Moore, *Lep. Ind.*, **5** : 5, pl. 380.

1992. *Melitaea arcesia sikkimensis* : Haribal, *Butterflies of Sikkim Himalaya*, : 183.

Material examined : Native Sikkim, 10 exs, no date, (De Nicèville).

Fore wing length : 19-21 mm.

Distribution : India : Sikkim (North Sikkim). *Elsewhere* : Tibet.

Remarks : This subspecies differs from other three subspecies., *viz.*, *balbi* More [Pakistan (Chitral)—Kashmir (India)], *sindura* Moore [Jammu & Kashmir (Ladakh) – Uttar Pradesh (Kamaon)] and *thibetana* Fawcett (Sikkim at very high elevations—Tibet) by its upperside of wings heavily marked, submarginal band nearly or quite coalesced to the dash margin and underside also heavily marked. Haribal (1992) reported it from North Sikkim beyond Gingong to Chho Lamho area.

20. ***Melitaea arcesia thibetana*** Fawcett (Blackvein Fritillary)

1904. *Melitaea tibetana* Fawcett, *Proc. zool. Soc. Lond.*, **2** : 135.

1992. *Melitaea arcesia thibetana* Fawcett : Haribal, *Butterflies of Sikkim Himalaya*, : 162.

Material examined : Sikkim (native), 1ex, no date, (De Nicèville coll). Sikkim , 3exs, no further data, 3000 feet, 1ex, no further data.

Fore wing length : 16-18 mm.

Distribution : India : Sikkim at very high elevations. *Elsewhere* : Tibet.

Remarks : Bingham (1905) considered *thibetana* from Tibet as a form of *sikkimensis* and, the former differeing from later by its upperside being prominently pale ochraceuos at base and apex of cell of fore wing, and similarly coloured terminal row of lunular transverse marks

on fore-and hind wings; and underside paler. Bingham (*loc. cit*) and Evans (1932) mentioned its wing expanse less than 40 mm and 40-45 mm for *sikkimensis*, respectively. Haribal (1992) followed Evans (loc. cit.) for wing expanse for subspp., *thibetana* and *sikkimmensis*.

XIV. Genus *Argynnis* Fabricius

1807. *Agrynnis* Fabricius, *Mag. f. Insektent* (Illiger) **6** : 283.

Of the 14 species occurring in India, eight are dealt with from Sikkim.

Key to species

1. Fore wing with vein R_2 arising from cell, upper apex opposite well beyond origin of Cu_{1a} ... 2
- Fore wing with vein R_2 arising from R_5 (except in *gemmata*) 6
2. Hind wing precostal vein well curved forward 3
- Hind wing precostal vein straight and rather obscure 5
3. Underside of hind wing ochreous and olive brown with silver stripes .... *hyperbius* (Linnaeus)
- Underside of hind wing dark green with silver spots 4
4. Underside with basal silver stripes continued to costa; discal silver band straight .... *childreni* Gray
- Underside with no silver marking in space, discal bands very sinuate ..... *kamala* Moore
5. Underside of hind wing ochreous bearing very large silver spots, postdiscal series of small, brown ringed silver spots bowed in the middle present ..... *lathonia* (Linnaeus)
- Underside of hind wing dark green bearing a discal series of long silver streaks complete but postdiscal series absent .... *clara* Blanchard
6. Hind wing costa straight and apex pointed; underside markings not prominently silver and spot at end cell not elongated .... *pales* (Dennis Schiff)
- Hind wing apex rounded, underside markings brilliant silvery, spot at end cell very long, nearly or quite reaching postdiscal row of small spots 7
7. Underside of hind wing with marginal silver markings long, narrow, of equal width throughout and nearly reaching postdiscal spots ..... *altissima* Elwes
- Underside of hind wing with marginal silver markings short, not of even width and also not reaching postdiscal spots ..... *gemmata* Butler

21. *Argynnis hyperbius hyperbius* (Linnaeus) (Indian Fritillary)

1764. *Papilio hyperbius* Linnaeus, *Amoen acad.*, **6** : 408, female.

1882. *Argynnis (Acidalia) niphe* Linnaeus : De Nicèville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 57.

1932. *Argynnis hyperbius hyperbius* (Linnaeus) : Evans, *Identification of Indian Butterflies*, : 182.

Material examined : Sikkim, 1ex, no date, (*C. Lynch coll.*); Sikkim, 1ex, no date (*purchased*), 549 m, 1ex, no further data.

Fore wing length : 35-37 mm.

Distribution : India : Sikkim (East, North and West Sikkim). *Elsewhere* : North Myanmar and Pakistan.

Remarks : This nominate subspecies is distinguished from other two Indian subspp., viz., *castesi* Oberthuer found in Tranvancore and Palni hills, *hyrida* Evans occurring in Nilgiris by the much produced apex of fore wing in male and in female termen concave in the middle. Corbet & Pendlebury (1992), Haribal (1992) and Varshney (1994) treated this taxon under the genus *Argyreus* Scopoli. Haribal (*loc. cit.*) recorded it from East, North and West Sikkim.

22. *Argynnis childreni childreni* Gray (Large Silver Stripe)

1831. *Argynnis childreni* Gray, *Zool. Misc.*, **1** : 33.

1882. *Argynnis childreni* : Elwes, *Proc. zool. Soc., Lond.*, : 397-407.

1932. *Argynnis childreni childreni* : Evans, *Identification of Indian butterflies*, : 182.

Material examined : Sikkim, 1ex, no date. (*De Nicèville coll*). North Sikkim, Mangan, 1200 m, 1ex, 15-ix-1983 (G.K. Srivastava & Party coll).

Fore wing length : 42 mm.

Distribution : India : Sikkim (East, North and West Sikkim), Arunachal Pradesh, Uttar Pradesh and West Bengal. *Elsewhere* : North Myanmar.

Remarks : This nominate subspecies is distinguished from *A. childreni sakontala* Kollar [Pakistan (Chitral)—India (Kumaon)] by its wing expanse more and upperside of hing wing with marginal blue suffusion broad and prominent. Elwes (1882) reported it from Sikkim. Haribal (1992) recorded it from East Sikkim (Bushuk, Gangtok and Penlongla), North Sikkim (Lachen, Lachung) and West Sikkim (Yoksum). Haribal (1992) and Varshney (1994) treated this species under the genus *Childrena* Hemming.

23. ***Argynnis kamala*** Moore
(Common Silverstripe)

1857. *Argynnis kamala* Moore, *Cat. Lep. Mus. East. India Coy.*, **1** : 156.

1932. *Argynnis kamala* : Evans, *Identification of Indian butterflies*, : 182.

Material examined : Nil.

Wing expanse : 65-75 mm.

Distribution : India : Sikkim and Uttar Pradesh. *Elsewhere* : Afghanistan and Pakistan.

Remarks : Evans (1932) provided its range of distribution from Pakistan (Chitral) to India (Kumuon). Haribal (1992) listed it from Sikkim. Haribal (*Loc. cit.*) and Varshney (1994) treated this species, under the genus *Fabriciana* Reuss.

24. ***Argynnis lathonia issaea*** Doubleday
(Queen of Spain)

1846. *Argynnis issaea* Doubleday, In Gray's *Lep. Inst. Nepal*, : 11.

1932. *Argynnis lathonia issaea* Doubleday : Evans, *Identification of Indian Butterflies*, : 183.

Material : Sikkim, 2 exs, no date ; North Sikkim, Lachung Valley, 1ex, no date, (*De Nicèville Coll.*)..

Fore wing length : 24-25 mm.

Distribution : India : Sikkim (North Sikkim), Jammu & Kashmir. *Elsewhere* : Afghanistan, Myanmar and Pakistan.

Remarks : This subspecies differs from the nominate one by underside of hind wing basal yellow spot in a space Cu_{1a} and second silver spot from base in space Cu_{1b}. Elwes (1882) recorded it from Sikkim as *Argynnis lathonia* Linnaeus (= A. *issoea* Moore). Haribal (1992) treated its species under the genus *Issoria* Huebner. Varshney (1994) considered *lathonia* Linnaeus and *issoea* Doubleday as two distinct species.

25. ***Argynnis clara manis*** Fruhstorfer
(Silverstreak)

1903. *Argynnis clara manis* Fruhstorfer, *Iris* **16** : 41.

1932. *Argynnis clara manis* : Evans, *Identification of Indian butterflies*, : 183.

Material examined : Sikkim; North Sikkim, 1ex, –viii–, 10000– 14000feet, 1ex, no date; Sikkim (native), 1ex, no date; Sikkim, 1ex, 6–xi–(De Nicèville Coll).

Fore wing length : 22-23 mm.

Distribution : India : Sikkim (North Sikkim) *Elsewhere* : Tibet.

Remarks : This subspecies is distinguished from the nominate subspecies by upperside pale ochreous, and broader dark markings. Haribal (1992) and Varshney (1994) considered the species *clara* Blanchard under the genera *Melitaea* Fabricius and *Mesoacidalia* Reuss, respectively.

26. ***Argynnis pales eupales*** (Fruhstorfer)
(Straightwing Silverspot)

1903. *Boloria eupales* Fruhstorfer, *Iris*, : 307.

1932. *Argynnis pales eupales* (Fruhstorfer) : Evans, *Identification of Indian Butterflies.* : 184.

Material examined : Sikkim, 1ex, no further data. Native Sikkim, 1ex, no data, 427-549 m, 2exs, –viii–, (De Nicèville Coll).

Fore wing length : 18-19 mm.

Distribution : India : Sikkim. *Elsewhere* : Tibet.

Remarks : This subspecies is distinguished from other two subspecies, *viz., sipora* Moore and *korla* Frustorfer mainly by upperside darker with heavier markings. Corbet and Pendlebury (1992) and Haribal (1992) treated the species *pales* (Dennis Schiffer-Miller) under the genus *Boloria* and Varshney (1994) followed it.

27. ***Argynnis altissima*** Elwes (Mountain Silverspot)

1882. *Argynnis altissima* Elwes, *Proc. zool. Soc., Lond.,* : 403, pl. 25. fig. 8, male.

1932. *Argynnis altissima* : Evans, *Identification of Indian Butterflies,* : 184.

Material examined : Sikkim, native, 3exs, no date, (De Nicèville Coll.). Sikkim, Chumbi Valley, 1ex, 7-xi–, (D. Mac. Donald Coll.).

Fore wing length : 16-17 mm.

Distribution : India : Sikkim (North Sikkim), *Elsewhere* : Tibet.

Remarks : Evans (1932) and Haribal (1992) treated *altissima* Elwes as species and subspecies *gemmata altissima,* respectively, under the genus *Argynnis*. Varshney (1994) considered *altissima* and *gemmata* Butler as separate species under the genus *Kuekenthaliella* Reuss. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

28. ***Argynnis gemmata gemmata*** Butler (Gem Silverspot)

1881. *Argynnis gemmata* Butler, *Ann. Mag. nat. Hist.* (5) **7** : 32, pl 4, fig. 1, 1a female.

1882. *Argynnis gemmata* : Elwes, *Proc. zool. Soc. Lond.,* : 399-417.

1932. *Argynnis gemmata gemmata* : Evans, The *Identification of Indian Buttlerflies,* : 184.

Material examined : Sikkim, 1ex, —. — 1881, 6 exs, no date (H.J.Elwes exchange). Sikkim, 1ex, no date, Native Sikkim, 5 exs, no date, 527-549M, 1ex, no date, (De Nicèville coll). Sikkim, 1ex, — viii & ix–1911 (Harryngton coll).

Fore wing length : 22-24 mm.

Distribution : India : Sikkim and Uttar Pradesh. *Elsewhere* : Tibet.

Remarks : Elwes (1882) recorded the nominate subspecies from Sikkim. Evans (1932) and Haribal (1992) treated it under the genus *Argynnis*. Varshney (1994) considered it under the genus *Kuekenthaliella* Reuss. Bingham (1905) mentioned its distribution from Kumaon to Chumbi Valley, east of Sikkim and Tibet.

XV Genus ***Vindula*** Hemming

1934. *Vindula* Hemming, *Entomologist,* **67** : 77.

Only a single species, *Vindula erota* (Fabricius) occurring in India is reported from Sikkim.

29. ***Vindula erota erota*** (Fabricius) (Cruiser)

1773. *Papilio erota* Fabricius, *Ent. Syst.,* **3** (1) : 76.

1882. *Cynthia erota* (Fabricius) : De Nicèville, *J. Asiat. Soc., Beng.,* **51** (2-3) : 57.

1997. *Vindula erota* (Fabricius) : Gupta, *Zool. Surv. India, State Fauna Series, 3 : Fauna of West Bengal,* Part-7 : 567.

Material examined : Sikkim, 4 exs, no date, 1ex,–ix–, 3 exs, –xi– (*De Nicèville coll*). Sikkim, 1ex, –x–, no coll, 2 exs, no date (*purchased*).

Fore wing length : 46-48 mm.

Distribution : India : Sikkim (East Sikkim), Arunachal Pradesh and West Bengal. *Elsewhere* : Myanmar.

Remarks : The nomimate subspecies differs from its two counterparts *viz., V. erota saloma* Swinhoe found in South India and *V. erota pallida* Staudinger occurring in Andamans by its seasonal forms very-sharply marked, in female hind wing

upperside bases green, discal band running from costa to vein Cu_{1b}, marginal area broad and ochreous brown. Haribal (1992) reported it from East Sikkim (Tumin Khola and Rangli Valley).

XVI. Genus *Cirrochroa* Doubleday

1847. *Cirrochroa* Doubleday, *Gen. diurn. Lep.* (1) : pl. 21, fig. 2.

Of the four species of this genus occurring in India, two *viz.*, *C. aoris* Doubleday and *C. tyche* Felder are dealt with from Sikkim.

Key to species

Fore wing with apex truncated .... *aoris* Doubleday

– Forewing with apex rounded .... *tyche* Felder

30. *Cirrochroa aoris aoris* Doubleday (Large Yeoman)

1847. *Cirrochroa aoris*, Doubleday. In Doubleday, *Gen. diurn. Lep*,. : (1) 157, pl. 21, fig. 2, female.

1882. *Cirrochroa aoris* Doubleday : *J. Asiat. Soc. Beng.*, **51** (23) : 57.

1997. *Cirrochroa aoris aoris* : Gupta, *Zool. Surv. India, State Fauna Series, 3 : Fauna of West Bengal*, Part-7 :

Material examined : Sikkim, 2exs, no date, (*purchased*), 12exs, no date, 1ex, –viii–, 1ex, 13–xi–1879 (*De Nicèville Coll*). Sikkim, 1ex, 10–x–1884, (*O. Moeller Coll*). West Sikkim, Geyzing, 1ex, 16-x–1959, Naya Bazar, 1ex, 17–x–1959 (*B.K.Tikader Coll*).

Fore wing length : 37-40 mm.

Distribution : India : Sikkim (East, North, South and West Sikkim), Arunachal Pradesh and West Bengal.

Remarks : Haribal (1992) recorded it from East Sikkim (Dikchu, Rangpo), North Sikkim (Mangan) and South Sikkim.

31. *Cirrochroa tyche mithila* Moore (Common Yeoman)

1872. *Cirrochroa mithila* Moore, *Proc. zool. Soc., Lond.*, : 558.

1882. *Cirrochroa mithila* : De Nicèville, *J. Asiat. Soc. Beng.* **51** (2-3) : 57.

1932. *Cirrochroa tyche mithila* : Evans, *Identification of Indian Butterflies*, : 188.

Material examined : Nil.

Wing expanse : 65-75 mm.

Distribution : India : Sikkim (South Sikkim), Arunachal Pradesh, Meghalaya, Nagaland and West Bengal. *Elsewhere* : Myanmar.

Remarks : Haribal (1992) observed it near Norak in South Sikkim. Varshney (1994) treated *tyche* (Cramer) and *mithila* Moore as separate species under the genus *Cirrochroa*.

XVII Genus *Cupha* Billberg

1820. *Cupha* Billberg, *Enum. Ins. Mus. Billb.*, : 79.

Only a single species, *Cupha erymanthis* (Drury) occurring in India is dealt with from Sikkim.

32. *Cupha erymanthis lotis* Sulz. (Rustic)

1776. *Cupha lotis* Sulzer, *Gesch. Insect.* : Pl. 16, fig. 6.

1883. *Cupha erymanthis* (Drury) : *J. Asiat. Soc. Beng.*, **52** (2-4) : 94.

1992. *Cupha erymanthis lotis* : Haribal, *Butterflies of Sikkim Himalaya*, : 159.

Material examined : Sikkim, 1ex, no date. (*De Nicèville coll*).

Fore wing length : 26 mm.

Distribution : India : Sikkim, Uttar Pradesh (Mussorie) to Arunachal Pradesh. *Elsewhere* : Myammar.

Remarks : This subspecies is distinguished from other three subspecies, *viz.*, *maja* Fruhstorfer found in South India, *andamanica* Moore

occurring in Andamans and *nicobarica* Felder confined to Nicobars by the upperside of the fore wing with a black spot in space 1A + 2A much larger than spots in spaces Cu_{1b} and Cu_{1a}, yellow spots on black apex; underside markings in cells pale and conjoined. De Nicèville (1883) mentioned that Moeller observed this subspecies in the bed of a stream below Poshak.

XVIII. Genus ***Vagrans*** Hemming

1934. *Vagrans* Hemming, *Entomologist*, **67** : 77.

This monotype genus is represented in India by a single species, *Vagrans egista* (Cramer).

33. ***Vagrans egista sinha*** (Kollar) (Vagrant)

1844. *Terinas sinha* Kollar, *Huegel's Kaschmir*, **4** (2) : 438.

1883. *Atella sinha* (Kollar) : De Nicèville, *J. Asiat. Soc. Beng.*, **53** (2-4) : 94.

1994. *Vagrans egista sinha* (Kollar) : Varshney, *Oriental Insects*, **28** : 172.

Material examined : Nil.

Wing expanse : 55-65 mm.

Distribution : India : Sikkim, Bengal (old) and Orissa. *Elsewhere* : Myanmar.

Remarks : Evans (1932) and Haribal (1992) treated this taxon under the genus *Issoria* Moore. De Nicèville (1983) referred that Moeller observed this butterfly in the bed of a stream below Poshak.

XIX. Genus ***Phalanta*** Horsfield

1829. *Phalanta* Horsfield, *Descr., Cat. Lep. Ins. Mus. East India Coy.*, (2) : Pl. 17.

Two species, viz., *Phalanta phalantha* (Drury) and *P. alcippe* (Cramer) of this genus found in India are dealt with from Sikkim.

Key to species

Fore wing with four black lines within the cell, other markings rounded .. *phalantha* (Drury)

– Fore wing with five or six black lines within the cell, other markings more linear..... ..... *alicippe* (Cramer)

34. ***Phalanta phalantha phalantha*** (Drury) (Common Leopard)

1770. *Papilio phalantha* Drury, *Exot. Inst.*, **1** : 41, pl. 21, figs. 1,2.

1932. *Atella phalanta* (Sic) (Drury) : Evans, *Identification of Indian Butterflies*, : 187.

1992. *Phalanta phalantha* (Drury) : Haribal, *Butterflies of Sikkim Himalaya*, : 159.

1997. *Phalanta phalantha phalantha* (Drury) : Gupta, *Zool. Surv. India, State Fauna Series*, 3 : *Fauna of West Bengal*, Part-7 : 569.

Material examined : Sikkim, 1ex, no date, (bred from pupa), 1ex, no date, (*De Nicèville coll.*); North Sikkim, about 11 km from Lachung on Yumathan Road, 1ex., 21–iv–1992 (*R.S. Mirdha coll.*)

Fore wing length : 25–26 mm.

Distribution : India : Sikkim, (East, North and South Sikkim), Arunachal Pradesh, Madhya Pradesh, Maharasthra, Nicobar Island, Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere : Myamnar and Pakistan.

Remarks : Only the nominate subspecies known in India is widely distributed. Haribal (1992) reported it from East Sikkim (Rangpo), North Sikkim ((Sanklang and Mangan in Teesta Valley) and South Sikkim (Rungeet Valley).

35. ***Phalanta alcippe alcippoides*** (Moore) (Small Leopard)

1900. *Atella alcippoides* Moore, *Lep. Ind.* **4** : 199, pl. 361., fig. 1, 1a–1d, ♂♀.

1992. *Phalanta alcippe alcippoides* (Moore); *Butterflies of Sikkim Himalaya*, : 160.

Material examined : Sikkim, 4exs, no date. (*De Nicèville Coll.*).

Fore wing length : 17–19 mm.

Distribution : India : Sikkim, Arunachal Pradesh and Assam. *Elsewhere* : Myanmar.

Remarks : This subspecies is distinguished from other subspp. *viz., mercea* Evans occurring in South India, *andamana* Frushstorfer in Andamans

and *fraterna* Moore in Central and South Nicobars by upperside wing veins not black, fore wing fully spotted, postdiscal line slender and in an even curve between Cu_{1b} and M_4.

Tribe **Nymphalini**

Fore wing termen and dorsum subequal, fore wing vein Sc not dilated at base, R_2 arising from end cell, R_5 equidistant between R_2 and M_1 or only a little closer to M_1, R_4 arising well beyond origin of R_1 and ending at apex or termen. Hind wing precostal vein arising beyond origin of Sc. Female fore tarsus normal and not clawed.

The tribe is represented in India by 11 genera.

Key to genera

1. Eyes smooth 2
- Eyes hairy 5
2. Labial palpi black above, white beneath. Head and thorax black, each with a pair of white dots. Fore wing only slightly falcate ..... ***Hypolimnas*** Huebner
- Labial palpi not as above. Head and thorax not white spotted. Fore wing markedly falcate 3
3. Hind wing not tailed ..... ***Junonia*** Huebner
- Hind wing tailed or prominently toothed 4
4. Upperside orange brown with a black apical border on fore wing. Cell open in fore and hind wing ..... ***Doleschallia*** Felder
- Upperside purple blue with a broad orange or pale blue subapical band on fore wing. Cells slenderly closed in fore and hind wing ..... ***Kallima*** Doubleday
5. Antennae equal to half the length of costa of fore wing. Cell open in hind wing ..... ***Symbrenthia*** Huebner
- Antennae longer than half the length of costa of fore wing. Cell closed in hind wing 6
6. Hind wing not produced and angled at vein M_3 7
- Hind wing termen produced at vein M_3 8
7. Upperside pinkish red, base golden brown, fore wing with three central black spots on the red area. ..... ***Cynthia*** Fabricius
- Upperside dark brown with a red central band on fore wing and a black spotted red marginal band on underside of hing wing ..... ***Vanessa*** Fabricius
8. Fore wing dorsum excavated in the distal half. Hind wing termen excavated above rein R_5 9
- Fore wing dorsum straight. Hind wing termen not excavated above vein R_5 10
9. Upperside very dark indigo blue with a broad postdiscal blue band on fore wing and hind wing ..... ***Kaniska*** Moore
- Upperside tawny with black spots ..... ***Polygonia*** Huebner
10. Palpi, costa of fore wing and dorsum of hind wing with long, black, coarse and erect hairs ..... ***Nymphalis*** Kluk
- Palpi, costa of fore wing and dorsum of hind wing without long, black coarse and erect hairs ..... ***Aglais*** Dalman.

XX Genus ***Hypolimnas*** Huebner

1819. *Hypolimnas* Huebner, *Verz. bekannt.* Schmett., (3) : 45.

This genus is represented in India by two species, viz., *Hypolimnas bolina* (Linnaeus) and *H. misippus* (Linnaeus) which are dealt with from Sikkim.

Key to species

Underside of hind wing with a prominent middle black costal spot in space R_5 ..... *misippus* (Linnaeus)
- Underside of hind wing without any prominent middle black costal spot in space R_5 ..... *bolina* (Lunnaeus)

36. ***Hypolimnas misippus*** (Linnaeus) (Danaid Egyfly)

1764. *Papilio misippus* Linnaeus, *Mus. Ulr.*, : 264, female.

1997. *Hypolimnas misippus* (Linnaeus) : Gupta *Zool. Surv. India, Fauna Series* : 3 *Fauna of West Bengal,* Part-7 : 560.

Material examined : Nil.

Wing expanse : 70-85 mm.

Distribution : India : Sikkim, Andaman & Nicobar Islands, Arunachal Pradesh, Uttar Pradesh and West Bengal. *Elsewhere* : Myanmar, Pakistan and Sri Lanka.

Remarks : The female of this species is polymorphic and also mimicks the *Danaus chrysippus* Linnaeus of the subfamily Danainae. Bingham (1905), Evans (1932) and Wynter Blyth (1957) stated its distribution India/throught India. This species has been included in Schedule–1 (Part–4) and Schedule-II (Part-2) of the Indian Wild Life (Protection) Act.

37. ***Hypolimnas bolina*** (Linnaeus) (Great Eggfly)

1758. *Papilio bolina* (Linnaeus), *Syst. Nat.* (ed. 10), **1** : 479.

1882. *Apatura bolina* (Linnaeus) : De Nicèville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 60.

1992. *Hypolimnas bolina* (Linnaeus): Haribal, *Butterflies of Sikkim Himalaya,* : 168.

Material examined : Sikkim , 1ex., no further data. Sikkim, 5 exs, no date, (*De Nicèville Coll.*).

Fore wing length : 38-48 mm.

Distribution : India : Sikkim, (East and South Sikkim), Andaman & Nicobar Islands, Arunachal Pradesh, Madhaya Pradesh, Meghalaya, Uttar Pradesh and West Bengal. *Elsewhere* : Myanmar, Pakistan and Sri Lanka.

Remarks : Haribal (1992) reported this species from East Sikkim (Rangpo and Gangtok) and South Sikkim (Rungeet Valley). Evans (1932) and Wynter –Blyth (1957) considered its status common but in 1981 this species was listed in a title 'Rare and Endangered Animals of India' issued by the Director, Zoological Survery of India.

XXI Genus ***Junonia*** Huebner

1816. *Junonia* Huebner, *Verz., beck. Sehmett.* : 34.

Six species representing this genus in India are dealt with from Sikkim.

Key to species

1. Upperside of fore wing with a black spot of variegated ocellus in space Cu_{1b} 2
– Upperside of fore wing without any ocellus in space Cu_{1b} ..... *iphita* (Cramer)
2. Upperside of hind wing with a black spot in space Cu_{1b} ..... *hierta* (Fabricius)
– Upperside of hind wing with a variegated ocellus in space Cu_{1b} 3
3. Upperside of fore wing and hind wing with submarginal ocelli in all spaces .... *atlites* (Linnaeus)
– Upperside of fore wing and hind wing without submarginal ocelli in space Cu_{1a} and M_1 4
4. Upperside of fore wing with a whitish subapical band ..... *orithya* (Linnaeus)
– Upperside of fore wing without any whitish subapical band 5
5. Uperside of fore wing brown with pale yellow spots ..... *lemonias* (Linnaeus)
– Upperside of fore wing fulvous orange and without pale yellow spots .... *almana* (Linnaeus)

38. ***Junonia iphita iphita*** (Cramer) (Chocolate Pansy)

1779. *Papilio iphita* Cramer, *Pap. exot.*, **3** : pl. 209, fig. C,D.

1881. *Junonia iphita* (Cramer), De Nicèville, *J. Asiat. Soc. Beng.*, **50** (1) : 50.

1882. *Precis iphita* (Cramer): De Niceville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 57.

1992. *Precis iphita iphita* (Cramer) : *Haribal, Butterflies of Sikkim Himalaya,* : 164-165.

1992. *Junonia iphita* (Cramer) : Corbet & Pendlebury, *Butterflies of Malaya Peninuala,* : 159.

Material examined : Sikkim, 2exs, no date (*De Nicèville Coll.*).

Fore wing length : 29-30 mm.

Distribution : India : Sikkim, Arunachal Pradesh and West Bengal. *Elsewhere* : Myanmar.

Remarks : This nominate subspecies differs from its two other counterparts, *viz.*, *siccata* Stichel found from Kashmir to Kumaon and *pluviatalis* Fruhstorfer occurring in Central and South India, Maldives and Sri Lanka, by its larger wing expanse, darker colouration and dry season form may be variegated.

39. ***Junonia hierta magna*** (Evans) (Yellow Pansy)

1926 *Precis hierta magna* Evans, *J. Bombay nat. Hist. Soc.*, **31** : 715.

1992 *Precis hierta magna* : Haribal, *butterflies of Sikkim Himalaya*, : 163.

Material examined : Sikkim, 2exs, no date, *(De Nicèville Coll.)*.

Fore wing length : 24-26 mm.

Distribution : India : Sikkim (East, North and South Sikkim), Andaman & Nicobar Islands, Arunachal Pradesh. *Elsewhere* : Mynamar.

Remarks : This subspecies differs from the nominate subspecies by larger wing expanse and brighter colouration. Haribal (1992) reported it from East Sikkim (Rangpo), North Sikkim (Mangan and Singhik) and South Sikkim (Rungeet Valley).

40. ***Junonia atlites*** (Linnaeus) (Grey Pansy)

1763. *Papilio atlites* Linnaeus, *Centur. Ans.*, : 24.

1881. *Junonia laomedia* Linnaeus : De Nicèville. *J. Asiat. Soc. Beng.*, **50** (1) : 50.

1883. *Junonia atlites* (Linnaeus): De Nicèville, *J. Asiat. Soc. Beng.*, **52** (2-4) : 94.

1992. *Precis atlites atlites* (Johanssen) (sic) : Haribal, *Butterflies of Sikkim Himalaya*, : 164.

1994. *Junonia atlites* (Linnaeus) : Corbet & Pendlebury, *Butterflies of Malay Peninsula*, : 159.

Material examined : Sikkim, 1ex, no date, *(De Nicèville Coll)*. North Sikkim, between Lachen and Zumaban, 1ex, 25-iv-1992 (no coll.).

Forewing length : 26 mm.

Distribution : India : Sikkim (East, North and South Sikkim), widely distributed in India.

Remarks : De Nicèville (1881) recorded this species from South Sikkim (Rungeet Valley) and Haribal (1992) reported it from East Sikkim (near Rangpo).

41. ***Junonia orithya ocyale*** (Huebner) (Blue Pansy)

1819. *Papilio ocyale* Huebner, *Verz., bekannt. Schmett.*, : 34.

1883. *Junonia orithya* (Linnaeus) : De Niceville, *J. Asiat. Soc. Beng.* **52** (2-4) : 94.

1992. *Precis orithya ocyale* (Huebner) : Haribal, *Butterflies of Sikkim Himalaya*, : 163.

1994. *Junonia orithya* (Linnaeus) : Varshney, *Oriental Insects*, **28** : 176.

Material examined : Sikkim, 1ex, no date, *(De Nicèville Coll.)*.

Fore wing length : 22 mm.

Distribution : India : Sikkim (East, North, South and West Sikkim), Andaman & Nicobar Islands, Arunachal Pradesh, West Bengal. *Elsewhere* : Myanmar.

Remarks : This subspecies differs from its counterpart, *J. orithya swinhoei* Butler found in India, Baluchistan and Sri Lanka, by its wing expanse larger and underside darker. De Nicèville (1883) reported it from South Sikkim Rungeet Valley). Haribal (1992) observed it in East Sikkim (Rangpo, Gangtok), North Sikkim (Mangan) and West Sikkim (Legship).

42. ***Junonia lemonias lemonias*** (Linnaeus) (Lemon Pansy)

1758. *Papilio lemonias* Linnaeus, *Syst. Nat.* (ed. **10**) : 473.

1881. *Junnonia lemonias* (Linnaeus) : De Nicèville, *J. Asiat. Soc. Beng.*, **50** (1) : 50.

1992. *Precis lemonias lemonias* : Haribal, *Butterflies of Sikkim Himalaya*, : 163.

1994. *Junnonia lemonias* : Varshney, *Oriental Insects*, **28** : 176.

Material examined : Nil.

Wing expanse : 50-60 mm.

Distribution : India, Sikkim (South Sikkim), Arunachal Pradesh. *Elsewhere* : Myanmar.

Remarks : This nominate subspecies differs from other two subspp. *viz., vaisya* Fruhstorfer occurring in Central and South India and Sri Lanka, and *persicaria* Fruhstorfer found from Kashmir to Kumaon, by wing expanse larger, very variable dry season form and underside often rosy. Haribal (1992) recorded it from South Sikkim.

43. ***Junonia almana almana*** (Linnaeus) (Peacock Pansy)

1758. *Papilio almana* Linnaeus, *Syst. Nat.* (ed. 10) : 472.

1883. *Junonia almana* (Linnaeus) : De Nicèville, *J. Asiat. Soc. Beng.*, **52** (2-4) : 94.

1992. *Precis almana almana* (Linnaeus) : Haribal, *Butterflies of Sikkim Himalaya*, : 164.

1992. *Junonia almana* (Linnaeus) : Varshney, *Oriental Insects*, **28** : 176.

Material examined : Sikkim, 1ex, no date, 689-1475 m, 1ex, no date, (*De Nicèville coll.*).

Forewing length : 25 mm.

Distribution : India : Sikkim (East Sikkim), widely distributed in India. *Elsewhere* : Myanmar and Sri Lanka.

Remarks : This nominate subspecies differs from its counterpart *nicobariensis* Felder found in Car Nicobar mainly by its larger wing expanse. De Nicèville (1883) recorded it from East Sikkim (Rungeet Valley). Haribal (1992) found it common up to an altitude of 1800 m in Sikkim.

XXII. Genus ***Doleschallia*** Felder

1861. *Doleschallia* Felder, *Ein Neues Lep.*, : 14.

This genus is represented in India by a single species, *Doleschallia bisaltide* (Cramer).

44. ***Doleschallia bisaltide indica*** Moore (Autumn Leaf)

1900. *Doleschallia indica* Moore, *Lep. Ind.*, **4** : 155, pl. 336, fig. 1, 1a-1c, & 2, 2a, 2b, male, female, larve and pupa.

1982. *Doleschallia bisaltide* Cramer : De Nicèville, *J. Asiat. Soc. Beng.* **51** (2-3) : 58.

1992. *Doleschallia bisaltide indica* Moore : Haribal, *Butterflies of Sikkim Himalaya*, : 169.

Material examined : Sikkim, 1ex, 15–v–1886, 5exs, no date, (*De Nicèville Coll.*); 3exs, no further data; South Sikkim, Melli, 1ex, 21-ix-1983 (*G. K. Srivastava & Party Coll*).

Forewing length : 38-40 mm.

Distribution : India : Sikkim (East and North Sikkim), Arunachal Pradesh. Elsewhere : Myanmar.

Remarks : Haribal (1992) mentioned its occurrence in East Sikkim (Dikchu) and North Sikkim (Mangan, Singhik and Tholung).

XXIII Genus ***Kallima*** Doubleday

1849. *Kallima* Doubleday, In Doubleday, Westwood & Hewitson, *Gen. diurn. (paralekta) Lep.*, : 324, pl. 52, fig. 2.3..

This genus is represented in India by four species of which three species are dealt with from Sikkim.

Key to species

1. Upperside fore wing with dark basal area extending beyond end cell 2

– Upperside fore wing the dark basal area not extending beyond end cell ... *alompra* Moore

2. Upperside of fore wing with discal band blue or bluish whille ..... ***philarchus*** Westwood

– Upperside of fore wing with discal band orange ..... *inachus* Boisduvel

45. ***Kallima alompra*** Moore (Scarce Blue Oakleaf)

1879. *Kallima alompra* Moore, *Trans. ent. Soc. Lond.*, : 14.

1886. *Kallima knyvetti* De Nicèville, *Butterflies of India, Burmah and Ceylon*, **2** : 267

1932. *Kallima alompra* Moore : *Identification of Indian Butterflies* : 176.

Material examined : Nil.

Wing expanse : 95-110 mm.

Distribution : India : Sikkim. *Elsewhere* : Bhutan and Myanmar.

Remarks : De Nicèville (1886) recorded it from Sikkim (Buxa), Bhutan and Myanmar. Evans (1932) mentioned its distribution from Sikkim to Myanmar. Haribal (1992) did not list this species from Sikkim.

46. ***Kallima philarchus horsfieldi*** (Kollar) (Blue Oakleaf)

1844. *Paphia horsfieldi* Kollar, In Huegel's Kaschmir, **4** : 434, pl. 10.

1932. *Kallima philarchus horsfieldi* (Kollar) : Evans, *Identification of Indian Butterflies*, : 175.

1992. *Kallima horsfieldi* (Kollar) : Haribal, *Butterflies of Sikkim Himalaya*, : 169.

Material examined : Nil.

Wing expanse : 85-110 mm.

Distribution : India : Sikkim (North Sikkim), Karnataka, Maharashtra and South India. *Elsewhere* : Myanmar.

Remarks : This subspecies differs from the nominate one found in Sri Lanka by its paler colouration, discal band uniformly coloured and female is much greener. De Nicèville (1886) mentioned its distribution in Himalayas, Belgaum (Karnataka) and Mathern Hill, Bombay (Maharashtra) whereas Evans (1932) considered it as confined to South India. Haribal (1992) stated its occurrence in North Sikkim (Tholung Valley).

47. ***Kallima inachus inachus*** (Boisduval) (Orange Oakleaf)

1836. *Paphia inachus* Boisduval, In Crochard's ed., *Curv. Reg. Anim. Ins.* **2** : pl. 139, fig. 3 (female).

1882. *Kallima inachis* (sic) (Boisduval) : De Nicèville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 58.

1992. *Kallima inachus inachus* (Boisduval) : Haribal, *Butterflies of Sikkim Himalaya* : 169.

Material examined : Sikkim, 9 exs, no date, 2 exs, –x–, (*De Nicèville coll*). Sikkim, 3exs, no date, (*De Nicèville, purchased*). South Sikkim, Melli, 1ex, 21–ix–1983 (*G.K. Srivastava & Party Coll*).

Fore wing length : 39-41 mm.

Distribution : India : Sikkim (South Sikkim) and Assam.

Remarks : This nominate subspecies is distinct from its counterpart, *K. inachus huegeli* (Kollar) found from Kashmir to Kumaon in having dry season form not much paler than the wet season form which is darker. De Nicèville (1881) reported it from South Sikkim (Rungeet Valley).

XXIV. Genus ***Symbrenthia*** Huebner

1819. *Symbrenthia* Huebner, *Verz., bekannt. Schmett.* (3) : 43.

All the four species of this genus occurring in India are dealt with from Sikkim.

Key to species

1. Underside of fore and and hind wings marked with black tesselations 2

– Underside of fore and hind wings marked with ferruginous markings; black tesselations absent ..... *lilaea* De Nicèville

2. Underside of hind wing with subterminal lunules metallic cerulean blue .... *silana* De Nicèville

– Underside of hind wing with subterminal lunules metallic green 3

3. Upperside of fore wing with preapical oblique fulvous or yellow irregular short band extended to costal margin ..... *niphanda* Moore

– Upperside of fore wing with preapical oblique fulvous or yellow irregular short band not extended to costal margin .... *hypselis* Godart

48. ***Symbrenthia lilaea khasiana*** Moore (Common Jester)

1874. *Symbrenthia khasiana* Moore, *Proc. zool. Soc. Lond.*, : 569.

1882. *Symbrenthia hippoclus* (Cramer): De Nicèville, *J. Asiat. Soc. Beng.* **51** (2-3) : 57

1885. *Symbrenthia hippocla* (sic) (Cramer) : De Nicèville, *J. Asiat. Soc. Beng.*, **54** (1) : 2.

1992. *Symbrenthia lilaea khasiana* Moore : Haribal, *Butterflies of Sikkim Himalaya,* : 167.

Material examined : Sikkim, 9exs, no date, 914 m, 1ex, no date, 689-1323 m, 1ex, no date (*De Nicèville Coll.*). South Sikkim, Tashingong, 1ex, 29–ix–1959 (*B.K. Tikader Coll.*) Sikkim, Paykong, 1ex, 12–ix-1993 (*S.K. Saha & S.K. Chatterjee Coll*).

Fore wing length : 22-23 mm.

Distribution : India : Sikkim (East Sikkim, South Sikkim) Arunachal Pradesh, Eastern Ghats and Jammu & Kashmir. *Elsewhere* : Myanmar.

Remarks : Evans (1932), Wynter-Blyth (1957) and Gupta (1988, 1997) referred this species/ subspecies as *Symbrenthia hippoclus/S. hippochus khasiana* Moore. De Nicèville (1881, 1885) reported it from East Sikkim (Rungeet Valley). Haribal (1992) mentioned its common occurrence in Sikkim up to 2000m.

49. ***Symbrenthia silana*** De Nicèville (Scarce Jester)

1885. *Symbrenthia silana* De Nicèville, *J. Asiat. Soc. Beng.*, **54** (2) : 117.

1994. *Symbrenthia silana* : Varshney, *Oriental Insects,* **28** : 173.

Material examined : Sikkim, 7exs, no date, 1ex, 11–iii–1887. (*De Nicèville Coll.*).

Fore wing length : 25-27 mm.

Distribution : India : Sikkim, Manipur. *Elsewhere* : Bhutan.

Remarks : Bingham (1905) treated this species as a race of *S. niphanda* Moore whereas Evans (1932) and Varshney (1994) maintained its species status. Haribal (1992) did not list this species. Its status is very rare and it has been included in Schedule–1 (Part–4) of the Indian Wild Life (Protection) Act.

50. ***Symbrenthia niphanda niphanda*** Moore (Bluetail Jester)

1872. *Symbrenthia niphanda* Moore, *Proc. zool. Soc. Lond.*, : 559.

1992. *Symbrenthia niphanda niphanda* Moore : Haribal, *Butterflies of Sikkim Himalaya,* : 168.

Material examined : Sikkim, 2exs, no date, 1ex, 12–iii-1884, 1ex, 20–iii–1884, 1ex, 27–iii–1884, 1ex, 7–iv–1884, 1ex, 17–iii–1885 (De Nicèville Coll.); Sikkim, 1100 m, 1ex,–v–1884, 2ex, 5–iv–1884, 1ex, 12–iv–1884, (O. Moeller coll).

Forewing length : 25-27mm.

Distribution : India : Sikkim and Assam.

Remarks : The nominate subspecies occurs from Sikkim to Assam. However, Haribal (1992) mentioned its distribution from Kashmir to Assam which is doubtful. Its status is rare and it has been included in Schedule–II (Part–2) of the Indian Wildlife Protection Act.

51. ***Symbrenthia hypselis cotanda*** Moore (Spotted Jester)

1874. *Symbrenthia cotanda* Moore, *Proc. zool. Soc. Lond.*, : 569, pl.

1882. *Symbrenthia hypselis* Godart : De Nicèville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 57.

1997. *Symbrenthia hypselis cotanda* Moore : Gupta, *Zool. Surv. India, State Fauna Series* **3** : *Fauna of West Bengal, Part-7* : 571.

Material examined : Native Sikkim, lex, no date, Sikkim hills,–x–1882 *(De Nicèville coll.)* Sikkim, 3 exs, no date; 4572 m, 1ex, 10–ix–1883.

Forewing length : 22–25 mm.

Distribution : India : Sikkim (East, North and West Sikkim), Arunachal Pradesh, Uttar Pradesh and West Bengal. *Elsewhere* : Myanmar.

Remarks : Evans (1932) treated two subspecies of *S. hypselis* Godart, viz., *cotanda* Moore and *brabira* Moore. Varshney (1994) agreed with Bingham (1905) in considering *brabira* as separate species. Haribal (1992) recorded it from East Sikkim (Gangtok), North

Sikkim (Mangan, Tholung Valley) and West Sikkim (Tashiding).

XXV. Genus *Cynthia* Fabricius

1807. *Cynthia* Fabricius, *Mag. f. Insektenk* (Illiger), **6** : 281.

Only a single species represents this genus in India.

52. *Cynthia cardui* (Linnaeus) (Painted Lady)

1758. *Papilio cardui* Linnaeus, *Syst. Nat.* (ed. 10), **1** : 475.

1883. *Pyrameis cardui* (Linnaeus): De Nicèville, *J. Asiat. Soc. Beng.*, **52** (2-4) : 94.

1997. *Cynthia cardui* (Linnaeus) : Gupta,. *Zool. Surv. India, State Fauna series* **3** : *Fauna of West Bengal*, Part-7 : 552.

Material examined : Sikkim : North Sikkim, Yathang (about 15 km North of Lachen), 1ex, 26–iv–1992 (*R.S. Mirdha coll.*).

Fore wing length : 26 mm.

Distribution : India : Sikkim (North Sikkim), Arunachal Pradesh, Jammu & Kashmir. *Elsewhere* : worldwide except South America and Antarctica.

Remarks : The species is migratory in habit. It was treated earlier under the genus *Vanessa* Fabricius but Field (1971) resurrected the genus *Cynthia* Fabricius and held *Cynthia cardui* (Linnaeus) a valid species and followed by Varshney (1977), Gupta (1988), Haribal (1992). De Nicèville (1883) stated that the species is not common in Sikkim and it fed upon thistle but Haribal (1992) mentioned it to be common in Sikkim.

XXVI. Genus *Vanessa* Fabricius

1807. *Vanessa* Fabricius, *Mag. f. Insektenk* (Illiger), **6** : 281.

Only a single species, *Vanessa indica* (Herbst) occurs in India.

53. *Vanessa indica indica* (Herbst) (Indian Red Admirable)

1794. *Papilio atlanta indica* Herbst, *Nat. Syst. Schmett.* **7** : 171, pl. 180, fig. 1, 2.

1881. *Pyrameis indica* (Herbst) : De Nicèville, *J. Asiat. Soc. Beng.*, **50** (1) : 50.

1997. *Vanessa indica indica* (Herbst) : Gupta, *Zool. Surv. India, State Fauna Series 3 : Fauna of West Bengal Part–7* : 554.

Material examined : Sikkim, 1ex, –x–, 1ex, no date, (*De Nicèville Coll.*); Sikkim, Rangli, alt. 800m, 1ex, 20–xii–1975, alt. 950 m, 1ex, 23–xii–1975 South Sikkim, Melli, 1ex, 21–ix–1983 (*G.K. Srivastava & Party Coll*).

Forewing length : 25–26 mm.

Distribution : India : Sikkim (East, North, South and West Sikkim), Arunachal Pradesh and Jammu & Kashmir. *Elsewhere* : North Myanmar.

Remarks : This nominate subspecies differs from its counterpart, *V. indica pholoe* Fruhstorfer found in South India by upperside dark brown areas with a golden gloss, fore wing bearing a discal band much wider and paler, and lower of two central spots detached; underside fore wing with bluish spots at end cell large and prominent, hind wing termen red. Haribal (1992) observed it in East Sikkim (Gangtok), North Sikkim (Mangan and Tholung Valley) and West Sikkim (Yoksum)

XXVII. Genus *Kaniska* Moore

1899. *Kaniska* Moore, *Lep. Ind.*, **2** (14) : 42.

This genus is represented in India by a single species *Kaniska canace* (Linnaeus)

54 *Kaniska canace canace* (Linnaeus) (Blue Admirable)

1763. *Papilio canace* Linnaeus, *Centur. In.*, : 23.

1882. *Vanessa charonia* Drury : De Nicèville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 57

1932. *Vanessa canace canace* (Linnaeus) : Evans, *Identification of Indian Butterflies*, : 178.

1992. *Kaniska canace canace* (Linnaeus) : Haribal, *Butterflies of Sikkim Himalaya*, : 166

Material examined : Sikkim, 2exs, no date (De Nicèville Coll).

Forewing length : 31-32 mm.

Distribution : India : Sikkim, Meghalaya, Nagaland and West Bengal. *Elsewhere* : Myanmar.

Remarks : This nominate subspecies differs from other two Indian subspp., *viz.*, *himalaya* Evans found from Pakistan (Chitral) to India (Kumaon) and *viridis* Evans occurring in South India by wing expanse larger, postdiscal band blue and wider.

XXVIII. Genus ***Polygonia*** Huebner

1819. *Polygonia* Huebner, *Verz. bek. Schmett.*, (3) : 36.

Only a single species, *Polygonia egea* (Cramer) representing this genus in India, is dealt with from Sikkim.

55. ***Polygonia egea agnicula*** (Moore) (Eastern Comma)

1872. *Grapta agnicula* Moore, *Proc. zool. Soc. Lond.* : 559, male only.

1992. *Polygonia egea agnicula* (Moore) : Haribal, *Butterflies of Sikkim Himalaya,* : 166.

Material examined : Sikkim, 1ex, no date (*De Nicèville Coll*).

Forewing length : 25 mm.

Distribution : India : Sikkim, West Bengal. *Elsewhere* : Bhutan and Nepal.

Remarks : This subspecies differs from its counterparts, *viz.*, *cognata* Moore occurring from Nathia Gali-Kumaon, *kashmira* Evans found in Kashmir and Ladakh by upperside uniformly fulvous red with comparatively narrow markings, margin uniform, hind wing without yellow spots instead a submarginal red band present which is inwardly bordered by a dark broken postdiscal band. Its status is rare and its has been included in Schedule-II (Part–2) of the Indian Wildlife Protection Act.

XXIX. Genus ***Nymphalis*** Kluk

1780. *Nymphalis* Kluk, *Zweirz. Hist. Nat. Natur. Poez. Gospod.*, **4** : 86.

This genus is represented in India by three species of which *Nymphalis antiopa* (Linnaeus) is dealt with from Sikkim.

56. ***Nymphalis antiopa yedanula*** (Fruhstorfer) (Camperwell Beauty)

1913. *Vanessa antiopa yedanula* Fruhstorfer. In Seiz *Macrolepidoplera of the world*, **9** : 527.

1992. *Nymphalis antiopa yadanula* (Fruhstorfer) : Haribal, *Butterflies of Sikkim Himalaya,* : 167

Material examined : Sikkim, 1ex, no date. (purchased).

Fore wing length : 35 mm.

Distribution : India : Sikkim. *Elsewhere* : Tibet.

Remarks : Only this single subspecies represented in India is confined to Sikkim. Its status is very rare and it has been listed in Schedule–I (Part–4) of the Indian Wildlife (Protection) Act.

XXX. Genus ***Aglais*** Dalman

1816. *Aglais* Dalman, *Kongl. Vet. Akad. Handl.*, **37** : 54, 64.

Three species of this genus known in India are dealt with from Sikkim.

Key to species

1. Fore and hind wings narrow and produced. Upperside of hind wing with submarginal row of blue centred black spots inwardly fuscous bordered ..... *cashmirensis* Fruhstorfer

– Fore and wings broad and squared. Upperside of hind wing with submarginal row of blue centred black spots not inwardly fuscous bordered 2

2. Fore wing termen rounded at apex and only slightly produced at vein M_1 .... *ladakensis* (Moore)

– Fore wing termen concave below apex..... ..... *urticae* Linnaeus

57. *Aglais cashmirensis aesis* (Frushstorfer) (Indian Tortoiseshell)

1909. *Vanessa aesis* Fruhstorfer., In. Seitz., *Macrolepidoplera of the World,* **9** : 527.

1992. *Aglais cachmirensis aesis* (Kollar) (sic) : Haribal, *Butterflies of Sikkim Himalaya,* : 167.

Material examined : Sikkim, 2 exs, no date (*De Nicèville Coll.*) North Sikkim, Mangan, 1ex 11-iv,-1992, (*R.S. Mirdha Coll.*); Khalang, 1ex, 12–iv–1992 (*S.R.Banerjee & Party Coll.*), State PWD, I.B. Compound, 2exs, 14-iv-1992, 3exs, 15–iv–1992 (*J.K. Prasad Coll*), 2exs, 11-iv-1992, 1ex, 14–iv–1992, Meyona (about 11 km north of Honza), between Lachen and Zermaban, 1ex, 25–iv–1992 (*A.R. Lahiri Coll.*); East Sikkim, Ranikul (about 13 km south of Gangtok, 1ex, 30–iv–1992 (*A.R. Lahiri Coll*).

Forewing length : 24-28mm.

Distribution : India : Sikkim (East and North Sikkim), Himachal Pradesh and West Bengal.

Remarks : This subspecies differs from its nominate counterpart occurring from Pakistan, North Waziristan, Safed Koh, Chitral - India (Kulu) by upperside of fore wing with fuscous inner border wider and yellow area more developed. Elwes (1882) recorded it from Sikkim.

58. *Aglais ladakensis* (Moore) (Ladak Tortoishell)

1878. *Vanessa ladakensis* Moore, *Ann. Mag. nat. Hist.,* **5** (1) : 227.

1842. *Aglais ladakensis* (Moore) : *Haribal, Butterflies of Sikkim Himalaya,* : 167

Material examined : Sikkim (native), 3exs, no date. (*De Nicèville coll*).

Fore wing hength : 23-24 mm.

Distribution : India : Sikkim, Jammu & Kashmir.

Remarks : Elwes (1882) stated 'it does not occur in this side of passes' However, there are specimens from Sikkim which agree well with characters of *ladakensis* (Moore). Haribal (1992) listed this species from Sikkim.

59. *Aglais urticae rizana* (Moore) (Mountain Tortoishell)

1872. *Vanessa rizana* Moore, *Proc. zool. Soc. Lond.,* : 559.

1992. *Aglais urticae rizana* (Moore) : Haribal, *Butterflies of Sikkim Himalaya,* : 166.

Material examined : Nil.

Wing expanse : 50-60 mm.

Distribution : India : Sikkim. *Elsewhere* : Safed Koh, Afghanistan and Pakistan.

Remarks : The status of this subspecies is rare and it has been listed in Schedule–II (Part–2) of the Indian Wild Life (Protection) Act.

Tribe **Cyrestini**

Both fore and hind wings marked with transverse and stripes running across their surfaces. Fore wing with vein Sc not dilated at base, R_4 ending on costa; hind wing with precostal vein arising beyond origin of Sc.

This tribe is known in India by two genera, *viz., Cyrestis* Boisduval and *Chersonesia* Distant.

Key to genera

Fore wing with vein R_2 arising directly from cell ..... ***Cyrestis*** Boisduval

– Fore wing with vein R_2 arising from vein R_5 ..... ***Chersonesia*** Distant

XXXI. Genus ***Cyrestis*** Boisduval

1832. *Cyrestis* Boisduval, *Voy. Astrolabe,* : 117.

Of the three species occurring in India, two *viz. Cyrestis cocles* Fabricius and *C. thyodamas* Boisduval are treated from Sikkim.

Key to species

Fore wing termen even and hind wing apex rounded ..... *cocles* (Fabricius)

Fore wing tornus and hind wing apex truncated ..... *thyodamas* Boisduval

60. *Cyrestis cocles cocles* (Fabricius) (Marbled Map)

1787. *Papilio cocles Fabricius, Mant. Ins.*, **2** : 7.

1992. *Cyrestis cocles cocles* (Fabricius) : Haribal, *Butterflies of Sikkim Himalaya*, : 170.

Material examined : Nil.

Wing expanse : 50-60 mm.

Distribution : India : Sikkim, Orissa. *Elsewhere* : Myanmar.

Remarks : The nominate subspecies is distinguished from its counterpart *C. cocles formosa* Felder found in Andamans by its lesser wing expanse. Its status is rare and also included in Schedule–II (Part–2) of the Indian Wild Life (Protection) Act.

61. *Cyrestis thyodamas thyodamas* Boisduval

1836. *Cyrestis thyodamas* Boisduval, *Cuv. Reg. Anim Ins.*, **2** : pl 138, Fig. 4.

1881. *Cyrestis thyodamas* : De Nicèville, *J. Asiat. Soc. Beng.*, **50** (1) : 57.

1992. *Cyrestis thyodamas thyodamas* : Haribal, *Butterflies of Sikkim Hamalaya*, : 170.

Material examined : Sikkim, 4exs, no date, 1ex, –xi–, South Sikkim, Rungeet Valley, alt. 305m, 1ex, 15–x–1880, (*De Nicèville coll.*), Sikkim, 2exs, no date. (*De Nicèville, purchased*).

Fore wing length : 26–28 mm.

Distribution : India : Sikkim (East and South Sikkim) Arunachal Pradesh and West Bengal. *Elsewhere* : Myanmar.

Remarks : The nominate subspecies is characteristically nearly always white on upperside of wings and fore wing with apical and termianl dark areas much broader and brown, thus, differs from other counterparts, *indica* Evans from south India, *ganescha* Kollar from Kashmir to Kumaon and *andamanica* Wood-Mason from Andamans. De Nicèville (1881) reported it from South Sikkim (Rungeet Valley). Haribal (1992) recorded it from East Sikkim (Rangpo).

XXXII. Genus *Chersonesia* Distant

1883. *Chersonesia* Distant, *Rhop. Malay*, : 142.

The genus is known in India by two species, *viz.*, *Chersonesia rahria* Moore and *C. risa* (Doubleday & Hewitson) of which the latter is dealt with from Sikkim.

62. *Chersonesia risa* (Doubleday & Hewitson) (Common Maplet)

1850. *Cyrestis risa* Doubleday & Hewitson, In. Doubleday's Westwood & Hewitson, *Gen. diurn. Lep.* **2** : 262. pl. 32, fig. 4.

1881. *Cyrestis risa* : De Nicèville, *J. Asiat. Soc. Beng.*, **50** (1) : 5.

1994. *Chersonisa risa* (Doubleday & Hewitson) : Varshney, *Oriental Insects*, **28** : 178.

Material examined : Sikkim, 7 exs, no date (De Nicèville Coll.); South Sikkim, Runjeet Valley, 2exs, 15–x–1880, no further data.

Fore wing length : 20–21 mm.

Distribution : India : Sikkim (South and West Sikkim), Arunachal Pradesh and Uttar Pradesh. *Elsewhere* : Bhutan, Myanmar and Nepal.

Remarks : De Nicèville (1881) and Haribal (1992) reported it from South Sikkim (Rungeet Valley) and West Sikkim respectively. Bingham (1905) and Evans (1932) mentioned its occurrence from Uttar Pradesh (Kumaon) to Myammar whereas Haribal (1992) provided its distribution from Nepal to Myanmar.

Tribe **Limenitidini**

Fore wing with vein Sc not dilated at base, R_2 arising before end cell, origin of R_4 opposite or beyond end of R_1, R_4 ending at apex or on termen, R_5 arising close to M_1 than R_2; termen and dorsum subequal. Hind wing precostal vein arising opposite or beyond origin of vein Sc + R_1.

This tribe is represented in India by 21 genera, of which 17 are dealt with from Sikkim.

Key to genera

1. Hind wing precostal vein arising at or before the origin of vein Sc 2

– Hind wing precostal vein arising beyond the origin of vein Sc 10

2. Hind wing with vein Sc ending on costa or, if ending on termen (*Phaedyma* only), veins M_1, Rs and Sc ending close together, and M_1 remote from M_2 3

– Hind wing with vein Sc reaching termen in both sexes, ending of veins M_2, M_1, Rs and Sc more or less equidistant 6

3. Fore wing with vein R_2 arising from vein R_5 ..... ***Pantoporia*** Huebner

– Fore wing with vein R_2 arising from the cell 4

4. Hind wing with vein Sc ending on termen in male; precostal vein with a spur directed basad ..... ***Phaedyma*** Felder

– Hind wing with vein Sc ending on costa in male; precostal vein with a long spur directed distad 5

5. Mostly small orange species with two submarginal lines on fore wing or fuliginous species with small subcostal spots above the end of cell streak ..... ***Lasippa*** Moore

– Mostly black and white species; if orange, with only a single submarginal line on fore wing; if fuliginous, then without subcostal spots above the end of cell streak ..... ***Neptis*** Fabricius

6. Hind wing cell open 7

– Hind wing cell closed 9

7. Fore wing lower discocellular vein ending well beyond origin of Cu_{1a} ..... ***Moduza*** Moore

– Fore wing cell open or, if closed, with lower discocellular vein ending close to vein Cu_{1a} 8

8. Proximal end of abdomen with pale band (except in *selenophora* male), the latter with a longitudinal whitish cell streak on underside of fore wing ..... ***Athyma*** Westwood

– Abdomen not pale-banded. Underside of fore wing without any whitish cell streak ..... ***Parasarpa*** Moore

9. Eyes hairy. Upperside of wings with a pale green transverse band ..... ***Sumalia*** Moore

– Eyes smooth. Upperside of wings without any pale green transverse band ..... ***Auzakia*** Moore

10. Fore wing with vein R_4 arising before end of R_2 11

– Fore wing with vein R_4 arising beyond end of R_2 14

11. Antennae almost equal to half the length of costa of fore wing 12

– Antenae more than half the length of costa of fore wing 13

12. Fore wing with vein 1A + 2A highly sinuous ..... ***Neurosigma*** Butler

– Fore wing with vein 1A + 2A straight ..... ***Abrota*** Moore

13. Labial palpi with thin long hairs. Fore wing with vein R_3 distorted, hind wing with precostal vein forked at end ..... ***Parthenos*** Huebner

– Labial palpi smooth. Fore wing with vein R_3, R_2, R_1 distorted but R_3 arising well before R_4; hind wing precostal vein not forked ..... ***Lebadea*** Felder

14. Cell open in fore wing 15

– Cell closed in fore wing 16

15. Upperside of fore and hind wings tawny orange with black markings. ..... ***Symphaedra*** Huebner

Upperside of fore and hind wings brown with white markings. 16

16. Thorax relatively slender. Fore wing with veins R_1 and Sc anastomosed in both sexes in female R_3 arising approximately mid-way between apex of cell and origin of R_4 ..... ***Tanaecia*** Butler

- Thorax robust. Fore wing with veins R_1 and Sc free in male; free or anastomosed in female and with R_3 arising close to cell apex and remote from R_4 ..... ***Euthalia*** Huebner

17. Fore wing lower discocellular vein ending well beyond origin of vein of Cu_{1a}; veins R_1 and Sc anastomosed in one or both sexes. Underside of fore wing with two continguous central cell spots echeloned one below the other ..... ***Lexias*** Boisduval

- Fore wing lower discocellular vein ending close to origin of vein Cu_{1a}; veins R_1 and Sc free in both sexes. Underside of fore wing with central cell spot undivided ..... ***Bassarona*** Moore

XXXIII. Genus ***Pantoporia*** Huebner

1819. *Pantoporia* Huebner, *Verz. bekannt. Schmett.* (3) : 44.

This genus is represented in India by a single species, *Pantoporia hordonia* (Stoll).

63. ***Pantoporia hordonia hordonia*** (Stoll) (Common Lascar)

1790. *Papilio hordonia* Stoll, In Cramler, *Pap. exot. Suppl.*, 3 pl. 33. fig. 4, 4D.

1881. *Neptis hordonia* (Stoll) : De Niecéville, *J. Asiat. Soc. Beng.*, **50** (1) : 58.

1882. *Rahinda hordonia* (Stoll) : De Niecéville. *J. Asiat. Soc. Beng.*, **51** (2-3) : 58.

1992. *Pantoporia hordonia hordonia* (Stoll) : Haribal, *Butterflies of Sikkim Himalaya*, : 175.

Material examined : Nil.

Fore wing length : 45-50mm.

Distribution : India : Sikkim (North and South Sikkim), Arunachal Pradesh, Orissa, South India and West Bengal. *Elsewhere* : Myanmar, Malaya, Thailand (Siam), North and South Vietnam.

Remarks : This nominate subspecies differs from its counterpart *cnalis* Hewitson found in Andamans by the upperside hind wing subbasal band ochraceous orange. De Nicéville (1881) recorded it from South Sikkim (Rungeet valley). Haribal (1992) mentioned its occurrence in North Sikkim (Mangan).

XXXIV. Genus ***Phaedyma*** Felder (C.)

1961. *Phaedyma* Felder, *Nova Acta Acad. Caesar, Lemp. Carol.*, **28** : 1-50, 1 pl.

The genus is represented in India by two species, *viz.*, *Phaedyma columella* Cramer and *P. aspasia* (Leech) of which the former is dealt with from Sikkim.

64. ***Phaedyma columella ophiana*** (Moore) (Short Banded Sailer)

1872. *Neptis ophiana* Moore, *Proc. zool. Soc. Lond.*, : 561.

1882. *Neptis columella* (Cramer) : De Nicéville, *J. Asiatic. Soc. Beng.*, **51** (2-3) : 59.

1969. *Phaedyma columella ophiana* (Moore) : Eliot, *Bull. Br. Mus. nat. Hist. Ent., Suppl.* **15** : 120.

1992. *Phaedyma columella ophiana* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 174.

Material examined : Sikkim, 4exs, no date, 1ex, –iv–, 1ex., –x– (De Nicéville coll.; 1ex, no date (T.S.Gardner Coll). Sikkim, Terai, 1ex., 18-viii–1881, (no coll). Sikkim, 1ex, –x–1882 (De Nicéville, purchased).

Fore wing length : 32-34 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Assam, North East India. *Elsewhere* : North Myammar.

Remarks : This subspecies is distinguished from its counterparts, *viz.*, *nilgirica* (Moore) found in South India and *binghami* Fruhstorfer (= *kankena* Evans 1932) occurring in Nicobar Islands, mainly by upperside wing markings white, and subbasal streak, on underside of hind wing less wider than in *nilgirica*. Haribal (1992) could not observe this subspecies in Sikkim.

XXXV. Genus *Lasippa* Moore

1898. *Lasippe* Moore, *Lep. Indica*, **3** : 146.

This genus includes two species, *viz.*, *Lasippa viraja* (Moore) and *L. tiga* (Moore) from India and the former is dealt with from Sikkim.

65. *Lasippa viraja viraja* (Moore) (Yellow Jack Sailer)

1872. *Neptis viraja* Moore, *Proc. zool. Soc. London*, : 563, pl. 32, fig. 6. o, G, E N.E. Bengal.

1992. *Lasippa viraja viraja* (Moore) : Haribal, *Butterflies of Sikkim, Himalaya*, : 174.

Material examined : Sikkim, 689 m 1 ex., no data; Sikkim, 4exs., no data, Sikkim (Terai), 1 ex., –vi–, (De Nicéville coll.).

Fore wing length : 28-32 mm.

Distribution : India : Sikkim, (North Sikkim), Assam Bengal (old) and Orissa. *Elsewhere* : Myanmar, Bhutan.

Remarks : This nominate subspecies is distinguished from *L. viraja kanara* (Evans) found in South India by upperside of wings with bands narrower and underside darker bearing sharply defined edges. De Nicéville (1886) mentioned its occurrence in Sikkim and Haribal (1992) observed it in North Sikkim (Mangan).

XXXVI. Genus *Neptis* Fabricius

1807. *Neptis* Fabricius, *Mag. f. Insektenk* (Illiger), **6** : 282.

Of the 30 species occurring in India, 22 are found in Sikkim.

Key to species

1. Fore wing with subcostal spots internal to the upper postdiscal band 2
– Fore wing without subcostal spots internal to the upper postdiscal band 6
2. Fore wing postdiscal spot in space Cu_{1a}, if present, placed above the spot in Cu_{1a} or, at most, only slightly shifted in 3
– Fore wing post discal spot in space Cu_{1a} much shifted in, often touching the streak beyond cell, so that cell streak, streak beyond cell and lower postdiscal band form a continuous hockey stick 5
3. Fore wing post discal spot in space Cu_{1a} absent or, at most; a mere extension of the spot in space Cu_{1a} across vein Cu_{a1}; streak beyond cell not entering base of space Cu_{1a} ..... *armandia* Oberthuer
– Fore wing post discal spot in space Cu_{1a} well developed; streak beyond cell extending into the base of space Cu_{1a}, at least on the underside larger 4
4. Fore wing with subcostal spot in space. Underside hind wing variegated with mauve markings; no basal or sub-basal streaks ..... *radha* Moore
– Fore wing without subcostal spot in space. Underside hind wing with basal or subbasal streaks; no mauve markings ..... *narayana* Moore
5. Upperside markings creamy to orange. Underside hind wing with a washed out appearance ..... *manasa* Moore
– Upperside markings white. Underside hind wing with prominent mother-of-pearl markings in basal area ..... *nycteus* De Nicéville
6. Fore wing with streak beyond cell not extending into base of space Cu_{1a} (except in *miah* sometimes). 7
– Fore wing with streak beyond cell extending narrowly into base of space Cu_{1a} on upper or underside or on both ..... *zaida* westwood
7. Underside hind wing with a subbasal streak, basal streak not reaching vein Sc + R_1 11
– Underside hind wing without subbasal streak, basal streak reaching vein Sc + R_1 near its origin 8
8. Fore wing with prominent postdiscal spot in space Cu_{1a} ..... *cartica* Moore

– Fore wing with post-discal spot in space Cu_{1a} absent or, at most, forming merely a narrow continuation of the spot in Cu_{1b} across vein Cu_{1a} 9

9. Underside fore wing with postdiscal fascia and submarginal series reaching vein R_3, as usual, and not bluish ..... *nashona* Swinhoe

– Underside fore wing with postdiscal fascia and submarginal series fading out before vein R_3 and nearly always tinged bluish 10

10. Upperside markings broader and paler, cilia very obscurely chequered. Female with fore wing upper and lower postdiscal bands well separated ..... *ananta* Moore

– Upperside markings narrower and richer orange, cilia narrowly but clearly chequered with white. Female with fore wing upper and lower post discal bands narrowly united by an orange line ..... *namba* Tytler

11. Underside hind wing discal fascia obsolete or much closer to the discal than to the postdiscal band and outwardly edged, or partly obscured, by a dark band or series of blochy spots..... 12

– Underside hind wing with discal fascia placed centrally between the discal and postdiscal bands, usually whitish and prominent (except in some dry season forms, in which it is obsolescent) 16

12. Underside hind wing with one or two round dark spots in cell, in addition to a v-or-u shaped mark below vein M_2 just internal to the discal band ..... *jumbah* Moore

– Underside hind wing without small round spots in cell, though in some species there may be a small v-or-u shaped mark below vein M_1 just internal to the discal band..... 13

13. Fore wing upper postdiscal band entirely above vein M_2 14

– Fore wing upper postdiscal band extending into space M_3 on upperside or underside or both 15

14. Upperside markings orange. Underside hind wing with v-or-u shaped mark nearly always present. ..... *miah* Moore.

– Upperside markings white or pale yellow. Underside hind wing without a v-or-u shaped mark under vein M_2 near inner edge or discal band ..... *sankara* Kollar

15. Fore wing cilia fuscous on fore wing and at most very obscurely chequcred on hind wing with lighter and dark brown .... *harita* Moore

– Fore wing cilia with prominent apical white patch in spaces R_5 and R_4 and hind wing cilia chequcred white and brown ....*pseudovikasi* Moore

16. Fore wing cilia usually fuscous in spaces M_1, and R_5 but occasionally with a few white hair scales ..... *clinia* Moore

– Fore wing cilia with white patches in spaces M_1 and R_5 17

17. Upperside fore wing cell streak without indications of a transverse line. Hind wing cilia narrowly chequered, the white patches smaller than the darker ones, post discal band inwardly almost even-edged ..... *yerburii* Butler

– Upperside fore wing usually with indications of a dark line across the cell close to the discocellular bar. Hind wing cilia chequered with white patches at least as wide as the dark patches; spots of post discal band, particularly those in spaces M_2 and M_3, with their inner edges more or less rounded 18

18. Underside with some shade of yellow to reddish ochreous, with the hind wing discal band and usually most of the other white markings outlined by black lines ..... *hylas* Linnaeus

– Underside always more reddish, with the white markings more weakly or not outlined in black 19

19. Underside of hind wing with the discal band usually weakly outlined black .... *Sappho* Pallas

– Underside of hind wing the discal band not outlined by black 20

20. Upperside white markings with a creamy tinge ..... *soma* Moore

– Upperside white markings without a creamy tinge 21

21. Antennal club with tip of nudum dark brown, barely contrasting with the rest of the club ..... *mahendra* Moore

– Antennal club with tip of nudum yellow-brown to light brown contrasting well with the rest of the club ..... *nata* Moore.

66. *Neptis armandia melba* Evans (Variegated Sailer)

1912. *Neptis melba* Evans. *J. Bombay nat. Hist. Soc.*, **21** : 578.

1969. *Neptis armandia melba* (Evans) : Eliot, *Bull. Brit. Mus. (nat. Hist.)* London, Suppl. **15** : 105

1992. *Neptis antilope elba* Evans 1924 (sic), Haribal, *Butterflies of Sikkim Himalaya*, : 173.

Material examined : Sikkim, 1 ex., no date, (De Nicéville coll.)

Fore wing expanse : 55 mm.

Distribution : India : Sikkim.

Remarks : This subspecies differs from *N. armandia gafuri* Tytler found in Nagaland by the upperside markings white. It is endemic in Sikkim and its status is very rare. It has been included in Schedule-1 (Part–4) of the Indian Wildlife Protection Act.

67. *Neptis radha radha* Moore (Great Yellow Sailer)

1857. *Neptis radha* Moore, *Cat. Lep. Ins. Mus. East India Coy.*, : 165, pl. 4a, fig. 2.

1994. *Neptis radha radha*, Haribal, *Butterflies of Sikkim Himalaya*, : 174.

Material examined : Sikkim, 2 exs, no date, (De Nicéville coll)

Fore wing length : 30-31 mm.

Distribution : India : Sikkim, Assam, and Uttar Pradesh. *Elsewhere* : North-East Myanmar.

Remarks : Haribal (1992) mentioned its occurrence in Kulu (Himachal Pradesh). Its status is rare and its has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

68. *Neptis narayana nana* De Nicéville

1888. *Neptis nana* De Nicéville, *J. Asiat. Soc. Beng.*, **57** (2) : 273-293, 2 pls.

1992. *Neptis narayana nana*, Haribal, *Butterflies of Sikkim Himalaya*, : 174.

Material examined : Sikkim, 1ex., no date, (De Nicéville coll).

Fore wing length : 30 mm.

Distribution : India : Sikkim, Assam and Manipur. *Elsewhere* : Bhutan.

Remarks : This subspecies is distinguished from the nominate one from Kulu to Kumaon by the yellow markings on upperside of wings. Its status is rare and it has been listed in Schedule-II (Part–2) of the Indian Wildlife (Protection) Act.

69. *Neptis manasa manasa* Moore (Pale Hockeystick Sailer)

1857. *Neptis manasa* Moore, *Cat. Lep. Ins. Mus. East India Coy.*, : 165, pl. 4a, fig. 2.

1992. *Neptis manasa manasa*, Haribal, *Butterflies of Sikkim Himalaya*, : 173.

Material examined : Nil.

Wing expanse : 65 mm.

Distribution : India : Sikkim, N. India. *Elsewhere* : Myanmar (South Shan States), North Thailand.

Remarks : Its status is very rare. It has been included in Schedule-1 (Part–4) of the Indian Wildlife Protection Act.

70. *Neptis nycteus* De Nicéville (Hockeystick Sailer)

1886. *Neptis nycteus* De Nicéville, *Butterflies of India. Burmah and Ceylon*, **2** : 203, pl. D. fig. 7 Sikkim.

1969. *Neptis nycteus* De Nicéville : Eliot, *Bull. Brit. Mus. (nat. Hist) Entomology, Suppl*, **15** : 109.

Material examined : Sikkim, 1 ex (damaged) -i-1903 (*De Nicéville coll*).

Fore wing length : 29 mm.

Distribution : India : Sikkim. Elsewhere : Bhutan.

Remarks : The status of this species is very rare and it has been included in Schedule–1 (Part–4) of the Indian Wildlife (Protection) Act.

71. ***Neptis zaida bhutanica*** Tytler (Pale Green Sailer)

1926. *Neptis zaida bhutanica* Tytler, *J. Bombay nat. Hist. Soc.*, **31** : 592, pl. 2, fig. 5

1992. *Neptis zaida bhutanica* Doubleday : Haribal, *Butterflies of Sikkim Himalaya*, : 174.

Material examined : Sikkim, 3 exs, – – 1886 (T.C. Jerdon Coll). Sikkim, 4 exs, no date ; –viii– , (*De Nicèville Coll*). North Sikkim, Chatang, Alt., 2485 m, 1 ex., 27-vii-1959 (*A.G.K. Menon Coll*).

Fore wing length : 33–35mm.

Distribution : India : Sikkim, (North Sikkim), Elsewhere : Bhutan, Nepal.

Remarks : This subspecies differs from *N. zaida manipurensis* Tytler found in Manipur and the nominate one occurring from Pakistan (Muree) to India (Uttar Pradesh : Kumaon) by upperside wing markings ochreous and hind wing central band nearly white. Its status is rare and it has been included in Schedule-2 (Part-II) of the Indian Wildlife (Protection) Act.

72. ***Neptis cartica cartica*** Moore (Plain Sailer)

1872. *Neptia cartica* Moore, *Proc. zool. Soc. Lond.*, : 562.

1992. *Neptis cartica cartica*, Haribal, *Butterflies of Sikkim Himalaya*, : 173.

Material examined : Sikkim (E. Himalaya), 5 exs, (no date), 1 ex., –viii–, 2 exs, –x–, (*De Nicéville coll*). Sikkim, 1 ex, 8 –x– 1880, (no coll).

Fore wing length : 28 – 30 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Assam. *Elsewhere* : North Myanmar, Nepal and Tonkin.

Remarks : This nominate subspecies differs from its counterpart *N. cartica burmana* De Nicéville occurring in South Myanmar and North Thailand (Siam) by upperside markings broad.

73. ***Neptis nashona nashona*** Swinhoe (Rich Sailer)

1896. *Neptis nashona* Swinhoe, *Ann. Mag. nat. Hist.* (6) **17** : 357-363.

1992. *Neptis nashona nashona* : Haribal, *Butterlies of Sikkim Himalaya*, : 458.

Material examined : Nil.

Wing expanse : 65-70 mm.

Distribution : India : Sikkim, Assam. *Elsewhere* : North Myanmar.

Remarks : Evans (1932) treated it as *N. anjana nashona* Swinhoe. Eliot (1969) recognised *N. anjana Moore* and *N. nashona* Swinhoe as two seperate species and as such followed by Haribal (1992) and Varshney (1994). Its status is rare and it has been in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

74. ***Neptis ananta ochracea*** Evans (Yellow Sailer)

1924. *Neptis ananta ochracea* Evans, *J. Bombay nat. Hist. Soc.*, **30** : 79.

1992. *Neptis ananta ochracea*, Haribal, *Butterflies of Sikkim Himalaya*, : 173.

Material examined : Sikkim; North Sikkim, Alt. 1976m, 1ex., 15-v-1959 (*A.G.K. Menon Coll*).

Wing expanse : 28 mm.

Distribution : India : Sikkim (North Sikkim), Manipur, Meghalaya, Nagaland and West Bengal. *Elsewhere* : Bhutan, Myanmar and Nepal.

Remarks : This subspecies is distinguished from the nominate one found from Himachal Pradesh (Chamba) to Uttar Pradesh (Kumaon) by the underside markings dark ferruginous ochreous. Haribal (1992) recorded it in the vicinity of Pashok in Sikkim. Its status is rare and it is included in

Schedule-II (Part-2) of the Indian Wildlife Protection Act.

75. *Neptis namba namba* Tytler (Yellow Sailer)

1915. *Neptis namba* Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 510, pl. 3, fig.

1933. *Neptis ananta namba* Tytler : Evans, *Identification of Indian Butterflies*, : 169.

1969. *Neptis namba namba* : Eliot, *Bull. Brit. Mus. (Nat. Hist.) London, Suppl.* **15** : 100.

Material examined : Nil.

Wing expanse : 55-70 mm.

Distribution : India : Sikkim, Assam, (North East India). *Elsewhere* : North Myanmar and Tonkin.

Remarks : Eliot (1969) mentioned its occurrence in Sikkim. Its status is rare.

76. *Neptis jumbah jumbah* Moore (Chestnut Streaked Sailer)

1857. *Neptis jumbah* Moore, *Cat. Lep. Mus. E. I. Coy.*, 1 : 167.

1969. *Neptis jumbah jumbah* : Eliot, *Bull. Brit. Mus.* (Nat. Hist.), London, Entomology, Suppl. **15** : 81

Material examined : Nil.

Wing expanse : 60-70mm.

Distribution : India : Sikkim, Assam and West Bengal. *Elsewhere* : Myanmar.

Remarks : This nominate subspecies differs from its other counterparts, *viz.*, *N. jumbah nalanda* Fruhstorfer found in Peninsular India and Sri Lanka and *N. jumbah amorosca* (Fruhstorfer) in Andamans by wing expanse of 60-70mm and a discal spot present in space R_s on underside of hind wing. Its status is not rare.

77. *Neptis miah miah* Moore (Small Yellow Sailer)

1857. *Neptis miah Moore, Cat. Lep. Mus. E. I. Coy.*, 1 : 164, pl. 4a, fig. 1

1992. *Neptis miah miah* : Haribal, *Butterflies of Sikkim Himalaya*, : 173.

Material examined : Sikkim, 9 exs, no date (*De Nicéville Coll*); 1 ex, -x-1882, (no date Coll.); 1ex, no further data.

Fore wing length : 25-27 mm.

Distribution : India : Sikkim (North and South Sikkim), Assam. Elsewhere : Bhutan.

Remarks : Only the nominate subspecies is represented in India. Haribal (1992) mentioned its occurrence in North and South Sikkim. Its status is not rare.

78. *Neptis sankara amba* Moore (Broad Banded Sailer)

1858. *Neptis amba* Moore, *Proc. zool. Soc. Lond.*, : 7, pl. 49, fig. 4 male.

1932. *Neptis sankara quilta* Swinhoe : Evans, *Identification of Indian Butterflies*, : 167.

1969. *Neptis sankara amba* Moore : Eliot, *Bull. Brit. Mus.* (*nat. Hist.*), London, Entomology, *Suppl.*, **15** : 91.

Material examined : Sikkim, 5 exs, no date, (De Nicéville Coll.)

Fore wing length : 32-34 mm.

Distribution : India : Sikkim, Assam, Meghalaya and Eastern Himalaya. *Elsewhere* : Nepal and N.E. Myanmar.

Remarks : This subspecies differs from its nominate one found from Kashmir to Kumaon by upperside wing markings white, narrow and spots forming a discal band are well separated.

79. *Neptis harita harita* Moore (Dingiest Sailer)

1874. *Neptis harita* Moore, *Proc. zool. Soc., Lond.*, : 571, pl. 66, fig. 8.

1992. *Neptis harita harita* : Haribal, *Butterflies of Sikkim* Himalaya, : 173

Material examined : Nil.

Wing-expanse : 55-60 mm.

Distribution : India : Sikkim, North-east India. *Elsewhere* : Malaya, Myanmar, North Vietnam and Thailand (Siam).

Remarks : Only the nominate subspecies is found in India. Haribal (1992) followed Evans (1932) regarding its occurrence from Bengal to Myanmar. Presently, distribution of this subspecies has been given after Eliot (1969).

80. ***Neptis pseudovikasi*** (Moore) (Dingy sailer)

1886. *Bimbisara pseudovikasi* Moore, *Lep. Ind,*. **2** : 7, pl. 291, figs 1, 1a-1c.

1932. *Neptia vikasi pseudovikasi* (Moore) : *Identification of Indian Butterflies,* : 168.

1994. *Neptis pseudovikasi (Moore)* : Varshney, *Oriental Insects,* : **28** : 179.

Material examined : Sikkim, 4 exs, no date, 1ex, –v–, 2 exs, –vi–, 1 ex, –vii–, 1 ex, –ix–, 1 ex, –x– (*De Nicéville Coll*).

Fore wing length : 31-33mm.

Distribution : India : Sikkim, Assam, North East India, Uttar Pradesh. *Elsewhere* : North Myanmar and Tonkin.

Remarks : Evans (1932) mentioned its distribution from Kumaon (Uttar Pradesh) to Assam which was followed by Haribal (1992).

81. ***Neptis clinia susruta*** Moore (Clear Sailer)

1872. *Neptis susruta* Moore, *Proc. zool. Soc. Lond.,* : 563, pl. 32, fig. 4.

1932. *Neptis nandina susruta* : Evans, *Identification of Indian Butterflies,* : 167.

1992. *Neptis clinia susruta* : Haribal, *Butterflies of the Sikkim Himalaya,* : 172.

Material examined : Sikkim Terai, 2exs, no date, South Sikkim, Rungeet Valley, 305 m 1 ex, no date (*De Nicéville Coll.*), Sikkim, 5 exs,no date, 2exs, –vi–, 1ex,–v–,3exs, –vi–,2exs –vii–, 1ex, –viii–, 3 exs, –ix–, 1 ex, –xii–, (*De Nicéville coll.*).

Fore wing length : 23-27 mm.

Distribution : India : Sikkim (South Sikkim), Assam, North East India. *Elsewhere* : Laos, Myanmar, Siam, North and South East China (South Yunnan, Hainan, Fukien).

Remarks : Evans (1932) mentioned its occurrence from Sikkim (India) to Myanmar whereas Haribal (1992) stated its distribution from Nepal to Myanmar. Eliot (1969) provided more information on its distribution.

82. ***Neptis yerburii pandoces*** Eliot (Yerbury's Sailer)

1969. *Neptis yerburii pandoces* Eliot, *Bull. Brit. Mus.* (nat. Hist.). London, *Suppl.* **15** : 69.

Material examined : Nil.

Wing expanse : not provided (Eliot, 1969).

Distribution : India : Sikkim (Tumlong), Meghalaya and West Bengal. *Elsewhere* : North East Myanmar and West Thailand (Siam).

Remarks : Eliot (1969) described this subspecies on the basis of specimens collected from localities as mentioned under distribution.

83. ***Neptis hylas varmona*** Moore (Common Sailer)

1872. *Neptis varmona* Moore, *Proc. zool. Soc. Lond.,* : 561.

1881. *Neptis aceris* Lepechin : De Nicèvillie, *J. Asiat. Soc. Beng.*, **50** (2-3) : 58.

1882. *Neptis varmona* Moore : De Nicèvillie, *J. Asiat. Soc. Beng.*, **51** (2-3) : 58.

1969. *Neptis hylas varmona* Moore : Eliot, *Bull Brit. Mus. (nat. Hist.), Entomology. Suppl.*, **15** : 61.

Material examined : Sikkim, 1ex, no date, 1 ex, –vi–1885 (*De Nicéville, O. Moeller coll.*); Sikkim, 6 exs, no date, 2 exs, –vi– (*De Nicéville coll.*). North Sikkim, Rishikhola, alt. 994 m, 1ex, 7 –v–1959; East Sikkim, Dikchu, alt. 542 m, 1 ex, 14-viii– 1959 (*A.K.G.Menon Coll.*)

Fore wing length : 26-28mm.

Distribution : India : Sikkim (East and North Sikkim), Himachal Pradesh, South India to Uttar Pradesh. *Elsewhere* : Sri Lanka.

Remarks : This subspecies differs from its allies, *viz., kamarupa* Moore found in North India, Myanmar, Thailand, North and South Vietnam; *andamana* Moore occurring in Andamans and *nicobarica* Moore found in Car and Central Nicobars by the hind wing upperside bearing evenly curved submarginal band and two submarginal lines obsolete. De Nicéville (1886), Evans (1932) and Haribal (1992) mentioned its occurrence in Sikkim. However, Eliot (1969) considered it to be confined to Peninsular India and Sri Lanka.

84. ***Neptis hylas kamarupa*** Moore (Common Sailer)

1874. *Neptis kamarupa* Moore, *Proc. zool. Soc.* London, : 570.

1932. *Neptis hylas adara* Moore : Evans, *Identification of Indian Butterflies*, : 166

1969. *Neptis hylas kamarupa* : Eliot, *Bull. Mus. (Nat. His.)*, Entomology, London, *Suppl.* **15** : 61.

Material examined : Nil.

Wing expanse : 50-60 mm.

Distribution : India : Sikkim, North India (from Mussorie extending along Himalayan foothills to Assam.). *Elsewhere* : Myanmar, Thailand, South and North Vietnam.

Remarks : This subspeices differs from its counterparts, *viz., varmona* Moore, *andamana* Moore and *nicobarica* Moore by the hind wing upperside submarginal band deflected towards anal angle and underside white bands and spots narrowly margined with black. The occurrence of two subspecies, *kamarupa* and *varmona* in Sikkim may be attributed to the sympatric distribution of their populations. De Nicéville (1886) also mentioned its occurrence in Sikkim.

85. ***Neptis sappho astola*** Moore (Common Sailer)

1932. *Neptis hylas astola* Moore : Evans, *Identification of Indian Butterflies*, : 166.

1872. *Neptis astola* Moore, *Proc. zool. Soc. Lond.*, : 560.

1882. *Neptis emodes* Moore : De Nicéville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 58.

1969. *Neptis sappho astola* Moore : Eliot, *Bull. Brit. Mus. (nat. Hist.)*, Entomology, Suppl. **15** : 6.

Material examined : Sikkim, 1 ex. no date, 1 ex,–x–, 1 ex., –xi, (*De Nicéville coll.*) East Sikkim, Rangli; 2 km east, alt. 900m., 1ex, 21–xii–1995, Rhencock, alt. 1000m, 1ex, 22–xii–1975 (*G.K. Srivastava Party* Coll.)

Fore wing length : 25-26mm.

Distribution : India : Sikkim, (East and South Sikkim), Jammu and Kashmir to Arunachal Pradesh, *Elsewhere* : Myanmar (Karen Hills).

Remarks : Eliot (1969) distinguished *N. sappho* (Pallas) from *N. hylas* (Linnaeus). Now, *N. sappho* is represented in India by a single subspecies, *astola* Moore. De Nicéville (1882) mentioned its occurrence in South Sikkim (Rungeet Valley).

86. ***Neptis soma soma*** Moore (Sullied Sailer)

1858. *Neptis soma* Moore, *Proc. zool. Soc. Lond.*, : 9, pl. 49, fig. 6.

1932. *Neptis yerburyi sikkima*, Evans, *Identification of Indian Butterflies*, : 167.

1992. *Neptis soma soma* Moore : Haribal, *Butterflies of Sikkim Himalaya*, : 172.

Material examined : Sikkim, 6 exs, no date, (*De Nicéville coll*). Sikkim, 2 exs, no date, 2 exs, –v–1883 (*De Nicéville purchased*).

Fore wing length : 29-30 mm.

Distribution : India : Sikkim (South Sikkim), Eastern Himalaya and Assam.

Remarks : This nominate subspecies differs from *N. soma palnica* Eliot found in South India (Palni Hills, Travancore and Trichinopoly) by white markings with creamy tinge wider especially the cell streak and streak beyond cell. De Nicéville (1882) recorded it from South Sikkim (Rungeet Valley). Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

87. ***Neptis mahendra mahendra*** Moore (Himalayan Sailer)

1872. *Neptis mahendra* Moore : *Proc. zool. Soc. London, :* 560, pl. 32, fig. 3. N.W. Himalayas.

1969. *Neptis mahendra mahendra* Moore : Eliot, *Bull. Brit. Mus. (Nat. Hist.)*, Entomology, *Suppl.* **15** : 79.

1992. *Neptis mahendra* Moore : Haribal, *Butterflies of Sikkim Himalaya,* : 171.

Material examined : Nil.

Wing expanse : 55-60 mm.

Distribution : India : Sikkim, Uttar Pradesh. *Elsewhere* : Pakistan (Chitral) and West Nepal.

Remarks : Haribal (1992) listed this species from Sikkim.

88. ***Neptis nata adipala*** Moore (Sullied Sailer)

1872. *Neptis adipala* Moore. *Proc. zool. Soc London* : 563, pl. 32. fig. 8, male, Khasia Hills.

1932. *Neptis soma soma* Moore : Evans, *Identification of Indian Butterflies,* : 166.

1969. *Neptis nata adipala,* Eliot, *Bull. Brit. Mus. (nat. Hist.)* Entornology, *Suppl* **15** : 73

Material examined : Sikkim, 1ex., 24. iv. 1884, 6 exs., –vi–, 2 exs., no date, Sikkim, Terai, 2exs, no date (De Nicéville coll.)

Fore wing length : 25-27 mm.

Distribution : India : Sikkim, Assam, Uttar Pradesh and Eastern Himalaya. *Elsewhere :* Laos, Myanmar, South Yannan, Tonkin and Thailand.

Remarks : This subspecies is distinguished from its counterparts, *viz., peilei* Eliot occurring in North West Himalaya, *hampsoni* Moore in South India and *evansi* Eliot in Andamans by upperside hind wing postdiscal spots conjoined.

XXXVII. Genus ***Moduza*** Moore

1881. *Moduza* Moore, *Lep. Ceylon,* **1** (2) : 47.

A single species, *Moduza procris (Cramer)* represents this genus in India.

89. ***Moduza procris procris*** (Cramer) (Commander)

1777. *Papilio procris* Cramer, *Pap. exot.,* **2** : pl. 106, figs. E.F.

1882. *Limenitis procris*.(Cramer) : De Nicéville, *J. Asiat. Soc. Beng.,* **51** (2-3) : 58.

1992. *Moduza procris procris :* Haribal, *Butterflies of Sikkim Himalaya,* : 178.

Material examined : Sikkim, 1ex., no date, 1 ex., –viii–, (De Nicéville coll.), Sikkim, 1ex. no date (purchased).

Fore wing length : 31-33 mm.

Distribution : India : Sikkim, (South Sikkim), Uttar Pradesh to Arunachal Pradesh. *Elsewhere* : Myanmar.

Remarks : This nominate subspecies differs from *M. procris undifragus* (Fruhstorfer) occurring in South India and *M. procris anarta* (Moore) in Andamans by the presence of a large white spot at end cell, wider bands on upperside of wings and, underside of wings paler and more irrorated with violet. De Nicéville (1882) recorded it from South Sikkim (Rungeet Valley). Haribal (1992) mentioned its occurrence in Lower Teesta Valley.

XXXVIII. Genus ***Athyma*** Westwood

1850. *Athyma* Westwood, In Doubleday's : *Gen. Diurn. Lep.,* : (2) 272.

Of the 13 species of this genus occurring in Inda, ten are dealt with from Sikkim.

Key to species

1. Cell closed in fore wing 2
– Cell open in fore wing 7
2. Sexes dissimilar. In male, upperside of fore wing with discal spots from dorsum to spaces Cu_{1b} or Cu_{1a} conjoined and directed to apex or costa 3
– Sexes similar. On upperside of fore wing discal spot in space Cu_{1b} well separated from spot in interspace 1A+2A, no discal spot in interspace Cu_{1a}, lower part of discal band directed to mid termen 6
3. Upperside of fore wing with prominent discal spot in interspace Cu_{1a}. In female, upperside of wings with white or sullied brownish bands 4

– Upperside of fore wing without a promient discal spot in space Cu_{1a}. In female, upperside of wings with broad orange markings normally arranged 5

4. Underside of fore wing with the discal streak twice divided by a brown line across cell; a triangular spot, at base of space M_2 beyond cell well separated .... *selenophora* (Kollar)

– Underside of fore wing with the discal streak entire and hardly separated from the spot at end cell in interspace M_3 .... *zeroca* (Moore)

5. In male, underside of fore wing with discal streak much broken. In female, discal spots in spaces M_1, M_2 forming a continuous and even edged apical band ..... *nefta* (Cramer)

– In male, underside of fore wing with the discal streak continuous but upper edge irregular. In female, a small discal spot in interspace M_3 and against outer edge spot in space Cu_{1b} .. ..*cama* (Moore)

6. Upperside of fore wing with a large triangular white spot just beyond apex of cell .... *opalink* (Kollar)

– Upperside of fore wing without a larger triangular white spot just beyond apex of cell ..... *ranga* (Moore)

7. Eyes smooth 8

– Eyes hairy..... *jina* Moore

8. Upperside of fore wing with discoidal streak divided ..... *perius* (Linnaes)

– Upperside of fore wing discoidal streak not divided 9

9. A spot present beyond apex of discal streak ..... *asura* Moore

– No spot beyond apex of discoidal streak .... *pravara* Moore

90. *Athyma selenophora selenophora* (Kollar) (Small Staff Sergeant)

1848. *Limenitis selenophora* Kollar, Huegel's Kaschmir, 4 (2) : 426, pl. 7, figs. 1, 2, male.

1932. *Pantoporia selenophara* (Kollar) : Evans, *Identification of Indian Butterflies*, : 162.

1992. *Parathyma selenophora selenophora* (Kollar) : Haribal, *Butterflies of Sikkim of Himalaya*, : 177.

1997. *Athyma selenophra selenophora* (Kollar) : Gupta, *State Fauna Series* 3 : *Fauna of West Bengal*, Part–7 : 587.

Material examined : Sikkim, 14 exs, no date, 1ex., –vi–, 1 ex, –x–, South Sikkim, Rangeet valley, 1ex, no date, (*De Nicéville coll.*).

Fore wing length : 28-32mm.

Distribution : India : Sikkim (East, North and South Sikkim), Uttar Pradesh to Arunachal Pradesh. *Elsewhere* : Myanmar.

Remarks : The nominate subspecies differs from *A. selenophora kanara* Evans found in South India by upperside of wings markings darker and bearing narrow bands in male and broad white markings in female. De Nicéville (1881) recorded it from South Sikkim (Rungeet vallay). Haribal (1992) reported its occurrence in East Sikkim (Tumin Khola) and North Sikkim (Tholung bridge).

91. *Athyma zeroca* Moore (Small Staff Sergeant)

1872. *Athyma zeroca* Moore, *Proc. zool. Soc. Lond.*, : 564.

1932. *Pantoporia zeroca* (Moore) : Evans, *Identification of Indian Butterflies*, : 162.

1992. *Parathyma zeroca* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 177

1997. *Athyma zeroca* : Gupta : *Zool. Surv. India, State Fauna Series* 3, *Fauna of West Bengal*, Part-7 : 587-588.

Material examined : Sikkim, 3exs, –vi–, 9exs, no date, (*De Nicéville coll*); Sikkim, 3exs, no date (*De Nicéville* purchased).

Fore wing length : 26-29mm.

Distribution : India : Sikkim, Uttar Pradesh to Arunachal Pradesh. *Elsewhere* : Myanmar.

Remarks : De Nicéville (1882, 1883) recorded it from Sikkim.

92. *Athyma nefte inara* (Doubleday) (Colour Sergeant)

1850. *Limenitis inara* Doubleday, In Doubleday, *Gen. diurn. Lep.*, **2** : pl. 34, fig. 30.

1882. *Athyma inara* (Doubleday Hewitson) : De Nicéville, *J. Asiat. Soc. Beng.*, **52** (2-3) : 54.

1932. *Pantoporia nefte inara* (Doubleday) : *Identification of Indian Butterflies*, : 162.

1992. *Parathyma nefte inara* (Doubleday & Hewitson) : Haribal, *Butterflies of Sikkim Himalaya*, : 175.

1997. *Athyma nefte inara*. Gupta, *Zool. Surv. India, State Fauna Series* 3, *Fauna of West Bengal*, Part-7 : 588.

Material examined : Sikkim, 2exs, –viii–, 1ex, –x–9 4exs, no date (De Nicèville coll); Sikkim, 1ex, no further data. East Sikkim, (Rangpo), alt, 400m, 1ex, 26. xii-1975. (*G.K. Srivastava & Party Coll*).

Distribution : India : Sikkim, (East Sikkim), Orissa, Sikkim to Arunachal Pradesh, South India and West Bengal. *Elsewhere* : North Myanmar.

Remarks : Previously, this species is known from Sikkim.

93. *Athyma cama* Moore (Orange Staff Sergeant)

1857. *Athyma cama* Moore, *Cat. Lep. Ins. Ms. East India Coy*, **1** : 174, pl. 5, fig. 5, male, female.

1932. *Pantoporia cama* (Moore) : Evans, *Identification of Indian Butterflies*, : 162.

1992. *Parathyma cama* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 175.

1997. *Athyma cama* : Gupta, *State Fauna Series* 3, *Fauna of West Bengal*, **7** : 588.

Material examined : Sikkim, 1ex, no date (De Nicéville purchased), Sikkim, 4 exs, no date, 2 exs, –x–, 1 ex, –xii– (*De Nicéville coll.*).

Fore wing length : 30-32 mm.

Distribution : India : Sikkim, Uttar Pradesh to Arunachal Pradesh, West Bengal. *Elsewhere* : North Myanmar.

Remarks : Haribal (1992) recorded it from Sikkim.

94. *Athyma opalina orientalis* Elwes (Himalayan Sergeant)

1888. *Athyma orientalis* Elwes, *Trans. ent. Soc. Lond.*, : 354, pl. 9, fig. 4.

1932. *Pantoporia opalina orientalis* (Elwes) : Evans, *Identification of Indian Butterflies*, : 163.

1992. *Parathyma opalina orientalis* (Elwes) : Haribal, *Butterflies of Sikkim Himalaya*, : 177

1997. *Athyma opalina orientalis* : Gupta , *Zool. Surv. India, State Fauna Series 3 : Fauna of West Bengal*, **7** : 589.

Material examined : Sikkim, 2exs, no date, 1ex, –iii– (*De Nicéville coll.*) North Sikkim, alt. 1576m, Singhik, 2exs, 6–viii–1959, Naga, 1515m, 1ex, 2–viii–1959 (*A.G.K. Menon coll.*).

Fore wing length : 30-33mm.

Distribution : India : Sikkim (North Sikkim), Arunachal Pradesh, West Bengal. *Elsewhere* : Myanmar.

Remarks : This subspecies is distinguished from the nominate subspecies occurring from Jammu & Kashmir to Uttar Pradesh by the presence of often sullied narrow white bands on upperside of wings. Earlier, this subspecies is known from Sikkim.

95. *Athyma ranga ranga* Moore (Blackvein Sergeant)

1857. *Athyma ranga* Moore, *Cat. Lep. Ins. Mus. East India Coy*, 1 : 175, pl. 5a, fig. 6 (male)

1881. *Athyma mahesa* Moore : De Nicéville, *J. Asiat. Soc. Beng.*, **50** (1) : 58.

1932. *Pantoporia ranga ranga* (Moore) : Evans, *Identification of Indian Butterflies*, : 163.

1992. *Parathyma ranga ranga* : Haribal, *Butterflies of Sikkim Himalaya*, : 176.

Material examined : Sikkim, 2 exs, no date, 7 exs, –iii–, 1 ex, –viii–, 3 exs, –x–, 1ex, –xii– (*De Nicéville coll*).

Fore wing length : 30-33mm.

Distribution : India : Sikkim (East, South and West Sikkim), Arunachal Pradesh and West

Bengal. *Elsewhere* : Myanmar.

Remarks : In this nominate subspecies, the upperside of hind wing in male bears sullied postdiscal and marginal spots, whereas in *A. ranga karwara* Fruhstorfer found in South India, only discal band is present but post discal band is absent in hind wing of male. De Nicéville (1881) recorded it from South Sikkim (Rungeet Valley). Haribal (1992) mentioned its occurrence in East Sikkim (Rangpo), South Sikkim (Rungeet Valley) and West Sikkim (Sanklang in Teesta Valley). Evans (1932) and Haribal (1992) mentioned its status 'rare' and 'not rare' respectively. It has been included in Schedule-II (Part–2) of the Indian Wildlife Protection Act.

96. ***Athyma jina jina*** Moore (Bhutan Sergeant)

1857. *Athyma jina* Moore, *Cat. Lep. Mus, E.I.C.*, **1** : 172.

1932. *Pantoporia jina jina* (Moore) : Evans, *Identification of Indian Butterflies*, : 164.

1992. *Parathyma jina jina* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 177.

Material examined : Sikkim, 2 exs, –. – 1868 (no coll), Sikkim, 8 exs, no date (De Nicéville *coll.*) Sikkim, 1 ex, –iv–, (No coll.) North Sikkim, Naga, alt. 1515m, 1ex, 2–viii–1959 (*A.G.K. Menon coll.*)

Fore wing length : 29-32 mm.

Distribution : India : Sikkim (North Sikkim) *Elsewhere* : Myanmar and Nepal.

Remarks : This nominate subspecies differs from its counterpart i.e. *A. jina jinoides* Moore found in North East Myanmar by upperside of wings bearing large sullied markings. It is a definitive record from North Sikkim. Its status is very rare and it has been included in Schedule–1 (Part–4) of the Indian Wildlife (Protection) Act.

97. ***Athyma perius*** (Linnaeus) (Common Sergeant)

1758. *Papilio perius* Linnaeus, *Syst. nat.* **10** : 471.

1882. *Athyma leucothoe* Linnaeus : De Nicéville. *J. Asiat. Soc. Beng.*, **51** (2-3) : 59.

1932. *Pantoporia perius* (Linnaeus) : Evans, *Identification of Indian Butterflies*, : 164.

1992. *Parathyma perius* (Linnaeus) : Haribal, *Butterflies of Sikkim Himalaya*, : 176.

1997. *Athyma perius* (Linnaeus) Gupta, *Zool. Surv. India, State Fauna Series : 3, Fauna of West Bengal, Part* : **7** : 587.

Material examined : Sikkim, 1ex, 16–viii–1879, 1ex, no date, (*De Nicéville coll.*).

Fore wing length : 31mm.

Distribution : India : Sikkim (North and South Sikkim) Himachal Pradesh. *Elsewhere* : Myanmar and Nepal.

Remarks : This species is widely distributed in India. Haribal (1992) mentioned its occurrence in North Sikkim (Ryngym Monastery) and South Sikkim (around Tashiding)

98. ***Athyma asura asura*** Moore (Studded Sergeant)

1857. *Athyma asura* Moore, *Cat. Lep. Mus. E.I.C.*, **1** : 171 pl. 5a, 1

1932. *Pantoporia asura asura* (Moore) : Evans, *Identification of Indian Butterflies*, : 164.

1992. *Parathyma asura asura* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 176

1994. *Athyma asura* (Moore) : Varshney, *Oriental Insects*, **28** : 180.

Material examined : Nil.

Wing expanse : 65-75 mm.

Distribution : India : Sikkim and Himachal Pradesh. *Elsewhere* : Myanmar.

Remarks : This nominate subspecies is distinguished from its ally *A. asura idita* Moore found in Myanmar by the underside of hind wing bearing a postdiscal band of white spots, each with a black spot in the centre. Its status is rare and its has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

99. ***Athyma pravara acutipennis*** (Fruhstorfer) (Unbroken Sergeant)

1912. *Pantoporia pravara acutipennis* Fruhstorfer, In Seitz : *The Macrolepdoptera of the World*, **9** : 624

1994. *Athyma pravara acutipennis* (Fruhstorfer) : Varshney, *Oriental Insects*, **28** : 180

Material examined : Sikkim : South Sikkim, Tashiding, 1 ex, 29 –ix– 1959 (*B.K. Tikadar coll*).

Fore wing length : 28mm.

Distribution : India : Sikkim (South Sikkim) Assam and Nagaland. *Elsewhere* : Myanmar.

Remarks : This subspecies has a unbroken streak in the cell on upperside of fore wing. *A pravara acutipennis* constitutes a definitive record from South Sikkim (Tashiding) and a first report of its occurrence in Sikkim. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife Protection Act.

XXXIX. Genus ***Parasarpa*** Moore

1898. *Parasarpa* Moore, *Lep. indica*, **3** (32) : 146.

This genus is represented in India by two species *viz., Parasarpa zayla* Doubleday and *P. duda* (Westwood).

Key to species

Upperside of fore wing with a broad yellow discal band and hind wing with a silvery white discal band present ..... *zayla* (Doubleday)

– Upperside of fore and hind wing with a broad white discal band. .....*dudu* (Westwood)

100. ***Parasarpa zayla*** (Doubleday) (Bicolour Commodore)

1850. *Liminitis zayla* Doubleday, In Doubleday, *Westw. & Hew. Gen. diurn. Lep.*, **2** : 276, pl. 35, fig. 4.

1994. *Parasarpa zayla* (Doubleday) : Varshney, *Oriental Insect*, **28** : 181.

Material examined : Sikkim, 1ex, –vii–, 1 ex, –viii–1886, 1 ex, no date, (De Nicéville coll).

Fore wing length : 41-42 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Assam, Meghalaya and West Bengal. *Elsewhere* : Bangladesh.

Remarks : Haribal (1992) stated its record near Darjiling without any reference to Sikkim.

101. ***Parasarpa dudu*** (Westwood) (White Commodore)

1850. *Liminitis dudu* Westwood, In Doubleday, Westw. & Hew. *Diurn. Lep.*, **2** : 276.

1994. *Parasarpa dudu* (Westwood) : Varshney, *Oriential Insects*, **28** : 181

Material examined : Sikkim, 1 ex., –v–, 1ex, no date, (*De Nicéville coll*)., Sikkim, 2exs, no date, (*L. Mandelli*, purchased)

Fore wing length : 37-38mm.

Distribution : India : Sikkim (West Sikkim), Assam, Meghalaya, Nagaland. *Elsewhere :* Bangladesh, Myanmar and Nepal.

Remarks : Haribal (1992) recorded this species from West Sikkim. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

XL. Genus ***Sumalia*** Moore

1898. *Sumalia* Moore, *Lep. Ind.*, **3** (32) : 146, 150.

Two species, *viz., Sumalia daraxa* (Doubleday) and *S. zulema* (Doubleday) of this genus known from India are dealt with from Sikkim.

Key to species

A broad pale green discal band present on upperside of wings.....*daraxa* (Doubleday)

A broad white discal band present on upperside of wings ..... *zulema* (Doubleday)

102. ***Sumalia daraxa*** (Doubleday) (Green Commodore)

1850. *Liminitis daraxa* Doubleday, In Doubleday : *Westw. & Hew. Gen. diurn. Lep.*, **2** : 276, pl. 34, fig. 4.

1994. *Sumalia daraxa* (Doubleday) : Varshney, *Oriental Insects*, **28** : 181.

Material examined : Sikkim, 1ex, –vii–, 2exs, –ix–, 2exs, no date, (De Nicéville coll.), Sikkim, 1 ex, no date, (E. Barlow coll.).

Fore wing length : 30-31 mm.

Distribution : India : Sikkim (East and West Sikkim), Arunachal Pradesh, Assam, Meghalaya, Nagaland, Uttar Pradesh and West Bengal. *Elsewhere* : Bangladesh, Bhutan, Myanmar and extending to Malay Peninsula.

Remarks : Haribal (1992) observed this species in East Sikkim (Rakadong, Rangpo and Tumin Khola) and West Sikkim.

103. ***Sumalia zulema*** (Doubleday) (Scarce White Commodore)

1850. *Limenitis zulema* Doubleday, In Doubleday, *Westw. & Hew., Gen. diurn. lep.*, **2** : 276, pl. 34, fig. 1.

1994. *Sumalia zulema* (Doubleday) : Varshney, *Oriental Insects*, **28** : 181.

Material examined : Sikkim, 1ex, –. –1868, (*T.C. Jerdon* Coll.) Sikkim, 1ex, (L. Mandelli, purchased); Sikkim, 2exs, no date, 1ex, –. –1888 (*De Nicéville coll*).

Fore wing length : 39-40 mm.

Distribution : India : Sikkim, Meghalaya and West Bengal. *Elsewhere* : Bhutan and Myanmar.

Remarks : Haribal (1992) reported this species under the genus *Limenitis* from Sikkim. Its status is very rare. It has been included in Schedule-1 (Part-4) of the Indian Wildlife (Protection) Act.

XLI. Genus ***Auzakia*** Moore

1898. *Auzakia* Moore, *Lep. Indica*, **3** (32) : 146, 148.

This genus is represented in India by a single species, *Auzakia danava* (Moore).

104. ***Auzakia danava*** (Moore) (Commodore)

1857. *Liminitis danava* Moore, *Cat. Lep. Mus. East. India Cog.*, **1** : 180, pl. 6a, fig. 2.

1994. *Auzakia danava* (Moore) : Varshney, *Oriental Insects*, **28** : 182.

Material examined : Sikkim, 3exs, no date, (De Nicéville coll), Sikkim, 1 ex, no further data.

Fore wing length : 40-41 mm.

Distribution : India : Sikkim (West Sikkim), Himachal Pradesh to Arunachal Pradesh. *Elsewhere* : Myanmar.

Remarks : Haribal (1992) recorded it from West Sikkim and considered its status not rare. Evans (1932) mentioned its status rare. This species has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

XLII. Genus ***Neurosigma*** Butler

1868. *Neurosigma* Butler, *Proc. zool. Soc. London*, (3) : 615.

This monotypic genus is represented in India by a species, *Neurosigma siva* (Westwood).

105. ***Neurosigma siva*** (Westwood) (Panther)

1850. *Adolias siva* Westwood, *Gen. diurn. Lep.*, **2** : 291.

1992. *Neurosigma doubledayi*, (Westwood) : Haribal, *Butterflies of Sikkim Himalaya*, : 180.

1994. *Neurosigma siva*, Varshney, *Oriental Insects*, **28** : 183.

Material examined : Sikkim, 2exs, –. –1868 (*T.C. Jerdon coll.*), Sikkim, 3exs, no date, (*De Nicéville coll.*), Sikkim, no date, 1ex, no date, 1ex, (Purchased).

Fore wing length : 41-43mm.

Distribution : India : Sikkim, Assam, Meghalaya and Nagaland. *Elsewhere* : Bangladesh, Bhutan and Nepal.

Remarks : The species exhibits variation regarding extent and prominence of spots and other markings on wings. Its status is rare and it has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

XLIII. Genus ***Abrota*** Moore

1857. *Abrota* Moore, In Horsfield & Moore, *Cat. Lep. Ins. Mus. East India Coy.*, (1) : 176.

A single species, *Abrota ganga* Moore represents this genus in India.

106. ***Abrota ganga*** Moore (Sergeant Major)

1857. *Abrota ganga* Moore, *Cat. Lep. Ins. Mus. East India Coy.*, **1** : 178, pl. 6a, fig. 1, male.

1994. *Abrota ganga* : Varshney, *Oriental Insects*, **28** : 183.

Material examined : Sikkim, 2ex, –. –1868 (*T.C. Jerdon coll.*), Sikkim, 1 ex, no date, (*B. cholorondley coll.*); Sikkim, 9exs, no date, 1 ex, –iv–, 1 ex, –vi–, 1 ex, –viii– (*De Nicéville coll*).

Fore wing length : 38-42 mm.

Distribution : India : Sikkim, Arunachal Pradesh. *Elsewhere* : Bhutan.

Remarks : The upperside of wings is rich yellowish brown in male and dark brown in female.

XLIV Genus ***Parthenos*** Huebner

1814. *Parthenos* Huebner, *Verz., bekannt. Schmett.*, (3) : 38.

This genus is represented in India by a single species, *Parthenos sylvia* Cramer.

107. ***Parthenos sylvia gambrisius*** (Fabricius) (Clipper)

1787. *Papilio gambrisius* Fabricius, *Mantissa Ins.* **2** : 12.

1992. *Parthenos sylvia gambrisius* (Fabricius) : Haribal, *Butterflies of Sikkim Himalaya*, : 179.

Material examined : Nil.

Wing expanse : 95-110mm.

Distribution : India : Sikkim, Arunachal Pradesh, Assam, Manipur and Bengal. *Elsewhere* : Myanmar.

Remarks : There are four subspecies of *Parthenos sylvia* known in India. This subspecies differs from its counterparts, *viz., virens* Moore occurring in South India, *roepstorfii* Moore in Andamans and *nila* Evans in South Nicobars by the upperside of wings being pale bluish green, and, in dry season form upperside of fore wing with apex whitish and white spots more contiguous.

XLV. Genus ***Lebadea*** Felder

1861. *Lebadea* Felder, *Nova Acta Leop. Carol.*, **28** (3) : 28.

This genus is represented in India by a single species, *Lebadea martha* Fabricius.

108. ***Lebadea martha martha*** (Fabricius) (Knight)

1787. *Papilio martha* Fabricius, *Mant. Ins.*, **2** : 56, female.

1881. *Lebadea ismene* Doubleday & Hewitson : De Nicéville, *J. Asiat. Soc. Beng.*, **50** (1) : 58.

1992. *Labadea martha martha*, Haribal, *Butterflies of Sikkim Himalaya*, : 179.

Material examined : Sikkim, 2 exs, no date (purchased). Sikkim, 1 ex, –iv–, 1ex, –viii–, 1 ex, –ix–, 1 ex, –x–, South Sikkim, Runjeet Valley, 2ex, no date (De Nicéville coll.).

Fore wing length : 32-34 mm.

Distribution : India : Sikkim (North and South Sikkim). *Elsewhere* : Bhutan and Nepal.

Remarks : This nominate subspecies differs from *L. martha ismene* (Doubleday & Hewitson) found from Assam – Manipur by upperside of wings bearing broader bands, inner edge of vertical spot in area Cu_{1b}, discal band in hind wing filling basal area. De Nicéville (1881) recorded it from south Sikkim (Rungeet Valley). Haribal (1992) mentioned its occurrence in North Sikkim (Singhik).

XLVI. Genus ***Symphaedra*** Huebner

1818. *Symphaedra* Huebner, *Zutr., z. Samml. Exot. Schmett*, **1** : 7.

The genus is represented in India by a single species, i.e. *Symphaedra nais* (Forster).

109. ***Symphaedra nais*** (Forster) (Baronet)

1771. *Papilio nais* Forster, *Nov. Spec. Ins. Cont.*, **1** : 73.

1932. *Euthalia nais* (Forster) : Evans, *Identification of Indian Butterflies*, : 157

1994. *Symphaedra nais* (Forster) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Sikkim, 1 ex, no date, (*De Nicéville coll.*)

Fore wing length : 32 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Maharashtra, Orissa, South India, Uttar Pradesh and West Bengal.

Remarks : Haribal (1992) did not observe this species in Sikkim but stated that it was recorded from lower hot valleys.

XLVII. Genus ***Tanaecia*** Butler

1869. *Tanaecia* Butler, *Proc. zool. Soc. Lond.*, (3) : 610.

The genus is represented in India by five species of which three are dealt with from Sikkim.

Key to species

1. Fore wing with apex produced and outer margin falcate below apex. Outer margin of hind wing slightly angled at vein Cu_{1a} thereafter straight upwards ..... *lepidea* (Butler)
- Fore wing not falcate, outer margin of hind wing evenly rounded.. 2
2. Upperside of wings with two dark discal lines composed of diffused spots .... *julii* (Bougainville)
- Upperside of wings with discal bands consisting of conspicuous connected crescents..... ..... *jahnu* (Moore)

110. ***Tanaecia lepidea lepidea*** (Butler) (Grey Count)

1868. *Adolias lepidea* Butler, *Ann. Mag. nat. Hist. Lond.*, (4) : 71.

1932. *Euthalia lepidea lepidea* (Butler) : *Identification of Indian Butterflies*, : 150.

1992. *Tanaecia lepidea lepidea* : Haribal, *Butterflies of Sikkim Himalaya*, : 180.

Material examined : Sikkim, 2 exs, no date (Purchased ?).

Fore wing length : 32-33 mm.

Distribution : India : Sikkim, Uttar Pradesh to Arunachal Pradesh.

Remarks : Haribal (1992) mentioned erroneously its occurrence from Kulu to Assam. The nominate subspecies differs from *Tanaecia lepidea miyana* (Fruhstorfer) found in North Kanara and Orissa by upperside of wings with pale grey borders. Its status is not rare but it has been listed in Schedule – II (Part–2) of the Indian Wildlife (Protection) Act.

111. ***Tanaecia julii appiades*** (Ménétriés) (Common Earl)

1857. *Adolias appiades* Ménétriés, *Enum. Crop. An. Mus. Peter, Lep.*, **2** : 120, pl. 9, fig. 4.

1932. *Euthalia julii appiades* (Ménétriés) : *Identification of Indian Butterflies*, : 151.

1992. *Tanaecia julii appiades*, Haribal, *Butterflies of Sikkim Himalaya*, : 181.

Material examined : Sikkim, 1ex, no date (Purchased ?); Sikkim, 1ex, no further data; Sikkim, 1ex, –viii–, 2exs –x–, 5 exs, no date (*De Nicéville Coll.*); South Sikkim, Rungeet Valley, 1ex, no date, (*De Nicéville coll.*)

Fore wing length : 33-38mm.

Distribution : India : Sikkim (South Sikkim) and Uttar Pradesh.

Remarks : This subspecies is differentiated from *T. julii adima* Moore found in Meghalaya and *T. julii sedeva* (Moore) in Manipur and North Myanmar by upperside of hind wing in male with blue margin to outer discal band and reaching vein M_1, female rather pale brown with whitish spots at the upper end of each discal band in area M_1; underside of hind wing with tornal half green and female all bluish except apex. Haribal (1992) mentioned its occurrence erroneously in Himachal Pradesh (Kulu).

112. ***Tanaecia jahnu jahnu*** (Moore) (Plain Earl)

1857. *Adolias jahnu* Moore, *Cat. Lep. Mus. East India Coy.*, **1** : 192.

1881. *Adolias sananda* Moore : De Nicéville, *J.Asiat. Soc. Beng.*, **50** (1) : 58.

1932. ***Euthalia jahnu*** (Moore), *Identification of Indian Butterflies*, : 152.

1992. *Tanaecia jahnu jahnu* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 181.

Material examined : Sikkim, 2ex, no date, 1ex, –x– (*De Nicéville coll.*); South Sikkim, Rungeet Valley, 2exs, no date, (*De Nicéville* coll).

Fore wing length : 33-35mm.

Distribution : India : Sikkim (South Sikkim), Arunachal Pradesh, Assam and West Bengal. *Elsewhere* : Bangladesh and North Myanmar.

Remarks : Only the nominate subspecies is found in India. De Nicéville (1881) recorded it from South Sikkim (Rungeet Valley).

XLVIII Genus ***Euthalia*** Huebner

1819. *Euthalia* Huebner, *Verz. bekannt. Schmett.*, (3) : 41.

The genus includes more than 12 species in India, of which, seven are recorded from Sikkim.

Key to species

1. Upperside or underside of fore wing never with two detached apical white spots on either side of vein R_5, just behind origin of vein R_4 unless forming part of pale band in female; upperside of fore wing with basal markings in area 1A + 2A consisting of a well defined ring under origin of vein Cu_{1b} reaching mid 1A+2A as well as a dark dot at the extreme base.. 2

– Upperside or underside of fore wing always with two detached apical white spots on either side of vein R_5 just before origin of vein R_4. Upperside of fore wing basal markings on area 1A+2A consisting of a spot, not a ring, under origin of vein Cu_{1b} may be replaced by a ring 4

2. Underside of fore wing without basal markings in area in 1A+2A or only a single spot or dash under origin of vein Cu_{1b} and only very rarely a spot present at the extreme base .... *telchinia* (Ménétriés)

– Underside of fore wing at base in area 1A+2A bearing always a ring or round spot under origin of vein Cu_{1b} with usually a second below it. 3

3. Apex of fore wing pointed; in male hind wing with tornus produced and termen convex. Male dark brown with a discal band on upperside of fore wing and a broad bluish grey margin on upperside of hind wing. Female paler brown with usual two dark discal lines .... *kesava* (Moore)

– Apex of fore wing highly falcate; in male, hind wing at tornus produced and termen being concave before tornus. Upperside of wings in male ash grey, male less suffused with greenish. In female curved row of small spots present beyond cell from area Cu_{1a} to costa .... *anosia* (Moore)

4. Upperside of wings dark green with red spots on hind wing and in cell of fore wing .... *lubentina* (Cramer)

– Upperside of wings without any of the red spots 5

5. Upperside of hind wing with a outer discal band of small and usually well defined and well separated spots ..... *aconthea* (Cramer)

– Upperside of hind wing with outer discal line continuous or absent but never of well defined and separated small spots. 6

6. Upperside of fore wing with a white streak at termen in area R_5, extending with areas M_1 and R_4 on underside of fore wing..... ..... *jama* (Felder)

– Upperside of fore wing without any white steak in area R_5 ..... *phemius* (Doubleday)

113. ***Euthalia telechina*** (Ménétriés) (Blue Baron)

1857. *Adolias telchinia* Ménétriés, *Enum. Carp. Anim. Mus. Petrop, Lep.*, **2** : 120, pl. 9, fig. 3.

1994. *Euthalia telechinia* (Ménétriés) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Sikkim, 1ex, no date, (*W.H. Evans Coll*).

Fore wing length : 36mm.

Distribution : India : Sikkim (East and South Sikkim), Arunachal Pradesh, Assam, Karnatata and West Bengal. *Elsewhere* : Nepal and N. Myanmar.

Remarks : De Nicéville (1883) recorded it at altitude between 305-610 m in South Sikkim. Haribal (1992) observed it in East Sikkim (Gangtok). Its status is very rare. This species has been included in Schedule–I (Part–4) of the Indian Wildlife (Protection) Act.

114. ***Euthalia kesava arhat*** Fruhstorfer (Powdered Baron)

1911. *Euthalia arhat* Fruhstorfer, In Seitz : *Macroepidoptera of the World,* **9** : 530.

1992. *Euthalia kesava arhat* : Haribal *Butterflies of Sikkim Himalaya,* : 181.

Material examined : Sikkim, 1ex, 14. iv. 1885, 1 ex, –iv–, 2 exs, –x–, 4 exs, no date, South Sikkim, Rungeet Valley, 1 ex. (*De Nicéville coll*); Sikkim, 1 ex, no date, (*De Nicèvelle purshased*); Sikkim, 1ex, no date, (*Raynold coll.*)

Fore wing length : 28-33mm.

Distribution : India : Sikkim (South Sikkim).

Remarks : This subspecies differs from the nominate one occurring from Assam to North Myanmar by the male being pale and in female pale discal band less developed. De Nicéville (1881, 1882) recorded it as *Adolias kesava* Moore and *Euthalia kesava* (Moore) from South Sikkim (Rungeet Valley), respectively. Haribal (1992) mentioned its distribution from North East India to Myanmar erroneously. This subspecies is endemic to Sikkim.

115. ***Euthalia anosia saitaphernes*** Fruhstorfer (Grey Baron)

1911. *Euthalia saitaphernes* Fruhstorfer, In Seitz, *Macrolepidoptera of the World,* **9** : 647.

1992. *Euthalia anosia saitaphernes* : Haribal, *Butterflies of Sikkim Himalaya,* : 181.

Material examined : Nil.

Wing expanse : 70-85 mm.

Distribution : India : Sikkim.

Remarks : This subspecies is distinguished from the nominate one found from India (Assam) to Myanmar by the presence of prominent white spot at base in area Cu_{1a} and absence of white costal patch on upperside of fore wing in male; in female upperside of fore wing bears rounded spots. This subspecies is endemic to Sikkim. Its status is rare and it has been included in Schedule-II (Part–2) of the Indian Wildlife (Protection) Act.

116. ***Euthalia lubentina indica*** Fruhstorfer (Gaudy Baron)

1911. *Euthalia indica* Fruhstorfer, *Stett., Zg.,* **65** : 350.

1992. *Euthalia lubentina indica* : Haribal, *Butterflies of Sikkim Himalaya,* : 182.

Material examined : Sikkim, 3exs, no date, (De Nicéville Coll.)? Sikkim, 1ex, ? W.D. purchased).

Fore wing length : 30-32 mm.

Distribution : India : Sikkim (South Sikkim), Himachal Pradesh to Arunachal Pradesh, and Maharashtra to Bengal. *Elsewhere* : Bangladesh and Myanmar.

Remarks : This subspecies differs from its counterpart *E. lubentina arasada* Fruhstorfer found in South India by its uniform dark colouration. It exhibits considerable season variation. It has been included in Schedule-4 of the Indian Wildlife (Protection) Act.

117. ***Euthalia aconthea suddhodana*** Fruhstorfer (Common Baron)

1911. *Euthalia suddhodana* Fruhstorfer, In Seitz, *Macrolapidoptera of the world,* **9** : 667.

1992. *Euthalia aconthea suddhodana* : Haribal, *Butterflies of Sikkim Himalaya,* : 182.

Material examined : Sikkim, 1 ex, no date, (Capt. *Evans. Coll*).

Fore wing length : 29mm.

Distribution : India : Sikkim (East and South Sikkim) and Bengal (old).

Remarks : The species, *Euthalia aconthea* (Cramer) is highly variable and is, thus, represented in India by five subspecies, *viz., E. aconthea meridionalis* Fruhstorfer-from South India to North Kanara, *E.aconthea anagama* Fruhstorfer–Bombay to Orissa, *E. aconthea aconthea* Cramer–Assam to Myanmar, *E. aconthea aconthis* Hewitson–Andamans and lastly *E. aconthea suddhodana*. The latter is distinguished from others by the darker colouration and upperside of fore wing bearing discal spots smaller.

118. ***Euthalia jama jamida*** Fruhstorfer (Streaked Baron)

1911. *Euthalia jamida* Fruhstorfer, *Ins. Boerse*, **23** : 19.

1992. *Euthalia jama jamida* Felder (sic) : Haribal, *Butterflies of Sikkim Himalaya*, : 182.

Material examined : Sikkim, 2exs, no date, (De Nicéville coll.).

Fore wing length : 28-29 mm.

Distribution : India : Sikkim.

Remarks : This subspecies is distinguished from the nominate one found in Assam and Manipur by the upperside of wings being pale and bearing narrow markings. This subspecies is endemic to Sikkim.

119. ***Euthalia phemius*** (Doubleday) (White Edged Blue Baron)

1848. *Itanus phemius* Doubleday, *Gen. Diurn. Lep*, : pl. 41, 41, fit. 4. (male.)

1992. *Euthalia phemius* (Doubleday & Hewitson) (sic) : Haribal, *Butterflies of Sikkim Himalaya*, : 182.

1994. *Euthalia phemius* (Doubleday) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Sikkim, 1 ex, –vi–, 2 exs, –x–, 1 ex, –xi–, 1ex, –xii–, 1 ex, no date (*De Nicéville coll.*).

Fore wing length : 32-34mm.

Distribution : India : Sikkim (South Sikkim), Assam, Meghalaya and Nagaland. *Elsewhere* : Bangladesh, Bhutan and Myanmar.

Remarks : The species exhibits sexual dimorphism as upperside of hind wing is with broad blue border in male but upperside of hind wing entirely brown in female. De Nicéville (1883) recorded it at altitude between 305-610 m in South Sikkim.

XLIX. Genus ***Lexias*** Boisduval

1832. *Lexias* Boisduval, In : d'Urville, Voy. *"Astrolabe" Fauna Ent.* 1 (Lep.) : 125,

Of the three species of this genus occurring in India, only a single species *Lexias khasiana* (Swinhoe) is treated here from Sikkim.

120. ***Lexias khasiana khasiana*** (Swinhoe) (Dark Archduke)

1893. *Symphaedra khasiana* Swinhoe, *Trans. ent. Soc. London*, : 284.

1932. *Adolias khasiana khasiana* (Swinhoe) : Evans, *Identification of Indian Butterflies*, : 158.

1994. *Lexias khasiana* (Swinhoe) : Varshney, *Oriental Insects*, **28** : 185.

Material examined : Nil.

Wing expanse : 80-105 mm.

Distribution : India : Sikkim, Arunachal Pradesh and Assam. *Elsewhere* : Bhutan.

Remarks : This nominate subspecies differs from *L. khasiana intermedia* (Tytler) found in Manipur by the male having upperside of fore wing unspotted and blue border vestigial, hind wing with blue border narrow and mostly purple bearing a row of blue spots; in female upperside of wings with bluish white spots and underside ochreous brown. Bingham (1905) and Wynter–Blyth (1957) considered it as rare. It has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

L. Genus ***Bassarona*** Moore

1897. *Bassarona* Moore, *Lep. Indica*, **3** (7) : 49, 59.

The genus is represented in India by ten species, of which six are found in Sikkim.

Key to species

1. Upperside of fore wing with a submarginal row of white spots, cell of fore wing not fully closed ..... *franciae* (Gray)
- Upperside of fore wing without any row of submarginal white spots, cell of fore wing closed 2
2. Upperside of fore wing with white discal band vertical and reaching inner margin beyond middle, veins R_1 and Sc anastomosed in fore wing. Cell open in hind wing 3
- Upperside of fore wing with white discal band, if present, directed to tornus and not extending below vein Cu_{1b}; vein R_1 in fore wing. Cell closed in hind wing 4
3. Upperside of hind wing with discal band outwardly black edged ..... *durga* (Moore)
- Upperside of hind wing with discal band not black edged outwardly before the blue area ..... *duda* (Staudinger)
4. Upperside of fore wing bronzy olive green in male and without any white discal band, rather a narrow white discal band present in fore wing of female spot in area M_3 elongate, pointed and well separated from the spots on either side ..... *nara* (Moore)
- Upperside of fore wing with a pale discal band in male, spot in area M_3 conjoined to spots on either side both in male as well as in female 5
5. On upperside of fore wing, distance of outer edge of spot in area Cu_{1b} from termen about equal to the length of spot ..... *sahadeva* (Moore)
- On upperside of fore wing, distance of outer edge of spot in area Cu_{1b} from termen about half the length of the spot ..... *iva* (Moore)

121. ***Bassarona franciae franciae*** (Gray) (French Duke)

1846. *Adolias franciae* Gray, *Lep. Ins. Nepal*, : 12, pl. 14.

1992. *Euthalia franciae franciae* (Gray) : Haribal, *Butterflies of Sikkim. Himalaya*, : 183.

1994. *Bassarona franciae* (Gray) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Sikkim, 3 exs, no date (De Nicéville coll). Sikkim, 2 exs, no date (Purchased ?).

Fore wing length : 28-32 mm.

Distribution : India : Sikkim (North Sikkim) *Elsewhere* : Bhutan and Nepal.

Remarks : The nominate subspecies is distinguished from *B. franciae rajah* (Felder) found from India (Assam) – Myanmar (Karens) by the upperside of wings bearing broad white discal band and all slightly diffused markings. Haribal (1992) observed this subspecies in North Sikkim (Tholung valley). Its status is very rare and it has been included in Schdule-1 (Par-4) of the Indian Wildlife (Protection) Act.

122. ***Bassarona durga durga*** (Moore) (Blue Duke)

1857. *Adolias durga* Moore, Horsefield and Moore, *Cat. Lep. Mus. East India Coy.*, **1** : 196, no. 197.

1992. *Euthalia durga durga* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 183.

1994. *Bassarona durga durga* (Moore) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Sikkim, 4 exs, –. – 1868 (T.C. *Jerdon* coll); Sikkim, 1ex, no date, (De Nicéville purchased); Sikkim, 2 exs, no date, Sikkim, Luhung valley, 1 ex, no date, (De Nicéville coll.).

Fore wing length : 36-40mm.

Distribution : India : Sikkim.

Remarks : This nominate subspecies differs from *B. durga splendens* (Tytler) found in Nagaland by the blue area not formed into lunules except near costa on upperside of hind wing. Its status is rare and it has been listed in Schedule-II (Part–2) of the Indian Wildlife (Protection) Act.

123. ***Bassarona duda*** (Staudinger) (Blue Duchess)

1886. *Euthalia duda* Staudinger, *Exot. Schmett.*, : 152, pl. 53.

1994. *Bassarona duda* (Staudinger) : Varshney, *Oriental Insects*, **28** : 184

Material examined : Sikkim, 1ex, no date (*De Nicéville coll.*).

Fore wing length : 46 mm.

Distribution : India : Sikkim and Assam (old).

Remarks : Haribal (1992) observed this species in Teesta valley. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

124. ***Bassarona nara nara*** (Moore) (Bronze Duke)

1859. *Adolias nara* Moore, *Trans. ent. Soc. Lond.* New ser. **5** : 78, pl. 8, fig. 1.

1992. *Euthalia nara nara* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 183.

1994. *Bassarona nara* (Moore) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Sikkim, 3 exs, –.– 1868 (T.C. Jerdon coll), Sikkim, 4 exs., no date, (De Nicéville coll.); Sikkim, 1ex, no date (purchased ?)

Fore wing length : 35–38 mm.

Distribution : India : Sikkim. *Elsewhere* : North Myanmar.

Remarks : Only the nominate subspecies is found in India. Haribal (1992) mentioned its occurrence very rare in Sikkim. Its status in rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

124. ***Bassarona sahadeva sahadeva*** (Moore) (Green Duke)

1859. *Adolias sahadeva* Moore, *Trans. ent. Soc. Lond.* New series, **5** : 80, pl. 8, Fig. 3.

1992. *Euthalia sahadeva sahadeva* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 183.

1994. *Bassarona sahadeva* (Moore) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Sikkim, 7 exs, –.– 1868 (*T.C. Jerdon coll*), Sikkim, 2exs, no date (De Nicéville coll).

Fore wing length : 41-44 mm.

Distribution : India : Sikkim (East Sikkim), *Elsewhere* : Bhutan.

Remarks : The nominate subspecies is distinguished from *B. sahadeva nadaka* (Frushtorfer) found from Assam to Manipur by upperside of hind wing in male bearing discal spots extending to area 1 and beyond the spots in areas M_2 and M_1 but wing being conspicuously paler, showing up the very broad postdiscal band. Haribal (1992) observed this subspecies in East Sikkim (Gangtok). Its status is rare and it has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

126. ***Bassarona iva*** (Moore)

1857. *Adolias iva* Moore, *Cat. Lep. Mus. East India Coy.*, **1** : 195.

1992. *Euthalia iva* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 184.

1994. *Bassarona iva* (Moore) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Nil.

Wing expanse : 115-125 mm.

Distribution : India : Sikkim and Manipur.

Remarks : Its status is very rare and it has been included in Scheudule-1 (Part-4) of the Indian Wildlife (Protection) Act.

Tribe **Pseudergolini**

Fore wing and hind wing with cells closed. Fore tarsi clawed in females with a few exceptions.The tribe is represented in India by three genera.

Key to genera

1. Eyes not hairy ..... ***Pseudergolis*** Felder
– Eyes hairy 2
2. Hind wing cell very short, barely one-third length of wing ..... ***Stibochiona*** Butler
– Hind wing cell proportionately longer being about half the length of wing ..... ***Dichorragia*** Butler

LI Genus *Pseudergolis* Felder

1867. *Pseudergolis* Felder, *Novara Reise, Lep.* **3** : 404.

This genus is represented in India by only a single species, *Pseudergolis wedah* (Kollar).

127. *Pseudergolis wedah* (Kollar) (The Tabby)

1844. *Ariadne wedah* Kollar, *Huegel's Kaschmir,* **4** (Part 2) : 437.

1881. *Precis wedah* (Kollar) : De Nicéville, *J. Asiat. Soc. Beng.,* **50** (1) : 54

1882. *Pseudergolis wedah* (Kollar) : De Nicéville, *J. Asiat. Soc. Beng.,* **51** (2-3) 57.

1992. *Pseudergolis wedah* (Kollar) : Haribal, *Butterflies of Sikkim Himalaya,* : 157.

Material examined : Sikkim, 2exs, no date, 1ex, –ix–, alt. 4000 feet. 1ex, no date, alt. 689-1475 m feet, 1 ex, 9-x-1880 (*De Nicéville coll*). North Sikkim, alt. 3661m, 1ex, 12-viii-1959 (*A.G.K. Menon coll*).

Fore wing length : 28-30mm.

Distribution : India : Sikkim (North and South Sikkim), Arunachal Pradesh, Assam, Jammu & Kashmir, Meghalaya and West Bengal. Elsewhere : Bangladesh and Myanmar.

Remarks : The females are usually paler than males. Haribal (1992) found it locally common in Teesta and South Sikkim (Rungeet Valley) but mentioned its range of distribution from Himachal Pradesh (Kulu) to Myanmar.

LII Genus *Stibochiona* Butler

1816. *Stibochiona* Butler, *Proc. zool Soc. Lond,. :* **3** : 614.

This genus is known in India by a single species, *Stibochiona nicea* (Gray).

128. *Stibochiona nicea nicea* (Gray) (Popinjay)

1846. *Adolias nicea* Gray, *Lep. Ins. Nepal, :* 13, pl. 12. fig.1.

1881. *Stibochiona nicea* (Gray) : De Nicéville, *J. Asiat. Soc. Beng.,* **50** (1) : 57.

1992. *Stibochiona nicea nicea* (Gray) : Haribal, *Butterflies of Sikkim Himalaya,* : 156.

Material examined : Sikkim, 9exs, no date, Sikkim (native), 1ex, no date, South Sikkim, Rangeet Valley, 1ex, no date, (*De Nicéville coll.*) North Sikkim, Talaymoo, alt, 3424m, 1ex, 3-vi-1959 (*A.G.K. Menon & Party coll*) and West Sikkim, Rao dhok, 1ex, 23-ix-1959; South Sikkim, Toshingong, 1ex, 29-ix-1959 (*B.K. Tikader coll*). Sikkim. alt. 1300m, 1ex, 7–iv–1981; North Sikkim, Singhik, 1ex, 11-iv-1981 (*R.K. Varshney & Party Coll*).

Fore wing length : 30-34 mm.

Distribution : India : Sikkim (North, South and West Sikkim), Himachal Pradesh to Arunachal Pradesh. *Elsewhere* : Bangladesh and North Myanmar.

Remarks : De Nicéville (1881) recorded it from South Sikkim (Rungeet Valley). Haribal (1992) found it common in cardamom plantations in North, South Sikkim and West Sikkim.

LIII. Genus *Dichorragia* Butler

1869. *Dichorragia* Butler, *Proc. zool. Soc. Lond.* (3) : 614.

The genus is represented in India by a single species, *Dichorragia nesimachus* (Boisduval).

129. *Dichorragia nesimachus* (Boisduval) (Constable)

1836. *Adolias nesimachus* Boisduval, *Cuv. Régne Amin, Ins.,* **2** : pl. 129 bis, fig. 1.

1882. *Dichorragia nesimachus* (Boisduval) : De Nicéville, *J. Asiat. Soc. Beng.,* **51** (2-3) : 60.

1994. *Dichorragia nesimachus* (Boisduval) : Varshney, *Oriental Insects,* **28** : 186.

Material examined : Sikkim, 4exs, no date, 1ex, –ix– (*De Nicéville coll*). Sikkim, 1ex, no further data.

Fore wing length : 32-34 mm.

Distribution : India : Sikkim, Arunachal

Pradesh, Assam and Himachal Pradess. *Elsewhere* : Myanmar.

Remarks : The upperside of wings dark green with small whitish spots on fore wing as well as very prominent zig zag submarginal line single in male but double in female. Haribal (1992) mentioned it flying in Sikkim up to about 900 m and found throughout the year at lower elevations.

Tribe **Apaturini**

Labial palpi with second segment not inflated. Fore wing vein Sc not dilated at base, R_4 ending at apex or on termen (with a few exceptions), R_2 arising from R_5 or from end cell, apex of cell closer to wing base than origin of vein Cu_{1a}; fore wing cell short and open. Hind wing precostal vein arising beyond origin of Sc + R_1.

The tribe is represente in India by 10 genera.

Key to genera

1. Antennae longer than half the length of fore wing costa. Labial palpi white or brown throughout 2
- Antennae equal to half the length of the costa. Labial palpi black or black and white 7
2. Antennal club sharply spatulate. Fore wing with upper end of cell obtuse, R_2 arising from R_5 ..... ***Helcyra*** Felder
- Antennal club stout and gradual. Fore with upper end cell right angled or acute, R_2 arising from cell 3
3. Cell closed in fore and hind wings ..... ***Dilipa*** Moore
- Cell open in fore and hind wings 4
4. Fore wing with origin of vein R_4 nearer origin of R_3 than termen ..... ***Herona*** Doubleday
- Fore wing with origin of vein R_4 nearer termen than origin of R_3 5
5. Underside of fore wing with prominent small subapical white dots in spaces M_2, M_1 and R_4 ..... ***Rohana*** Moore
- Underside of fore wing without any of the minute subapical white dots in spaces M_2, M_1 and R_4 6
6. Underside of fore wing with black spots in cell ..... ***Apatura*** Fabricius
- Underside of fore wing without any black spot in cell ..... ***Chitoria*** Moore
7. Fore wing with vein R_2 arising from cell ..... ***Hestina*** Westwood
- Fore wing with rein R_2 arising from R_5 8
8. Labial palpi very long and black with a white tip ..... ***Sephisa*** Moore
- Labial palpi short and white at base 9
9. Eyes smoooth ..... ***Euripus*** Doubleday
- Eyes hairy ..... ***Diagora*** Snellen

LIV. Genus ***Helcyra*** Felder

1860. *Helcyra* Felder, *Sitzungsb. Ak. Wiss,* **40** : 450.

Only a single species, *Helcyra hemina* Hewitson represents this genus in India.

130. ***Helcyra hemina*** Hewitson (White Emperor)

1864. *Helcyra hemina* Hewitson, *Trans. ent. Soc. Lond.,* (3) **2** : 245, pl. 15, Fig. 1.

1992. *Helcyra hemina* : Haribal, *Butterflies of Sikkim Himalaya,* : 152.

Material examined : Sikkim, 1ex, –.– 1868 (T.C. Jerdon coll), Sikkim, 3 exs, no date, (*De Nicéville coll.*). Sikkim, 1ex, no further data.

Fore wing length : 32-33 mm.

Distribution : India : Sikkim (South Sikkim) and Nagaland. *Elsewhere* : Myanmar.

Remarks : De Nicéville (1885) recorded one female as rare in a collection made from South Sikkim (Rungeet) or roads between it and Darjiling. De Nicéville (1886) commented about this species as very beautiful and rare. It has been included in Schedule-1 (Part-4) of the Indian Wildlife (Protection) Act.

LV. Genus ***Dilipa*** Moore

1857. *Dilipa* Moore, *Cat. Lep. Mus. East India Coy.,* **1** : 201.

This genus is represented in India by a single species, *Dilipa morgiana* Westwood.

131. ***Dilipa morgiana*** (Westwood) (Golden Emperor)

1851. *Apatura ? morgiana* Westwood, *Gen. diurn. Lep.*, **2** : 305, no. 22.

1994. *Dilipa morgiana* (Westwood) : Varshney, *Oriental Insects*, **28** : 187.

Material examined : Sikkim, 1ex, no date, (*De Nicéville coll.*).

Fore wing length : 34mm.

Distribution : India : Sikkim, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir and Nagaland. *Elsewhere* : Myanmar and Nepal.

Remarks : This species exhibits sexual dimorphism as upperside of wings is golden bronzy in male but white in female. Its status is rare and it has been included in Schedule-I (Part-4) of the Indian Wildlife (Protection) Act.

LVI. Genus ***Herona*** Doubleday

1850. *Herona* Doubleday, In Doubleday, Westwood & Hewitson, *Gen. diurn. Lep.*, : 293, pl. 41.

The genus is represented in India by a single species, *Herona marathus* Doubleday.

132. ***Herona marathus marathus*** Doubleday (Pasha)

1850. *Herona marathus* Doubleday, In Doubleday, Westwood Hewitson, *Gen. diurn. Lep.* : 294, pl. 41, Fig. 3 male.

1992. *Herona marathus marathus* : Haribal, *Butterflies of Sikkim Himalaya*, : 154.

Material examined : Sikkim, 4exs, no date, 1ex, –x–, (*De Nicéville coll.*).

Fore wing length : 35-36 mm.

Distribution : India : Sikkim (North Sikkim), Assam, Meghayala and West Bengal. *Elsewhere* : Bhutan and Upper Myanmar.

Remarks : This nominate subspecies differs from its counterpart *andamana* Moore found in Andamans by the presence of wide and confluent tawny bands on upperside of wings. Its status is not rare. It has also been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

LVII. Genus ***Rohana*** Moore

1880. *Rohana* Moore, *Lep. Ceylon*, **1** (1) : 27.

Two species, *Rohana parvata* Moore and *R. parisatis* Westwood occur in India.

Key to species

Eyes hairy. Upperside of fore and hind wings brown in both sexes ..... *parvata* (Moore)

Eyes not hairy. Upperside of fore and hind wings purple-black in male and brown in female .....*parisatis* (Westwood)

133. ***Rohana parvata*** (Moore) (Brown Prince)

1857. *Apatura parvata* Moore, *Cat. Lep. Mus. East India Coy.*, **1** : 202, pl. 6a, fig. 6 male.

1994. *Rohana parvata* (Moore) : Varshney, *Oriental Insects*, **28** : 186.

Material examined : Sikkim, 1ex, –.– 1868 (*R.Cholomondelay coll.*), 3exs, –.– 1868 (*T.C. Jordon coll.*).

Fore wing length : 24-26 mm.

Distribution : India : Sikkim, Assam and Meghalaya. *Elsewhere* : Bhutan.

Remarks : The status of this species is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

134. ***Rohana parisatis parisatis*** (Westwood) (Black Prince)

1850. *Apatura parisatis* Westwood, In Doubleday, Westwood and Hewitson, *Gen. diurn. Lep.*; **2** : 305, no. 20.

1881. *Rohana parysatis* (sic) (Westwood) : De Nicéville, *J. Asiat. Soc. Beng.*, **50** (1) : 58.

1992. *Rohana parisatis parisatis* Moore 1857 (sic) : Haribal, *Butterflies of Sikkim Himalaya,* : 154.

Material examined : Sikkim, 1ex, no date, (*R.Cholmondelay coll*); 5 exs, no date, 1ex, –vii– (*De Nicéville coll.*), Sikkim, 1ex, no date (*De Nicéville purchased*).

Fore wing length : 21-23mm.

Distribution : India : Sikkim (South Sikkim), Assam and Meghalaya. *Elsewhere* : Bangladesh and Myanmar.

Remarks : This nominate subspecies differs from its counterpart *atacinus* Fruhstorfer occurring in South India by the presence of a single apical dot on upperside of fore wing and female is much darker. DeNicèville (1882) recorded it from South Sikkim (Rungeet Valley).

LVIII. Genus ***Apatura*** Fabricius

1807. *Apatura* Fabricius, *Mag. f. Insektenk* (Illiger), **6** : 280.

Two species, *viz., Apatura ambica* Kollar and *A. chevana* Moore of this genus occurring in India are dealt with from Sikkim.

Key to species

1. Upperside of fore wing cell with a broad white streak ..... *chevana* (Moore)
– Upperside of fore wing cell without any streak ..... *ambica* Kollar

135. ***Apatura chevana*** (Moore) (Sergeant Emperor)

1865. *Athyma chevana* Moore, *Proc. zool. Soc. Lond.,* : 763 pl. 41, fig. 1 male.

1994. *Apatura chevana* (Moore) : Varshney, *Oriental Insects,* **28** : 186.

Material examined : Sikkim, 1ex, –.– 1868 (*T.C. Jerdon coll*); 7exs, no date, 1ex, –iv– (*De Nicéville coll*). Sikkim, 1ex, no date (*De Nicéville purchased*).

Fore wing length : 36-37 mm.

Distribution : India : Sikkim. *Elsewhere* : North Myanmar.

Remarks : The presence of a broad white streak in cell on upperside of fore wing makes this species mimick other species of *Athyma* Westwood. Its status is rare and it has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

136. ***Apatura ambica ambica*** Kollar (Indian Purple Emperor)

1844. *Apatura ambica* Kollar, *Huegel Kaschmir,* **4** (2) : 431.

1882. *Apatura namouna* Doubleday : De Nicéville, *J. Asiat. Soc. Beng.,* **51** (2-3) : 60

1992. *Apatura ambica ambica* Kollar : Haribal, *Butterflies of Sikkim Himalaya,* : 153.

Material examined : Sikkim, 3exs, no date, 1ex, –vii–, 1ex, –viii–, 1ex (*De Nicéville coll.*). Sikkim, 2exs, no date (*De Nicéville purchased*).

Fore wing length : 31-33mm.

Distribution : India : Sikkim (North Sikkim), Assam and West Bengal. *Elsewhere* : Myanmar.

Remarks : This nominate subspecies differs from its counterpart *chitralensis* Evans found from Pakistan (Chitral) to India (Jammu & Kashmir) by lesser wing expanse and well defined markings on wings. Its status is rare. Haribal (1992) reported its occurrence in North Sikkim near Mangan (in Teesta Valley)

LIX. Genus ***Chitoria*** Moore

1896. *Chitoria* Moore, *Lep. Indica,* **3** (25) : 10.

Three species of this genus occur in India and one *i.e. Chitoria sordida* Moore is treated here from Sikkim.

137. ***Chitoria sordida sordida*** (Moore) (Sordid Emperor)

1865. *Apatura sordida* Moore, *Proc. zool. Soc. Lond.,* : 765, pl. 41.

1992. *Apatura sordida sordida :* Haribal, *Butterflies of Sikkim Himalaya,* : **2** 153.

1994. *Chitoria sordida* (Moore) : Varshney, *Oriental Insects,* **28** : 186

Material examined : Sikkim, 3exs, –x–, 2exs, no date, (*De Nicéville coll*).

Fore wing length : 30-31 mm.

Distribution : India : Sikkim (South Sikkim, West Sikkim). *Elsewhere* : North Myanmar.

Remarks : This nominate subspecies is distinguished from *C. sordida naga* (Tytler) occurring in Nagaland by the presence of discal white band on upperside of fore wing, a prominent ocellus in space Cu_{1b} in hind wing, and, underside of wings brown. De Nicéville (1885) reported its occurrence in South Sikkim (Rungeet Valley). Haribal (1992) mentioned its occurrence in West Sikkim. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

LX. Genus ***Hestina*** Westwood

1850. *Hestina* Westwood, In Doubleday's *Gen. diurn. Lep.*, **2** : 281.

Only a single species, *Hestina nama* (Doubleday) represents this genus in India.

138. ***Hestina nama*** (Doubleday) (Circe)

1845. *Diadema nama* Doubleday, *Ann. Mag. nat. Hist.*, (1) **16** : 232.

1881. *Hestina nama* (Doubleday) : De Nicéville, *J. Asiat. Soc. Beng.*, **50** (1) : 57.

1994. *Hestina nama* : Varshney, *Oriental Insects*, **28** : 188.

Material examined : Sikkim, 4exs, no date, 1ex, 18–vii–1884, 2exs, –x–; South Sikkim (Rungeet Valley), 2exs, no date, (*De Nicéville coll*). Sikkim, 1ex, no date, (*De Nicéville purchased*).

Fore wing length : 47-49mm.

Distribution : India : Sikkim (East and South Sikkim), Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Nagaland, Uttar Pradesh and West Bengal. *Elsewhere* : Myanmar.

Remarks : The discal streaks and postdical spots are bifurcated outwardly. This species mimicks 'Chestnut Tiger'–*Danaus tytia* Gray of the subfamily Danainae. De Nicéville (1881) recorded it from South Sikkim (Rungeet Valley). Haribal (1992) mentioned its occurrence in East Sikkim (Rangpo) and Teesta.

LXI. Genus ***Sephisa*** Moore

1882. *Sephisa* Moore, *Proc. zool. Soc. Lond.*, : 240.

The genus is represented in India by two species, *viz.*, *Sephisa dichroa* (Kollar) and *S. chandra* (Moore) and the latter is dealt with from Sikkim.

139. ***Sephisa chandra*** (Moore) (Eastern Courtier)

1858. *Castalia chandra* Moore, *Cat. Lep. Ins. Mus. East India Coy*, **1** : 200, pl. 6A.

1882. *Sephisa chandra* (Moore) : De Nicéville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 60.

1994. *Sephisa chandra* (Moore) : Varshney, *Oriental Insects*, **28** : 187.

Material examined : Sikkim, 1ex, –.– 1868 (*T.C. Jerdon coll.*); 1ex, –x–, (*De Nicéville coll*). Sikkim, 1ex, no date, (*De Nicéville purchased*).

Fore wing length : 38-39 mm.

Distribution : India : Sikkim (North, South and West Sikkim), Arunachal Pradesh and West Bengal. *Elsewhere* : Myanmar.

Remarks : The female of this species is very rare and polymorphic. De Nicéville (1882) recorded it from collection made either in South Sikkim (Rungeet) or roads between it and Darjiling. Haribal (1992) reported its occurrence in North and West Sikkim. It has been included in Schedule-1 (Part-4) of the Indian Wildlife (Protection) Act.

LXII. Genus ***Euripus*** Doubleday

1848. *Euripus* Doubleday, *Gen. diurn. Lep.*, (2) : pl. 41, fig. 2.

Two species, *viz., Euripus consimilis* (Westwood) and *E. nyctelius* (Doubleday) occur in India.

Key to species

1. Underside of hind wing with red basal markings. In male, red submarginal spots present from space 3A to Cu_{1a} .... *consimilis* (Westwood)

– Underside of hind wing without red basal markings. In male, pale submarginal spots present from space 3A to Cu_{1a} .... *nyctelius* (Doubleday)

140. ***Euripus consimilis consimilis*** (Westwood) (Painted Courtesan)

1850. *Diadema consimilis* Westwood, *Gen. diurn. Lep.*, **2** : 281, no. 20.

1992. *Euripus consimilis consimilis* (Westwood): *Butterflies of Sikkim Himalaya,* : 155.

Material examined : Sikkim, 1ex, no date, (*H.J. Elwes by Exchange*).

Fore wing length : 31mm.

Distribution : India : Sikkim, Arunachal Pradesh, Assam, Meghalaya and West Bengal. *Elsewhere* : Myanmar.

Remarks : This nominate subspecies differs from its counterpart *meridionalis* Wood-Mason found in South India by the upperside of hind wing with black discal band traceable in male only, and, underside of fore wing bearing dark discal band prominently broader at lower end. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

141. ***Euripus nyctelius*** (Doubleday) (Courtesan)

1845. *Diadema nyctelius* Doubleday, *Ann. Mag. nat. Hist.*, **16** : 182 : female.

1881. *Euripus halitherses* (Doubleday) : De Nicéville, *J. Asiat. Soc. Beng.*, **50** (1) : 57.

1883. *Euripus cinnamomeus* Wood-Mason : De Nicéville, *J. Asiat. Soc. Beng.*, **52** (2-4) : 94.

1992. *Euripus halitherses* (Doubleday & Hewitson) : Haribal, *Butterflies of Sikkim Himalaya,* : 155.

1994. *Euripus nyctelius* (Doubleday) : Varshney, *Oriental Insects,* **28** : 188.

Material examined : Sikkim, 1ex, –iv–, 1ex, –x–, 13exs, no date, (*De Nicéville coll*), Sikkim, 1ex, no further data.

Fore wing length : 33-36 mm.

Distribution : India : Sikkim (South and West Sikkim), Arunachal Pradesh, Assam, Meghalaya and West Bengal. *Elsewhere* : Myanmar.

Remarks : The female of this species is polymorphic. De Nicéville (1881) recorded it from South Sikkim (Rungeet Valley). Haribal (1992) also collected *cinnamomeus* (sic) f. from West Sikkim.

XLII. Genus ***Diagora*** Snellen

1844. *Diagora* Snellen, *Tijdschr. Ent.*, **37** : 67.

This genus is represented in India by two species, *viz., Diagora nicévillei* Moore and *D. persimilis* Westwood of which the latter is dealt with from Sikkim.

142. ***Diagora persimilis persimilis*** (Westwood) (Siren)

1850. *Diadema persimilis* Westwood, *Gen. diurn. Lep.*, **2** : 281, no. 19.

1882. *Hestina persimilis* (Westwood) : De Nicéville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 58.

1992. *Hestina persimilis persimilis* : Haribal, *Butterflies of Sikkim Himalaya,* : 156.

1994. *Diagora persimilis* (Westwood) : Varshney, *Oriental Insects,* **28** : 186.

Material examined : Sikkim, 5 exs, no date, 1ex, –v– (*De Nicéville coll.*).

Fore wing length : 32-33 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Assam, Meghalaya and Orissa *Elsewhere* : Myanmar.

Remarks : This nominate subspecies is

distinguished from *D. persimilis zella* Butler, found from Himachal Pradesh (Shimla) to Uttar Pradesh (Kumaon), by the presence of narrower white markings or darker wings and apex of fore wing produced. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

Subfamily CHARAXINAE

Large and robust butterflies. Fore wing with cell closed, vein R_4 arising nearer to end of cell than to termen. Hind wing with cell open or closed.

This subfamily is represented in India by three genera, two of which are dealt with here.

Key to genera

Upperside of wings predominantly reddish to dark brown. Hind wing with cell slenderly closed, a single tooth or tail present at vein M_3 ..... ***Charaxes*** Ochsenheimer

– Upperside of wings predominantly pale yellowish or greenish white. Hind wing with cell open, subequal pointed tails present at veins Cu_{1b} and M_3 ..... ***Polyura*** Billberg

LXIV. Genus ***Charaxes*** Ochsenheimer

1816. *Charaxes* Ochsenheimer, *Schmett. Europe*, **4** : 18.

All the five species of this genus occurring in India are treated from Sikkim.

Key to species

1. Upperside of fore wing and hind wing brown with a yellow or whitish discal band. Hind wing with long tails at veins Cu_{1b} and M_3 .... *fabius* (Fabricius)

– Upperside of fore wing and hind wing tawny or chestnut. In male, hind wing more or less toothed at M_3 whereas in female, tailed at M_3 2

2. In male, upperside of fore wing with broad black border, never with tawny spots at apex; in female, upperside of fore wing with a broad discal band ..... *polyxena* (Cramer)

– In male, upperside of fore wing with narrow black border, tawny spots reaching the apex and inwardly bordered by a lunular dark line; in female, upperside of fore wing without a white or pale discal band 3

3. Upperside of fore wing without apical spot above vein M_1. Underside of wings purple tawny ..... *aristogiton* Felder

– Upperside of fore wing with apical spots above vein M_1. Underside of wings ochreous..... 4

4. Underside of wings more or less uniform and markings regular, fore wing with mid cell black bar macular, hind wing with more or less straight (except just beyond end cell) discal line beyond cell ..... *marmax* Westwood

– Underside of wings with markings prominent and irregular; central band much darker, fore wing with all cell bars entire, hind wing with discal line very irregular and broken and may be highly concave in area M_1. .... *kahruba* (Moore)

143. ***Charaxes fabius fabius*** (Fabricius) (Black Rajah)

1781. *Papilio fabius* Fabricius, *Sp. Ins.*, **2** : 12 No. 47.

1992. *Charaxes fabius fabius* (Fabricius) : Haribal, *Butterflies of Sikkim Himalaya*, : 151.

Material examined : Sikkim, 1ex, no date, (De Nicéville coll).

Fore wing length : 36 mm.

Distribution : India : Sikkim, Himachal Pradesh, Maharashtra, Orissa, Uttar Pradesh and West Bengal.

Remarks : The nominate subspecies is distinguished from *Charaxes fabius sulphureus* Rothschild, found from Assam Myanmar, by the presence of white or pale discal band on upperside of wings. Evans (1932) mentioned its distribution in South India also, whereas Haribal (1992) referred that it might be migrting to South India in August.

144. ***Charaxes polyxena hierax*** Felder (Tawny Rajah)

1867. *Charaxes hierax* Felder, *Novara Reise, Lep. Rhop.* **3** : 422.

1881. *Nymphalis polyxena* (Cramer) : De Nicéville, *J. Asiat. Soc. Beng.*, **50** (1) : 58.

1882. *Haridra polyxena* (Cramer) : De Nicéville, *J. Asiat Soc. Beng.*, **51** (2-3) : 61.

1992. *Charaxes polyxena hierax* Felder : Haribal, *Butterflies of Sikkim Himalaya* : 150.

Material examined : Sikkim, 4exs, no further data. Sikkim, 3exs, –x–, 8exs, no date, 1ex, –iv, 3exs, –vii–, 10-x-1885, 1ex, –v–, 1ex, –viii–, (*De Nicéville coll*). Sikkim, 4exs, no date (*De Nicéville purchased*).

Fore wing length : 37-42mm.

Distribution : India: Sikkim (South Sikkim) and West Bengal. *Elsewhere* : North Myanmar.

Remarks : Earlier, De Nicéville (1881) recorded this subspecies from South Sikkim (Rungeet Valley). Bingham (1905) mentioned this subspecies as highly variable. Evans (1932) and Haribal (1992) referred to males showing polymorphism.

145. *Charaxes aristogiton* Felder (Scarce Tawny Rajah)

1867. *Charaxes aristogiton* Felder, *Reise Novara*, Lep., **3** : 445, no. 727.

1992. *Charaxes aristogiton* : Haribal, *Butterflies of Sikkim Himalaya*, : 150.

Material examined : Sikkim, 1ex, –vii–, 3exs, no date, (*De Nicéville coll*). Sikkim, 4 exs, no date, (*De Nicéville purchased*).

Fore wing length : 41-43 mm.

Distribution : India : Sikkim and Assam. *Elsewhere* : Bangladesh, Bhutan and Myanmar.

Remarks : The status of this species is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife Protection Act.

146. *Charaxes marmax* Westwood (Yellow Rajah)

1848. *Charaxes marmax* Westwood, *Cab. Or. Ent.*, : 43, pl. 21, male and female.

1992. *Charaxes marmax* : Haribal, *Butterflies of Sikkim Himalaya*, : 150-151.

Material examined : Sikkim, 4exs, no date, 2exs, –iv–, 2exs, –x–, 1ex, –vii–, 1ex, –xi–, (*De Nicéville coll*); 2exs, no date, (*De Nicéville purchased*).

Fore wing length : 48-53 mm.

Distribution : India : Sikkim, Assam and Uttar Pradesh. *Elsewhere* : Bangladesh and Myanmar.

Remarks : Haribal (1992) did not observe this species in Sikkim but made reference to Sanders' (1940s) observation that males are rather rare and females rarer. De Nicéville (1886) reported its occurrence in Sikkim. This species has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

147. *Charaxes kahruba* (Moore) (Variegated Rajah)

1895. *Haridra kahruba* Moore, *Lep. Ind.*, **2** : 235, pl. 171, fig, 1, 1a-1c, ♂♀.

1992. *Charaxes kahruba* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 151

Material examined : Sikkim, 4exs, no date, 2exs, –v–, 1ex, –viii–, (*De Nicéville coll*).

Fore wing length : 48-50mm.

Distribution : India : Sikkim, Assam and Uttar Pradesh. *Elsewhere* : Myanmar.

Remarks : Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

LXV. Genus *Polyura* Billberg

1820. *Polyura* Billberg, *Enum. Ins. Mus. Billb.*, : 79.

Of the nine species occurring in India, six are dealt with from Sikkim.

Key to species

1. Upperside of wings with the ground colour black or deep indigo blue 2

- Upperside of wings with the ground colour yellowish white 3

2. Upperside of wings with discal band pale yellow ..... *athamas* (Drury)

- Upperside of wings with discal band pale greenish white ..... *arja* (Felder & Felder)

3. Upperside of fore wing with one or two prominent transverse postdiscal series of pale/ white spots 4

- Upperside of fore wing without any postdiscal series of pale/white spots 5

4. Upperside of fore wing with a postdiscal series of pale white spots. Underside of fore wing with costa chocolate brown .... *doloii* Westwood

- Upperside of fore wing with two series of pale white spots. Underside fore wing with costa white ..... *eudamippus* (Doubleday)

5. Underside of fore wing with a prominent chocolate brown band on inner side of discal area. ..... *moori* Distant

- Underside of fore wing without any chocolate brown band on inner side of discal area .... *delphius* (Doubleday)

148. ***Polyura athamas athamas*** (Drury) (Common Nawab)

1770. *Papilio athamas* Drury, *Ill. exot. Ent.*, **1** : 5 pl. 2, fig.4.

1881. *Nymphalis athamas* (Drury) : De Nicéville, *J. Asiat. Soc. Beng.*, **50** (1) : 51, 55, 58.

1982. *Polyura athamas athamas* (Rothschild) : Smiles, *Bull. Brit. Mus. (Nat. Hist.)*, Entomology **44** (3) : 166.

1992. *Polyura athamas athamas* (Drury) : Haribal, *Butterflies of Sikkim Himalaya*, : 151.

Material examined : Sikkim, 6exs, no date, 2exs, –iv–, 1ex, –vi–, 1ex, –ix– (*De Nicéville coll*). West Sikkim, Tingling, 1ex, 28–ix–1959 (*B.K. Tikader coll*).

Fore wing length : 31-34mm.

Distribution : India : Sikkim (South and West Sikkim), Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Karnataka, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, North-West Himalaya, Orissa, Uttar Pradesh, Tamil Nadu and West Bengal. *Elsewhere* : Bangladesh, China, Hainan, Hongkong, Laos, Myanmar, Singapore, Sri Lanka, Taiwan, Thailand, Vietnam and West Malaysia.

Remarks : The nominate subspecies is distinguished from *P. athamas andamanica* (Fruhstorfer) from Andamans by upperside of fore wing bearing discal band broader than 4mm at its narrowest point in male and 7mm in female. De Nicéville (1881) recorded it from South Sikkim (Rungeet Valley). Haribal (1992) also found it feeding on a compositae creeper in South Sikkim.

149. ***Polyura arja*** (Felder & Felder) (Pallid Nawab)

1867. *Charaxes arja* Felder & Felder, *Novara Reise, Lep. Rhap.*, : 438.

1912. *Eulepis arja* (Felder & Felder) : Evans, *J. Bombay nat. Hist. Soc.*, **21** (2) : 572.

1992. *Polyura arja* (Felder & Felder) : Haribal, *Butterflies of Sikkim Himalaya*, : 151-152.

Material examined : Sikkim, 9 exs, no date, 1ex, –viii–, 1ex, –ix– (*De Nicéville coll*). Sikkim, 3exs (*De Nicéville by Purchased*)

Fore wing length : 37-40 mm.

Distribution : India : Sikkim (West Sikkim), Assam, Manipur, Meghalaya, Nagaland, West Bengal. *Elsewhere* : Bangladesh, Bhutan, Myanmar, Thailand and Vietnam.

Remarks : Haribal (1992) reported it from West Sikkim. Its status is not rare.

150. ***Polyura dolon centralis*** (Rothschild & Jordan) (Stately Nawab)

1899. *Eulepis dolon centralis* Rothschild & Jordan, *Novit. zool.*, **6** : 274, Holotype G, India : Sikkim.

1992. *Polyura dolon centralis* (Rothschild & Jordan) : Haribal, *Butterflies of Sikkim Himalaya*, : 152.

Material examined : Sikkim, 4exs, no date, (*De Nicéville coll*). Sikkim, 2exs, no data, (*Purchased*).

Fore wing length : 42-43 mm.

Distribution : India : Sikkim (East Sikkim, North Sikkim) and West Bengal.

Remarks : This subspecies differs from *P. dolon magniplaga* (Fruhstorfer) found in Assam, Meghalaya, Manipur and Nagaland by upperside of hind wing bearing admarginals yellow and blue scaling at veins obsolete; from nominate subspecies occurring in Kashmir–Nepal by hind wing upperside having submarginal spots small and pale. Evans (1932) mentioned its occurrence in Sikkim, Nepal and Bhutan whereas Smiles (1982) restricted its distribution to West Bengal and Sikkim. Sanders (1942) and Haribal recorded it from North Sikkim (Chungthang) East Sikkim (Bushuk) respectively. Its status is rare and has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

151. ***Polyura eudamippus eudamippus*** (Doubleday) (Great Nawab)

1843. *Charaxes eudamippus* Doubleday, *Annls. Soc. ent. Fr.* (2) **1** : 218, pl. 8.

1992. *Polyura eudamippus eudamippus* (Doubleday), Haribal, *Butterflies of Sikkim Himalaya*,: 152.

Material examined : Sikkim, 1ex, –vii–1886, 6exs, no date, (*De Nicéville coll.*); Sikkim, 1ex, no date, (*De Nicéville purchased*), Sikkim, 1ex, no data. (*purchased*).

Fore wing length : 50-52 mm.

Distribution : India : Sikkim (East Sikkim, North Sikkim, Tumlong, Troomlong), Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland and West Bengal. *Elsewhere* : Bangladesh, Bhutan and Nepal.

Remarks : Evans (1932) mentioned its distribution form Kumaon (Uttar Pradesh) to Assam whereas Smiles (1982) did not refer to its occurrence Uttar Pradesh.

152. ***Polyura moori sandakana*** (Fruhstorfer) (Malayan Nawab)

1895. *Charaxes sandakanus* Fruhstorfer, *Ent. Nachr.* **21** : 197, Holotype, male (India : Assam).

1932. *Eriboea moori sandakanus* (Fruhstorfer) : Evans, *Identfication of Indian Butterflies* : 114.

1982. *Palyura moori sandakana* (Fruhstorfer) : Smiles, *Bull. Brit Mus. nat. thist* (Ent.), **44**(3) : 185.

1992. *Polyura moori sandakanus* (Fruhstorfer) Haribal, *Butterflies of Sikkim Himalaya*, : 153.

Material examined : Nil.

Wing expanse : 80-85 mm.

Distribution : India : Sikkim, Assam, Meghalaya and Nagaland. *Elsewhere* : Myanmar.

Remarks : Its status is very rare. It has been incldued in Schedule-1 (Part-4) of the Indian Wildlife (Protection) Act.

153. ***Polyura delphis delphis*** (Doubleday) (Jewelled Nawab)

1843. *Charaxes delphis*. Doubleday, *Annls, Soc. ent. Fr.*, (2) **1** : 217, pl.7, Lectotype male, Bangladesh.

1992. *Polyura delphis delphis* (Doubleday) : Haribal, *Butterflies of Sikkim Himalaya*, : 154.

Material examined : Nil.

Wing expanse : 95-100 mm.

Distribution : India : Sikkim, Assam, Manipur, Meghalaya, Mizoram and Nagaland. *Elsewhere* : Bangladesh, Myanmar and Thailand.

Remarks : Evans (1932) referred to its distribution from Assam to Myanmar but Smiles (1982) mentioned its occurrence in Sikkim which was followed by Haribal (1992). It has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

Subfamily LIBYTHEINAE

Eyes naked; labial palpi very long, porrect and beak like; wings short and broad with cell closed by tubular veins, fore wing falcate and truncate at apex and vein 1A + 2A forked at base; fore legs imperfect in male but functionally perfect in female.

The subfamily is represented in the World by a single genus *Libythea* Fabricius with 12 species of which three occur in India.

LXVI. Genus ***Libythea*** Fabricius

1807. *Libythea* Fabricius, *Mag. f. Insektenk* (Illiger) **6** : 284.

Of the three species of this genus found in India, two are dealt with from Sikkim.

Key to species

Upperside of fore wing with an elongate oval orange-yellow spot beyond lower apex of cell ..... *myrrha* Godart

– Upperside of fore wing with a quadrate orange spot beyond lower apex of cell .... *lepita* Moore

154. ***Libythea myrrha sanguinalis*** Fruhstorfer (Club Beak)

1898. *Libythea myrrha* var. *sanguinalis* Fruhstorfer, *Berl. ent. Zeits.*, **43** : 169.

1992. *Libythia* (sic) *myrrha myrrha* Fruhstorfer : Haribal, *Butterflies of Sikkim Himalaya*, : 193.

Material examined : Sikkim, 5exs, no date, (*De Nicéville coll*).

Fore wing length : 24-27 mm.

Distribution : India : Sikkim (South Sikkim), Arunachal Pradesh, Himachal Pradesh and Meghalaya. *Elsewhere* : Myanmar.

Remarks : This subspeices differs from *L. myrrha carma* Fruhstorfer from South India by upperside of fore wing and hind wing bearing less wide ochreous markings and presence of yellow apical spot in fore wing. De Nicéville (1885) recorded a male under the name of species *L. myarha* Godart from South Sikkim (Rungeet Valley) in the bed of a hill stream.

155. ***Libythea lepita lepita*** Moore (Common Beak)

1857. *Libythea lepita* Moore, *Cat. Ins. Mus. East. India Coy.*, **1** : 240.

1992. *Libythia* (sic) *lepita lepita* : Haribal, *The Butterflies of Sikkim Himalaya*, : 193.

Material examined : Sikkim, 4 exs, no date, (*De Nicéville coll*).

Fore wing length : 21-26 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Assam, Jammu & Kashmir and Meghalaya.

Remarks : This nominate subspecies has been treated as *L. celtis leptia* by D'Abrera (1985). Varshney (1994) considered *L. celtis* Laicharting and *L. lepita* as separate species. Though its status is known to be not rare, the species has been included in the Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

SUMMARY

Altogether 155 species/subspecies belonging to 66 genera and six subfamilies *viz.*, Morphinae, Acraeinae, Nymphalinae, Charaxinae and Libythinae of the family Nymphalidae have been dealt with from Sikkim. Keys to identification of species and genera have been provided. An appendix listing the taxa with their district-wise distribution in Sikkim has been included. Of these 155 spp., subspp. seven are endemic to Sikkim and 55 have been afforded protection by including these in Schedule-1 (Part-4)–15 species and Schedule-2 (Part-2)–39 : spp. and Schedule-4 1sp. of the Indian Wildlife (Protection) Act.

ACKNOWLEDGEMENTS

The author is grateful to Dr. J.R.B. Alfred, Director, Zoological Survery of India for providing laboratory facilities for the work. Thanks are also due to Dr. G.K. Srivastava, Scientist-SG and Dr. S.K. Mitra, Scientist–SF, Entomology Division, for their encouragement and valuable suggestions during the course of this study. He is also thankful to Mr. Rati Ram, P. P. O., for several courtsies.

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APPENDIX

List of species/subspecies of butterflies of family Nymphalidae providing District-wise distribution in Sikkim.

Sl. No.	Name of species/subspecies	Name of the District of Sikkim			
		North	East	West	South
	Family NYMPHALIDAE				
	I. Subfamily MORPHINAE				
	Tribe **Amathusiini**				
1.	*Amathuxidia amythaon amythaon* (Doubleday)	—	—	—	—
2.	*Aemona amathusia amathusia* (Hewitson)	—	—	—	—
3.	*Faunis canens arcesilas* Stichel	—	—	—	—
4.	*Stichophthalma nourmahal nourmahal* (Westwood)	—	—	—	—
5.	*S. camadeva camadeva* (Westwood)	—	—	—	—
6.	*Thaumantis diores diores* Doubleday	—	—	—	+
7.	*Discophora timora timora* Westwood	—	—	—	+
8.	*D. sondaica zal* Westwood	—	—	—	—
9.	*Enispe cycnus cycnus* Westwood	—	—	—	—
10.	*E. euthymius euthymius* (Doubleday)	—	—	—	+
	II. Subfamily CALINAGINAE				
11.	*Calinaga gautama* Moore	—	—	—	—
12.	*Penthema lisarda lisarda* (Doubleday)	+	+	—	—
	III. Subfamily ACRAEINAE				
13.	*Acraea violae* (Fabricius)	—	—	+	+
14.	*A. issoria issoria* (Huebner)	+	+	—	—
	IV Subfamily NYMPHALINAE				
	Tribe **Biblidini**				
15.	*Ariadne ariadne pallidior* (Fruhstorfer)	—	—	—	+
16.	*A. merione assama* (Evans)	—	—	—	—
	Tribe **Heliconiini**				
17.	*Cethosia cyane* (Drury)	—	—	—	—
18.	*C. biblis tisamena* Fruhsterfer	+	+	+	—
19.	*Melitaea arcesia sikkimensis* Moore	+		—	—
20.	*M. arcesia thibetana* Fawcett	—	—	—	—
21.	*Argynnis hyperbius hyperbius* (Linnaeus)	+	+	+	—
22.	*A. childreni childreni* Gray	+	+	+	—
23.	*A. kamala* Moore	—	—	—	—

Sl. No.	Name of species/subspecies	Name of the District of Sikkim			
		North	East	West	South
24.	*A. lathonia isaea* Doubleday	+	—	—	—
25.	*A. clara manis* Fruhstorfer	+	—	—	—
26.	*A. pales eupales* (Fruhstorfer)	—	—	—	—
27.	*A. altissima* Elwes	+	—	—	—
28.	*A. gemmata gemmata* Butler	—	—	—	—
29.	*Vindula erota erota* (Fabricius)	—	+	—	+
30.	*Cirrochroa aoris aoris* Doubleday	+	+	+	+
31.	*C. tyche mithila* Moore	—	—	—	+
32.	*Cupha erymanthis lotis* Sulz.	—	—	—	—
33.	*Vagrans egista sinha* (Kollar)	—	—	—	—
34.	*Phalanta phalantha phalantha* (Drury)	+	+	—	+
35.	*P. alcippe alcippoides* (Moore)	—	—	—	—
	Tribe **Nymphalini**				
36.	*Hypolimnas misippus* (Linnaeus)	—	—	—	—
37.	*H. bolina* (Linnaeus)	—	+	—	+
38.	*Junonia iphita iphita* (Cramer)	—	—	—	—
39.	*J. hierta magna* (Evans)	+	+	—	+
40.	*J. atlites* (Linnaeus)	+	+	—	+
41.	*J. orithya ocyale* (Huebner)	+	+	+	+
42.	*J. lemonias lemonias* (Linnaeus)	—	—	—	+
43.	*J. almana almana* (Linnaeus)	—	+	—	—
44.	*Doleschallia bisaltide indica* Moore	+	+	—	—
45.	*Kallima alompra* Moore	—	—	—	—
46.	*K. philarchus horsfieldi* (Kollar)	+	—	—	—
47.	*K. inachus inachus* (Boisduval)	—		—	+
48.	*Symbrenthia lilaea khasiana* Moore	—	+	—	+
49.	*S. silana* DeNicéville	—	—	—	—
50.	*S. niphanda niphanda* Moore	—	—	+	—
51.	*S. hypeselis cotanda* Moore	+	+	—	+
52.	*Cynthia cardui* (Linnaeus)	+	—	—	—
53.	*Vanessa indica indica* (Herbst)	+	+	+	+
54.	*Kaniska canace canace* (Linnaeus)	—	—	—	—
55.	*Polygonia egea agnicula* (Moore)	—	—	—	—
56.	*Nymphalis antiopa yedanula* (Fruhstorfer)	—	—	—	—
57.	*Aglais cashmirensis aesis* (Fruhstorfer)	+	+	—	—
58.	*A. ladakensis* (Moore)	—	—	—	—
59.	*A. urticae rizana* (Moore)	—	—	—	—

Sl. No.	Name of species/subspecies	Name of the District of Sikkim			
		North	East	West	South
	Tribe **Cyrestini**				
60.	*Cyrestis cocles cocles* (Fabricius)	—	—	—	—
61.	*C. thyodomas thyodamas* Boisduval	—	+	—	+
62.	*Chersonesia risa* (Doubleday & Hewitson)	—	—	+	+
	Tribe **Limenitidini**				
63.	*Pantoporia hordonia hordonia* (Stoll)	+	—	—	+
64.	*Phaedyma columella ophiana* (Moore)	—	—	—	—
65.	*Lasippa viraja viraja* (Moore)	+	—	—	—
66.	*N. armandia melba* Evans	—	—	—	—
67.	*N. radha radha* Moore	—	—	—	—
68.	*N. narayana nana* De Nicèville	—	—	—	—
69.	*N. manasa manasa* Moore	—	—	—	—
70.	*N. nycteus* De Nicèville	—	—	—	—
71.	*N. zaida bhutanica* Tytler	+	—	—	—
72.	*N. cartica cartica* Moore	—	—	—	—
73.	*N. nashona nashona* Swinhoe	—	—	—	—
74.	*N. ananta ochracea* Evans	+	—	—	—
75.	*N. namba namba* Tytler	—	—	—	—
76.	*Neptis jumbah jumbah* Moore	—	—	—	—
77.	*N. miah miah* Moore	+	—	—	+
78.	*N. sankara amba* Moore	—	—	—	—
79.	*N. harita harita* Moore	—	—	—	—
80.	*N. pseudovikasi* (Moore)	—	—	—	—
81.	*N. clinia susruta* Moore	—	—	—	+
82.	*N. yerburii pandoces* Eliot (1969)	—	—	—	—
83.	*N. hylas varmona* Moore	+	+	—	—
84.	*N. hylas kamarupa* Moore	—	—	—	—
85.	*N. sappho astola* Moore	—	+	—	+
86.	*N. soma soma* Moore	—	—	—	+
87.	*N. mahendra mahendra* Moore	—	—	—	—
88.	*N. nata adipala* Moore	—	—	—	—
89.	*Moduza procris procris* (Cramer)	—	—	—	+
90.	*Athyma selenophera selenophora* (Kollar)	+	+	—	+
91.	*A zeroca* Moore	—	—	—	—
92.	*A. nefte inara* (Doubleday)	—	+	—	—
93.	*A. cama* Moore	—	—	—	—
94.	*A. opalina orientalis* Elwes	+	—	—	—

Sl. No.	Name of species/subspecies	Name of the District of Sikkim			
		North	East	West	South
95.	*A ranga ranga* Moore	—	+	+	+
96.	*A jina jina* Moore	+	—	—	—
97.	*A perius* (Linnaeus)	+	—	—	+
98.	*A asura asura* Moore	—	—	—	—
99.	*A. pravara acutipennis* (Fruhstorfer)	—	—	—	+
100.	*Parasarpa zayla* (Doubleday)	—	—	—	—
101.	*P. dudu* (Westwood)	—	—	+	—
102.	*Sumalia daraxa* (Doubleday)	—	+	+	—
103.	*S. zulema* (Doubleday)	—	—	—	—
104.	*Auzakia danava* (Moore)	—	—	+	—
105.	*Neurosigma siva* (Westwood)	—	—	—	—
106.	*Abrota ganga* Moore	—	—	—	—
107.	*Parthenos sylvia gambrisius* (Fabricius)	—	—	—	—
108.	*Lebadea martha martha* (Fabricius)	+	—	—	+
109.	*Symphaedra nais* (Forster)	—	—	—	—
110.	*Tanaecia lepidea lepidea* (Butler)	—	—	—	—
111.	*T. julii appiades* (Ménétriés)	—	—	—	+
112.	*T. jahnu jahnu* (Moore)	—	—	—	+
113.	*Euthalia telchinia* (Ménétriés)	—	+	—	+
114.	*E. kesava arhat* Fruhstorfer	—	—	—	+
115.	*E. anosia saitaphernes* Fruhstorfer	—	—	—	—
116.	*E. lubentina indica* Fruhstorfer	—	—	—	+
117.	*E. aconthea suddhodana* Fruhstorfer		+	—	+
118.	*E. jama jamida* Fruhstorfer	—	—	—	—
119.	*E. phemius* (Doubleday)	—	—	—	+
120.	*Lexias khasiana khasiana* (Swinhoe)	—	—	—	—
121.	*Bassarona franciae franciae* (Gray)	+	—	—	—
122.	*B. durga durga* (Moore)	—	—	—	—
123.	*B. duda* (Staudinger)	—	—	—	—
124.	*B. nara nara* (Moore)	—	—	—	—
125.	*B. sahadeva sahadeva* (Moore)	—	+	—	—
126.	*B. iva* (Moore)	—	—	—	—
	Tribe **Pseudergolini**				
127.	*Pseudergolis wedah* (Kollar)	+	—	—	+
128.	*Stibochiona nicea nicea* (Gray)	+	—	+	+
129.	*Dichorragia nesimachus* (Boisduval)	—	—	—	—

Sl. No.	Name of species/subspecies	Name of the District of Sikkim			
		North	East	West	South
	Tribe **Apaturini**				
130.	*Helcyra hemina* Hewitson	—	—	—	+
131.	*Dilipa morgiana* (Westwood)	—	—	—	—
132.	*Herona marathus marathus* Doubleday	+	—	—	—
133.	*Rohana parvata* (Moore)	—	—	—	—
134.	*R. parisatis parisatis* (Westwood)	—	—	—	+
135.	*Apatura chevana* (Moore)	—	—	—	—
136.	*A. ambica ambica* Kollar	+	—	—	—
137.	*Chitoria sordida sordida* (Moore)	—	—	+	+
138.	*Hestina nama* (Doubleday)	—	+	—	+
139.	*Sephisa chandra* (Moore)	+	—	+	+
140.	*Euripus consimilis consimilis* (Westwood)	—	—	—	—
141.	*Euripus nyctelius* (Doubleday)	—	—	+	+
142.	*Diagora persimilis persimilis* (Westwood)	—	—	—	—
	V. Subfamily CHARAXINAE				
143.	*Charaxes fabius fabius* (Fabricius)	—	—	—	—
144.	*C. polyxena hierax* Felder	—	—	—	+
145.	*C. aristogiton* Felder	—	—	—	—
146.	*C. marmax* Westwood	—	—	—	—
147.	*C. kahruba* (Moore)	—	—	—	—
148.	*Polyura athamas athamas* (Drury)	—	—	+	+
149.	*P. arja* (Felder & Felder)	—	—	+	—
150.	*P. dolon centralis* (Rothschild & Jordan)	+	+	—	—
151.	*P. eudamippus eudamippus* (Doubleday)	+	+	—	—
152.	*P. moori sandakana* (Fruhstorfer)	—	—	—	—
153.	*P. delphis delphis* (Doubleday)	—	—	—	—
	VI. Subfamily LIBYTHEINAE				
154.	*Libythea myrrha sanguinalis* Fruhstorfer	—	—	—	+
155.	*L. lepita lepita* Moore	—	—	—	—

Zool. Surv. India.
State Fauna Series 9, Fauna of Sikkim (Part-4), 93-107, 2003

INSECTA : LEPIDOPTERA : CTENUCHIDAE AND LIMACODIDAE

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INTRODUCTION

The faunistic account deals with the moths of families Ctenuchidae and Limacodidae from Sikkim. Cotes and Swinhoe (1887-89) catalogued speices of moths of India and neighbouring countries. Subsequently Hampson (1892) provided description of species of these families in his first volume of Fauna of British India (Moths) Series. Hampson (1898) included comprehensive account of species of Ctenuchidae. Later on, contributions have been made on Indian Ctenuchidae by Arora (1980), Arora, *et. al.* (1982), Ghosh and Chaudhury (1997) and Ghosh and Chaudhury (1998).

The studies are based on the material collected by various survey parties of the department. The specimens of moths of families Ctenuchidae and Limacodidae available in National Zoological Collections have also been examined.

Altogether 64 species of moths of both of families have been dealt with including 13 species reviewed from literature. The family Ctenuchidae includes 20 species in 5 genera whereas family Limacodidae covers 44 species in 17 genera.

Of the species dealt with 12 are new locality records viz. *Trichaeta teneiformis* (Walker) *Syntomis serrata* Hampson and *Syntomis compta* (Walker) of the family Ctenuchidae; *Miresa decedens* Walker. *Thosea sinensis* Walker, *Parasa herbifera* (Walker) Parasa herbifera and *Ceratonema albifusum,*. Hampson, *Narosa conspersa* Walker, *Narosa doenia* (Moore), *Tripleoaphelps inferma* (Swinhoe) and *Birthama junctura* Walker of the family Limacodidae. The latter three species are also first record from India. Two species, *viz. Eressa lepcha* (Moore) *Syntomis unifascia* Hampson of the family Ctenuchidae and six species *viz.*, *Scopelodes sericea* Butler, *Tetraphleps crispa* Swinhoe, *Tetraphleps brevilinea* Walker, *Araeogyia castanea* Hampson, *Araeogyia spatulata* Hampson, and *Ceratonema pallidinota* Hampson are endemic to Sikkim.

Keys to genera and species of families Ctenuchidae and Limacodidae have been provided. The wing expanse and geographical distribution of each species have been given. A list of 64 species so far known from Sikkim has been appended and the species reviewed from literature are marked with asterisk (*).

Family CTENUCHIDAE

Key to genera

1. Hindwing vein Cu_{1a} absent ..... *Ceryx* Wallengren
– Hindwing vein Cu_{1a} present 2
2. Hindwing vein M_2 from lower angle of cell or stalked with vein Cu_{1a} 3
– Hindwing vein M_2 from well above of lower angle of cell ..... *Eressa*-Walker
3. Forewing vein Cu_{1a} from close to angle of cell ..... *Trichaeta* Swinhoe
– Forewing vein Cu_{1a} from well before lower angle of cell 4
4. Forewing vein R_1 stalked with R_2–R_5 ..... *Syntomis* Ochsenheimer
– Forewing vein R_1 from cell ..... *Callitomis* Butler

Genus *Ceryx* Wallengren

1863. *Ceryx* Wallengren, *Wien. Ent. Mon.* **7** : 140.

Key to species

1. Abdomen with five bands .... *hyalina* (Moore)
- Abdomen with two bands .....2.
2. Hindwing with narrow terminal black band.. ..... *godartii* (Boisduval)
- Hindwing with broad terminal black band .... *imaon* (Cramer)

*1. *Ceryx hyalina* (Moore)

1879. *Syntomis hyalina* Moore, *Lep. Atk.* **1** : 13.

1898. *Ceryx hyalina* (Moore) : Hampson, *Cat, Lep. Phal. Brit. Mus.* **1** : 42.

Material examined : Nil

Wing expanse : 30–40 mm.

Distribution : India : Sikkim, Assam and Nagaland. *Elsewhere* : Myanmar.

2. *Ceryx godartii* (Boisduval)

1829. *Syntomis godartii* Boisduval, *Mon. Zyg.* : 115.

1997. *Ceryx godartii* (Boisduval) : Ghosh & Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 691.

Material examined : Sikkim : Sikkim, 3exs, no date (*G.C. Dudgeon* Coll). West Sikkim, Chaking, 1ex., 21.ix.1993. (*S.K. Saha & H.N. Singh* Coll.); Jadong, 6 exs, 29 & 30. x. 1994; Jadong, 1 C. A. R. Rest House, 1.xi.1994 (*G.C. Sen* Coll.); Dentam, 1ex, 18.x.1995; Tintin, 1ex., 20.x.1995 (*S.C. Mitra* Coll.)

Wing expanse : 25–30 mm.

Distribution : India : Sikkim (East and West Sikkim). Assam, Meghalaya, South India and West Bengal. *Elsewhere* : Malaya, Myanmar and Sumatra.

3. *Ceryx imaon* (Cramer)

1780. *Sphnix imaon* Cramer, *Pap. Exot.*, **3** : 94, pl. 248E.

1997. *Ceryx imaon* (Cramer) : Ghosh & Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 691

Material examined : Sikkim : North Sikkim, Taichung, 2727m., 1ex., 5. vii. 1959 (*A.G.K. Menon* Coll.); Dikchu, 1ex., 21. v. 1994 (*S. Chatterjee* Coll.). East Sikkim, Jadong, 1 km. North of 1.C.A.R. Rest House, 1ex., 1. xi. 1994 (*G.C. Sen* Coll); Jorethang, 4 exs., 15. x. 1995 (*S. C. Mitra* Coll.).

Wing Expanse : 30–34 mm.

Distribution : India : Sikkim (East, North and South Sikkim), Andamans, Assam, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Meghalaya, Tamil Nadu and West Bengal. *Elsewhere* : Indonesia, Myanmar and Sri Lanka.

Genus *Eressa* Walker

1854. Eressa Walker, *List Lep. Het. Brit. Mus.* **1** : 149.

Key to species

1. Antennae of male bipectinate .... *confinis* (Walker)

   Antennae of male serrate .....2.
2. Wings hyaline yellow, forewing with small apical black patch not extending to vein M_3 .... *multigutta* (Waltker)
- Wings hyaline white, forewing with apical black patch extending to vein .... *lepcha* (Moore)

4. *Eressa confinis* (Walker)

1864. *Glaucopis confinis* Walker, *List Lep. Het. Brit. Mus.*, **1** : 149.

1997. *Eressa confinis* (Walker) : Ghosh & Chaudhury, *State Fauna Series 3, Fauna of West Bengal* (7) : 696.

Material examined : Sikkim, 2exs., no date (*G.C. Dudgeon* Coll.)

Wing expanse : 25 mm.

Distribution : India : Sikkim, Himachal Pradesh, Maharashtra, Meghalaya, North West Himalaya, Tamil Nadu and West Bengal. *Elsewhere* : Bhutan, Myanmar and Sri Lanka.

5. *Eressa multigutta* (Walker)

1854. *Syntomis multigutta* Walker, *List lep. Het. Brit. Mus.*, **1** : 134.

1997. *Eressa multigutta* (Walker) : Ghosh & Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 696.

Material examined : Sikkim, 2exs., No other data, 2exs., 9.xi.1983 (*O. Moller* Coll.). North Sikkim, Thombyak, 3870m., 2exs., 2vi.1959 (*A.G.K. Menon* Coll).

Wing expanse : 27–30 mm.

Distribution : India : Sikkim (North Sikkim), Arunachal Pradesh, Meghalaya and West Bengal. *Elsewhere* : China, Myanmar, Nepal and Tibet.

6. *Eressa lepcha* (Moore)

1879. *Syntomis lepcha* Moore, Lep. Atk., **1** : 12.

1898. *Eressa lepcha* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.* **1** : 121.

Wing expanse : 24 mm.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

Genus *Trichaeta* Swinhoe

1892. *Trichaeta* Swinhoe, *Cat. Het. Mus. Oxon.*, : 52.

7. *Trichaeta teneiformis* (Walker)

1856. *Syntomis teneiformis* Walker, *Cat. Lep. Het. Brit. Mus.* **7** : 1595.

1898. *Trichaeta teneiformis* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.* **1** : 58.

Diagnostic character : Black, suffused with golden brown, vertex of head and collar orange. Forwing with wedge shaped hyaline spot below the costa and two spots between vein Cu_{1a} and M_2. Inner margin of hindwing base yellow. Abdomen with orange paired dorsolateral spots on each segments.

Material examined : Sikkim, 1ex., no date (*Knyvetti* Coll.)

Wing expanse : 22 mm.

Distribution : India : Sikkim and Himachal Pradesh. *Elsewhere* : Bhutan.

Remarks : The species is a first record for Sikkim.

Genus *Syntomis* Ochsenheimer

1808. *Syntomis* Ochsenheimer, *Eur. Schmett.* **2** : 103.

Key to species

1. Antennae of male serrate, female simple ..... *serrate* Hampson
– Antennae simple in both sexes 2
2. Abdomen without dorsal band ..... *unifascia* Hampass
– Abdomen with dorsal bands 3
3. Abdomen with two bands 4
– Abdomen with more than two bands 8
4. Abdomen with lateral spots .... *lucina* Butler
– Abdomen without lateral spots 5
5. Collar with orange ring ..... *cyssea* (Stoll)
– Collar without orange ring 6
6. Metathorax with orange patch 7
– Metathorax without orange patch ..... *bicincta* (Kollar)
7. Inner area of hindwing bright orange ..... *sperbius* (Fabricius)
– Inner area of hindwing without orange ..... *hydatina* (Butler)
8. Abdomen with the extremity orange ..... *submarginalis* Walker
– Abdomen without orange extremity. 9
9. Wings with yellow hyaline spot ..... *newara* Moore
– Wings with white hyaline spot 10
10. Forewing without black bar across submedian interspaces ..... *malaena* Walker
– Forewing with black bar across submedian interspaces 11
11. Frons orange ..... *compta* Walker
– Frons white ..... *divisa* Walker

8. *Syntomis serrata* Hamson

1892. *Syntomis serrata Hampson, Fauna Brit. India, Moths,* **1** : 221

1898. *Symtomis serrata* Hampson : Hampson, *Cat. Lep. Phal. Brit. Mus.* **1** : 70

Material examined : Sikkim, North Sikkim, Dikchu, 1ex., 15.viii.1954 (*A.G.K. Menon* Coll.).

Wing expanse : 36 mm.

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

Remarks : The species is recorded as new to Sikkim.

9. *Syntomis unifascia* Hampson

1892. *Syntomis unifascia* Hampson, *Fauna Brit. India, Moths* **1** : 212.

1898. *Syntomis unifascia* Hampson : Hampson, *Cat. Lep. Phal. Brit Mus.* **1** : 112, pl. 4, Fig. 20.

Wing expanse : 36 mm.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

10. *Syntomis lucina* Butler

1876. *Syntomis lucina* Butler *J. Linn. Soc. Zool.* **12** : 345.

1997. *Syntomis lucina* Butler : Ghosh & Chaudhury, *State Fauna Series 3 Fauna of West Bengal (7)* : 695.

Material examined : Sikkim, 2exs., No other data.

Wing expanse : 30 mm.

Distribution : India : Sikkim and West Bengal. *Elsewhere* : Nepal.

11. *Syntomis cyssea* (Stoll)

1872. *Sphnix cyssea* Stoll, *Pap. Exot.* **4** : 124, pl. 355B.

1997. *Syntomis cyssea* (Stoll) : Ghosh & Chaudhury, *State Fauna Series 3, Fauna of West Bengal* (7) : 694.

Material examined : Sikkim, 1ex., No date (*Knyvetti* Coll).

Wing expanse : 28 mm.

Distribution : India : Sikkim, Maharashtra, Meghalaya, North West Himalaya, Tamil Nadu and West Bengal. *Elsewhere* : Myanmar, Nepal, Pakistan and Sri Lanka.

12. *Syntomis bicincta* Kollar

1844. *Syntomis bicincta* Kollar, *In Hugels Kashmir und das Reich der Siek,* **4** : 460, pl. 19, fig. 8.

1997. *Syntomis bicincta* Kollar : Ghosh & Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 694-695.

Material examined : Sikkim, 2exs., No date (*Kynvetti* Coll.) 2exs., 10.iv.1888 (*O. Moller* Coll).

Wing expanse : 38 mm.

Distribution : India : Sikkim. Meghalaya, North West Himalaya, Uttar Pradesh and West Bengal. *Elsewhere* : China

13. *Syntomis sperbius* (Fabricius)

1787. *Zygaena sperbius* Fabricius, *Mont. Ins.* **2** : 103.

1997. *Syntomis sperbius.* (Fabricius) : Ghosh & Choudhury, *State Fauna Series,* **3**, *Fauna of West Bengal* (7) : 694.

Material examined : Sikkim, 2exs., No date (*O. Moller* Coll.)

Wing expanse : 31 mm.

Distribution : India : Sikkim, Assam, Meghalaya and West Bengal. *Elsewhere* : Myanmar, Tenasserim and Tonkin.

14. *Syntomis hydatina* Butler

1876. *Syntomis hydatina* Butler, *J. Linn. Soc. London* : 346.

1997. *Syntomis hydatina* Butler : Ghosh & Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 694

Wing expanse : 24-26mm.

Distribution : India : Sikkim, Calcutta and Central India.

15. ***Syntomis submarginalis*** Walker

1869. *Syntomis submarginalis* Walker, *Char. Undescr. Het* : 81.

1898. *Syntomis submarginalis* Walker : Hampson, *Cat. lep. Phal. Brit. Mus.* **1** : 91, pl. 3, fig. 15.

Material examined : Sikkim, 3exs., No date (*O. Moller* Coll.)

Wing expanse : 38 mm.

Distribution : India : Sikkim. *Elsewhere* : Myanmar.

16. ***Syntomis newara*** Moore

1879. *Syntomis newara* Moore, *Lep. Atk.*, : 12.

1898. *Syntomis newara* Moore : Hampson, *Cat. Lep. Phal. Brit. Mus.* **1** : 94, pl. 3, Fig. 18.

Material examined : Sikkim, 1ex., No other data.

Wing expanse : 40 mm.

Distribution : India : Sikkim. *Elsewhere* : Bhutan.

17. ***Syntomis malaena*** (Walker)

1854. *Syntomis melas* Walker, *List Lep. Insects Brit. Mus.* **1** : 135

1997. *Syntomis malaena* (Walker) : Ghosh & Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 693.

Material examined : Sikkim, 4 exs., No other data.

Wing expanse : 52-54mm.

Distribution : India : Sikkim, Assam and Meghalaya. *Elsewhere* : Myanmar and Nepal.

18. ***Syntomis compta*** Walker

1869. *Syntomis compta* Walker, *Char. Undercr. Het.*, : 89.

1898. *Syntomis compta* Walker : Hampson, *Cat. Lep. Phal. Brit. Mus.* **1** : 99.

Material examined : Sikkim, 2exs., No other data.

Wing expanse : 36 mm.

Distribution : India : Sikkim, Assam and Meghalaya.

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

19. ***Syntomis divisa*** Walker

1854. *Syntomis divisa* Walker, *List Let. Insects Brit. Mus.* **1**: 131.

1898. *Syntomis divisa* Walker : Hampson, *Cat. Lep. Phal Brit. Mus.* **1** : 98-99.

Material examined : Sikkim, 3exs., 10. 20. iv. 1888 (*O. Moller* Coll.)

Wing expanse : 36 mm.

Distribution : India : Sikkim, Assam and Meghalaya. *Elsewhere* : Bangladesh and Myanmar.

Genus ***Callitomis*** Butler

1876. *Callitomis* Butler, *J. Linn. Soc. Zool.* **12** : 351.

20. ***Callitomis multifasciata*** Hampson

1892. *Callitomis multifasciata* Hampson, *Fauna Brit. India.* Moths, **1** : 225.

1898. *Callitomis multifasciata* Hampson : Hampson, *Cat. Lep. Phal. Brit. Mus.* **1** : 33.

Material examined : Sikkim, 4 exs., No other data.

Wing expanse : 52 mm.

Distribution : India : Sikkim. Assam and Meghalaya. *Elsewhere* : Myanmar and Nepal.

Family LIMACODIDAE

Key to genera

1. Forewing short, the outer margin evenly rounded, apex not produced 2
- Forewing elongate, the outer margin not rounded, apex produced ..... *Mahanta* Moore
2. Palpi porrect 3
- Palpi upturned 11

3. Palpi extremely elongate 4
– Palpi shorter 5
4. Palpi with terminal hair brush. Forewing veins R_3–R_5. stalked ..... *Scopelodes* Westwood
– Palpi without terminal hair brush. Forewing vein R_5 free ..... *Hyphorma* Walker
5. Hindwing vein Sc + R_1 anastomosing with R_5 near base ..... *Miresa* Walker
Hindwing vein SC + R_1 free 6
6. Forewing vein R_5 free 5
– Forewing vein R_5 stalked with R_3 and R_4 8
7. Forewing vein R_3 and R_4 stalked, R_2 free ... . *Natada* Walker
– Forewing vein R_2—R_4 stalked .... *Birthama* Walker
8. Forewing short, broad and rounded .... *Susica* Walker
– Forewing produced 9
9. Forewing vein R_2 from angle of cell or before it 10
– Forewing vein R_2 stalked with R_3—R_5 .... *Tetraphelps* Hampson
10. Forewing apex somewhat rectangular .... *Thosea* Walker
– Forewing apex rounded ..... *Parasa* Moore
11. Palpi reaching above vertex of head. 12
– Palpi reaching upto vertex of head 13
12. Forewing vein R_5 stalked with R_2–R_4 .... *Monema* Walker
– Forewing vein R_5 free .... *Araeogyia* Hampson
13. Forewing vein R_1 not curved 14
– Forewing vein R_1 curved 15
14. Forewing vein R_5 stalked with R_2–R_4 .... *Triplophleps* Hampson
– Forewing vein R_5 free .... *Ceratonema* Hampson
15. Palpi short. Hindwing vein R_s and M_1 from cell 16
– Palpi reaching upto vertex of head. Hindwing vein R_s and M_1 stalked ..... *Narosa* Walker.
16. Head and thorax smoothly scaled .... *Cania* Walker
– Head and thorax clothed with erect pile .... *Altha* Walker

Genus ***Mahanta*** Moore

1879. Mahanta Moore, **Lep. Atk.** : 78.

1. ***Mahanta quadrilinea*** Moore

1879. *Mahanta quadrilinea* Moore, *Lep. Atk.*, : 78.

1892. *Mahanta quadrilinea* Moore : Hampson, *Fauna Brit. India, Moths*, **1** : 401-402, fig. 227.

Diagnostic Character : Head grey, palpi fulvous with a white bar. Forewing ochreous with oblique medial dark line, a similar line from the apex to inner margin beyond the middle, inner area suffused with grey. Hindwing uniform ochreous.

Material examined : Sikkim, lex. vi. 1897 (*G.C. Dadgeon* Coll.)

Wing expanse : 48mm.

Distribution : India : Sikkim and Darjeeling.

Genus ***Scopelodes*** Westwood

1841. *Scopelodes* Westwood, *Nat. Libr.* **37** : 222

Key to species

1. Hindwing vein R_s and M_1 from cell in male and stalked in female 2
– Hindwing vein R_s and M_1 stalked in both sexes 3
2. Palpi fulvous in colour and thickly clothed with hair. Wing silky ochreous .... *sericca* Butler
– Palpi brown in colour and without hair. Wing pale silky ochreous to smoky brown .... *venosa* Westwood

3. Palpi reddish brown, abdomen orange. Hindwing uniform pale yellow .... *unicolor* Westwood

– Palpi and abdomen blackish. Hindwing very dark brown ..... *contracta* Walker

2. *Scopelodes sericea* Butler

1880. *Scopelodes sericea* Butler, *Ann. Mag. nat. Hist. Soc.* (5) **6** : 63, pl. 101, fig. 5.

1892. *Scopelodes sericea* Butler : Hampson, *Fauna Brit. India, Moths*, **1** : 374.

Material examined : Sikkim, 4 exs., 18.viii.1890, 5.ix.1896 (*G.C. Dudgeon* Coll.)

Wing expanse : 70-72 mm.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

3. *Scopelodes venosa* Walker

1855. *Scopelodes venosa* Walker, *Cat. Lep. Het. Brit. Mus.*, **5** : 1105.

1892. *Scopelodes venosa* Walker : Hampson, *Fauna Brit. India, Moths*, **1** : 374, fig. 253.

Material examined : Sikkim, 6 exs., V–VIII, IX. 1896 (*G.C. Dudgeon* Coll.)

Wing expanse : 52–55mm.

Distribution : India : Sikkim and Darjeeling. *Elsewhere* : Moulmein, Sri Lanka and Sylhet.

4. *Scopelodes unicolor* Westwood

1841. *Scopelodes unicolor* Westwood, *Nat. Libr.* **37** : 222, pl. 28, fig. 2.

1892. *Scopelodes unicolor* Westwood : Hampson, *Fauna Brit. India, Moths*, **1** : 375.

Material examined : Sikkim, 5 exs, v–viii 1887, 22 viii. 1890, 15. v. 1891 (*G.C. Dudgeon* Coll.)

Wing Expanse : 42-58 mm.

Distribution : India : Sikkim and Assam, *Elsewhere* : Borneo and Java.

5. *Scopeledes contractar* Walker

1855. *Scopelodes contracta* Walker, *Cat. Lep. Het. Brit. Mus.*, **5** : 1105.

1892. *Scopelodes contracta* Walker : Hampron, *Fauna Brit India, Moths.* **1** : 375.

Material examined : Sikkim, 1ex., vii. 1896 (*G.C. Dudgeon* Coll.)

Wing expanse : 38 mm.

Distribution : India : Sikkim. *Elsewhere* : China.

Genus *Hyphorma* Walker

1865. *Hyphorma.* Walker, *Cat. Lep. Het Brit. Mus.* **32** : 493.

6. *Hyphorma minax* Walker

1865. *Hyphorma minax* Walker, Cat. Lep. Het. Brit. Mus., **32** : 493.

1892. *Hyphorma minax* Walker : Hampson, *Fauna Brit. India Moths* **1** : 375-376.

Diagnostic characters : Head, thorax and abdomen red brown, base of thorax and basal segment of abdomen deep red. Forwing silky red brown, an oblique dark line from costa before apex to lower angle of cell. Foretibiae with a silvery white spot.

Material examined : Sikkim, 1ex., – ix.1897 (*G.C. Dudgeon* Coll.)

Wing expanse : 45 mm.

Distribution : India : Sikkim, *Elsewhere* : North China.

Genus *Miresa* Walker

1855. *Miresa* Walker, *Cat.* Lep. Het. *Brit Mus.* **5** : 1123.

Key to species

Forewing vein R_2 free and red brown in colour ..... *bracteata* Butler

Forewing vein R_2 stalked and dark brown in colour ..... *decedens* Walker.

7. *Miresa bracteata* Butler

1880. *Miresa bracteata* Butler, *Ann, Mag. nat. Hist. Soc.* (5) **6** : 64.

1892. *Miresa bracteata* Butler : Hampson, *Fauna Brit. India,* Moths, **1** : 387.

Material examined : Sikkim, 2exs., – 1889, 1ex., vii.1895 (*Pilcher & Dudgeon* Coll)

Wing expanse : 40 mm.

Distribution : India : Sikkim, Darjeeling and Nagas.

8. *Miresa decedens* Walker.

1855. *Miresa decedens* Walker, *Cat., Lep. Het. Brit. Mus.*, **5** : 1125.

1892. *Miresea decedens* Walker : Hampson, *Fauna Brit. India Moths* **1** : 387.

Material examined: Sikkim, 3exs., 20.viii.1890, ix.1897 (*G.C. Dudgeon* Coll).

Wing expanse : 35-38mm.

Distribution : India : Sikkim. Assam and Nilgiris.

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

Genus *Natada* Walker

1855. *Natada* Walker, Cat. *Lep. Het. Brit. Mus.* **5** : 1108.

Key to species

1. Antennae of male bipectinate upto apex. Head copper colour ..... *conjunctana* Walker.
– Antennae of male with distal half serrate. Head not copper colour 2
2. Forewing dark silky red brown. Foretibiae of male with silvery white spot .... *velutina* (Kollar)
– Forewing ochreous brown, irrorated with black. Foretibiae of male without silvery white spot ..... *ocellata* (Moore)

9. *Natada conjunctana* Walker

1855. *Natada conjunctana* Walker, *Cat. Lep. Het. Brit. Mus.* **5** : 1150.

1892. *Natada conjunctana* Walker : Hampson, *Fauna Brit. India, Moths,* **1** : 381.

Material examined : Sikkim, 1ex., 20.v. 1880. (*G.C. Dudgeon* Coll.)

Wing expanse : 24 mm.

Distribution : India : Sikkim, Elsewhere : East Pegu, Formosa, North-China and Rangoon.

10. *Natada velutina* (Kollar)

1848. *Gastropacha velutina* Kollar, *In Hugel's Kashmir und das Rich. der. Siek.*, **4** : 473.

1892. *Natada velutina* (Kollar) : Hampson, *Fauna Brit India, Moths,* **1** : 382-383

Material examined : Sikkim, 5 exs., 7. vi. 1890, V–VI, 96, V. 1897. (*G.C. Dudgeon* Coll).

Wing expanse : 62-65 mm.

Distribution : India : Sikkim. Bengal, Cachar, Himalaya and Poona. *Elsewhere* : Myanmar and Sind.

11. *Natada ocellata* (Moore)

1879. *Monema ocellata* Moore, *Lep. Atk.* **1** : 74.

1892. *Natada ocellata* (Moore) : Hampson, *Fauna Brit. India, Moths,* **1** : 382.

Wing expanse : 40–60mm.

Distribution : India : Sikkim. Meghalaya and Nagas. *Elsewhere* : Myanmar.

Genus *Birthama* Walker

1862. *Birthama* Walker, *J. Linn.Soc.*, **6** : 175.

12. *Birthama. junctura* Walker

1865. *Birthama junctura* Walker, *Cat. Lep. Het. Brit. Mus.*, **33** : 857.

1892. *Birthama junctura* Walker : Hampson, *Fauna Brit. India* Moths, **1** : 384.

Diagnostic characters : Head, thorax, abdomen and forewing red brown, basal area of

forewing darkest and bounded by oblique dark medial line, two waved post medial line present. Hindwing paler.

Material examined : Sikkim, 1ex., vi 1897 (*G.C. Dudgeon* Coll.)

Wing expanse : 37 mm.

Distribution : India : Sikkim. *Elsewhere* : Borneo and Myanmar.

Remarks : The species is recorded as new to India.

Genus ***Susica*** Walker

1855. *Susica* Walker, *Cat. Lep. Het. Brit. Mus.* **5** : 1113.

13. ***Susica pallida*** Walker

1855, *Susica pallida* Walker, *Cat. Lep. Het. Brit. Mus.* **5** : 1114.

1892. *Susica pallida* Walker : Hampson, *Fauna Brit. India, Moths*, **1** : 377, Fig. 257

Diagnostic characters : Pale silky brown. Forewing with an oblique line from casta just before the apex to inner margin, underside suffused with black near the base. Hind wing slightly browner.

Material examined : Sikkim, 5 exs, 11, 20 vi. 1890, vi. 1896 (*G.C. Dudgeon* Coll.)

Wing expanse : 25–45mm.

Distribution : India : Sikkim. *Elsewhere* : China, Moulmein and Nepal.

Genus ***Tetraphleps*** Hampson

1892. *Tetraphleps* Hampson, *Fauna Brit India*, Moths, **1** : 383.

Key to species

Antennae with the branches long. Forewing apex round ..... *brevilinea* (Walker)

– Antennae with the branches short. Forewing apex produced ..... *crispa* Swinhoe

14. ***Tetraphleps brevilinea*** (Walker)

1865. *Miresa brevilinea* Walker, *Cat. Lep. Het. Brit. Mus.*, **32** : 475.

1892. *Tetraphleps brevilinea* (Walker) : Hampson, *Fauna Brit. India, Moths*, **1** : 383.

Wing expanse : 36-40 mm.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

15. ***Tetraphleps crispa*** Swinhoe

1880. *Tetraphleps crispa* Swinhoe, *Proc. Zool. Soc. London* : 400, pl. 43, fig. 4.

1892. *Tetraphleps crispa* Swinhoe : Hampson, *Fauna Brit. India, Moths*, **1** : 383.

Material examined : Sikkim, 1ex., No date (*J.C. Pilcher* Coll.)

Wing expanse : 35 mm.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

Genus ***Thosea*** Walker

1855. *Thosea* Walker, *List Lep. Het. Brit. Mus.*, **5** : 1068.

Key to species

1. Male with antennae bipectinate. 2
– Male with distal half of antennae serrate..... ..... *divergens* (Moore)
2. Forewing greyish brown 3
– Forewing not greyish brown 4
3. Head, thorax and abdomen red brown, a white spot at the end of foretibiae .... *cervina* Moore
– Head, thorax and abdomen grey, foretibiae without white spot ..... *sinensis* Walker
4. Basal half of forewing dark brown .... *tripartita* (Moore)
– Basal half of forewing not dark brown .... *cana* (Walker)

16. *Thosea divergens* (Moore)

1879. *Setora divergens* Moore, *Descrb. Ind. Lep. Atk.*, : 75, pl. 3, fig. 23.

1892. *Thosea divergens* (Moore) : Hampson, *Fauna Brit. India Moths*, **1** : 380.

Material examined : Sikkim, 2exs., ix. 1897 (*G.C. Dudgeon* Coll.)

Wing expanse : 35 mm.

Distribution : India : Sikkim. Assam and Nagas.

17. *Thosea cervina* Moore

1897. *Thosea cervina* Moore, *Ann. Mag. nat. Hist. Soc.* (4) **20** : 348.

1892. *Thosea cervina* Moore : Hampson, *Fauna Brit India, Moths*, **1** : 379.

Material examined : Sikkim, 5 exs., v–viii. 1897 (*G.C. Dudgeon* Coll.)

Wing expanse : 36-45mm.

Distribution : India : Sikkim, *Elsewhere* : Srilanka.

18. *Thosea sinensis* Walker

1855. *Thosea sinensis* Walker, *Cat. Lep. Het. Brit. Mus.*, **5** : 1093.

1892. *Thosea* sinensis Walker : Hampson, *Fauna Brit. India, Moths*, **1** : 379.

Material examined : Sikkim, 4 exs., vi. 1896, ix. 1897 (*G.C. Dudgeon* Coll.)

Wing expanse : 35–38 mm.

Distibution : India : Sikkim and Cachar. *Elsewhere* : Formosa, Hongkong, Java and Pegu.

19. *Thosea tripartita* (Moore)

1884. *Aphendala tripartita* Moore, *Trans. ent. Soc. London* : 376.

1892. *Thosea tripartita* (Moore) : Hampson, *Fauna Brit. India, Moths*, **1** : 378.

Material examined : Sikkim, 5exs., vi. 1896-97 (*G.C. Dudgeon* Coll.)

Wing expanse : 25–27mm.

Distribution : India : Sikkim, Bihar, Dharamsala, Jabbalpur, Manipur and Mhow.

20. *Thosea cana* (Walker)

1865. *Parasa cana* Walker, *Cat. Lep. Het. Brit. Mus.* **32** : 484.

1892. *Thosea cana* (Walker) : Hampson, *Fauna Brit India, Moths*, **1** : 378, fig. 258.

Material examined : Sikkim, 2exs, 20. viii. 1890, viii. 97. (*G.C. Dudgeon* Coll.).

Wing expanse : 28mm.

Distribution : India : Sikkim. Kulu, Nilgiris and Poona. *Elsewhere* : Srilanka.

Genus *Parasa* Moore

1859. *Parasa* Moore, *Lep. E.I.C.* : 413.

Key to species

1. Antennae of male serrated throughout .... *dentata* Hampson
– Antennae of male bipectinate, the distal half serrated 2
2. Head and thorax pea green 3
– Head and thorax not pea green 4
3. Forewing pea green with brown speck between vein 2A and 2c another between vein M_2 and M_3 ..... *bicolor* (Walker)
– Forewing basal two thirds purlpish brown in male and dark reddish brown in female and without speck ..... *herbifera* (Walker)
4. Forewing with green patch .... *dharma* Moore
– Forewing without green patch 5
5. Thorax with brown stripe 6
– Thorax without brown stripe .... *hilaris* (Westwood)
6. Forewing with basal patch 7
– Forewing without basal patch .... *argentilinea* Hampson

7. Forewing with a silvery white line on marginal area ..... *repanda* (Walker)

– Forewing without silvery white line .... *pastoralis* Butler

21. ***Parasa dentata*** Hampson

1892. *Parasa dentata* Hampson, *Fauna Brit. India*, Moths, **1** : 391.

Wing expanse : 30 – 44mm.

Distribution : India : Sikkim and Nagas

22. ***Parasa bicolor*** (Walker)

1855. *Neoera bicolor* Walker, *Cat. Lep. Het. Brit. Mus.*, **5** : 1142.

1998. *Parasa bicolor* (Walker) : Ghosh & Chaudhury, *State Fauna Series* **4** : *Fauna of Meghalaya*, (6) : 399

Material examined : Sikkim, 2exs., vii. ix. 1897. (*G.C. Dudgeon* Coll.).

Wing expanse : 36 mm.

Distribution : India : Sikkim, Throughout Continental India. *Elsewhere* : Myanmar.

23. ***Parasa herbifera*** (Walker)

1855. *Parasa herbifera* Walker, *Cat. Lep. Het. Brit. Mus.*, **5** : 1136.

1998. *Parasa herbifera* (Walker) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 399

Material examined : Sikkim, 13exs., 11.V, VIII, IX, 1897 (*G.C. Dudgeon* Coll.).

Wing expanse : 28-36 mm.

Distribution : India : Sikkim, Himachal Pradesh, Meghalaya and Tamil Nadu. *Elsewhere* : Nepal.

24. ***Parasa dharma*** Moore

1859. *Parasa dharma* Moore, *Lep. E.I.C.* : 414, pl. xi. a, fig. 7.

1892. *Parasa dharma* Moore : Hampson, *Fauna Brit. India, Moths*, **1** : 388.

Material examined : Sikkim, 1ex., 17. vi. 1875. (*G.C. Dudgeon* Coll.)

Wing expanse : 28 mm.

Distribution : India : Sikkim, *Elsewhere* : Java and Rangoon.

Remarks : The species is new to India.

25. ***Parasa hilaris*** (Westwood)

1848. *Limacodes hilaris* Westwood, *Cab. Cor. Ent.*, : 50, pl. 24, fig. 3.

1892. *Parasa hilaris* (Westwood), Hampson, *Fauna Brit. India Moths*, **1** : 389.

Material examined : Sikkim, 8 exs., v. 1896, v. vii, ix, 1897 (*G.C. Dudgeon* Coll.)

Wing expanse : 25-32 mm.

Distribution : Throughout India including Sikkim. *Elsewhere* : Sri Lanka.

26. ***Parasa angentilinea*** Hampson

1892. *Parasa argentilinea* Hampson, *Fauna Brit. India, Moths*, **1** : 389.

Material examined : Sikkim, 1. ex., ix. 1892 (*G.C. Dudgeon* Coll.)

Wing expanse : 25mm.

Distribution : India : Sikkim and Assam.

27. ***Parasa repanda*** (Walker)

1855. *Neoera repanda* Walker, *Cat. Lep. Het. Brit. Mus.*, **5** : 1141.

1892. *Parasa repanda* (Walker) : Hampson, *Fauna Brit India, Moths*, **1** : 388.

Wing expanse : 52 mm.

Distribution : India : Sikkim and Assam.

28. ***Parasa pastoralis*** Butler

1880. *Parasa pastoralis* Butler, *Ann. Mag. nat. Hist. Soc.* (5) **6** : 63.

1892. *Parasa pastoralis* Butler : Hampson, *Fauna Brit India, Moths*, **1** : 389.

Material examined : Sikkim, 3exs, ix. 1896-97 (*G.C. Dudgeon* Coll.)

Wing expanse : 42 mm.

Distribution : India : Sikkim. Dharamsala and Nagas. *Elsewhere* : Bhutan.

Genus ***Monema*** Walker

1856. *Menema* Walker, *List Lep. Het. Brit. Mus.*, **5** : 1112.

29. ***Monema*** sp.

Material examined : Sikkim, 12exs., 7.8, 20–22 vi, 16, viii. 1888, 7, 10, vi, 1890, 23. v, viii, 1845 (*G. C. Dudgeon* Coll.)

Genus ***Araeogyia*** Hampson

1892. *Araeogyia* Hampson, *Fauna Brit. India.* Moths, **1** : 394.

Key to species

Thorax purlplish black. Forewing black irrorated with few leaden scale .... *spatulata* Hampson

– Thorax chestnut. Forewing chestnut with blackish patch..... *castanaea* Hampcson

30. ***Araeogyia spatulata*** Hampson

1892. *Araeogyia spatulata* Hampson, *Fauna Brit, India,* Moths, **1** : 395.

Wing expanse : 16 mm.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

31. ***Araeogyia castanea*** Hampson

1892. *Araeogyia castanea* Hampson, *Fauna Brit India, Moths,* **1** : 395.

Material examined : Sikkim, 2exs., V. VIII 1887 (*G.C. Dudgeon* Coll.)

Wing expanse : 20 mm.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

32. ***Araeogyia pheopasta*** Hampson

1906. *Araeogyia pheopasta* Hampson, *Proc. Zool. Soc. London,* : 462, pl. 36, fig. 22.

Wing expanse : 22 mm

Distribution : India : Sikkim and Darjeeling.

Genus ***Triplophleps*** Hampson

1898. *Triplophleps* Hampson, *Fauna Brit India, Moths* **1** : 392.

33. ***Triplophleps inferma*** (Swinhoe)

1890. *Proneca ps inferma* Swinhoe, *Trans, ent. Soc. London* : 194.

1892. *Triplophleps inferma* (Swinhoe) : Hampson, *Fauna Brit. India. Moths* **1** : 393.

Diagnostic characters : Head, thorax, abdomen and wings greyish fuscous. Forewing with black antemedial curved line which are not reaching either the coasta or termen, another black line from lower angle of cell to vein 2A, an oblique curved line from costa before the apex to above outer angle.

Material examined : Sikkim, 1ex., ix, 1897 (*G.C. Dudgeon* Coll.)

Wing expanse : 24 mm.

Distribution : India : Sikkim. *Elsewhere* : Rangoon.

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

Genus ***Ceratonema*** Hampson

1892. *Ceratonema* Hampson, *Fauna Brit. India* Moths, **1** : 393.

Key to species

1. Head and thorax red brown with purlpish suffusion..... *pallidinota* Hampson

– Head and thorax ochreous without purlpish suffusion.....2

2. Forewing suffused with whitish along inner and outer margin. Hindwing whitish .... *albifusum* Hampson

– Forewing without white margin. Hindwing pale yellow ..... *retractum* Walker

34 *Ceratonema pallidinota* Hampson

1895. *Ceratonema pallidinata* Hampson, *Trans. ent. Soc.*, 290.

1896. *Ceratonema pallidinota* Hampson : Hampson, *Fauna Brit. India, Moths*, **4** : 485.

Wing expanse : 22 mm.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

35. *Ceratonema albifusum* Hampson

1892. *Ceratonema albifusum* Hampson, *Fauna Brit India, Moths*, **1** : 394.

Material examined : Sikkim, 1ex., 10 vi. 1890 (*G.C. Dudgeon* Coll.)

Wing expanse : 25 mm.

Distribution : India : Sikkim and Nagas.

Remarks : The species is new for Sikkim.

36. *Ceratonema retractum* (Walker)

1865. *Limacodes retractum* Walker, Cat. Lep. *Het. Brit. Mus.* **32** : 487.

1892. *Ceratonema retractum* (Walker) : Hampson, *Fauna Brit. India, Moths*, **1** : 394.

Material examined : Sikkim, 1ex., 1895. (*J.G. Pilcher* Coll.)

Wing expanse : 22mm.

Distribution : India : Sikkim and Darjeeling.

37. *Ceratonema fusca* Swinhoe

1905. *Ceratonema fusca Swinhoe, Ann. Mag. nat. Hist.* (7) **15** : 498.

Wing expanse : 22-26 mm.

Distribution : India : Sikkim. Assam and Khasis.

Genus *Narosa* Walker

1855. *Narosa* Walker, *Cat. Lep. Het. Brit. Mus*, **5** : 1151.

Key to species

Head and thorax white. Forewing yellowish white, spotted, and streaked with red brown. Hindwing pale yellow .... *conspersa* walker.

– Head and thorax white. Forewing pale brown irrorated with fuscous. Hindwing silky fuscous ..... *doenia* (Moore)

38. *Narosa conspersa* Walker

1855. *Narosa conspersa* Walker, *Cat. Lep. Het. Brit. Mus*, **1**: 398-399.

Material examined : Sikkim, 3exs., x. 1890, VII. 1897 (*G. C. Dudgeon* Coll)

Wing expanse : 24mm.

Distribution : India, Sikkim, Nagas and South India. *Elsewhere* : Borneo and Sri Lanka.

Remarks : The species is recorded as new to Sikkim.

39. *Narosa doenia* (Moore)

1859. *Parasa doenia* Moore, *Cat. Lep. Mus. E.I.C.*, **2** : 416.

1892. *Narosa doenia* (Moore) : Hampson, *Fauna. Brit. India*, Moths, **1** : 399.

Material examined : Sikkim, 7 exs, VII. 1896. V. VII, IX. 1897 (*G. C. Dudgeon* Coll).

Wing expanse : 18-24mm.

Distribution : India : Sikkim : Bihar and Nagas.

Remarks : The species is new to Sikkim.

40. *Narosa* sp.

Material examined : Sikkim, 1ex., 20.v.1880 (*G.C.Dudgeon* Coll).

Genus *Cania* Walker

1855. *Cania.* Walker, *Cat. Lep. Het. Brit. Mus*, **5** : 1177.

41. *Cania bilinea* Walker

1855. *Cania bilinea* Walker, *Cat. Lep. Het. Brit. Mus*, **5** : 1142.

1892. *Cania bilinea* Walker : Hampsn, *Fauna. Brit. India, Moths*, **1** : 395-396.

Diagnostic characters : Head, thorax and forewing reddish, the latter with two oblique lines from costa before apex to near centre of inner margin, cilia brownish. Hindwing ochreous.

Material examined : Sikkim, 5 exs, vi. 1896, V, VII, 1897 (*G.C. Dudgeon* Coll).

Wing expanse : 30-32 mm.

Distribution : India, Sikkim, Bihar, Manipur and South India. *Elsewhere* : China, Java, Malacca.

Genus *Altha* Walker

1862. *Altha* Walker, *J. Linn. Soc.*, **6** : 173.

Key to species

1. Forewing vein R_5 stalked with R_3 and R_4 2

– Forewing vein R_5 from the cell .... *rufotessellata* (Moore)

2. Antennae of male bipectinate up to tip. Forewing with large chestnut subbasal irregular patch with a blue grey line across the middle from median nervure to inner margin .... *castaneipars* (Moore)

– Antennae of male serrated upto distal half. Forewing without patch ..... *nivea* Walker

42. *Altha rufotesselata* (Moore)

1879. *Narosa rufossellata* Moore, *Lep. Atk.*, **1** : 73, pl. 3, fig. 24.

1892. *Altha rufotessellata* (Moore) : Hampson, *Fauna. Brit. India*, Moths, **1** : 398.

Wing expanse : 34mm.

Distribution : India : Sikkim. Darjeeling and Himachal Pradesh.

43. *Altha castaneipars* (Moore)

1865. *Miresa castaneipars* Moore, *Proc. Zool, Soc. London*: 819.

1892. *Altha castaneipars* (Moore) : Hanpson, *Fauna. Brit. India*, Moths, **1** : 396-397.

Material examined : Sikkim, 1ex, 10.VIII. 1884 (*G. C. Dudgeon* Cell).

Wing expanse : 37mm.

Distribution : India, Sikkim, Darjiling and Nagas.

44. *Altha nivea* Walker

1862. *Altha nivea* Walker, *J. Linn. Soc.*, **6** : 173.

1892. *Altha nivea* Walker, Hampsn, *Fauna. Brit. India*, Moths, **1** : 397.

Material examined : Sikkim, 4exs, VII. 1896, V. 1897 (*G. C. Dudgeon* Coll).

Wing expanse : 28-30mm.

Distribution : India : Sikkim. Bihar, Himachal Pradesh, Sibsagar, South India and Uttar Pradesh. *Elsewhere* : Sri Lanka.

List of species of moths from Sikkim

Family CTENUCHIDAE

*1. *Ceryx hyalina* (Moore, 1879)
2. *Ceryx godartii* (Boisduval, 1829)
3. *Ceryx imaon* (Cramer, 1780)
4. *Eressa confinis* (Walker, 1854)
5. *E. multigutta* (Walker, 1854)
*6. *E. lepcha* (Moore, 1879)
7. *Trichaeta teneiformis* (Walker, 1856)
8. *Syntomis serrata* Hampson, 1892.
*9. *S. unifascia* Hampson, 1892.
10. *S. lucina* Butler, 1876.
11. *S. cyssea* (Stoll, 1872)
12. *S. bicincta* (Kollar, 1844.)
13. *S. sperbius* (Fabricius, 1787)
*14. *S. hydatina* Butler, 1876
15. *S. submarginalis* Walker, 1869.

16. *S. newara* Moore, 1879.
17. *S. malaena* (Walker, 1854)
18. *S. compta* Walker, 1869.
19. *S. divisa* Walker, 1854.
20. *Callitomis multifasciata* Hampson, 1892.

Family LIMACODIDAE

21. *Mahanta quadrilinea* Moore, 1879.
22. *Scopelodes sericea* Butler, 1880.
23. *S. venosa* Walker, 1855.
24. *S. unicolor* Westwood, 1841.
25. *S. contracta* Walker, 1855.
26. *Hyphorma minax* Walker, 1865.
27. *Miresa bracteata* Butler, 1880.
28. *M. decedens* Walker, 1855.
29. *Natada conjunctana* Walker, 1855.
30. *N. velutina* (Kollar, 1848).
*31. *N. ocellata* (Moore, 1879)
32. *Birthama junctura* Walker, 1865.
33. *Susica pallida* Walker, 1855.
*34. *Tetraphleps brevilinea* (Walker, 1865)
35. *T. crispa* Swinhoe, 1880.
36. *Thosea divergens* (Moore, 1879)
37. *T. cervina* Moore, 1877
38. *T. sinensis* Walker, 1855.
39. *T. tripartita* (Moore, 1884)
40. *T. cana* (Walker, 1865)
*41. *Parasa dentata* Hampson, 1892.
42. *P. bicolor* (Walker, 1855)
43. *P. herbifera* (Walker, 1855)
44. *P. dharma* Moore, 1859.
45. *P. hilaris* (Westwood, 1848)
46. *P. argentilinea* Hampson, 1892.
*47. *P. repanda* (Walker, 1855)
48. *P. pastoralis* Butler, 1880.
49. *Monema* sp.
*50. *Araeogyia spatulata* Hampson, 1892
51. *A. castanea* Hampson, 1892.
*52. *A. phaeopasta* Hampson, 1892.
53. *Triplophleps inferma* (Swinhoe, 1890)
*54. *Ceratonema pallidinota* Hanpson, 1895.
55. *C. albifusum* Hampson, 1892.
56. *C. retractum* (Walker, 1865)
*57. *C. fusca* Swinhoe, 1905.
58. *Narosa conspersa* Walker, 1855.
59. *N. doenia* (Moore, 1859)
60. *Narosa* sp.
61. *Cania bilinea* Walker, 1855.
*62. *Altha rufotessellata* (Moore, 1879)
63. *A. castaneipars* (Moore, 1865)
64. *A. nivea* Walker, 1862.

* Species marked with asteriks are not represented in collected material.

ACKNOWLEDGEMENTS

The author is grateful to the Director, Zoological Survey of India, Calcutta, for providing laboratory facilities and to Shri I. J. Gupta, O/c, of the section, for going through the manuscript, valuable suggestion and help to complete the work.

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Zool. Surv. India.
State Fauna Series 9, Fauna of Sikkim (Part-4), 109-146, 2003

INSECTA : LEPIDOPTERA : PIERIDAE AND HESPERIIDAE

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INTRODUCTION

The paper deals with the faunistic account of species of butterflies of families Pieridae and Hesperiidae from Sikkim. The important works on butterflies of India, including Sikkim, are by Seitz (1927), Evans (1932) and Wynterblyth (1957), on Pieridae by deNiceville (1902), Talbot (1939) and on Hesperiidae by Watson (1891), Evans (1949). Haribal (1992) dealt with all species known from Sikkim. The families Pieridae and Hesperiidae have also been studied from West Bengal and Meghalaya (neighbouring states of Sikkim) by Ghosh and Chaudhury (1997 a, b and also 1998 a, b).

Altogether 227 species of butterflies of families Pieridae and Hesperiidae have been dealt with. The family Hesperiidae constitutes major share of 176 species belonging to 68 genera and three subfamilies where as Pieridae has other 51 species representing 18 genera and two subfamilies, *viz.*, Pierinae and Coliadinae.

The studies are based on the material collected by various survey parties of the department. The specimens of butterflies available in the National Zoological Collections of Zoological Survey of India have also been examined. Of the 225 species, 115 spp. have been reviewed from literature. Two species of the family Pieridae and four of the family Hesperiidae marked with asterisk (*) constitute first locality records for Sikkim, where as two hesperiid, *Halpe kusala* Fruhstorfer and Pirdana distanti distanti Staudinger are a new locality record from India also. Two species namely *Aeromachus jhora jhora* (deNiceville) and *Sovia lucasii separata* (Moore) are endemic to Sikkim.

Key to species, genera and subfamilies of available material belonging to families Pieridae and Hesperiidae have been provided. The geographical distribution and wing expanse of each species have been given. A list of species reviewed from literature has also been appended each for family Pieridae and Hesperiidae.

Family PIERIDAE

Key to subfamilies

Palpi always with hair. Hindwing with well developed precostal vein curved distad ..... PIERINAE

– Palpi without hair. Hindwing without precostal vein or if present, very short directed basal ..... COLIADINAE

Subfamily PIERINAE

Key to genera

1. Forewing vein R_2 absent ..... *Delias* Huebner
– Forewing vein R_2 present 2
2. Forewing vein R_3 emitted from vein $R_4 + R_5$, the latter very close to apex, stalk long ..... *Pieris* Schrank
– Forewing vein R_3 emitted from vein $R_4 + R_5$, the latter further from apex, stalk short 3
3. Male with a tuft of hair arising between the 7th and 8th abdominal segment ..... *Appias* Huebner
– Male without any tuft of hair 4

4. Forewing vein R_3, R_4 + R_5 and M_1 stalked... ..... *Ixias* Huebner

– Forewing vein M_1 not stalked..... ..... *Hebomoia* Huebner.

Genus ***Delias*** Huebner

1819. *Delias* Huebner, *Verz. bek. Schmett.*, : 91.

Key to species of the genus *Delias* Huebner

1. Hindwing underside with red patch 2

– Hindwing underside without red patch..... .....*belladona* (Fabricius)

2. Hindwing underside with red subbasal band, upperside of both wings with bluish grey discal band ..... *pasithoe* (Linnaeus)

– Hindwing underside with red subcostal area in area R_5, upperside of wings without bluish grey discal band..... *descombesi* (Boisduval)

1. ***Delias belladona*** (Fabricius)
(Hill Jezebel)

1793. *Papilio belladona* Fabricius, *Ent. Syst.*, **3** : 180.

1998. *Delias belladona*, Ghosh & Chaudhury, *State Fauna Series* **4**, Fauna of Meghalaya (6) : 248.

1a. ***Delias belladona ithiela*** (Butler)

1869. *Thyca ithiela* Butler, *Ann. Mag. Nat. Hist.*, (4), **4** : 242.

1939. *Delias belladona ithiela*, Talbot, *Fauna Brit. India*, Butterflies, **1** : 341.

Material examined : 2 exs., North Sikkim, along the side of Teesta, dn. stream jungle, 21.iv.1991; 1ex., from jungle on Namprinkdung, Mangaon Road, 23.iv.1991, (Coll. *K.P.S. & party*).

Expanse : 70 mm.

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

2. ***Delias pasithoe*** (Linnaeus)
(Red Base Jezebel)

1758. *Delias aglaia* Linnaeus, *Syst. Nat.*, ed. 10th : 465.

1984. *Delias pasithoe*, Varshney, *J. Bombay nat. Hist. Soc.*, **81(2)** : 495-496.

Material examined : 1ex., East Sikkim, Rongpo,12.iii.1994, (Coll. *L.K. Ghosh & party*).

Expanse : 63 mm.

Distribution : India : Sikkim (East Sikkim) and Meghalaya. *Elsewhere* : South West China, Hainan to Himalayas; Myanmar, South and East to Malaya Peninsula, the Philippines and Java.

3. ***Delias descombesi*** (Boisduval)
(Red Spot Jezebel)

1836. *Pieris descombesi* (Boisduval), *Spec. Gen. Lep.*, **1** : 465.

1998. *Delias descombesi*, Ghosh and Chaudhury, *State Fauna Series* **4**, Fauna of Meghalaya (6) : 248.

Material examined : 1ex., East Sikkim, Rongpo, 12.iii.1994, (Coll. *L.K.Ghosh & party*).

Expanse : 65 mm.

Distribution : India : Sikkim (East Sikkim), Meghalaya, West Bengal. *Elsewhere* : Thailand, Saigon and Cochin, China.

Genus ***Pieris*** Schrank

1801. *Pieris* Schrank, *Fauna Boica*, : 152.

Key to species of the genus *Pieris* Schrank

Forewing dorsally with inner edge of black area dentate..... *canidia* (Sparrman)

– Forewing upperside with inner edge of black area not dentate..... *brassicae* (Linnaeus)

4. ***Pieris canidia*** (Sparrman)
(Indian Cabbage White)

1768. *Papilio canidia* Sparrman, *Amoen. Acad.*, **7** : 504.

1998. *Pieris canidia*, Ghosh and Chaudhury, *State Fauna Series* **4**, Fauna of Meghalaya (6) : 252.

4a. ***Pieris canidia canis*** Evans

1912. *Pieris canidia* canis Evans, *J. Bombay nat. Hist. Soc.*, **21** : 559, 976.

1997. ***Pieris canidia canis***, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7) : 710-711.

Material examined : 1ex., Sikkim, South District, Rubangla, 2010 m., 7.x.1988, (coll. V. C. Agarwal); 1ex., North Sikkim, Zema, 2620 m, 3.viii.1989, (coll. S.S. Saha); 1ex., North Sikkim, along the side of River Teesta, dn. stream jungle, 21.iv.1991; (coll. *K.P.S. & Party*); 3 exs., Mangaon, P.W.D.I.B. compound, 10.iv.1992, (coll. S.R.Banerjee); 4exs., East Sikkim, Jadong, I.C.A.R. Crop Field, 10.iii.1994, 1ex., Donagaon, 3 km North of Rongpo, 13.iii.1994, 1ex., Damthang, 13 km North of Namchi, South Sikkim, 18.iii.1994, 1ex., Tarku, 6 km North Temi, 21.iii.1994, 1ex., Jingtan, 11 km North of Rongpo, 23.iii.1994, (coll. *L.K.Ghosh* & party); 4exs., Pheusong, Mangaon, 35 km of Ranipool, 25.v.1994, (coll. *B.C.Das & party*); 6 exs., Sikkim, Jadong, 1 km. North of 1 km. A.R. Rest House, 30.x, 1-2. xi. 1994. C. (coll. *G.C.Sen & party*); 3 exs., West Sikkim, Gayzing, 8-9.iv.1995, (coll. S.S.Saha).

Expanse : 45-62 mm.

Distribution : India : Sikkim (North, South, East and West Sikkim), Meghalaya and West Bengal, extending to China, the Loochoo Island and Malaya Peninsula.

5. ***Pieris brassicae*** (Linnaeus)

1758. ***Papilio brassicae*** Linnaeus, *Syst. Nat.*, ed. 10th, : 467.

1998. ***Pieris brassicae***, Ghosh and Chaudhury, *State Fauna Series* **4**, Fauna of Meghalaya (6) : 253.

5a. ***Pieris brassicae nepalensis*** Doubleday

1846. ***Pieris brassicae*** var. *nepalensis* Doubledoy, *In Gray's Lep. In. Nepal*, : 9, pl. vi, figs. 1-3.

1998. ***Pieris brassicae nepalensis***, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 253

Material examined : 1ex., Yamthung, 22.iv.1992, (coll. *R.S. Mirdha*); 2 exs., Lachu, nr. Jr. High School, 25.iv.1992, (coll. *A.R.Lahiri*).

Expanse : 63 mm.

Distribution : India : (Sikkim, Meghalaya, Assam, West Bengal and N. W. Himalaya). Elsewhere : Tibet and Yunnan.

Genus ***Appias*** Huebner

1819. *Appias* Huebner, *Verz. bek. Schmett.*, : 91.

Key to species of the genus *Appias Huebner*

1. Forewing underside with a yellow spot in subapical area *lyncida* (Cramer).
- Forewing underside without yellow spot in subapical area 2
2. Hindwing underside pearly bluish white ..... *wardi* (Moore)
- Hindwing underside not pearly bluish white 3
3. Forewing underside with a large black spot at end of cell ..... *pandione* (Geyer)
- Forewing underside without black spot at end of cell ..... *indra* (Moore)

6. ***Appias lyncida*** (Cramer) (Chocolate Albatross)

1777. *Papilio lyncida* Cramer, In. Cramer, *Uitl. Kapellen*, **2** : (11) : 52

1998. *Appias lyncida*, Ghosh and Chaudhury, *State Fauna Series* **4**, Fauna of Meghalaya (6) : 254.

6a. ***Appias lyncida eleonora*** (Boisduval)

1836. *Pieris eleonora* Biosduval, *Spec. Gen. Dep.*, **1** : 481.

1998. *Appias lyncida eleonora*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya*, (6) : 254

Material : 2 exs., North Sikkim, along the side of river Lachung-chu, up stream jungle, 22.iv.1991. (coll. *K.P.S. & party*); 3 exs., South Sikkim, 1 km. West of Noyabazar, Jorethung, 5.xi.1994, (coll. *G. C. Sen & party*).

Expanse : 55-60 mm.

Distribution : India Sikkim (North and South Sikkim) and West Bengal. *Elsewhere* : Myanmar extending to Hainan, Tonkin, Thailand and Annam.

*7. *Appias wardi* (Moore)
(Lesser Albatross)

1884. *Catophaga wardi* Moore, *J. As. Soc. Bengal*, **53** (11) no. 1, : 43.

1997. *Appias wardi*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7) : 712-713.

Material examined : 1ex., South Sikkim, Jorethang, 5.xi.1994. (coll. *G.C. Sen & party*).

Expanse : 28 mm.

Distribution : India : Sikkim (South Sikkim), West Bengal and Peninsular India, Tamil Nadu.

8. *Appias pandione* (Geyer)
(Spot Puffin)

1832. *Hiposcritia pandione* Geyer, In Huebner, *Zutr. Z. Samml. Exot. Schmett.*, **4** : 16.

1998. *Appias pandione*, Ghosh and Chaudhury, *State Fauna Series* **4**, Fauna of Meghalaya (6) : 255.

Material examined : 1ex., North Sikkim, Dumprink Dung, side of river Teesta, dn. stream jungle, 21.iv.1991; 6 exs., along the side of river Lachung-Chu, up stream jungle, 22.iv.1991; 2 exs., from jungle on Namprinkdung, Mangaon road, 23.iv.1991, (coll. *K.P.S. & party*); 2 exs., Hooker's Trail Expedition to East Sikkim, 13 km from Gangtok, 2600 m, 6.v.1994; 1ex., Namthing, 21.v.1994, (coll. *S. Chatterjee*).

Expanse : 48 55 mm.

Distribution : India : Sikkim, North and East Sikkim, Meghalaya, United Provinces, Mussoree to Southern Myanmar). Tonkin, Hainan, the Malaya Peninsula and Thailand.

9. *Appias indra* (Moore)
(Plain Puffin)

1857. *Pieris indra* Moore, *Cat. Lep. Mus. E. I. C.*, **1** : 74.

1939. *Appias indra*, Talbot, *Fauna Brit. India*, Butterflies, **1** : 390.

9a. *Appias indra indra* (Moore)

1997. *Appias indra indra*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 721.

Material examined : 1ex., North Sikkim, Thombu, 3167 m, 14.iv.1959, (coll. *A.G.K. Menon*).

Expanse : 62 mm.

Distribution : India : Sikkim (North Sikkim) and West Bengal. *Elsewhere* : Nepal to Myanmar, Hainan, South China, Malay Peninsula and Cochin China.

Genus *Ixias* Huebner.

1819. *Ixias* Huebner, *Verz. bek. Schmett.*, : 95.

10. *Ixias pyrene* (Linnaeus)
(Yellow Orange Tip)

1764. *Papilio pyrene*, Linnaeus, *Mus. Ulr.*, : 241.

1998. *Ixias pyrene*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 258.

10a. *Ixias pyrene sesia* (Fabricius)

1777. *Papilio sesia* Fabricius, *Gen. Ins.*, : 257.

1997. *Ixias pyrene sesia* Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7) : 714.

Diagnostic characters : Forewing upperside yellow with broad orange band, costal and outer area black which is reaching upto area Cuia. Hindwing upperside with outer black area broad, underside pale yellow with fuscous brown strigae.

Material examined : 1ex., West Sikkim, Nayabazar, 400 m, 21.ix.1993, (coll. *T.K. Pal.* & party); 1ex., Nayabazar, 3.iv.1994, (coll. *B.C. Das & party*); 3 exs., South Sikkim, 1 km. North of Nayabazar, Jorethang, 5.xi.1994, (coll. *G. C. Sen & party*).

Expanse : 48-60 mm.

Distribution : Peninsular India including Sikkim (South and West Sikkim) and West Bengal.

Genus *Hebomoia* Huebner

1819. *Hebomoia* Huebner, *Verz. bek. Schmett.*, : 95.

11. ***Hebomoia glaucippe*** (Linnaeus) (Great Orange Tip)

1758. *Papilio glaucippe* Linnaeus, *Syst. Nat.* ed. 10th, ; 469.

1997. *Hebomoia glaucippe*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 713.

11a. ***Hebomomia glaucippe glaucippe*** (Linnaeus)

1997. *Hebomoia glaucippe glaucippe*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 713.

Diagnostic Characters : Wings upperside white, occupying large black edged orange patch on the apical portion of forewing, hindwing with few marginal black spots, underside of both wings mottled with brownish red.

Material examined : 2 exs., North Sikkim, along the side of river Teesta, dn. stream jungle, 21.iv.1991; 1ex., from jungle on Namprinkdung, Mangaon Road, 23.iv.1991, (coll. *K.P.S.* & party).

Expanse : 70 mm.

Distribution : India : North Sikkim and West Bengal. *Elsewhere* : Nepal to Myanmar.

Subfamily COLIADINAE

Key to genera of the subfamily COLIADINAE

1. Hindwing with precostal vein short. Male with oval sex patch on upperside of hindwing .... *Catopsilia* Huebner.
- Hindwing with precostal vein absent or obsolete. Male without sex patch 2
2. Forewing vein, R_2 arising from stalk of R_4 + R_5 and R_3 ..... *Colias* Fabricius
- Forewing vein R_2 arising from the cell .... *Eurema* Huebner

Genus ***Catopsilia*** Huebner

1819. *Catopsilia* Huebner, *Verz. bek. Schmett.*, : 98.

Key to species of the genus *Catopsilia* Huebner

Antennae red. Forewing underside with transverse reddish brown strigae, upperside with continuous narrow apical and terminal black spots ..... *florella* (Fabricius)

- Antennae black. Forewing underside without reddish brown strigae, upperside with apical and terminal black border .... *crocale* (Cramer)

12. ***Catopsilia florella*** (Fabricius) (African Emigrant)

1775. *Papilio florella* Fabricius, *Syst. Nat.*, : 479.

1998. *Catopsilia florella*, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 260.

*12a. ***Catopsilia florella gnoma*** (Fabricius)

1776. *Papilio gnoma* Fabricius, *Syst. Nat.*, : 828.

1997. *Catopsilia florella* gnoma, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 717.

Material examined : 2exs., South Sikkim, 1 km. West of Nayabazar, Jorethang, 5-6.xi.1994; 7 exs., Jorethong, 10.xi.1994, (coll. *G. C. Sen & party*).

Distribution : India : Sikkim, (South Sikkim), Meghalaya, West Bengal and Andamans. *Elsewhere* : Myanmaer to Indochina, Hainan to South China, Africa to Arabia, Persia and Sri Lanka.

13. ***Catopsilia crocale*** (Cramer) (Common Emigrant)

1775. *Papilio crocale* Cramer, *Pap. Exot.*, **1** : 87, pl. iv. figs. C.D.

1998. *Catopsilia crocale*, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 259.

13a. ***Catopsilia crocale crocale*** (Cramer)

1998. *Catopsilia crocale crocale*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of Meghalaya* (6) : 259.

Material examined : 2 exs., South Sikkim, F.R.H. Compound, Jorethang, 10.xi.1994. (coll. *G. C. Sen & party*).

Distribution : India Sikkim, (South Sikkim) Meghalaya and West Bengal, Sri Lanka to Andaman Island to South China, Myanmar, the Philippines, Borneo, Sumatra and Java.

Genus ***Colias*** Fabricius

1807. *Colias* Fabricius, *Illigers Maq.*, **6** : 284.

14. ***Colias electo*** (Linnaeus) (Dark Crouded Yellow)

1763. *Papilio electo* Linnaeus, *Amoen. Acad.*, **4** : 405.

1998. *Colias electo*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 260.

14a. ***Colias electo fieldi*** Menetries

1885. *Colias fieldi* Menetries, *Enum. Corp. anim. Mus. potr.*, **1** : 97, pl. 1, fig. 5.

1997. *Colias electo fieldi*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7), : 717.

Diagnostic Characters : Male upperside deep orange yellow with broad black outer border, prominent black cell spot on forewing. Hindwing with basal yellow band. Female : hindwing heavily dusted with black scales.

Material examined : 1ex., North Sikkim, Yamthung, 3475 m., 24.v.1989, 1ex., 5 km. North West of Lachen, 3500 m., 3.viii.1989, (coll. *S. S. Saha*); 1ex., North Sikkim, Around Lachung, 25.iv.1991, (coll. *K.P.S. & party*); 2 exs., North Sikkim, Yamthung, 18.iv.1992, (coll. *A. R. Lahiri*); 1ex., Sikkim, Yoksum, 2.vi.1992, (coll. *S. S. Saha*).

Expanse : 38-43 mm.

Distribution : India : Sikkim, (North Sikkim), West Bengal, N. W. Himalaya, Uttar Pradesh and Maharashtra, Meghalaya. *Elsewhere* : Myanmar, Nepal and Tibet.

Genus ***Eurema*** Huebner

1819. *Eurema* Huebner, *Verz. bek. Schmett.*, 96.

Key to species of the genus *Eurema* Huebner

Forewing upperside with black border not extending to vein 1A, underside with numerous spots..... ***hecabe*** (Linnaeus)

– Forewing upperside with black border extending to vein 1A, underside pale .... ***laeta*** (Boisduval)

15. ***Eurema hecabe*** (Linnaeus) (Common Grass Yellow)

1758. *Papilio hecabe* Linnaeus, *Syst. Nat.* ed. 10th. : 470.

1998. *Eurema hecabe*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 261.

15a. ***Eurema hecabe contubernalis*** (Moore)

1886. *Terias contubernalis* Moore, *J. Linn. Soc. Lond. Zool.*, **21** : 46.

1997. *Eurema hecabe contubernalis*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7), : 719.

Material examined : 2 exs., South District, Jorethang, 3000 m., 9.xi.1982, (coll. *A.K. Hazra & party*); 1ex., North Sikkim 2620 m., 27.vii.1989, (coll. *S. S. Saha*); 1ex., North Sikkim, Phadong, 31.x.1992, 1ex., South Sikkim, Melli, 232 m., 9.xi.1992, (coll. *M.S. Shishodia & party*); 1ex., East Sikkim, Marchak village, 1600 m., 12 km. of Gangtok, 2.x.1993, (coll. *T.K. pal & party*); 1ex., South District, Legshep, 9.x.1993, (coll. *B.N. Das & party*); 1ex., I.C.A.R. Rest House, East Sikkim, Tadong, 29.x.1994, 4exs., South Sikkim, 1 km. West of Nayabazar, 5-6.xi.1994, 2 exs., South Sikkim, C.C.B.F., Kartekar, Jorethang, 9.xi.1994, 2 exs., South Sikkim, F. R. H. Compound, Jorethang, 10.xi.1994, (coll. *G. C. Sen & party*).

Expanse : 30-55 mm.

Distribution : Sikkim (North, South and East Sikkim). Meghalaya, Assam, Gujarat, West Bengal *Elsewhere* : Myanmar, Malaya Peninsula and Singapore.

16. ***Eurema laeta*** (Boisduval) (Spotless Grass yellow)

1836. *Terias laeta* Boisduval, *Spec. Gen. Lep.*, **1** 674.

1998. *Eurema laeta*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 262.

16a. ***Eurema laeta laeta*** (Boisduval)

1997. *Eurema laeta laeta*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7) : 718-719.

Material examined : 1ex., East Sikkim, Turnim, 1475 m., 20.ix.1988, (coll. *V.C. Agarwal*); 1ex., North Sikkim, Soem, 1260 m., 20 km. of Mangaon, 28.ix.1993. (coll. *T.K. Pal*).

Expanse : 43 mm.

Distribution : India including Sikkim (North and East Sikkim), Meghalaya and West Bengal. Peninsular to western Himalayas. *Elsewhere* : Sri Lanka,

List of species reviewed from literature

1. ***Leptosia nina nina*** (Fabricius) (Psyche)
2. ***Baltia butleri sikkima*** Fruhstorfer (Butler's Dwarf)
3. ***Aporia peloria*** (Hewitson) (Great Black Vein)
4. ***A. agathon agathon*** (Gray) (Great Black Vein)
5. ***Pieris dubernardi chumbiensis*** (de Niceville) (Chumbi white)
6. ***P. napi montana*** Verity (Green Veined White)
7. ***P. napi melaina*** Rober (Chumbi Green Veined White)
8. ***Prioneris thestylis thestylis*** (Doubleday) (Spotted Sawtooth)
9. ***P. clemanthe clemanthe*** (Doubleday) (Red Spot Sawtooth)
10. ***Anaphaeis aurota aurota*** (Fabr.) (Pioneer)
11. ***Appias nero galba*** (Wallace) (Orange Albatross)
12. ***A. albina darada*** (Felder) (Common Albatross)
13. ***Pareronia valeria hippia*** (Fabricius) (Common Wonderer)
14. ***P. avatar avatar*** (Moore) (Pale Wonderer)
15. ***Cepora nerissa nerissa*** (Fabricius) (Common Gull)
16. ***C. nadina nadina*** (Lucas) (Lesser Gull)
17. ***Delias eucharis*** (Drury) (Common Jezebel)
18. ***D. agostina agostina*** (Hewitson) (Yellow Jezebel)
19. ***D. sanaca areas*** Talbot (Pale Jezebel)
20. ***D. berinda boyleae*** (Butler) (Dark Jezebel)
21. ***D. thysbe pyramus*** (Wallace) (Red Breast Jezebel)
22. ***D. hyparte indica*** (Wallace) (Painted Jezebel)
23. ***Catopsilia pyranthe*** (Linnaeus) (Mottled Emigrant)
24. ***Dercas verhuelli doubledavi*** (Moore) (Tailed Sulphur)
25. ***Dercas lycorias lycorias*** (Doubleday) (Plain Sulphur)
26. ***Gonepteryx rhamni nepalensis*** (Doubleday) (Common Brimstone)
27. ***Gandaca harina assamica*** (Moore) (Tree Yellow)
28. ***Eurema brigitta rubella*** (Wallace) (Small Grass yellow)
29. ***E. blanda silhetana*** (Wallace) (Three Spot Grass yellow)
30. ***E. jordani*** (Corbet & Pendulburey) (Jordan's Grass Yellow)
31. ***E. andersoni andersoni*** (Moore) (One Spot Grass Yellow)
32. ***E. sari sodalis*** (Moore) (Chocolate, Grass Yellow)
33. ***Colias stoliczakana miranda*** (Fruhstorfer) (Orange Clouded Yellow)
34. ***C. berylla*** (Faweett) (Everest Clouded yellow)
35. ***C. nina nina*** (Faweett) (Faweett's Clouded Yellow).
36. ***C. dubia*** (Elwes) (Dwarf Clouded Yellow)

Family HESPERIIDAE

Key to subfamilies

1. Forewing vein M_2 closer to M_1 than to M_3 at origin of cell. Abdomen shorter than anal margin of hindwing 2

- Forewing vein M_2 closer to M_3 than to M_1 at origin of cell. Abdomen more or less equal to the anal margin of hindwing ..... HESPERIINAE

2. Labial palpi with second joint upturned, third joint porrect, long and awl shaped..... COELIADINAE

- Labial palpi with these joints showing variable orientation, third joint may be long but never awl shaped ..... PYRGINAE

Subfamily HESPERIINAE

Key to groups of the subfamily HESPERIINAE

1. Antennal club not constricted before the apiculus. Forewing vein M_2 usually straight at its origin. Hindwing vein M_2 well marked 2

- Antennal club constricted before the apiculus. Forewing vein M_2 decurved at its origin. Hindwing vein M_2 not traceable..... 4

2. Antennal apiculus finely pointed 3

- Antennal apiculus not finely pointed..... ASTICTOPTEROUS Group

3. Hindwing vein M_2 decurved at origin ..... ANCISTROIDES Group

— Hindwing vein M_2 not decurved at origin..... PLASTINGIA Group

4. Apiculus absent or minute, Fascis yellow or orange. Forewing with discal white spots..... TARACTOCERA Group

- Apiculus present usually right angled. Fascis dark brown. Forewing with dorsal hyaline spots ..... GEGENES Group.

Group ASTICTOPTEROUS

Key to genera of the group ASTICTOPTEROUS

1. Forewing vein M_2 well before vein R_1 and far away from vein Cula..... *Astictopterous* Felder

- Forewing vein M_2 after or opposite vein R_1 and never far away from vein Cula 2

2. Wings broad. Costa of forewing always arched 3

- Wings produced at apex of forewing. Costa of forewing straight 4

3. Hindwing cell equal to half of the wing ..... *Aeromachus* deNiceville

- Hindwing cell shorter than half of the wing ..... *Ochus* deNiceville

4. Antennal apiculus absent or short ..... *Ampittia* Moore

- Antennal apiculus present 5

5. Forewing upper end cell not produced, vein M_2 straight..... *Sebastonyma* Watson

- Forewing upper end cell produced, vein M_2 decurved at origin 6

6. Uncus undivided .....*Sovia* Evans

- Uncus divided.....7

7. Antennal apiculus long and thin, as long as width of club ..... *Pithauria* Moore

- Antennal apiculus not longer than twice width of club.....8

8. Antennal apiculus obtuse, rather short and blunt .....*Pedestes* Hemming

- Antennal apiculus hooked 9

9. Palpi generally more porrect. Apiculus not fish-hook type. Gnathos strongly developed..... *Thoressa* Swinhoe

- Palpi generally erect and flattened. Apiculus like fish-hook. Gnathos absent or incomplete *Halpe* Moore.

Genus ***Astictopterous*** Felder

1860. *Astictopterous* Felder, *Wien. ent. Monatsb.*, **4 : 401.**

1. ***Astictopterous jama*** Felder
(Forest Hopper)

1860. *Astictopterous jama* Felder, *Wien, ent. Monotob.*, **4 : 401.**

1997. *Astictopterous jama*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7) : 290.

1a. *Astictopterous jama olivascens* Moore

1878. *Astictopterous olivascens* Moore, *Proc. Zool. Soc. Lond.*, : 692.

1997. *Astictopterous jama olivascens*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 290-291.

Diagnostic characters : Wings : apex of forewing and tornus of hindwing more produced, underside amber brown. Male without hyaline spot but female usually with hyaline spots in cells, and on veins R_4, R_5 and M_1.

Material examined : 5 exs., Sikkim (No other data).

Expanse : 38 mm.

Distribution : Oriental region including Sikkim, Assam, Nagaland, Meghalaya, West Bengal and Andamans. *Elsewhere* : Bhutan; Thailand and Indochina.

Genus *Aeromachus* deNiceville

1890. *Aeromachus* de Niceville, *J. Bombay nat. Hist. Soc.*, 5 : 214.

Key to species of the genus *Aeromachus* deNiceville

1. Forewing upperside with prominent spot. Hindwing underside with purple marking, the central marking narrow and broken .... *kali* (deNiceville)

– Forewing upperside with the spot faint of absent. Hinding underside with grey or white marking, the central marking neither narrow nor broken 2

2. Forewing underside the veins towards termen more or less paler. Hindwing vein R_5 and M_1 hair pinned ..... *stigmata* (Moore)

– Forewing underside the veins towards termen not paler.

Hindwing vein R_5 and M_1 not hair pinned ... . *jhora* (deNiceville)

2. *Aeromachus kali* (deNiceville) (Blue Spotted Scrub Hopper)

1885. *Thanaos kali* deNiceville, *J. As. Soc. Bengal*, : 123, pl. 2, fig. 3.

1949. *Aeromachus kali*, Evans, *A Catalogue of Hesperiidae from Europe Asia and Australia in Brit. Mus. (nat. Hist.)*, : 241.

Material examined : 2 exs., Sikkim, 1.ix.83, (coll. *deNiceville*).

Expanse : 25 mm.

Distribution : India (Sikkim and Assam). *Elsewhere* : North Myanmar to Shan States.

3. *Aeromachus stigmata* (Moore) (Veined Scrub Hopper)

1878. *Thanaos stigmata* Moore, *Proc. Zool., Soc. London*, : 694.

1998. *Aeromachus stigmata*, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 281.

3a. *Aeromachus stigmata stigmata* (Moore)

1949. *Aeromachus stigmata stigmata*, Evans, *A. Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist)*. : 242.

Material examined : 17 exs., Sikkim, (coll. *de Niceville*).

Expanse : 22-32 mm.

Distribution : India (Sikkim, N. W. Himalayas and Mussorie). *Elsewhere* : Bhutan.

4. *Aeromachus jhora* (deNiceville) (Grey Scrup Happer).

1885. *Thanaos jhora* deNiceville, *J. As. Soc. Bengal;* : 122.

1998. *Aeromachus jhora*, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 282.

4a. *Aeromachus jhora jhora* (deNiceville)

1949. *Aeromachus jhora jhora*, Events, *A Catalogue of Heperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 243.

Material examined : 10 exs., Sikkim, 31.iii.1884, (Coll. *O. Moller & deNiceville*).

Expanse : 26 mm.

Distribution : India (Sikkim).

Genus ***Ochus*** deNiceville

1894. *Ochus* deNiceville, *J. Asiat. Soc. Bengal* (N. S.), **63** (2) : 51.

5. ***Ochus subvittatus*** (Moore) (Tiger Hopper)

1878. *Cyclopides subvittatus* Moore, *Proc. zool. Soc. London*, : 692.

1998. *Ochus subvittatus*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 282.

5a. ***Ochus subvittatus subradiatus*** (Moore)

1878. *Cyclopides subradiatus* Moore, *Proc. zool. Soc. London*, : 693.

1998. *Ochus subvittatus subradiatus*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 282.

Diagnostic characters : Wings upperside black with a yellow spot at apex of forwing, costa of fore and hindwing bright yellow with numerous black markings.

Material examined : 8 exs., Sikkim, (no other data).

Expanse : 22 mm.

Distribution : India (Sikkim, Assam and Meghalaya).

Genus ***Ampittia*** (Moore)

1880-81. *Ampittia* Moore, *Lep. Ceylon.*, **1** : 171.

6. ***Ampitta dioscorides*** Fabricius (Bush Hopper)

1793. *Hesperia dioscorides* Fabricius, *Entom. System, Suppl.*, : 432.

1949. *Ampittia dioscorides*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 238.

*6a. ***Ampittia dioscorides dioscorides*** Fabricius

1949. *Ampittia dioscorides dioscorides*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 239.

Diagnostic characters : Forewing upperside with a large spots in area 2A, basal half of the wing and cell yellow, discal spot yellow.

Material examined : 1ex., Sikkim dt. nil (coll. *deNiceville*); 1ex., North Sikkim, along the side of river Lachungchu, up stream jungle, 22. iv. 1991 (coll. *K.P.S.*)

Expanse : 22 mm.

Distribution : India (Sikkim (North Sikkim) Assam, Kangra, Bengal and South India). *Elsewhere* : North Myanmar.

Genus ***Sebastonyma*** Watson

1893. *Sebastonyma* Watson, *Proc. zool. Soc. London*, : 81.

7. ***Sebastonyma dolopia*** (Hewitson) (Tufted Ace)

1868. *Hesperia dolopia* Hewitson, *Descrip. Hesperiid.*, : 27.

1998. *Sebastonyma dolopia*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 283.

Diagnostic characters : Antennal club brown above. Forewing with three apical spots. Hindwing underside chocolate, a long white streak at base of space between vein R_4 and R_5.

Material examined : 11exs., Sikkim, (coll. *deNiceville*).

Expanse : 36 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : North Myanmar.

Genus ***Sovia*** Evans

1949. *Sovia* Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 27.

8. ***Sovia lucasii*** (Mabille) (Lucas Ace)

1876. *Hesperilla lucasii* Mabille, *Bull. Soc. Ent. Fr.* (5) **4** : CL iii.

1998. ***Sovia lucassi***, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 284.

8a. *Sovia lucasii separata* (Moore)

1882. ***Halpe separata*** Moore, *Proc. zool. Soc. London*, p. 407.

1949. ***Sovia lucasii separata***, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 247.

Diagnostic chracters : Palpi clothed with long hair. Forewing upperside with hyaline spots in cell, in area Cu_{1a}, Cu_{1b} and at apex. Hindwing underside with olive or ochreous scaling.

Material examined : 11exs., Sikkim, (Moore's collns).

Expanse : 34 mm.

Distribution : India (Sikkim). *Elsewhere* : Bhutan.

Genus *Pithauria* (Moore)

1878. *Pithauria* Moore, *Proc. zool. Soc. London*, : 689

Key to species of the genus *Pithauria* Moore

Male upperside covered with pale to dark ochrous scale, underside forewing without white area on mid dorsum .... *muradeva* (Moore)

– Male upperside covered with bluish green scale, underside of forewing with a conspicuous, yellowish white area on mid dorsum .... *stramineipennis* Wood-Mason and deNiceville

9. *Pithauria muradeva* (Moore) (Dark Straw Ace)

1865. ***Ismene muradeva*** Moore, *Proc. zool. Soc. London*, : 784.

1949. ***Pithauria muradeva***, Evans, *A Catalogue of Hesperiidae from Europe Asia and Australia in Brit. Mus. (nat. Hist.)*, : 268-269.

Material examined : 4exs., Sikkim (no other data).

Expanse : 43 mm.

Distribution : India (Sikkim, Assam and West Bengal). *Elsewhere* : Myanmar, Thailand, Indochina, Malaya and Borneo.

10. *Pithauria stramineipennis* Wood-Mason & de Niceville (Light Straw Ace)

1886. *Pithauria stramineipennis* Wood-Mason & deNicevillle, *J. As. Soc. Bengal*, : 388, pl. 15, fig. 5.

1949. *Pithauria stramineipennis*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 268.

10a. *Pithuria stramineipennis stramineipennis* Wood-Mason & deNiceville

1949. *Pithuaria stramineipennis stramineipennis*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 268.

Material examined : 11exs., Sikkim (no other data).

Expanse : 42-55 mm.

Distribution : India (Sikkim and Assam). *Elsewhere* : Myanmar, Hainan Malaya and Sumatra.

Genus *Pedestes* Hemming

1934. *Pedestes* Hemming, *Entomologist*, **67** : 38.

Key to species of the genus *Pedeste* Hemming

Wings upperside bluish purple brown and forewing upperside with a spot in area Cu_{1b} overlap the spots in cell and Cu_{1a} .... *masuriensis* (Moore)

– Wings upperside brown and forewing upperside with a spot in area Cu_{1b} widely separated from the cell spot .... *pandita* (deNiceville)

11. *Pedestes masuriensis* (Moore) (Mussoorie Bush Bob)

1878. *Isoteinon masuriensis* Moore, *Proc. zool. Soc. London*, : 693.

1949. *Pedestes masuriensis* Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 249.

11a. ***Pedestes masuriensis masuriensis*** (Moore)

1949. *Pedestes masuriensis masuriensis*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 249.

Material examined : 1ex., Sikkim (no other data).

Expanse : 32 mm.

Distribution : India (Sikkim, Assam and N.W. Himalayas).

12. ***Pedestes pandita*** (deNiceville)
(Brown Bush Bob)

1885. *Isoteinon pandita* deNiceville, *J. As. Soc. Bengal*, 121, pl. 2, fig. 14.

1949. *Pedestes pandita*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)* : 249.

Material examined : 3exs., Sikkim, (coll. *deNiceville*).

Expanse : 30 mm.

Distribution : India (Sikkim and Naga Hills). *Elsewhere* : North Myanmar to North Shan State and Tonkin.

Genus ***Thoressa*** Swinhoe

1913. *Thoressa* Swinhoe, *Lep. Indica*, **10** : 284.

Key to species of the genus *Thoressa* Swinhoe

1. Antennal club not ringed with pale yellow before apiculus. Forewing upperside with separate spots in spaces Cu_{1a}, Cu_{1b}, and cell ..... *cerata* (Hewitson)

– Antennal club ringed with pale yellow before apiculus. Forewing upperside with spots in spaces Cu_{1a}, Cu_{1b} over lapping 2

2. Forewing upperside cell spot absent or faint. Hindwing cilia whitish.... *gupta* (deNiceville)

– Forewing upperside with two cell spots. Hindwing cillia reddish ochreous, unchequred .....*aina* (deNiceville)

12. ***Thoressa cerata*** (Hewitson)
(Northern Spotted Ace)

1876. *Halpe cerata* Hewitson, *Ent. Month. Mag.*, : 152.

1998. *Thoressa cerata*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 286.

Material examined : 3 exs., Sikkim, (no other data).

Expanse : 40 mm.

Distribution : India (Sikkim and Meghalaya). *Elsewhere* : Myanmar, Thailand and Indochina.

12. ***Thoressa gupta*** (deNiceville)
(Olive Ace)

1886. *Halpe gupta* deNiceville, *J. As. Soc. Bengal*, : 255.

1998. *Thoressa gupta*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 285.

13a. ***Thoressa gupta gupta*** (deNiceville)

1998. *Thoressa gupta gupta*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 285

Material examined : 5 exs., Sikkim, 7000 ft. (coll. O. Moller).

Expanse : 32 mm.

Distribution : India (Sikkim, Meghalaya and Uttar Pradesh).

14. ***Thoressa aina*** (deNiceville)
(Garhwal Ace)

1890. *Halpe aina* deNiceville, *J. Bombay nat. Hist. Soc.*, **5** : 176, pl. B., fig. 8.

1949. *Thoressa aina*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)* : 257.

Material examined : 5 exs., Sikkim, (no other data).

Expanse : 35 mm.

Distribution : India (Sikkim and Garhwal).

Genus ***Halpe*** Moore

1878. ***Halpe*** Moore, *Proc. zool. Soc. London*, : 689.

Key to species of the genus *Pedestes* Hemming

1. Antennal club above with white or pale yellow ringed before apiculus ..... *zema* (Hewitson)
- Antennal club above without white ringed before apiculus 2
2. Forewing termen convex and equal to dorsum ..... *homolea* Hewitson
- Forewing termen straight and shorter than dorsum ..... *kusala* Fruhstorfer

15. ***Halpe zema*** (Hewitson)
(Banded Ace)

1887. *Hesperia zema* Hewtson, *Ann. Mag. nat. Hist.*, (4) **19** : 77.

1998. *Halpe zema*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 287.

15a. ***Halpe zema zema*** (Hewitson)

1998. *Halpe zema zema*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 287

Material examined : 9 exs., Sikkim, (no other data).

Expanse : 40 mm.

Distribution : India (Sikkim, Meghalaya and Andaman). *Elsewhere* : North Myanmar and Indo-China.

16. ***Halpe homolea*** Hewitson
(Indian Ace)

1868. *Halpe homolea* Hewtson, *Descrip. Hesperiid.* p : 29.

1998. *Halpe homolea*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 288.

*16a. ***Halpe homolea aucma*** Swinhoe

1893. *Halpe aucma* Swinhoe, *Trans. ent. Soc. London*, : 325.

1998. *Halpe homolea aucma*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 288.

Material examined : 22 exs., Sikkim, (no other data).

Expanse : 30-40 mm.

Distribution : India (Sikkim, Meghalaya Manipur and Nagaland). *Elsewhere* : S. E. Tibet and North Myanmar.

17. ***Halpe kusala*** Fruhstorfer
(Tenasserim Ace)

1911. *Halpe kusala* Fruhstorfer, *Iris*, : 46.

1949. *Halpe kusala*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)* p : 266.

Material examined : 19 exs., Sikkim, (no other data).

Expanse : 25-30 mm.

Distribution : India (Sikkim). *Elsewhere* : Myanmar, Thailand, Annam and Malaya.

Group ANCISTROIDES

Key to genera of the group ANCISTROIDES

1. Forewing vein M_2 straight, vein M_3 nearer to vein Cu_{1a} ..... *Koruthailos* Watson
- Forewing vein M_2 decurved at origin, vein M_3 not nearer to vein Cu_{1a} 2
2. Forewing vein Cu_{1a} opposite to vein R_2 at their origin ..... *Ancistroides* Butler
- Forewing vein Cu_{1a} opposite to vein R_3 3
3. Antennae greater than costa. Forewing with hyaline white band dorsally. Hindwing cell equal to half of the wing ..... *Notocrypta* deNiceville
- Antennae shorter than half of the costa. Forewing with large hyaline spot dorsally. Hindwing cell shorter than half of the wing ..... *Udaspes* Cramer

Genus ***Koruthailos*** Watson

1893. *Koruthailos* Watson, *Proc. zool. Soc. London*, : 76.

18. *Koruthailos butleri* (deNiceville) (Dark Velvet Bob)

1883. *Astictopterus butleri* deNiceville *J. As. Soc. Bengal*, **52** (2) : 98, pl. x, fig. 3.

1949. *Koruthailos butleri*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 276.

Diagnostic characters : Palpi with the third segment short, blunt not protruding. Wings unmarked. End of uncus divergent.

Material examined : 5 exs., Sikkim, (no other data).

Expanse : 35 mm.

Distribution : India (Sikkim and Assam).

Elsewhere : North and South Shan States and Ataran.

Genus *Ancistroides* Butler

1874. *Ancistroides* Butler, *Trans. ent. Soc. London*, : 436.

19 *Ancistroides nigrita* (Latreille) (Chocolate Demon)

1824. *Hesperia nigrita* Latreille, *Enc. Melb.*, : **9** (2) : 788.

1998. *Ancistroides nigrita*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 290.

19a *Ancistroides nigrita diocles* (Moore)

1865. *Kerana diocles* Moore, *Trans. ent. Soc. London*, **14** (4) : 255.

1998. *Ancistroides nigrita diocles*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of* Meghalaya (6) : 291.

Diagnostic characters : Forewing upperside brown, unmarked, underside, apex of forewing and termen of hindwing broadly paler.

Material examined : 7 exs., Sikkim, (no other data).

Expanse : 55 mm.

Distribution : India (Sikkim Assam and Meghalaya). *Elsewhere* : Bhutan and Myanmar.

Genus *Notocrypta* deNiceville

1889. *Notocrypta* deNiceville, *J. Bombay nat. Hist. Soc.*, : 188.

Key to species of the genus *Notocrypta* deNiceville

1. Forewing upperside without any trace of spot in area between vein R_4 to M_1, termen straight to vein M_3 then convex to apex. Hindwing dorsum equal to costa .... *paralysos* (Wood-Mason & deNiceville)

– Forewing upperside with trace of spot in area between vein R_4 to M_1 and also in spaces between M_2 to Cu_{1a}, termen not straight to vein M_3. Hindwing dorsum greater than costa 2

2. Forewing underside central band not produced above the radius ..... *curvifascia* (Felder)

– Forewing underside central band produced above the radius .....*feisthamelii* (Boisduval)

20. *Notocrypta paralysos* (Wood-Manson & deNiceville) (Common Banded Demon)

1881. *Plesioneura paralysos* Wood Mason & deNiceville, *Proc. Asiat. Soc. Bengal*, : 143.

1949. *Notocrypta paralysos*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)* p : 283.

20a. *Notocrypta paralysos asawa* Frushtorfer

1911. *Notocrypta asawa* Frushtorfer, *Iris*, : 24.

1994. *Notocrypta paralysos asawa*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 284.

Material examined : 4exs., Sikkim, (no other data).

Expanse : 35 mm.

Distribution : India (Sikkim and Assam). *Elsewhere* : Myanmar, Thailand, Indochina, Hainan, Foochow and Longkawi Islands.

21. *Notocrypta curvifascia* (Felder) (Restricted Demon)

1862. *Plesioneura curvifascia* Felder, *Wien. ent. Mon.*, **6** : 29.

1997. *Notocrypta curvifascia*, Ghosh & Chaudhury, *State Fauna Sevies* **3**, *Fauna of West Bengal* (7) : 293-294.

21a. *Notacrypta curvifascia curvifascia* (Felder)

1997. *Notocrypta curvifascia curvifascia*, Ghosh and Chaudhury, *State Fauna Sevies* 3, *Fauna of West Bengal* (7) 293-394.

Material examined : 12 exs., Sikkim, no other data; 1ex., East Sikkim, Tumin, 1475 m., 1.x.1988 (Coll *V.C. Agrawal*).

Expanse : 40-50 mm.

Distribution : Palacarcfic and oriental region including India (Sikkim (East Sikkim), Assam, Meghalaya, West Bengal, South India and Andaman Islands).

22. *Notocrypta feisthamelii* Boisduval (Spotted Demon)

1832. *Notocrypta feisthamelii* Boisduval, *Voy. Astrolabe. Lep.*, : 159.

1949. *Notocrypta feisthamelii*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 287.

22a. *Notocrypta feisthamelii alysos* (Moore)

1865. *Plesioneura alysos*, Moore, *Proc. zool. Soc. London*, : 789.

1949. *Notocrypta feisthamelli alysos*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, p : 287.

Material examined : 3 exs., Sikkim, (no other data).

Expanse : 40 mm.

Distribution : India (Sikkim, Assam and N. W. Himalayas). *Elsewhere* : Myanmar, Thailand, Indochina and Malaya.

Genus *Udaspes* Moore

1881. *Udaspes* Moore, *Lep. Ceylon.*, **1** : 177.

23. *Udaspes folus* (Cramer) (Grass Demon)

1775. *Papilio folus* Cramer, *Pap. Exot.*, **1** : 118, pl. 74, fig. F.

1997. *Udaspes folus*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 294-295.

Diagnostic characters : Wings upperside with marginal white spots. Forewing upperside with large white marking and underside with variegated white patches, brown patches present between vein Cu_{1b} to M_3, another small and white spot present between R_5 and SC + R_1.

Material examined : 9 exs., Sikkim, no other data ; 1ex., North Sikkim, Lachung, 20. iv. 1992 (coll. *A.R. Lahiri & party*).

Expanse : 42 mm.

Distribution : Palaearctic and oriental region including India (Sikkim (North Sikkim), Assam Meghalaya, West Bengal, Orissa, South India and North West Himalayas).

Group PLASTINGIA

Key to genera of the group PLASTINGIA

1. Antennal apiculus not longer than twice width of the club, shortly or moderately hooked, palpi generally with second segment, slender, third pointed or protruding more or less 2
– Antennal apiculus longer than twice width of the club. Palpi generally with second segment stout and quadrantic, third short and stout, bluntly conical, not protruding 7
2. Hindwing dorsum not longer than costa. Palpi variable 3
– Hindwing dorsum longer than costa. Palpi third segment short 6
3. Palpi third segment long and thin. Forewing vein M_2 straight 4
– Palpi third segment very short. Forewing vein M_2 decurved ..... *Cupitha* Moore

4. Forewing vein M_3 nearer to vein Cu_{1a} than to vein M_2 veins Sc and R_1 close 5

– Forewing vein M_3 midway between vein M_2 and Cu_{1a}, vein Sc and R_1 apart .... *Suastus* Moore

5. Forewing vein 1A straight, apex not produced, both sides with white spots. Hindwing upperside with white spots ....*Scobura* Elwes & Edwards

– Forewing vein 1A more or less bowed, apex produced, only upperside with white spots. Hindwing upperside partly white but underside straited with white ..... *Suada* deNiceville

6. Forewing vein M_2 decurved, upperside with white spots ..... *Zographetus* Watson

– Forewing vein M_2 straight, upperside either with hyaline spots unmarked .... *Hyarotis* Moore

7. Antennae longer than half of the costa. Forewing cell apex not produced, vein M_3 not opposite to vein R_3 ..... *Erionota* Mabille

– Antennae shorter than half of the costa. Forewing cell apex produced, vein M_3 opposite to vein R_3 8

8. Hindwing with lower angle of discocellular cell abnormally produced, vein M_1 opposite to vein Cu_{1b}. Eyes red. Wings unmarked .... *Matapa* Moore

– Hindwing with lower angle of discocellular normally produced, vein M_1 opposite to vein Cu_{1a}. Eyes not red. Wings unmarked 9

9. Palpi normal, segment short. Hindwing underside green and cilia yellow .... *Pirdana* Distant

– Palpi abnormal, third segment very long and stout. Hindwing underside not green and cilia orange ..... *Cyrina* Hemming

Genus ***Cupitha*** (Moore)

1884. *Cupitha* Moore, *Asiat. Soc. Bengal*, : 47.

Genus ***Cupitha purrea*** (Moore) (Wax Dart)

1877. *Pamphila purrea* Moore, *Proc. zool. Soc. London*, : 594.

1998. *Cupitha purrea*, Ghosh and Chaudhury. *State Fauna Series* 4, *Fauna of* Meghalaya (6) : 294.

Diagnostic characters : Body brown. Forewing upperside with yellow streak along costa and a broad central irregular yellow band from base of below cell towards apex. Hindwing upperside with broad central yellow band.

Material examined : 2 exs., Sikkim, (no other data).

Expanse : 32 mm.

Distribution : India (Sikkim, Assam, Meghalaya, South India and Andamans). *Elsewhere* : Indochina, Thailand, Malayan subregion).

Genus ***Suastus*** (Moore)

1881. *Suastus* Moore, *Lep. Ceyln.*, **1** : 168.

25. ***Suastus gremius*** (Fabricius)

1798. *Hesperia gremius* Fabricius, *Ent. Syst. Suppl.*, : 433.

1992. *Suastus gremius*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 297.

25a. ***Suastus gremius gremius*** (Fabricius)

1997. *Suastus gremius gremius*, Ghosh and Chaudhury, *State Fauna series* 3, *Fauna of West Bengal* (7), : 297-298.

Diagnostic characters : Forewing upperside with white spot, underside sometimes with tornus dark beyond a central white in space 2A. Hindwing with conspicuous black cell spot, which is large as any discal spot.

Material examined : 1exs., Sikkim, (no other data).

Expanse : 30 mm.

Distribution : Oriental region including India (Sikkim, Assam, Meghalaya, South India, Central India and North West Himalayas).

Genus ***Scobura*** Elwes & Edwards

1897. *Scobura Elwes* and Edwards, *Trans. zool. Soc. London*, **14** : 204.

26. *Scobura cephala* (Hewitson) (Forest Bob)

1876. *Hesperia cephala* Hewitson, *Ent. Mon. Mag.*, p : 152.

1998. *Scobura cephala*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 294.

Diagnostic characters : Forewing upperside with white spot in space Cu_{1a} and M_3. Hindwing upperside with two hyaline spots, underside with conspicuous rectangular white spot in area 2A in continuation of the spot in spaces Cu_{1a} and Cu_{1b}, beyond the discal spot the yellow colour becomes ferruginous.

Material examined : 12 exs., Sikkim (no other data).

Expanse : 32-35 mm.

Distribution : India, Sikkim, Assam and Meghalaya. *Elsewhere* : Myanmar.

Genus ***Suada*** deNiceville

1895. *Suada deNiceville*, J. Asiat. Soc. Bengal, **9** (4) : 370.

27. *Suada swerga* (de Niceville) (Grass Bob)

1893. *Hesperia swerga* de Niceville, *J. Asiat. Soc. Bengal*, **52**(2) : 89, pl. x, fig. 12.

1949. *Suada swerga*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)* : 295.

27a. *Suada swerga swerga* (de Niceville lc)

1949. *Suada swerga swerga*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 295.

Diagnostic characters : Wings upperside brown with well marked discal and apical spots and also a short streak in space 2A. Hindwing uniformly brown.

Material examined : 9 exs., Sikkim, (coll. *deNiceville*).

Expanse : 37 mm.

Distribution : India (Sikkim and Assam).

Genus ***Zographetus*** Watson

1893. *Zographetus* Watson *Proc. zool. Soc. London*, : 84.

Key to species of the genus *Zographetus* Watson

Upperside of forewing vein Cu_{1b} nearer to base than to vein Cu_{1a}, brands short and well marked, not extending to base of vein Cu_{1a}, placed under cubitus above and below vein 1A and Cu_{1b} ..... *satwa* (deNiceville).

– Upperside of forewing vein Cu_{1b} not nearer to base than to vein Cu_{1a}, brands long and narrow, over and under basal part of vein Cu_{1b} and a corresponding streak over vein 1A .... *ogygia* Hewitson.

28. *Zographetus satwa* (de Niceville) (Purple and Gold Flitter)

1883. *Isoteinon satwa* de Niceville, *J. As. Soc. Bengal*, : 86.

1998. *Zographetus satwa*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 295.

Diagnostic characters : Forewing upperside with two subapical spots and spot in space 2A, underside costa yellow upto the subapical spots. Hindwing underside basal half yellow with a few black spots, outer half dark brown with purple washed.

Material examined : 12 exs., Sikkim (no other data).

Expanse : 34 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Myanmar, Thailand, Malaya and Java.

29. *Zographetus ogygia* Hewitson (Purple Spotted Flitter)

1866. *Zographetus ogygia* Hewitson, *Trans. ent. Soc. London*, (3) **2** : 500.

1949. *Zographetus ogygia*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 300.

29a. ***Zographetus ogygia ogygia*** Hewitson

1949. *Zographetus ogygia ogygia*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 300.

Material examined : 5 exs., Sikkim (no other data).

Expanse : 32 mm.

Distribution : India (Sikkim and Assam). *Elsewhere* : Thailand, Malaya, Sumatra, Nias, Banka and Borneo.

Genus ***Hyarotis*** Moore

1881. *Hyarotis* Moore, *Lep. Ceylon*, **1** : 174.

30. ***Hyarotis adrastus*** (Stoll) (Tree Flitter)

1780. *Papilio adrastus* Stoll, *In* Cramers *Pap. Exot.*, **4** (27) : 62, pl. 319, fig. f, g.

1997. *Hyarotis adrastus*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7), : 298.

30a. ***Hyarotis adrastus praba*** (Moore)

1865. *Plesioneura praba* Moore, *Proc. zool. Soc. London*, : 790.

1997. *Hyarotis adrastus praba*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7), : 298.

Diagnostic characters : Forewing upperside with a spot between 1A and Cu_{1b} immediately below and adjoining the cell spot. Hindwing underside with central white band in wet season form.

Material examined : 2 exs., Sikkim, (no other data).

Expanse : 40 mm.

Distribution : Oriental region including India (Sikkim, Assam, West Bengal, North West Himalayas and Andamans Islands).

Genus ***Erionota*** Mabille

1878. *Erionota* Mabille, *Ann. Soc. Ent. Belg.*, **21** : 34.

31 ***Erionota thrax*** (Linnaeus) (Palm Red Eye)

1867. *Papilio thrax* Linnaeus, *Syst. Nat.*, **1** : 794.

1997. *Erionota thrax*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7), : 299-300.

31a. ***Erionota thrax thrax*** (Linnaeus)

1997. *Erionota thrax thrax*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7), : 300.

Diagnostic characters : Antennae only basal half or two thirds of club white in both sexes. Forewing upperside without spot between vein Cu_{1a}, Cu_{1b} and 1A, apical spot absent or inconspicuous, underside with a pale area over the spot in spaces between Cu_{1a} and Cu_{1b}, apex acute and termen straight in both sexes, vein 1A equal to Rs.

Material examined : 3 exs., Sikkim (no other data).

Expanse : 70 mm.

Distribution : Oriental region including India (Sikkim, Assam and West Bengal).

Genus ***Matapa*** Moore

1881. *Matapa* Moore, *Lep. Ceylon.*, **1** : 163.

Key to species of the genus *Matapa* Moore

1. Upperside of forewing stigma grey and conspicuous ..... *druna* (Moore)
- Upperside of forewing stigma black and inconspicuous 2
2. Upperside of forewing uniform dark brown with bluish green metallic stinge on the thorax and wing bases, underside fuliginous with black veins ..... *sasivarana* (Moore)
- Upperside of forewing uniform dark with purple gloss, underside uniform brown .... *purpurascens* Elwes & Edwards

32. *Matapa druna* (Moore) (Dark Banded Red Eye)

1865. *Ismene druna* Moore, *Trans. zool. Soc. London*, : 784.

1998. *Matapa druna*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 297.

Material examined : 13 exs., Sikkim, (no other data).

Expanse : 42-46 mm.

Distribution : India (Sikkim Assam, Meghalaya). *Elsewhere* : Myanmar, Indochina and Malayan Subregion.

33. *Matapa sasivarana* (Moore) (Black veined Red Eye)

1805. *Ismene sasivarna* Moore, *Proc. zool. Soc. London*, : 784.

1998. *Matapa sasivarna*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 298.

Material examined : 8 exs., Sikkim, (no other data).

Expanse : 42 mm.

Distribution : India (Sikkim Assam, and Meghalaya). *Elsewhere* : Myanmar, Indochina and Malayan Sumatra.

34. *Matapa purpurascens* Elwes & Edwards (Purple Red Eye)

1897. *Matapa purpurascens* Elwes & Edwards, *Trans. zool. Soc. London*, **14** : 209, pl. 20, fig. 1.

1998. *Matapa purpurascens*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 298.

Material examined : 2 exs., Sikkim, (no other data).

Expanse : 43 mm.

Distribution : India (Sikkim Assam, and Meghalaya). *Elsewhere* : Myanmar.

Genus *Pirdana* Distant

1886. *Pirdana* Distant, *Rhopalocera Malayana*, p : 369, 376.

35. *Pirdana distanti* Staudinger (Plain Green Palmer)

1889. *Pirdana distanti* Staudinger, *Iris*, **2** : 141.

1949. *Pirdana distanti*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 393.

35a. *Pirdana distanti distanti* Staudinger

1949. *Pirdana distanti distanti*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 339.

Diagnostic characters : Wings underside with prominent shining blue of green. Upperside of hindwing with orange tornal area.

Material examined : 1ex., Sikkim, (no other data).

Expanse : 45 mm.

Distribution : India (Sikkim). *Elsewhere* : Malaya.

Genus *Cyrina* Hemming

1939. *Cyrina* Hemming, *Proc. R. ent. Soc. London*, **8** : 39.

36. *Cyrina cyrina* (Hewitson)

1876. *Hesperia cyrina* Hewitson, *Ann. Mag. nat. Hist. So.*, (4) **18** : 460.

1998. *Cyrina cyrina*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 299.

36a. *Cyrina cyrina cyrina* (Hewitson)

1998. *Cyrina cyrina cyrina*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 299.

Diagnostic characters : Palpi black, legs densely fringed with yellow at ends. Wings with large conspicuous hyaline spots. Hindwing underside submarginal yellow borders.

Material examined : 1ex., Sikkim, (no other data).

Expanse : 44 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Bhutan.

Group TARACTOCERA

Key to genera of the group TARACTOCERA

1. Antennae equal to half costa, apiculus hooked and not longer than width of club. upper side of forewing generally with a brand .... *Potanthus* Scudder

– Antennae larger than half costa, apiculus more obtuse and larger. Forewing without brand 2

2. Forewing vein Cu_{1b} nearer to end cell than to base, upper side of forewing always with an unbroken discal stigma in male. Uncus divided ..... *Telicota* Moore

– Forewing vein Cu_{1b} nearer to base than to base, upper side of forewing without discal stigma. Uncus undivided .... *Cephrenes* Waterhouse & Lyell

Genus ***Potanthus*** Scudder

1872. *Potanthus* Scudder, *4th Ann. Peabody Acad. Sci.*, p : 75.

1997. *Potanthus*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 304.

Key to species of the genus *Potanthus* Scudder

1. Forewing upperside with a conjoined band in space M_2 and M_3. Cuillar of clasper slender and pointed ..... *mingo* (Edwards)

– Forewing upperside without band in space M_2 and M_3, cuillar of clasper not slender but with a projection 2

2. Forewing upperside with yellow marking. Uncus taperred to a sharp triangular point..... ..... *pallida* (Evans)

– Forewing upperside marking not yellow. Uncus tapered to a blunt triangular print..... ..... *trachala* (Mabille)

37. ***Potanthus mingo*** (Edwards)

1866. *Hesperia mingo* Edwards,

1949. *Potanthus mingo*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. nat. Hist.*, p : 384.

*37a. ***Potanthus mingo ajax*** Evans

1932. *Padraona ajax* Evans, *The identification of Indian butterflies, Bombay nat. Hist. Soc.*, : 404.

1949. *Potanthus mingo ajax*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. nat. Hist.*, p. 384.

Material examined : 2exs., Sikkim, (no other data).

Expanse : 26 mm.

Distribution : India (Sikkim and Assam). *Elsewhere* : Myanmar, Karen, Thailand, Indochina.

38. ***Potanthus pallida*** (Evans) (Common Dart)

1932. *Padraona pseudomaesa pallida* Evans, *The Identification of Indian butterflies, Bombay nat. Hist. Soc.*, : 402.

1997. *Potanthus pallida*, Ghosh and Chaudhury, *State Fauna Series 3, Fauna of West Bengal*, (7), : 304.

Material examined : 2 exs., North Sikkim, along the side of river Lachung-Chu, up stream jungle, 22.iv.1991, (coll *K.P.S. and party*).

Expanse : 30 mm.

Distribution : India (Sikkim North Sikkim, Assam South India and N. W. Himalayas). *Elsewhere* : Bhutan, Myanmar, Thailand, Yunnan.

39. ***Potanthus trachala*** (Mabille) (Broad Bident Dart)

1877. *Padraona trachala* Mabille, *Petit. Nouv.*, **1** : 237.

1949. *Potanthus trachala*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)* : 376.

39a. *Potanthus trachala tytleri* (Evans)

1914. *Plastingia tytieri* Evans, *J. Bombay nat. Hist. Soc.*

1949. *Potanthus trachala tytleri*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 376.

Material examined : 2 exs., Sikkim, (no other data).

Expanse : 33 mm.

Distribution : India (Sikkim, Assam and Manipur). *Elsewhere* : Myanmar, Thailand, Indochina and Malaya.

Genus *Telicota* Moore

1881. *Telicota* Moore, *Lep. Ceylon.*, **1** : 169.

40. *Telicota ohara* Plotz.

1883. *Telicota ohara* Plotz, *Stett. Ent. Ztg.*, : 226.

1949. *Telicota ohara*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 402.

40a. *Telicota ohara jix* Evans (Dark Palm Dart)

1949. *Telicota Jix* Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 450.

Diagnostic characters : Forewing upperside with spots in area M_2 and M_3 more conjoined than other. Hindwing underside without dark veins.

Material examined : 1ex., Sikkim, (no other data).

Expanse : 34 mm.

Distribution : India (Sikkim and Assam).

Elsewhere : Myanmar, Thailand, Indochina and Malaya.

Genus *Cephrenes* Waterhouse & Lyell

1914. *Cephrenes* Waterhouse & Lyell, *Butterflies of Australia*, : 206.

41. *Cephrenes chrysozona* (Plotz) (Plain Palm Dart)

1883. *Telicota chrysozona* Plotz, *Stett. Ent. Ztg.*, **44** : 288.

1998. *Telicota chrysozona*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 312.

41a. *Cephrenes chrysozona oceanica* (Mabille)

1904. *Telicota oceanica* Mabille, *Genera Insect.*, **17** : 143.

1997. *Cephrenes chrysozona oceanica*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 308.

Diagnostic characters : Forewing upperside tawny coloured with central dark band solid throughout in male, tawny marking suffused with a dark scaling in female. Hindwing underside yellow to ochreous brown.

Material examined : 2 exs., Sikkim (no other data).

Expanse : 38 mm.

Distribution : Oriental region including (Sikkim, Assam, West Bengal and the Andamans). *Elsewhere* : Myanmar, Yunnan, Indochina and Hainan.

Group GEGENES

Key to genera of the group GEGENES

1. Forewing vein Cu_{1b} nearer to upper end cell than to base 2
- Forewing vein Cu_{1b} nearer to base than to upper end of cell ..... *Iton* deNiceville
2. Antennae with more segments of nudum on club than to apiculus ..... *Parnara* Moore
- Antennae with at least as many as segment on apiculus as on club 3
3. Antennae not reaching to mid costa. Forewing vein Cu_{1b} arising opposite to vein R 4
- Antennae equal to half costa. Forewing vein Cu_{1b} arising before origin of vein R 5
4. Underside of hindwing without cell spot. Mid tibiae unspined ..... *Borbo* Evans
- Underside of hind wing with cell spot, Mid tibia heavily spined ..... *Pelopidas* Walker

5. Antennal apiculus more obtuse. Palpi less flattened ..... *Polytremis* Mabille
- Antennal apiculus right angled. Palpi much stouter 6
6. Mid tibiae unspined ..... *Caltoris* Swinhoe
- Mid tibiae heavily spined ..... *Baoris* Moore

Genus ***Iton*** deNiceville

1895. *Iton* deNiceville, *J. Bombay nat. Hist. Soc.*, **9** : 399.

42. ***Iton semamora*** (Moore) (Common Wight)

1865. *Hesperia semamora* Moore, *proc. zool. Soc. London.*, : 791.

1998. *Iton semamora*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 308.

42a. ***Iton semamora semamora*** (Moore)

1998. *Iton semamora semamora*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Maghalaya* (6) : 308

Diagnostic characters : Forewing underside with a tuft of upturned hairs from near the base of dorsum. Upperside tornal part of hindwing white.

Material examined : 2 exs., Sikkim (no other data). 1ex., Runjeet Valley (coll. *deNiceville*).

Expanse : 38 mm.

Distribution : India (Sikkim, Meghalaya and West Bengal). *Elsewhere* : Myanmar, Thailand and Malaya.

Genus ***Parnara*** Moore

1881. *Parnara* Moore, *Lep. Ceylon.*, **1** : 166.

43. ***Parnara naso*** (Fabricius) (Straight Sift)

1798. *Hesperia naso* Fabricius, *Ent. Syst.*, *Supplement*, : 431.

1997. *Parnara naso*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 311.

43a. ***Parnara naso bada*** (Moore)

1878. *Hesperia bada* Moore, *Proc. zool. Soc. London*, : 685.

1997. *Parnara naso bada*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 312.

Diagnositic characters : Forewing upperside the inner edge of the spot in space between Cu_{1a} and Cu_{1b} lying beneath or after the origin of Cu_{1b} apical spot present. Hindwing underside generally with spots.

Material examined : 1ex., Sikkim (no other data).

Expanse : 35 mm.

Distribution : Palearctic and oriental region including India (Sikkim, West Bengal, South India, Central India and Kashmir).

Genus ***Borbo*** Evans

1949. *Borbo* Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 44.

Key to species of the genus *Borbo* Evans

Wings produced. Antennal club angled. Palpi appressed, third segment short, stout, errect inconspicuous. Forewing upperside with one spot in space 2A. Hindwing upperside with one or two dots ..... *cinnara* (Wallace)
- Wings broad. Antennal club obtuse. Palpi semierrect, hairy, third segment longer, pointed and conspicuous. Forewing upperside with two spots in space 2A. Hindwing upperside with dots in spaces M_1 to M_3..... ..... *bevani* (Moore)

44. ***Borbo cinnara*** (Wallace) (Rice Switt)

1866. *Hesperia cinnara* Wallace, *Proc. zool. Soc. London.*: 361.

1997. *Borbo cinnara*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 312-13.

Material examined : 2 exs., Sikkim, (coll. ***deNiceville***).

Distribution : Palacaretic, oriental including **India** (**Sikkim**, Manipur, West Bengal, South India, **Madhya** Pradesh, Himachal Pradesh, the **Andaman** and Nicobars). *Elsewhere* : Papuan and **Australian** region.

45. ***Borbo bevani*** (Moore)
(Bevan's Swift)

1878. *Hesperia bevani* Moore, *Proc. zool. Sco. London,* : 688.

1998. *Borbo bevani* Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 301.

Material examined : 1ex., Sikkim (no other data).

Expanse : 28 mm.

Distribution : India (Sikkim, Assam, Meghalaya and Kashmir to Kumaon). *Elsewhere*: Bhutan, Indochina, Malayan Subregion, Myanmar, Peninsular, Thailand.

Genus ***Pelopidas*** Walker

1870. *Pelopidas* Walker, *Ent.*, **5** : 56.

Key to species of the *Pelopidas* Walker

1. Upperside of forewing with discal stigma .... *assamensis* (Wood manson & de Niceville)
- Upperside of forewing without discal stigma 2
2. Lower end of stigma not nearer to base, more or less under origin of vein Cu_{1a} .... *sinensis* (Mabille)
- Lower end of stigma nearer to base and well before origin of vein Cu_{1a} .... *mathias* (Fabricius)

46. ***Pelopidas assamensis***
(Wood Manson and de Niceville)
(Great Swift)

1882. *Parnara assamensis* Wood Mason and deNiceville, *J. Asiat. Soc. Bengal,* : 65.

1998. *Pelopidas assamensis*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 303.

Material examined : 6 exs., Sikkim (no other data).

Expanse : 48 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Myanmar, Thailand, Indochina and Malaya.

47. ***Pelopidas sinensis*** (Mabille)
(Large Banded Swift)

1877. *Gegenes sinensis* Mabille, *Bull. Soc. zool. Fr.*, : 232.

1998. *Pelopidas sinensis*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 302.

Material examined : 5 exs., Sikkim. (no other data).

Expanse : 36 mm.

Distribution : India (Sikkim, Assam, Meghalaya and N.W. Himalaya), *Elsewhere* ; S. W. China and Myanmar.

48. ***Pelopidas mathias*** (Fabricius)
(Small Banded Swift)

1798. *Hesperia mathias* Fabricius, *Ent. Syst. Supple* : 433.

1997. *Pelopidas mathias*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7) : 313.

48a. ***Pelopidas mathias mathias*** (Fabricius)

1997. *Pelopidas mathias mathias*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 313-314.

Material examined : 5 exs., Sikkim (no other data).

Expanse : 36 mm.

Distribution : Oriental including India (Sikkim, (South Sikkim), Assam, West Bengal, South India, Central India, Rajasthan, Punjab, Himachal Pradesh, Jammu and Kashmir and the Central Nicobars). *Elsewhere* : Australian region.

Genus *Polytremis* Mabille

1904. *Polytremis* Mabille, *In Wytsmans, Genera Insectorum,* **17** (8) : 136.

Key to species of the genus *Polytremis* Mabille

1. Palpi third segment slender, protruding, semierrect, antennal club obtuse, upperside of hindwing with inconspicuous hyaline spots ... . *lubricans* (Herrich-Schaffer)
- Palpi third segment short, stout and errect, antennal club angled, upperside of hindwing with conspicuous spots 2
2. Hindwing tornal cilia white, uncus and gnathos convergent ..... *discreta* (Elwes & Edwards)
- Hindwing tornal cilia yellow; uncus and gnathos divergent ..... *eltola* (Hewitson)

49. *Polytremis lubricans* (Herrich-Schaffer) (Swift)

1869. *Goniloba lubricuns* Herrich-Schaffer, *Corr. Blalt. Zool. min. yer. Regensb. :* 196.

1998. *Polytremis lubricans* Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 304.

49a. *Polytremis lubricans lubricans* (Herrich Schaffer)

1998. *Polytremis lubricans lubricans, Ghosh and Choudhury State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 304.

Material examined : 2 exs., Sikkim, (no other data).

Expanse : 38 mm.

Distribution : India (Sikkim, Assam, Meghalaya, South India, Bihar and Andamans).

Elsewhere : Myanmar, Malayan sub-region and China.

50. *Polytremis discreta* (Elwes and Edwards) (Himalayan Swift)

1897. *Parnara discreta* Elwes & Edwards, *Trans. zool. Soc. London,* **14** : 282, fig. 16.

1998. *Polytremis discreta,* Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 304.

50a. *Polytremis discreta discreta* (Elwes & Edwards)

1998. *Polytremis discreta discreta,* Ghosh and Chaudhury *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 304.

Material examined : 4exs., Sikkim, (no other data).

Expanse : 44 mm.

Distribution : India (Sikkim, Assam, Meghalaya and N. W. Himalayas). *Elsewhere* : Myanmar, North Thailand, Malya and China.

51. *Polytremis eltola* (Hewitson) (Yellow spot swift)

1869. *Hesperia eltola* Hewitson, *Exot. Bult.*, **4**, pl. 4, fig. 40.

1998. *Polytremis eltola eltola* Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 305.

51a. *Polytremis eltola eltola* (Hewitson)

1998. *Polytremis eltola eltola,* Ghosh and Chaudhury *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 305.

Material examined : 16 exs., Sikkim, (no other data).

Expanse : 36-40 mm.

Distribution : India (Sikkim, Assam, West Bengal and N. W. Himalayas). *Elsewhere* : Myanmar.

Genus *Caltoris* Swinhoe

1893. *Caltoris* Swinhoe, *Trans ent. Soc. London,* : 323.

Key to species of the genus *Caltoris* Swinhoe

1. Upperside of forewing with more or less well marked cell spots 2
- Upperside of forewing without cell spot 3
2. Antennal club aberrant .... *aurociliata* (Elwes & Edwards)

– Antennal club normal..... *cahira* (Moore)

3. Underside of forewing without tuft.....4

– Underside of forewing with an upturned tuft of dark hair from dorsum near base..... .....*plebia* (deNiceville)

4. Underside of hindwing densely overlaid with ochreous brown scale..... *kumara* (Moore)

– Underside of hindwing not densely overlaid with ochreous brown scale .... *tulsi* (deNiceville)

52. *Caltoris aurociliata* (Elwes & Edwards) (Yellow Fringed Swift)

1897. *Parnara aurociliata* Elwes & Edwards, *Trans. zool. Soc. London*, **14** : 278, fig. 23.

1998. *Caltoris aurociliata*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 306.

Material examined : 1ex., Sikkim, (no other data).

Expanse : 42 mm.

Distribution : India (Sikkim, Meghalaya, Manipur and Nagaland).

53. *Caltoris cahira* (Moore) (Austen's Swift)

1877. *Hesperia cahira* Moore, *Proc. zool. Soc. London*, : 593.

1997. *Caltoris cahira*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7) : 315.

53a. *Caltoris cahira austeni* (Moore)

1883. *Baoris austeni* Moore, *Proc. zool. Soc. London*, : 533.

1998. *Caltoris cahira austeni*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 306.

Material examined : 16 exs., Sikkim, (no other data).

Expanse : 34-38 mm.

Distribution : India (Sikkim, Assam, Meghalaya and Manipur). *Elsewhere* : Taiwan, Myanmar, Thailand, Indochina and Malaya.

54. *Caltoris plebia* (deNiceville) (Tufted Swift)

1887. *Parnara plebia* deNiceville, *Proc. zool. Soc. London*, : 466, pl. 60, figs. 2.

1998. *Caltoris plebia*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 306.

Material examined : 7 exs., Sikkim, (no other data).

Expanse : 38 mm.

Distribution : India (Sikkim and Meghalaya). *Elsewhere* : Myanmar, Malayan subregion.

55. *Caltoris kumara* (Moore) (Black Swift)

1878. *Hesperia kumara* Moore, *Proc. zool. Soc. London*, : 687.

1998. *Caltoris kumara*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 307.

55a. *Caltoris kumara moorei* (Evans)

1926. *Baoris moorei* Evans, *J. Bombay nat. Hist. Soc.*, **31** : 634.

1998. *Caltoris kumara moorei*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 307.

Material examined : 34exs., Sikkim, (no other data).

Expanse : 40-46 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Myanmar.

56. *Caltoris tulsi* (deNiceville) (Purple Swift)

1889. *Parnara tulsi* deNiceville, *J. Asiat. Soc. Bengal*, **52** (2) : 86, np. 30, pl. x, fig. 1.

1998. *Caltoris tulsi*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 307.

56a. *Caltoris tulsi tulsi* (deNiceville)

1998. *Caltoris tulsi*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 307.

Material examined : 6 exs., Sikkim, (no other data).

Expanse : 44 mm.

Distribution : India (Sikkim, Assam and Meghalaya).*Elsewhere* : Bhutan, Myanmar, Thailand and Malaya.

Genus ***Baoris*** Moore

1881. *Boaris* Moore, *Lep. Ceylon.*, 1 : 165.

Key to species of the genus *Baoris* Moore

Male with secondary sexual character. Upperside of forewing with hyaline white spots, cell spot more than one ....*farri* (Moore)

– Male without secondary sexual character. Upperside of forewing with yellow spots, cell spot single ..... pagana (deNiceville)

57. ***Baoris farri*** (Moore)
(Paint Brush Swift)

1878. *Hesperia farri* Moore, *Proc. zool. Soc. London,* 688.

1997. *Boaris farri*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 314.

57a. ***Boaris farri farri*** (Moore)

1997. *Baoris farri farri*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 315.

Material examined : 2 exs., Sikkim, (no other data).

Expanse : 36 mm.

Distribution : Oriental region including (Sikkim, Assam, Meghalaya, West Bengal, South India, Central India, Uttar Pradesh, Andaman and Nicobars).

58. ***Boaris pagana*** (deNiceville)
(Figure of 8 Swift)

1887. *Parnara pagana* deNiceville, *Proc. zool. Soc. London,*: 465. pl. 40. fig. 7.

1949. *Boaris pagana* Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 450.

Material examined : 14exs., Sikkim, (no other data).

Expanse : 46 mm.

Distribution : India (Sikkim and Bengal). *Elsewhere* : Myanmar and Borneo.

Subfamily COELIADINAE

Key to genera of the subfamily COELIADINAE

1. Forewing cell shorter than dorsum 2
– Forewing cell not shorter than dorsum 3
2. Forewing vein 1A slightly bisinuate, usually without hyaline spot dorsally .... *Bibasis* Moore
– Forewing vein 1A acutely bisinuate near base, often with hyaline spot dorsally .... *Hasora* Moore
3. Wings upperside more or less blue or green, without hyaline spot .....*Choaspes* Moore
– Wings upperside neither blue nor green, with hyaline spot..... *Badamia* Moore

Genus ***Bibasis*** Moore

1881. *Bibasis* Moore, *Lep. Ceylon.*, 1 : 160.

Key to species of the genus *Bibasis* Moore

1. Hindwing underside more or less striped, small black spot at base of space R_4 2
— Hindwing underside without stripe, and spot in space R_4 .....*sena* (Moore)
2. Underside of forewing with discal striping not reaching termen at apex 3
— Underside of forewing with discal striping reaching upto termen at apex 4
3. Forewing vein Cu_{1a} nearer to origin of vein Cu_{1b} than to origin of vein M_3 ....*jaina* (Moore)

– Forewing vein Cu_{1a} nearer to origin of vein M_3 than to origin of vein Cu_{1b} .... *harisa* (Moore)

4. Hindwing cilia ochreaous .... *vasutana* (Moore)

– Hindwing cilia white 5

5. Forewing vein Cu_{1a} nearer to origin of vein Cu_{1b} than to vein M_3. Hindwing underside brown with green veins and stripe .... *amara* (Moore)

– Forewing vein Cu_{1a} nearer to origin of vein M_3 than to vein Cu_{1b}. Hindwing underside greenish with broad pale green stripes between in the veins ..... *gomata* (Moore)

59. ***Bibasis sena sena*** (Moore) (Orange Tail Awl)

1865. *Goniloba sena* Moore, *Proc. zool. Soc. London,* : 778.

1998. *Bibasis sena sena*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 314.

59a. ***Bibasis sena sena*** (Moore)

1998. *Bibasis sena sena*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 314.

Material examined : 1ex., Sikkim, (no other data).

Expanse : 42 mm.

Distribution : India (Sikkim, Assam, Meghalaya, N. W. Himalayas, South India and Andamans). *Elsewhere* : Sri Lanka, Myanmar, Thailand and China.

60. ***Bibasis jaina*** (Moore) (Orange Awl)

1865. *Ismene jaina* Moore, *Proc. zool. Soc. London,* : 782.

1998. *Bibasis jaina jaina*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 316.

60a. ***Bibasis jaina jaina*** (Moore)

1998. *Bibasis jaina jaina*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 316.

Material examined : 7 exs., Sikkim, (no other data).

Expanse : 55 mm.

Distribution : India (Sikkim, Assam, Meghalaya and N. W. Himalayas). *Elsewhere* : Myanmar.

61. ***Bibasis harisa*** (Moore) (Orange Awlet)

1865. *Ismene harisa* Moore, *Proc. zool. Soc. London* : 782.

1997. *Bibasis harisa*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 277-278.

61a. ***Bibasis harisa harisa*** (Moore)

1997. *Bibasis harisa, harisa* Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 278.

Material examined : 10exs., Sikkim, (coll. deNiceville).

Distribution : Oriental region including India (Sikkim, Assam, Meghalaya and Andamans).

62. ***Bibasis vasutana*** (Moore) (Green Awl)

1926. *Ismene vasutana* Moore, *Proc. zool. Soc. London* : 783.

1998. *Bibasis amara*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 316.

Material examined : 8 exs., Sikkim, (no other data).

Expanse : 58 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Myanmar and Nepal.

63. ***Bibasis amara*** (Moore) (Small Green Awl)

1865. *Ismene amara* Moore, *Proc. zool. Soc. London* : 783.

1998. *Bibasis amara*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 314.

Material examined : 10 exs., Sikkim, (coll. deNiceville).

Expanse : 52 mm.

Distribution : India (Sikkim, Assam Meghalaya, West Bengal and Andamans). *Elsewhere* : Myanmar, Thailand and China.

64. ***Bibasis gomata*** (Moore)
(Pale Green Awl)

1865. *Ismene gomata* Moore, *Proc. zool. Soc. London* : 783.

1998. *Bibasis gomata gomata*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 317.

64a. ***Bibasis gomata gomata*** (Moore)
(Small Green Awl)

1998. *Bibasis gomata gomata*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 317.

Material examined : 4exs., Sikkim, (coll. deNiceville).

Expanse : 53 mm.

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

Genus ***Hasora*** (Moore)

1881. *Hasora* Moore, *Lep. Ceylon.*, **1** : 159.

Key to species of the genus *Hasora* Moore

1. Underside of hindwing without dark tornal lobe ..... *anura* deNiceville
- Underside of hindwing with more or less dark tornal lobe 2
2. Style of clasper undivided 3
- Style of clasper divided 4
3. Upperside bases paler. Forewing dorsum equal to termen, upperside with white spots in space Cu_{1a} and Cu_{1b} ..... *chromus* (Cramer)
- Upperside uniform. Forewing dorsum greater than termen, upperside with one or two rounded spots ..... *taminatus* Huebner
4. Underside of hindwing with two pale spots ..... *badra* (Moore)
- Underside of hindwing without spot .... *vitta* Butler

65. ***Hasora anura*** deNiceville
(State Awl)

1889. *Hasora anura* deNiceville, *J. Bombay nat. Hist. Soc.*, **6** : 170, pl. 6, fig. 5.

1998. *Hasora anura anura*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 317.

65a. ***Hasora anura anura*** deNiceville

1998. *Hasora anura anura*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 317.

Material examined : 4exs., Sikkim, (no other data).

Expanse : 48 mm.

Distribution : India (Sikkim, Meghalaya, Nagaland and Manipur). *Elsewhere* : North Myanmar.

66. ***Hasora chrous*** (Cramer)
(Common Banded Awl)

1782. *Papilio chromus* Cramer, *Pap. Exot.*, **3**, pl. 284, fig. E.

1997. *Hasora chromus*, Ghosh and Chaudhury, *State Fauna Series* **3**, Fauna of West Bengal (7) : 279.

66a. ***Hasora chromus chromus*** (Cramer)

1997. *Hasora chromus chromus*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 279.

Material examined : 3 exs., Sikkim, (coll. *deNiceville*).

Expanse : 45 mm.

Distribution : Palaearctic, Oriental, Papuan, Australian and Hawiian region.

67. ***Hasora taminatus*** Huebner
(White Banded Awl)

1818. *Hasora taminatus* Huebner, *Smlg. Exot. Schmett.* : fig. 193-94.

1949. *Hasora taminatus*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus.* (*nat.* Hist.) : 61.

67a. *Hasora taminatus bhava ra* Fruhstorfer

1911. *Hasora bhavara* Fruhstorfer, *Iris.*, : 72.

1949. *Hasora taminatus bhavara*, Evans, *A Catalogue of Herperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 61-62.

Material examined : 3exs., Sikkim, (no other data).

Expanse : 45 mm.

Distribution : India (Sikkim, Assam and Kangra). *Elsewhere* : Myanmar, West Thailand and West China.

68. *Hasora badra* (Moore) (Common Awl)

1889. *Goniloba badra* Moore, *Proc. zool. Soc. London*, : 778.

1998. *Hasora badra*, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 318.

68a. *Hasora badra badra* (Moore)

1998. *Hasora badra*, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 318.

Material examined : 9 exs., Sikkim, (coll. *deNiceville*).

Expanse : 49 mm.

Distribution : India (Sikkim, Assam, Meghalaya, South India, Andaman and Nicobar Islands). *Elsewhere* : Myanmar, Thailand, China, Taiwan and Malayan subregion.

69. *Hasora vitta* Butler (Plain Banded Awl)

1870. *Hasora vitta* Butler, *Trans. ent. Soc. London*, : 498.

1997. *Hasora vitta*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 279-280.

69a. *Hasora vitta indica* Evans

1932. *Hasora indica* Evans, *Identification of Indian Butterflies, 2nd ed.*, : 315.

1997. *Hasora vitta indica*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 280.

Material examined : 6 exs., Sikkim, (coll. *deNiceville*).

Expanse : 47 mm.

Distribution : Oriental region including (Sikkim, Assam, Meghalaya, West Bengal and South India).

Genus *Choaspes* Moore

1881. *Choaspes* Moore, *Lep. Ceylon.*, **1** : 158.

Key to species of the genus *Choaspes* Moore

1. Upperside of forewing of male with a brand ..... *plateni* (Staudinger)
– Male without brand 2
2. Cuiller of clasper with rounded tip and a beak ..... *benjamini* (Guerin)
– Cuiller of clasper without beak on ventral side ..... *hemixanthus* Rothschild & Jordan

70. *Choaspes plateni* (Staudinger) (Branded Awl king)

1888. *Rhopalocampa plateni* Staudinger, *Exot. Tagfalter*, : 293.

1998. *Choaspes plateni*, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 319.

70a. *Choapes plateni stigmata* Evans

1932. *Choaspes stigmata* Evans, *Identification of Indian Butterflies*, : 320.

1998. *Choaspes plateni stigmata*, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 319.

Material examined : 2 exs., Sikkim, (no other data).

Expanse : 50 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Tonkin and Taiwan.

71. *Choaspes benjamini* (Guerin) (Indian Awl king)

1843. *Thymele benjamini* Guerin, *Delesserts Souv. Voy. Ind.*, **2** : 79, pl. 22, fig. 2, 2a.

1998. *Choaspes benjamini*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 320.

71a. ***Choapes benjamini japonica*** (Murray)

1875. *Rhopalo compta japonica*, Murray, *Ent. Month. Mag.*, **12** : 4.

1949. *Choaspes benjamini japonica*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australid in Brit. Mus. (nat. Hist.)*, : 75.

Material examined : 1ex., Sikkim, (no other data).

Expanse : 51 mm.

Distribution : India (Sikkim, Assam and N. W. Himalayas). *Elsewhere* : Nepal, Japan, West China, Yunnan.

72. ***Choaspes hemixanthus*** Rothschild & Jordan (Awl King)

1903. *Choaspes hemixanthus* Rothschild & Jordan, *Nov. zool.*, pl. xi, fig. 3.

1998. *Choaspes hemixanthus*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 320.

72a. ***Choapes hemixanthus furcata*** Evans

1932. *Choaspes furcata* Evans, *Identification of Indian Butterflies*, : 321.

1998. *Choaspes hemixanthus furcata*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 320.

Material examined : 1ex., Sikkim, (no other data).

Expanse : 50 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Bhutan, Perak, Thailand and North China.

Genus ***Badamia*** Moore

1881. *Badamia* Moore, *Lep. Ceylon.*, **1** : 157.

73. ***Badamia exclamationis*** (Fabricius) (Brown Awl)

1775. *Papilio exclamationis* Fabricius, *Syst. Ent.* : 530.

1997. *Badamia exclamatimis*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7), : 277.

Diagnostic characters : Wings upperside dark brown with pale base. Forewing upperside with large whitish hyaline spot in spaces M_3 and Cu_{1a}, Cu_{1b} and also in cell. Hindwing underside pale brown with a dark brown tornus surmounted by a whitish subtornal spot.

Material examined : 8 exs., Sikkim, (Purchased Moore's collns.) (No other data).

Expanse : 60 mm.

Distribution : Oriental including India (Sikkim, Assam, Meghalaya, West Bengal and Andamans). *Elsewhere* : Papuan, Australian Hawaiian region.

Subfamily PYRGINAE

Key to the groups of the subfamily PYRGINAE

Forewing cell generally long, palpi 2nd segment erect ....CELAENORRHINUS group

– Forewing cell generally short, palpi 2nd segment porrect..... TAGIADES group

Group CELAENORRHINUS

Key to the genus of the group CELAENORRHINUS

Hindwing vein M_2 tubular. Hind tibiae with hair pencil ..... *Capila* Moore

– Hindwing vein M_2 not tubular. Hind tibiae without hair pencil .... *Calaenorrhinus* Huebner

Genus ***Capila*** Moore

1865. *Capila* Moore, *Proc. zool. Soc. Lond.*, p : 785.

Key to species of the genus *Capila* Moore

Forewing dorsum as long as termen; head,

thorax and base of wings orange; wings produced ..... *jayaveda* (Moore)

– Forewing dorsum longer than termen; head, thorax and base of wings brown; wings not produced ..... *zennara* (Moore)

74. *Capila jayadeva* Moore (Striped Dawn Fly)

1857. *Ismene jayadeva* Moore, *Cat. Lep. E. I. C.*, 1 : 248.

1997. *Capila jayadeva*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 281.

Material examined : 6 exs., Sikkim, (No other data).

Expanse : 64 mm.

Distribution : Oriental region including India (Sikkim, Assam, Meghalaya and West Bengal).

75. *Capila zennara* (Moore) (Pale Striped Dawn Fly)

1865. *Pisola zennara* Moore, *Proc. zool. Soc. London*, : 786.

1997. *Capila zennara*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 282.

Material examined : 8 exs., Sikkim, (No other data).

Expanse : 67 mm.

Distribution : Oriental region including India (Sikkim, Manipur and West Bengal).

Genus *Celaenorrhinus* Huebner

1819. *Celaenorrhinus* Huebner, *Verz. bek. Schmett.*, : 106.

Key to species of the genus *Celaenorrhinus* Huebner

1. Upperside of forewing with white central spot or band 2
– Upperside of forewing with yellowish orange central spot or band ..... *dhanada* (Moore)
2. Upperside of forewing with cell spot prominently nearer to apex than to base 3
– Upperside of forewing with the cell spot placed midway between the base and the apex of the wing 4
3. Upperside of forewing with the central white band narrow. Hindwing cilia broadly yellow, unchequered ..... *badia* (Hewitson)
– Upperside of forewing with the central white band compact. Hindwing cilia brown .... *asmara* (Butler)
4. Antennal shaft chequered 5
– Antennal shaft white 6
5. Upperside of hindwing with conspicuous and cell spot ..... *plagifera* deNiceville
– Upperside of hindwing without cellspot .... *Sumita* (Moore)
6. Abdomen striped. upperside of forewing cell spot not continued above radius. Hindwing cilia yellow ..... *patula* deNiceville
— Abdomen unstriped. Upperside of forewing cell spot continued above radius. Hindwing cilia outwardly white, basally yellow .... *leucocera* (Kollar)

76. *Celaenorrhinus dhanada* (Moore) (Himalayan Yellow Flat)

1865. *Plesioneura dhanada* Moore, *Proc. zool. Soc. London.* : 789.

1949. *Celaenorrhinus dhanada*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 104.

76a. *Celanorrhinus dhanada dhanada* (Moore)

1949. *Celaenorrhinus dhanada dhanada*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)* : 104.

Material examined : 2 exs., Sikkim (no other data).

Expanse : 42 mm.

Distribution : India (Sikkim and N.W. Himalaya). *Elsewhere* : Bhutan.

77. *Celanorrhinus badia* (Hewitson) (Scarce Banded Flat)

1877. *Pterygospidea badia* Hewitson, *Ann. Mag. nat. Hist.* (4) **20** : 322.

1998. *Celaenorrhinus badia*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 325.

Material examined : 1ex., Sikkim (no other data).

Expanse : 55 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Bhutan.

78. *Celaenorrhinus asmara* (Butler) (White Banded Flat)

1877. *Plesioneura asmara* Butler, *Trans. Linn. Soc. zool.*, (2) **1** : 556.

1998. *Celaenorrhinus asmara*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 326.

*78a. *Celaenorrhinus asmara consertus* deNiceville

1890. *Celaenorrhinus consertus* deNiceville, *J. Bombay nat. Hist. Soc.*, **5** : 222, pl. E, fig. 12.

1998. *Celaenorrhinus asmara consertus*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 326.

Material examined : 2 exs., Sikkim (no other data).

Expanse : 40 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Rangoon, Ataran, Tavoy, Thailand, Indo-China.

79. *Celaenorrhinus plagifera* deNiceville (DeNiceville's Spotted Flat)

1889. *Celaenorrhinus plagifera* deNiceville, J. *Bombay nat. Hist. Soc.*, **4** : 182, pl. b, fig. 13.

1949. *Celaenorrhinus plagifera*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 97.

Material examined : 4exs., Sikkim (no other data).

Expanse : 55 mm.

Distribution : India (Sikkim and Assam). *Elsewhere* : Bhutan, Myanmar, Tempang and Sadan.

80. *Celaenorrhinus sumitra* (Moore) (Moore's Spotted Flat)

1865. *Plesioneura sumitra* Moore, *Proc. zool. Soc. London.*: 787.

1949. *Celaenorrhinus sumitra*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus (nat. Hist.)*, : 97

Material examined : 1ex., Sikkim, 3.vi.1984 (coll. *O. Moller*).

Expanse : 55 mm.

Distribution : India (Sikkim and Manipur). *Elsewhere* : N. Shan States.

81. *Celaenorrhinus patula* deNiceville (Large Spotted Flat)

1889. *Celaenorrhinus patula* deNiceville, *J. Bombay nat. Hist. Soc.*, **4** : 182, pl. B, fig. 4.

1949. *Celaenorrhinus patula*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 98.

Material examined : 5exs., Sikkim, (no other data).

Expanse : 46 mm.

Distribution : India (Sikkim, Assam, Manipur and Naga Mills). *Elsewhere* : Myanmar, Karen Hills, W. Dawnas and China.

82. *Celaenorrhinus leucocera* (Kollar) (Common Spotted Flat)

1848. *Hesperia leucocera* Kollar, *In Hugel's Kaschmir, und. das. Reich. der. sick* **4** : 454, pl. 18, fig. 3, 4.

1997. *Celaenorrhinus leucocera*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 282-283.

Material examined : 12 exs., Sikkim (no other data), 1ex., East Sikkim, Tumin, 1475 m, 1.x.1988, (coll. V.C. Agrawal); 1ex., Simmim, Naya Bazar, 3.vi.1994 (coll. B.C. Das).

Distribution : Oriental region including India (Sikkim, (East Sikkim), Assam, Meghalaya, West Bengal, Madhya Pradesh, South India, North West Himalayas and Andamans).

Group TAGIADES

Key to genera of the group TAGIADES

1. Apiculus tapered to a fine point. Forewing vein Sc usually ending over end cell 3
- Apiculus blunt. Forewing vein Sc usually ending before end cell 2
2. Apiculus arcuate and tapered. Male with recumbent hair pencil on the hind tibiae. Wings brown with numerous hyaline spots .... *Ctenoptilum* deNiceville
- Apiculus stout and untapered. Male with short hair pencil on fore coxae, Wings brown. Upperside of forewing with dark areas and hyaline spot small or absent. Upperside of hindwing variegated with white lines .... *Odontotoptilum* deNiceville
3. Hindwing dorsum greater than costa 4
- Hindwing dorsum not greater than costa 6
4. Hind tibiae with hair pencil .... *Satarupa* Moore.
- Hind tibiae without hair pencil 5
5. Antennal club angled or hooked to apiculus beyond thickest part of the club .... *Darpa* Moore
- Antennal club arcuate or obtuse from thickest part of the club ..... *Sesaria* Matsumara
6. Upperside of hindwing with spot 7
- Upperside of hindwing without spot .... *Chamunda* Evans
7. Hind tibiae with a recumbent hair pencil 8
- Hind tibiae without hair pencil .... *Tagiades* Huebner
8. Upperside of hindwing with dark spot .... *Coladenia* Moore
- Upperside of hindwing without dark spot .... *Daimio* Murray

Genus ***Ctenoptilum*** deNiceville

1890. *Ctenoptilum deNiceville*, J. Bombay nat. Hist. Soc., **5** : 220.

83. ***Ctenoptilum vasava*** (Moore) (Tawnn Angle)

1865. *Achlydes vasava* Moore, *Proc. zool. Soc. London.* : 786.

1949. *Ctenoptilum vasava*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 157.

83a. ***Ctenoptilum vasava vasava*** (Moore)

1949. *Ctenoptilum vasava vasava*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, p : 157.

Diagnostic characters : Upperside of forewing with hyaline spot at apex and in space R_5 elongate, borders bright chestnut, contrasting with the darker bases.

Material examined : 10 exs., Sikkim, (no other data).

Expanse : 35 mm.

Distribution : India (Sikkim and Assam). *Elsewhere* : Myanmar to Tavoy and Thailand.

Genus ***Odontoptilum*** deNiceville

1890. *Odontoptilum* deNiceville, *J. Bombay nat. Hist. Soc.*, **5** : 217.

84. ***Odontoptilum angulata*** Felder

1862. *Odontoptilum angulata* Felder, *Verh. Zool. bot. Ges. Wien.*, **12** : 488.

1998. *Odontoptilum angulata*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 328.

84a. *Odontoptilum angulata angulata* Felder

1998. *Odontoptilum angulata angulata*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 328.

Diagnostic characters : Upperside of forewing without white lines, ground colour more or less variegated. Hindwing cilia pale brown never entirely white.

Material examined : 1ex., Sikkim (no other data).

Expanse : 40 mm.

Distribution : India (Sikkim, Assam, Meghalaya, N. W. Himalayas and South India). *Elsewhere* : Bhutan, Nepal, Myanmar, Sri Lanka, Thailand, Indochina and Malayan subregion.

Genus *Satarupa* Moore

1865. *Satarupa* Moore, *Proc. zool. Soc. London* : 780.

85. *Satarupa gopala* Moore (Large White Flat)

1865. *Satarupa gopala* Moore, *Proc. zool. Soc. London*, : 780. pl. 42. fig. 1.

1998. *Satarupa gopala*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 328.

Diagnostic characters : Forewing cell spot absent or small, not larger than the spot in space Cu_{1a}, spot in space 2A narrower than spots in spaces Cu_{1a} and Cu_{1b}, underside of hindwing with black discal spot reduced which separated in white veins, which penetrate to termen and a prominent spot present in area R_5.

Material examined : 12 exs., Sikkim (no other data).

Expanse : 55 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Myanmar, China, Malaya and Sumatra.

Genus *Darpa* Moore.

1865. *Darpa* Moore, *Proc. zool. Soc. London*, : 781.

86. *Darpa hanria* Moore (Hairy Angle)

1865. *Darpa hanria* Moore, *Proc. zool. Soc. London.*, 781, pl. 42, fig. 2.

1998. *Darpa hanria*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 329.

Diagnostic charcters : Both wings termen highly crenulate, forewing cell spot peculiar, continued upwards above vein Sc, downwards branched to two spots in space Cu_{1a} and Cu_{1b}.

Material examined : 4exs., Sikkim (no other data).

Expanse : 35 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Myanmar.

Genus *Sesaria* Matsumara

1919. *Sesaria* Matsumara, *Thous. Ins. Japan Addit.*, **3** : 683.

87. *Sesaria sambara* (Moore) (Sikkim White Flat)

1857. *Goniloba sambara* Moore, *Cat. Lep. Mus. E.I.C.*, **1** : 246.

1997. *Sesaria sambara*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 286.

87a. *Sesaria sambara sambara* (Moore)

1997. *Sesaria sambara sambara.* Ghosh and Chaudhury, *State Fauna series* **3**, *Fauna of West Bengal* (7) : 286.

Diagnostic characters : Forewing with narrow dorsal white spots between Cu_{1a} and Cu_{1b} which is outwardly excavated. Abdomen entirely white.

Material examined : 2 exs., Sikkim (no other data).

Expanse : 45 mm.

Distribution : Oriental region including India (Sikkim, Assam, Meghalaya, Manipur and West Bengal).

Genus *Chamunda* Evans

1949. *Chamunda* Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*,: 14.

88. *Chamunda chamunda* (Moore) (Olive Flat)

1865. *Plesioneura chamunda* Moore, *Proc. zool. Soc. London*, 788.

1998. *Chamunda chamunda*, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 330.

Diagnostic characters : Wings upperside dark brown, base of forewing and whole of hindwing except exterior margin dark olive brown, Cilia brown.

Material examined : 1ex., Sikkim (no other data).

Expanse : 50 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Myanmar and Thailand.

Genus *Tagiades* Huebner

1816. *Tagiades* Huebner, *Verz. bek. Schmett.*, 108.

Key to species of the genus *Tagiades* Huebner

Forewing without hyaline spot in space R_1 and over cell spot. Hind tibiae without hair pencil. End of uncus bilobate ..... *gana* (Moore)

— Forewing with hyaline spot in space R_1 over cell spot. Hindtibiae with short recumbent hair pencil. End of uncus undivided .... *menaka* Moore.

89. *Tagiades gana* (Moore) (Large Snow Flat)

1865. *Pterygospidea gana* Moore, *Proc. zool. Soc. London*,: 180.

1949. *Tagiades gana*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 141.

89a. *Tagiades gana athos* Plotz

1949. *Tagides gana athos*, Evans, *A Catalogue of Hesperiidae from Europe Asia and Australia in Brit. Mus. (nat. Hist.)*, : 141.

Material examined : 3 exs., Sikkim (no other data).

Expanse : 42 mm.

Distribution : India (Sikkim, Assam and Orissa). *Elsewhere* : Nepal, Thailand.

90. *Tagiades menaka* (Moore) (Spotted Snow Flat)

1865. *Goniloba menaka* Moore, *Cat. Lep. Mus. E.I.C.*, : 246.

1949. *Tagiades menaka*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 147.

90a. *Tagiades menaka menaka* (Moore)

1949. *Tagiades menaka menaka*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 148.

Material examined : 12 exs., Sikkim (no other data).

Expanse : 40 mm.

Distribution : India (Sikkim, Assam and N. W. Himalayas). *Elsewhere* : Bhutan, Myanmar, Thailand, Indochina and Hainan.

Genus *Coladenia* Moore.

1881. *Coladenia* Moore, *Lep. Ceylon.*, 1 : 180.

1997. *Coladonia*, Ghosh and Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7), : 285.

Key to species of the genus *Coladenia* Moore

1. Underside of hindwing dark brown, more or less suffused with tawny spots, hindtibiae fringed. Uncus widely divided .... *dan* (Fabricius)

– Underside of hindwing not dark brown but with tawny spots, hindtibiae with recumbent hair pencil. Uncus undivided 2

2. Wings upperside with more or less developed ochreous shadding or spotting. Forewing underside always with an ochreous discal spot in space 2A, a similar spot beyond termen and cilia white ..... *indrani* (Moore)

– Wings without ochreous spots. Forewing underside without spot in space 2A, cilia dark brown ..... *agni* (de Niceville)

91. *Coladenia dan* (Fabricius) (Fuluous Pied Flat)

1787. *Papilio dan* Fabricius, *Mant. Ins.*, **2** : 88.

1998. *Coladenia dan*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 334.

91a. *Coladenia dan festa* Kollar

1949. *Coladenia dan festa* Evans, *A Catalogue of Hespariidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 112-113.

Material examined : 7 exs., Sikkim, (no other data).

Expanse : 40 mm.

Distribution : India (Sikkim, Meghalaya, Manipur and Naga Hills). *Elsewhere* : Bhutan, North Myanmar, W. Szechwan, Yunnan, S. Shan State, Karen, Ataran.

92. *Coladenia indrani* (Moore) (Tricoloured Pied Flat)

1865. *Plesioneura indrani* Moore, Proc. Zool. Soc. London,: 789.

1997. *Coladenia indrani*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7), : 285.

92a. *Coladenia indrani indrani* (Moore)

1997. *Coladenia indrani indrani*, Ghosh and Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 285.

Material examined : 7 exs., Sikkim (no other data).

Expanse : 40 mm.

Distribution : Oriental region including India (Sikkim, Assam, West Bengal, Uttar Pradesh and Himachal Pradesh).

93. *Coladenia agni* (deNiceville) (Brown Pied Flat)

1883. *Plesioneura agni* deNiceville, *J. Asiat. Soc. Bengal*, **52** (2) : 87, pl. 10, fig. 4.

1998. *Coladenia agni*, Ghosh and Chaudhury, *State Fauna Series* 4, Fauna of Meghalaya (6) : 333.

93a. *Caladenia agni agni* (deNiceville)

1949. *Caladenia agni agni*. Evans, *A Catalogue of Hesperiidae from Europe. Asia and Australia in Brit. Mus. (nat. Hist.)*, : 116.

Material examined : 7 exs., Sikkim, (coll. *deNiceville*).

Expanse : 38 mm.

Distribution : India (Sikkim and Assam). *Elsewhere* : Myanmar to Tavoy, Thailand, Hainan.

Genus *Daimio* Murray

1875. *Daimio* Murray, *Ent. Mon. Mag.*, **11** : 17.

Key to species of the genus *Daimio* Murray

Abdomen upperside centrally white, brawn at ends. End of uncus bulbous ..... *sinica* Felder

– Abdomen upperside narrowly striped. End of uncus tapered to a point ... *Phisara* (Moore)

94. *Daimio sinica* Felder (White Yellow Brest Flat)

1949. *Daimio sinica*, Evans, *A Catalogue of Hesperiidae from Europe, Asia and Australia in Brit. Mus. (nat. Hist.)*, : 130

94a. *Daimio sinica narada* (Moore)

1884. *Satarupa narada* Moore. *Asiat. Soc. Bengal*, : 51.

1998. *Daimio sinica narada*, Ghosh and Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 332.

Material examined : 26 exs., Sikkim, (coll. deNiceville).

Expanse : 36-40 mm.

Distribution : India (Sikkim, Assam and Meghalaya). *Elsewhere* : Myanmar.

95. *Dainio phisara* (Moore) (Dusky Yellow Brest Flat)

1884. *Satarupa phisara* Moore. *J. Asiat. Soc. Bengal*, : 50.

1998. *Daimio phisara*, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 333.

95a. *Daimio phisara phisara* (Moore)

1998. *Daimio phisara phisara*, Ghosh and Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 333.

Material examined : 19 exs., Sikkim (no other data).

Expanse : 36-40 mm.

Distribution : India (Sikkim, Assam, Meghalaya and Manipur). *Elsewhere* : Myanmar and Thailand.

List of species reviewed from literature

1. ***Bibasis odipodea belesia*** Mabille (Branded Orange Awlet)
2. ***B. anadi*** deNiceville (Plain Orange Awlet)
3. ***Choaspes xanthopogon*** Kollar (Awlking)
4. ***Capila lidderdalei*** Elwes (Lidderdale's Dawnfly)
5. ***Lobocla liliana liliana*** (Atkinson) (Marbled Flat)
6. ***Celaenorrhinus flavocincta*** (deNiceville) (Bhutan Flat)
7. ***C. pyrrha*** deNiceville (Double Spotted Flat)
8. ***C. ratna daphne*** Evans
9. ***C. ratna tytleri*** Evans
10. ***C. pulomaya pulomaya*** Moore (Multi Spotted Flat)
11. ***C. pero lucofera*** Leech (Mussouri Pied Flat)
12. ***C. morena*** Evans (Pied Flat)
13. ***C. putra putra*** Moore (Common Spotted Flat)
14. ***C. munda munda*** Moore (Himalayan Spotted Flat)
15. ***C. munda maculicornis*** Elwes & Edwards (Himalayan Spotted Flat)
16. ***Celaenorrhinus nigricans*** deNiceville (Small Banded Flat)
17. ***C. zea*** Swinhoe (Swinhoe's Flat)
18. ***Odina decoratus*** Hewitson (Zigzag Flat)
19. ***Coladenia dan fatua*** Evans (Fulvous Pied Flat).
20. ***C. dan fabia*** Evans (Fulvous Pied Flat)
21. ***Sarangesa dasahara dasahara*** Moore (Small Common Flat)
22. ***Statarupa zulla zulla*** Tytler (Tytler's White Flat)
23. ***Sesaria dohertyi dohertyi*** Watson (Himalayan White Flat)
24. ***Tagiades japetus ravi*** Moore
25. ***T. para gala*** Evans (Large Snow Flat)
26. ***T. litigiosa litigiosa*** Moschler (Water Snow Flat)
27. ***T. cohaerens cynthia*** Evans (Flat)
28. ***Moorena trichoneura pralaya*** (Moore) (Yellow Flat)
29. ***Spialia galba*** (Fabricius) (Indian Skipper)
30. ***Caprona agama agama*** (Moore) (Spotted Angle)
31. ***Pyrgus dejeani*** Oberthur
32. ***Carterocephalus avanti*** deNiceville
33. ***Arnetta atkinsoni*** Moore (Atkinson's Bob)
34. ***Baracus vittatus septentrionam*** Wood-Mason & de-Niceville (Hedge Hopper)
35. ***Sovia grahami*** Evans (Grahm's Ace)
36. ***Halpe kumara*** de-Niceville (Plain Ace)
37. ***H. knyvetti*** Elwes & Edwards (Knyvetti's Ace)
38. ***H. sikkima*** Moore (Sikkim Ace)
39. ***H. homolea molta*** Evans (Indian Ace)
40. ***H. homolea filda*** Evans (Indian Ace)
41. ***H. arcuata*** Evans (Ace)
42. ***Pithaueria marsena*** Hewitson (Branded Straw Ace)
43. ***Iambrix salsala salsala*** Moore (Chestnut Bob)
44. ***Scobura isota*** Swinhoe (Forest Bob)
45. ***Stimula swinhoei*** Elwes & Edwards (Watson's Demon)
46. ***Suastus minuta aditia*** Evans (Ceylon Palm Bob)
47. ***Plastingia noemi*** deNiceville (Spotted Yellow Lancer)
48. ***Gangara thyrsis thyrsis*** (Fabricius) (Giant Red Eye)
49. ***C. lebadea lebadea*** Hewitson (Banded Red Eye)
50. ***Erionota torus*** Evans (Palm Red Eye)
51. ***E. acroleucus apex*** Semper (Red Eye)
52. ***Pirdana hyela major*** Evans (Green Striped Palmer)
53. ***Matapa cresta*** Evans (Grey Brand Red Eye)
54. ***Ochlodes subhyalina pasca*** Evans (Sub Hyaline Darter)

55. ***O. siva siva*** Moore (Assam Darter)
56. ***O. brahma*** Moore (Himalayan Darter)
57. ***Pudicitia pholus*** (deNiceville) (Spotted Red Eye)
58. ***Taractocera danna*** Moore (Himalayan Dark Dart)
59. ***T. maevius sagara*** Moore (Common grass Dart)
60. ***Oriens goloides*** Moore (Common Dartlet)
61. ***O. gola pseudolus*** (Mabille) (Common Dartlet)
62. ***Potanthus pseudomaesa clio Evans*** (Common Dart)
63. ***P. rectifasciata*** (El. & Ed.) (Branded Dart)
64. ***P. sita*** Evans (Common Dart)
65. ***P. mara mara*** Evans (Sikkim Dart)
66. ***P. confucius dushta*** Fruhstorfer (Chinese Dart)
67. ***P. nesta nesta*** Evans (Dart)
68. ***P. pava pava*** Fruhstorfer (Dart)
69. ***P. palnia palnia*** Evans
70. ***Telicota linna linna*** Evans (Dark Palm Dart)
71. ***T. ancilla bambusae*** Moore
72. ***T. colon colon*** (Palm Dart)
73. ***Parnara guttatus mangala*** Moore (Straight Swift)
74. ***P. thrax masta*** Evans (Small Branded Swift)
75. ***Pelopidas agna agna*** Moore (Small Branded Swift)
76. ***P. subochracea subochracea*** Moore (Large Branded Swift)
77. ***Baoris penicillata unicolor*** Moore (Paintbrush Swift)
78. ***Caltoris confusa*** Evans (Confusing Swift)
79. ***C. philippina philippina*** Hewitson (Philippine Swift)

ACKNOWLEDGEMENT

The author is grateful to the Director, Zoological Survey of India, Calcutta, for providing laboratory facilities and Sri I. J. Gupta, officer-in-charge, Lepidoptera Section for going through the manuscript and valuable suggestion.

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INSECTA : LEPIDOPTERA : SATURNIIDAE

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INTRODUCTION

The family Saturniidae is represented in the world by more than 1100 species of moths grouped under seven subfamilities. They are known as wild silkmoths, non-mulberry silkmoths, giant silkmoth or emperor silkmoths. Forty species belonging to 18 genera and two subfamilies—Saturniinae and Salassinae, occur in India. The state of Sikkim abounds 26 species, accounting for 65% of Indian saturniids, distributed over 14 genera and two subfamilies.

They are usually of large size and beautifully coloured. Females of 'Atlas Moth'—*Attacus atlas* (Linnaeus) and 'Edward Moth'—*Archaeoattacus edwardsii* (White) are well known for their wing expanse of more than 270 mm and also for the largest wing area of all the Lepidoptera. The larvae or caterpillars of many species are polyphagous as they feed upon species of plants of different families.

Saturniids moths are of great economic importance as some of their species are exploited for obtaining silk of commercial value. India occupies unique position in the world regarding production of all the three varieties of non-mulberry silks, *viz.*, tasar, eri and muga on a large scale. Three species yielding these silks are : *Antheraea paphia* (Linnaeus)—Tasar silkmoth providing tasar, *Samia cynthia* (Drury)—Eri silkmoth producing eri and *Antheraea assamensis* (Helfer)—Muga silkmoth yielding muga. India ranks first and second in the world in the production of eri and tasar silks, respectively, but it has monopoly in the yield of muga silk.

The earlier significant contributions to the studies on species of Indian Saturniidae are by Wardle (1881), Cotes (1888, 1889), Hampson (1892, 1894), Packard (1914), Seitz (1924), Draudt (1930) and Cooper (1942). Schuessler (1933-36) catalogued the species of Saturniidae of World under three subfamilies. Michener (1954) is credited for providing the sound classification of the family into seven subfamilies. Sen Sarma (1956) listed the species of wild silkmoths represented in the collection of the Forest Research Institute, Dehra Dun. Arora and Gupta (1979) contributed to the taxonomical studies of subfamily Saturniinae. Chowdhury (1982 a,b) provided information on Muga and Eri silk industries facing various problems and suggested measures for their improvement. Gupta (1997, 2000) studied these moths from the states of West Bengal and Meghalaya.

Present studies on Saturniide are based on the material collected during recent faunistic surveys of Sikkim by various parties or individuals of the Zoological Survey of India. The specimens available in the old collection of Zoological Survey of India have also been examined. The species known from Sikkim not available for study have been reviewed from literature.

Wild silkmoths as the name indicates flourished in forests where they had a large number of species of food plants. The increasing human population pressure has led to deforestation for human needs of settlements, urbanisation, industrialisation, construction of dams, hydroclectric projects etc. Consequently, there has been shrinkage in their natural habitats and decrease in

food plants. Thus, the population and diversity of species of these moths have also been adversely affected. Their poor representation in the material collected during recent faunistic surveys indicates their occurrence as very rare. Gupta (1997, 2000) suggested for the protection of these moths and habitats by legislation under the Wildlife Protection Act.

For identification, keys to species and genera of these moths from Sikkim have been given. Measurement of fore wing length / wing expanse, geographical distribution and remarks have been provided for the species. The diagnostic characters have been given for genera, viz., *Rinaca* Walker, *Caligula* More, *Solus* Watson and *Eriogyna* Jordan which have not been included in the key to genera of subfamily Saturniinae. Key to three species of *Salassa* has not been given but their salient features have been provided. An appendix listing species known from Sikkim has been included.

Key to subfamilies of family SATURNIIDAE

1. Fore wing with vein R_5 arising well before from apex of discal cell ..... SATURNIINAE
- Fore wing with vein R_5 arising from apex of discal cell ..... SALASSINAE

Subfamily SATURNIINAE

Of the 36 species in 17 genera known from India, 23 species belonging to 13 genera are found in Sikkim.

Key to genera

1. Both the fore-and hind wing each with the cell completely or partly closed 2
- Both the fore-and hind wing each with the cell completely open 7
2. Hind wing tailed 3
- Hind wing tailless 4
3. Fore wing with five radials present. Hind wing tail shorter than the costa of fore wing in male ..... ***Actias*** Macleay
- Fore wing with four radials present. Hind wing tail longer than the costa of fore wing in male ..... ***Sonthonnaxia*** Watson
4. In fore wing vein R_5 stalked with M_1 beyond the upper angle of cell. Cell partly closed in fore and hind wing ..... ***Rhodinia*** Staudinger
- In fore wing vein R_5 not stalked with M_1. Cell completly closed in fore and hind wing 5
5. Fore wing with four radials ..... ***Antheraea*** Huebner
- Fore wing with five radials 6
6. Frons convex and raised above the level of eyes. Antennae with distal ramii of one segment close to the basal ramii of the succeeding segment ..... ***Loepa*** Moore
- Frons flat and at level of eyes. Antennae with distal ramii of one segment well separated from basal ramii of the succeeding segment ..... ***Cricula Walker***
7. Frons flat, labial palpi one segmented. Fore wing with a slender reddish streak between veins R_4 and R_5 ; antemedial line not sending spurs along veins Cu_{1a} and Cu_{1b}. Mid and hind tibiae without terminal spurs ..... ***Attacus*** Linnaeus
- Frons convex; labial palpi three segmented. Fore wing without reddish streak between veins R_4 and R_5 ; antemedial line sending whitish spurs at bases of Cu_{1a} and Cu_{1b}. Mid and hind tibiae with terminal spurs 2
8. Fore wing with a short blackish patch between veins R_4 and R_5 ; discocellular spot large and triangular ..... ***Archaeoattacus*** Watson
- Fore wing with a short ocellate spot between veins R_4 and R_5; discocellular spot narrow and lunate ..... ***Samia*** Huebner

I. Genus *Actias* Macleay 1815

1815. *Actias* Macleay, In Leach, *Zool. Miscell.*, **2** : 25.

This genus is represented in India by a single species, *Actias selene* (Huebner) which is presently dealt with from Sikkim.

I. *Actias selene* (Huebner)

1806. *Echidna caudata selene* Huebner, *Samml. Exot. Schmett.*, **1** : 3, pl. 172 G, pl. 174 E.

1892. *Actias selene* (Huebner) : Hampson, *Fauna of British India (Moths)*, **1** : 13.

2000. *Actias selene* (Huebner) : Gupta, *Zool. Surv. India. State Fauna Series* : 4, *Fauna of Meghalaya,* Part **5** : 423.

Material examined : Sikkim, 1 ♂, no date (*G. C. Dudgeon Coll.*); 1 ♂, 31.iii.1888 (no *coll*), 1 ♀, no date, (*O. Mochller Coll.*).

Fore wing length : Male 74 – 76 mm, female 80 mm.

Distribution : India : Sikkim : Andamans, Assam, Bihar, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra,n Manipur, Meghalaya, Orissa, Tamil Nadu and Uttar Pradesh. *Elsewhere* : Bangladesh, Bhutan, China, Indonesia, Japan, Myanmar, Nepal, Pakistan, Sri Lanka and USSR.

Ramarks : This moth is popularly known as Indian Moon-moth. Fresh specimens are beautifully coloured apple green. Hind wing is tailed. The species has a large number of food plants.

II. Genus *Sonthonnaxia* Watson 1912

1912. *Sonthonnaxia* Watson, *The Wild Silkmoths of the World.*

A single species of *Sonthonnaxia maenas* (Doubleday) is dealt with from Sikkim.

2. *Sonthonnaxia maenas* (Doubleday)

1847. *Actias maenas* Doubleday, *Ann. Mag. Nat. Hist.*, **19** : 95, pl.7, fig. 1.

1892. *Actias maenas* Doubleday Hampson, *Fauna of British India (Moths)*, **1** : 14.

1936. *Sonthonnaxia maenas* (Doubleday) : Schuessler, *Lepid. Cat.*, **70** : 49-50.

Material examined : Sikkim, 1♂, no further data, Sikkim 2♂♂, no date (*J. C. Jordan Coll*), Sikkim, 3♂♂ 3-iii-1888, 1♂ , 7-iii-1888 (*O. Moeller Coll.*)

Fore wing length : Male 58-70 mm, female 72 mm.

Distribution : India : Sikkim, Assam, Meghalaya and South Andamans, Sikkim. *Elsewhere* : Bangladesh, Bhutan, China, Indonesia, Myanmar, N. Vietnam and Thailand.

III. Genus *Rhodinia* Staudinger 1892

1892. *Rhodinia* Staudinger, In Rom, *Mem. Sur. Les Lep.*, **6** : 327.

The genus is represented in India by a single species, i.e. *Rhodinia newara* (Moore).

3. *Rhodinia newara* (Moore)

1872. *Rhodia newara* Moore, *Proc. zool. Soc. Lond.*, : 578.

1892. *Loepa newara* (Moore) : Hampson, *Fauna of British India* (Moths), **1** : 26, No. 27.

2000. *Rhodinia newara* (Moore) : Gupta, *Zool. Surv. India., State Fauna Series* : **4**, *Fauna of Meghalaya,* Part **5** : 424.

Material Examined : Sikkim, 152 m., 1 ♂, 16-xi-1855, 1 ♂, 20. xi. 1855, 1 ♂, (no date), (*G. C. Dudgeon Coll*).

Fore wing length : Males 60-65mm, female 67 mm.

Distribution : India : Sikkim; Meghalaya and West Bengal. *Elsewhere* : Nepal.

IV. Genus *Antheraea* Huebner 1816

1820. *Antheraea Huebner, Verz. bek. Schmett.*, : 152.

Ten species are known from India, of which seven are dealt with from Sikkim.

Key to species of the genus *Antheraea*

1. Fore wing with vein R_1 stalked with R_{2+3} and R_4 2
– Fore wing with vein R_1 free and arising from the cell 4
2. Antennae in female with distal ramii more than half the length of the basal ramii. Hind wing with submarginal line from much below the costa to inner margin; ocellus filled with black

on inner one third, with hyaline spot reduced or absent ..... *assamensis* (Helfer)

– Antennae in female with distal ramii less than half the length of basal ramii. Hind wing with submarginal line nearly from costa to inner margin, ocellus not filled with black 3

3. Hind wing with submarginal line single, smoothly curved, pinkish red and outlined by white; ocellus large ..... *paphia* (Linnaeus)

– Hind wing with submarginal line double, highly angulated; ocellus small .... *frithi* Moore

4. Hind wing with submarginal lines black and straight ; ocellus filled with black on inner half, hyaline spot obsolescent .... *compta* Rothschild

– Hind wing with submarginal line not black, straight or wavy; ocellus without black on the inner side, hyaline spot reduced or well developed 5

5. Fore wing with costal fascia extending upto basal half ; hind wing with antemedial line not touching ocellus ..... *roylei* Moore

– Fore wing with costal fascia extending upto basal two thirds ; hind wing with antemedial line farther from base and touching or nearly touching ocellus 6

6. Hind wing with submarginal line double, wavy, the inner line curved inwards and touching the antemedial line; ocellus with a well developed black blotch above .... *helferi* Moore

– Hind wing with submarginal line single, not wavy, and not touching antemedial line; ocellus without blotch above or very much reduced ..... *knyvetti* Hampson

4. *Antheraea assamensis* (Helfer)

1837. *Saturnia assamensis* Helfer, *J. Asiat. Soc. Beng.*, **6** : 43, No. 8, ♀ (Type locality—Assam).

1892. *Antheraea assama* Westwood (Sic) : Hampson, *Fauna Brit. India*, Moths, **1** : 20.

2000. *Anthereaa assamensis* (Helfer) : Gupta. *Zool. Surv. India, State Fauna Series* : **4**, *Fauna of Meghalaya, Part* **5** : 425.

Material examined : Nil.

Wing expanse : Males 110-145 mm., females 112-150 mm.

Distribution : India : Sikkim, Assam, Gujarat, Himachal Pradesh, Meghalaya, Pondicherry and Uttar Pradesh. *Elsewhere* : Bangladesh, Sri Lanka and Indonesia.

Remarks : This moth is popularly known as 'The Muga Silk-moth' The cocoon of this moth is a source of muga silk. India has monopoly in the production of muga silk.

5. *Antheraea paphia* (Linnaeus)

1758. *Phalaena Bombyx paphia* Linnaeus, *Syst. Nat.*, Ed.10, **1** : 496.

1892. *Antheraea paphia* (Linnaeus) : *Fauna of British India (Moths)*, **1** : 18.

2000. *Anthraea paphia* (Linnaeus) : Gupta, *Zool. Surv. India, State Fauna Series-4, Fauna of Meghalaya, Part*, **5** : 426.

Material examined : Sikkim ♂♂, 3♀♀ (no further data)

Fore wing length : Males 60–67mm, females 70-74 mm.

Distribution : India : Sikkim, Andhra Pradesh, Assam, Bihar, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Pandicherry, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal. *Elsewhere* : Bangladesh, Bhutan, Myanmar, Nepal, Pakistan, South China and Sri Lanka.

Remarks : The moth is popularly known as 'The Tasar Silkmoth' and its cocoons yield tasar silk. It has a large number of food plants. The species displays a great degree of variation in colouration which Lefroy (1909) assigned to hybridisation in the species and absence of mating in captivitity.

6. *Antheraea frithi* Moore

1859. *Antheraea frithi* Moore, *Cat. Lep. Ins. Mus. E.I. House*, **2** : 396-397

2000. *Anteraea frithi* : Gupta, *Zool. Surv. India, State Fauna Series* : 4, *Fauna of Meghalaya, Part* 5: 426.

Material examined : Sikkim, 4 ♂ ♂ (no further data).

Fore wing length : 58-62 mm

Distribution : India : Sikkim, Andamans, Bihar, Himachal Pradesh, Meghalaya and West Bengal. *Elsewhere* : Bhutan, Indonesia and South Vietnam.

Remarks : This species is known to have preference for food plant of species *Shorea robusta* (Sal).

7. *Antheraea compta* Rothschild

1899 *Antheraea compta* Rothschild, *Novit. zool.*, **6** (3) : 431-432.

2000. *Antherae compta* : Gupta, *Zool Surv. India, State Fauna Series : 4, Fauna of Meghalaya, Part* **5** : 426.

Material examined : Meghalaya : 1220-1524mm, 1♂, 24. vii. 1931 (no coll).

Wing expanse : Male 166 mm.

Distribution : India : Sikkim, Meghalaya and Assam.

8. *Antheraea roylei* Moore

1859. *Antheraea roylei* Moore, *Cat. Lep. Ins. Mus. E.I. House*, **2** : 397-398.

2000. *Antheraea roylei :* Gupta, *Zool. Surv. India, State Fauna Series : 4 Fauna of Meghalaya, Part*, **5**: 426.

Material examined : Sikkim 2♂ ♂, 5♀ ♀ (no further data).

Fore wing length : Males 70-71mm, females 72-76 mm.

Distribution : India : Sikkim (Darjiling), Assam, Himachal Pradesh, Meghalayal, Uttar Pradesh and West Bengal.

Remarks : This moth is commonly called 'The Oak Tasar Moth' Its larvae spin double layered cocoons. Hybrids obtained by crossing *A. roylei* with a chinese species *A. pernyi,* yield Oak Tasar Silk of commercial value.

9. *Antheraea helferi* Moore

1859. *Antheraea helferi* Moore, *Cat. Lep. Ins. E.I. House*, **2** : **397.**

1892. *Caliguea helferi (Moore):* Kirby, *Syn. Cat. Lep. Het*, **1** : 760. No. 2, 937.

1997. *Antheraea helferi Moore :* Gupta, *Zool. Surv. India, State, Fauna Series :* 3. *Fauna of West Bengal, Part*, **7** : 417

Material examined : Sikkim 7♂ ♂, 2♀ ♀ (no further data).

Fore wing length : Males 62-70mm, females 70-73mm.

Distribution : India : Sikkim, West Bengal and Manipur.

10. *Antheraea knyvetti* Hampson

1892. *Antheraea knyvetti* Hampson, *Fauna Brit. India, Moths.*, **1** : 19-20.

1979. *Antheraea knyvetti* : Arora & Gupta, *Mem. zool. Surv.* India, **16** (1) : 35.

Material examined : India : Sikkim, 1ex, (damaged), reared in Museum (no further data).

Fore wing length : 75 mm.

Distribution : India : Sikkim.

Remarks : The species is represented in the collection of Zoological Survey of India by a single (damaged) specimen.

V. Genus *Loepa* Moore 1858

1858. *Loepa* Moore, *Cat. Lep. Ins. E.I. House*, **2** : 399, No. 923.

This genus is represented in India by two species i.e. *Loepa anthera* Jordan and *L. katinka* (Moore), of which the latter is dealt with from Sikkim.

11. *Loepa katinka* (Westwood)

1858. *Saturnia katinka* Westwood, *Cab. Orient. Ent.*, **25** : pl 12, fig. 2.

1855. *Antheraea katinka* (Westwood) : Walker, *Cat. Lep. Ins. Mus. E.I. House*, **2** : 399, pl. 20, fig. 1, 1a.

1892. *Loepa katinka* (Westwood) : Hampson, *Fauna of British India (Moths)*, **1** : **25.**

2000. *Loepa katinka* (Westwood): Gupta, *Zool. Surv. India, State Fauna Series :* **4,** *Fauna of Meghalaya :* Part, **5** : 427.

Material examined : Sikkim, N. Sikkim, Toong, 1394m, 1♂, 30-vii-1959 (*A.G.K. Menon coll).*

Fore wing length : Male 40 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, and Tamil Nadu and West Bengal. *Elsewhere* : Bangladesh, China and Indonesia.

VI. Genus ***Cricula*** Walker 1855

1855. *Cricula* Walker, *Cat. Lap. Het. Brit. Mus.*, **2** : 1186-1187.

Two species, *viz., Cricula andrei* Jordan and *C. trifenestrata* (Helfer) represent this genus in India.

Key to species

Fore and hind wings usually reddish brown; in male fore wing more falcate .... *andrei* Jordan

Fore and hind wings usually yellowish brown to brown and area beyond post-medial line may be grey brown; in male fore-wing less falcate ..... *trifenestrata* (Helfer)

12. ***Cricula andrei*** Jordan

1909. *Cricula andrei* Jordan, *Novit, zool.*, **16** (2) : 301, fig. G (nom. nov. for *zuleika* Westwood, 1858).

2000. *Cricula andrei :* Gupta, *Zool. Surv. India, State Fauna Series : 4, Fauna of Meghalya,* Part, **5** : 428.

Material examined : India : Nil.

Wing expanse : Males 70-77 mm; female 68mm.

Distribution : India : Sikkim, Manipur and Meghalaya. *Elsewhere* : Bhutan and Indonesia (Java).

Remarks : Since the specimens were not available for study, this species has been reviewed from literature.

13. ***Cricula trifenestrata*** (Helfer)

1837. *Saturnia trifenestrata* Helfer, *J. Asiat. Soc. Beng.*, **6** : 45, No. 10♂, ♀.

1892. *Cricula trifenestrata* (Helfer) : Hampson, *Fauna of British India (Moths),* **1** : 28.

2000. *Cricula trifenestrata* (Helfer) : Gupta, *Zool.Surv. India, State Fauna Series : 4, Fauna of Meghalaya, Part,* **5** : 428.

Material examined : Sikkim, 1♂ no date (*Long coll.)* 1♀ (*O. Moeller coll.).* Sikkim, 1♂, (no further data).

Wing expanse : 61-112 mm.

Distribution : India : Sikkim, Andamans; Assam; Bihar, Kerala; Meghalaya; Tamil Nadu and West Bengal. *Elsewhere* : Bangladesh, Indonesia, Myanmar and Sri Lanka.

VII. Genus ***Attacus*** Linnaeus 1767

1767. *Phalaena Attacus* Linnaeus, *Syst. Nat. 12* ed., **1** : (2) : 808.

Only a single species i.e. *Attacus atlas* (Linnaeus) occurs in India.

14. ***Attacus atlas*** (Linnaeus)

1758. *Phalaena Bombyx atlas* Linnaeus, *Syst. Nat.* Ed. 10. **1** : 495.

1767. *Phalaena Attacus atlas* (Linnaeus), Linnaeus, : *Syst. Nat.* Ed. 12, **1** (2) : 808.

1892. *Attacus atlas* (Linnaeus) : Hampson, *Fauna of British India (Moths),* **1** : 15.

2000. *Attacus atlas* (Linnaeus) : Gupta, *Zool. Surv. India, State Fauna Series* **4** : *Fauna of Meghalaya, Part,* **5** : 428.

Material examined : Sikkim, 1♀ – – (*O. Moeller coll.),* 1♂, –.– 1888 (*Jordan coll),* 1♂,1♀, –.– 1889 (G.C. *Dudgeon coll.).* Sikkim, 1♂ (no further data).

Fore wing length : Males 95 – 110 mm, Females 110–120mm.

Distribution : India : Sikkim, Andamans,

Assam, Bihar, Gujarat, Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal. ***Elsewhere*** : Bangladesh, Indonesia, Myanmar, Singapore, Sri Lanka, South Asia and Western Malaysia.

Remarks : This moth is popularly known as 'Indian Atlas Moth' It has the largest wing-area of all the known Lepidoptera. It feeds on several species of plants. The cocoons of these moths yield " Fagara" silk.

VIII. Genus *Archaeoattacus* Watson 1914

1914. *Archaeoattacus* Watson, In Packard; *Mem. nat. Acad. Sci.*, **12** (1) : 265.

The genus is represented in India by a single species *Archaeoattacus edwardsii* (White).

15. *Archaeoattacus edwardsii* (White)

1859. *Attacus edwardsii* White, *Proc. zool. Soc. Lond.*, **27** : 115, pl. 57.

1892. *Attacus edwardsi* White : (Sic) Hampson, *Fauna Brit. India., (Moths)*, **1** : 16.

1914. *Archaeoattacus edwardsii* (White) : Watson, In Packard : *Mem. nat. Acad. Sci.*, **12** (1) : 265.

2000. *Archaeoattacus edwardsii* (White) : Gupta, *Zool. Surv. India, State Fauna Series : 4, Fauna of Meghalaya, Part*, **5** : 429.

Material examined : Sikkim, 1♂ *(O. Moeller coll)*, 2♂♂, 1♀, no date *(G.C. Dudgeon coll.)*.

Fore wing length : Males 115-110 mm, female 110 mm.

Wing expanse : 250 mm. Males 204-224 mm, female 244 mm.

Distribution : India : Sikkim, (Darjiling), Assam, Meghalaya, Nagaland and West Bengal. *Elsewhere* : Bhutan and Nepal.

Remarks : This moth is commonly called 'The Edward Moth'

IX. Genus *Samia* Huebner 1820

1820. *Samia* Huebner, *Verz. bek. Schmett*, : 156.

The genus is represented by only a single species i.e. *Samia cynthia* (Drury).

16. *Samia cynthia* (Drury)

1773. *Phalaena Attacus cynthia Drury, Illust. Nat. Hist. Exot. Ins.*, **2** : 10. pl. 6, fig. 2.

1820. *Samia cynthia (Drury)*: Huebner, *Verz. bek. Schmett.*, : 156.

1892. *Attacus cynthia* (Drury) : Hampson, *Fauna of British India (Moths)*, **1** : 16.

1956. *Philosamia cynthia* (Drurry) : Sen-Sarma, *Indian Forest Leaffet No.* **121** (Part 4) : 289.

2000. *Samia cynthia (Drurry)* : Gupta, *Zool. Surv. India, State Fauna Series : 4, Fauna of Meghalaya*, Part, **5** : 429.

Material examined : Sikkim, 2♂♂, 5♀♀ (no further data), 1♂, 1♀ no date, *(O. Moeller coll.)*; 1♂, –.– 1887 *(G.C. Dudgeon coll.)*.

Fore wing length : Males 42-67 mm, females 50-70 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Meghalaya, Nilgiri Hills, South Andamans, Uttar Pradesh and West Bengal. *Elsewhere* : Australia, Bangladesh, Myanmar, China, Indonesia, Sri Lanka and U.K.

Remarks : This moth is popularly known as Eri Silkmoth or Ailanthus Silkmoth and it feeds on a large number of species of plants. Its cocoons yield 'Eri Silk'

X. Genus *Rinaca* Walker 1855

1855. Walker, *Cat. Lep. Met. Brit. Hus*, **6** : 1274.

Diagnostic characters : Antennae much longer than the thorax; in male, antennae very deeply pectinated, branches ciliated and in pairs, the latter equal in length; in female, antennae with fewer joints than those of male, branches in pairs, the latter unequal in length. Labial palpi very short. Wings long and moderately broad; ocellus truncate lunate, with a curved discal vitreous line. Fore wings almost straight in front, rounded at tips; outer margin oblique. Fore wing slightly falcate, concave along outer margin.

The genus is represented in India by a single species i.e. *Rinaca zuleika* (Hope).

17. *Rinaca zuleika* (Hope)

1843. *Saturnia zuleika* Hope, *Trans. Linn. Soc. London. Zool.*, **19** : 132, No. 18, t. 11, fig. 5.

1892. *Saturnia zuleika* Hope : Hampson, *Fauna Brit. India, (Moths)*, **1** : 21.

1936. *Rinaca zuleika* (Hope) : Schuessler, *Lepid. Cat.*, **56** : 236.

2000. *Rinaca zuleika* (Hope) : Gupta, *Zool. Surv.India, State Fauna Series* : 4, *Fauna of Meghalaya, Part*, **5** : 430.

Material examined : Nil.

Wing expanse : 136 mm.

Distribution : India : Sikkim, Meghalaya and Nagaland. *Elsewhere* : Bangladesh and Tibet.

Remarks : Jordan (1911) reported a form *orites* of this species from Sikkim.

XI. Genus *Caligula* Moore 1862

1862. *Caligula* Moore, *Trans. ent. Soc. Lond.*, (3) **1** : 321.

Diagnostic characters : Antennae of male densely quadripectinate and feathered to the apex. Fore and hind wings ample; fore wing apex falcate in male but rounded in female.

This genus is represented in India by four species.

Key to species

1. Palpi of moderate size; in male, ramii of antennae long 2
- Palpi very short; in male, ramii of antennae short 3
2. Head, thorax and abdomen brown .... *anna* (Moore)
- Head, thorax and abdomen ochreous (pale brown or buff)slightly with grey brown .... *thibeta* (Westwood)
3. Ground colour of fore and hind wings brown ..... *grotei* (Moore)
- Ground colour of fore and hind wings grey ..... *lindia* (Moore)

18. *Caligula anna* (Moore)

1865. *Saturnia anna* Moore, *Proc. zool. Soc. Lond.*,: 818.

1892. *Saturnia anna* : Hampson, *Fauna of British India (Moths)*, **1** : 22.

1997. *Caligula anna* (Moore) : Gupta, *Zool.Surv. India, State Fauna Series* **3** : *Fauna of West Bengal, Part*, **7** : 421.

Material examined : Nil.

Wing expanse : 110-120 mm.

Distribution : India : Sikkim, North-India and West Bengal. *Elsewhere* : South China.

19. *Caligula thibeta extensa* (Butler)

1881. *Rinaca extensa* Butler, *Illustr. Lep. Het. Brit. Mus.*, **5** : 61, t. 94, fig. 20.

1892. *Saturnia thibeta Westwood* : Hampson, *Fauna of British India (Moths)*, **1** : 22.

1997. *Caligula thibeta extensa* (Butler) : Gupta, *Zool. Surv. India, State Fauna Series* : 3, *Fauna of West Bengal, Part*, **7** : 421.

Material examined : Nil.

Wing expanse : 124-146 mm.

Remarks : Schuessler (1936) treated two subspecies, *Caligula thibeta* (Westwood) with its nominate subspecies found in Uttar Pradesh (Kumaon), North-West Himalaya and Tibet and other *C. thibeta extensa* Butler occurring in West Bengal, Sikkim and Assam.

Distribution : India : Sikkim, Assam, Uttar Pradesh and West Bengal. *Elsewhere* : Tibet.

20. *Caligula grotei* (Moore)

1858. *Saturnia grotei* Moore, *Proc. zool. Soc. Lond.*,. 265, pl. 65, fig. 2.

1892. *Saturnia grotei* Moore : Hampson, *Fauna Brit. India*, (Moths), 1 : 22-23.

1936. *Caligula grotei* (Moore) : Schuessler, *Cat. Lep.*, **36** :

Material examined : Nil.

Wing expanse : Male 80 mm, female 88 mm.

Distribution : India : Sikkim, North India and Uttar Pradesh and Himachal Pradesh. ***Elsewhere*** : Tibet.

Remarks : However, Schuessler (1936) did not refer to its occurrence in Tibet but Hampson (1892) included its distribution in Tibet also.

21. *Caligulal lindia* Moore

1865. *Caligula lindia* Moore, *Trans. ent. Soc. Lond.*, (3) **2** : 424. No. 3, t. 22, fig. 3G.

1892. *Saturnia lindia* (Moore) : Hampson, *Fauna of British India (Moths)*, **1** : 23.

1997. *Caligula lindia* Moore : Gupta *Zool. Surv. India, State Fauna Series* : 3, *Fauna of West Bengal*, Part **7** : 421.

Material examined : Nil.

Wing expanse : 86 mm.

Distribution : India: Sikkim, West Bengal, Himachal Pradesh and Jammu & Kashmir. ***Elsewhere*** : Tibet.

XII. Genus *Solus* Watson 1913

1913. *Solus* Wetson, *Notes Leyden Mus.*, **35** : 181, t. 8, Fig. 1.

Diagnostic characters : Cells of fore wing and hind wing open and without any discal veins in the cell, inner margin of fore wing straight making a right angle with the outer margin. It differs from the genus *Cricula* walker by hind wing being longer (twice the length of body) and ocelli not so completely hyaline.

Only a single species i.e. *Solus drepanoides* (Moore) occurs in India

22. *Solus drepanoides* (Moore)

1865. *Cricula drepanoides* Moore, *Proc. zool. Soc. Lond.*, : 817.

1892. *Cricula drepanoides* Moore : Hampson, *Fauna of British India*, (Moths), **1** : 29.

1997. *Solus drepanoides* (Moore) : Gupta, *Zool. Surv. India, State Fauna Series* : 3, *Fauna of West Bengal, Part*, **7** : 422.

Material examined : Nil.

Wing expanse : 68 mm.

Distribution : India : Sikkim and West Bengal. *Elsewhere* : Bhutan.

XIII. Genus *Eriogyna* Jordan 1911

1911. *Eriogyna* Jordan, In Seitz : *Macrolepidoptera of the World*, **2** : 221.

Diagnostic characters : Antennae with distal ten segments produced ventrally at apex but without distinct sensory cones. Fore wing with only two subcostal veins; hind wing with costal vein strongly approaching subcostal distally or sometimes uniting with it for a short distance and terminating in the costal margin. Abdomen of female thickened at apex and densely clothed with anal wool.

The genus is represented in India by a single species, *Eriogyna pyretorum* (Westwood)

23. *Eriogyna pyretorum cidosa* (Moore)

1865. *Saturnia cidosa* Moore, *Trans. ent. Soc. Lond.*, (3) **2** : 423, No. 2, t. 22, fig 2 E.

1892. *Saturnia pyretorum* Westwood : Hampson, *Fauna Brit. India*, Moths, **1** : 23.

1936. *Eriogyna pyretorum cidosa* (Moore) : Schuessler, *Lep. Cat*, **56** : 285, 701

Fore wing largely dark at base, medilal area whitish, postmedial area heavily suffuseld with fuscous, the latter obliterating the dentate lines, a white submarginal line, outer margin fuscous, ocellus dark with a streak and ringed with yellow and black, two deep red subapical patches present. Hind wing almost like fore wing, whitish medial area broader, waved lines and a red subapical patch being obsolete. Female with a large tuft of hair at end of abdomen.

Material examined : Nil.

Wing expanse : 103 mm.

Distribution : India : Sikkim and North-East India.

Remarks : Schuessler (1936) treated this taxon occurring in India as subspecies *Eriogyna pyretorum cidosa* (Moore).

Subfamily SALASSINAE

This subfamily is represented by a single genus, *Salassa* Moore occurring in Southern Asia.

XIV. Genus ***Salassa*** Moore 1859

1859. *Salassa* Moore, *Proc. zool. Soc. Lond,* : 246.

The genus is represented in India by four species, of which three are dealt with from Sikkim.

24. *Salassa lola* (Westwood)

1847. *Saturnia lola* Westwood, *Cab. Or. Entom.*, : 25, pl, 12, fig. 3.

1892. *Salassa lola* (Westwood) : Hampson, *Fauna of British India* (Moths), **1** : 27.

1997. *Salassa lola* (Westwood) : Gupta, *Zool. Surv. India, State Fauna series 3, Fauna of West Bengal, Part,* **7** : 423.

Material Examined : Nil.

Wing expanse : Male 116 mm, female 120-158 mm.

Distribution : India : Sikkim and West Bengal. *Elsewhere* : Bangladesh.

Remarks : The head, thorax and abdomen are coloured brick red. The fore wing beyond cell, has a hyaline spot which is variable in shape and size, and a postmedial line bearing a series of hyaline striae on it. The hind wing has a ocellus which is ringed black, white and deep red exteriorly. The female is brown with its fore and hind wings clothed with dark and reddish hair.

25. ***Salassa royi*** (Elwes)

1887. *Saturnia royi* Elwes, *Proc. zool. Soc. Lond.*, : 447, G.

1892. *Salassa royi* (Elwes) : Hampson, *Fauna of British India,* (Moths), **1** : 27

1997. *Salassa royi* (Elwes) : Gupta, *Zool. Surv. India, State Fauna Series* : 3, *Fauna of West Bengal, Part* **7** : 423.

Material examined : Nil.

Wing expanse : Male 149 mm, female 154 mm.

Distribution : *India* : Sikkim, Himalaya and West Bengal.

Remarks : The male of this species differs from that of *Salassa lola* (Westwood) by its head, thorax and abdomen being purplish red brown, fore wing with a large and round hyaline spot, postmedial line without any hyaline striae on it, hind wing with outer ring of ocellus being narrow and black istead of broad and deep red. The female is paler but head and thorax yellow ; the fore and hind wing being clothed with olive yellow hair.

26. ***Salassa iris*** Jordan

1910. *Salassa iris* Jordan, *Nov. Zool.*, **18** (3) : 471, G, E.

1936. *Salassa iris* Jordan : Schuessler, *Lep. Cat.* **56** : 94.

Material examined : Nil.

Wing expanse : Not given Jordan (1911).

Distribution : India : Sikkim.

Remarks : The male of this species differs from other species by its a little more paler ferruginous colouration, fore wing much longer and narrower; underside drab or cinnamomeus drab paler in female.

Jordan (1911) described this species from Sikkim on the basis of several males but two females.

ACKNOWLEDGEMENTS

The author is grateful to Dr. J. R. B. Alfred, Director, Zoological Survey of India for providing necessary laboratory facilities for this work. Thanks are due to Dr. G. K. Srivastava, Scientist–SG (Retd.) and Dr. S. K. Mitra, Scientist-SF (Retd.) for their encouragement and valuable suggestions during the course of this study. He is also thankful to Mr. Rati Ram, P.P.O., for several courtsies.

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APPENDIX

A list of species of the family Saturniidae from Sikkim

Family SATURNIIDAE

Subfamily SATURNIINAE

Genus ***Actias*** Macleay

1. ***Actias selene*** (Huebner)

Genus ***Sonthonnaxia*** Watson

2. *Sonthonnaxia maenas* (Doubleday)

Genus ***Rhodinia*** Staudinger

3. *Rhodinia newara* Moore

Genus ***Antheraea*** Huebner

4. *Antheraea assamensis* (Helfer)
5. *A paphia* (Linnaeus)
6. *A. frithi* Moore
7. *A. compta* Rothschild
8. *A. roylei* Moore
9. *A. helferi* Moore
10. *A. knyvetti* Hampson

Genus ***Loepa*** Moore

11. *Loepa katinka* (Westwood)

Genus ***Cricula***. Walker

12. *Cricula andrei* Jordan
13. *C. trifenestrata* (Helfer)

Genus ***Attacus*** Linnaeus

14. ***Attacus atlas*** (Linnaeus)

Genus ***Archaeoattacus*** Watson

15. ***Archaeoattacus edwardsii*** (White)

Genus ***Samia*** Huebner

16. ***Samia cynthia*** (Drury)

Genus ***Rinaca*** Walker

17. ***Rinaca zuleika*** (Hope)

Genus ***Caligula*** Moore

18. ***Caligula anna*** (Moore)
19. ***C. thibeta*** (Westwood)
20. ***C. grotei*** (Moore)
21. ***C. lindia*** (Moore)

Genus ***Solus*** Watson

22. ***Solus drepanoides*** (Moore)

Genus : ***Eriogyna*** Jordan

23. ***Eriogyna pyretorum cidosa*** (Moore)

Subfamily SALASSINAE

Genus ***Salassa*** Moore

24. ***Salassa lola*** (Westwood)
25. ***S. royi*** (Elwes)
26. ***S. iris*** Jordan

Zool. Surv. India.
State Fauna Series 9, Fauna of Sikkim (Part-4), 159-174, 2003

INSECTA : LEPIDOPTERA : ZYGAENIDAE

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INTRODUCTION

The family Zygaenidae includes four subfamilies of which Zygaeninae, Chalcosiinae and Phaudinae are well represented in Sikkim and the distribution of the species, *Himantopterus caudatus* (Moore) under Himantopterinae from Sikkim has been considered doubtful by Fletcher (1925). Butler (1881-1886) in *Illustrations of Heterocera in the British Museum*, dealt with the moths of Sikkim including Zygaenidae. Elwes (1890) recorded some 20 species, while Hampson (1892, 96) in *Fauna of British India, Moths*, reported 53 species of zygaenids from Sikkim. Dudgeon (1899) noted 23 species and subspecies of Zygaenidae from Darjiling and Sikkim. Jordan (1908) and Fletcher (1925) reported nearly 60 species and subspecies of Zygaenidae from this area. Barlow (1982) in his work on the *Illustrations to the Moths of South East Asia*, included the zygaenids of Indian region also.

The present work includes systematic account of 66 species and subspecies under 29 genera with their keys and distribution. Of these, 21 species and subspecies have been appended on the basis of literature review, as these are not represented in the collection under study.

Two zygaenine species, *Phacusa properta* (Swinhoe) and *Illiberis fuliginosa* (Moore) and another couple of chalcosine, *Corma maculata maculata* Hampson and *Eterusia pulchella pulchella* (Kollar) are new locality records for Sikkim. One species *Eterusia nigribasalis* (Hampson) is the topotype representative of Sikkim. As many as six species, *Artona flaviciliata* Hampson, *Artona postalba* Elwes (12000 ft.), *Artona posthyalina* (Hampson), *Artona sikkimensis* Elwes (12000 ft.), *Artona zebra* Elwes (11000 ft.) and *Pidorus truncatus* Jordan, are hitherto known as endemic to Sikkim. The keys and descriptions are mainly based on those given in Hampson (1892).

Family ZYGAENIDAE

Key to the subfamilies of ZYGAENIDAE

1. Mouth parts present 2
– Mouth parts wanting 3
2. Antennae not flabellate at tip ..... ZYGAENINAE
– Antennae flabellate at tip ..... CHALCOSIINAE
3. Hind wing with the outer margin produced into a long tail ..... HIMANTOPTERINAE
– Hind wing with the outer margin not produced into a long tail ..... PHAUDINAE

Key to the genera of ZYGAENINAE

1. Hind wing with M_1 absent 2
– Hindi wing with M_1 present 4
2. Fore wing long and narrow 3
– Fore wing produced at apex and broad ..... ***Phacusa***
3. Hind wing M_2 remote from R_S ..... ***Artona***
– Hind wing M_2 arising close to R_2 ..... ***Arachotia***
4. Abdomen tufted at end ..... ***Lophosoma***
– Abdomen not tufted at end 5

5. Hind wing long and narrow ..... ***Illiberis***
– Hind wing broad and rounded ..... ***Clelea***

Genus ***Artona*** Walker

1854. ***Artona*** Walker, *Cat. Lep. Het. Brit. Mus.*, **2** : 439-440.

Seventeen species and subspecies under this genus are known from India of which seven species and subspecies are known from Sikkim. Two species and subspecies are dealt with hereunder, other five have been appended at the end after reviewing the literature.

Key to the species of *Artona*

Fore wing postmedial spots small and double ..... *zebraica*

Fore wing postmedial spots very large and single ..... *walkeri*

1. ***Artona zebraica zebraica*** Butler

1876. *Artona zebrica* Butler, *J. Linn. Soc.*, **12** : 356.

1925. *Artona zebrica zebracia*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 6–7.

Material examined : Two exs., Sikkim, No date, (O. Moller coll.); 1ex., Sikkim, No date, Knyvett coll.). Wing exp. 20–24 mm.

Distribution : India : Sikkim, Himachal Pradesh, North-West India, Uttar Pradesh, (Kumaon).

Remarks : Barlow (1982) described the subspecies under the genus *Zeuxippa* with its distribution restricted mainly to north-west India and Sikkim.

2. ***Artona walkeri nigrescens*** Butler

1876. *Artona nigrescens* Butler, *J. Linn. Soc.*, **12** : 356.

1892. *Artona confusa*, Hampson, *Fauna Brit. India*, Moths, **1** : 236.

1925. *Artona walkeri nigrescens*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 6.

Material examined : One ex., Sikkim, No date, (O. Moller coll.) and 1ex., Sikkim, 10.v.1888 (Dudgeon's coll.). Wing exp. 26 mm.

Distribution : India : Sikkim (Raitdong), North-West Himalaya and Punjab hills.

Remarks : The distribution of the subspecies *nigrescens* is restricted to the north-west Himalaya and Sikkim.

Genus ***Clelea*** Walker

1854. *Clelea* Walker, *Cat. Lep. Het. Brit. Mus.*, **2** : 239, fig. 156.

Eight species under this genus are recorded from India while three species are known from Sikkim.

Key to the species of *Clelea*

1. Hind wing spotted ..... *stipata*
Hind wing not spotted 2
2. Fore wing with streaks from the base metallic blue ..... *sapphirina*
Fore wing with streaks from the base green ..... *discriminis*

3. ***Clelea sapphirina*** Walker

1854. *Clelea sapphirina* Walker, *Cat. Lep. Het. Brit. Mus.*, **2** : 465–466.

1925. *Clelea sapphirina*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 9.

Material examined : One ex., Sikkim, No date, (O. Moller coll.), 1ex., Sikkim, 6.vi.1888 and 1 ex., Sikkim, 28.v.1888 (Dudgeon's coll.). Wing exp. ♂24, ♀30 mm.

Disribution : India : Sikkim, North India, Meghalaya; also Central, Southern and Western China; Hong Kong and Myanmar.

Remarks : In India, the distribution of the species is restricted mainly to the North Eastern part.

4. ***Clelea discriminis*** Swinhoe

1891. *Clelea discriminis* Swinhoe, *Trans. ent. Soc. Lond.*, : 475.

1925. *Clelea discriminis*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 8.

Material examined : One ex., Sikkim, 2.vi.1888 (O. Moller coll.). Wing exp. 27 mm.

Distribution : India : Sikkim, North India, Meghalaya, Nagaland and West Bengal.

Remarks : The distribution of the species is restricted to North East India.

5. *Clelea stipata* (Walker)

1854. *Procris stipata* Walker, *Cat. Lep. Het. Brit. Mus.*, 1 : 114.

1892. *Chrysartona stipata*, Hampson, *Fauna Brit. India*, Moths. 1 : 232.

1925. *Clelea stipata*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 9.

Material examined : One ex., Sikkim, July, 1897, 1 ex., Sikkim, Aug., 1889 (Dudgeon's coll.) and 1 ex., Sikkim, No date, (O. Moller coll.). Wing exp. ♂ 18 mm., ♀ 20 mm.

Distribution : India : Sikkim : Himachal Pradesh, Meghalaya : also West China, : Java and Myanmar.

Remarks : The distribution of the species in India is restricted to the north eastern and western parts of the Himalayan region.

Genus *Phacusa* Walker

1854. *Phacusa* Walker, *Cat. Lep. Het. Brit. Mus.*, 1 : 150.

Six species and subspecies under this genus are known from India of which one species is recorded for the first time from Sikkim.

6. *Phacusa properta* (Swinhoe)

1890. *Notioptera properta* Swinhoe, *Proc. zool. Soc. Lond.*, [1889] : 400, pl. 43, fig. 6.

1925. *Phacusa properta*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 14.

Material examined : One ex. Sikkim, May, 1897 (Dudgeon's coll.). Wing exp. 30 mm.

Distribution : India : Sikkim, North India, Nagaland, Nicobar Islands; also Myanmar.

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

Genus *Illiberis* Walker

1854. *Illiberis* Walker, *Cat. Lep. Het. Brit. Mus.*, 2 : 280.

Two species under this genus are known from India of which one is recorded for the first time from Sikkim.

7. *Illiberis fuliginosa* (Moore)

1879. *Artona fuliginosa* Moore, *Lep. Atkinson*, p. 14.

1925. *Illiberis fuliginosa*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 12.

Material examined : One ex., Sikkim, 9. vi.1888 (Dudgeon's coll.). Wing exp. ♂ 15 mm., ♀ 17 mm.

Diagnostic characters : Dark brown in colour. Fore wing, antennae, palpi, costa and discocellulars black.

Distribution : Sikkim and West Bengal.

Remarks : This is the first locality record of the species from Sikkim.

Genus *Lophosoma* Swinhoe

1892. *Lophosoma* Swinhoe, *Cat. Lep. Het. Oxon.*, 1 : 58.

Two species under this genus are recorded from India of which one species is known from Sikkim.

8. *Lophosoma cuprea* (Walker)

1856. *Syntomis cuprea* Walker, *Cat. Lep. Het. Brit. Mus.*, 7 : 1596.

1925. *Lophosoma cuprea*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 16.

Material examined : 1 ex. Sikkim, L.M., No date, (O. Moller coll.). Wing exp. 24 mm.

Distribution : India : Sikkim, Andamans, North India, Himachal Pradesh and Meghalaya.

Remarks : The distribution of the species is restricted to the Himalayan region and Andamans.

Genus *Arachotia* Moore

1879. *Arachotia* Moore, *Lep. Atk.*, p. 14.

Three speci es under this genus are recorded from India of which one species is known from Sikkim.

9. *Arachotia flaviplaga* Moore

1879. *Arachotia flaviplaga* Moore, *Lep. Atk.*, p. 14.

1925. *Arachotia flaviplaga*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 17.

Material examined : One ex., Sikkim, No date, (O. Moller coll.). Wing exp. 35 mm, 44 mm.

Distribution : India : Sikkim, Meghalaya, Nagaland and West Bengal.

Ramarks : The distribution of the species is restricted to north east India.

Subfamily CHALCOSIINAE

Key to the genera of CHALCOSIINAE

1. Wings uniformly semi-transparent 2
   Wings not uniformly semi-transparent 3
2. Fore wing with R_1 anastomosing with Sc .... ***Philopator***
   Fore wing with R_1 not anastomosing with Sc ..... ***Agalope***
3. Fore wing with cell long 4
   Fore wing with cell short ..... ***Psaphis***
4. Fore wing with no veinlet between Sc and costa 5
   Fore wing with veinlets between Sc and costa 15
5. Both wings normal in form 6
   Both wings not normal in form 8
6. Fore wing R_1 anastomosing with Sc ..... ***Cyclosia***
   Fore wing R_1 not anastomosing with Sc 7
7. Hind wing M_2 and M_3 stalked ..... ***Chalcosia***
   Hind wing M_2 and M_3 not stalked ..... ***Corma***
8. Wings zygaeniform ..... ***Trypanophora***
   Wings not zygaeniform 9
9. Wings moderately long and broad 10
   Wings very long and broad 13
10. Fore wing with R_5 given off farther from cell than R_3 ..... q***Herpa***
    Fore wing with R_5 given off nearer from cell than R_3 11
11. Fore wing with M_2 and M_3 from cell ..... ***Pidorus***
    Fore wing with M_2 and M_3 stalked 12
12. Fore wing with M_1 absent ..... ***Phlebohecta***
    Fore wing with M_1 present ..... ***Eterusia***
13. Fore wing with Cu_{1a} not stalked with M_2 and M_3 14
    Fore wing with Cu_{1a} stalked with M_2 and M_3 ..... ***Campylotes***
14. Fore wing with R_2 not stalked with R_3, R_4 and R_5 ..... ***Erasmia***
    Fore wing with R_2 stalked with R_3, R_4 and R_5 ..... ***Cadphises***
15. Hind wing with outer margin rounded ..... ***Gynautocera***
    Hind wing with outer margin extremely produced ..... ***Histia***

Genus *Trypanophora* Kollar

1844. *Trypanophora* Kollar, *Hugel's Kaschmir*, 4 (2) : 457.

Three species under this genus are known from India of which one is dealt with from Sikkim.

10. *Trypanophora semihyalina* Kollar

1844. *Trypanophora semihyalina* Kollar, *Hugel's Kaschmir*, 4 (2) : 457, pl. 19, figs 1–4.

1925. *Trypanophora semihyalina*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 28—29.

Material examined : Two exs., Sikkim, March.

1896; 1 ex., Sikkim, July. 1896 and 1 ex., Sikkim, Jan. 1897 (Dudgeon's coll.). Wing exp. 31-36 mm.

Distribution : India : Sikkim, Himachal Pradesh, Jammu and Kashmir, Meghalaya, South India and West Bengal; also Bangladesh (Dacca); East Pegu and Hong Kong.

Remarks : The spots and colours are very variable in different forms of this species. In typical *semihyalina* the discal hyaline patches of the fore wing are large while in *humeralis* these are much reduced and when the colour of frons and tegulae is orange in these two forms, it is white in the form *argyrospila* (Hampson, 1892).

Genus *Cyclosia* Hübner

1822. *Cyclosia* Hubner, *Verz. bek. Schmett.*, : 177.

Five species and subspecies are recorded under this genus from India of which four are known from Sikkim.

Key to the species of *Cyclosia*

1. Fore wing with numerous veinlets from Sc to costa 2
- Fore wing without numerous veinlets from Sc to costa 3
2. Fore wing with veins R_3, R_4, R_5 and M_1 all much curved ..... *imitans*
- Fore wing with veins R_3, R_4, R_5 and M_1 all not much curved, straight ..... *midamia*
3. Abdomen banded with blue and white ..... *papilionaris*
- Abdomen not banded, entirely blue-green ..... *panthona*

11. *Cyclosia imitans* (Butler)

1881. *Epyrgis imitans* Butler, *Ill. Typ. Sp. Lep. Het. Brit. Mus.*, **5** : 24, pl. 84, fig. 1.

1925. *Cyclosia imitans*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9, p. 30.

Material examined: One ex., Sikkim, 30.iii.1888 and 2exs., Sikkim, 6.iv.1884 (O. Moller coll.). Wing exp. 72 mm.

Disribution : India : Sikkim, Meghalaya; also Bhutan and Myanmar.

Remarks : The species is an excellent mimic of the butterfly, *Danaus aglea.*

12. *Cyclosia midamia* (Herrich-Schaffer)

1853. *Epyrgis midamia* Herrich-Schaffer, *Ausserurr. Schmett.* **1**, pl. 2, fig. 7.

1925. *Cyclosia midamia*, Fletcher, *Cat. India Ins.*, Zygaenidae, pt. **9** : 32.

Material examined : Eight exs., Sikkim, 23.iii.1888, (O. Moller coll.), 1ex., Sikkim, 1886, 1 ex., Sikkim, Aug. 1896, (G.C. Dudgeon coll.). Wing exp. 74 mm. 86 mm.

Distribution : India : Sikkim, Assam, Meghalaya, Nagaland, West Bengal; also Bangladesh; Bhutan; Borneo; Java; Malacca; Myanmar; Singapore; Sri Lanka; Sumatra; Thailand and Vietnam.

Remarks : The colour and spots of the species are much variable and it is a beautiful mimic of the blue Euploeas.

13. *Cyclosia panthona* (Cramer)

1781. *Geometra panthona* Cramer, *Pap. Exot.*, **4** : 322, fig. C.

1925. *Cyclosia panthona*, Fletcher, *Cat. India Ins.*, Zygaenidae, pt. 9 : 33.

Material examined : One ex., Sikkim, No date, (O. Moller coll.) and 3 exs., Sikkim, May, 1893, (Dudgeons coll.). Wing exp. 40–60 mm.

Distribution : India : Sikkim (Nagrishpur). Assam, Meghalaya, also China (Hong-Kong): Malacca; Myanmar; Sri Lanka and Thailand.

Remarks : In India, the distribution of the species is restricted to north east India.

14. *Cyclosia papilionaris* (Drury)

1773. *Noctua papilionaris* Drury, *Ill. Exot. Ent.*, **2** : 4, pl. 2, fig. 4.

1925. *Cyclosia papilionaris*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 33–34.

Material examined : One ex., Sikkim, v. 1894,

1 ex., 7.viii.1890, 1 ex., June, 1897, 2 exs., 1895, 1 ex., Aug. 1898, 1 ex., 16.viii.1888, 1 ex., Aug. 1896 (Dudgeon's coll.), 2 exs., No date, and 2 exs., 30.iii.1888, (O. Moller coll.). All old collections from Sikkim. Wing exp. 46–70 mm.

Distribution : India : Sikkim, Andamans, Assam, Kerala, Meghalaya, Nicobars, South India, Tamil Nadu; also Bangladesh; Bhutan; China; Java; Malacca; Myanmar and Sumatra.

Remarks : According to Fletcher (1925) the species *papilionaris* has seven subspecies. Hampson (1892) in *Fauna British India* described the male as *Pintia ferrea* Walker, while the female as *Cyclosia papilionaris* Drury.

Genus ***Gynautocera*** Guerin

1831. *Gynautocera* Guerin, *Mag. Zool. (Ins.)*, 12, (1830).

The single species known under this genus from India is dealt with from Sikkim.

15. ***Gynautocera papilionaria*** Guerin

1831. *Gynautocera papilionaria* Guerin, *Mag. Zool. (Ins.)*, 12, (1830).

1925. *Gynautocera papilionaria*, Fletcher, *Cat. Indian Ins.*, Zygaenidae. pt. 9. 36.

Material examined : Three exs., Sikkim, No date, (O. Moller coll.), Wing exp. 84–96.

Distribution : India : Sikkim, Assam, Jammu and Kashmir, Meghalaya, Nagaland, Uttar Pradesh, West Bengal and The Himalaya; also Annam; Bangladesh; Bhutan; China; Myanmar and Vietnam (Tong-King).

Remarks : In India, the distribution of the species is restricted mostly to the Himalayan region.

Genus ***Histia*** Hübner

1822. *Histia* Hübner, *Verz. bek. Schmett.*, p. 198.

One species with two subspecies, under this genus, are known from India of which nominate subspecies occurs in Sikkim.

16. ***Histia rhodope rhodope*** (Cramer)

1775. *Bombyx rhodope* Cramer, *Pap. Exot., 1*. pl. 30, fig. F.

1925. *Histia rhodope*, Fletcher, *Cat. Indian Ins.*, Zygaenidae. pt. **9** : 36–37.

Material examined : One ex., Sikkim, May, 1893, (G.C. Dudgeon's coll.), 4 exs., No date, (O. Moller coll.) and 1 ex., 1888, (No coll. Name) (all old NZ Collection). Wing exp. 70–80 mm.

Distribution : India : Sikkim, Assam, Meghalaya, Nagaland and West Bengal (Darjiling); also Bhutan; China (Hong-Kong) and Myanmar.

Remarks : There are two subspecies, *rhodope* is with ab. *albimacula*, from Meghalaya (India) and Myanmar, and others *nilgira* from Nilgiris (India).

Genus ***Campylotes*** Westwood

1839. *Campylotes* Westwood, *Royle's Bot. Himalayas Lep.*, : 53.

Three species known under this genus from India are also dealt with from Sikkim.

Key to the species

1. Fore wing with all the spots towards apex yellow ..... *sikkimensis*

   Fore wing with all the spots towards apex not yellow 2

2. Fore wing with a series of six white spots beyond the cell ..... *histrionicus*

   Fore wing with a series of four white spots beyond the cell ..... *atkinsoni*

17. ***Campylotes histrionicus*** Westwood

1839. *Campylotes histrionicus*. Westwood, *Royle's Bot. Himalayas Lep.*, : 53, pl. 10, fig. 1.

1925. *Campylotes histrionicus*'.. Fletcher, *Cat. Indian Ins.*, Zygaenidae, **9** : 41.

Material examined : Five exs., Sikkim, No date. (O. Moller coll), 1 ex., North Sikkim, Bob, 3 kms. of Chungthang, 1.x.1978 (T.K. Pal and party coll.). Wing exp.51-56 mm.

Distribution : India : Sikkim, (Lebong, Raitdong), Jammu and Kashmir, Uttar Pradesh, Meghalaya, throughout the Himalaya; also Afghanistan and West China.

Remarks : The size and colour of the spots are variable in different forms of the species.

18. *Campylotes sikkimensis* Elwes

1890. *Campylotes sikkimensis* Elwes, *Proc. zool. Soc. Lond.*,: 384, pl. 33, fig. 2.

1925. *Campylotes sikkimensis*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 42.

Material examined : Two exs., Sikkim, 28.iii.1888, (O. Moller coll.), 1 ex., 6.vi. 1887, 1 ex., Oct. 1888, 2 exs., 9.vii.1888, 1ex., 17.vi.1888 and 1 ex., – vii. 1888 (Dudgeon coll.), all old collection from Sikkim. Wing exp. 44 mm., 62 mm.

Distribution : India : Sikkim, Assam and Meghalaya at high altitudes.

Remarks : The species is recorded only from the high altitudes of Sikkim, Assam and Meghalaya.

19. *Campylotes atkinsoni* Moore

1879. *Campylotes atkinsoni* Moore, *Lep. Atk.*, : 17.

1925. *Campylotes atkinsoni*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 40.

Material examined : 1ex., Sikkim, 6.ix.1896, (Dudgeon's coll.), 11exs., No date, (O. Moller coll.), all old collection from NZC. Wing exp. 72 mm.

Distribution : India : Sikkim and West Bengal (Darjiling) high altitudes.

Remarks : The species is known to occur in the high altitudes of Sikkim and West Bengal.

Genus *Erasmia* Hope

1840. *Erasmia* Hope, *Trans. Linn. Soc.*, 18 : 446.

Three species and subspecies under this genus are known from India and are dealt with from Sikkim.

Key to the species of *Erasmia*

1. Hind wing black 2
   Hind wing pale yellow ..... *pulchella*
2. Fore wing with the veins broadly edged with vinous red ..... *sanguiflua*
   Fore wing with the veins not broadly edged with vinous red ..... *aliris*

20. *Erasmia aliris aliris* (Doubleday)

1847. *Gynautocera aliris* Doubleday, *Ann. Nat. Hist.*, 19 : 74.

1925. *Erasmia aliris*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 42–43.

Material examined : Three exs., Sikkim. No other data, Wing exp. 86-92 mm.

Disribution : India : Sikkim, Assam, Nagaland, West Bengal and North India ; also Bangladesh and Myanmar (Karen hills).

Remarks : The species *aliris* has two subspecies, the other *aliris analis* Jordan is recorded from Tenasserim, South Myanmar.

21. *Erasmia sanguiflua sanguiflua* (Drury)

1773. *Noctua sanguiflua* Drury, *Ill. Exot. Ent.*, 2 : 55, pl. 20, figs. 1, 2.

1925. *Erasmia sanguiflua*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 44.

Material examined : One ex., Sikkim, 15.viii.1889 and 1 ex., Aug. 1897 (Dudgeon's coll.). Wing exp. 100 – 110 mm.

Distribution : India : Sikkim, Meghalaya, West Bengal (Darjiling); also Bangladesh and Myanmar.

Remarks : In India, the distribution of this subspecies in restricted to north east India.

22. *Erasmia pulchella pulchella* Hope

1840. *Erasmia pulchella* Hope, *Trans. Linn. Soc.*, 18 446, pl. 31, fig. 5.

1925. *Erasmia pulchella pulchella*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. 9 : 43–44.

Material examined : Three exs, Sikkim, October, Year? (O. Moller coll.). Wing exp. 80 - 90 mm.

Distribution : India : Sikkim, Assam, Meghalaya, Nagaland, West Bengal (Darjiling); also Myanmar and Nepal (Khatmandu).

Remarks : In India, the distribution of the subspecies is restricted in the north eastern region.

Genus ***Agalope*** Walker

1854. *Agalope* Walker, *Cat. Lep. Het. Brit. Mus.*, **2** : 437.

Five species and subspecies under this genus are recorded from India and also from Sikkim of which four are represented here, the reviewed from literature.

Key to the species of *Agalope*

1. Fore wing shorter ..... *hyalina*
   Fore wing longer 2
2. Fore wing vein M_1 given off close to R_5 3
   Fore wing vein M_1 given away from R_5 ..... *bifasciata*
3. Fore wing a subbasal orange band edged with black ..... *eronioides*
   Fore wing a subbasal brown band not edged with black ..... *glacialis*

23. ***Agalope bifasciata*** (Hope)

1840. *Chelura bifasciata* Hope, *Trans. Linn. Soc.*, **18** : 444.

1925. *Agalope bifasciata*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 46.

Material examined : One male Sikkim, Deorali, 1500 m, 23. ix.1978 (A.N.T. Joseph and party coll.) and 1 ex., No date, (O. Moller coll.). Wing exp. 90 mm.

Disribution : India : Sikkim, Assam, Meghalaya, Uttar Pradesh (Nainital); also Bhutan; Myanmar and Nepal.

24. ***Agalope eronioides eronioides*** (Moore)

1879. *Chelura eronioides* Moore, *Lep. Atk.*, 18.

1925. *Agalope eroniodes eroniodes*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 46–47.

Material examined : One ex., Sikkim, June. 1897 and 1ex., Sikkim, 6.vi.1891 (Dudgeon's coll.). Wing exp. 64 mm.

Distribution : India : Sikkim, Assam, Meghalaya and West Bengal (Darjiling).

Remarks : The distribution of the species is restricted to the north east India only.

25. ***Agalope glacialis glacialis*** (Moore)

1872. *Chelura glacialis* Moore, *Proc. zool. Soc. Lond.*, : 570.

1925. *Agalope glacialis*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 47.

Material examined : One ex., Sikkim, No date. (O. Moller coll). Wing exp. 57 mm.

Distribution : India : Sikkim, West Bengal (Darjiling) ; also Myanmar.

Remarks : In India, the distribution of this subspecies is restricted to north east India only. It appears to mimic the geometrid, *Abraxas leopardina.*

26. ***Agalope hyalina*** (Kollar)

1844. *Chalcosia hyalina* Kollar, *Hugel's Kaschmir*, **4** (2) : 462.

1925. *Agalope hyalina*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 47-48.

Material examined : Seven exs., Sikkim, No date, (O. Moller coll), 1ex., 30.ix.1888, 1ex., 6.v.1889 (Dudgeon's coll). Wing exp. 42-50 mm.

Distribution : India : Sikkim, Himachal Pradesh (Simla), Uttar Pradesh (Mussouri) to Sikkim, West Bengal (Darjiling); also Afghanistan; Bhutan and Myanmar.

Genus ***Philopator*** Moore

1865. *Philopator* Moore, *Proc. zool. Soc. Lond.*, : 800.

Two species under this genus are known from India and are also recorded from Sikkim.

Key to the species of *Philopator*

1. Wings large and produced ..... *basimaculata*

– Wings shorter and rounded ..... *rotunda*

27. *Philopator basimaculata* Moore

1865. *Philopator basimaculata* Moore, *Proc. zool. Soc. Lond.*, : 800, pl. 42, fig. 6.

1925. *Philopator basimaculata*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 59.

Material examined : Two exs., Sikkim, No date, (O. Moller coll.), 1ex., Oct., 1888 (Dudgeon's coll.). Wing exp. 50 m., 44 –58 mm.

Disribution : India : Sikkim (Raitong), Manipur, Meghalaya, Nagaland and West Bengal (Darjiling),

Remarks : The distribution of the species is restricted in the north-eastern hills of India.

28. *Philopator rotunda* Hampson

1896. *Philopator rotunda* Hampson, *Fauna Brit. India*, **4** : 470.

1925. *Philopator rotunda*. Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 50.

Material examined : Three exs., Sikkim, No date, (O. Moller coll). Wing exp. 40-48 mm.

Distribution : India : Sikkim, Manipur, Meghalaya and Nagaland.

Remarks : The distribution of the species is restricted in the north eastern region of India only.

Genus *Cadphises* Moore

1865. *Cadphises* Moore, *Proc. zool. Soc. Lond.*, : 800

Three species and subspecies under this genus are known from India of which one sp. is recorded from Sikkim.

29. *Cadphises maculata* Moore

1865. *Cadphises maculata* Moore, *Proc. zool. Soc. Lond.*, : 801, pl. 42, fig. 7.

1925. *Cadphises maculata*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 51.

Material examined : One ex., Sikkim, No other data. Wing exp. 70 mm.

Distribution : India : Sikkim, Meghalaya and West Bengal (Darjiling).

Remarks : The distribution of the species is restricted to north east India.

Genus *Corma* Walker

1864. *Corma* Walker, *Cat. Lep. Het. Brit. Mus.*, **31** : 124.

Two species and subspecies under this genus are known from India, of which one species with subspecies is recorded for the first time from Sikkim.

30. *Corma maculata maculata* Hampson

1892. *Corma maculata* Hampson, *Fauna Brit. India*, Moths. **1** : 268.

1925. *Corma maculata maculata*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 51-52.

Material examined : One ex., Sikkim, May. 1897 (Dudgeon's coll.). Wing exp. 40-45 mm.

Diagnostic characters : Fore wing with a fuscous band along the basal half of costa, a spot at middle of cell and one on vein 1c, post medial and marginal maculate bands. Hind wing with a fuscous spot on the costa, near end of cell and a maculate apical band.

Distribution : India : Sikkim, Meghalaya; also West Myanmar (Chin hills).

Remarks : This is the first specific locality record of the species from Sikkim.

Genus *Psaphis* Walker

1854. *Psaphis* Walker, *Cat. Lep. Het. Brit. Mus.*, **2** : 433.

The single species with the nominotypical subspecies known from India, under this genus, is also treated from Sikkim.

31. *Psaphis euschemoides euschemoides* (Moore)

1865. *Canerkes euschemoides* Moore, *Proc. zool. Soc. Lond.*, : 802, pl. 42, fig. 8.

1925. *Psaphis euschemoides euschemoides*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 56.

Material examined : One ex., Sikkim, 10.iii.1890, (Dudgeon's coll.). Wing exp. 62 mm.

Distribution : India : Sikkim ; also Bangladesh and East Pegu.

Remarks : From India the species is recorded from Sikkim only. It is a beautiful mimic of the geometrid moth *Euschemas* of the *bellona* group.

Genus *Eterusia* Hope

1840. *Eterusia* Hope, *Trans. Linn. Soc.*, **18** : 445.

Thirteen species and subspecies under this genus are known from India of which nine species and subspecies are recorded from Sikkim. Seven species and subspecies are dealt with hereunder, other two have been appended at the end.

Key to the species of *Eterusia*

1. Abdomen black 2
   Abdomen not black 5
2. Hind wing not bright golden yellow 3
   Hind wing bright golden yellow 4
3. Hind wing with the inner area below the median nervure shot with metallic blue ..... *repleta*
   Hind wing with the inner area below the median nervure not shot with metallic blue ..... *circinata*
4. Hind wing with the base black ..... *nigribasalis*
   Hind wing with the base yellow ..... *pulchella*
5. Abdomen blue-green ..... *raja*
   Abdomen yellow 6
6. Fore wing with the spots of the medial band longer and superposed ..... *aedea*
   Fore wing with the spots of the medial band small and well separated ..... *tricolor*

32. *Eterusia aedea edocla* (Doubleday)

1759. *Papilio aedea* Clerck, *Icones*, pt. **4** : fig. 2.

1847. *Heterusia edocla* Doubleday, Zoologist, **3** : 469.

1925. *Eterusia aedea edocla*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9**, 58-59.

Material examined : Three exs., Sikkim. No date, (O. Moller coll.). 1ex., No date, (H.J. Elwes coll.), 2exs., No date, 3exs., 22.iii.1888, (O. Moller coll.), 1ex., 17.iii.1889, 1ex., 22.viii.1890, 1ex., 30.iv.1887 and 1ex., May, 1897 (Dudgeon's coll). Wing exp. 65-80 mm.

Distribution : India : Sikkim, Assam, Meghalaya, Nagaland, West Bengal; also Myanmar and Nepal.

Remarks : The distribution of the species and subspecies is restricted to the eastern part of the Indian subregion.

33. *Eterusia tricolor* Hope

1840. *Eterusia tricolor* Hope, *Trans. Linn. Soc.*, **18** : 445, pl. 31, fig. 8.

1925. *Eterusia tricolor*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 66-67.

Material examined : One ex., Sikkim, 10.iii.1889, 1 ex., 18.viii.1888, 1ex., v.1894, 1 ex., 7.ix.1888, and 1 ex., 20.vi.1894 (all Dudgeon's coll.). Wing exp. 60-75 mm.

Distribution : India : Sikkim, Assam, Meghalaya, Nagaland; also Bangladesh; Bhutan; West China; Nepal; East Pegu and East Tibet border (Omei-shan).

Remarks : In India, the distribution of the species is restricted to the north eastern region only.

34. *Eterusia repleta* Walker

1864. Eterusia *repleta* Walker, *Cat. Lep. Het. Brit. Mus.*, **31** : 118.

1925. *Eterusia repleta*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 66-67.

Material examined : One ex., Sikkim, No other data. Wing exp. 72-62-86 mm.

Distribution : India : Sikkim, Assam, Nagaland; also Bhutan; Cambodia and Myanmar.

Remarks : In India, the distribution of the species is restricted to the north eastern region only.

35. ***Eterusia raja*** Moore

1859. Eterusia *raja* Moore, *Cat. Lep. E. I. Co. Mus.*, **2** : 320, pl. 8a, fig. 2.

1925. *Eterusia raja*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 65.

Material examined : One ex., Sikkim, No other data. Wing exp. 72-62-86 mm.

Distribution : India : Sikkim, Assam, Nagaland; also Bhutan; Cambodia and Myanmar.

Remarks : In India, the distribution of the species is restricted to the north eastern region only.

36. ***Eterusia pulchella pulchella*** (Kollar)

1844. *Chalcosia pulchella* Kollar, *Hugel's Kaschmir*, **4** : 461,.

1925. *Eterusia pulchella pulchella*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 64-65.

Material examined : One ex., Sikkim, 2.v.1888, 1 ex., Oct. 1888, 1 ex., 7.x.1888, 1 ex., x.1897 (all Dudgeon's coll.); 4 exs., No other data, 1 ex., No date, (O. Moller coll.). Wing exp. 34-50 mm.

Distribution : India : Sikkim, Jammu and Kashmir, Meghalaya, Uttar Pradesh hills, West Bengal (Darjiling); also Afghanistan; China and Myanmar.

Remarks : This is the first specific locality record of the subspecies from Sikkim.

37. ***Eterusia nigribasalis*** (Hampson)

1892. *Soritia nigribasalis* Hampson, *Fauna Brit. India*, Moths, **1** : 253.

1925. *Eterusia nigribasalis*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 64.

Material examined : One ex., Sikkim, 5.x.1888 and 1 ex., 25.iv.1888 (Dudgeon's coll.). Wing exp. 44 mm.

Distribution : India : Sikkim, Meghalaya (Cherrapunji).

Remarks : Type locality of the species is Sikkim.

38. ***Eterusia circinata*** (Herrich-Schaffer)

1854. *Heterusia circinata* Herrich-Schaffer, *Aussereur. Schmett.*, : 57, figs. 156, 157.

1925. *Eterusia circinata*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 61.

Material examined : One ex., Sikkim, 1.x.1887 and 1 ex., Sikkim, 1.x.1888 (Dudgeon's coll.) and 5 exs., No date, (O. Moller coll.). Wing exp. 61-63 mm.

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

Remarks : The distribution of the species is restricted to Eastern India only.

Genus ***Pidorus*** Walker

1854. *Pidorus* Walker, *Cat. Lep. Het. Brit. Mus.*, **2** : 424

Seven species and subspecies under this genus are known from India of which five are recorded from Sikkim. The species *Pidorus circumdata* is now transfered under the genus *Pseudoscaptesyle*. Two species are described here, other three have been appended at the end due to paucity of material at hand from Sikkim.

Key to the species of *Pidorus*

Smaller in size, 30-40 mm..... *gemina*

Larger in size, 50-60 mm..... *glaucopis*.

39. ***Pidorus gemina*** (Walker)

1854. *Laurion gemina* Walker, *Cat. Lep. Het. Brit. Mus.*, **2**: 427.

1925. *Pidorus gemina*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 68.

Material examined : One ex., Sikkim, No. date, (O. Moller coll.), and 1ex., Sikkim, No date, (Dudgeon's coll.) Wing exp. 32-40 mm.

Distribution : India : Sikkim and Meghalaya (Khasis); also Bangladesh (Sylhet); Bhutan; Borneo; Cambodia; China and Myanmar.

Remarks : In India the distribution of the species is restricted to north eastern region only.

40. *Pidorus glaucopis glaucopis* (Drury)

1773. *Bombyx glaucopis* Drury, *Ill. Exot.* Ent., **2** : pl. 6, fig. 4.

1925. *Pidorus glaucopis glaucopis*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 69.

Material examined : One ex., Sikkim, July, 1897, 1 ex., Sikkim, 14.x.1890 (Dudgeon's coll.), 3 exs., Sikkim, No date, 1 ex., Sikkim, 1.xi.1885 and 1 Pakyong, 10.x.1995 (S.C. Mitra and party coll.). Wing exp. 50-60 mm.

Distribution : India : Sikkim, Assam, Meghalaya, Nagaland and West Bengal; also Bangladesh; Bhutan, Myanmar and Vietnam (Tong King).

Remarks : In India, the distribution of the species is restricted to the north eastern region only.

Genus *Chalcosia* Hubner

1822. *Chalcosia* Hubner, *Verz. bek. Schmett.*, p. 173.

Four species and subspecies under this genus are known from India of which two are reported from Sikkim. Only nominate subspecies is treated here, the other is appended at the end due to paucity of material in hand.

41. *Chalcosia adalifa adalifa* (Doubleday)

1847. *Gynautocera adalifa* Doubleday, *Ann. Nat. Hist.*, **19** : 76.

1892. *Milleria virginalis* Hampson, *Fauna Brit. India*, Moths, **1** : 263.

1925. *Chalcosia adalifa adalifa*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 70-71.

Material examined : One ex., Sikkim, No date, (Old NZ Collection). Wing exp. 62 mm..

Distribution : India : Sikkim, Meghalaya, West Bengal; also Bangladesh; Bhutan; West China; Myanmar and Vietnam (Tong-King).

Remarks : The distribution of the subspecies is restricted to the north eastern region of India.

Genus *Chalcophaedra* Jordan

1908 *Chalcophaedra* Jordan, Seitz's *Macrolep. World.*, **10** : 39.

The single species known under this genus from the Indian region is dealt with from Sikkim.

42. *Chalcophaedra zuleika* (Doubleday)

1847. *Gynatocera zuleika* Doubleday, *Ann. Nat. Hist.*, **19** : 76, pl. 7, fig. 4.

1925. *Chalocophaedra zuleika*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 77.

Material examined : One ex., Sikkim, 1.ix.1887, and 1 ex., Sikkim, July, 1897, (Dudgeon's coll.) also 3 exs., 28.xi.1888 (O. Moller coll.). Wing exp.50 - 60 mm.

Distribution : India : Sikkim, Meghalaya ; also Bangladesh; Bhutan and Myanmar.

Remarks : The distribution of the species in India is restricted to the north eastern part only.

Genus *Retina* Walker

1854. *Retina* Walker, *Cat. Lep. Het. Brit. Mus.*, **2** : 438-439.

One species under this genus is known from India and is also recorded from Sikkim. The genus is not included in the key of the subfamily *Chalcosiinae*.

43. *Retina rubrivitta* Walker

1854. *Retina rubrivitta* Walker, *Cat. Lep. Het. Brit. Mus.*, **2** : 439.

1898. *Soritia rubrivitta* Hampson. *Fauna Brit. India*, Moths, **1** : 252.

1925. *Retina rubrivitta*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 78-79.

Material examined : Two exs., Sikkim, No date, (O. Moller coll.). Wing exp. 38 mm.

Distribution : India : Sikkim, Assam and Meghalaya; also Bangladesh (Sylhet).

Remarks : The distribution of the species is restricted to the north eastern part of India only.

Genus *Pseudoscaptesyle* Hering

1922. *Pseudoscaptesyle* Hering, *Arch. f. Natur.*, **88** (A 11), : 76-77.

One species under this genus known from India is dealt with from Sikkim. This genus is not included in the key of the subfamily Chalcosiinae.

44. *Pseudoscaptesyle circumdata circumdata* (Walker)

1864. *Eterusia circumdata* Walker, *Cat. Lep. Het. Brit. Mus.*, **31** : 121.

1982. *Pidorus circumdatus*, Hampson. *Fauna Brit. India*, Moths, **1** : 254.

1925. *Pseudoscaptesyle circumdata*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 80.

Material examined : One ex., Sikkim, July, **1889**, (Dudgeon's coll.) and 2 exs., No date, (O. Moller coll.). Wing exp. 38 mm.

Distribution : India : Sikkim.

Remarks : The subspecies *circumdata* is endemic to Sikkim.

Subfamily PHAUDINAE

Genus *Phauda* Walker

1884. *Phauda* Walker, *Cat. Lep. Het. Brit. Mus.*, **1** : 256.

Four species under this genus are known from India of which two occur in Sikkim. One species is treated here and the other is appended at the end due to paucity of material at hand.

45. *Phauda flammans* (Walker)

1854. *Euchromia (Phauda) flammans* Walker, *Cat. Lep. Het. Brit. Mus.*, **1** : 257.

1925. *Phauda flammans*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 81-82.

Material examined : One ex., Sikkim, August, **1889**, (Dudgeon's coll.), 1 ex., No date, (O. Moller coll.), 2 exs., No date, (Knyvett coll.) and 1 ex., Sikkim, (No other data). Wing exp. 30 34 mm.

Distribution : India : Sikkim, (Raitdong), Bihar, Himachal Pradesh, Meghalaya; also Java; Myanmar and Pakistan.

Remarks : The species was first described from North India by Walker (1854).

APPENDIX

Species reviewed from literature due to paucity of material at hand from Sikkim are given below:

Subfamily ZYGAENINAE

1. *Artona flaviciliata* Hampson

1920. *Artona flaviciliata* Hampson, *Novit. Zool.*, **26** : 273.

1925. *Artona flaviciliata*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 3.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

2. *Artona postalba* Elwes

1890. *Artona postalba* Elwes, *Proc. zool. Soc. Lond.*, p. 379, pl. 32, fig. 16.

1925. *Artona postalba*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 4.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

3. *Artona posthyalina* Hampson

1892. *Araeocera posthylina* Hampson, *Fauna Brit. India*, Moths., **1** : 273.

1925. *Artona posthyalina*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 4.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

4. *Artona postvitta* Moore

1879. *Artona postvitta* Moore, *Lep. Atk.*, : 13.

1925. *Artona postvitta*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 5.

Distribution : India : Sikkim and West Bengal (Darjiling).

Remarks : The distribution of the species in India is restricted to north eastern part only.

5. *Artona sikkimensis* Elwes

1890. *Artona sikkimensis* Elwes, *Proc. zool. Soc. Lond.*, : 379, pl. 32, fig. 17.

1925. *Artona sikkimensis*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 5.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

6. ***Artona zebra*** Elwes

1890. *Artona zebra* Elwes, *Proc. zool. Soc. Lond.*, p. 379, pl. 32, fig. 11.

1925. *Artona zebra*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 6.

Distribution : India : Sikkim.

Remarks : This endemic species has been recorded at the high altitude of Sikkim (11000 ft.).

7. ***Platyzygaena molleri*** (Elwes)

1890. *Soritia molleri* Elwes, *Proc. zool. Soc. Lond.*, : 385, pl. 32, fig. 13.

1925. *Platyzygaena molleri*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 20.

Distribution : India : Sikkim (Chengtong) and Assam.

Remarks : The distribution of the species in India is restricted to north eastern part only.

Subfamily CHALCOSIINAE

8. ***Arbudas bicolor*** Moore

1879. *Arbudas bicolor* Moore, *Lep. Atk.*, : 20, pl. 2, fig. 19.

1925. *Arbudas bicolor*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9**, 26-27.

Distribution : India : Sikkim, Meghalaya, West Bengal; also Bhutan.

Remarks : The distribution of the species in India is restricted in the north eastern part only.

9. ***Agalope basiflava*** (Moore)

1879. *Chelure basiflava* Moore, *Proc. zool. Soc. Lond.*, : 391.

1925. *Agalope basiflava*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 45.

Distribution : India : Sikkim and West Bengal (Darjiling).

Remarks : The distribution of the species in India is restricted to the north eastern part, specially in the high altitudes.

10. ***Cadphises moorei moorei*** Butler

1875. *Cadphises moorei* Butler, *Proc. zool. Soc. Lond.*, : 392.

1925. *Cadphises moorei moorie*, Fletcher, Zygaenidae, pt. **9** : 51.

Distribution : India : Sikkim, Meghalaya, Nagaland, West Bengal; also Bhutan.

Remarks : The distribution of the species in India is restricted to the north eastern part only.

11. ***Herpa subhyalina*** Moore

1879. *Herpa subhyalina* Moore, *Lep. Atk.*, : 18.

1925. *Herpa subhyalina*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 55.

Distribution : India : Sikkim (Lachung Valley), Assam; also Tse-Kou (East Tibet border).

Remarks : The distribution of the species in India is restricted in the north eastern part only.

12. ***Eterusia lativitta*** Moore

1872. *Eterusia lativitta* Moore, *Lep. Atk.*, : 15.

1925. *Eterusia lativitta*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 63.

Distribution : India : Sikkim, Meghalaya, Nagaland, West Bengal; also Myanmar.

Remarks : The distribution of the species in India is restricted to the north eastern part only.

13. ***Eterusia shahama*** Moore

1865. *Eterusia shahama* Moore, *Proc. zool. Soc.* Lond., : 801.

1925. *Eterusia shahama*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 66.

Distribution : India : Sikkim and West Bengal (Darjiling).

Remarks : The distribution of the species is restricted in the high altitudes of Sikkim and West Bengal, north-eastern states of India.

14. ***Pidorus circe*** (Herrich-Schaffer)

1853. *Chalcosia circe* Herrich-Schaffer, *Aussereur. Schmett.* : fig. 2.

1928. *Pidorus circe*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 68.

Distribution : India : Sikkim, Assam, Meghalaya, Nagaland; also Bangladesh (Sylhet).

15. *Pidorus miles* (Butler)

1881. *Laurion miles* Butler, *Ill. Het.*, **25** : pl. 34, fig.3.

1925. *Pidorus miles*, Fletcher, *Cat. Indian Ins.*; Zygaenidae, pt. **9** : 70.

Distribution : India : Sikkim, West Bengal (Darjeeling); also Bhutan.

Remarks : The distribution of the species is restricted in the north eastern part of India only.

16. *Pidorus truncatus* Jordan

1902. *Pidorus truncatus* Jordan, Seitz's *Macrolep. World.*, **3** : 36, pl. 6, fig. g.

1925. *Pidorus truncatus*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9**.

Distribution : India : Sikkim.

Remarks : The species is endemic to Sikkim.

17. *Chalcosia pectinicornis argentata* Moore

1879. *Chalcosia argentata* Moore, *Lep. Atk.*, 17-18.

1925. *Chalcosia pectinicornis argentata*, Fletcher, Zygaenidae, pt. **9** : 74.

Distribution : India : Sikkim, north east Assam and Meghalaya.

Remarks : The distribution of this subspecies is restricted in the north-east part of India.

18. *Phlebohecta fuscescens* (Moore)

1879. *Soritia fuscescens* Moore, *Lep. Atkinson*, p. 16.

1925. *Phlebohecta fuscescens*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 79.

Distribution : India : Sikkim, Meghalaya, West Bengal (Darjiling); also Bhutan.

Remarks : The distribution of the species is restricted to the north eastern region of India.

19. *Phlebohecta lithosina flavicosta* (Elwes)

1890. *Retina flavicosta* Elwes, *Proc. zool. Soc. Lond.*, : 386, pl. 32, fig. 1.

1925. *Phlebohecta lithosina flavicosta*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 80.

Distribution : India : Sikkim; also Myanmar.

Remarks : In India, this subspecies is recorded from Sikkim only.

Subfamily PHAUDINAE

20. *Phauda fuscalis* Swinhoe

1892. *Phauda fuscalis* Swinhoe, *Cat. Het. Mus. Oxon.*, **1** : 60.

1925. *Phauda fuscalis*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 82.

Distribution : India : Sikkim and Assam.

Remarks : The distribution of the species is restricted to the north eastern region of India.

Subfamily HIMANTOPTERINAE

21. *Himantopterus caudatus* (Moore)

1879. *Thymara caudata* Moore, *Proc. zool. Soc. Lond.*, : 394, pl. 37, fig. 3.

1925. *Himantopterus caudatus*, Fletcher, *Cat. Indian Ins.*, Zygaenidae, pt. **9** : 84.

Distribution : India : Sikkim (Pankabari ?), Assam, North India (?), South India (Nilgiris); also Bababudin hills Wynaad and Myanmar.

Remarks : The distribution of the species for Sikkim is doubtful. Pankabary previously under Sikkim is now in West Bengal near Darjiling.

SUMMARY

The present work includes systematic account of a total of 66 species and subspecies under 9 genera of zygaenids with keys, diagnostic characters, distribution etc.of four species and subspecies are new locality records and six species are endemic to Sikkim. The type locality of a single species, *Eterusia nigribasalis,* is also reported from Sikkim.

ACKNOWLEDGEMENT

The author is grateful to the Director, Zoological Survey of India for providing laboratory facilities to carryout studies of this group.

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INSECTA : LEPIDOPTERA : ARCTIIDAE

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INTRODUCTION

The present work includes a comprehensive account of moths of the family Arctiidae from Sikkim. This is based on the moths collected by different survey parties of Zoological Survey of India and also the specimens available in old National Zoological Collection of Zoological Survey of India.

The moths of this family have generally stout body, brightly coloured wings bearing long, narrow to moderately broad and prominent spots. So far, 3500 species of moths of Arctiidae are known from world, including 450 species occurring in India. The state of Sikkim account for 182 species (40%) of total Arctiids species found in India.

Cotes & Swinhoe (1887-89) Catalogued species of moths of several families including Arctiidae from India, followed on their studies by Hampson (1894, 1900, 1901, 1905, 1914), Seitz (1913), Draudt (1914), Rothschild (1914) and Roepke (1944). Strand (1919-1922) and Bryk (1937) also catalogued species of moths of the family Arctiidae from Sikkim and adjoining areas.

The contributions to the studies on these moths from North Eastern States of India are by Dudgeon (1903), Arora and Chaudhury (1982), Ghosh & and Chaudhury (1997, 1998).

The classification and nomenclature of species of family Arctiidae have been followed mainly after Hampson (1900, 1901).

Altogether, 182 species have been dealt with from Sikkim. The species represented in eight subfamilies are Nolinae (27 spp), Arctiinae (15 spp), Rhodogastriinae (1sp), Nyctemeriinae (4 spp), Callimorphinae (4 spp) Spilosominae (14 spp), Lithosiinae (113 spp) and Micrarctiinae (4 spp). These studies have brought to light 40 species (marked with y) endemic to Sikkim and nine species (marked with*) as first records.

The keys to identification of species, genera and subfamilies have been given. The wing expanse and distribution of each species have also been provided.

SYSTEMATIC LIST

Family ARCTIIDAE

A. Subfamily NOLINAE

Genus I ***Cleama*** Walker

+y1. *Celama lativittata* (Moore)
+2. *Celama encausta* (Hampson)
3. *Celama fasciata* (Hampson)
+4. *Celama astigma* (Hampson)
+y5. *Celama duplicilinea* (Hampson)
+y6. *Celama suffusa* (Hampson)
+7. *Celama marginata* (Hampson)
8. *Celama squalida* (Staudinger)
9. *Celama pumila* (Snellen)
+10. *Celama phaeochroa* Hampson
+11. *Celama flexuosa* (Pouj)
+y12. *Celama polia* (Hampson)

Genus II ***Roesalia*** Huebner

+13. *Roesalia scripta* Moore
+y14. *Roesalia strigivena* (Hampson)
+y15. *Roesalia denticulata* Moore

+16. *Roesalia orgyria* (Hampson)
+y17. *Roesalia argentescens* (Hampson)
+y18. *Roesalia semirufa* (Hampson)
+19. *Roesalia cuneifera* (Walker)

Genus III ***Nola*** Leach

+20. *Nola brunella* (Hompson)
+y21. *Nola loxoscia* Hampson
+y22. *Nola argentalis* (Moore)
+23. *Nola melanota* (Hampson)
+24. *Nola tristicta* (Hampson)
+25. *Nola distributa* (Walker)

Genus IV ***Melanographia*** Hampson

+y26. *Melanographia tympanistis* Dudgeon

Genus V **Dialithoptera** (Hampson)

+y27. *Dialithoptera gemmata* (Hampson)

Subfamily ARCTIINAE

Genus VI ***Baroa*** Moore

+28. *Baroa vatala* Swinhoe

Genus VII ***Arctia*** Schrank

*29. *Arctia tibetica* Felder

Genus VIII ***Maenas*** Huebner

+30. *Maenas venosa*, (Moore)

Genus IX ***Diacrisia*** Huebner

31. *Diacrisia rhodophila* (Walker)
+y32. *Diacrisia multivittata* (Moore)
33. *Diacrisia punctata* (Moore)
+y34. *Diacrisia flavalis* (Moore)
35. *Diacrisia stigmata* (Moore)
36. *Diacrisia multiguttata* (Walker)
37. *Diacrisia gopara* (Moore)
+y38. *Diacrisia dentilinea* (Moore)
+y39. *Diacrisia sordidescens* (Moore)
+40. *Diacrisia sikkimensis* (Moore)
41. *Diacrisia fulvohirta* (Walker)
42. *Diacrisia impleta* (Walker)

Subfamily RHODOGASTRIINAE

Genus X ***Rhodogastria*** Huebner

*43. *Rhodogastria astreus* (Drury)

Subfamily : NYCTEMERIINAE

Genus XI ***Dilemera*** Huebner

44. *Dilemera arctata* (Walker)

Genus XII ***Nyctemera*** Huebner

45. *Nyctemera varians* Walker
46. *Nyctemera cenis* (Cramer)
47. *Nyctemera adversata* (Schaller)

Subfamily CALLIMORPHINAE

Genus XIII ***Callimorpha*** Latreille

*48. *Callimorpha plagiata* (Walker)
49. *Callimorpha nyctemerata* (Moore)
50. *Callimorpha principalis* (Kollar)
51. *Callimorpha equitalis* (Kollar)

Subfamily SPILOSOMINAE

Genus XIV ***Phissama*** Moore

52. *Phissama transiens* (Walker)

Genus XV ***Creatonotos*** Huebner

53. *Creatonotos gangis* (Linnaeus)

Genus *XVI* ***Alphaea*** Walker

+54. *Alphaea quadriramosa* (Kollar)

Genus XVII ***Spilarctia*** Butler

55. *Spilarctia lubricipeda* (Linnaeus)
+56. *Spilarctia nigrifrons* (Walker)
+57. *Spilarctia melanosoma* (Hampson)
+y58. *Spilarctia obliquivitta* Moore
59. *Spilarctia flavens* (Moore)

+60. ***Spilarctia rubitincta*** (Moore)
61. ***Spilarctia casigneta*** (Kollar)
62. ***Spilarctia obliqua*** (Walker)

Genus XVIII ***Areas*** Walker

63. ***Areas imperialis*** Walker
64. ***Areas galactina*** (Hoeven)

Genus XIX ***Olepa*** Watson

65. ***Olepa ricini*** (Fabricius)

Subfamily LITHOSIINAE

Genus XX ***Neoblavia*** Hampson

y+66. ***Neoblavia scoteola*** Hampson

Genus XXI ***Lexis*** Wallengren

67. ***Lexis fulveola*** Hampson

Genus XXII ***Poliosia*** Hampson

68. ***Poliosia muricolor parva*** (Moore)
y+69. ***Poliosia punctivena*** (Hampson)
+70. ***Poliosia brunnea*** (Moore)
+71. ***Poliosia cubitifera*** (Hampson)

Genus XXIII ***Lobobasis*** Hampson

+72. ***Lobobasis niveimaculata*** Hampson

Genus XXIV ***Chrysorabdia*** Butler

73. ***Chrysorabdia viridata*** (Walker)

Genus XXV ***Mithuna*** Moore

+74. ***Mithuna quadriplaga*** Moore
y+75. ***Mithuna strigifera*** Hampson

Genus XXVI ***Strysopha*** Arora & Chaudhury

76. ***Strysopha tortricoides*** (Walker)

Genus XXVII ***Eilema*** Huebner

+77. ***Eilema tumida*** (Walker)
78. ***Eilema tetragona*** (walker)
+79. ***Eilema plumbeomicans*** (Hampson)
+y80. ***Eilema brunnea*** (Moore)
81. ***Eilema vagessa*** (Moore)
+82. ***Eilema oblitterans*** (Felder)
+83. ***Eilema conformis*** (Walker)
+84. ***Eilema auriflua*** (Moore)
85. ***Eilema reticulata*** (Moore)
y+86. ***Eilema quadrisignata*** (Moore)
y+87. ***Eilema terminalis*** (Moore)
+88. ***Eilema nigripars*** (Walker)
+y89. ***Eilema varana*** (Moore)
+90. ***Eilema nigripes*** (Hampson)
+y91. ***Eilema xanthocraspis*** (Hampson)
92. ***Eilema fumidisca*** (Hampson)
+93. ***Eilema vicaria*** (Walker)

Genus XXVIII ***Teulisna*** Walker

+94. ***Teulisna protuberans*** (Moore)

Genus XXIX ***Prabhasa*** (Moore)

+95. ***Prabhasa venosa*** (Moore)

Genus XXX ***Zadadra*** Moore

96. ***Zadadra distorta*** (Moore)

Genus XXXI ***Chrysaeglia*** Butler

97. ***Chrysaeglia magnifica*** (Walker)

Genus XXXII ***Hemonia*** Walker

+98. ***Hemonia orbiferana*** Walker

Genus XXXIII ***Agrisius*** Walker

99. ***Agrisius guttivitta*** Walker

Genus XXXIV ***Agylla*** Walker

y+100. ***Agylla apicalis*** (Moore)
101. ***Agylla divisa*** (Moore)
+y102. ***Agylla beema*** (Moore)
y+103. ***Agylla rufifrons*** (Moore)
y+104. ***Agylla albocinerea*** (Moore)

+105. *Agylla prasena* (Moore)
106. *Agylla maculata* (Moore)
Y+107. *Agylla bipars* (Moore)
108. *Agylla ramelana* (Moore)
*109. *Agylla alboluteola* Rothschild

Genus XXXV ***Cyclomilta*** Hampson

+Y110. *Cyclomilta melanolepia* Hampson

Genus XXXVI ***Cyana*** Walker

111. *Cyana alborosea* (Walker)
+112. *Cyana effracta* (Walker)
*113. *Cyana signa* (Walker)
114. *Cyana adita* (Moore)
115. *Cyana guttifera* (Walker)
116. *Cyana molleri* (Elwes)
117. *Cyana perornata* (Walker)
+118. *Cyana arama* (Moore)
+119. *Cyana candida* (Feeder)
120. *Cyana detrita* (Walker)
+121. *Cyana sikkimensis* (Elwes)
122. *Cyana puer* (Elwes)
+123. *Cyana dohertyi* (Elwes)
+Y124. *Cyana divakara* (Moore)
125. *Cyana bellissima* (Moore)
+126. *Cyana dudgeoni* Hampson
127. *Cyana gelidla* (Walker)
128. *Cyana gazella* (Moore)
+129. *Cyana coccinea* (Moore)
130. *Cyana bianca* (Walker)

Genus XXXVII ***Siccia*** Walker

+131. *Siccia taprobanis* (Walker)
+132. *Siccia sagittifera* (Moore)

Genus XXXVIII ***Oxacme*** Hampson

133. *Oxacme dissimilis* Hampson

Genus XXXIX ***Ovipennis*** Hampson

+Y134. *Ovipennis dudgeoni* (Elwes)

Genus XL ***Stictane*** Hampson

+135. *Stictane fractilinea* Hampson

Genus XLI ***Asura*** Walker

136. *Asura nubifascia* (Walker)
+Y137. *Asura melanoleuca* (Hampson)
+138. *Asura dasara* (Moore)
139. *Asura undulosa* (Walker)
140. *Asura obsoleta* (Moore)
+141. *Asura frigida* (Walker)
142. *Asura euprepioides* (Walker)
+143. *Asura conjunctana* (Walker)
+144. *Asura flavivenosa* (Moore)
+145. *Asura humilis* (Walker)
+146. *Asura nebulosa* (Moore)
147. *Asura strigipennis* (Herrich-Schaffer)
*148. *Asura arcuata* (Moore)
+149. *Asura floccosa* (Walker)
+150. *Asura rubricosa* (Moor)
+151. *Asura congerens* (Felder)
+Y152. *Asura anomala* (Elwes)
+Y153. *Asura rubrimargo* (Hampson)

Genus XLII ***Asuridia*** Hampson

+154. *Asuridia metaphoea* (Hampson)

Genus ***Parasiccia*** Hampson

+Y155. *Parasiccia maculifascia* (Moore)

Genus XLIV ***Miltochrista*** Huebner

+Y156. *Miltochrista flavicollis* (Moore)
157. *Miltochrista cardinalis* (Hampson)
+Y158. *Miltochrista postnigra* (Hampson)
+159. *Miltochrista punicea* (Moore)
160. *Miltochrista cuneonotata* (Walker)
161. *Miltochrista cruciata* (Walker)
162. *Miltochrista inflexa* (Moore)

+Y163. *Miltochrista roseata* (Walker)
164. *Miltochrista gratiosa* (Guerin & Meneville)
165. *Miltochrista linga* (Moore)
*166. *Miltochrista eccentropis* (Meyrick)
+167. *Miltochrista radians* (Moore)
+Y168. *Miltochrista delicata* (Moore)
+Y169. *Miltochrista proleuca* (Hampson)
+170. *Miltochrista spilosomoides* (Moore)
*171. *Miltochrista magna* (Hampson)
+Y172. *Miltochrista perpallida* (Hampson)

Genus XLV ***Hemispilia*** Hampson

+Y173. *Hemispilia coa-vestis* (Hampson)

Genus XLVI ***Nudaria*** Hawarth

+174. *Nudaria fumidisca* (Hampson)
+175. *Nudaria suffusa* (Hampson)
+176. *Nudaria fasciata* (Moore)
+177. *Nudaria margaritacea* (Walker)

Genus XLVII ***Stigmatophora*** Staudinger

*178. *Stigmatophora palmata* (Moore)

Subfamily MICRACTINAE

Genus XLVIII ***Argina*** Huebner

179. *Argina argus* (Kollar)
+180. *Argina syringa* (Cramer)
181. *Argina astrea* (Drury)

Genus XLIX ***Utetheisa*** Huebner

182. *Utetheisa pulchella* (Linnaeus)

(Species marked with plus (+) are reviewed from literature)

SYSTEMATIC ACCOUNT

Key to subfamilies

1. Fore wing with tufts of raised scales ..... NOLINAE
– Fore wing without tufts of raised scales .2
2. Body stoutly built in one or both sexes ...3
– Body slenderly built in one or both sexes
3. Proboscis not always functional ..... ARCTIINAE
– Proboscis always functional 4
4. Palpi upturned..... RHODOGASTRIINAE
– Palpi porrect. 5
5. Antennae bipectinate, wings usually white ..... NYCTEMERINAE
– Antennae variable, wings usually blackish, ...6
6. Fore wing markings in form of bands..... CALLIMORPHINAE
– Fore wing markings reduced to dots ..... SPILOSOMINAE
7. Head usually broad. Fore wing very long and hindwing uncommonly large ..... LITHOSIINAE
– Head not so broad. Fore wing and hindwing moderately large ..... MICRARCTIINAE

Subfamily NOLINAE

Key to genera

1. Fore wing vein R_2 absent ..... ***Celama*** Walker
– Fore wing vein R_2 present 2
2. Fore wing vein R_3 absent. 3
– Fore wing vein R_3 present ..... ***Roesalia*** Hubner
3. Hind wing vein M_3 absent ..... ***Nola*** Leech
– Hind wing vein M_3 present 4
4. Fore wing vein R_5 given off from R_4 after R_2 ..... ***Melanographia*** Hampson
– Fore wing vein R_5 given off from R_4 before R_2 ..... ***Dialithoptera*** Hampson.

I. Genus *Celama Walker*

1864. *Celama* Walker, *Cat. Lep. Het. Br. Mus.*, **32** : 500

Key to species

1. Antennae of male bipectinate .....2.
– Antennae of male ciliated 6

2. Fore wing with medial band .....3.
- Fore wing without medial band 4
3. Fore wing medial black band not confluent with the postmedial dots .... *lativittata* (Moore)
- Fore wing medial black band confluent with the postmedial series of dots below the cell ..... *encausta* Hampson
4. Fore wing with large oblique eliptical brownish antemedial and medial costal stigmata .... *fasciata* (Walker)
- Fore wing without large antemedial and medial costal stigmata 5
5. Fore wing antemedial line strongly defined by black..... *astigma* (Hampson)
- Fore wing antemedial line not defined by black ..... *duplicilinea* Hampson
6. Fore wing with prominent blackish band or suffusion on inner side of postmedial line ..... *suffusa* Hampson
- Fore wing without blackish band or suffusion 7
7. Fore wing with large fan shaped medial and postmedial tufts of scales..... ..... *marginata* (Hampson)
- Fore wing with small tufts of scales.....8
8. Fore wing with tufts of scales at middle and end of cell .....9.
- Fore wing without tufts of scales at middle and end of cell..... 10.
9. Fore wing with medial area whitish ....*squalida* (Staudinger)
- Fore wing uniform brownish ....*pumila* (Snellen)
10. Fore wing postmedial line strongly excurved below costa to vein cula .....11.
- Fore wing postmedial line slightly curved below costa then oblique ....*phaeochroa* Hampson
11. Fore wing ground colour brownish ....*flexuosa* (Pouj)
- Fore wing ground colour white .... *polia* Hampson.

1. *Celama lativittata* (Moore)

1888. Roesalia lativittata Moore, Lep.Atk., : 286

1900. Celama lativittata (Moore); Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 7.

Wing expanse : 20 mm.

Distribution : India (Sikkim.).

2. *Celama encausta* Hampson

1900. Celama encausta Hampson, *Cat.Lep.Phal. Brit.Mus.*, **2** : 8-9.

Wing expanse : 18mm.

Distribution : India : Sikkim. Assam and Nagaland.

3. *Celama fasciata* (Walker)

1866. Minnagara fasciata Walker, *List Lep Het. Brit. Mus.*, **35**; 1903.

1900. Celama fasciata (Walker) : Hampson, *Cat.Lep.Phal. Brit. Mus.*, **2** : 10

Material examined — 2exs : Sikkim, 549m., July' 1897 (Coll. *G.C. Dudgeon*)

Wing expanse : 20-22mm.

Distribution : India : Sikkim. Tamil Nadu *Elsewhere* : Borneo, Nawalapitya, Queensland, Sarawak and Sula

4. *Celama astigma* (Hampson)

1894. *Nola astigma* Hampson, *Fauna Brit. India, Moths*, **2** : 140

1894. *Nola astigma* (Hampson), Hampson *Cat. Lep. phal. Brit. Mus*, **2** : 12, pl. 18, fig. 7.

Wing expanse : 18-22 mm.

Distribution : India : Sikkim. Assam and Nagaland

5. *Celama duplicilinea* Hampson

1900. *Celama duplicilinea* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 12, pl. 18, fig. 8.

Wing expanse : 22 mm

Distribution : India : Sikkim.

6. *Celama suffusa* Hampson

1900. *Celama suffusa* Hampson, *Cat. lep. Phal. Brit. Mus.*, **2** : *18 19, pl. 18, fig. 13.*

Wing expanse : 18 mm.

Distribution : India : Sikkim

7. *Celama marginata* (Hampson)

1895. *Nola marginata* Hampson, *Trans. ent. Soc.*, : 296.

1900. *Celama marginata* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 19.

Material examined : 2exs; Sikkim, 549 m., July' 1897 (coll. *G. C. Dudgeon*)

Wing expanse : 18mm.

Distribution : India : Sikkim. *Elsewhere* : Bhutan.

8. *Celama squalida* (Staudinger)

1870. *Nola squalida* Staudinger, *Berl. ent. Zeit.*, **14** : 102.

1900. *Celama squalida* (Staudinger) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 24-25.

Wing expanse : 14mm.

Distribution : India: Sikkim. Maharashtra, N.W. Himalaya. *Elsewhere* : Beirut, Bhutan, China, Frankfort, Java, Madagascar, Malaya, Pakistan, Pulo Lout, Queensland, Sind, Spain, Srilanka, Syria and Tonga.

9. *Celama pumila* (Snellen)

1874. *Nola pumila* Snellen, *Tijd. V. Ent.*, **17** : 68, pl.6, fig. 4.

1900. *Celama pumila* (Snellen) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : *25.*

Wing expanse : 14mm.

Distribution : India : Sikkim. Assam, Maharashtra, Meghalaya, Tamil Nadu. *Elsewhere*: Burneo, Celebes, China, Myanmar, New Guineas Portmoresby, Sanghai, Sarawak, Sukotra and Taiwan.

10. *Celama phaeochroa* Hampson

1900. *Celama phaeochroa* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : *29.*

Wing expanse : 21-23 mm.

Distribution : India : Sikkim. *Elsewhere* : Java and Mt. Arjuna.

11. *Celama flexuosa* (Pouj)

1887. *Nola flexuosa* Pouj., *Bull. Soc. Ent. Fr.* (6) **6** : 167.

1900. *Celama flexuosa* (Pouj) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 27, pl. 18, fig. 26.

Wing expanse : ♂ 20mm., ♀ 22mm.

Distribution : India : Sikkim. *Elsewhere* : Moupin and Tibet.

12. *Celama polia* Hampson

1900. *Celama polia* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2**: 28, pl. 18, fig. 22.

Wing expanse : 18-20mm.

Distribution : India : Sikkim.

II Genus *Roesalia* Huebner

1827. *Roesalia* Huebner, *Verz. bek. Schmett.*, : 397.

Key to species

1. Fore wing with a prominent irregular dentate postmedial line ..... 2.

– Fore wing without dentate postmedial line ..... 4.

2. Forewing with double postmedial line .... *scripta* Moore.

– Forewing with single postmedial line ..... 3.

3. Hindwing brown, vein M3 stalked with Cula ..... *strigivena* (Hampson)

– Hindwing brownish white, vein M3 absent ..... *denticulata* Moore

4. Forewing ground colour silvery white .....5.
- Forewing ground colour not silvery white.. .....6.
5. Forewing with prominent black spot below middle of cell..... *argyria* (Hampson).
- Fore wing without black spot below middle of cell ..... *argentescens* (Hampson).
6. Forewing apical half bright rufous .... *semirufa* (Hampson).
- Forewing with triangular rufuous patch from costa to lower angle of cell..... ..... *cuneifera* (Walker)

13. ***Roesalia scripta*** Moore

1888. *Roesalia scripta* Moore, *Proc. Zool. Soc. Lond.*, : 393.

1900. *Roesalia scripta* Moore : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **1** : 56-57.

Wing expanse : 22-24mm

Distribution : India : Sikkim. Dalhousie, Himachal Pradesh and N.W. Himalaya. *Elsewhere*: Pakistan.

14. ***Roesalia strigivena*** (Hampson)

1894. *Selca strigivena* Hampson, *Fauna. Brit. India, Moths.*, **2** : 147.

1900. *Roesalia strigivena* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 57, pl. 19, fig.25.

Wing expanse : 22mm

Distribution : India : Sikkim.

15. ***Roesalia denticulata*** Moore

1888. *Roesalia denticulata* Moore, *Lep.Atk.*, : 287.

1900. *Roesalia denticulata* Moore : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 63, pl. 20, fig. 4.

Wing expanse : 24mm

Distribution : India : Sikkim.

16. ***Roesalia argyria*** (Hampson)

1894. *Pisara argyria* Hampson, *Fauna Brit.* India, *Moths*, **2**: 145.

1998. *Roesalia argyria* (Hampson) : Ghosh & Chaudhury, *State Fauna Series 4, Fauna of Meghalaya* (6) : 384.

Wing expanse : 26mm

Distribution : India : Sikkim. Assam and Meghalaya.

17. ***Roesalia argentescens*** (Hampson)

1895. *Pisara argentescens* Hampson, *Trans. ent. Soc Lond.*, : 296.

1900. *Roesalia argentescens* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 58-59.

Wing expanse : 28mm

Distribution : India : Sikkim.

18. ***Roesalia semirufa*** (Hampson)

1894. *Pisara semirufa* Hampson, *Fauna Brit. India, Moths.*, **2** : 146.

1900. *Roesalia semirufa* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 61.

Wing expanse : 28mm

Distribution : India : Sikkim.

19. ***Roesalia cuneifera*** (Walker)

1865. *Melia cuneifera* Walker, *List Lep. Het.Brit. Mus*, **32** : 338.

1900. *Roesalia cuneifera* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 62-63,

Wing expanse : 32mm

Distribution — India : Sikkim. *Elsewhere* : Bhutan, Borneo and Sarawak.

III Genus *Nola* Leach

1815. *Nola* Leach, *Edinb. Encycl.*, **9** : 135

Key to species

1. Fore wing with red brown suffusion .....2.
- Fore wing without red brown suffusion ...3.
2. Head and thorax whitish. Palpi very long. Wings with black points..... ..... *brunella* (Hampson)
- Head and thorax reddish brown. Palpi moderate. Wings with black streaks.....

..... *loxoscia* Hampson.

3. Fore wing with blackish patch subquadrate and large .....4.

– Fore wing with blackish patch subtriangular and small .....5.

4. Fore wing with the postmedial line continuous and dentate ..... *argentalis* (Moore)

– Forewing with the postmedial line punctiform ..... *melanota* Hampson.

5. Fore wing with black spot on inner margin at the postmedial line .... *tristicta* Hampson

– Fore wing without black spot on inner margin at the postmedial line .... *distributa* (Walker)

20. *Nola brunella* (Hampson)

1893. *Rhyncopalpus brunellus* Hampson, *Ill.* Het., **9** : 89, pl. 158.

1900. *Nola brunella* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 34,

Wing expanse : 20mm

Distribution : *India* : Sikkim. Assam and Nagaland. *Elsewhere* : Pundalaya, Srilanka.

21. *Nola loxoscia* Hampson

1900. *Nola loxoscia* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 33, pl.18, fig.33,

Wing expanse : 22mm

Distribution : India : Sikkim.

22. *Nola argentalis* (Moore)

1867. *Aglossa argentalis* Moore, *Proc. Zool. Soc. Lond.*, : 89.

1900. *Nola argentalis* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 35.

Material examined : 2exs : Sikkim, No other data (Coll. *O. Moller*)

Wing expanse : 35mm

Distribution : India : Sikkim.

23. *Nola melanota* Hampson

1900. *Nola melanota* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 35-36, pl. 19, fig. 3.

1998. *Nola melanota* Hampson : Ghosh & Chaudhury, *State Fauna Series* (4), *Fauna of Meghalaya* (6) : 383.

Wing expanse : 22-24mm

Distribution : India : Sikkim. Assam and Meghalaya.

24. *Nola tristicta* Hampson

1900. *Nola tristicta* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 37, pl. 19, fig. 4.

1998. *Nola tristicta* Hampson : Ghosh & Chaudhury, *State Fauna Series* (4), *Fauna of Meghalaya* (6) : 383.

Wing expanse : 18-20mm

Distribution : India : Sikkim. Assam and Meghalaya.

25. *Nola distributa* (Walker)

1862. *Lyclene distributa* Walker, *J. Linn. Soc. Zool.*, **6** : 113.

1900. *Nola distributa* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 36,

Wing expanse : ♂ -18-20mm, ♀-26-28mm.

Distribution : India : Sikkim. Tamil Nadu and West Bengal. *Elsewhere* : Bali, Bhutan, Borneo, Christmas Is., China, Madagascar, Myanmar, Sarawak, Sanghai, Sierra Leone.

IV Genus *Melanographia* Hampson

1900. *Melanographia* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 89

26. *Melanographia tympanistis* Dudgeon

1899. *Melanographia tympanistis* Dudgeon, *J. Bombay nat. Hist. Soc., pl. 2, fig. 22.*

1900. *Melanographia tympanistis* Dudgeon : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 49, fig. 13.

Wing expanse : 20 mm

Distribution : India : Sikkim.

V Genus ***Dialithoptera*** Hampson

1900. *Dialithoptera* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 50

27. ***Dialithoptera gemmata*** (Hampson)

1896. *Pisara gemmata Hampson, Fauna Brit. India, Moths*, **4** : 506

1900. *Dialithoptera gemmata* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 50, fig. 15.

Wing expanse : 20 mm

Distribution : India : Sikkim.

Sub family ARCTIINAE

Key to genera

1. Proboscis more or less aborted .....2.
- Proboscis fully developed ..... *Baroa* Moore
2. Forewing vein R_3 from R_2 and anastomosing with R_4 to form the areole .... *Arctia* Schrank
- Forewing without areole 3
3. Fore tibiae with curved apical claws, hind tibiae without medial spur*Maenas* Huebner
- Foretibiae without apical claw, hind tibiae wih medial spur ..... *Diacrisia* Huebner

VI Genus ***Baroa*** Moore

1878. *Baroa* Moore, *Proc. Zool. Soc. Lond.*, : 28.

28. ***Baroa vatala*** Swinhoe

1894. *Baroa vatala* Swinhoe, *Ann. Mag. nat. Hist.*, (6), **14** : 336.

1998. *Baroa vatala* Swinhoe : Ghosh & Chaudhury, *State Fauna Series* (4), *Fauna of Meghalaya* (6) : 351.

Wing expanse : 36mm.

Distribution : India : Sikkim. Assam, Meghalaya and West Bengal. *Elsewhere* : Bhutan and Hongkong.

VII Genus ***Arctia*** Schrank

1802. *Arctia* Schrank, *Fauna Boica* **2** (2) : 152.

* 29. ***Arctia tibetica*** Felder

1894. *Arctia tibetica* Felder, *Reis. Nov.*, pl. 101, fig. 12.

1900. *Arctia tibetica* Felder : Hampson *Cat. Lep. Phal. Brit. Mus.*, **3** : 465-466.

Diagnostic Characters : Head and thorax red brown, collar crimson, abdomen dark red brown with crimson sides. Fore wing red brown with a yellow streak from the base below median nervure. Hind wing crimon, the basal and costal areas black.

Material examined : lex, Sikkim, No other data (coll. *O. Moller).*

Wing expanse : 48mm.

Distribution : India : Sikkim. Himachal Pradesh, Jammu & Kashmir, and N. W. Himalayas. *Elsewhere* : Pakistan and Tibet.

Remarks : The species is recorded as new to Sikkim.

VIII Genus ***Maenas*** Huebner

1827. *Maenas* Huebner, *Verz. bek. Schmett.*, : 167.

30. ***Moenas venosa*** (Moore)

1879. *Carbisa venosa* Moore, *Lep. Atk.*, : 41, pl. 2, fig. 10

1901. *Maenas venosa* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **3** : 251.

Wing expanse : 36mm.

Distribution : India : Sikkim. *Elsewhere* : Bhutan.

IX Genus ***Diacrisia*** Huebner

1827. *Diacrisia* Huebner, *Verz. bek. Schmett.*, : 169.

Key to species

1. Fore wing ground colour pure white .....2.
- Fore wing ground colour not white .....3.
2. Abdomen crimson above except base and extremity. Fore wing with postmedial series of points ..... *rhodophila* (Walker)
- Abdomen orange above except base and extremity. Fore wing with postmedial maculate band ..... *multivittata* (Moore)

3. Abdomen orange above .....4.
– Abdomen crimson above .....5.
4. Fore wing whitish buff .... *punctata* (Moore)
– Fore wing orange .....*flavalis* (Moore)
5. Hind wing whitish.....6.
– Hind wing not whitish 7
6. Fore wing yellowish white .... *stigmata* (Moore)
– Fore wing not yellowish white .....9.
7. Hindwing orange or yellow 8
– Hindwing crimson or strongly tinged with crimson ..... *dentilinea* (Moore)
8. Fore wing white..... ..... *multiguttata* (Walker)
– Fore wing brownish buff .... *gopara* (Moore)
9. Fore wing pale dull reddish brown .... *sordidescens* (Moore)
– Fore wing grey brown or black ..... 10.
10. ..... Fore wing with series of white spots .....*sikkimensis* (Moore)
– Fore wing without series of white spots11.
11.Hindwing ground colour white ....*fulvohirta* (Walker)
– Hindwing ground colour pale yellow..... ..... *impleta* (Walker)

31. ***Diacrisia rhodophila*** (Walker)

1864. *Spilosoma rhodophila* Walker, *List Lep. Het. Brit. Mus.*, 294.

1901. *Diacrisia rhodophila* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **3** : 264.

Material examined : 5 exs., Sikkim, No other data (Coll. *O. Moller*)

Wing expanse : 42-48mm.

Distribution : India : Sikkim. Himachal Pradesh and N. W. Himalaya. *Elsewhere* : Chanyang, Moupin, Omei. Shan, Putsufeng and W. China.

32. ***Diacrisia multivittata*** (Moore)

1865. *Spilosoma multivittata* Moore, *Proc. Zool. Soc. Lond.*, : 808.

1901. *Diacrisia multivittata* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **3** : 265.pl. 64, fig. 22.

Material examined : 2 exs., Sikkim, No other data (Coll. *O. Moller*)

Wing expanse : 40mm.

Distribution : India : Sikkim.

33. ***Diacrisia punctata*** (Moore)

1859. *Spilosoma punctata* Moore, *Lep. East India. Comp*, : 355.

1901. *Diacrisia punctata* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **3** : 279. 279-280.

Material examined : 12 exs., Sikkim, 2.vi. 1888 (coll. *O. Moller*); lex; Thombyak, 3879m., 1.vi. 1959, lex; Talayampa, 2934m, 3. iv. 1959, lex; Chungthang, 1997m, 30. iv. 1959, 4exs : Lachung, 2727m, 30. vi, 4. vii. 1959, 2exs, East Sikkim, Tunim. 1800m., 23. ix. 1988 (Coll. *V. C. Agarwal);* lex: East Sikkim, Jadong, I.C.A.R. Rest House Compound, 30. viii. 1994 (Coll. G.C.Sen).

Wing expanse : 35-42mm.

Distribution : India : Sikkim. Assam and Nagaland. *Elsewhere* : Bassein, Java, Myanmar and Thetmyo.

34. ***Diacrisia flavalis*** (Moore)

1865. *Spilosoma flavalis* Moore, *Proc. Zool. Soc. Lond.*; : 809.

1901. *Diacrisia flavalis* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **3** : 283, pl. 65, fig.3.

Wing expanse : 42mm.

Distribution India : Sikkim

35. ***Diacrisia stigmata*** (Moore)

1865. *Spilosoma stigmata* Moore, *Proc. Zool. Soc. Lond.*; : 809.

1901. *Diacrisia stigmata* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 3 : 287-288, fig.141.

Material examined 3exs : Sikkim, No other data, (Coll. *O. Moller*); lex: Sikkim, Thangu, 3842mm., 10.vi. 1959, lex : Lachung,15.v. 1959, lex: Yonthang, 3530m., 17.vi. 1959, lex : N. Sikkim, Chungthang, 1651m., 30. vii. 1959 (Coll. *A. G. K. Menon*)

Wing expanse : 50-54mm.

Distribution India : Sikkim. Himachal Pradesh and N. W. Himalayas. *Elsewhere* : Nitore, Omei-Shan, Pakistan and Tibet.

36. ***Diacrisia multiguttata*** (Walker)

1855. *Hypercompa multiguttata* Walker, *List Lep. Het. Brit. Mus.*; 3 : 657.

1998. *Diacrisia multiguttata* (Walker) : Ghosh & Chaudhury, *State Fauna Series 4, Fauna of Meghalaya* (6) : 350-351.

Material examined : lex : Sikkim, No other data, lex : N. Sikkim, Akrathang, 970m, 12.VII.1959 (Coll. *A. G. K. Menon)*

Wing expanse : 50mm.

Distribution : India : Sikkim. Meghalaya, N. W. Himalayas and West Bengal.

37. ***Diacrisia gopara*** (Moore)

1859. *Spilosoma gopara* Moore, *Lep. East India Comp.*, : 356. pl. 99, fig. 11.

1998. *Diacrisia gopara* Moore : Ghosh & Chaudhury, *State Fauna Series 4, Fauna of Meghalaya* (6) : 350.

Material examined : lex : Sikkim, No other data (Coll. *O. Moller*)

Wing expanse : 40mm.

Distribution India : Sikkim. Assam and Meghalaya.

38. ***Diacrisia dentilinea*** (Moore)

1872. *Spilosoma dentilinea* Moore, *Proc. zool. Soc. Lond.*, : 573.

1901. *Diacrisia dentilinea* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 3 : 289, pl. 65, fig. 21.

Wing expanse : 42mm.

Distribution : India : Sikkim.

39. ***Diacrisia sordidescens*** (Moore)

1865. *Spilosoma sordidescens* Moore, *Proc. zool. Soc. Lond.*, : 808.

1901. *Diacrisia sordidescens* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 3 : 304, pl. 66, fig. 2.

Wing expanse : ♂34mm., ♀40mm.

Distribution : India : Sikkim.

40. ***Diacrisia sikkimensis*** (Moore)

1879. *Euchaetes sikkimensis* Moore, *Lep. Atk.*, : 39, pl. 2 fig. 12.

1998. *Diacrisia sikkimensis* (Moore) : Ghosh & Chaudhury, *State Fauna Series*, (4), *Fauna of Meghalaya* (6) : 351.

Wing expanse :. ♂-34mm. ♀-40mm

Distribution : India : Sikkim. Assam and Meghalaya.

41. ***Diacrisia fulvohirta*** (Walker)

1855. *Alphaea fulvohirta* Walker, *List Lep. Het. Brit. Mus.*, 3 : 684.

1997. *Diacrisia fulvohirta* (Walker) : Ghosh & Choudhury,

State Fauna Series 3, *Fauna of West Bengal* (7) : 251.

Material examined lxs : Sikkim, No other data, lex : Yanthang, 3530m., 17.vi. 1959, lex : Lachen, 2760m. 21.vi. 1959 (Coll. *A. G. K. Menon*); lex : N of Lachen, 2700m., 22.vi. 1989 (Coll *S. S. Saha*); lex : N. Sikkim, Jeema, 25. vii. 1989 (Coll. *S. Chatterje*).

Wing expanse : 52mm.

Distribution : India : Sikkim. West Bengal. *Elsewhere* : Bhutan and Western China.

42. ***Diacrisia impleta*** (Walker)

1864. *Hypercompa impleta* Walker, *List Lep. Het. Brit. Mus.*, 31 : 286.

1998. *Diacrisia impleta* (Walker) : Ghosh & Choudhury, *State Fauna Series* 4 *Fauna of Meghalaya* (6) : 351.

Material examined 4exs : Sikkim, No other data, (Coll. *O. Moller*).

Wing expanse : 55mm.

Distribution : India : Sikkim. Assam, Meghalaya and West Bengal.

Subfamily RHODOGASTRIINAE

X Genus ***Rhodogastria*** Huebner

1816. *Rhodogastria* Huebner, *Verz. bek. Schmett.*, : 572.

*43. ***Rhodogastria astreus*** (Drury)

1773. *Sphnix astreus* Drury, *Ill. Exot. Ent.*, **2** : 50, pl. 28, fig. 4.

1997. *Rhodogastria astreus* (Drury) : Ghosh & Chaudhury, State Fauna Series 3, Fauna of West Bengal (7) : 252.

Diagnostic Characters : Head, thorax and tegulae marked with black. Fore wing brownish, semidiaphanous except costa, discocellular and apical areas, a black mark on base legs tinged with crimson.

Material examined : lex : Sikkim, vii. 1893, 3 exs : Sikkim, No other data.

Wing expanse : 70mm.

Distribution India : Sikkim. Arunachal Pradesh, Maharashtra, Tamil Nadu and West bengal. *Elsewhere* : Indonesia, Myanmar, New Guinea, Philippines and Srilanka.

Subfamily NYCTEMERIINAE

Key to genera

Second joint of palpi reaching vertex of head. Fore wing with long areole .... ***Dilemera*** Huebner

– Second joint of palpi not reaching vertex of head. Forewing with short areole .... ***Nyctemera*** Huebner.

XI Genus ***Dilemera*** Huebner

1818. *Dilemera* Huebner, *Verz. bek. Schmett.*, :178

44. ***Dilemera arctata*** (Walker)

1856. *Nyctemera arctata* Walker, *List Lep. Het. Brit. Mus.*, **6** : 1664.

1998. *Dilemera arctata* (Walker) : Ghosh & Choudhury *State Fauna Series 4, Fauna of Meghalaya* (6) : 353

Diagnostic Characters : Head, thorax and abdomen yellow with black spots and bands. Fore wing white with some black spots near base, broad fuscous streak along costa and inner margin from base to medial maculate band, a broad marginal fuscous band of more or less conjoined streaks. Hindwing white with marginal series of rounded fuscous spots which are elongated towards and angle.

Material examined : lex : Sikkim, 3.vii. 1889 No other data.

Wing expanse : 58mm.

Distibution : India : Sikkim. Manipur, Meghalaya and Nagaland.

XII Genus *Nyctemera* Huebner

1820. *Nyctemera* Huebner, *Verz. bek. Schmett.*, : *178.*

Key to species

1. Antennae of male with short pectination. Hindwing with veins Rs and M_1 not stalked ..... *varians* Walker

– Antennae of male with long pectination. Hindwing with veins Rs and M_1 stalked ... . 2.

2. Abdomen yellowish with transverse black band on each segments. Wings without discocellular spot..... *cenis* (Cramer)

– Abdomen whitish with dorsal and lateral rows of black spots. Wings with discocellular spot ..... *adversata* (Schaller)

45. *Nyctemera varians* Walker

1854. *Nyctemera varians* Walker, *List Lep. Insects Brit. Mus.*, **2** : 400-401.

1998. *Nyctemera varians* Walker : Ghosh & Chaudhury, *State Fauna Series*, 4, *Fauna of Meghalaya* (6) : 354.

Material examined : 3exs, Sikkim, 550m. viii. 1896, vi.1897, 5exs : Sikkim, No other data (Coll *O. Moller*)

Wing expanse : 50-54mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Kashmir, Meghalaya. *Elsewhere*: Myanmar.

46. *Nyctemera cenis* (Cramer)

1779. *Phalaena cenis* Cramer, Pap. exot., **2** : 82, pl. 147, fig. E.

1998. *Nyctemera cenis* (Cramer) : Ghosh & Chaudhury, *State Fauna Series*, **4**, *Fauna of Meghalaya* (6) : 354.

Material examined : 7exs, Sikkim, No other data (Coll *O. Moller*)

Wing expanse : 40-45mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Uttar Pradesh and West Bengal. *Elsewhere* : Bangladesh, China and Myanmar.

47. *Nyctemera adversata* (Schaller)

1788. *Phalaena* (Geometra) *adversata* Schaller, *Naturorscher.*, **23** : 52.

1998. *Nyctemera adversata* (Schaller) : Ghosh & Chaudhury, *State Fauna Series*, **4**, *Fauna of Meghalaya* (6) : 354.

Material examined 1ex, Sikkim, 550m., x.1896; 2exs : Sikkim, No other data (Coll *O. Moller*); 1ex : N. Sikkim, Yamthung, 3650m, 16.vi. 1959, 1ex : Naga, 1515m., 2-v.1959, 1ex : Chetang, 2485m., 17.vii. 1959, 1ex : Manasthung, 1576m., 26 vii. 1959 (Coll. *A. G. K. Menon*); 2exs : S. Sikkim, Jorethang, CCBF, Karkatar, 9. xi. 1994 (Coll. *G. C. Sen).*

Wing expanse : 45-50mm.

Distribution Throughout India including Sikkim. *Elsewhere* : Bangladesh, Hongkong, Indochina, Japan, Malayasia, South China, Sumatra and Tonkin.

Subfamily CALLIMORPHINAE

XIII Genus *Callimorpha* Latreille

1809. *Callimorpha* Latreille, *Genera Crustaceorum et. insectorum*, **4** : 200

Key to species

1. Head and abdomen orange .....2.
– Head and abdomen not orange .....3.
2. Hind wing orange, without black streaks on veins..... *plagiata* (Walker)
– Hind wing pure white, veins slightly tinged with black ..... *nyctemerata* (Moore)
3. Fore wing metallic green with numerous yellow spots, hindwing orange, the veins streaked with black .... *principalis* (Kollar)
– Fore wing fuscous with tittle tinged of green, hindwing pure white, the veins fuscous .... *equitalis* Kollar

*48 *Callimorpha plagiata* (Walker)

1855. *Hypercompa plagiata* Walker, *List Lep. Het. Brit. Mus.*, **3** : 655.

1998. *Callimorpha plagiata* (Walker) : Ghosh & Chaudhury, *State Fauna Series 4, Fauna of Meghalaya* (6) : 355.

Material Examined : lex : Sikkim, 16.v. 1887, 7exs; Sikkim, No other data, lex : Sikkim, 10.iii. 1887 (Coll. *O. Moller*); 2exs. N. Sikkim, Tumin, 1800m., 22. ix. 1988 (Coll. *V.C. Agarwal*); lex : Tankung, 6km. N. of Teri, 21. v. 1994 (Coll *L. K. Ghosh*).

Wing expanse : 80mm.

Distribution : India; Sikkim. Arunachal Pradesh, Assam, Jammu & Kashmir, Meghalaya

and West Bengal. *Elsewhere* : Bangladesh and China.

Remarks : The species is recorded as new to this area.

49 *Callimorpha nyctemerata* (Moore)

1879. *Hypercompa nyctemerata* Moore, *Descr. Indian Lep. Atk.*, **1** : 38.

1997. *Callimorpha nyctemerata* (Moore) : Ghosh & Chaudhury, *State Fauna Series 3, Fauna of West Bengal* (7) : 249.

Material Examined lex : Sikkim, No other data, 1889 (Coll. *Pilcher*); lex : No other data (Coll. *O. Moller*); 3 exs; Sikkim, Rabangla, 2010m., 24. x. 1988 (Coll. *V.C. Agarwal*);

Wing expanse : 50mm.

Distribution : India; Sikkim. West Bengal.

50 *Callimorpha principalis* (Kollar)

1844. *Euprepia principalis* Kollar, *In Hugels Kashmir und. das Reich der. Siek.*, **4** : (2) : 465, pl.20, fig. 2.

1997. *Callimorpha principalis* (Kollar) : Ghosh & Chaudhury, *State Fauna Series 3, Fauna of West Bengal* (7) : 248.

Material Examined : lex : Sikkim, 1845m, vi. 1897; 21exs. : Zeema, 2km. N. of Lachem, 2700m, 27, 28. vi. 1989 (coll. *S. Chatterjee* and *S. S. Saha*).

Wing expanse : 80-85mm.

Distribution : India; Sikkim. Arunachal Pradesh, N.W. Himalayas, West Bengal. *Elsewhere* : China and Myanmar.

51 *Callimorpha equitalis* (Kollar)

1848. *Euprepia equitalis* Kollar, *In Hugels Kashmir und das Reich der. Siek.*, **4** : 465, pl.20, fig. 3.

1998. *Callimorpha equitalis* (Kollar) : Ghosh & Chaudhury, *State Fauna Series 4, Fauna of Meghalaya*, (6) : 355.

Material Examined : 2exs : Sikkim, 1825m, vi. 1889 (Coll Nil)

Wing expanse : 75mm.

Distribution : India; Sikkim. Himachal Pradesh,Meghalaya, Uttar Pradesh. *Elsewhere* : Myanmar and Nepal.

Subfamily SPILOSOMINAE

Key to genera

1. Antennae ciliated in both sexes. Fore tibia without curved apical claw. Hind legs with one pair of tibial spurs ..... 2.
– Antennae minutely serrate or pectinate in male. Foretibiae with or without curved apical claw. Hind legs with two pairs of tibial spurs, rarely the middle pair extremely reduced ..... 3.
2. Thorax unmarked. Legs with coxae and femora yellow, tibiae and tarsi ivory white, marked with dark brown stripe ..... ***Phissama*** Moore
– Thorax marked. Legs with coxae and femora pale yellow above, tibiae and tarsi dark brown, unmarked .... ***Creatonotos*** Huebner.
3. Foretibiae with curved apical claw ..... ***Alphaea*** Walker.
– Fore tibiae without curved apical claw ...4.
4. Head, thorax and abdomen wih large woolly hair, Antennae about half the length of costa. Proboscis extremely short not extending the width of head ..... ***Spilarctia*** Butler.
– Head, thorax and abdomen smoothly scaled Antennae less than half the length of costa. Proboscis extending the width of head ...5.
5. Labial palpi long and porrect, projecting beyond frons. Proboscis twice the width of head ..... ***Areas*** Walker
– Labial palpi short and porrect, not projecting beyond frons. Proboscis not twice the width of head ..... ***Olepa*** Watsonr.

XIV Genus *Phissama* Moore

1859. Phissama Moore, *Lep. East India Comp.*, : 362.

52. *Phissama transiens* (Walker)

1855. *Spilosoma tramiens* Walker, *List Lep. Het. Brit. Mus.*, **3** : 675.

1998. *Phissama transiens* (Walker) : Ghosh & Chaudhury, *State Fauna Series 4, Fauna of Meghalaya* (6) : 356-357.

Diagnostic Characters : Head and thorax dirty white. Palpi and femora orange. Fore wing very pale fuscous, the costa and base of inner margin ivory white, black spots in and just beyond each angle of cell. Hindwing pale fuscous. Abdomen orange above, white below.

Material examined : 1ex: Sikkim, 11.vi. 1890 (No coll)

Wing expanse : 42mm.

Distribution India : Sikkim. Arunachal Pradesh, Assam, Manipur, Meghalaya and West Bengal. *Elsewhere* : China, Indonesia, and the Philippines.

XV Genus *Creatonotos* Huebner

1816. *Creatonotos* Huebner,Verz. bek. Schmett., : 169.

53. *Creatonotos gangis* (Linnaeus)

1764. *Phalaena gangis* Linnaeus, Amoecon. Acad., **6** : 410.

1998. *Creatonotos gangis* (Linnaeus) : Ghosh & Chaudhury, *State Fauna Series 4, Fauna of Meghalaya* (6) : 356.

Diagnostic Characters : Head and thorax pale pinkish ochreous. Palpi and legs smoky black, the femora yellow. Fore wing with a broad black fascia below median nervure, two black spots at end of cell and a broad streak beyond the lower angle. Hindwing pale fuscous. Abdomen crimson above with dorsal and lateral series of black spots.

Material examined : 1ex: Sikkim, 550m, vi. 1897 (Coll. Nil). 3exs : Rongpo, P.W.D.R.H. Campd., 12. ii. 1992 (Coll. A. K. Hazra)

Wing expanse : 40mm.

Distribution : Throughout India including Sikkim. *Elsewhere* : China, Eastern Asia, Malayasia, Nepal, North Australia, Pakistan and Srilanka.

XVI Genus *Alphaea* Walker

1855. *Alphaea* Walker, *List Lep. Het. Brit. Mus.*, **3** : 683.

54. *Alphaea qudriramosa* (Kollar)

1844. *Euprepia quadriramosa* Kollar, *In Hugel's kashmir und das Reich der siek.* **4** (2) : 468.

1998. *Alphaea quadriramosa* (Kollar) : Ghosh & Chaudhury, *State Fauna Series 4, Fauna of Meghalaya* (6) : 352.

Wing expanse : 36mm.

Distribution India : Sikkim. Arunachal Pradesh, Assam, Dalhoushe, Himachal Pradesh, Meghalaya and Kashmir.

XVII Genus *Spilarctia* Butler

1875. *Spilarctia* Butler, *Cist. Ent.* **2** : 39.

Key to species

1. Fore wing with ground colour pure white ..... 2.
– Fore wing ground colour not white ..... 4.
2. Wings sparsly clothed with hairy scales .3.
– Wings thickly and smoothly scaled .... *lubricipeda* (Linnaeus)
3. Tegulae wholly orange .... *nigrifrons* (Walker)
– Tegulae without orange..... ..... *melanosoma* (Hampson)
4. Abdomen orange above 5
– Abdomen crimson above 6
5. Fore wing with oblique maculate band from apex to middle of inner margin ....*obliquivittata* Moore.
– Fore wing without maculate band to middle of inner margin .....*flavens* (Moore)
6. Fore wing orange tinged with crimson..... .....*rubitincta* (Moore)

– **Fore** wing buff or yellowish white.....7.

7. Palpi dark at base. Antennae dark but strongly pectinated..... *casigneta* (Kollar)

– **Palpi** crimson at base. Antennae dark but weakly pectinated ..... *obliqua* (Walker)

55. *Spilarctia lubricipeda* (Linnaeus)

1758. *Bombyx lubricipeda* Linnaeus, *Syst. Nat.*, 1(2) : 505.

Material examined lex : Sikkim, 1 8 8 7 (Coll. *O. Moller*)

Wing expanse : 35mm.

Distribution : India : Sikkim. N.W. Himalayas. *Elsewhere* : Armenia, Amur, Altai, China, Korea, Changyang, C.& N. Europe, E. Europe, Gensam, Italy, Japan, Kweichow, Moupin, Nagasaki, Nikko, Omei-Shan, Pakistan, Sanghai, Spain, Tsu-Shima, Washan and Yokohama.

56. *Spilarctia nigrifrons* (Walker)

1865. *Icambosida nigrifrons* Walker, : *List Lep. Het. Brit. Mus.*, 32 : 401.

1998. *Spilarctia nigrifrons* (Walker) : Ghosh & Chaudhury, *State Fauna Series 4, Fauna of Meghalaya* (6) : 358-359.

Wing expanse : 40 mm.

Distribution : India : Sikkim. Assam, Meghalaya.

57. *Spilarctia melanosoma* (Hampson)

1894. *Thyrgorina melanosoma* Hampson, : *Fauna Brit. India. Moths.*, 2 : 15.

1998. *Spilarctia melanosoma* (Hampson) : Ghosh & Chaudhury, *State Fauna Series 4, Fauna of Meghalaya* (6) : 358.

Wing expanse : ♂- 36 mm., ♀ 46mm.

Distribution : India : Sikkim. Assam, Dalhousie, Khasis, Kulu, Murree, N.W. Himalayas, Simla. *Elsewhere* : Abbotabad, W. China and Washan.

58. *Spilarctia obliquivitta* Moore

1879. *Spilarctia obliquivitta* Moore, : *Lep. Atk.*, : 40 pl.2. fig. 20.

Wing expanse : 36-42 mm.

Distribution : India : Sikkim.

59. *Spilarctia flavers* Moore

1879. *Alphaea flavens* Moore, *Lep. Atk.*, : 39

1998. *Spilarctia flavens* (Moore) : Ghosh & Choudhury, *State Fauna Series 4, Fauna of Meghalaya* (6); 358.

Material examined : lex : Sikkim, No other data (Coll. *O. Moller.*)

Wing expanse : 40 mm.

Distribution : India : Sikkim. Arunachal Pradash, Assam and Meghalaya.

60. *Spilarctia rubitincta* (Moore)

1865. *Spilosoma rubitincta* Moore, *Proc. Zool. Soc. Lond.*, 809.

1997. *Spilarctia rubitincta* (Moore) : Ghosh & Choudhury, *State Fauna Series 3, Fauna of West Bengal* (7); 257.

Wing expanse : 46 mm.

Distribution : India : Sikkim. Arunachal Pradash, Meghalaya and West Bengal. *Elsewhere*: Bhutan.

61. *Spilarctia casigneta* (Kollar)

1844. *Euprepia casigneta* Kollar, *In Hugels Kashmir und das reich der siek*, 4 (2) : 469.

1998. *Spilarctia casigneta* (Kollar) : Ghosh & Choudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6); 358.

Material examined : 4exs; Sikkim, No other data (Coll. *O. Moller*)

Wing expanse : 42 mm.

Distribution : India : Sikkim. Arunachal Pradash, Assam, Manipur, Meghalaya, Nagaland, N.W. Himalayas and Tamil Nadu. *Elsewhere* : Asia, Bhutan, Western China.

62. *Spilarctia obliqua* (Walker)

1855. *Spilosoma obliqua* Walker, *List Lep. Insects Brit. Mus*, **3** : 679.

1998. *Spilarctia obliqua* (Walker) : Ghosh & Choudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6); 358.

Material examined : 2exs; Sikkim, No other data (Coll. *O. Moller*)

Wing expanse : 40 mm.

Distribution : Throughout India including Sikkim. *Elsewhere* : Asia, Bhutan, China, Eastern Asia and Nepal.

XVIII Genus *Areas* Walker

1855. *Areas* Walker, *List Lep. Insects Brit. Mus.*, **3** : 658.

Key to species

1. Thorax black. Fore wing black with white fascia above median nervure and vein M_2 ..... *imperialis* (Kollar)
- Thorax white above crimson below. Fore wing white with the veins brown .... *galactina* (Hoeven)

63. *Areas imperialis* (Kollar)

1844. *Euprepia imperialis* Kollar, *In Hugels Kashmir und das Reich der siek*, **4** (2) : 466. pl. 21, fig. 1.

1894. *Areas imperials* (Kollar) : Hampson, *Fauna Brit. India, Moths*, **2** : 25-26.

Material examined : 1ex; Sikkim, No other data; 1ex: Mangaon, 29.v. 1994 (Coll. *B.C. Das*)

Wing expanse : 82 mm.

Distribution : India : Sikkim. Himachal Pradesh and N.W. Himalayas.

64. *Areas galactina* (Hoeven)

1840. *Chelonia galactina* Hoeven, *Tijschr. Nat. Ges. Phys.*, **7** : 280. pl. 6, fig. 5.

1998. *Areas galactina* (Hoeven) : Ghosh & Choudhury, *State Fauna Series 4, Fauna of Meghalaya* (6) : 359.

Material examined : 7exs; Sikkim 550m, vi. 1890, v.1896, 1897 (Coll. nil); 1ex : Yamthung, 3475m., 1.vii. 1989 (Coll. *S.S. Saha*).

Wing expanse : 75-82 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Nagaland, N.W. Himalaya and West Bengal. *Elsewhere* : Eastern Asia, Indonesia, Sarawak, South America, Western China.

XIX Genus *Olepa* Watson

1980. *Olepa* Watson, *The generic names of the moths of the world*, **2** : 133.

65. *Olepa ricini* (Fobricius)

1775. *Bombyx ricini* Fabricius, *Syst, Entom, :* 583.

1997. *Olepa ricini* (Fabricius) : Ghosh & Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 257.

Diagnostic Characters : Head and thorax dark grey brown, collar tringed with crimson. Fore wing fuscous brown with numerous pale ringed black spots in the interspaces. Hindwing crimson with antemedial, medial, postmedial and magrinal bands. Abdomen crimson with black bands.

Material examined : 2 exs; Sikkim, No other data.

Wing expanse : 48 mm.

Distribution : India : Sikkim Arunachal Pradesh, Assam, Karnataka, Madhya Pradesh, Punjab and Tamil Nadu. *Elsewhere* : Bangladesh, Srilanka.

Subfamily LITHOSIINAE

Key to genera

1. Fore wing vein M_2 absent 2
- Fore wing vein M_2 present 12
2. Fore wing vein M_3 present 3
- Fore wing vein M_3 absent .... ***Neoblavia*** Wallengren
3. Fore wing vein Culb curved at base .... ***Lexis*** Wallengren

– **Fore** wing vein Culb oblique 4

4. Hindwing vein M_3 absent 5

– **Hindwing** vein M_3 present 6

5. Fore wing vein R_1 anastomosing with Sc.. ..... ***Poliosia*** Hampson

– **Fore** wing vein R_1 free ..... ***Lobobasis*** Hampson

6. Hindwing cell open, a recurrent vein in cell ..... ***Chrysorabdia*** Butler.

– **Hindwing** cell closed, no recurrent vein in cell 7

7. Fore wing vein R_2 stalked with R3 R5 ... . ***Mithuna*** Moore

– Fore wing vein R_2 free 8

8. Fore wing in male with secondary sexual character 9

– Bothwings in male with secondary sexual character ..... 10.

9. Male genitalia with scaphium..... ..... ***Strysopha*** Arora & Chaudhury

– Male genitalia without scaphium .... ***Eilema*** Huebner

10. ... Fore wing cell half the lengths of wing. Uncus broad ..... ***Teulisna*** Walker

– Fore wing cell more than half the length of wing. Uncus long and narrow ..... 11.

11. Fore wing cell a little over half the length of wing and tufts on fore wing about half the length of cell ..... ***Prabhasa*** Moore

– Fore wing cell about two thirds the length of wing, tuffs of fore wing two thirds the length of cell ..... ***Zadadra*** Moore

12. Hindwing vein M_2 present..... 13.

– Hindwing vein M_2 absent ..... 14.

13. Fore wing vein M_1 from upper angle of cell not stalked with vein R_5..... ..... ***Chrysaeglia*** Butler

– Fore wing vein M_2 stalked with R_5..... ..... ***Hemonia*** Walker.

14. Fore wing with an areole..... 15

– Fore wing without areole ..... 16.

15. Fore wing veins R_2 and R_3 anastomosing with R_4 to form the areole .... ***Agrisius*** Walker

– Fore wing veins R_2 arises from R_3 and then anastomosing with R_4 to form the areole.. ..... ***Agylla*** Walker

16. Fore wing veins R_5 from R_4 after R_3.... 17

– Fore wing veins R_5 from R_4 before R_3 .... 22.

17. Fore wing veins M_1 from cell, R_2 R_5 stalked ..... ***Cyclomilta*** Hampson

– Fore wing veins M_1 and R_2 from cell..... ..... 18.

18. Hindwing vein M_2 obsolescent from just below angle of discocellular .... ***Cyana*** Walker

– Hindwing vein M_2 fully developed from well below angle of discocellular..... 19

19 Palpi upturned ..... *Sicia* Walker

– Palpi porrect 20

20. Fore wing costa exceed towards apex .... *Oxacme* Hampson

– Fore wing normal shape 21

21. Fore wing vein R_2 closed to vein R_1 .... *Ovipennis* Hampson

– Fore wing vein R_2 from towards end of cell ..... *Stictane* Hampson.

22. Fore wing vein R_1 anastomosing with Sc 23

– Fore wing vein R_1 not anastomosing with Sc 24

23. Fore wing vein R_2 free ..... ***Asura*** Walker

– Fore wing vein R_2 not free..... ..... ***Asuridia*** Hampson

24. Palpi upturned 25
- Palpi porrect 26

25. Palpi reaching vertex of head ..... ***Parasiccia*** Hampson
- Palpi not reaching vertex of head ..... ***Miltochrista*** Huebner

26. Fore wing vein R_1 become coincident with R_2 ..... ***Hemispilia*** Hampson
- Fore wing vein R_1 free ..... 27.

27. Fore wing vein R_3 present ..... ***Nudaria*** Haworth
- Fore wing vein R_3 absent ..... ***Stigmatophora*** Staudinger

XX Genus *Neoblavia* Hampson

1900 *Neoblavia* Hampson, *Cat. Lep. Phal. Brit. Mus.*, 2 :105

66 *Neoblavia scoteola* Hamposn

1900 *Neoblavia scoteola* Hampson, *Cat. Lep. Phil. Brit. Mus.*, 2 :105, fig. 45

Wing expanse : 18mm.

Distribution : India : Sikkim.

XXI Genus *Lexix* Wallengren

1865 *Lexis* Wallengren, *Vet. Akad. Handl.*, (2) 5 (4) : 41

67. *Lexis fulveola* Hampson

1900. *Lexis fulveola* Hampson *Cat. Lep. Phal. Brit. Mus.*, 2 : 106

Wing expanse : 22 mm.

Distribution : India : Sikkim. West Bengal.

XXII Genus *Poliosia* Hampson

1900 *Poliosia* Hampson, *Cat. Lep. Phal. Brit. Mus.*, 2 :106

Key to species

1. Fore wing with yellow costal fascia ..... *muricolor* Walker
-Fore wing without yellow costal fascia.....2

2. Head and tegulae yellow ..... *punctivena* Hampson
- Head and tegulae not yellow 3

3. Fore wing thickly and uniformly irrorated with dark brown hindwing grey brown suffused with yellow brown towards base ..... *brunnea* (Moore)
- Fore wing not irrorated with brown, Hindwing pale yellow.....*cubitifera* (Hampson)

68. *Polisoia muricolor parva* (*Moore*)

1878 *Collita parva* Moore, *Proc. Zool. Soc. Lnd.*, :106, Pl.1, fig. 13.

1900. *Poliosia musicolor parva* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 2 : 108

Wing expanse : ♂-20 mm., ♀- 24 mm.

Distribution : India : Sikkim, Assam and Meghalaya.

69. *Polisia punctivena* (Hampson)

1898 *Gampola punctivena* Hampson, *J. Bombay nat. Hist. Soc.*, : 297.

1900. *Poliosia punctivena* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 2 :108, Pl. 20, fig. 22

Wing expanse : 18mm

Distribution : India : Sikkim.

70. *Poliosia brunnea* (Moore)

1878. *Dolgoma brunnea* Moore, *Proc. Zool. Soc. Lnd.*, :20, Pl. 2, fig. 8.

1998 *Poliosia brunnea* (Moore) : Ghosh & Chaudhury, *State Fauna Series* 4, *Funna of Meghalaya* (6) : 379.

Wing expanse : 24 mm.

Distribution : India : Sikkim. Assam and Meghalaya.

71. *Poliosia cubitifera* (Hampson)

1894. *Lithosia cubitifera* Hampson, *Fauna Brit. India Moths*, 2 : 83.

1900 Poliosia cubitifera (Hampson) : Hampson, *Cat. lep. Phal. Brit. Mus.*, 2 : 108.

Wing expanse : 24-28 mm.

Distibution : India : Sikkim. Assam and **Nagaland.**

XXIII Genus ***Lobobasis*** Hampson

1896. ***Lobobasis*** Hampson. Fauna Brit. *India*, Moths, **4** : **498.**

72. ***Lobobasis niveimaculata*** Hampson

1896. ***Lobobasis niveimaculata*** Hampson, *Fauna Brit. India, Moths*, **4** : 498.

1900. ***Loboasis niveimaculata*** Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 260

Wing expanse : 20 mm.

Distibution : India : Sikkim. *Elsewhere* : Bhutan, Perak and Sumatra.

XXIV Genus ***Chrysorabdia*** Butler

1877. *Chrysorabdia* Butler, *Trans. ent. Soc. Lond.*, : 357

73. ***Chrysorbadia viridata*** (Walker)

1864. *Lithosia viridata walker, List Lep. Insects Brit. Mus.*, **31** : 225

1998 *Chrysorabdia virvidata* (Walker) : Ghsoh & Chaudhury, State Fauna Series 4, Fauna of West Bengal (6) : 360

Material examined : 3exs, Sikkim, 29. IX. 1888 (Coll *O. Moller*) 2exs N. of Lachung, 4 VII, 1989, 2 exs : N. W. of Lachen, 30. VII. 1989 (Coll. *S. S. Saha*); lex : Dikchu, 9. IX. 1993 (Coll *S. Chatterjee*); Lex : Lachung, 2700m., 6.V. 1994 (Coll. S. Chatterjee).

Wing expanse : 40-42 mm.

Distibution : India : Sikkim. Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya and West Bengal. *Elsewhere* : Bangladesh, Bhutan and China.

XXV ***Mithuna*** Moore

1878. Mithuna Moore, *Proc. Zool. Soc. Lond.* : 21

Key to species

Fore wing vein R_5 arising before vien R_2. ..... *quadriplaga* Moore

– Fore wing vein R_5 arising after vein R_2..... ..... *strigifera* Hampson

74. ***Mithuna quadriplaga*** Moore

1878. *Mithuna quadriplaga* Moore, *Proc. Zool. Soc. Lond.*, : 21.

1900. *Mithuna quadriplaga* Moore : Hampson, *Cat, Lep. Phal. Brit. Mus.*, **2** : 122.

Wing expanse : ♂-22mm., ♀-26 mm.

Distribution : India : Sikkim. *Elsewhere* : Bhutan

75. ***Mithuna strigifera*** Hampson

1900. *Mithuna strigifera* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 123

Wing expanse : 28 mm.

Distribution : India : Sikkim.

XXVI Genus ***Strysopha*** Arora & Chaudhury

1982. Strysopha Arora & Chaudhury, *Tech. Monogr., no.* **6** : 27-28.

76. ***Strysopha tortricoides*** (Walker)

1862. *Lithosia tortricoides* Walker, *J. Proc. Linn. Soc. Zool.*, **6** : 107

1989 Strysopha tortricoides (Walker) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 361.

Diagnostic Characters : Fore wing slightly suffused with fuscous, costal area yellow, execpt apex which is black, the veins streaked with black, a triangular black spot on costa beyond middle. Hindwing pale yellow, tinged with fuscous towards apex. Abdomen grey, extremity yellow.

Material examined : lex, Sikkim, No other data (Coll. O. Moller)

Wing expanse : 24 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Meghalaya, Tamil Nadu. *Elsewhere* : Bhutan, China, Indonesia and Malayasia.

XXVII Genus ***Eilema*** Huebner

1816 *Eilam* Huebner, *Verz. bek. Schmett.*, : 165.

Key to species

1. Fore wing with secondary sexual character 2
- Fore wing without secondary sexual character 9
2. Fore wing of male with a fold in cell, subcostal and median nervure closely apporximate ..... *tumida* (Walker)
- Fore wing of male without fold in cell, subcostal and median nervure not aporximate 3
3. Fore wing with large quadrate postmedial black mark below the cell .... *tetragona* (Walker)
- Fore wing without postmedical black mark below the cell 4
4. Fore wing with postmedial black spot on costa ..... *plumbeomicans* (Hampson)
- Fore wing without postmedial black spot.. 5
5. Fore wing of male with large fringe of scale in the cell ..... *brunnea* (Moore)
- Fore wing of male with slight fringe of scale in the cell 6
6. Fore wing orange yellow .... *vagessa* (Moore)
- Fore wing not orange yellow 7
7. Fore wing with fuscous postmedial line angled out words at middle .... *oblitterans* (Felder)
- Fore wing without postmedial line 8
8. Fore wing whitish with pink tinge, the termen orange yellow .... *conformis* (Walker)
- Fore wing uniform pale straw yellow .... *auriflua* (Moore)
9. Fore wing with prominent lines .... *reticulata* (Moore)
- Fore wing without lines 10
10. Fore wing with antemedial blackspot on costa ..... *quadrisignata* (Moore)
- Fore wing without black spot on costa..... 11
11. Fore wing with black band on terminal area ..... *terminalis* (Moore)
- Fore wing without black band on terminal area 12
12. Fore wing white 13
- Fore wing not white 14
13. Hind wing pale yellow .... *nigripars* (Walker)
- Hind wing white ..... *varana* (Moore)
14. Fore wing vein R_1 free 15
- Fore wing vein R_1 anastomosing with SC 16
15. Fore wing fulvous orange, abdomen ventrally with black bands .... *nigripes* Hampson
- Fore wing yellowish white, abdomen fuscous, clothed with white hair, extermity orange ..... *xanthocraspis* Hampson
16. Fore wing dark brown with terminal yellow band, hind wing yellow .... *fumidisca* (Hampson)
- Fore wing dark grey without yellow band, hind wing pale yellow .... *vicaria* (Walker)

77 *Eilema tumida* (Walker)

1862. *Tegulata tumida* Walker, *J. Linn. Soc. Zool.*, **6** :110

1922. *Eilema tumida* (Walker) : Strand, *Iep. Catalogus, pars* 26:

Wing expanse : 28 mm.

Distribution : India : Sikkim. *Elsewhere* : Borneo, Malacca, Sarawak and Sumatra.

78. *Eilema tetragona* (Walker)

1854. *Lithosia tetragona* Walker, *List Lep. Insects. Birt. Mus.*, **2** : 510

1998. *Eilema tetragona* (Walker): Ghosh & Chaudhary, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 362

Material examined : *1ex* : *Sikkim, No other data (Coll O. Moller);* lex : Mang*aon*, 31.V. 1994 (Coll *B. C. Das).*

Wing expanse : 25 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Kerala, Manipur, Nagaland and Tamil Nadu. *Elsewhere* : Bangladesh, China, Kampuchea.

79. *Eilema plumbeomicans* (Hampson)

1894 *Prabhasa plumbeomicans* Hampson, *Fauna Brit. India*, Moths, 2 : 77

1922 *Eilema plumbeomicans* (Hampson) : Strand, *Lep. Catalogus, pars* **26** :

Wing expanse : 30mm.

Distribution : India :Sikkim. Assam and Nagaland.

80. *Eilema brunnea* (Moore)

1878. *Cossa brunnea* Moore, *Proc. Zool. Soc. Lond.*, **22** : Pl. 2 fig. 11.

1922. *Eilema brunnea* (Moore). Strand, *Lep. Catalogus, Pars* **26** :

Wing expanse : 32 mm.

Distribution : India : Sikkim.

81 *Eilema vagessa* (Moore)

1859. *Lithosia vagessa* Moore *Lep. East India Comp.*, :304

1998 Eilema vagessa (Moore) : Ghosh & Chaudhary, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 362.

Meterial examined : 4exs : Sikkim, No other data (Coll O. *Moller*)

Wing expanse : 36 mm.

Distribution : India : Sikkim. Assam, Meghalaya, N. W. Himalayas, and West Bengal. *Elsewhere* : Myanmar, Nepal.

82. *Eilema oblitterans* (Felder)

1868. Lithosia oblitterans (Felder), *Verh. Zool. bot. Ges. Wien.*, **18** : 285.

1922. *Eilema oblitterans* (Felder) : Strand, *Lep. Catalogus, pars* **26** :

Wing expanse : ♂-26 mm ♀-30mm.

Distribution : India : Sikkim. Karnataka, Tamil Nadu. *Elsewhere* : East Africa, Java, Kilmanjara, Preanger and Sri Lanka.

83. *Eilema conformis* (Walker)

1854. *Lithosia conformis Walker, List Lep. Het. Brit. Mus.*, **2** : 509

1922. *Eilema conformis* (Walker) : Strand, *Lep. Catalogus*, pars **26** :

Wing expanse : 30-40 mm.

Distribution : India : Sikkim. Himachal Pradesh, N. W. Himalayas. *Elsewhere* : Bhutan and Japan.

84. *Eilema auriflua* (Moore)

1878. *Systropha auriflua* Moore, *Proc. Zool. Soc. Lond.*, : 18

1997. *Eilema auriflua* (Moore) : Ghosh & Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7) : 259.

Wing expanse : 26mm.

Distribution : India : Sikkim. Assam, Meghalaya and West Bengal.

85. *Eilema reticulata* (Moore)

1865. *Lithosia reticulata* Moore, *Proc. Zool. Soc. Lond.*, : 798.

1922. *Eilema reticulata* (Moore) : Strand, *Lep. Catalogus, pars* **26** :

Material examined : lex : Sikkim, No. other data, – 1886 (*Coll. O. Moller*).

Wing expanse : 32 mm.

Distribution : India : Sikkim. N. W. Himalayas.

86. *Eilema quadrisignata* (Moore)

1878. *Cossa quadrisignata* Moore, *Proc. Zool. Soc. Lond.*, : 21, Pl. 2, fig. 10.

1922. *Eilema quadrisingata* (Moore) : Strand, *Lep. Catalogus, Pars* : **26** :

Wing expanse : 32 mm

Distribution : India : Sikkim.

87. *Eilema terminalis* (Moore)

1878. *Katha terminalis* Moore, *Proc. Zool. Soc. Lond.*, : 17

1922. *Eilema terminalis* (Moore) Strand, *Lep. Catalogus*, Pars **26** :

Wing expanse : 34 mm.

Distribution : India : Sikkim.

88. *Eilema nigripars* (Walker)

1856. *Lithosia nigripars* Walker, *List Lep. Insects Brit. Mus.*, **7** : 1779.

1922. *Eilema nigripars* (Walker) : Strand, *Lep. Catalogus*, pars **26** :

Wing expanse : 42 mm.

Distribution : India : Sikkim. N. W. Himalayas.

89. *Eilema varana* (Moore)

1865. *Lithosia varana* Moore, *Proc. Zool. Soc. Lond.*, : 797.

1922. *Eilema varana* (Moore) : Strand, *Lep. Catagus*, Pars **26** :

Material examined. 5exs : Sikkim, No other data (Coll *O. Moller*).

Wing expanse : 34 mm.

Distribution : India : Sikkim.

90. *Eilema nigripes* (Hampson)

1900. *Ilema nigripes* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 175–176, Pl. 23, fig. 6.

1998. *Eilema nigripes* (Hampson) : Ghosh & Chaudhury, *State Fauna Series* **4**, Fauna of Maghalaya (6) : 363.

Wing expanse : ♂- 42, ♀- 46 mm.

Distribution : India : Sikkim. Assam and Meghalaya.

91 *Eilema xanthocraspis* (Hampson)

1900. *Ilema xanthocraspis* Hampson, *Cat. Lep. Phal. Brit. Mus* **2** : 169.

1922. *Eilema xanthocraspis* (Hampson) : Strand, *Lep. Catalogus* : pars 26 :

Wing expanse : 32 mm.

Distribution : India : Sikkim.

92. *Eilema fumidisca* (Hampson)

1894. *Lithosia fumidiscea* Hampson. *Fauna Brit. India*, Moths **2** : 80.

1982. *Eilema fumidisca* (Hampson). Arora & Chaudhury, *Tech. Monogr.*, No. **6** : 31-32.

Wing expanse : 24 mm.

Distribution : India : Sikkim. Arunachal Pradesh. *Elsewhere* : Amur, China and Myanmar

93. *Eilema vicaria* (Walker)

1854. *Lithosia vicaria* Walker, *List Lep. Het. Brit. Mus*, *2* : 505.

1998. *Eilema vicaria* (Walker) : Ghosh & Chaudhury, *State Fauna Series* **4**, Fauna of *Meghalaya* (6) : 362.

Wing expanse : 26-34 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam. Meghalaya and West Bengal. *Elsewhere* : Amur, Borneo, China, Durban, Hongkong, Natal, Sarawak and Sri Lanka.

XXVIII Genus *Teluisna* Walker

1862. *Teulisna* Walker, *J. Proc. Linn. Soc. Zool.*, **6** :109.

94. *Teulisna protuberans* (Moore)

1878. *Tegulata protuberans* Moore, *Proc. Zool. Soc. Lond.*, 23, *Pl. 2, fig. 6.*

1997. *Teulisna protuberans* (Moore) : Ghosh & Chaudhury. *State Fauna Series* 3, *Fauna of West Bengal* (7) : 266

Wing expanse : 32 mm.

Distribution : India : Sikkim. West Bengal. *Elsewhere* : Bhutan.

XXIX Genus ***Prabhasa*** Moore

1878. ***Prabhasa*** Moore, *Proc. Zool. Soc. Lond.*, : 25

95. ***Prabhasa venosa*** (Moore)

1878. ***Prabhasa venosa*** Moore, *Proc. Zool. Soc. Lond.*, : 26, Pl. 2, fig. 16.

1997. ***Prabhasa venosa*** Moore : Ghosh & Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 266.

Wing expanse : ♂-30, ♀-34 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Nagaland and West Bengal. ***Elsewhere*** : Bhutan, China and Myanmar.

XXX Genus ***Zadadra*** Moore

1878. ***Zadadra*** Moore *Proc. Zool. Soc. Lond.*, : 6572

96. ***Zadadra distorta*** (Moore)

1872. ***Lithosia distorta*** Moore, *Proc. Zool. Soc. Lond.*, : 572.

1998. ***Zadadra distorta*** (Moore) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Maghalaya* (6) : 361.

Diagnostic characters : Fore wing fuscous grey, the costal area ochreous suffused with fulvous,with a round black spot beyond middle. Hindwing pale yellow and in male a large patch of androconia below the middle portion of costa.

Material examined : 4 exs : Sikkim, No other data (Coll *O. Moller*); 6 exs : Tumin, 1800m, 28 IX. 1988 (Coll. *V. C. Agarwal*); 1exs : Mangaon, 31.V.1994 (Coll. *B. C. Das*).

Wing expanse : 36 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Meghalaya, Nagaland and West Bengal. *Elsewhere* : China and Nepal.

XXXI Genus ***Chrysaeglia*** Butler

1877. ***Chrysaglia*** Butler, *Trans. ent. Soc. Lond.*, : 356.

97. ***Chrysaeglia magnifica*** (Walker)

1862. ***Lithosia magnifica*** Walker, *J. Linn. Soc. Zool.*, **6** : 103.

1900. *Chrysaeglia magnifica* (Walker) : Hampson, *Cat : lep. Phal. Brit. Mus.*, **2** : 185.

Diagnostic Characters : Golden yellow. Palpi with deep metallic green spot at sides. Fore wing with broad green costal fascia on basal area, then narrowing, an oblique patch on basal inner area, a medial band expanding below the cell, a broad terminal band with purple suffussion. Hindwing cilia fuscous towards apex.

Material examinad : 2exs : Sikkim, 1100m., Vi. 1897 (Coll *O. Moller).*

Wing Expanse : 52mm.

Distribution : India : Sikkim. *Elsewhere* : Borneo, Nepal, Sarawak.

XXXII Genus ***Hemonia*** Walker

1863. *Hemonia* Walker, *List Lep. Insects Brit. Mus.*, **28** : 425 462.

98. ***Hemonia orbiferana*** Walker

1863 *Hemonia orbiferana* Walker, *List Lep. Insects. Brit. Mus.*, **28** : 426

1982. *Hemonia orbiferana* Walker, Arora & Chaudhury. *Tech. Monogr.*, no. **6** : 40-41.

Wing expanse : 18 20 mm.

Distribution : India : Sikkim. Arunachal Pradesh. *Elsewhere* : Bhutan, Indonesia, Indochina, Malayasia and Sri Lanka.

XXXIII Genus ***Agrisius*** Walker

1855. *Agrisius* Walker, *List. Lep. Insects. Brit. Mus.*, **3** : 723.

99. ***Agrisius guttivitta*** Walker

1855. *Agrisius guttivitta* Walker *List Lep. Insects Brit. Mus.*, **3** : 723.

1982. *Agrisius guttivitta* Walker : Arora & Chaudhury, *Tech. Monogr, no.* **6** : 44

Diagnostic Characters : Wings whitish, veins in both wings streaked with black in the

apical half, the basal half of the fore wing marked with series of spots.

Material examined : 3exs : Sikkim, No. other data (Coll *O. Moller)*

Wing expanse : 43 mm.

Distribution : India : Sikkim. *Arunachal Pradesh. Elsewhere* : China.

XXXIV. *Genus* ***Agylla*** Walker

1854. *Agylla* Walker, *List Lep. Insects Brit. Mus.*, **2** : 552.

Key to species

1. Antennae of male bipectinate 2
- Antennae of male ciliate 5
2. Fore wing with apical white patch .... *apicalis* (Moore)
- Fore wing without apical white patch 3
3. Fore wing with the costal half yellowish, inner half purplish fuscous ....*divisia* (Moore)
- Fore wing brown 4
4. Hindwing orange yellow with large brown patch on inner area not reaching termen .. ..*beema* (Moore)
- Hindwing wholly orange ....*rufifrons* (Moore)
5. Fore wing silky white, inner area brown ... .*albocinerea* (Moore)
- Fore wing white or pale yellow, inner area not brown 6
6. Tegulae orange.....*prasena* (Moore)
- Tegulae not orange.....7
7. Hindwing pale orange, the terminal area white .....*maculata* (Moore)
- Hindwing not orange, the terminal area not white 8
8. Fore wing with basal half ditry white and the terminal half black brown..... .....*bipars* (Moore)
- Fore wing fully white..... 9
9. Hindwing whitish.....*ramelana* (Moore)
- Hindwing yellowish..... ..... *alboluteola* Rothschild

100. ***Agylla apicalis*** (Moore)

1878. *Sidyma apicalis* Moore, *Proc. Zool. Soc. Lond.*, 9, Pl.1. Fig. 2

1900 *Agylla spicalis* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 193.

Wing expanse : ♂-42 mm– ♀-44mm.

Distribution : India : Sikkim.

101. ***Agylla divisa*** (Moore)

1878. *Hesudra divisa* Moore, *Proc. Zool. Soc. Lond.*, : 18, Pl. 1, fig. 4.

1982. *Agylla divisa* (Moore) : Arora & Chaudhury, *Tech.. Monogr.*, No. **6** : 42.

Material examined : 4 exs: Sikkim, No other data (Coll. *O. Moller*)

Wing expanse : 40 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Manipur. *Elsewhere* : China, Indonesia.

102. ***Agylla beema*** (Moore)

1865. *Lithosia beema* Moore, *Proc. Zool. Soc. Lond.*, : 798.

1900. *Agylla beema* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.* **2** : 197.

Material examined : 2 exs : Sikkim, Yumthung 3830m., 17.VI. 1959, 2 exs : Lachung, 2727m., 6 VII. 1959, 3 exs : Dampong, 2985m., 10. VIi. 1959 (Coll. *A. G. K. Menon*)

Wing expanse : 47-50 mm.

Distribution : India : Sikkim.

103. ***Agylla rufifrons*** (Moore)

1878. *Charinga rufifrons* Moore, *Proc. Zool. Soc. Lond.*, : 10, Pl. 1, fig. 12.

1900. *Agylla rufirons* (Moore) : Hampson, *Cat. Lep.*

Phal. Brit. Mus., **2** : 198.

Wing expanse : ♂-56 mm, ♀-60 mm.

Distribution : India : Sikkim.

104. *Agylla albocinerea* (Moore)

1878. *Ghoria albocinerea* Moore, *Proc. Zool. Soc. Lond.*, : 13, Pl. 1, fig. 10.

1900. *Agylla albocinerea* (Moore) : Hampson, *Cat, Lep. Phal. Brit. Mus.*, **2** : 209-210.

Wing expanse : ♂-36mm, ♀-40mm

Distribution : India : Sikkim.

105. *Agylla prasena* (Moore)

1859. *Tripura prasena* Moore, *Lep. East. India Comp.*, : 299 Pl. 7a, fig. 6.

1900. *Agylla prasena* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 210.

Wing expanse : 52-58 mm.

Distribution : India : Sikkim. Assam, Himachal Pradesh, Nagaland and N. W. Himalaya.

106. *Agylla maculata* (Moore)

1878. *Vamuna maculata* Moore, *Proc. Zool. Soc. Lond.*, : 10.

1997. *Agylla maculata* (Moore) : Ghosh & Chaudhury, *State Fauna Series* 3, *Fauna of West Bengal* (7) : 260.

Material examined : 1ex : Sikkim, No other data (Coll. *O. Moller)* : 1ex : Rabangla, 2010m., 5. X. 1988 (Coll. V. C. *Agarwal*).

Wing expanse : 45 mm

Distribution : India : Sikkim. Arunachal Pradesh, West Bengal. *Eleswhere* : Bhutan.

107. *Agylla bipars* (Moore)

1878. *Vamuna bipars* Moore, *Proc. Zool. Soc. Lond.*, : 10, Pl. 1, fig. 5.

1900. *Agylla bipars* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 211.

Wing expanse : 54 mm

Distribution : India : Sikkim

108. *Agylla ramelana* (Moore)

1865. *Lithosia ramelana* Moore, *Proc. Zool. Soc. Lond.*, : 798.

1998. *Agylla ramelana* (Moore) : Ghosh & Chaudhury, *State Fauna Series 4, Fauna of Meghalaya* (6) : 363-364.

Material examined. : 2 ex : Sikkim, 16.VI.1888 (Coll *O. Moller)*, 6 exs. Rabangla, 2010, 5.X.1988 (Coll *V. C. Agarwal*), 2 exs : Gangtok, Power Guest House, 10.IX.1993 (Coll *S. K. Saha*).

Wing expanse : 32-36 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Maghalaya and West Bengal. *Elswhere* : Indonesia.

*109. *Agylla alboluteola* Rothschild

1912. *Agylla alboluteola* Rothochild : *Novit. Zool.*, **19** : 226.

1982. *Agylla alboluteola* Rothschild : Arora & Chaudhury, *Tech. Monogr., No.* **6** : 43.

Material examinad : 2 exs : Rabangla, 2010., 5.X.1988. (Coll *V. C. Agarwal*).

Wing expense : 42 mm.

Distribution : India : Sikkim. Arunachal Pradesh and Assam. *Elsewhere* : Malayasia.

Remarks : The species is recorded as new to Sikkim.

XXXV Genus *Cyclomilta* Hampson

1900. *Cyclomilta* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 512.

110 *Cyclomilta melanolepia* Hampson

1900. *Cyclomilta melanolepia* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 512.

Wing expanse : 28 mm.

Distribution : India : Sikkim

XXXVI Genus *Cyana* Walker

1854. *Cyana Walker, List Lep. Insects Brit. Mus.* **2** : 528.

Key to species

1. Fore wing in female with vein M_2 and M_3 stalked.....2

– Fore wing in female with vein M_2 and M_3 from cell.....3

2. Fore wing in female with vein M_1 stalked with R_4-R_5, R_3 absent *alborosea* (Walker)

– Fore wing in female with vein M_1 from cell, R_3, arises from R_5 ..... *effracta* (Walker)

3. Fore wing of male with the lobe trifid.....4

– Fore wing of male with the lobe not trifid 7

4. Fore wing with the lines scarlet.....5

– Fore wing with the lines yellow 6

5. Fore wing of male with two discoidal spots conjoined into a bar, female with the postmedial line not bent outwards to costa ..... *signa* (Walker)

– Fore wing of male with two discoidal spots separate, female with the postmedial line bent outwards to costa ..... *adita* (Moore)

6. Hindwing yellow ..... *guttifera* (Walker)

– Hindwing white ..... *molleri* (Elwes)

7. Fore wing with the lobe bifid 8

– Fore wing with the lobe single 15

8. Fore wing with inner part lobe large and elongate, the costal fringe long and strongly developed ..... *perornata* (Walker)

– Forwing with the lobes small and closely attached, the costal fringe much slighter. 9

9. Abdomen with the terminal half of the dorsum crimson ..... *arama* (Moore)

– Abdomen wholly white.....10

10. Fore wing with bands 11

– Fore wing without bands .... *candida* (Felder)

11. Fore wing with black spot at end of cell 12

– Fore wing with fuscous spot at end of cell ..... *detrita* (Walker)

12. Fore wing with subterminal orange band 13

– Fore wing without subterminal band..... ..... *sikkimensis* (Elwes)

13. Fore wing in both sexes with three black spots in cell 14

– Fore wing in male with three and in female with two black spots in cell..... ..... *puer* (Elwes)

14. Fore wing with antemedial and postmedial bands separate ..... *dohertyi* (Elwes)

– Fore wing with antemedial and postmedial bands conjoined below cell. .... *divakara* (Moore)

15. Fore wing with three black spots at end of cell in both sexes 16

– Fore wing with two black spots at end of cell in both sexes 19

16. Fore wing with terminal band not dentate 17

– Fore wing with terminal band dentate . 18

17. Fore wing with orange subterminal band. ..... *bellissima* (Moore)

– Fore wing with scarlet subterminal band. ..... *dudgeoni* Hampson

18. Fore wing with obscure fuscous annuli at end of cell ..... *gelida* (Walker)

– Fore wing without spot at end of cell .... *gazella* (Moore)

19. Fore wing with black edged postmedical band straight..... *coccinea* (Moore)

– Fore wing with black edged postmedical band sinuous ..... *bianca* (Walker)

111. *Cyana alborosea* (Walker)

1864. *Lithosia alborosea* Walker, *List Lep. Insects Brit. Mus.*, **31** : 230

1998. *Cyana alborasea* (Walker) : Ghosh & Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 367.

Material examined. : 1 ex : Sikkim, No other data.

Wing expanse : 26 mm.

Distribution : India : Sikkim. Assam, **Meghalaya**. *Elsewhere* : Bhutan, Hongkong, **Java and** Myanmar.

112 *Cyana effracta* (Walker)

1854. ***Barsine effracta*** (Walker), *List Lep Het. Brit. Mus.*, **2** : 546

1894. *Cyana effracta* (Walker) : Hampson, *Fauna Brit. India, Moths.*, **2** : 57

Wing expanse : 24 mm.

Distribution : India : Sikkim. Elsewhere : **Myanmar** and Nepal.

* 113. *Cyana signa* (Walker)

1854. ***Bizone signa*** Walker, *List. Lep. Het. Brit. Mus.* **2** : 550

1998 *Cyana signa* (Walker) : Ghosh & Chaudhury *State Fauna Series* (4) *Fauna of Meghalaya* (**6**) : 356.

Material examined : 9exs : Sikkim, No other **data, 10.X.1884** (Coll. *O. Moller);* lex : **Dampong**, 2985m., 10.VII.1959 (Coll *A. G. K. Meron*).

Wing expanse : 42 48 mm.

Distribution : India : Sikkim. Assam, Manipur, and Meghalaya. *Elsewhere* : Myanmar, N. Khyel Hills.

Remarks. : The species is recorded as new to Sikkim.

114. *Cyana adita* (Moore)

1854. *Bizone adita* Moore, *Cat. Lep. East India. Camp.*, 306, tab. 7a, fig. 1.

1997. *Cyana adita* (Moore) : Ghosh Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (**7**) : 260-261.

Material examined. : 6 exs : Sikkim, No other data, 17. 30. 111.1888 (Coll. *O. Moller*); **5exs** : Noth Sikkim, Zeema, 2620m., 3 VIII. 1989 (Coll. *S. Chakraborty*); 2 exs : Ranipala, 13 Km. South of Gangtok, 6. IV. 1994 (Coll. *P. H. Roy);* 3 exs : East Sikkim, Tumin, 1800., 20.IX.1988 (Coll. *V. C. Agarwal*).

Wing expanse : 34-40 mm.

Distribution : India : Sikkim. Meghalaya, N. W. Himalaya, West Bengal. *Eleswhere* : Tibet.

115. *Cyana guttifera* (Walker)

1865. *Bizone guttifera* (Walker), *List Lep. Het. Brit. Mus.* 7 : 1779.

1998. *Cyana guttifera* (Walker) : Ghosh & Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* (6) : 366.

Material examined. : 5exs : Sikkim, No other data (Coll. *O. Moller*); lex : East Sikkim, Doragaon, 8 km North of Jadong, 13.111.1994 (Coll *L. K. Ghosh*).

Wing expanse : 32-35 mm.

Distribution : India : Sikkim. Andamans, Assam, Bombay, Himachal Pradesh, Maharashtra and Kerala.

116. *Cyana molleri* (Elwes)

1890. *Bizone molleri, Elwes. Proc. Zool. Soc. Lond.*, : 395.

1894. *Cyana molleri* (Elwes) : Hampson. *Fauna Brit. India, Moths*, **2** : 60

Material examined : lex. Sikkim, No other data (Coll. *O. Moller*).

Wing expanse : 32 mm.

Distribution : India : Sikkim. Assam, Khasis.

Elsewhere : Upper Myanmar.

117. *Cyana perornata* (Walker)

1854. *Bizone perorata* Walker, *List Lep. Insects Brit. Mus.*, **2** : 548.

1894. *Cyana perornata* (Walker) : Hampson, *Fauna Brit. India, Moth.*, **2** : 57-58.

Material examined : 4exs : Sikkim No other data (Coll. *O. Moller).*

Wing expanse : 45 mm.

Distribution : India : Sikkim. Assam. *Elsewhere* : Bangladesh, Borneo, Sarawak.

118. *Cyana arama* (Moore)

1859 *Bizone arama* Moore, *Cat. Lep. East India Camp.*, : 306, *Pl.* 7a, *fig.* 10.

1998. *Cyana arama* (Moore) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 366.

Wing expanse : 50-54 mm.

Distribution : India : Sikkim. Assam, Meghalaya, Nagaland and West Bengal.

119. *Cyana candida* (Felder)

1874. *Chionaema candida* Felder, *Reis. Nov. Pl.* 106, *fig.* 17.

1894. *Cyana candida* (Felder) : Hampson, *Fauna Brit. India. Moths*, **2** : 58.

Wing expanse : 40 mm.

Distribution : India : Sikkim. Dalhousie, Himachal Pradesh and N.W. Himalayas.

120. *Cyana detrita* Walker

1854. *Cyana detrita* Walker, *List Lep. Insects. Brit. Mus.* **2** : 529.

1998. Cyana detrita Walker : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* **(6)** : 367.

Material examined. : lex : Sikkim, No other data (Coll. *O. Moller).*

Wing expanse : 30 mm.

Distribution : India : Sikkim. Assam, Himachal Pradesh, Meghalaya, Nagaland, N. W. Himalayas and Uttar Pradesh.

121. *Cyana sikkimensis* (Elwes)

1890. *Bizone sikkimensis* Elwes, *Proc. Zool. Soc. Lond.*, : 395

1894. *Cyana Sikkimensis* (Elwes) : Hampson, *Fauna Brit. India Moths*, **2.** : 313-314.

Wing expanse : ♂-42 mm, ♀-46 mm.

Distribution : India : Sikkim. Himachal Pradesh and N. W. Himalayas.

122. *Cyana puer* (Elwes)

1890. *Bizone puer* Elwes, *Proc. Zool. Soc. Lond.*, : 392, Pl. 32, fig. 8.

1998. *Cyana puer* (Elwes) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* **(6)** : 365.

Material examined : lex : East Sikkim, Tumin, Panchayet Bhawan, 1470m., 30 IX. 1988. (Coll. *V. C. Agarwal*).

Wing expanse : 42 mm.

Distribution : India : Sikkim. Assam and Meghalaya.

123. *Cyana dohertyi* (Elwes)

1890. *Bizone dohertyi* Elwes, *Proc. Zool. Soc. Lond.*, : 394, Pl. 32, fig. 4.

1998. *Cyana dohertyi* (Elwes) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* **(6)** : 366.

Wing expanse : 34 mm.

Distribution : India : Sikkim. Assam, Meghalaya and N. W. Himalayas.

124. *Cyana divakara* (Moore)

1865. *Bizone divakara* Moore, *Proc. Zool. Soc. Lond.*, : 789, *Pl.* 42, *fig.* 9.

1894 *Cyana divakara* (Moore) : Hampson, *Fauna Brit. India Moths*, **2** : 90.

Material examined : 2exs : Sikkim, Lachung, 2727m., 4. VII. 1959, lex : Dampong, 2985m., 10.VII. 1959 (Coll. *A.G.K. Menon)*

Wing expanse : 48 mm.

Distribution : India : Sikkim.

125. *Cyana bellissima* (Moore)

1878. *Bizone bellissima* Moore, *Proc. Zool. Soc. Lond.*, : 27, Pl. 3, fig. 13.

In Press : *Cyana bellissima* (Moore) : Majumdar, *State Fauna Series Fauna of Manipur.*

Material examined. : lex : Sikkim, No other data (Coll. *O. Moller*).

Wing expanse : 54 mm.

Distribution : India : Sikkim. Manipur, N. W. Himalaya and Uttar Pradesh. *Elsewhere* : Mayanmar.

126. *Cyana dudgeoni* Hampson

1895. *Cyana dudgeoni* Hampson, *Trans. ent. Soc. Lond.*, : 293.

1998. *Cyana dudgeoni* Hampson : Ghosh & Chudhaury, *State Fauna Series* **4**, *Fauna of Meghalaya* **(6)** : 365.

Wing expanse : ♂-20 mm, ♀-34mm.

Distribution : India : Sikkim. Arunachal

Pradesh, Assam and Meghalaya. *Elsewhere* : **Bhutan.**

127. *Cyana gelida* (Walker)

1854. ***Doliche gelida*** Walker, *List Lep. Insects Brit Mus.*, **2** : 529.

1998. ***Cyana gelida*** (Walker) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* **(6)** : 367.

Material examined. : lex : Sikkim, No other data (Coll. *O. Moller*)

Wing expanse : 32 mm.

Distribution : India : Sikkim. Assam, Himachal Pradesh, Meghalaya and N. W. Himalayas..

128. *Cyana gazella* (Moore)

1872. ***Bizone gazella*** (Moore), *Proc. Zool. Soc. Lond.*, : 572, *Pl.* 33. *fig.* 4.

1894. *Cyana gazella* (Moore) : Hampson, *Fauna Brit. India. Moths*, **2** : 61.

Material examined. : lex : Sikkim, No other data (Coll. *O. Moller*).

Wing expanse : 35 mm.

Distribution : India : Sikkim. N. W. Himalayas.

129. *Cyana coccinea* (Moore)

1878. ***Bizone coccinea*** Moore, *Proc. Zool. Soc. Lond.*, : 28, *Pl.* 3, *fig.* 14.

1998. *Cyana coccinea* (Moore) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya.* **(6)** : 365.

Wing expanse : ♂-36 mm, ♀–34-40 mm.

Distribution : India : Sikkim. Andaman and Nagaland. *Elsewhere* : Myanmar.

130. *Cyana bianca* (Walker)

1856. ***Bizone bianca*** Walker, *List Lep. Insects Brit Mus.*, **7** : 1684.

1998. *Cyana bianca* (Walker) : Ghosh & Chaudhury *State Fauna Series* **4**, *Fauna of Meghalaya* **(6)** : 366.

Material examined : 5exs : Sikkim, No other data (Call. *O. Moller*).

Wing expanse : 30-32 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam and Meghalaya. *Elsewhere* : Bangladesh, Bhutan, Malay Peninsula.

XXXVII Genus *Siccia* Walker

1854. *Siccia* Walker, *List Lep. Insects Brit. Mus.* **2** : 539.

Key to species

Antennae of male with very short branches ending to a bristle. Fore wing pale grey with black spot at base of costa, without 'Y' shaped mark ..... taprobanis (Walker)

– Antennae of male ciliated. Fore wing white with a black costal edge towards base, a small 'Y' shaped mark .... sagittifera (Moore)

131. *Siccia taprobanis* (Walker)

1854. *Aemene taprobanis* Walker, *List Lep. Insects Brit Mus.*, **2** : 542.

1998. *Siccia taprobanis* (Walker) : Ghosh & Chaudhury, *State Fauna Series* 4, *Fauna of Meghalaya* **(6)** : 375.

Wing expanse : 24 mm., 30mm.

Distribution : India : Sikkim. Assam, Bombay, Meghalaya, Nagaland and N. W. Himalayas. *Elsewhere* : Malacca and Sri Lanka.

132. *Siccia sagittifera* (Moore)

1888. *Aemene sagittifera* Moore, *Proc. Zool. Soc. Lond.*, : 392.

1900. *Siccia sagittifera* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 392-393, *fig.* 305.

Wing expanse : 18-22 mm.

Distribution : India : Sikkim. Dalhousie, and N. W. Himalayas.

XXXVIII. Genus *Oxacme* Hampson

1894. *Oxacme* Hampson, *Fauna Brit. India, Moths*, 2 : 91.

133. *Oxacme dissimilis* Hampson

1894. *Oxacme dissimilis* Hampson, *Fauna Brit. India. Moths*, **2** : 392.

Wing expanse : 22 mm.

Distribution : India : Sikkim.

XXXIX. Genus *Ovipennis* Hampson

1900. *Ovipennis* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 410..

134. *Ovipennis dudgeoni* (Elwes)

1890. *Nudaria dudgeoni* Elwes, *Proc. Zool. Soc. Lond.*, : 388. *Pl.* 32, *fig.* 10.

1900. *Ovipennis dudgeoni* (Elwes) : Hampson, *Cat Lep. Phal. Brit. Mus.*, **2** : 411.

Wing expanse : 26 mm.

Distribution : India : Sikkim.

XL Genus *Stictane* Hampson

1900. *Stictane* Hampson, *Cat. Lep. Phal. Brit. Mus.* **2.** : 258.

135. *Stictane fractilinea* (Snellen)

1880. *Pitane fractilinea* Senellen, *Veths Midd. Sumatra Lep.*, : 38.

1900. *Stictane fractilinea* (Snellen) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 259.

Wing expanse : 13-18 mm.

Distribution : India : Sikkim. *Elsewhere* : Dickoya, Java, Sri Lanka, Sumatra.

XLI Genus *Asura* Walker

1854. *Asura* Walker, *List Lep. Insects Brit. Mus.*, **2** : 484.

Key to species

1. Antennae of male with moderate branches...2
- Antennae of male with bristle and cilia.....3
2. Fore wing yellow, hindwing yellowish white. Abdomen whitish without marking .... *nubifascia* (Walker)
- Fore wing yellowish white, hindwing with fuscous spot in and below cell. Abdomen with blackish band towards extremity .... *melanoleuca* (Hampson)
3. Fore wing with the cell very narrow..... ..... *dasara* (Moore)
- Fore wing with the cell normal 4
4. Fore wing with very highly and irregularly dentate postmedial line 5
- Fore wing without highly dentate postmedical line 6
5. Fore wing with terminal black point .... *undulosa* (Walker)
- Fore wing without terminal black points .... *obsoleta* (Moore)
6. Fore wing white with brown markings .... *frigida* (Walker)
- Fore wing not white but with brown markings 7
7. Fore wing with postmedial line..... 8
- Fore wing with or without psotmedial line 10
8. Fore wing with medial and postmedial line connected by a streak at upper angle of cell. ..... *euprepioides* (Walker)
- Fore wing with medial and postmedial line not connected by a streak at upper angle of cell 9
9. Fore wing with terminal black line .... *conjunctana* (Walker)
- Fore wing without terminal black line..... ..... *flavivenosa* (Moore)
10. Fore wing with postmedial series of spots, streaks, often conjoined into an irregular band... 11
- Fore wing without postmedial line, streak or spots..... 17
11. Fore wing with medial line 12
- Fore wing without medial line .... *humilis* (Walker)
12. Fore wing with antemedial line or diffused band 13
- Fore wing with antemedial series of well separated points ..... 14.

13. Fore wing with medial line strongly excurved below the costa and than confluent with the antemedial line .... *nebulosa* (Moore)

– Fore wing with medial line more or less straight and oblique 15

14. Fore wing with medial line not excurved below the cell..... ..... *strigipennis* (Herrich-Schaffer)

– Forwing with medial line straight or slightly excurved at middle ..... *arcuata* (Moore)

15. Fore wing with postmedial series of well separated short streaks or points .... *floccosa* (Walker)

– Fore wing with postmedial band composed of short confluent streaks 16

16. Fore wing with postmedial band not confluent with the medial line at innermargin ..... *rubricosa* (Moore)

– Fore wing with postmedial band confluent with the medial line at inner margin .... *congerens* (Felder)

17. Fore wing crimson ..... *anomala* (Elwes)

– Fore wing greyish with crimson streaks at inner margin ..... *rubrimargo* (Hampson)

136. *Asura nubifascia* (Walker)

1864. *Barsine nubifascia* Walker, *List Lep. Het. Brit. Mus.*, **31** : 251.

1900. *Asura nubifascia* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 430.

Material examined. : 4exs : Sikkim, No other data, 1888 (Coll *O. Moller*).

Wing expanse : 38 mm.

Distribution : India : Sikkim. N. W. Himalayas. *Elsewhere* : Tibet and Yatung.

137. *Asura melanoleuca* (Hampson)

1894. *Miltochrista melanoleuca* Hampson, *Fauna Brit. India, Moths*, **2** : 120.

1900. *Asura melanoleuca* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mlus.*, **2** : 430-431, *Pl.* 30, *fig.* 8.

Wing expanse : 36 mm.

Distribution : India : Sikkim.

138. *Asura dasara* (Moore)

1859. *Setina dasara* Moore, *Lep. East India Comp.* : 303.

1998. *Asura dasara* (Moore) : Ghosh & Chaudhury, *State Fauna Series* (4), *Fauna of Meghalaya* (**6**) : 370.

Wing expanse : 26 mm., -30mm.

Distribution : India : Sikkim. Assam, Manipur, Meghalaya, N. W. Himalayas and Tamil Nadu. *Elsewhere* : Java and Sumatra.

139. *Asura undulosa* (Walker)

1854. *Cyllene undulosa* Walker, *List Lep. Insects Brit. Mus.* **2** : 545.

1998. *Asura undulosa* (Walker) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya*, (**6**) : 368.

Material examined. : 4exs : Sikkim, No other data, lex., Thambyak, 3880m., 1.VI.1959 (Coll. *A.G.K. Menon*).

Wing expanse : 26 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Manipur, Meghalaya and West Bengal. *Elsewhere* : Bhutan and Myanmar.

140. *Asura obsoleta* (Moore)

1878. *Lyclene obsoleta* Moore, *Proc. Zool. Soc. Lond.*, : 32, Pl. 3, fig. 7.

1998. *Asura obsoleta* (Moore), Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (**6**) : 368.

Material examined. : Lex; Sikkim, No other data (Coll. *O. Moller*); 8exs :, E. Sikkim, Tumin, 1800m., 28. IX.1988 (Coll *V. C. Agarwal*).

Wing expanse : 20 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Meghalaya, South India and West Bengal. *Elsewhere* : Bhutan and South China.

141. *Asura frigida* (Walker)

1854. *Doliche frigida* Walker, *List Lep. Insects Brit. Mus.*, **2** : 530.

1998. *Asura frigida* (Walker) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya*. (**6**) : 368.

Wing expanse : 20 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam and Meghalaya. *Elsewhere* : Borneo, Java and Malayasia.

142. *Asura euprepioides* (Walker)

1862. *Hypropia euprepioides* Walker, *J. Proc. Linn. Soc. Zool.*, **6** : 102.

1998. *Asura eupripioides* (Walker) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 369.

Material examined. : 2exs : Sikkim, No other data.

Wing expanse : 32 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Meghalaya and Nagaland. *Elsewhere* : Indonesia, Malayasia, and Myanmar.

143. *Asura conjunctana* (Walker)

1866. *Conchylis conjunctana* Walker, *List Lep. Insects Brit. Mus.*, **35** : 1788.

1998. *Asura conjunctana* (Walker) : Ghosh & Chaudhury, *State Fauna Series*, **4**, *Fauna of Meghalaya* (6) : 369.

Wing expanse : 20 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Meghalaya, Nagaland, West Bengal. *Elsewhere* : Bhutan.

144. *Asura flavivenosa* (Moore)

1878. *Barsine flavivenosa* Moore, *Proc. Zool. Soc. Lond.*, : 30, Pl. 3, fig. 18.

1900. *Asura flavivenosa* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 448.

Wing expanse : ♂-18 mm, ♀-24 mm.

Distribution : India : Sikkim. *Elsewhere* : Bhutan.

145. *Asura humilis* (Walker)

1859. *Cyllene humilis* Walker, *List Lep. Het. Brit. Mus.*, **2** : 544.

1900. *Asura humilis* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.* **2** : 458.

Wing expanse : 22 mm.

Distribution : India : Sikkim. *Elsewhere* : Myanmar.

146. *Asura nebulosa* (Moore)

1878. *Setina nebulosa* Moore, *Proc. Zool. Soc. Lond.*, : 35.

1998. *Asura nebulosa* (Moore) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 369.

Wing expanse : 34 mm.

Distribution : India : Sikkim. Maghalaya.

147. *Asura strigipennis* (Herrich-Schaffer)

1855. *Paidia strigipennis* Herrich-Schaffer, *Ausserens. Schemett.*, : 21, Pl. 437.

1998. *Asura strigipennis* (Herrich-Schaffer) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 368-369.

Material examined. : 6exs, N. Sikkim, Lachen, 2706m., 7. VI. 1959 (Coll. *A. G. K. Menon).*

Wing expanse : 30 mm.

Distribution : India : Sikkim.Arunachal Pradesh, Assam, Manipur, Maghalaya and West Bengal. *Elsewhere* : Bhutan, China, Indonesia and Myanmar.

* 148. *Asura arcuata* (Moore)

1882. *Lyclene arcuata* Moore, *Lep. Ceyl.*, **2** : 62, Pl. 103, fig. 5.

1900. *Asura arcuata* (Moore) : Hampson, *Cat. Lep.Phal. Brit. Mus.*, **2** : 457.

Material examined. : 11exs., Sikkim, No other data (Coll *O. Moller*).

Wing expanse : 22-27 mm.

Distribution : India : Sikkim.Nilgiris. *Elsewhere* : Sri Lanka.

Remarks. : The species is recorded as new to Sikkim.

149. *Asura floccosa* (Walker)

1864. *Nudaria floccosa* Walker, *List Lep. Het. Brit. Mus.*, **31** : 274.

1900. *Asura floccosa* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 454. Pl. 31, fig. 13.

Wing expanse : ♂-20 mm., ♀-22 mm.

Distribution : India : Sikkim. Bihar, Chennai and West Bengal. *Elsewhere* : Sri Lanka.

150. *Asura rubricosa* (Moore)

1878. *Lyclene rubricosa* Moore, *Proc. Zool. Soc. Lond.*, : 30, Pl.3. fig. 1.

1900. *Asura rubricosa* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 453.

Wing expanse : 22 26 mm.

Distribution : India : Sikkim. Himachal Pradesh, Kashmir, Mumbai, and Tamil Nadu.

151. *Asura congerens* (Felder)

1878. *Cymella congerens* Felder. *Reis. Nov., Pl.* 106, *fig.* 14.

1997. *Asura congernes.* (Felder) : Ghosh & Chaudhury, *State Fauna Series* **3**, *Fauna of West Bengal* (7) : 262-263.

Wing expanse : 20 26 mm.

Distribution : India : Sikkim. N. W. Himalayas and West Bengal.

152. *Asura anomala* (Elwes)

1890. *Lithosia anomala* Elwes, *Proc. Zool. Soc. Lond.*, : 388, *Pl.* 32. *fig.* 14.

1900. Asura anomala (Elwes) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 463.

Wing expanse : 26 mm.

Distribution : India : Sikkim.

153. *Asura rubrimargo* (Hampson)

1894. *Idopterum rubrimargo* Hampson, *Fauna Brit. India, Moths*, **2** : 104.

1900. *Asura rubrimargo* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 403.

Wing expanse : 28 mm

Distribution : India : Sikkim.

XLII Genus *Asuridia* Hampson

1900. *Asuridia* Hampson. *Cat. Lep. Phal. Brit. Mus.* **2** : 412.

154. *Asuridia metaphaea* Hampson

1900. *Asuridia metaphaea* Hampson. *Cat. Lep. Phal. Brit. Mus.*, **2** : 413.

1998. *Asruidia metaphaea* Hampson : Ghosh & Chaudhury, *State Fauna Series* **4**. *Fauna of Meghalaya.* (6) : 370.

Wing expanse : 28 mm.

Distribution : India : Sikkim. Meghalaya.

XLIII Genus **Parasiccia** Hampson,

1900. *Parasiccia* Hampson, *Cat. Lep. Phal. Brit. Mus.* **2** : 407.

155. *Parasiccia maculifascia* (Moore)

1878. *Aemene maculifacia* Moore. *Proc. Zool. Soc. Lond.*, : 33, *Pl.* 3, *fig.* 10.

1900. *Parasiccia maculifascia* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 408-409.

Wing expanse : 30 mm.

Distribution : India : Sikkim.

XLIV Genus *Miltochrista* Huebner

1816. Miltochrista Huebner. *Verz. bek.Schmett.*, : 166.

Key to species

1. Antennae of male serrated with long bristle and fascicles of cilia .... *flavicollis* (Moore)
– Antennae of male with moderate bristle and cilia ..... 2.
2. Fore wing cilia blackish.....3
– Fore wing cilia not blackish.....8
3. Fore wing cilia black near middle only .... *cardinalis* Hampson
– Fore wing cilia wholly black 4
4. Hindwing black with yellow fascia on basal half of costa ..... *postnigra* Hampson
– Hindwing yellow or crimson.....5
5. Hindwing with terminal fuscous band.. .... *punicea* (Moore)

– Hindwing without terminal fuscous band, the veins on terminal area often streaked with black. 6

6. Fore wing with medial line strongly angled in words in submedian fold .... *cuneonotata* (Walker)

– Fore wing with medial line not angled inwards in submedian fold 7

7. Fore wing suffused with crimson .... *cruciata* (Walker)

– Fore wing yellow with crimson streaks in the interspaces ..... *inflexa* (Moore)

8. Fore wing fuscous with yellow spots .... *roseata* (Walker)

– Fore wing not fuscous 9

9. Fore wing with crimson streaks in the interspaces .... *gratiosa* (Guerin & Menev.)

– Fore wing without crimson streak 10

10 Fore wing with the veins on terminal area streaked with black 11

– Fore wing with the veins on terminal area not streaked with black 14

11. Fore wing with subbasal series of spots 12

– Fore wing without subbasal series of spots ..... *linga* (Moore)

12. Fore wing white..... *eccentropis* Meyrick

– Fore wing not white 13

13. Fore wing with medial series of spots .... *radians* (Moore)

– Fore wing with continuous medial line .... *delicata* (Moore)

14. Fore wing with medial line .... *proleuca* Hampson

– Fore wing without medial line 15

15. Fore wing with postmedial series of points.. 16

– Fore wing without series of points .... *perpallida* Hampson

16. Patagia and base of fore wing with black spots ..... *spilosomoides* Moore

– Patagia and base of fore wing without black spot ..... *magna* Hampson

156. ***Miltochrista flavicollis*** (Moore)

1878. *Mithuna flavicollis* Moore, *Proc. Zool. Soc. Lond.*, : 11, Pl. i, fig. 3.

1900. Miltochrista flavicollis (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 474.

Wing expanse : 36 mm.

Distribution : India : Sikkim.

157. ***Miltochrista cardinalis*** Hampson

1900. *Miltochrista cardinalis* Hampson. *Cat. Lep. Phal. Brit. Mus.*, **2** : 480, Pl. 32, fig. 8.

1998. *Miltochrista cardinalis* Hampson : Ghosh & Chaudhury, *State Fauna Series* (4), *Fauna of Meghalaya* (6) : 374-375.

Material examined. : lex : Tumin, 1800m., 28.IX.1988. (Coll. *V. C. Agarwal*).

Wing expanse : 22 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam and Meghalaya.

158. ***Miltochrista postnigra*** Hampson.

1894. *Miltochrista postnigra* Hampson, *Fauna Brit. India* Moths, **2** : 118.

1900. *Miltochrista postnigra* Hampson : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 480, Pl. 32, fig. 10.

Wing expanse : 18 mm.

Distribution : India : Sikkim.

159. ***Miltochrista punicea*** (Moore)

1878. *Barsine punicea* Moore, *Proc. Zool. Soc. Lond.*, : 29.

1982. *Miltochrista punicea* (Moore) : Arora & Chaudhary, *Tech. Monogr., no.* **6** : 54.

Wing expanse : 26 mm.

Distribution : India : Sikkim. Arunachal Pradesh and Assam. *Elsewhere* : Bhutan and Myanmar.

160. *Miltochrista cuneonotata* (Walker)

1855. *Ammatho cuneonotata* Walker, *List Lep. Insects Brit. Mus.*, **3** : 759.

1998. *Miltochrista cuneonotata* (Walker) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* **(6)** : 372.

Material examined. : 2exs., Sikkim, No other data (Coll. *O. Moller*), lex., Sikkim, Chungtang, 1550m., 30.VI.1959. (Coll. *A.G.K.Menon*), 2exs., Tumin, 1800m. 23.IX.1988. (Coll.*V.C. Agarwal*)

Wing expanse : 30 mm

Distribution : India : Sikkim. Arunachal Pradesh, Assam and Nagalnd. *Elsewhere* : Indonesia, Malayasia, the Phllipines and Sri Lanka.

161. *Miltochrista cruciata* (Walker)

1862. *Hypoprepia cruciata* Walker, *J. Proc. Linn. Soc. Zool.* **6** :101.

1998. *Miltochrista cruciata* (Walker) : Ghosh & Chaudhury, *State Fauna* series **4**, *Fauna of Meghalaya* **(6)** : 372.

Material examined. : 2exs., Sikkim, No other data (Coll. *O. Moller*).

Wing expanse : 30 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Manipur and Meghalaya. *Elsewhere* : Indonesia and Malayasia.

162. *Miltochrista inflexa* (Moore)

1878. *Barsine inflexa* Moore, *Proc. Zool. Soc. Lond.* : 29, pl.3, fig. 17.

1998. *Miltochrista inflexa* (Moore) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* **(6)** : 374.

Material examined. : lex., Sikkim, Lachung, 2727m., 5.IV.1995, lex., Thombyak, 3879m., I.VI.1959 (Coll. *A. G. K. Menon) ;* 2exs., Tumin, 1800m., 25.IX.1988, lex., Rubangla, 2010m., 5.X.1988 (Coll. *V. C. Agarwal).*

Wing expanse : 30 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Assam, Meghalaya and West Bengal.

163. *Miltochrista roseata* (Walker)

1864. *Castabala roseata* Walker, *List Lep. Insects Brit. Mus.*, **31** : 217.

1900. *Miltochrista roseata* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.* **2** : 487.

Wing expanse : ♂-52 mm., ♀-56 mm.

Distribution : India : Sikkim.

164. *Miltochrista gratiosa* (Guerin & Meneville)

1843. *Euchelia gratiosa* Guerein & Meneville, In *Deless. Souvo. Inde.* **2** : 90, Pl. 25, fig. 1.

1998. *Miltochrista gratiosa* (Guerin & Meneville) : Ghosh & Chaudhury, *State Fauna Series* **4**, Fauna of Meghalaya **(6)** : 374.

Material examined. : 6exs., Tumin, 1800m., 28. IX.1988. (Coll. *V. C. Agurwal).*

Wing expanse : 38 mm.

Distribution : India : Sikkim. Andamans, Arunachal Pradesh, Assam, Meghalaya and West Bengal. *Elsewhere* : Bhutan, China, Eastern Asia, Indonessia, Japan, Myanmar and Sri Lanka.

165. *Miltochrista linga* (Moore)

1859. *Barsine linga* Moore, *Lep. East India Comp.*, 301.

1900. *Miltochrista linga* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 439, Pl. 32, fig. 21.

Material examined. : 2exs., Sikkim, No other data, (Coll. *O. Moller*).

Wing expanse : 44 mm.

Distribution : India : Sikkim. N. W. Himalayas.

*166. *Miltochrista, eccentropis* Meyrick

1894. *Miltochrista eccentropis* Meyrick, *Trans. ent. Soc. Lond.*, : 3.

1998. *Miltochrista eccentropis* Meyrick : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya.* **(6)** : 373.

Material examined. : 3exs., Sikkim. 29.IX.1888 (Coll. *O. Moller*), lex., E. Sikkim, Rongpo, 23.IX.1993. (Coll. *S. K. Saha*).

Wing expanse : 22 mm.

Distribution : India : Sikkim. Assam, and Meghalaya. *Elsewhere* : Myanmar.

Remarks : The species is recorded as new to Sikkim.

167. ***Miltochrista radians*** (Moore)

1878. *Lyclene radians* Moore, *Proc. Zool. Soc. Lond.*, : 30, Pl. 3., fig. 2.

1998. *Miltochrista radians* (Moore) : Ghosh & Chaudhury. *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 373.

Wing expanse : 22 mm.

Distribution : India : Sikkim. Assam, Meghalaya and West Bengal.

168. ***Miltochrista delicata*** (Moore)

1878. *Lyclene delicata* Moore, *Proc. Zool. Soc. Lond.*, : 31.

1900. *Miltochrista delicata* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, : **2** : 492, Pl. 32, fig. 19.

Wing expanse : 30 mm.

Distribution : India : Sikkim.

169. ***Miltochrista proleuca*** Hampson.

1900. *Miltochrista proleuca* Hampson, *Cat. Lep. Phal. Brit. Mus.* **2** : 494, Pl. 32, fig. 28.

Wing expanse : 24 mm.

Distribution : India : Sikkim.

170. ***Miltochrista spilosomoides*** (Moore)

1878. *Lyclene spilosomoides* Moore, *Proc. Zool. Soc. Lond.*, : 33.

1998 *Miltochrista spilosomoides* (Moore) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* **(6)** : 373.

Wing expanse : ♂-44 mm, ♀-50mm.

Distribution : India : Sikkim. Assam, Meghalaya and N. W. India.

*171. ***Miltochrista magna*** Hampson.

1894. *Miltochrista magna* Hampson, *Fauna Brit. India*, Moths, **2** : 112.

1998. *Miltochrista magna* Hampson : Ghosh & Chaudhury, *State Fauna Serise* **4**, *Fauna of Meghalaya* **(6)** : 373.

Material examined. : 2exs. Tumin, 1800, 28.IX. 1988. (Coll. *V. C. Agarwal.)*

Wing expanse : 45 mm.

Distribution : India : Sikkim. Arunachal Pradesh, Manipur and Meghalaya. *Elsewhere* : Myanmar.

Remarks : The species is recorded as new to Sikkim.

172. ***Miltochrista perpallida*** (Hampson)

1878. *Korawa perpallida* Moore, *Proc. Zool. Soc. Lond.*, : 12.

1900. *Miltochrista perpallida* (Hampson) Hampson, *Cat. Lep. Phal. Brit. Mus.* **2** : 495, Pl. 32, fig. 22.

Wing expanse : ♂-40 mm, ♀-54 mm.

Distribution : India : Sikkim.

XLV Genus ***Hemispilia*** Hampson

1900. *Hemispilia* Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 532.

173. ***Hemispilia coa-vestis*** (Hampson)

1894. *Nudaria coa-vestis* Hampson, *Fauna Brit. India, Moths*, **2** : 124.

1900. *Hemispilia coa-vestis* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 532.

Wing expanse : 20 mm.

Distribution : India : Sikkim.

XLVI Genus *Nudaria* Hawarth

1803. *Nudaria* Hawarth, *Lep. Brit.*, : 156.

Key to species

1. Fore wing with dark wedge shaped patch above tornus ..... *fumidisca* Hampson
- Fore wing without dark wedge shaped patch above tornus 2
2. Fore wing with postmedial line 3
- Forwing without post medial line .... *suffusa* Hampson
3. Forwing with postmedial line oblique from median nervure to inner margin ....*fasciata* Moore
- Forwing with postmedial line bent outwards to inner margin..... *margaritacea* Walker

174. *Nudaria fumidisca* Hampson

1896. *Nudaria fumidisca* Hampson. *Fauna Brit. India*, Moths, **4** : 502.

1998. *Nudaria fumidisca* Hampson : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 380.

Wing expanse : 18-20 mm.

Distribution : India : Sikkim. Assam and Meghalaya.

175. *Nudaria suffusa* Hampson

1894. *Nudaria suffusa* Hampson, *Fauna Brit. India*, Motls, **2** : 123.

1998. *Nudaria suffusa* Hampson : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 380.

Wing expanse : 18-20 mm.

Distribution : India : Sikkim. Assam and Meghalaya.

176. *Nudaria fasciata* (Moore)

1878. *Nudaria fasciata* Moore, *Proc. Zool. Soc. Lond.*, : 36.

1900. *Nudaria fasciata* Moore : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** 534-535 Pl.. 34, fig. 23.

Wing expanse : 24 26 mm.

Distribution : India : Sikkim. Assam, Meghalaya. *Elsewhere* : Tibet and Yatung.

177. *Nudaria margaritacea* Walker

1864. *Nudaria margaritacea* Walker, *List Lep. Insects Brit. Mus.*, **3** : 275

1900. *Nudaria margaritacea* Walker : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 535.

Wing expanse : 22-26mm.

Distribution : India : Sikkim. *Elsewhere* : Tibet and Yatung.

XLVII Genus *Stigmatophora Staudirger*

1881. *Stigmataphora* Staudinger, *Stett. ent. zeit.*, **62** : 399.

* 178. *Stigmatophora palmata* (Moore)

1878. *Lyclene palmata* Moore, *Proc. zool. soc. Lond.*, : 34, pl.3, fig. 5.

1998. *Stigmatophora palmata* (Moore) : Ghosh & Choudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 371.

Diagnostic characters : Thorax : mesothorax with a pair of black spots; tibia; fore tibiae banded with black; fore wing : costa and termen rather deeper yellow, a blue black spot at base of costa and a subbasal spot on median nervure, an antemedial series of three spots, a medial series of three strigae, two purplish streak on end of cell; hindwing : with three subterminal short streaks below apex followed by four and five spots.

Material examined : lex., N. Sikkim, Lachem, 2727m., 6.vi. 1959 (Coll. *A.G.K. Menon*).

Wing expanse : 35mm.

Distribution : India : Sikkim. Assam, Meghalaya and N.W. Himalayas.

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

Subfamily MICRACTINAE

Key to genera

Palpi porrect. Antennae of male serrate. Tibiae with minute spurs. Hindwing with a fold on inner margin containing a glandular patch near base and with a tuft of long hair beyond it ..... *Argina* Huebner.

– Palpi upturned. Antennae of male ciliated. Tibiae with normal spurs. Hindwing normal ..... *Utetheisa* Huebner.

XLVIII Genus ***Argina*** Huebner

1816. *Argina* Huebner, *Verz. bek. Schmett.*, : 167.

Key to species

1. Head, thorax and fore wing scarlet or brownish red ..... *argus* (Kollar)

– Head, thorax and fore wing not scarlet or brownish ..... 2.

2. Head, thorax and fore wing pale pinkish brown, abdomen and hindwing crimson .... *syringa* (Cramer).

– Head, thorax and fore wing orange yellow or whitish, abdomen and hindwing bright orange ..... *astrea* (Drury).

179. ***Argina argus*** (Kollar)

1844. *Euprepia argus* Kollar, *in Hugel's Kashmir und das Reich der siek.*, **4** : 467, pl. 21, fig. 3.

1998. *Argina argus* (Kollar) : Ghosh & Choudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 382.

Material examined : 4exs., Sikkim, 550m., vii. 1893, ix. 1893 (Coll. G. C. Dudgeon), 4exs., Sikkim, No other data.

Wing expanse : 35-38mm.

Distribution : Throughout India including Sikkim. *Elsewhere* : Eastern Asia, Mayanmar and Sri Lanka.

180. ***Argina syringa*** (Cramer)

1775. *Phalaena syringa* Cramer, *Pap. Exot.*, **1** ., pl.5, fig c.

1894. *Argina syringa* (Cramer) : Hampson, *Fauna Brit. India, Moths*, **2** : 51.

Material examined : lex., Sikim, No other data.

Wing expanse : 59mm.

Distribution : Throughout India including Sikkim. *Elsewhere* : Australia and Sri Lanka.

181. ***Argina astrea*** (Drury)

1773. *Phalaena astrea* Drury, *Illust. Nat. Hist. exot. Insects*, **2** : 11, pl.6, fig.3.

1998. *Argina astrea* (Drury) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 382.

Material examined : lex., Sikkim, 550m., viii.1897 (Coll. *G.C. Dudgeon).*

Wing expanse : 42 mm.

Distribution : Throughout India including Sikkim. *Elsewhere* : China, Mauritius, New Guinea, the Phillippines, Samon Is.Land, Sri Lanka.

XLIX Genus ***Utetheisa*** Huebner

1816. *Utetheisa* Huebner, *Verz. bek. Schmett.*, : 168.

182. ***Utelheisa pulchella*** (Linnaeus)

1758. *Tinea pulchella* Linnaeus, Syst. Nat., **1** : 534

1998. *Uteltheisa pulchella* (Linnaeus) : Ghosh & Chaudhury, *State Fauna Series* **4**, *Fauna of Meghalaya* (6) : 382-383

Diagnostic Characters : Fore wing : white with five interrupted scarlet band and with series of black spots between them, and marginal series of black spots., hind wing: semidiaphanous

white, a very irregular black submarginal band at apical area and between veins cu_{1a} and 2A.

Material examined : 5exs, Sikkim, No other data.

Wing expanse : 30mm.

Distribution : Throughout India including Sikkim. *Elsewhere* : Africa, Australia, Europe, Malay Archipelago, New Guinea, Pacific group, the Phillippines and Sri Lanka.

ACKNOWLEDGEMENT

The author is indebted to the Director, Zoological Survey of India, Calcutta, for permission to work out the collection from Sikkim and to Dr. S.K. Mitra SC 'SF' (Retd.) for providing vearious facilities. Thanks are also due to Sri I.J. Gupta, O/c Lepidoptera section for all kinds of help and reviewing the manuscript.

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INSECTA : LEPIDOTTERA : HETEROCERA : GEOMETRIDAE

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INTRODUCTION

Sikkim is situated on inner range of Himalayas approximately between 27°-28°N and 88°-89°E. The state is predominantly rural, moutainous with a little plain valleys and picturesque.

Valuable timbers grown in the dense forest in the south. Fern, Sal and Bamboos are grown below 2250 m. other plants are oak, chestnut, fur, maple etc. are grown between 2250-5000 m. More than 30 varities of rhododendron, 4000 varities of flowers and 700 varities of orchids are found in the state. The states has only 12 per cent of cultivated land (Bhatt, 1998).

Lepidoptera, one of the orders of Insecta, fall within Endopterygota, Holometabola. It passes through a complex metamorphosis i.e. egg, larva (caterpilar), crysalis (pupa) and imago (adult).

Moths can be easily differentiated from butterflies by their antennae and wing coupling apparatus. The antennae of moths may be ciliate, fasciculate or pectinate etc. in most of the moths wing coupling is by frenulum and in a very small number of species it is jugate or wing coupling is amplexiform but antennae are complex, moths, in general, night visitors, at repose moths spread their wings whereas butterflies have simple antennae clubbed at apex, wings coupling are amplexiform, they are day fliers and at repose they keep their wings erect.

The Geometridae is one of the largest families of the order Lepidoptera. It includes 21,144 species in the world fauna (Holloway, 1997). they are distributed throughtout the world, where vegetations available, even some of the species are found in arctic region.

These moths are commonly called 'Carpets', 'Pugs' 'Waves' 'Emereld' etc. and larvae are called loopers.

The family Geometridae is characterised by its cylinder build, fore wing with second median (M_2) nearer the first (M_1) than the third (M_3) at the origin, hind wing with a precostal spur at the extreme base and abdomen with antero-ventral tympanal organs. Both proboscis and frenulum are present in most of the species. In many species hind tibia is dilated and with a hair pencil. For more details of morphological features, habits etc. refer to Mondal and Ghosh (1997,1998).

Sexual dimorphism is noticed in some species of Geometrid moths. Males have bipectinate antenna, hind tibia dilated, frenulum is single bristle, thicker, some times with fovea, fascia more prominent, where as females posses simple or smaller pectination, hind tibia not dilated, frenulum composed of bundle of thinner bristles, fovea absent in female, in size comparatively bigger, fascia less prominent. In Holarctic regions, in cold countries, during winter some of the females are wingless, called winter moth.

They are weak flier and diurno-nocturnal habits. Wings are wholly extended pressed out flat against the object on which they rest, often mistaken for a spot or scar. Fascia of Wings look continuous on both the wings when at rest. They can be readily differentiated from

Pyralidae by their glossy wings, longer legs and sitting posture.

The egg is generally flat. Two or three pairs of ventral prolegs of larva are reduced or absent. The larva of most species prefers leaves of trees or shrubs as food than low vegetation. They change colour with the host plant. Some groups pass their larval stages in seed or buds. For defence many larvae produce green secration from the mouth parts. They puppate under or on the surface of the ground or in leaves of the food plant. Certain Larentiinae from Hawii are carnivorus, catching files and other active prey. The Geomatridae of a few genera from S.E. Asia are attracted to saline secretions around the eyes of larger mammals, and to sweat and some even reported sucking blood (Burlow, 1982).

Collection of the Geometridae is very easy for the experienced worker with trained eye. They are attracted to light and sit on the wall.

For collection a 200 W lighted bulb is placed outside the room close to wall to attract specimens. The specimens picked up from the wall are dropped in killing bottle. For temporary storage specimens after killing are placed in paper packets which should be dried in sun.

Specimens are pinned after proper relaxation to make them ready for study.

During dark nights more specimens are attracted to light and sometimes it is observed that specimens are drifted by high velocity of wind. Often specimens take shelter in shadow on rocks and foliage. They are weak fliers and when disturbed, settle to nearby suitable spot after short flight.

Through the available collection data for preserved specimens and field trips suitable period for the collection ranges from May to October with peak period in July. Mostly specimens are collected between 7 to 10 pm and 3 to 4 am. Occasionally a large number of specimens of *Abraxaphantes perampla* (Swinhoe) were collected during day time in the forest canopy in Manipur.

The Geometridae comprises of 525 species under 182 genera belonging to five subfamilies from the state.

The material studied contain 580 exs. belonging to 265 species which represent a little over 50% of the total Geometrid fauna from the state. Most studied metarials is old, the faunal resources should be legally protected in their natural habitats of the country.

Besides the catalogue of Swinhoe (1900), the pioneering work from Sikkim is after Warren (1893) and Hampson (1895-96).

The present work is an attempt to provide a consolidated account of Geometridae from Sikkim along with generic and specific distribution and keys to subfamilies, genera and species studied.

Out of 525 species 43 are endemic to Sikkim and 70 are distributed within N. E. India, 73 in North India and 83 throught India. These include species, viz. *Electrophaes aliena* (Butler), *Loxaspilates unidiluta* Inoue and *Opisthograptis rumiformis* (Hampson) reported for the first time from India (Sikkim). It may be mentioned that Butler (1886), Cotes and Swinhoe (1887-88) and Moore (1888) have reported a few species from Darjiling then includes as part of Sikkim which were reported from Sikkim by Hampson (1885-86) omitting Darjiling.

In old collection locality was mentioned as 'Sikkim' only but in recent collections district-wise data is given. Wing measurement is from the apex of fore wing to the base of the wing where it meets the thorax. The classification followed is after Hampson (1895-96), Prout (1912, '13, '14, '15, '34 and '35) along with modification by Inoue (1982-87).

Subfamily wise diversity of Geometridae from Sikkim relation to India, Oriental and World fauna is summarised below after (Hollow, 1997)

	Sikkim	India	Oriental	World
Oenochrominae	19	29	136	610
Larentiinae	112	241	1,042	5,749
Sterrhinae	94	124	543	2,763
Geometrinae	27	129	584	2,296
Ennominae	273	577	1,846	9,710
Total	**525**	**1,100**	**4,151**	**21,128**

Following is state-wise distribution of Geometrid fauna in N. E. India.

Sikkim	525
Assam	29
Meghalaya	460
Negaland	98
Manipur	18
Tripura	07
W.Bengal (Darjiling)	260

Larentiinae is predominent over other groups of Geometridae with the increase in latitude, in the tropics similar trends is observed with increase in altitude (Holloway, 1997).

SYSTEMATIC ACCOUNT

Class	INSECTA
Order	LEPIDOPTERA
Suborder	HETEROCERA
Superfamily	GEOMETROIDEA
Family	GEOMETRIDAE
Subfamily	OENOCHROMINAE

1. Genus ***Sarcinodes*** Guenèe

1. *carnearia* Guenèe
2. *aequilinearia* (Walker)
3. *debitaria* (Walker)
4. *restitutaria* (Walker)

2. Genus ***Palaeomystis*** Warren

5. *falcataria* (Moore)

*3 Genus ***Doratoptera*** Hampson

6. *nicevillei* Hampson

4. Genus ***Eumelia*** Duncan

7. *aureliata* Guenee
8. *florinata* Guenee
9. *rosalia* (Cramer)
*10. *vulpenaria* Stoll

5. Genus ***Derambila*** Walker

11. *lumenaria* (Geyer)
12. *satelliata* Walker

6. Genus ***Noreia*** Walker

13. *pardensata* Walker

7. Genus ***Conolophia*** Warren

14. *helicola* (Swinhoe)

8. Genus ***Nexa*** Walker

15. *textilis* Walker

9. Genus ***Ozola*** Walker

16. *impedita* (Walker)
17. *microniaria* Walker
18. *picaria* (Swinhoe)

10. Genus ***Celerena*** Walker

19. *divisa* Walker

11. Genus ***Archaeobalbis*** Prout

20. *subtepens* Walker
*21. *cristata* (Warren)
*22. *usneata* (Felder)

12. Genus ***Actenochroma*** Warren

23. *muscicoloraria* (Walker)

13. Genus ***Ebipristis*** Meyrick

24. *mininaria* (Guenèe)

14. Genus ***Pingasa*** Moore

25. *chlora* (Stoll)
26. *ruginaria* (Guenèe)
*27. *lariaria* (Walker)
*28. *venusta* Warren

15. Genus ***Terpna*** Herrich-Schaffer

*29. *crocina* (Butler)
*30. *haemataria* Herr.-Sch.
*31. *leopardinata* (Moore)
*32. *molleri* (Warren)
33. *similis* (Moore)
*34. *subornata* Warren
35. *vigens* Butler

16. Genus ***Dindica*** Moore

36. *polyphaenaria* (Guenèe)

17. Genus ***Sphagnodela*** Warren

37. *lucida* Warren

18. Genus ***Dysphania*** Hübner

38. *bellona* (walker)
*39. *militaris* (Linnaeus)

19. Genus ***Agathia*** Guenèe

40. *arcuta* Moore
*41. *gigantea* Butler

*42. *lycaenaria* (Kollar)

*20. Genus ***Helicopage*** Warren

43. *hirudinalis* Warner

21. Genus ***Chlorodontopera*** Warren

44. *chalybeata* (Moore)

45. *discospilata* (Moore)

22. Genus ***Tanaorhinus*** Butler

46. *rafflesii* (Moore)

*47. *reciprocata* (Walker)

48. *vittata* (Moore)

*23.Genus ***Chlorozancla*** Prout

49. *falcatus* (Hampson)

*24. Genus ***Hipparchus*** Leach

50. *smargadus* (Butler)

51. *vallata* (Butler)

25. Genus ***Iotaphora*** Warren

52. *iridicolor* (Butler)

26. Genus ***Ornithospila*** Warrren

53. *avicularia* (Guenèe)

*54. *lineata* (Moore)

27. Genus ***Anisozyga*** Prout

55. *gavissima* (walker)

28. Genus ***Opisthotia*** Warren

56. *tumidilinea* (Moore)

*29. Genus ***Osteosema*** Warren

57. *sanguilineata* (Moore)

30. Genus ***Rhomborista*** Warren

58. *devaxata* (Walker)

*31. Genus ***Comibaena*** Hübner

59. *albimarginata* (Warren)

60. *delineata* (Warren)

32. Genus ***Thalassodes*** Guenèe

*61. *curiosa* Swinhoe

62. *quadraria* Guenèe

33. Genus ***Jodis*** Hübner

63. *caudularia* (Guenèe)

34. Genus ***Berta*** Walker

64. *chrysolineata* Walker

*65. *acte* (Swinhoe)

35. Genus ***Gelasma*** Warren

66. *goniaria* (Felder)

*67. *glaucaria* (Walker)

68. *griseoviridis* Warren

69. *inaptaria* (Walker)

36. Genus ***Spaniocentra*** Prout

70. *pannosa* (Moore)

37. Genus ***Oenospila*** Swinhoe

71. *flavifusata* (Walker)

*72. *strix* (Butler)

38. Genus ***Maxates*** Moore

73. *coelataria* (Walker)

*74. *macariata* (Walker)

39. Genus ***Paramaxates*** Warren

75. *polygrapharia* (Walker)

*76. *vegata* (Walker)

40. Genus ***Omphacodes*** Warren

77. *directa* (Walker)

41. Genus ***Episothalma*** Swinhoe

78. *robustaria* (Guenèe)

42. Genus ***Hemithea*** Duponchel

*79. *distinctaria* (Walker)

*80. *rubripicta* (Warren)

81. *tritonaria* (Walker)

43. Genus ***Cyclothea*** Prout

82. *disjuncta* (Walker)

44. Genus ***Hemistola*** Warren

83. *detracta* (walker)

*84. *dispartita* (Walker)

*85. rubrimargo Warren

45. Genus ***Comostola*** Meyrick

86. *ovifera* (Warren)

46. Genus ***Pyrrhorachis*** Warren

87. *caerulea* (Warren)

Subfamily STERRHINAE

47. Genus ***Rhodostrophia*** Hübner

*88. *haematozona* Hampson

*89. *olivacae* Warren
*90. *similata* (Moore)
91. *vinacearia* (Moore)

48. Genus ***Tanaotrichia*** Warren

92. *prasonaria* (Swinhoe)

*49. Genus ***Discoglypha*** Warren

93. *punctimargo* (Hampson)
94. *genuflexus* (Hampson)
95. *aurcifloris* (Warren)

50. Genus ***Dithecodes*** Warren

96. *idaea* (Swinhoe)

*51. Genus ***Organopoda*** Hampson

97. *annulifera* Butler

52. Genus ***Metallaxis*** Prout

98. *semipurpurascens* (Hampson)

53. Genus ***Synegiodes*** Swinhoe

*99. *diffusifascia* Swinhoe
*100. *histrionareus* Swinhoe
*101. *sanguinarius* (Moore)
102. *hyriaria* (Walker)

*54. Genus ***Chrysocraspeda*** Hampson

103. *conspicuaria* Swinhoe

55. Genus ***Timandra*** Duponchel

104. *convectraria* Walker

56. Genus ***Gnamptaloma*** Warren

105. *aventiaria* (Guenèe)

57. Genus ***Anisodes*** Guenèe

*106. *sarawackarius* Guenèe
*107. *absconditaria* Walker
*108. *intermixtarius* Swinhoe
109. *decretarius* Walker
110. *flavispila* (Warren)
*111. *perscripta* (Warren)
112. *denticulata* Hampson

58. Genus ***Somatina*** Guenèe

113. *plynusaria* (walker)
114. *subusta* Warren

59. Genus ***Problepsis*** Lederer

115. *vulgaris* Butler
116. *conjunctiva* Warren

60. Genus ***Zythos*** Fletcher

117. *turbata* (Walker)

*61. Genus ***Antitrygodes*** Warren

118. *vicina* (Th-Mieg)

62. Genus ***Scopula*** Schrank

119. *emissaria* (Walker)
120. *fibulata* (Guenèe)
121. *ferrilineata* (Moore)
122. *Pulchellata* (Fabricius)
123. *extimaria* (Walker)
124. *moorei* (Cotes and Swinhoe)
125. *eulomata* Snellen
126. *mecysma* (Swinhoe)
*127. *violacea* (Warren)
*128. *pallida* (Warren)
*129. *butyrosa* (Warren)
130. *actuaria* (Walker)
131. *aspilataria* (Walker)
132. *attentata* (Walker)

63. Genus ***Idaea*** Treitschke

133. *chotaria* Swinhoe
*134. *mathaemaria* Hampson
*135. *vacillata* (Walker)

*64. Genus ***Sterrha*** Hübner

136. *grisescens* Warren
137. *obliquilinea* (warren)
138. *falcipennis* (Warren)
139. *acuminata* (Moore)
140. *informis* (Warren)

Subfamily LARENTIINAE

*65. Genus ***Leptostegna*** Christ

141. *tenerata* Christ

66. Genus ***Naxidia*** Hampson

142. *punctata* (Butler)
143. *irrorata* (Moore)

*67. Genus ***Dysethia*** Warren

144. *bicommata* Warren
145. *ocyptaria* Swinhoe
146. *straminea* Warren

68. Genus ***Stamnodes*** Guenèe

147. *pamphilata* Felder

69. Genus ***Brabira*** Moore

148. *artimidora* Oberthür

70. Genus ***Sauris*** Guenèe

*149. *normis* Hampson
*150. *olivacea* Warren
151. *interruptata* (Moore)
*152. *lineosa* (Moore)

71. Genus ***Cambogia*** Guenèe

153. *memorata* (walker)
154. *pluristrigata* (Moore)
*155. *marginata* Warren
*156. *pulchella* Hampson
157. *lunulosa* (Moore)
158. *grataria* (Walker)

72. Genus ***Cryptoloba*** Warren

159. *aerata* (Moore)
160. *cinerea* (Butler)
161. *bifasciata* Warren
*162. *trinotata* Warren

*73. Genus ***Syzeuxis*** Hampson

163. *trinotaria* (Moore)

*74. Genus ***Goniopteroloba*** Hampson

164. *zalaska* (Swinhoe)

75. Genus ***Hastina*** Moore

165. *gemmifera* (Moore)

76. Genus ***Anaites*** Duponchel

*166. *pudicata* Guenèe
167. *fulgurata* Guenèe
*168. *roseifascia* Hampson

77. Genus ***Eubolia*** Duponchel

169. *duplicata* Warren

*78. Genus ***Triphosa*** Stephen

170. *dubiosata* (Walker)
171. *rubrodotata* (Walker)

79. Genus ***Electrophaes*** Prout

172. *aliena* (Butler)

80. Genus ***Photoscotosia*** Warren

173. *multilinea* Warren
174. *atromarginata* Warren
175. *metachriseis* Hampson
176. *miniosata* (Walker)
*177. *fulgurites* Warren
*178. *venipicta* Warren
*179. *aurantiaria* (Moore)

*81. Genus ***Gymnoscelis*** Mabille

180. *ectochlora* Hampson
181. *polyodonta* Swinhoe

82. Genus ***Cidaria*** Treitschke

*182. *chalybearia* Moore
*183. *lativittaria* (Moore)
*184. *albapex* Hasmpson
*185. *scortea* Swinhoe
*186. *intertexta* Warren
*187. *aurata* Moore
*188. *dentistrigata* Warren
*189. *mediovittaria* (Moore)
*190. *interplagata* Guenèe
*191. *mixtilineata* Hampson
*192. *relata* Butler
*193. *inextricata* Walker
*194. *aurigena* Butler
*195. *chalchoptera* Hampson
196. *viridata* Moore
*197. *obfuscata* Warren

83. Genus ***Larentia*** Treitschke

*198. *argentilineata* (Moore)
*199. *punctatissima* Warren
*200. *stellata* (Warren)
*201. *hypolopha* Hampson
*202. *abraxidia* Hampson
*203. *lacteiguttata* (Warren)
204. *bicolor* (Warren)
205. *apicistrigata* (Warren)
206. *variabilis* (Warren)
*207. *minuata* Butler
*208. *fasciata* (Warren)
*209. *interrupta* (Warren)
*210. *niveopicta* (Warren)
*211. *albiseriata* Warren
*212. *comis* Butler
213. *siderifera* (Moore)
214. *olivacea* Warren

*84. Genus ***Gnamptopteryx*** Hampson

215. *cymatia* (hampson)
*85. Genus ***Ecliptopera*** Warren

216. ***rectilinea*** Warren

*86. Genus ***Dysstroma*** Hübner

217. ***dentiferum*** (Warren)
218. ***sikkimense*** Heydemann

87. Genus ***Venusia*** Curtis

*219. ***sikkimensis*** Elwees
*220. ***lilacina*** Warren
221. ***obliguisigna*** Moore

88. Genus ***Hydrelia*** Hübner

*222. ***rufigrisea*** Warren
*223. ***marginipunctata*** Warren
224. ***flavilinea*** Warren
*225. ***rhodoptera*** Hampson
*226. ***plumbeolineata*** Hampson
*227. ***rufinota*** Hampson
*228. ***cingulata*** Hampson
*229. ***crocearia*** Hampson
*230. ***sanguiflua*** Hampson
231. ***pictaria*** (Moore)
232. ***recurvilineata*** (Moore)

89. Genus ***Asthena*** Hübner

*233. ***plurilinearia*** (Moore)
234. ***albosignata*** (Moore)

90. Genus ***Polynesia*** Warren

235. ***sunandeva*** (Walker)
*236. ***truncapex*** Swinhoe

91. Genus ***Xanthorhöe*** Hübner

237. ***albigirata*** (Kollar)
*92. Genus ***Horisme*** Hübner
238. ***hyperrythra*** (Hampson)

*93. Genus ***Chloroclystis*** Hübner

239. ***rubrinotata*** Warren
240. ***xanthocomes*** (Prout)
241. ***filicata*** Swinhoe
242. ***spissidentata*** Warren
243. ***lucinda*** (Butler)
244. ***modesta*** Warren

*94. Genus ***Eupithecia*** Curtis

245. ***costipicta*** Warren
246. ***rufipicta*** Hampson
247. ***irambata*** Warren
248. ***rubridorsata*** Hampson

*95. Genus ***Trichopterigia*** Hampson

249. ***sanguinipunctata*** (Warren)

*96. Genus ***Trichopteryx*** Hübner

250. ***sikkima*** (Moore)
251. ***viretata*** Hübner

*97. genus ***Microloba*** Hampson

252. ***bella*** (Butler)

Subfamily ENNOMINAE

98. Genus ***Abraxas*** Leach

253. ***sylvata*** (Scopoli)
254. ***irrorata*** Moore
*255. ***fulvosparsa*** Hampson
*256. ***spontaneata Walker***
*257. ***fasciata*** Swinhoe
258. ***martaria*** Guenèe
*259. ***metamorpha*** Warren
*260. ***alpestris*** Warren
*261. ***diaphana*** Warren
262. ***nigrivena*** Warren

99. Genus ***Peratophyga*** Warren

263. ***aerata*** (Moore)
*264. ***xanthyala*** (Hampson)

100. Genus ***Heterostegane*** Hampson

265. ***subtessellata*** (Walker)

*101. Genus ***Cassyma*** Guenèe

266. ***heteroneurata*** Guenèe

102. Genus ***Zamarada*** Moore

267. ***scriptifasciata*** (Walker)

103. Genus ***Patalia*** Herrich-Schäeffer

268. ***medardaria*** Herrich-Schäeffer
*269. ***capitata*** (Walker)
*270. ***immaculata*** Hampson
271. ***fasciata*** (Moore)
272. ***riobearia*** (Walker)

104. Genus ***Myrteta*** Walker

*273. ***planaria*** Walker
274. ***sericea*** Butler
*275. ***subvitrea*** Hampson
*276. ***subpunctata*** Warren
*277. ***simpliciata*** Moore

*105. Genus ***Tasta*** Walker

278. *micaceata* Walker

*106. Genus ***Bapta*** Stephen

279. *platyleucata* (Walker)
280. *mytylata* Guenèe

107. Genus ***Stegania*** Guenèe

281. *marginata* Warren
*282. *strigata* (Warren)
283. *urbica* (Swinhoe)
284. *rectifascia* Hampson
*285. *latifasciata* Moore
286. *trilineata* (Moore)

108. Genus ***Synegia*** Guenèe

287. *erythra* Hampson
288. *lidderdalii* (Butler)
289. *camptogrammaria* (Guenèe)
*290. *lunulosa* (Moore)
*291. *pardaria* (Guenèe)

109. Genus ***Parasynegia*** Warren

292. *pluristriaria* (Walker)
293. *diffusaria* (Moore)

110. Genus ***Hyperythra*** Guenèe

294. *lutea* (Stoll)
295. *phoenix* Swinhoe

111. Genus ***Kranarda*** Moore

296. *semihyalina* Moore

112. Genus ***Gonodontis*** Hübner

297. *clelia* (Cramer)

113. Genus ***Luxiaria*** Walker

298. *contigaria* (Walker)
299. *exclusa* (Walker)
*300. *obliguata* Moore
301. *phyllosaria* (Walker)
*302. *acutaria* (Snellen)
*303. *mitorrhaphes* Prout

*114. Genus ***Tephrina*** Duponchel

304. *purpurascens* (Moore)

115. Genus ***Oxymacaria*** Warren

305. *palliata* Hampson

*116. Genus ***Zeheba*** Moore

306. *lucidata* (Walker)

117. Genus ***Macaria*** Curtis

307. *fasciata* (Fabricius)
308. *nora* Walker
309. *xanthonora* Walker
310. *elevirata* Guenèe
311. *odataria* Swinhoe
*312. *ozararia* Walker
313. *pulviata* (Fabricius)
314. *azataria* Swinhoe
315. *pervolgata* Walker
316. *effusata* Guenèe
317. *acutaria* Walker
318. *emersaria* Walker
319. *perfusaria* Walker
*320. *avitusaria* (Walker)

*118. Genus ***Calletaera*** Warren

321. *subexpressa* (Walker)

119. Genus ***Obeidia*** Walker

322. *tigrata* (Guenèe)
*323. *millepunctata* Warren

120. Genus ***Vithora*** Moore

324. *indrasana* Moore

121. Genus ***Percnia*** Guenèe

*325. *ductaria* Walker
*326. *coryneta* Swinhoe
*327. *tincta* Hampson
*328. *felinaria* Guenèe
329. *belluaria* Guenèe
330. *maculata* (Moore)

122. Genus ***Arichanna*** Moore

*331. *maculata* Moore
332. *transectata* (Walker)
333. *lapsariata* (Walker)
334. *rubrivena* Warren
*335. *violacea* Warren
*336. *transfasciata* Warren
*337. *marginata* Warren
338. *ramosa* (Walker)
339. *biquadrata* Warren
*340. *albovittata* Moore
341. *plagifera* (Walker)
342. *tenebraria* (Moore)
*343. *subaenescens* Warren
344. *negans* Prout

123. Genus ***Pardarisa*** Warren

345. *comparataria* (Walker)

124. Genus ***Alcis*** Curtis

346. *nigridorsaria* (Guenèe)
*347. *tenera* (Warren)

125. Genus ***Cleora*** Curtis

348. *fraterna* (Moore)
*349. *inoffensa* (Swinhoe)

*126. Genus ***Diplurodes*** Warren

350. *parvularia* (Leach)

127. Genus ***Ectropis*** Hübner

351. *rubrifusa* (Warren)
352. *duplex* (Moore)

128. Genus ***Boarmia*** Treitschke

353. *diversicolor* (Warren)
*354. *conspurcata* (Walker)
*355. *cervina* Hampson
356. *conifera* (Moore)
357. *idaeoides* (Moore)
*358. *marmorata* Moore
359. *crepuscularia* Hübner
360. *bhurmitra* Walker
361. *boarmiaria* (Guenèe)
*362. *bisinuata* Hampson
363. *propulsaria* Walker
364. *variegata* (Moore)
*365. *melanosticta* Hampson
*366. *nigralbata* (Warren)
367. *semiclarata* (Walker)
*368. *atrostipata* Walker
*369. *trispinaria* Walker
370. *cineracea* (Moore)
371. *sublavaria* Guenèe
372. *transcissa* Walker
373. *fuliginea* Hampson
374. *nilgirica* Hampson
375. *nigrescens* Warren
376. *subplagiata* (Walker)
377. *delineata* Walker
378. *separata* Walker
*379. *dentilinea* Warren
*380. *albibasis* Hampson
*381. *albipicta* (Warren)
*382. *sericea* (Warren)
383. *virescens* (Butler)
*384. *euryzona* (Hampson)
*385. *incolorata* Warren
*386. *lignicolor* Warren
*387. *thricophora* Hampson

*129. Genus ***Hirasa*** Moore

388. *scripturaria* Walker

130. Genus ***Phthonandria*** Warren

389. *atrilineata* (Butler)

131. Genus ***Ruttellerona*** Swinhoe

390. *cessaria* (Walker)

*132. Genus ***Menophra*** Moore

391. *subterminalis* (Prout)

133. Genus ***Amblychia*** Guenèe

392. *angeronaria* Guenèe

134. Genus ***Chorodna*** Walker

*393. *pallidularia* Moore
394. *adambrata* Moore
395. *metaphaeria* (Walker)
396. *erebusaria* Walker

135. Genus ***Srinopteryx*** Butler

397. *rufivinctata* (Walker)
398. *undulifera* Warren

136. Genus ***Ourapteryx*** Leach

399. *ebuleata* Guenèe
400. *picticaudata* Walker
*401. *clara* Butler
402. *podaliriata* Guenèe
403. *primularis* Butler
*404. *sciticaudaria* Walker
*405. *margaritata* Moore

137. Genus ***Thinopteryx*** Butler

*406. *citrina* Warren
407. *crocoptera* (Kollar)

138. Genus ***Xeropteryx*** Butler

408. *columbicola* (Walker)

139. Genus ***Biston*** Leach

409. *falcata* (Warren)
410. *regalis* (Moore)

*411. *sinuata* Hampson
412. *contectaria* (Walker)

140. Genus ***Elphos*** Guenèe

413. *hymenaria* Guenèe
414. *pardicelata* Walker

*141. Genus ***Xandrames*** Moore

415. *albofasciata* Moore

*142. Genus ***Gnophas*** Treitschke

416. *muscosaria* Walker
417. *eolaria* Guenèe
418. *licheneus* Oberthür

*143. Genus ***Ophthalomodes*** Guenèe

419. *herbidaria* Guenèe
420. *cordularia* Swinhoe

144. Genus ***Buzura*** Walker

421. *suppressaria* (Guenèe)

145. Genus ***Erebomorpha*** Walker

422. *fulgurita* Walker
423. *fulguraria* Walker
424. *compositata* (Guenèe)

146. Genus ***Micrabraxas*** Butler

425. *punctigera* Butler
426. *melanodonta* (Hampson)

147. Genus ***Psyra*** Walker

427. *spurcataria* (Walker)
428. *angulifera* (Walker)

148. Genus ***Medasina*** Moore

429. *similis* Moore
430. *strixaria* (Guenèe)
431. *muscidaria* (Walker)
432. *basistrigaria* (Moore)
433. *contaminata* (Moore)
*434. *quadrinotata* Warren
*435. *livida* Warren
*436. *creataria* (Guenèe)
437. *albidaria* (Walker)
438. *combustaria* (Walker)
439. *interruptaria* (Moore)
440. *scotosiaria* Warren
441. *nigrovittata* (Moore)
*442. *reticulata* Hampson

149. Genus ***Loxaspilates*** Warren

*443. *obliquaria* (Moore)
444. *hastigera* (Butler)
*445. *dispar* Warren
446. *unidiluta* Inoue

150. Genus ***Scardamia*** Guenèe

447. *metallaria* Guenèe

151. Genus ***Tanaoctenia*** Warren

448. *haliaria* (Walker)

*152. Genus ***Metrocampa*** Latreille

449. *biseriata* (Moore)

153. Genus ***Aplochlora*** Warren

450. *dentisignata* (Moore)
*451. *vivilaca* (Walker)
*452. *viridis* Warren

*154. Genus ***Caberodes*** Guenèe

453. *cinerascens* (Moore)
454. *costalis* (Moore)

155. Genus ***Plutodes*** Guenèe

*455. *prasina* (Swinhoe)
*456. *delphinaria* (Swinhoe)
*457. *subcaudata* Butler
458. *costatus* (Butler)
459. *discigera* Butler
460. *exquisita* Butler

156. Genus ***Odontopera*** Stephens

461. *bilinearia* (Swinhoe)

*157. Genus ***Crocallis*** Treitschke

462. *cervinaria* (Moore)

158. Genus ***Hyposidra*** Guenèe

463. *talaca* (Walker)
464. *violescens* Hampson
*465. *aquilaria* (Walker)
466. *infixaria* (Walker)
467. *megaspila* (Moore)

159. Genus ***Dalima*** Moore

468. *trucataria* (Moore)
*469. *apicata* Moore
*470. *lucens* (Warren)
471. *patularia* (Walker)

*472. *latitans* Warren

160. Genus ***Eurymene*** Duponchel

*473. *inustaria* Moore
474. *reticulata* Warren

161. Genus ***Prionia*** Hübner

475. *squalidaria* Hübner
*476. *lithosiaria* (Walker)
477. *incitata* (Walker)

162. Genus ***Auonychia*** Warren

478. *grisea* (Butler)
479. *lativitta* (Moore)

163. Genus ***Heterolocha*** Lederer

480. *falconaria* (Walker)

164. Genus ***Fascellina*** Walker

481. *hypochryseis* Swinhoe
482. *plagiata* (Walker)
*483. *vinosa* Warren
*484. *subsignata* Warren
485. *porphyreofusa* Hampson
*486. *inormata* Warren

165. Genus ***Mimochroa*** Warren

487. *lugens* (Butler)
*488. *gynopteridia* (Butler)

166. Genus ***Garaeus*** Moore

*489. *cruentatus* Butler
*490. *coloratus* (Warren)
*491. *muscorarius* Hampson
492. *discolor* Warren
493. *apicata* (Moore)
494. *argillaceus* Butler
495. *absona* (Swinhoe)

167. Genus ***Pseudopanthera*** Hübner

496. *himalayica* (Kollar)

168. Genus ***Spilopera*** Warren

*497. *fuscomarginata* (Warren)
498. *ferrifera* (Moore)

169. Genus ***Callerinnys*** Warren

*499. *combusta* (Warren)
500. *obliquilinea* (Moore)

170. Genus ***Leptomiza*** Warren

501. *decorata* (Moore)
502. *translineata* (Walker)
*503. *amethystina* (Warren)
*504. *calcearia* (Walker)

*171. Genus ***Pseudomiza*** Butler

505. *castanearia* (Moore)

172. Genus ***Hypochrosis*** Guenèe

506. *pachiaria* (Walker)
*507. *iris* (Butler)
508. *hyadaria* Guenèe
*509. *festivaria* (Fabricius)
510. *pyrrhularia* (Guenèe)
*511. *rufescens* Butler

173. Genus ***Corymica*** Walker

512. *arnearia* Walker
*513. *specularia* (Moore)

*174. Genus ***Milionia*** Walker

514. *pulchrinervis* Felder
515. *zonea* Moore

*175. Genus ***Eilicrinia*** Hübner

516. *flava* (Moore)

176. Genus ***Eurytaphria*** Warren

517. *undilineata* Warren
518. *bisinuata* Hampson
519. *pachyceras* Hampson

*177. Genus ***Peetula*** Moore

520. *exanthemata* Moore

*178. Genus ***Xenographia*** Warren

521. *lignataria* Warren

*179. Genus ***Hypulia*** Swinhoe

522. *dirempta* (Walker)

*180. Genus ***Rhynchobapta*** Hampson

523. *cervinaria* (Moore)

181. Genus ***Psilalcis*** Warren

524. *inceptaria* (Walker)

182. Genus ***Opisthograptis*** Hübner

525. *rumiformis* (Hampson)

SYSTEMATIC ACCOUNT
Key to the subfamilies

M_2 present in Hind wing 1

M_2 absent in Hind wing ..... ENNOMINAE

1. Hind wing M_2 much near to M_1 than M_3 Green ..... colour specinmens.

Areole absent ..... GEOMETRINAE

Hind wing M_2 from middle of cell or near to M_3 2

2. Hind wing $S_c + R_1$ approximated to Rs near middle of cell or connected by a bar near base ..... OENOCHROMINAE

Hind wing $S_c + R_1$ anastomosing with R_s beyond middle of cell or at base 3

3. Hind wing $S_c + R_1$ anastomosing with R_s beyond middle of cell, sometimes running closely and connected with each other by a bar beyond middle of cell ..... LARENTIINAE

Hind wing $S_c + R_1$, bent down and touching R_s at base, then rapidly diverging .... STERRHINAE

Key to genera of the subfamily OENOCHROMINAE

$S_c + R_1$ approxmately near middle of discocellular 1

$S_c + R_1$ connected by a bar near base of discocellular 2

1. Palpi upturned, M_1-R_3 stalked, Hindwing $M_1 + M_2$ stalked ..... *Sarcinodes* Guenèe

Palpi porrect, R_3 R_5 stalked, Hindwing M_1 from angle of cell, M_2 from middle of discocellulars ..... *Palaeomystes* Warren.

2. Palpi very minute, Forewing rounded at apex, R_3 stalked, ... *Naxa* Walker

Palpi of moderate size 3

3. Palpi porrect 4

Palpi upturned 5

4. Hind tibia dilated, containing hair pencil 6

Hind tibia not dilated 7

5. Antennae and legs of moderate size, Rs of Hindwing before upper angle .... *Noreia* Walker

Antennae and legs long, Rs and M_1 of Hindwing stalked ..... *Eumelia* Duncan

6 Rs of Hindwing before upper angle .... *Celerena* Walker

- R_2 of Forewing absent, Rs and M_1 of Hindwing from upper angle of cell .... *Ozola* Walker

7. Rs of Hindwing before upper angle .... *Conolophia* Warren

Rs and M_1 of Hindwing stalked .... *Derambila* Walker

1. Genus *sarcinodes* Guenèe

1858. *Sarcinodes* Guenèe, *Hist. nat. Ins. Lep.*, **1**: 188.

Diagnosis : As per key.

Distributional range : India : Sikkim, Meghalaya and West Bengal. Elsewhere : Mayanmar, West China, Malay, Indonesia (Sumatra, Borneo) and Newguinea.

Key to the species of genus *Sarcinodes*

Forewing with oblique line from apex 1

Forewing with oblique lines from apex and other part of costa 2

1. Wing pale pink, a double line from apex of Fore wing to middle of inner margin of Hindwing, no speck at end of cell ..... *restitutaria* (Walker)

Wing yellowish, a single line from near apex of Forewing to middle of inner margin of Hindwing a speck at end of cell .... *debitaria*(Walker)

2. Wing pale-pink, Two oblique, to some extent parallel lines, one from apex of Forewing, another from middle of costa to inner margin of Hindwing. Both the lines continue to antemedian and post median lines of Hindwings. Angular lines join the spots on postmedian area of both wings .... *carnearia* Guenèe

Wing pink grey. Three equidistant, parallel lines arise, one from apex, one from antemediam, one from postmedian area of

custa reach inner magim of hun wuing. The **lines arise from** apex and antemedial continue **with hindwing** parallel lines .... *aequilinearia* (Walker)

1. *Sarcinodes carnearia* Guenèe

1857. *Sarcinodes carnearia* Guenèe, *Hist. nat.Ins.Lep.*, **1** : 188.

1992. *Sarcinodes carnearia* : Inoue, *Lep. checklist Taiwan*, **1(2)** : 111

Material Examined : One ♂, vi.1897, Sikkim, *G.C. Dudgeon* Coll. (Old Collection).

Length of Forewing : ♂25 mm.

Diagnosis : As per key.

Distribution : India : Sikkim , Meghalaya and West Bengal (Darjilling). *Elsewhere* : Myanmar and Taiwan.

2. *Sarcinodes aequilinearia* (Walker)

1860. *Mergana aequilinearia* Walker, *cat. Lep. Het. Brit. Mus.*, **21** : 292.

1992. *sarcinodes aequilinearia* : Inoue, *Lep. Checklist*, Taiwan, **1(2)** : 111.

Material Examined : Two ♂ ♂, Sikkim, (Old Collection).

Fore wing length : ♂ 27 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal [trilineata (Walker 1866)]. *Elsewhere* : Bangladesh (Sylhet), West China, Indonesia (Sumatra and Java) Holloway (1976).

Remarks : The species does not occur in Assam. It was earlier recorded from Khasi Hills (Meghalaya). It is commonly found only on foot hills (Holloway 1976).

3. *Sarcinodes debitaria* (Walker)

1862. *Auxima debitaria* Walker, *Cat. Lep. Het. Brit. Mus*, **26** : 1527

1912. *Sarcinodes debitaria* : Prout, *Lep. Cat.*, **8** : 50.

Material examined : One ♂, 1888, Sikkim alt *Ca* 650 m, *G. C. Dudgeon* coll. (Old Collection).

Length of Fore wing : ♂ 25 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Khasis and West Bengal (Darjiling). *Elsewhere* : Indonesia (Sumatra).

Remarks : Prout (1912) has pointed out that occurrence of the species in Sumatra is doubtful.

4. *Sarcinodes restitutaria* (Walker)

1862. *Auxima restitutaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1527.

1982. *Sarcinodes restitutaria* : Barlow, *Intr.Moths S.E. Asia*, p. 118, pl. 42, fig. 2.

Material Examined : One ♂, Sikkim, 1889, *G.C.Dudgeon* coll.

Length of Forewing : ♂ 33 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling) Cotes and Swinhoe (1888). *Elsewhere* : Myanmar, Malaya and Indoensia (Sumatra and Borneo).

Remarks : The Specimens is smaller in size than the one described by Hampson (1895).

2. Genus *Palaeomystes* Warren

1894. *Palaeomystes* warren, *novit. Zool.*, **1** : 379.

Diagnosis : Refer Key.

Distributional range : India : Sikkim and West Bengal (Darjiling). *Elsewhere* : Tibet, West China and Japan.

There are only two species under this genus. Both the species occuring just within the Palearctic Region but probably Indo-Australian rather than

Palearctic in their origin Prout (1912). Out of these one species occurs in India.

5. *Palaeomystis falcataria* (Moore)

1867. *Urapteryx* (?) *falcataria* Moore, *Proc. Zool. Soc. Lond.*, **1867** : 612.

1912. *palaeomystis falcaatria* : Prout, *Macrolep.* World, **4** : 7.

Material examined : One ♂, Sikkim, x.1888, *G.C. Dudgeon* coll.

Length of Forewing : ♂ 20 mm.

Diagnosis : Wing white with slight yellowish tinge,Fore wing apex produced with four transverse lines second and third meeting at inner margin of Hindwing with the transverse lines. The Hindwing with three transverse lines. The third, submarginal line is curved.

Distribution : India : Sikkim and West Bengal (Derjiling). *Elsewhere* : Tibet and West China.

*3. Genus ***Doratoptera*** Hampson

1895. *Doratoptera* Hampson, *Fauna Brit. India, Moths*, **3** : 318.

Distributional range : India : Sikkim.

Remarks : Under this genus only a single species is described from Sikkim.

6. *Doratoptera Nicevillei* Hampson

1895. *Doratoptera nicevillei* Hampson, *Fauna Brit. India Moths*, **3** :318, fig. 153.

1912. *Doratoptera nicevillei* : Prout, *Lep. Cat.*, **8** : 51

Distribution : India : Sikkim.

Remarks : This species is not reported after Hampson (1895).

4. Genus ***Eumelia*** Duncan

1841. *Eumelia* Duncan, *Exot. Moth.*, **32** : 215.

Diagnosis : Refer Key.

Distributional range : Indo-Australian region.

Remarks : Under the genus there are 21 species, out these four species are represented in India. All the four species occur in Sikkim.

Key to the species

Wings yellow, irrorated with orange specks. ..... *aureliata* Guenèe

Wings orange-yellow, irrorated with crimson 1

1. Crimson antemedial, media and submarginal bands of Forewings are indistinct. Underside crimson bands are prominent .... *rosalia* (Cramer)

   Crimson bands are distinct, Underside submarginal band is distinct. Apex of hindwings both side whitish .... *florinata* Guenèe

7. *Eumelea aureliata* Guenèe

1858. *Eumelea aureliata* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 394.

1912. *Eumelea aureliata* : Prout, *Lep. Cat.*, **8** : 52.

Material examined : 2 ♂♂ and 3 ♀♀, Sikkim, *Ca* 550 m. vii-xii. 1897, *G.C. Dudgeon* coll.

Length of Forewing : ♂ 22 mm, ♀ 25mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim, Assam, South India and Andaman & Nicobar Islands. *Elsewhere* : Sri Lanka, Myanmar, Taiwan, Indonesia (Borneo) and Solomons Island.

Remarks : Inoue 1992 synnonymised this species under *ludovicata* Guenèe.

8. *Eumelea florinata* Guenèe

1858. *Eumelea florinata* Guenee, *Hist. nat. Ins. Lep.*, **1** : 392.

1912. *Eumelea florinata* : Prout, *Lep. Cat.*, **8** : 53.

Material examined : One ♂, Sikkim, viii.1889, *G.C. Dudgeon* coll.

Length of Forewing : ♂ 26 mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim, *Elsewhere* : Malaya (Perak) and Indonesia (Sunda Insland).

Remarks : This species was synonomised by Hampson (1895) but Prout (1912) treated this as good species.

9. *Eumelia rosalia* (Stoll)

1782. *Phalaena (Geometra) rosalia* Stoll, *pap. Exot.*, **4** : 152.

1888. *Eumelia rosalia* : Cotes and Swinhoe, *Cat. Moth India*, **4** : 528.

Material examined : One ♂, Sikkim, iii.1896, c 1800 ft. *G.C. Dudgeon* Coll.

Length of forewing : ♂ 24mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Assam (Sibsagar) and Bihar (Buxar). Elsewhere : Sri Lanka, Bangladesh (Sylhet), Malayan, Austro Malayan subregion from Sundal and eastwards (Burlow 1982).

Remarks : Hampson (1895) stated that it occurs in Taiwan (Formosa), but it is not reflected in catalogue of Inoue (1992). Burlow 1982 omitted it from China.

*10. *Eumelea vulpenaria* Stoll

1782. *Phalaena (Geomettra) vulpenaria* Stoll in Cramer, *Pap. Exot.*, **4** : 245.

1982. *Eumelea vulpenaria* : Burlow, *Intr. Moths, S.E. Asia*, p. 118.

Distribution : India : Sikkim and Coromandel coast, West India. *Elsewhere* : Sri Lanka and Indonesia (Sumatra, Borneo, Java and Lombok).

Remarks : Prout 1912 synonimised this species under *Olivacea* Hampson and reported from West India and Sumatra. It was further reported from sikkim and Nilgiris by Hampson (1895). Cotes and Swinhoe (1888) had given its distribution from Coromandel coast and Sri Lanka (Ceylon).

5. Genus *Derambila* Walker

1862. *Derambila* Walker, (*Rambara* Moore, 1887) *Cat. Lep. Het. Brit. Mus.*, **26** : 1630.

Diagnosis : Refer Key.

Distribution : Indo-Australian region, Philippines, Taiwan, Malagsy and South Africa. Amongst four Indian species two species occur in Sikkim.

Key to the species

A white centred discocellular spot, Forewing with black subapical lunule, and a small mark near margin of apex ..... *satelliata* Walker

Fuscous discocellular spot entire, no subapical lunule or mark near apex .... *lumenaria* (Geyer)

11. *Derambila lumenaria* (Geyer)

1837. *Arrhostia lumenaria* Geyer in Hubner. *Zutr. Exot.* Schemett., **4** : 35.

1912. *Derambila lumenaria* : Prout, *lep. Cat.* **8** : 63

Material examined : One ♂, Sikkim, 7.vii.1891, *G.C. Dudgeon* Coll.

Length of Forewing : 14 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim and Andamans. *Elsewhere* : Myanmar, Malacca and Nias.

Remarks : Hampson 1896 reported this species as *Rambara luminaria* Hübner, but earlirein 1895 he described it as *R.. ochreicostalis* Hampson.

12. *Derambila satelliata* (Walker)

1866. *Zanclopteryx satelliata* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1636.

1992. *Derambila satelliata* : Inoue, *Lep. Checklist*, Taiwan, **1** (2) : 111.

Material examined : One ♂, xi.1895, One ♂,iii.1896, One ♀, vii-1896, all from Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂, ♀15 mm.

Diagnosis : Refer Key

Distribution : India : Sikkim, Meghalaya (Cherra Punji) and West Bengal (Darjiling). *Elsewhere* : Taiwan, Malacca, Indonesia (Sula) and Newguinea.

6. Genus *Noreia* Walker

1862. *Noreia* walker, *Cat. Lep. Het. Brit. mus.*, **24** : 1092.

Distrubution : Indo-Australian upto Neuginea.

Remarks : Out of 11 species, only one species occurs in India.

13. *Noreia perdensata* Walker

1862. *Noreia perdensata* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1092.

1912. *Noreia perdensata* : Prout, *Lep. Cat.*, **8** : 68.

Material examined : One ♂, Sikkim, 17.viii.1889, *G.C. Dudgeon* coll.

Length of Forewing : ♂ 15 mm.

Diagnosis : Purple grey, an oblique line from apex of forewing to inner margin at postmedian area present. End cell speck on both fore and hind wings.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Nagaland and Kerala. Elsewhere : Sri Lanka, Pulo-Laut Celebes and Philippines.

Remarks : The specimen is much smaller than the description provided by Hampson (1895).

7. Genus *Conolophia* Warren

1894. *Gamoruna* warren *Novit Zool* ., **1** : 367.

1894. *Conolophia* Warren *Novit Zool.*, **1** : 369.

Distributional range : West, Central and South Africa, India, Sri Lanka, Myanmar and Indonesia (Borneo).

Remarks : Out of five species, only two species occur in india. Here one species dealt with.

14. *Conolophia helicola* (Swinhoe)

1894. *Geoglada helicola* Swinhoe, *Trans. ent. Soc. Lond.*, **1894** : 184.

1912. *Conolophia helicola* : Prout, *Lep. Cat.*, **12** : 85.

Material examined : One ♀, Sikkim, 1-1897, *Ca* 550 m. *G. C. Dudgeon* coll.

Length of Forewing : ♀ 19 mm.

Diagnosis : Yellowish brown. A ferrugenus line starts from apex to meet inner margin medially, the line is continues to hindwing at antemedian area. The postmedian dotted band is more proment at hind wing. Post median line of underside of forewing upto M_3 and entire in hindwing.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

Remarks : Hampson (1895) described this species under the genus *Alex.*

8. Genus *Naxa* Walker

1856. *Naxa* Walker, *Cat. Lep. Het. Brit. Mus.*, **7** : 1742.

Diagnosis : As per key.

Distributional range : India, Bangladesh, Indonesia (Borneo, Sumatra). Philippines, China, Amur and Japan.

Remarks : Out of five species two species are recorded from India. Here only one species is described. Hampson (1895) recorded *seviaria* Motsch from Nagas. But Prout (1912) reported it from China, Amur and Japan.

15. *Nexa textiles* Walker

1856. ***Nexa textiles Walker,*** *Cat. Lep. Het. Brit. Mus.*, **7** : 1743.

1992. ***Nexa textiles*** : *Inoue, Lep. Taiwan Checklist*, **1** : 111.

Material examined : One ♂, Sikkim, vii.1889, one ♂, Sikkim, 14.iv.1890, *G.C. Dudgeon* coll.

Length of forewing : ♂ 20 mm.

Diagnosis : Wings white, Forewing with three antemedial black spots on nervures. Ocellated cell spots on both wings. Marginal and submarginal black spots on both wings.

Distribution : India : Sikkim, Assam(Cachar, Sibsagar) and Bihar (Buxar). *Elsewhere* :

Bangladesh (Sylhet), Bhutan, Myanmar, Nepal **and Taiwan.**

Remarks : Prout (1912 and 1912a) mentioned **its distribution** as Indian and throughout India.

9. Genus *Ozola* Walker

1862. ***Ozola*** Walker, *cat. Lep. Het. brit. Mus.*, **24** : 1080.

Distributional range : India : Sri Lanka, **Myanmar**, Nepal, Malayan and Austro Malayan **subregions.**

Key to the species of genus Ozola

Fore wing outer margin excised below apex wing pale ochreous 1

- Forewing outer margin not excised below apex. Wings with fuscous pots .... *picaria* (Swinhoe)

1. Two postmedial lines of forewing angled below costa and Hindwing medial line closer to the postmedial line of Forewing, a simple speck at end of cell of Forewing .... *microniaria* Walker

- Antemedial double line of Forewing angled below the costa, a diamond shaped patch at end of cell. Hindwing with a double post medial line and a cell spot..... *impedita* (Walker)

16. ***Ozola impedita*** (Walker)

1861. *Acidalia impedita* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 766.

1997. *Ozola impedita* : Mandal and Ghosh, *State Fauna* Series 3 : Fauna of West Bengal, (7) : 524.

Material examined : One ♂ Sikkim, x.1897, c 550 m *G. C. Dudgeon* coll.

Diagnosis : Refer Key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), and West Bengal(Darjiling). ***Elsewhere*** : E. Nepal (Kalibani and Kaligandaki).

Remarks : The specimens agree well with ***biangulifera*** (Moore), description of which is given by Hampson (1895). But the species is synonomised under the species *impedita* (Walker) Swinhoe (1900) and Prout (1912). But Inoue (1982) reported this species as *Ozola impedita biangulifera* (Moore).

17. ***Ozola microniaria*** Walker

1862. *Ozola microniaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1080.

1948. *Ozola microniaria* : Sevastopulo, *J. Bombay nat. Hist. Soc.*, **47**(3) : 493.

Material examined : 2 ♂♂ 2 ♀♀, Ca 550 m (one ♂ v.1896, ♀ ♀ v.1897) Sikkim, *G.C. Dudgeon* coll.

Length of Forewing : ♂ ♀ 11 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), West Bengal (Darjiling and Calcutta), W.Himalaya (Dharmasala), Ganjam and Nilgiris. *Elsewhere* : Sri Lanka and Philippines.

Remarks : The specimens are much smaller in size than the specimens described by Hampson (1895). The specimens feed on *Premna latifolia*. Some Australian species feed on *Eucalyptus* (Sevastopulo 1948).

18. ***Ozola picaria*** (Swinhoe)

1892.*Tosaura picaria* Swinhoe, *Trans ent. Soc. Lond.*, 1892 : 16.

1912. *Ozola picaria* : Prout, *Lep. Cat.*, **8** : 75.

Material Examined : One example, Sikkim x.1889, *G.C. Dudgeon* coll.

Diagnosis : Refer Key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

Remarks : The specimen is damaged.

10. Genus ***Celerena*** Walker

1862. *Celerena* walker, *Trans. ent. Soc. Lond.*, **1**(3) : 71.

Distributional range : India : Sikkim, Assam and Andamans. *Elsewhere* : Bangladesh (Sylhet), Myanmar, Moluccas and Austro-Malayan subregion.

Remarks : Two species are found in India. Here only one species is dealt with.

19. *Celerena divisa* Walker

1862. *Celerena divisa* walker, *Trans. ent. Soc. Lond.*, 1(3) : 72.

1912. *Celerena divisa* : Prout, *Lep. Cat.*, **8** : 76.

Material examined : Three ♂ ♂, Sikkim 10-14.iii.1890, one ♂ 12.xi.1890, *G.C. Dudgeon* coll.

Length of Forewing : ♂ 31-33 mm.

Diagnosis : Wings bright yellow. From medial area of costa to base of wing grey. The medial black band is continuous with the costal grey band. The medial black band agled at cell and terminates at. Excuricugbved black post medial band on both wings. After that the both wings grey.

Distribution : India : Sikkim, Assam (Sibsagar) and West Bengal (Darjiling). *Elsewhere* : Bangladesh (Sylhet), Malayan, 'Halbinsel' Indonesia (Borneo).

Remarks : The specimens are smaller in size in comparison to that of Hampson (1895).

Key to the genera of Geometrinae

R_1 of Forewing arising separately from the cell [Abdominal crest small, $S_c + R_1$ diverging well before one half] ..... *Archaeobalbis* Prout

R_1 of Forewing not arising separately from the cell 2

2. Hindwing without basal expansion 3

Hindwing with basal expansion 15

3. Forewing with strong fovea, wing much elongated ..... *Dysphania* Hübner

Forewing without fovea 4

4. Hind tibia without median spur 5

Hind tibia with median spurs 11

5 Forewing apex falcate, termen smooth, Palpus moderate to long, 3rd joint elongated ..... *Tanaorhinus* Butler

Forewing apex not falcate, termen smooth 6

6. Forewing with R_1 arising after R_4 7

Forewing with R_1 arising before R_4 8

7. Abdomen crested, Sc of Forewing from cell Dc of Hindwing straight ..... *Opisthotia* Guenèe

Abdomen not crested, Sc of Forewing stalked Hindwing Dc angled ..... *Ornithospila* Guenèe

8. Antennae in ♂ bipectinate 9

Antennae of ♂ ♀ simple. Hindwing pointed at M_3 ..... *Agathia* Guenèe

9. Bothwings with termen strongly dentate ..... *Chlorodenbtopera* Warren

Winds are not strongly dentate 10

10. Hindwing crenulate and angled at M_3 ..... *Anisozyga* Prout

Not angled at M_3 margin crenulate, iridecent colour ..... *Iotaphora* Warren

11. Metathorax crested strongly ..... *Dindica* Moore

Metathorax without crest or with small crest 12

12. Hindwing with tufts of raised scale, Cell of Hindwing short ..... *Pingasa* Moore

Hindwing without tuft of scale 13

13. Hindwing Sc $+R_1$ approximated to cell ..... *Sphagnodela* Warren

Hindwing Sc $+R_1$ diverging before one half near base 14

14. Pectus densely hairy, Hind femora densely hairy, ♂ antennae bipectinate to two third length ..... *Terpna* Guenèe

Pectus not densely hairy, femora glabrous, antennae simple ..... *Epipristis* Meyrick

15. Frenulum present in ♂ 16

Frenulum absent in ♂ 24

16. Forewing with R_1 arising after R_4 17

Forewing with R_1 arising before R_4 18

17. Dc smaller, outer margin of Hindwing dentate at veins M_1 and M_3, median spurs present... ..... *Rhomborista* Warren

Dc bigger, outer margin of Hindwing not so,

median spurs absent .... *Spaniocentra* Prout

18. Hind tibia with one pair of spur 19

- Hind tibia with all spurs 22

19. Hind tibia with terminal spur, Abdomen crested antennae ciliate .... *Cyclothea* Prout

- ♀ Hind tibia with median spurs 20

20. Forewing costa straight, abdomen not crested ..... *Oenospila* Swinhoe

- Forewing costa arched, abdomen crested 21

21. Hindwing termen crenulate or excised between veins M_1 and M_3 ..... *Episothalma* Swinhoe.

- Hindwing termen neither crenulate nor excised, angled or tailed at vein M_3 .... *Hemithea* Duponchel

22. Hindwing Dc oblique .. *Thalassodes* Guenèe

- Hindwing Dc not so, rather curvud 23

23. Hindwing termen dentate, long tail at vein M_3 ..... *Maxates* Moore

- Hindwing termen entire or weekly subcrenulate ..... *Gelasma* Warren

24. Both wings termen strongly crenulate .... *Paramaxates* Warren

- Both wings termen not so 25

25. Hindwings Sc approximated to cell for long distance, both wings Cula widely separate 26

- Hindwing Sc diverging near base Cula approximated or stalked .... *Hemistola* Warren

26. Dc straight [Sc stalked with R_1-R_4] .... *Jodis* Hübner

- Dc curved 27

27. Hindwing termen crenulated with tail at M_3 and M_1 it is toothed ..... *Berta* Walker

- Hindwing termen rounded not toothed or tailed ..... *Comostola* Meyrick

11. Genus *Archaeobalbis* Prout

1912. *Archaeobalbis* Prout, *Gen. Ins.*, **129** : 24

Diagnosis : Refer key.

Distributional range : India (Northeast and Northwest India), *Elsewhere* : Sri Lanka, Nepal, Bhutan, Indonesia (Borneo), Taiwan, West and Southwest China, Kazak and Uzbek.

Remarks : Out of seven Indian species, three species occur in Sikkim. Here only one species dealt with.

20. *Archaeobalbis subtepens* (Walker)

1860. *Hypochroma subtepens* Walker, *cat. Lep. Het. Brit. Mus.*, **21** : 438

1982. *Archaeobalbis subtepens* : Burlow, *Intr. Moths S.E. Asia*, ed. **1** : 119.

Material examined : One ♀ 20-21.viii.1888, Sikkim, alt. *Ca* 1700 m. *G.C. Dudgeon* coll.

Length of Forewing : ♀ 24 mm.

Diagnosis : Forewing with waved antemedian line, one postmedial line and submarginal series of black specks. Under side cell-spots black and with a post medial band. Wings margin crenulated.

Distribution : India : Sikkim and Meghalaya (Khasis). Elsewhere : Indonesia (Borneo and Sulawesi).

*21. *Archaeobalbis cristata* (Warren)

1894. *Archaeobalbis cristata* Warren, *nov. Zool.*, **1** : 381.

1992. *Archaeobalbis cristata* : Inoue, *Lep. Check list*, Taiwan, **1**(2) : 120.

Distribution : India : Sikkim and Assam. *Elsewhere* : Bhutan, Sri Lanka, Indochina, Malaya and Indonesia (sumatra, Borneo and Sulawesi).

Remarks : The species *cristata*, was considered as synonym of the former species by Hampson (1895). Holloway (1976) treated this as good species.

*22. *Archaeobalbis usneata* (Felder)

1875. *Scotopteryx* (?) *usneata* Felder, *Reise Novara, Lep. Het.*, **2**, pl. 125, f 12.

1987. *Archaeobalbis usneata* : Inoue, *Bull. Fac. domest. sci. Otsuma Wom. Univ.*, **23** : 216.

Distribution : India : Sikkim. *Elsewhere* : Eastern Nepal (Late, 2400 m. near Nilgiri, Kalbani 2400 m, Kaligandaki).

Remarks : Inoue (1992) put this species as synonym of *Amontana* (Bastelberger 1911). He also noted there *usneta* Inoue, 1978 (not Felder and Rogenhofer, 1875). '*usneta*' may be mispelt.

12. Genus ***Actenochroma*** Warren

1893. *Actenochroma Warren, Proc. zool. Soc. Lond.*, **1893** : 350

Distributional range : North Indian : Sikkim, West Bengal (Darjiling), Meghalaya (Khasi Hills) and Himachal Pradesh (Dharmsala).

Remarks : This genus is endemic to N. India.

23. ***Actenochroma muscicoloraria*** (Walker)

1862. *Hypochroma muscicoloraria* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1543.

1913. *Actenochroma muscicoloraria* : Prout, *Lep. Cat.*, **14** : 6.

Material examined : Two ♂, Sikkim, Old colln.

Length of Forewing : 25 mm.

Diagnosis : Fresh specimens bright yellowish green fades in course of time. Forewing with crenulate postmedial and dentate submarginal lines. Cell spot on both wings. Underside with cell spot and fuscous submarginal band on both wings.

Distribution : North India : Sikkim, West Bengal (Darjiling), Meghalaya (Khasi Hills) and Himachal Pradesh (Dharmsala).

Remarks : The specimens are bigger in size than that of Hampson (1895).

13. Genus ***Epipristis*** Meyrick

1888. *Epipristis* Meyrick, *Proc. Linn. Soc. N.S.Wales*, **2** (2) : 916.

Diagnosis : Refer Key.

Distributional range : Indo-Australian region.

Remarks : Out of two species of the genus one occur in India.

24. ***Epipristes minimaria*** (Guenèe)

1858. *Hypochroma minimaria* Guenee, *Hist. nat. Ins. Lep.*, **1** : 279.

1913. *Epipristes minimaria* : Prout, *Lep. Cat.*, **14** : 6.

Material examined : One ♂, 24.vi.1890, one ♂ June, 1896, one ♂ 20.vii.1896, one ♂ August, 1896, Sikkim, *G.C.dudgeon* coll.

Length of forewing : 24-25 mm.

Diagnosis : Vide Mondal and Ghosh (1997).

Distribution : India : Sikkim, rest vide Mondal and Ghosh 1997.

14. Genus ***Pingasa*** Moore

1887. *Pingasa* Moore, *Lep. Ceylon*, **3** : 419.

Diagnosis : Refer key.

Distributional range : Indo-Australian and Aethiopian Regions, scarcely spreading into the Palearctic.

Remarks : Out of seven Indian species four species found in Sikkim.

Key to the species *Pingasa*

Crenulate antemedial line on forewing, postmedial line is less crenulate, beyond this line of both wings suffused with brown. Outer area of under side of both wings with broad black band, a black band on cell of forewing only .... *ruginaria* (Guenèe)

Post medial line of both wings very much crenulate, beyond this line is not suffused with brown. Outer area of underside of both wings a thinner black band, on both wings black streak on cell but the forewing band is bigger, the hindwing band is very small..... .....*chlora* (stoll)

25. ***Pingasa chlora*** (Stoll)

1782. *Phalaena*[Geometra] *chlora*, Stoll in Cramer, *Pap. Exot.*, **4** : 233.

1882. *Pingasa chlora* : Burlow, *intr. Moths S.E.Asia*, ed.1 : 119.

Material examined : One ♀ 24.vi.1890, One ♀ iv.1896, One ♀ ix.1896, One ♀ iii.1897 alt *c* 550 m, one ♂ iii.1896, one ♂ 1.viii.1897, Sikkim, *G.C. Dudgeon* coll.

Length of forewing : ♂ 18-23 mm; ♀ 19 mm.

Diagnosis : Refer key

Distribution: India : Sikkim. *Elsewhere*: Malaya, Indonesia (Sumatra, Borneo, Bali), Philippines, Sulawesi to Queensland and Solomon Inlands.

Remarks : Inoue (1992) put this species as synonym of *secreta* Inoue, And also noted as "***chlora***.-Prout, 1932, part (not Cramer, 1782)." The larva feeds on Coffee, Sevastopulo (1948).

26. *Pingasa ruginaria* (Guenèe)

1858. *Hypochroma ruginaria* Guenèe, *Hist. nat. ins. Lep.*, **1** : 278.

1992. *Pingasa ruginaria* : Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 120.

Material examined : One ♂, 1x.1889, one ♂, vi.1896, one ♀, ii.1891, Sikkim, *G.C. Dudgeon* coll. One ♂, 18.iv.1995, Rongpo, East Sikkim, Collector A.T. Biswas.

Length of Forewing : ♂ 19 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim (Rongpo), Assam, West Bengal (Darjiling), and Bihar (Ranchi). *Elsewhere* : Oriental region from N. E. India to Indonesia, Borneo and Bali.

Remarks : The adults rest on tree trunks where it looks like lichens to escape from predators (Burlow 1982). The food plant of the species is *Nephelium lichi* (Mihi), Sivastopulo (1948).

*27. *Pingasa lariaria* (Walker)

1860. *Hypochroma lariaria* walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 433.

1976. *Pingasa lariaria* : Holloway, *Moths Borneo*, Mount Kinablu, p. 60.

Distribution : India : Sikkim and Assam. *Elsewhere* : Malaya, Indonesia (Sumatra, Java, Borneo, Sulawesi) Buru and New Guinea.

Remarks : Hampson (1895) treated this species as synonym of *chlora*. Prout (1912) treated this species as good species. This is an upper montane element Holloway (1976).

*28. *Pingasa venusta* Warren

1894. *Pingasa venusta* Warren *Nov. zool.*, **1** : 384.

1976. *Pingasa venusta* : *Holloway* : moths Borneo, Mount Kinabalu, P. 60.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Indonesia (Sumatra, Java, Bali, Borneo, Sulawasi) Ceram and New Guinea.

15. Genus *Terpna* Herrich-Schaffer

1856. *Terpna* Herrich-Schaffer *Samml. Aussereur Schmett.*, **1** : 26.27.

Diagnosis : Refer key.

Distributional range : Indo-Australian.

Remarks : Out of 16 Indian species seven species available in Sikkim.

Key to the species of genus *Terpna*

Grey, irrorated with olive green, Forewing with subbasal and antemedial waved lines, Underside whitish, the base of wing orange .... *similis* (Moore)

Entire green, No subbasal line, in Forewing there is one sinuons antemedial line, underside ochreons white ..... *vigens* (Butler)

*29. *Terpna crocina* (Butler)

1880. *Hypochroma crocina* Butler, *Ann. Mag. nat. Hist.*, **6** (5) : 126.

1913. *Terpna crocina* : prout, *Lep. Cat.*, **14** : 15.

Distribution : India : Sikkim.

*30. ***Terpna haemataria*** Herrich-Schäffer

1854. *Terpna Haemataria* herrich-Schäffer, Samml. Ausser. Schmett. **1** : 37.

1913. *Terpna haemataria* : prout, *Lep. Cat.* **14** : 16.

Distribution : India : Sikkim and Assam (Sibsagar) Cotes and Swinhoe (1888).

*31. ***Terpna leopardinata*** (Moore)

1867. *Hypochroma leopardinata* Moore, *Proc. zool. Soc. Lond.* **1867** : 634.

1913. *Terpna leopardinata* : Prout, *Lep. Cat.*, **14** : 16.

Distribution : India : Sikkim Hampson (1895) and Bengal cotes and Swinhoe (1888). *Elsewhere* : Tibet, Prout (1912).

*32. ***Terpna molleri*** (Warren)

1893. *Dindica molleri* Warren, *Proc. zool. Soc. Lond.*, **1893** : 349.

1913. *Terpna molleri* : Prout, *Lep. Cat.*, **14** : 16.

Distribution : India : Sikkim.

33. ***Terpna similis*** (Moore)

1888. *Pingasa similis* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson* p. 248.

1913. *Terpna similis* : Prout, *Lep. Cat.*, **14** : 17.

Material examined : One ♀, *J.G. Pilcher* coll., one ♂ *Ca* 550 m, viii.1897, *G.C. Dudgeon* coll. Sikkim.

Length of Forewing : ♀ 20 mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) Assam (Sibsagar), West Bengal, Maharashtra and Nilgiris.

Remarks : The specimen is smaller in size if compared with Hampson (1895) specimen. The ♂ specimen is badly damaged.

*34. ***Terpna subornata*** Warren

1894. *Calleremites subornata* Warren, *Nov. zool.*, **1** : 385.

1913. *Terpna subornata* : prout, *lep. Cat.*, **14** : 17.

Distribution : India : Sikkim.

35. ***Terpna vigens*** (Butler)

1880. *Hypochroma vigens* Butler, *Ann.Mag. nat. Hist.*, **6** (5) : 127.

1976. *Terpna vigens* : Holloway, *Moths Borneo*, Mountkinabalu, p. 60.

Material examined : One ♂, vii.1897, *Ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 19 mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling). *Elsewhere* : Malaya and Indonesia (Sumatra, Borneo) Holloway (1976).

Remarks : Holloway (!976) reported that species is confined to lower montane region only.

16. Genus ***Dindica*** Moore

1888. *Dindica* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, p. 248.

Diagnosis : Refer Key.

Distributional range : North India to Philippines, Celebes one species occurs in Japan and Korea.

Remarks : Out of seven known species only four species occur in India. Here only one species dealt with.

36. ***Dindica polyphaenaria*** (Guenèe)

1858. *Hypochroma polyphaenaria* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 280.

1992. *Dindica polyphaenaria* : Inoue, *lep. Checklist*, Taiwan **1** (2) : 120.

Materia examined : One ♂, vii.1896, *Ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Lenght of forewing : ♂ 19 mm.

Diagnosis : Antenna of male bipectinate up

to first two thirds, a large tuft on metathoracic segment present. A black cell end spot on forewing only. The submarginal black band diffuses towards forewing costa. Under side orange, pale patches on margin.

Distribution : India : Sikkim and Himachal Pradesh (Dharmsala). *Elsewhere* : Myanmar, Malaya, Taiwan and Indonesia (Java, Sumatra, Borneo).

Remarks : It feeds on Lauraceae, Holloway, 1982, Laurineae sp. (mihi), Sivastopulo (1948).

17. Genus *Sphagnodela* Warren

1893. *Sphagnodela* Warren, *Proc. zool. Soc. Lond.*, **1893** : 351.

Diagnosis : Refer Key.

Distributional range : Sikkim to Tibet.

Remarks : This genus contains single species distribution of which is restricted to Sikkim and Tibet only.

37. *Sphagnodela lucida* Warren

1893. *Sphagnodela lucida* Warren, *Proc. zool. Soc. Lond.*, **1893** : 351, t.13.

1913. *Sphagnodela lucida* : Prout, *Lep. Cat.*, **14** : 19.

Materia examined : One ♂, one ♀ viii.1885, *ca* 3000 m, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : ♂ ♀ 21 mm.

Diagnosis : Green, irrorated with black, side of palpi black, forewing with waved antemedial and crenulate post medial lines, lines thick, a dentate lunule at cell. Hindwing paler, the distal margin concolours with forewing, Underside of hindwings almost as upper of forewing which almost throughout dark greyish.

Distribution : India : Sikkim. *Elsewhere* : Tibet.

Remarks : Only species of the genus is restricted to Sikkim to Tibet.

18. Genus *Dysphania* Hübner

1826. *Dysphania* Hübner, *Verz. bek. Schmett.*, p.175.

Diagnosis : Refer key.

Distributional range : Indo- Australian.

Remarks : Out of Three Indian species, two species occur in Sikkim. Here only one species is dealt with.

38. *Dysphania bellona* (Walker)

1854. *Euschema bellona* Walker, *Cat. Lep. Het. Brit. Mus.*, **2** : 405.

1913. *Dysphania bellona* : Prout, *Lep. Cat.*, **14** : 25.

Materia examined : One ♂, one ♀ viii.1896, *ca* 550 m, Sikkim, *G.C. Dudgeon*, coll.

Length of Forewing : ♂ 43 mm, ♀ 41 mm.

Diagnosis : Head, thorax and abdomen yellow intercepted by purple bands. Outer area of forewing with thin maculate bands. Outer area of hindwing purple with short yellow band from inner margin extended upto Culb.

Distribution : India : Sikkim, Andamans and Nicobars. *Elsewhere* : Myanmar (Mergui).

*39. *Dysphania militaris* (Linne)

1758. *Phalaena bombyx militaris* Linne, *Syst. Nat.*, (ed. X), **1** : 505.

1913. *Dysphania militaris* : Mandal and Ghosh, *State Fauna Series* **3** : *Fauna* West Bengal, (7) : 528.

Distribution : India : Sikkim, Assam (Cachar, Sibsagar), Meghalaya (Cherranpunji, Shillong), Naga Hills, West Bengal (Darjiling), Maharashtra (Matheran), Andaman and Nicobar Islands (Andaman, Nicobar, Nancowry). *Elsewhere* : Myanmar, Indonesia (Java) and China.

19. Genus *Agathia* Guenèe

1858. *Agathia* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 388.

Diagnosis : Refer Key.

Distributional range : This Indo-Australian genus, straggling into the Palaearctic and Aethiopian Regions, Prout (1912).

Remarks : Out of 13 Indian species six occuring in Sikkim, here only one species is dealt with.

40. *Agathia arcuta* Moore

1867. *Agathia arcuta* Moore, *Proc. zool. Soc. Lond.*, **1867** : 640.

1913. *Agathia arcuta* : Mandal and Ghosh, *state Fauna Series* **3** : *Fauna of West Bengal* (7) : 528.

Material examined : One ♀, viii.1891, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 17 mm.

Diagnosis : No green on thorax and abdomen. Forewing costa rufous, medial band oblique, conjoined below vein Culb to outer area, which is rufous, further it runs along inner margin. Markings of underside purplish fuscous.

Distribution : India : Sikkim and Meghalaya (Khasi Hills), Cotes & Swinhoe reported its distribution in Bengal, However, it is doubtful.

*41. *Agathia gigantea* (Butler)

1880. *Agathia gigantea* Butler, *Ann. Mag. nat. Hist.*, **6** (5) : 217.

1913. *Agathia gigantea* : Prout, *Lep. Cat.* **14** : 35.

Distribution : India : Sikkim, Assam to Indonesia (Java).

*42. *Agathia lycaenaria* (Koller)

1844. *Geometra lycaenaria* Koller, in Hugel, *Kasch. Reich Seik. Ins.*, **4** : 486.

1997. *Agathia lycaenaria* : Mandal and Ghosh, *State Fauna Series* **3** : *Fauna West Bengal* (7) : 514.

Distribution : and other details *vide* Mandal and Ghosh,

*20. Genus *Helicopage* Warren

1896. *Helicopage* Warren, *nov. zool.*, **3** : 106.

1913. *Helicopage* Prout, *Lep. Cat.*, **14** : 37.

Distributional range : Sikkim and Meghalaya.

Remarks : Only single species of the genus occurs in Sikkim and khasi Hills.

43. *Helicopage hirudinalis* Warren

1896. *Helicopage hirudinalis* Warren, *Nov. zool.*, **3** : 106.

1913. *Helicopage hirudinalis* : Prout, *Lep. Cat.*, **14** : 37.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

21 Genus *Chlorodontopera* Warren

1893. *Chlorodontopera* Warren, *proc. zool. soc. Lond.*, **1893** : 351.

Distributional range : North East India to Taiwan straggling into Central China.

Remarks : Out of four species of the genus two occur in India both of Which are dealt with.

Key to the species

Frons rufous, cilia pinkish, large, black discal spots on both wings, under side orange with black irroration ..... *discospilata* (Moore)

Frons black, black markings on base of cilia, forewing discal spot smaller, underside purplish brown ..... *chalybrata* (Moore)

44. *Cholorodontopera chalybeata* (Moore)

1872. *Odontoptera chalybeata* Moore, *Proc. zool. Soc.*, **1872** : 580.

1997. *Cholorodontopera chalybeata* : Prout, *Lep. Cat.*, **14** : 38.

Material examined : One ♂, iii.1896, *Ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 17 mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

Remarks : The specimen is smaller in size as compare to Hampson's (1895) description.

45. *Cholorodontopera discospilata* (Moore)

1867. *Odontoptera discospilata* Moore, *Proc. zool. Soc., Lond.*, **1867** : 621.

1997. *Cholorodontopera discospilata* : Mandal and Ghosh, *state Fauna Series* **3** : *Fauna of West Bengal* (7) : 513.

Material examined : One example, 15.v.1897, Sikkim, *G.C.dudgeon* coll., one ♂, 5.x.1988,

Rabangla, S. Sikkim, alt. *Ca* 2010 m, *V.C.Agrawal* coll.

Length of Forewing : 22 mm.

Diagnosis : As per key.

Remarks : One specimen is badly damaged, Length of Forewing, sex can not be determined for that specimen. The specimen examined has a smaller wing than that mentioned byHampson (1895).

22. Genus *Tanaorhinus* Butler

1879. *Tanaorhinus* Butler, *Ill. Het. Coll. Mus* ., **3** : 38.

Diagnosis : Refer key.

Distribution range : India and China to Neuguinea.

Remarks : Out of five Indian species under this genus three species are found in Sikkim, here only two species are dealt with.

Key to the species

Dark blue green. Fore wing ante- and postmedial lines closer and two cell-specks between them. No lunulate mark .... *rafflesii* (Moore)

- Bright green, suffused with silvery white. Forewing with ante- and postmedial bands, no cell speck, a lunule at end of cell .... *vittata* (Moore)

46. *Tanaorhinus rafflesii* (Moore)

1859. *Drepana rafflesii* Moore, *Cat. Lep. E. Ind. House*, **2** : 369.

1997. *Tanaorhinus rafflesii* Mandal and Ghosh, *State Fauna series* **3** : *Fauna of West Bengal* (7) : 529.

Material examined : One ♂, 12.vii.1889, Sikkim. *G. C. Dudgeon* coll., one ♂, 1.x.1988, Tumin, E. Sikkim, alt. 1475 m., coll. *V. C. Agarawal.*

Length of Forewing : 23-29 mm.

Diagnosis : Refer key.

Distribution : N. E. India : Sikkim, Meghalaya (Khasi Hills) and west Bengal. *Elsewhere* : S.China, Taiwan, Malaya, Indonesia (Sumatra, Java, Borneo), Philippines and Sulawesi.

Remarks : Swinhoe (1900) considered this Hampson's (1895) synonym as good species. Burlow (1982) found larvae in the leaf of *Quercus* sp. (Cupuliferae).

*47. *Tanaorhinus reciprocata* (Walker)

1861. *Geometra reciprocata* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 515.

1976. *Tanaorhinus reciprocata* : holloway, *Moths Borneo*, Mount Kina balu, p. 61.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Himachal Pradesh (Dharmsala, Simla) and Khasmir. *Elsewhere* : Japan, North and Westren China, Taiwan and Myanmar.

48. *Tanaorhinus vittata* (Moore)

1867. *Geometra vittata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 636.

1997. *Tanaorhinus vittata* : Mandal and Ghosh, *state Fauna Series* **3** : *Fauna of West bengal*, (7) : 529.

Material examined : One ♂, 22.viii.1890, *ca* 550 m, Sikkim, *G.C.dudgeon* coll.

Length of Forewing : 20 mm.

Daignosis : Refer Key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), West Bengal (Darjiling) and Himachal Pradesh (Solan, Kulu). *Elsewhere* : Japan and Indonesia (Sumatra).

Remarks : Sivastopulo (1948) reported a pupa from the curl leaf of *Quercus* sp. (mihi).

*23 Genus *Chlorozancla* Prout

1912. *Cholorozancla* Prout, *Gen. Ins.*, **129** : 69.

Distributional range : Sikkim.

49. *Chlorozancla falcatus* (Hampson)

1895. *Tanaorrhinus falcatus* Hampson, *Fauna Brit. India Moths*, **3** : 494.

1913. *Chlorozancla falcatus* : Prout, *Lep. Cat.*, **14** : 41.

Distribution : India : Sikkim.

*24. Genus ***Hipparchus*** Leach

1915. *Hipparchus* Leach *Edinb. Encycl.*, **9**(1) : 134.

Distribution : Eastern Palearctic and North India.

Remarks : Out of five Indian species two species recorded from Sikkim. Although the genus is E. Palaearctic and type species *Papilionaria* (L.) is described from Europe.

50. ***Hipparchus smargadus*** (Butler)

1880. *Tanaorhinus smargadus Butler,* Ann. Mag. nat. Hist., **6** (5) : 128.

1913. *Hipparchus smargadus* : Prout, *Lep. Cat.*, **14** :m 45.

Distribution : India : Sikkim.

51. ***Hipparchus vallata*** (Butler)

1878. *Thalassodes vallata* Butler, *Ill.Typ. Lep. Het. Brit. Mus.*, **2** : 50.

1913. *Hipparchus vallata* : Prout, *lep. Cat.*, **14** : 46.

Distribution : India : Sikkim. *Elsewhere* : Japan.

Remarks : Specimens are common in Japan from June to August Prout (1912a). Inoue (1992) put this species under the genus *Neohipparchus* Inoue and he recorded *vallatus* (Butler) from Japan.

25. Genus ***Iotaphora*** Warren

1894. *Iotaphora* Warren, *nov. zool.*, **1** : 384.

Diagnosis : Refer Key.

Distribution : North-East India to Amur.

Remarks : Two species are described under this genus and only one species is found in N. E. India, which is dealt with. Hampson (1895) described this genus under the subfamily Orthostixinae, later on Prout (1912) transferred it under the subfamily Hemitheinae which is named as Geometrinae.

52. ***Iotaphora iridicolor*** (Butler)

1880. *Panaethia iridcolor* Butler, *Ann. Mag. nat. Hist.*, **6** (5) : 46.

1913. *Iotaphora iridicolor* : Prout, *Lep. Cat.*, **14** : 46.

Material examined : One ♀, vi.1897, Sikkim, *c* 2200 m, *G. C. Dudgeon* coll.

Length of Forewing : 29 mm.

Diagnosis : Colour of wing light orange; Forewing with curved antemedial line, a medial band broader towards costa, a postmedial thinner band, a lunulate cell speck which is black on both wings, submarginal streaks in between veins. The streaks are black.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

Remarks : Hampson (1895) cited 'Tibet' in distributional list which may be for *admirabilis* (Oberth.) species.

26. Genus ***Ornithospila*** Warren

1894. *Ornithospila* Warren , *Nov. zool.*, **1** : 386.

Diagnosis : Refer Key.

Distributional range : North India to Newguinea.

53. ***Ornithospila avicularia*** (Guenèe)

1858. *Geometra avicularia* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 342.

1997. *Ornithospila avicularia* : Mandal and Ghosh, *State Fauna Series* **3** : *Fauna of West Bengal*, (7) : 529.

Material examined : One ♂, vii.1889, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 21 mm.

Diagnosis : Vertex and forewing costa white, indistinct curved antemedial and postmedial lines. V-shaped cell spot present on both wings, cilia chestnut brown.

Distribution : India : Sikkim, West Bengal (Darjiling) and Maharashtra (Mumbai).

*54. ***Ornithospila lineata*** (Moore)

1872. ***Geometra lineata*** Moore, *Proc. zool. soc. Lond.*, **1872** : 580.

1913. ***Ornithospila lineata*** : Prout, *Lep. Cat.*, **14** : 48.

Distribution : India : Sikkim.

Remarks : Distribution shown by Hampson (1895) as Myanmar is not supported by any other worker. Hampson (1895) Kept both these species under the genus *Thalassodes* Guenèe.

27. Genus ***Anisozyga*** Prout

1911. ***Anisozyga*** Prout, *Ent.* **44** : 26.

Diagnosis : Refer key.

Distributional range : Mostly Oceanian stragglers in Singapore, Sri Lanka and India.

55. ***Anisozyga gavissima*** (Walker)

1861. *Comibaena gavissima* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 575.

1913. *Anisozyga gavissima* : Prout, *Lep. Cat.*, **14** : 50.

Material examined : One ♂, viii.1897, *ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 19 mm.

Diagnosis : Yellowish-green, palpi and vertex white, thorax, abdomen and wings with white markings. Forewing having waved antemedial band with spot on inner adge below cell, two end cell spots, dentate postmedial band merges purplish patch on costa. White spots on the basal area of hindwing, a waved medial band, under side white, black brown patches near apex, patches larger on hindwing.

Distribution : India : Sikkim and Himachal Pradesh (Solan). *Elsewhere* : Sri Lanka, Taiwan and Sarawak.

Remarks : Inoue (1992) included this species under the genus *Ochrognesia* Warren. An Australian species feeds on fern, Sevastopulo (1948).

28. Genus ***Opisthotia*** Warren

1894. *Opisthotia* Warren, *Nov. zool.*, **1** : 386.

Diagnosis : Refer key.

Distributional range : Sikkim.

56. ***Opisthotia tumidilinea*** (Moore)

1888. *Geometra tumidilinea* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, p. 278.

1913. *Opisthotia tumidilinea* : Prout, *lep. Cat.*, **14** : 55.

Materia examined : One ♂, ix.1887, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 18 mm.

Diagnosis : Head, thorax and abdomen purple, vertex of head and wing green. Costa of Forewing with black specks. Antemedial line of Forewing rufous and oblique, sinous post medial line expanded into inner margin, in hind wing expanding into a patch between Cula and M_3. Both wings having discocellular lunule.

Distribution : India : Sikkim.

Remarks : The specimen examined is smaller than that mentioned by Hampson (1895). the species is rectricted to Sikkim only, although Prout (1912a, 1913a) mentioned its distribution as North India.

*29. Genus ***Osteosema*** Warren

1894. *Osteosema* Warren, *nov. zool.*, **1** : 392.

Distributional range : North-east India and Bangaladesh (Sylhet), Nepal and Bornean.

57. ***Osteosema sanguilineata*** (Moore)

1867. *Comibaena sanguilineata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 638.

1997. *Osteosema sanguilineata* Mandal and Ghosh, *State Fauna Series* **3** : *Fauna of West Bengal* (7) : 529.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling). *Elsewhere* : Nepal.

Remarks : Food plant of species is *Maesa chisia* (mihi) Sevastopulo (1948).

30. Genus ***Rhomborista*** Warren

1897. *Rhomborista* Warren, *nov. zooll*, **4** : 44.

Diagnosis : Refer Key

Distributional range : India to Sunda Island, and Newguinea.

58. ***Rhomborista devexata*** (Walker)

1861. *comibaena devexata* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 573.

1997. *Rhomborista devexata* : Mandal and Ghosh, *State Fauna Series* **3** : *Fauna of West Bengal*, part-7 : 528.

Material examined : One ♀, iv.1897, Sikkim, *ca* 550 m, *G. C. Dudgeon* coll.

Length of Forewing : 18 mm.

Diagnosis : Vertex and shaft of antennae white, two end cell specks on both wings, outer angle with irregular patch, the marginal line rufous with white diamond shaped marking. Margin of hindwing very much dentate at M_1 and M_3. Short band of underside is rufous.

Distribution : India : Sikkim, West Bengal (Darjiling), Meghalaya (Khasi Hills), Uttar Pradesh (Mussoorie), Himachal Pradesh (Simla) and Kerala (Travancore). *Elsewhere* : Indonesia (Borneo), Hampson(1895).

*31. Genus ***Comibaena*** Hübner

1826. *Comibaena* Hübner, *Verz. Bek. Schmett.*, p. 254.

Distributional range : Chiefly of Eastren Palaearctic and Indo-Australian, But rarely found in Western Europe and Africa.

59. ***Comibaena albimarginata*** (Moore)

1893. *Uliocnemis albimarginata* Warren, *Proc. zool. Soc. Lond.*,**1893** : 355.

1976. *Comibaena albimarginata* Holloway, *Moths borneo*, Mount Kinabalu, P. 62.

Distribution : India : Sikkim and Assam. *Elsewhere* : Indonesia (Borneo) and Japan (Hampson 1895).

Remarks : Distribution of the species cited as Japan by Hampson is doubtful.

60. ***Comibaena delineata*** (Warren)

1893. *Uliocnemis delineata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 356.

1987. *Comibaena delineata* : Inoue; *Bull. Fac.domest. Sci. Otsuma Wom. Univ.*, **23** : 217.

Distribution : India : Sikkim. Elsewhere : E. Nepal and Tibet.

32. Genus ***Thalassodes*** Guenèe

1858. *Thalassodes* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 359.

Diagnosis : Refer key.

Distributional range : Mainly Indo-Australian, stragglers to Aethiopian region.

Remarks : A total of six species are found in India. Out of these only two species are reported from Sikkim. Here only one species is studied.

*61. ***Thalassodes curiosa*** Swinhoe

1902. *Thalassodes curiosa* Swinhoe, *Trans. ent. Soc. Lond.*, **1902** : 673.

1976. *Thalassodes curiosa* : Holloway, *Moths Borneo*, Mount Kinabdu, p. 62.

Distribution : India : Sikkim. *Elsewhere* : Malaya, Indonesia (Borneo, Java, Sulawesi), Ceram and Buru.

Remarks : It is reported from both upper and lower montane ranges, Holloway (1976).

62. ***Thalassodes quadraria*** Guenèe

1858. *Thalassodes quadraria* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 360.

1913. *Thalassodes quadraria* : Prout, *Lep. Cat.*, **14** : 97.

Material examined : Four ♂, vii.1889, 7.viii.1890 and 20.viii.1890. vi.1897, one ♀, vii.1891, *G.C.Dudgeon* coll.; one ♂,27.x.1992, Tadong, Gangtok, East Sikkim, *M.S.Shishodia* coll.

Length of Forewing : ♂, 17-22 mm, ♀, 20 mm.

Diagnosis : Frons and palpi red, vertex white, wings semihyaline, Cula and M_3 of both wings stalked. Indistinct antemedial line on fore wing straight on hindwing angled at vein Cula. Hindwing angled at M_3 cilia ochreous. Underside of both wings white.

Distribution : India : Sikkim (Tadong, E. Sikkim). *Elsewhere* : Myanmar and Australia.

Remarks : Inoue (1992) in his catalogue of moths of Taiwan dealt with the above species under *subqudrarius* Inoue, 1976. Larva feeds on *Polyalthea longifolia,* [Sivastopulo (1948)]. Species collected at light.

33. Genus ***Jodis*** Hübner

1823. *Jodis* Hübner, *Verz. Bek. Schmett.*, p. 285.

Diagnosis : Refer Key.

Distributional range : Europe, Asia and Africa.

Remarks : This was misspelt *Iodis* : Mandal and Ghosh (1997).

63. ***Jodis caudularia*** (Guenèe)
[***Iodis caudularia*** (Guenèe)]

1858. *Nemoria caudularia* Guenèe, *Hist. nat. Ins. lep.*, **1** : 349.

1913. *Jodis caudularia* : Prout, *Lep. Cat.*, **14** : 154.

Material examined : One ♂, xii.1896 *ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 12 13 mm.

Diagnosis : ♂ antennae bipectinated to two-thirds length. Vertex of head white, antemedial and postmedial dentate lines on both wings, postmedial lines curved between culb and M_3. of hindwing Underside of both wings white.

Distribution : India : Sikkim and Nilgiris. *Elsewhere* : Sri Lanka.

34. Genus ***Berta*** Walker

1862. *Berta* walker, *Cat. Lep. Brit. Mus.*, **26** : 1621.

Diagnosis : Refer Key.

Distributional range : India to N. Australia and W. Africa.

Remarks : Out of three Indian species, one species is dealt with.

64. ***Berta chrysolineata*** Walker

1862. *Berta chrysolineata* Walker, *Cat. Lep. Het. brit. Mus.*, **26** : 1621.

1982. *Berta chrysolineata* : Burlow, *Intr. Moths S. E. Asia,* ed. **1** : 57.

Material examined : One ♂, one ♀, 7.ix.1891, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : ♂ 12 mm ♀ 13 mm.

Diagnosis : Palpi minute, ♂ antennae bipectinate, hind tibia dilated with a fold and a long tuft of hair. Hindwing excised, on both wings, antemedial, medial and submarginal spots. On hindwing medial series are curved whereas on fore wing these are obloque. Under side of both wings white. The hind wing is excised.

Distribution : India : Sikkim, Assam, West Bengal and Karnataka (Kanara). *Elsewhere* : Taiwan, Malaya and Indonesia (Sumatra, Borneo).

Remarks : Inoue (1992) synonymised this species under *Zygophyxia* Prout 1912, described from Singapore. He also noted *Chrysolineata* auct. part (not Walker, 1862)

*65. ***Berta acte*** (Swinhoe)

1892. *Thalera acte* Swinhoe, *Trans. ent. Soc. Lond.*, **6** : t. 1, f. 13.

1913. *Berta acte* : Prout, *Lep. Cat.*, **14** : 159.

Distribution : India : Sikkim, Meghalaya(Khasi Hills) and Nagaland. *Elsewhere* : Sri Lanka and West China.

35. Genus ***Gelasma*** Warren

1893. *Gelasma* Warren , *Proc. zool. Soc. Lond.*, **1893** : 353.

Diagnosis : Refer key.

Distribution : Indo-Australian (Stragging into

Eastern Palaearctic), Malagassy (Madagascar)

Remarks : Out of six Indian species four occur in Sikkim three of which are dealt with.

Key to the species

Outer margin of hindwing angled at M_3. Frons rufons, vertex white, waved antemedial line at forewing, on hindwing postmedial line angled at Cula. Both wing with lunulate dark spot on cell ..... *griseoviridis* Warren

Outer margin of hindwing produced to a long point at M 1

1. Frons crimson, Forewing costa ochreous, an oblique antemedial pale line, both wings with pale oblique postmedial line .... *goniaria* (Felder)

Frons blackish, forewing costa irrorated with fuscous, antemedial and post medial line of both wings waved ..... *inaptaria* (Walker)

66. ***Gelasma goniaria*** (Felder)

1874. *Timandra goniaria Felder,* Reis. Nov., pl.128, fig. 3.

1997. *Gelasma goniaria* Mandal and Ghosh, *State Fauna series* 3, *Fauna West Bengal*, Part- 7 : 515.

Material examined : One ♂, Yatang, one♀, 8.x.1887, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 14 mm. ♀ 15 mm.

For other details : Refer Mandal and Ghosh (1997).

*67. ***Gelasma glaucaria*** (Walker)

1866. *Thalera glaucaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1613.

1987. *Gelasma glaucaria* : Inoue, *Bull. Fac. Domest. Sc. Otsuma Wom. Univ.*, **23** : 217.

Distribution : India : Sikkim and N. India. *Elsewhere* : Nepal and Tibet.

68. ***Gelasma griseoviridis*** Warren

1893. *Gelasma griseoviridis* Warren, *Proc. zool. soc. Lond.*, **1893** : 353.

1913. *Gelasma griseoviridis* : Prout, *Lep. Cat.* **14** : 93.

Material examined : One ♂, Yatang, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 15 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nagaland *ca* 1900 m.

Remarks : The specimen is larger in size in comparison to that of Hampson's (1895) specimen.

69. ***Gelasma inaptaria*** (Walker)

1862. *Thalassodes inaptaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1560.

1976. *Gelasma inaptaria*: Hollway, *Moths Broneo*, Mount Kinabalu, p. 62.

Material examined : One ♂, Sikkim *Old Coll.*

Length of Forewing : 23 mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim and Assam. *Elsewhere* : Bangladesh (Sylhet).

Remarks : This species is closer to *korintjiensis* Prout (Sumatra) and *submacularia* Leech (W. China) Holloway (1976).

36. *Genus* ***Spaniocentra*** prout

1862. *Spaniocentra* Prout, *Gen. Ins.* **129** : 94.

Diagnosis : Refer key.

Distributional range : India and China to Indonesia [Sulawesi (Celebes)].

Remarks : This genus is very close to *Rhomborista* differs by the presence or absnce of median spur. Only single Indian species of the genus is studied and reported in the text (Median spur absent in *Spaniocentra*).

70. ***Spaniocentra pannosa*** (Moore)

1887. *Comibaena pannosa* Moore, *Lep. Ceylon*, **3** : 433.

1913. ***Spaniocentra pannosa*** : Prout, *Lep. Cat.*, **14** : 58.

Material examined : One ♂, 18.vi.1890, one ♀, vi.1895, one ♂, vii.1896, alt. *c* 550 m, two ♀ vii.1897, Sikkim, three examples (damaged) vii, ix-x. 1897, alt. *ca* 550 m. *G. C. dudgeon* coll.

Length of Forewing : ♂ 12-13 mm, ♀ 14-19 mm.

Diagnosis : Fresh specimens bright green costa of forewing white, then narrowly purple-brown. Purple-brown white central blotch at anal angle, on hindwing a smaller blotch at apical region. Underside blotches are pale.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : North Nepal, Sri Lanka, Myanmar, Indonesia (Borneo), Amboina var (?) *incomptaria* Leech, West China Prout (1913).

Remarks : One ♀ (19 mm) specimen examined has a larger wing than that mentioned by Hampson (1895). the food plant of the larva is *Loranthus* sp. Hampson (1895).

37. Genus ***Oenospila*** Swinhoe

1892. *Oenospila* Swinhoe, *Trans ent. Soc. Lond.*, **1892** : 5.

Diagnosis : Refer key.

Distributional range : India to N. Australia, enters Palaearctic region in Kashmir.

Remarks : Amongst two Indian species one species is dealt with here.

71. ***Oenospila flavifusata*** (Walker)

1861. *Thalera flavifusata* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 596.

1992. *Oenospila flavifusata* Inoue, *Lep. Taiwan, Checklist*, **1** (2) : 122.

Material examined : One ♂ (?), vii.1897, Sikkim alt. *ca* 550 m. *G.C.Dudgeon* coll.

Lenght of Forewing : 15 mm.

Diagnosis : Emereld green (fresh specimens), vertex of head white, costa white except base, indistinct dentate antemedial line forms by reddish dots ended in a spot on the inner margin, crimson spot at end of cell on both wings, under side white.

Distribution : India : Sikkim and Bengal Swinhoe (1900). *Elsewhere* : Sri Lanka, Taiwan, Indonesia (Java, Borneo) and N.Australia.

Remarks : The specimen is damaged. Determination of sex is very difficult for this damage specimen. Larvae feed on *Barringtonia* sp. and *Eugenia jambos*, [Sevastopulo (1948)].

*72. ***Oenospila strix*** (Butler)

1889. *Recheospila strix* Butler, *Ill. Typ. Lep. Het. Brit. Mus.*, **7** : 105, 136, f. 8.

1976. *Oenospila strix* : Hiolloway, *Moths Borneo*, Mount Kinabalu, p. 62.

Distribution : N. India : Sikkim, Meghalaya (Khasi Hills), Himachal Pradesh (Dharmsala) and Kashmir. *Elsewhere* : Indonesia (Suamtra, Java, Bali).

38. Genus ***Maxates*** Moore

1887. *Maxates* Moore, *Lep. Ceylon*, **3** : 436.

Diagnosis : Refer key.

Distributional range : India, Sri Lanka to Queensland.

73. ***Maxates coelataria*** (Walker)

1861. *Thalssodes coelataria* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 552.

1997. *Maxates coelataria* : Mandal and Ghosh, *State Fauna Series*, **3** : *Fauna of West Bengal*, Part- 7 :

Material examined : One ♂, Sikkim, alt. *ca* 550 m. *J.G.Pilcher* coll. (Old collection).

Length of Forewing : 18 mm.

Diagnosis : Frons blackish, vertex of head white, forewing costa ochreous, irrorated with fuscous, post medial area of this with dark lunule at outer angle, there is an ochreous crescent shaped patch, a smaller patch also at hindwing apex and a white patch postmedial at costal region. Under side pale with broad submarginal fuscous band diminises towards costa of fore wing and inner margin of hindwing.

Distribution : India : Sikkim, West Bengal (Darjiling) and Karnataka (N.Kanara). *Elsewhere* : Sri Lanka, Singapore and Indonesia (Borneo).

*74. ***Maxates macariata*** (Walker)

1862. *Thalassodes macariata* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1562.

1913. *Maxates macariata* : Prout, *Lep. Cat.*, **14** : 106.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Bangladesh(Sylhet) Cotes and Swinhoe (1888).

39. Genus ***Paramaxates*** Warren

1894. *Paramaxates* warren, *Nov. zool.*, **1** : 387.

Diagnosis : Refer key.

Distributional range : Indo-Malayan, China and Taiwan.

Remarks : This genus is restricted to North-Eastern states of India.

75. ***Paramaxates polygrapharia*** (Walker)

1860. *Hypochroma polygrapharia* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 429.

1913. *Paramaxates polygrapharia* : Prout, *lep. Cat.*, **14** : 138.

Material examined : One ♂, viii.1895, Sikkim, alt. *ca* 600 m. *J. G. Pilcher* coll.

Length of Forewing : 20 mm.

Diagnosis : Yellow patch at the base of forewing, waved antemedial and postmedial lines indistinct, at the end of cell a hyaline speck, dark striae on costal and inner medial areas. Hindwing with subbasal and postmedial band, outer area yellowish. Underside white, submarginal band of forewing starts from M_2 to inner margin of hindwing. Yellow patches at forewing apex and beyond cell.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Singapore and Indonesia [Borneo (Sarawak), South Sulawesi] (Swinhoe, 1900).

Remarks : Inoue (1992) in his catalogue mentioned the species as synonym of *taiwana* Yazaki, 1988. It is given as *Polygrapharia*-auct, part (Not Walker, 1860).

*76. ***Paramaxates vagata*** (Walker)

1861. *Macaria vagata* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 927.

1982. *Paramaxates vagata* : Barlow, *Intr. Moth. S.E.Asia*, ed. **1** : 122.

Distribution : India : Sikkim. *Elsewhere* : Bangladesh (Sylhet), Cotes and Swinhoe (1888), Bhutan, Myanmar, Taiwan, Malaya and Indonesia Sumatra, Borneo, Java and Sulawesi.

Remarks : Holloway (1976) considered this, *Hampsonian* synonym under *Polygrapharia* (walker) as good species.

*40. Genus ***Omphacodes*** Warren

1894. *Omphacodes* Warren, *Nov. Zool.*, **1** : 396.

Distributional range : Mainly confined to East and South African countries and then enters into Northern part of India.

Remarks : Prout (1913) dealt with this genus in his catalogue. Thereafter this species has not yet been recorded.

77. ***Omphacodes directa*** (Walker)

1861. *Nemoria* (?) *directa* walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 535.

1913. *Omphacodes directa* : Prout, *Lep. Cat.*, **14** : 147.

Distribution : India : Sikkim and Himachal Pradesh (Simla and Dharmsala).

41. Genus ***Episothalma*** Swinhoe

1893. *Episothalma* Swinhoe, *Ann. Mag. nat. Hist.*, **21** (6) : 149.

Diagnosis : Refer key.

Distributional range : India to Neuguinea.

78. ***Episothalma robustaria*** (Guenèe)

1858. *Hemithea robustaria* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 383.

1913. ***Episothalma robustaria*** : Prout, *Lep. Cat.*, **14** : 109.

Material examined : One ♀, 10.vii.1888, one ♂, viii.1896, alt. *ca* 550 m., one ♂, ix.1897, Sikkim, *G.C.Dudgeon* coll.

Lenght of Forewing : ♂ 17 mm, ♀21 mm.

Diagnosis : Fresh specimens blue-green, both wings' crenulated olive postmedial line angled at M_3, both wings with brown discocellular speck, underside whitish with pale postmedial line and cell specks which is faded.

Distribution : India, Sikkim, Assam and Nilgiri hills. ***Elsewhere*** : Myanmar (Moulmein).

42. Genus ***Hemithea*** Duponchel

1829. *Hemithea* Duponchel, *Hist. nat. Lep.*,7 (2) : 106, 233.

Diagnosis : Refer key.

Distributional range : Palaearctic and Indo-Australian.

Remarks : Three species of genus are hitherto known from Sikkim, here only one species dealt with.

*79. ***Hemithea distinctaria*** (Walker)

1866. *Thalassodes distinctaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1607.

1997. *Hemithea distinctaria* : Mandal and Ghosh, *State Fauna Series* **3** : *Fauna of West Bengal*, (7) : 514.

For other details Mandal and Ghosh (1997).

*80. ***Hemithea rubripicta*** Warren

1893. *Hemithea rubripicta* Warren, *Proc. zool. Soc. Lond.*, **1893** : 353.

1913. *Hemithea rubripicta* : Prout, *Lep. Cat.*, **14** : 112.

Distribution : India : Sikkim.

Remarks : Prout (1913) dealt this species thereafter no record is available.

81. ***Hemithea tritonaria*** (Walker)

1862. *Thalassodes tritonaria* Walker, *Cat. Het. Brit. Mus.*, **26** : 1560.

1948. *Hemithea tritonaria* : Sevastopulo, *Jour. Bom. nat. Hist. Soc.*, **47** (3) : 492.

Material examined : One example (sex in det), xi.1896 and one example vii.1997, alt. *ca* 550 m. Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 12 mm.

Diagnosis : Fresh specimen yellow green, red specks on 3rd to 5th segments of abdomen. Forewing costa ochreous, antemedial line waved and whitish, postmedial line white, waved, on both wigs, marginal line dark with venal specks. Underside white.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), West Bengal (Darjiling) and Nilgiris. *Elsewhere* : China, Sri Lanka, Indonesia (Borneo, Java) and Philippines.

Remarks : Specimens are damaged. Food plant : *Ficus*, Sivastopulo (1948).

43. Genus ***Cyclothea*** Prout

1912. *Cyclothea* Prout, *Gen. Ins.*, **129** : 181.

Diagnosis : Refer key.

Distributional range : India, Sri Lanka, Taiwan, and Indonesia (Sumatra).

Remarks : It is known from Taiwan (Formosa) Prout (1913) but Inoue (1992) did not reported this genus from there.

82. ***Cyclothea disjuncta*** (Walker)

1861. *Thalera disjuncta* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 595.

1913. *Cyclothea disjuncta* : Prout, *Lep. Cat.*, **14** : 124.

Material examined : One ♂, vii.1896, Sikkim, alt. *ca* 550 m. *G.C.Dudgeon* coll.

Length of Forewing : 14 mm.

Diagnosis : Frons, palpi red, vertex of head white, Forewing costa white, striated with dark specks, discocellular spots on both wings, white specks on veins, wings margin with dark line, underside of wings whitish.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), and S.India (Ganjam, Canara, Nilgiris). *Elsewhere* : Sri Lanka, Indonesia (Sumatra) and Taiwan.

Remarks : Hampson (1895) has pointed out that its occurrence in Japan is doubtful.

44. Genus ***Hemistola*** Warren

1893. *Hemistola Warren, Proc. zool. Soc. Lond.*, **1893** : 353.

Diagnosis : Refer key.

Distributional range : Mainly European and Asian region some African species are also placed in this genus.

83. ***Hemistola detracta*** (Walker)

1861. *Geometra detracta* Walker, *cat. Lep. Het. Brit. Mus.*, **22** : 521.

1913. *Hemistola detracta* : Prout, *Lep. Cat.*, **14** : 152.

Material examined : One ♂, vi.1896, Sikkim, alt. *ca* 550 m, *G. C. Dudgeon* coll.

Length of Forewing : 14 mm.

Diagnosis : Semi hyaline, vertex of head white, white dentate postmedial line on both wings, a white ring on centre of both wings, costal edge of forewing ochreous. Underside pale and without any mark.

Distribution : India : Sikkim, Nagaland, Himachal Pradesh (Kulu, Simla) and Kashmir.

*84. ***Hemistola dispartita*** (Walker)

1861. *Geometra dispartita* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 520.

1913. *Hemistola dispartita* : Prout, *Lep. Cat.*, **14** : 152.

Distribution : India : Sikkim, N. W. India including Kashmir. *Elsewhere* : E. Turkey.

*85. ***Hemistola rubrimargo*** Warren

1893. *Hemistola rubrimargo* Warren, *Proc. zool. Soc. Lond.*, **1893** : 384, t. 31, f. 3.

1913. *Hemistola rubrimargo* : Prout, *Lep. Cat.*, **14** : 153.

Distribution : India : Sikkim. *Elsewhere* : Taiwan, and W.China.

Remarks : Inoue (1992) put this species under *simplex* Warren (1899) as synonym.

45. Genus ***Comostola*** Meyrick

1888. *Comostola* Meyrick, *Proc. Lin. Soc. N. S. Wales*, **2** (2) : 869.

Diagnosis : Refer key.

Distributional range : Indo-Australian region but a few species are Palaearctic in distribution.

86. ***Comostola ovifera*** (Warren)

1893. *Euchloris* (?) *ovifera* Warren, *Proc. zool. Soc. Lond.*, **1893** : 358.

1987. *Comostola ovifera* : Inoue, *Bull. Fac. Domest. Sci. Otsuma Wom. Univ.*, **23** : 218.

Material examined : One ♂, Gnatang, alt. *ca* 350 m. *G.C.Dudgeon* coll. (Old Collection). Due to damaged condition measurement could not not be taken.

Diagnosis : Frons pinkish shaft of antennae whitish, white speck on median, white cell spot, postmedial area of both wings with curved series of spot. Underside pale green, most of the part of fore wing covered with grey.

Distribution : India : Sikkim. *Elsewhere* : Nepal (E. Nepal) and Tibet.

Remarks : Prout 1913 (1912-15) reported that "the species was first discovered by Elwis in July at Tonglo, Sikkim, at an elevation of 3000 m, but has since been taken at Yatang, Tibet, perhaps not Palaearctic"

*46. Genus ***Pyrrhorachis*** Warren

1896. *Pyrrhorachis* Warren, *Nov. zool.*, **3** : 292.

Distributional range : India to Australia.

87. ***Pyrrhorachis caerulea*** Warren

1893. *Comostola caerulea* Warren, *Proc. zool. Soc. Lond.*, **1893** : 354, t. 31, f. 1.

1913. *Pyrrhorachis caerulea* : Prout, *Lep. Cat.* **14** : 162.

Distribution : India : Sikkim.

Remarks : In Prout (1913) it is mentioned that type of this species is last catalogued, after that none has studied this species.

Key to the subfamily Sterrhinae

Palpi slender, porrect and do not reaching beyond frons 1

- Second joint of palpi oblique and reaches beyond frons, third joint long and porrect [♂ antennae bipectinate R_1-R_5 stalked with a small aerole at their base] ..... *Anisodes* Guenèe

1. Single aerole in Forewing 2

- Double aerole in Forewing 6

2. Rs and M_1 stalked in hindwing ..... *Idaea* Treitschke

Rs and M_1 from the cell 3

3. Outer margin of Hindwing not produced at. M_3 4

- Outer margin of Hindwing produced to a point at M_3 5

4. M_2 of both wings from the middle of cell ..... *Scopula* Schrank

- M_2 of both wings above the middle of cell, Hindwing outer margin evenly round ..... *Problepsis* Lederar

5. Forewing apex produced and acute, M_3 and Cula From cell ..... *Tirnandra* Duponchel

- Forewing apex excised from apex to M_3; M_3 and cula stalked ..... *Gnamptoloma* Warren

6. Rs and M_1 of Hindwing From cell 7

- Rs and M_1 of Hindwing stalked ..... *Rhodostrophia* Hübner

7. Both wings M_2 from middle of cell 8

- Both wings M_2 nearer to M_1 than M_3 9

8. Antennae of male serrate and fasciculate ... *Dithecodes* Warren

- Antennae of male bipectinate upto three-fourth length 10

9. Antennae of male serrated with tufts of cilia, hind legs reduced with a strong tibial hair-pencil, first tarsal joint long and densely tufted with hair ..... *Zythos* Fletcher

Antennae of male ciliated, male hind leg small, tibia dilated with a fold and tuft of long hair ..... *Somatina* Guenèe

10. Male hind-tibia with all spurs, wings margin cremulated and angled at M_3 ..... *Synegiodes* Swinhoe

Male hind-tibia with terminal pair of spurs, Hindwing outer margin rounded ..... *Tanaotrichia* Warren

47. Genus ***Rhodostrophia*** Hübner

1825. *Rhodostrophia* Hübner, *Verz. Bek. Schmett.*, p. 300.

Diagnosis : Refer Key.

Distributional range : Palaearctic, Himalayan, Meghalaya (Khasi Hills), Myanmar, Taiwan, North Africa, S. America (Chile).

*88. ***Rhodostrophia haematozona*** Hampson

1895. *Rhodostrophia haematozona* Hampson, *Fauna. Brit. India* Moths, **3** : 457.

1934. *Rhodostrophia haematozona : Prout,* Lep. Cat., **61** : 20.

Distribution : India : Sikkim (Chumbi Valley).

Remarks : Hampson (1895) described this endemic species, after that none dealt with this species.

*89.***Rhodostrophia olivacea*** Warren

1895. *Rhodostrophia olivacea* Warren, *Nov. zool.* **2** : 99.

1934. *Rhodostrophia olivacea* : Prout. *Lep. Cat.*, **61** : 20.

Distribution : India : Sikkim and West Bengal (Darjiling). *Elsewhere* : Myanmar.

*90 ***Rhodostrophia similata*** (Moore)

1888. *Phyletis similata* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, p. 264.

1934. *Rhodostrophia similata* : prout, *Lep. Cat.*, **61** : 20.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Myanmar.

91. ***Rhodostrophia vinacearia*** (Moore)

1867. *Anisodes ? vinacearia* Moore, *Proc. Zool. Soc. Lond.*, **1867** : 642.

1934. *Rhodostrophia vinacearia* Prout, *Lep. Cat.*, **61** (2) : 21.

Material examined : One ♂ one ♀ one (damaged), iv to ix.1896, Sikkim, alt. *ca* 550 m. *G. C. Dudgeon* coll.

Length of Forewing : ♂ ♀ 15 mm.

Diagnosis : Ground colour reddish ochreous, forewing costa pinkish, antemedial line curved, postmedial and submarginal lines sinous, all the lines faded, a dark cell spot. Hindwing with subbasal, medial and postmedial lines, cell speck dark. Underside yellowish.

Distribution : India , Sikkim and Bengal. [Cotes and Swinhoe (1888)]. *Elsewhere* : Tibet.

48. Genus ***Tanaotrichia*** Warren

1893. *Tanaotrichia* Warren, *Proc. Zool. Soc. Lond.*, **1893** : 360.

Diagnosis : Refer key.

Distributional range : India, Bhutan and West China.

Remarks : Out of three species one species occurring in India.

92. ***Tanaotrichia prasonaria*** (Swinhoe)

1892. *Phyletes prosonaria* Swinhoe, *Trans. ent. Soc. Lond.*, **1892** : 12.

1913. *Tanaotrichia prasonaria* : Prout, *Lep. Cat.*, **61** (1) : 22.

Material examined : 13 examples, 2.x.1889, one ♂, xi.1895, one example, iii.1896, alt. *ca* 550 m, nine examples, xi. 1896, alt. *c.* 550 m, one example vi.1897, alt. 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 16 mm.

Diagnosis : Pale rufous specimens irrorated with red, vertex of head white, fuscous line on forewing, medial on hindwing, submarginal line of both wing curved between M_3 and culb, forewing with a cell speck, marginal line dark.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Himachal Pradesh (Kangra Valley) and North-west India [*trilineata* Warren (1893)]

Remarks : Most of the collection was damaged, so sex can not be determined.

*49. Genus ***Discoglypha*** Warren

1893. *Discoglypha* Warren, *Nov. zool.*, **3** : 110.

Distributional range : Mainly North-East India and Sri Lanka.

93. ***Discoglypha punctimargo*** (Hampson)

1895. *Erythrolophus punctimargo* Hampson, *Fauna. Brit. India* Moths, **3** : 453.

1934. *Discoglypha punctimargo* : Prout, *Lep. Cat.*, **61** : 22.

Distribution : India : Sikkim and Assam.

94. ***Discoglypha genuflcxus*** (Hampson)

1895. *Erythrolophus genuflexus* Hampson, *Fauna Brit. India, Moths*, **3** : 453

1934. *Discoglypha genuflexus* : *Prout, Lep. Cat.*, **61** : 22. *Distribution;* India; Sikkim and Meshalaya (Khasi Hills)

95. ***Discoglypha aureifloris*** Warren

1896. *Discoglypha aureifloris* Warren, *nov. zool.*, **3** : 111.

1934. *Discoglypha aureifloris* : Prout, *Lep. Cat.*, **61** : 23.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

Remarks : Prout (1934) included these three species of the genus in his catalogue.

50. Genus ***Dithecodes*** Warren

1900. *Dithecodes* Warren, *Nov. zool.*, **7** : 102.

Diagnosis : Refer key.

Distributional range : Majority of the species are found in Indo-Australian, African and Neotropical Regions, a few species are occuring in Western China, Japan and America.

96. *Dithecodes idaea* (Swinhoe)

1892. *Hemithea idaea* Swinhoe, *Trans. ent. Soc. Lond.*, **1892** : 6.

1934. *Dithecodes idaea* : Prout, *Lep. Cat.*, **61** : 26.

Material examined : One ♂, vii.1897, Sikkim, alt. *ca* 550 m, *G. C. Dudgeon* coll.

Lenght of Forewing : 14 mm.

Diagnosis : Frons and costa of Forewing crimson red, wings suffused with crimson, faded sinous antemedial, medial, postmedial and submarginal lines on forewing, a dark end cell speck, which is white and V-Shaped in Hindwing. Under side of Wings white.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nagaland. *Elsewhere* : Pahang and Indonesia (Sumatra, Lombok).

*51. Genus *Organopoda* Hampson

1893. *Organopoda* Hampson, *Typ. Lep. Het. Brit. Mus.*, **9** : 147.

Distributional range : Oriental tropics and subtropics east to Queensland and the Bismarck island (Holloway, 1997).

Remarks : Out of two Indian species one species was recorded from Sikkim.

97. *Organopoda annulifera* (Butler)

1889. *Anisodes annulifera* Butler, *Ill. Typ. Lep. Het. Brit. Mus.*, **7** : 107.

1934. *Organopoda annulifera* : Prout, *Lep. Cat.* **61** : 23.

Distribution : India : sikkim and North-west India. *Elsewhere* : Sri Lanka.

*52. Genus *Metallaxis* Prout

1932. *Metallaxis* Prout, *Nov. Zool.*, **37** (2) : 229.

Distributional range : Oriental, but three species are included from Malagassy (Holloway, 1997)

Remarks : There are only two species recorded from India (North-East India), of Which one species is reported from Sikkim.

98. *Metallaxis semipurpurascens* (Hampson)

1896. *Rhodostrophia semipurpurascens* Hampson, *Fauna Brit. India* moths, **4** : 563.

1997. *Metallaxis semipurpurascens* : Holloway, *Malayan Nature Jour.*, **51** : 64.

Distribution : India : Sikkim. *Elsewhere* : Bhutan, Hong Kong and Malaysia.

53. Genus *Synegiodes* Swinhoe

1892. *Synegiodes* Swinhoe, *Trans. ent. Soc. Lond.*, **1892** : 11.

Diagnosis : Refer Key.

Distributional range : Tropical and subtropical region extended south-east beyond Indonesia (Borneo).

Remarks : Among five Indian species four species are known from sikkim of which one species is studied here.

*99. *Synegiodes diffusifascia* Swinhoe

1892. *Synegiodes diffusifascia* Swinhoe, *Trans. ent. Soc. Lond.*, **1892** : 11.

1997. *Synegiodes diffusifascia* : Holloway, *Malayan Nat. J.*, **51** : 21.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : From N.E.India to Peninsular Malaysia and Indonesia (Borneo).

Remarks : The species is rare, Holloway (1997), reported a single ♀ from G. Mulu at 1790m.

*100. *Synegiodes histrionaria* Swinhoe

1892. *Synegiodes histrionaria* Swinhoe, *Trans. ent. Soc. Lond*, **1892** : 12.

1992. *Synegiodes histrionaria* : Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 12.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Tonkin and Taiwan.

Remarks : Inoue (1992) treated this species as good species from the Hampson's (1895) synonym list.

*101. ***Synegiodes sanguinarius*** (Moore)

1868. *Anisodes sanguinarius* Moore, Proc. zool. Soc. Lond., **1867** : 641.

1987. *Synegiodes sanguinarius* : Inoue, *Bull Fac. Domest. Sci. Otsuma Wom. Univ.*, **23** : 219.

Distribution : India : Sikkim and Nagaland. *Elsewhere* : E. Nepal (Rele Khola, alt. 2400 m nr. Annapurna).

102. ***Synegiodes hyriaria*** (Walker)

1866. *Anisodes hyriaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1617.

1997. *Synegiodes hyriaria* : Mandal and Ghosh *State Fauna Series*, 3 : *Fauna of West Bengal* (7) : 510.

Material examined : One ♂, one ♀, 11.vi.1888, two examples, ix-x.1896, one example, 15.v.1897, Sikkim, *G.C.dudgeon* coll.

Length of Forewing : ♂ 17 mm, ♀ 18 mm. Most of the specimens are damaged.

For other details : Refer Mandal and Ghosh (1997).

*54. Genus ***Chrysocraspeda*** Hampson

1893. *Chrysocraspeda* Swinhoe, *Ann. Mag. nat. Hist.*, **12** (6) : 157 (indescr.).

1895. *Chrysocraspeda* Hampson, *Fauna Brit. India* Moths, **3** : 443.

Distributional range : Throughout the Old World tropics and subtropics, Holloway (1997)

103. ***Chrysocraspeda conspicuaria*** Swinhoe

1905. *Chrysocraspeda conspicuaria* Swinhoe, *Ann. Mag. nat. hist.*, **15** (7) : 165.

1934. *Chrysocraspeda conspicuaria* : Prout, *Lep. Cat.*, **61** : 62.

Distribution : India : Sikkim and Assam. *Elsewhere* : Sri Lanka.

Remarks : After the description of the species Hampson (1907) was the first man who has reported this species. After that Prout (1934) has catalogued this.

55. Genus ***Timandra*** Duponchel

1829. *Timandra* Duponchel, *Hist. nat. Lep. Eur.*, 7 (2) : 224.

Daignosis : Refer key.

Distributional range : The genus is chiefly Asian, a few species may be extended towards, Australia and Africa.

Remarks : The genus was synomised by Prout (1934), but Inoue (1992) treated this genus as a valid genus.

104. ***Timandra convectaria*** Walker

1861. *Timandra convectaria* Walker, *cat. Lep. Het. Brit. Mus.*, **23** : 800.

1992. *Timandra convectaria* : Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 122.

Material examined : One ♀, one example, 2.v.1888, one example, 30.vii.1888 alt. *ca* 1700 m, two examples 1x-x.1890, one example i.1897, one example viii.1897, alt. *ca* 550 m, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : ♀ 15 mm.

For other details : Mandal and Ghosh (1997) may be consulted.

Remarks : Specimens are damaged, thereforwe measurement or sex determination was not possible for whole specimens.

This species was put under the genus *Timandra* instead of *Calothysanis* Hübner by Inoue (1992) which is its original position.

56. Genus ***Gnamptoloma*** Warren

1895. *Gnamptoloma* warren, *Nov. zool.*, **2** : 95.

Diagnosis : Refer key.

Distributional range : India including Sri lanka, Mayanmar and Taiwan to Australia.

Remarks : Out of two species of the genus only one species is recorded from Indian region. The same species is also dealt with here from Sikkim.

105. ***Gnamptoloma aventiaria*** (Guenèe)

1857. *Timandra aventiaria* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 3.

1992. *Gnamptoloma aventiaria* : Inoue, *Lep. Taiwan.*, Checklist, **1** (2) : 122.

Material examined : One ♀, i.1895, alt. ***ca*** 550 m. sikkim, *G. C. Dudgeon* coll.

Lenght of Forewing : 18 mm.

Diagnosis : Ochreous, if fresh it is dull green, with red costa, outer margin of forewing excised from apex to M_2, one Ocellus at end of cell, an oblique line arising near apex from costa to middle of inner margin of hindwing. A cell speck on hindwing. Underside yellow.

Distribution : India : Sikkim and Nilgiri Hills. ***Elsewhere*** : Bangladesh (Sylhet), Sri Lanka, Myanmar, Taiwan, Indonesia (Java) and Austarlia.

57. Genus ***Anisodes*** Guenèe

1857. *Anisodes* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 415.

Diagnosis : Refer key.

Distributional range : Distribution of the genus is world wide except Holarctic region.

*106. ***Anisodes sarawackarius*** Guenèe

1857. *Anisodes sarawackarius* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 420.

1992. *Anisodes sarawackarius* : Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 123.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Perak, Tankin, Taiwan, Indonesia (Borneo), Ceram, Neuguinea and Newmacklenberg.

Remarks : The species *obscrata* Warren was in the synonym list of the species *monetaria* Guenee by Hampson (1895). But Prout (1934) followed by Inoue (1992) the species is shifted in the synonym list of the species dealt with. The species *obscurata* is described from Sikkim.

*107 ***Anisodes absconditaria*** Walker

1862. *Anisodes absconditaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1580.

1997. *Anisodes absconditaria* Mondal and Ghosh, *State Fauna Series* 3, *Fauna West Bengal*, (7) : 510.

Distribution : India : Sikkim and Assam. ***Elsewhere*** : W. China, Taiwan, Malaya, Indonesia (sumatra, Java) and Philippines Holloway (1976).

Remarks : This species is also recorded from West Bengal (Darjiling) Mondal and ghosh (1997). For other details vide Mondal and Ghosh (1997).

*108. ***Anisodes intermixtarius*** Swinhoe

1892. *Anisodes intermixtarius* swinhoe, *Trans. ent. Soc. Lond.*, **1892** : 8.

1992. *Anisodes intermixtarius* : Inoue, *Lep. Taiwan*, Checklist,

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Bhutan, Taiwan and Malaya.

Remarks : Holloway (1976) in his distributional record mentioned 'Assam' .But actually Khasi Hill is now in Meghalaya.

109. ***Anisodes decretarius*** Walker

1862. *Anisodes decretaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 650.

1992. *Anisodes decretarius* : Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 123.

Material examined : Four examples (1 ♂ and 1 ♀).iii and ix.1896 and ii and v.1897. Sikkim, alt. *c* 550 m. *G. C. Dudgeon* coll.

Length of Forewing : ♂ 14 mm, ♀ 15 mm.

Diagnosis : Male hind tibia short, rufous specimens with reddish tinge, frons and vertex of head white. On Forewing a cell speck, curved antemedial specks three in number, postmedial line waved and fade. Underside of wings pale.

Distribution : India : Sikkim and Assam. *Elsewhere* : Sri Lanka, Taiwan, Malay, Indonesia (Borneo, Java, Bali) and Philippines.

Remarks : As the specimens were damaged with great difficult sex and measurement of two specimens were determined. Holloway (1997) dealt with this species as *Perixera dectaria* from Borneo. Coffea (Rubiaceae) is its host plant Holloway (1997).

*110. ***Anisodes flavispila*** (Warren)

1896. *Perixera flavispila* (Warren), *Nov. zool.*, **3** : 312.

1934. *Anisodes flavispila* : Prout, *Lep. Cat.*, **61** : 121.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : China (Hainan), Hong-kong, Salenger, Mantawi Island and Indonesia (Borneo and Sambawa).

*111. *Anisodes perscripta* (Warren)

1896. *Perixera pallida ab. perscripta* Warren, *Nov. zool.*, **3** : 326.

1934. *Anisodes perscripta* : Prout, *Lep. Cat.*, **61** : 122.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

Remarks : Holloway (1997) reported this species under *Perixera perscripta* Prout from Indonesia (Borneo). But the author have not seen any Indian specimen of the species, that is why the name of the species is not changed.

*112. *Anisodes denticulata* Hampson

1895. *Anisodes denticulata* Hampson, *Fauna Brit. India* Moths, **3** : 447.

1976. *Anisodes denticulata* : Holloway, *Moths Borneo*, Mount Kinabalu, : 64.

Distribution : India : Sikkim and Nagaland. *Elsewhere* : Indonesia (Sumatra, Borneo, Sulawesi), Ceram and New Guinea.

58. Genus *Somatina* Guenèe

1858. *somatina* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 10.

Diagnosis : Refer key.

Distribution : India including Sri Lanka to North Australia, Eastern Palearctic, Malagasy and Africa.

Key to the species

Olive brown, Forewing with waved irregular post medial line arises from base, a white cell speck, medial line ends before costa with purple patch. Hindwing with antemedial and medial dark bands, submarginal line grey .... *subusta* Warren

Grey with reddish suffusion, forewing antemedial postmedial and submarginal lines waved and indistinct. Cell-speck black. Hindwing with medial and postmedial lines which are waved and indistinct .... *plynusaria* (Walker)

113. *Somatina plynusaria* (Walker)

1862. *Anisodes plynusaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1581.

1992. *Somatina plynusaria* : Inoue, *Lep. Taiwan*, Checklist, **1** : 123.

Material examined : One ♂, vi.1897, Sikkim, alt. *ca* 550 m, *G. C. Dudgeon* coll.

Length of Forewing : 16 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Assam, Nilgiris and Canara. *Elsewhere* : Bangladesh (Sylhet), Myanmar, Taiwan and China (Hainan).

114. *Somatina subusta* (Warren)

1893. *Lipomelia subusta* Warren, *Proc. zool. Soc. Lond.*, **1893** : 359.

1900. *Somatina subusta* Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 376.

Material examined : One ♂, ix.1897, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 14 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nagaland. *Elsewhere* : Bhutan, Mayanmar (Karen Hills) and Taiwan.

Remarks : Now this species is *Lipomelia subusta* Warren, Inoue (1992). Hampson (1895) kept this genus in the synonym list of *Somatina*. The specimen is damaged.

59. Genus *Problepsis* Lederar

1846. *Calopter* Frivaldsky, *K.Magyar Term. Tars. Evkon.*, **1** : 185.

1852. *Problepsis* Lederar, *Verh. zool-bot. Ver. Wien.*, **2** : 74.

Diagnosis : Refer key.

Distributional range : Old World tropics and subtropics extending upto Eastern Palaearctic.

Remarks : Out of seven Indian species two species are dealt with here from Sikkim.

Key to the species

Antennae of male bipectinate, ocellus of **forewing** smaller and to some extent lunulate **with black ring**, dark mrkings, extending with **medial facia** towards inner margin of hindwing. **Ocellus** with raise silver scale. Hind wing **with medial** and post medial curved band..... ..... *vulgaris* Butler

Antennae of male fasciculate, discal ring shaped ocellus large, inside with a silvery ring and black mark below the centre, a fuscous band from ocellus to inner margin of hind wing. Hindwing ocellus is also bigger and round ..... *conjunctiva* Warren

115. *Problepsis vulgaris* Butler

1859. *Problepsis vulgaris* Butler, *Ill. Typ. Lep. Het. Brit. Mus.*, **7** : 43.

1997. *Problepsis vulgaris* : Mondal and Ghosh, *State Fauna Series* 3 : *Fauna West Bengal* part - 7 : 511.

Material examined : One ♂, 7.vii.1891, one example, vi.1896, one ♂, xii.1897, alt. *ca* 550 m, one example 10.vi.1890, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂, 17 mm.

Diagnosis : Refer key.

Distribution and other details : Refer Mondal and Ghosh (1997).

116. *Problepsis conjunctiva* Warren

1893. *Problepsis conjunctiva* Warren, *Proc. zool. Soc. Lond.*, **1893** : 358.

1934. *Problepsis conjunctiva* : Prout, *Lep. Cat.*, **61** : 157.

Material examined : One ♀, vi.1895, alt. *ca* 2200 m., one ♂, 9.x.1895, alt. *ca* 1200 m, *J. G. Pilcher* coll., one ♀, vii.1897, alt. *ca* 550 m. *G. C. Dudgeon* coll. Sikkim.

Length of Forewing : ♂ ♀ 19 mm.

Daignosis : Refer key.

Distribution : India : Sikkim. *Elsewhere* : Upper Myanmar.

Remarks : Now this species is *Problepsis* (*Problepsiodes*) *conjunctiva* Inoue (1992).

60. Genus *Zythos* Fletcher

1979. *Zythos* Fletcher, *Gen. Names Moths World*, **3**, Geometrida London *Brit. Mus.* (o. u. s.).

Diagnosis : Refer key.

Distributional range : India to New Guinea.

Remarks : The genus was studied under the preoccupied name (Fletcher, 1979). *Nobilia* Walker (1862).

The adults of the genus occur in lowland rain forest, Holloway (1997).

117. *Zyhtos turbata* (Walker)

1862. *Nobilia turbata* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1098.

1997. *Zythos turbata* : Holloway, *Malayan Nat. J.*, **51** : 67.

Material examined : One ♂, ix.1897, Sikkim, alt. *ca* 550 m. *G.C.Dudgeon* coll.

Length of Forewing : 20 mm.

Daignosis : Costa, base and medial area of Forewing olive grey, antemedial triangular patch, and the lunulate cell spot reddish. Hind wing reddish mixed with grey, cell-spot white.

Distribution : India : Sikkim, Assam (Sibsagar) and Andaman Islands. *Elsewhere* : Indonesia (Borneo), South Myanmar, peninsular Malaysia, Sumatra and Philippines (Mindanao).

*61. Genus *Antitrygodes* Warren

1895. *Antitrygodes* Warren, *Nov. zool.*, **2** : 90.

Distribution : Old World tropics.

Remarks : Out of three Indian species only one species is occuring from Sikkim.

118. *Antitrygodes vicina* (Thierry-Mieg)

1907. *Trygodes vicina* Thierry-Mieg, *Lep. nouv. Nat.*, **29** : 271.

1934. *Antitrygodes vicina* : Prout, *Lep. Cat.*, **61** : 162.

Distribution : Sikkim, Meghalaya (Khasi Hills). *Elsewhere* : South China.

Remarks : After the First description of the species Prout (1934) has reported in his catalogue.

62. Genus ***Scopula*** Schrank

1802. *Scopula* Schrank, *Fauna Boica* **2**(2) : 162.

Diagnosis : Refer key.

Distributional range : This genus is virtually cosmopolitan Holloway (1997). The genus is the only member of the subfamily Sterrhinae to extend into Polynesia, with endemic species on the Marquesas Holloway (1938) and it is the only genus to reach New Zealand Dugdale (1988).

Remarks : The genus includes species of both forest and open habitats, the latter adaptation leading to its success at higher latitudes Holloway (1997).

A number of species of the genus have been recorded to attract for drinking lachrymal secretions and body fluids of large mammals in S. E. Asia (Banziger and Fletcher, 1985).

Key to the species

Hind legs of amle samller 1

Hind legs of male longer, apex of forewing produced, post medial narrow band of forewing reaches apex ..... *emissaria* (Walker)

1. Outer margin of Hindwing agled at M_3 2

Outer margin of Hindwing rounded 6

2. Curved double antemedial and medial lines on forewing 3

No double lines on forewing 4

3. Tibial tuft pale, orange patch on post medial line of forewing and fulvous patch on hindwing ..... moorei (Cotes & Swinhoe)

Tibial tuft black, dark rufous patch beyond postmedial line of forewing, hindwing having no patch ..... *extimaria* (Walker)

4. Dark grey, no discal spot on wings. [Antemedial and post medial lines of forewing oblique. Antemedial line of hindwing sinuous] ..... *mecysma* Swinhoe

Ochreous, discal spots on both wings 5

5. Brown ochreous, white centred annular discal spot on hindwing, on forewing it is smaller and entire ..... *eulomata* (Snellen)

- Ochreous white, discal spots on both wings smaller, two lunular spots on submarginal line of forewing ..... *pulchellata* (Fabricius)

6. Cream colour specimens with bands on wings 7

Not cream colour, instead of bands lines on wings 8

7. Wavy antemedial band on forewing, medial, postmedial, submarginal wavy bands on both wings, no cell speck ... *aspilataria* (Walker)

Wavy bands on both wings thinner, black end cell specks on both wings ..... *acturia* (Walker)

8. Grey, antemedial, medial and postmedial den tate dark lines of forewing with olive edge, cell speck edged with olive ..... *fibulata* (Guenèe)

White or ochreous, lines are not olive edged, cell-speck dark 9

9. White, antemedial line of forewing obliquly curved and rufous, innermargin of postmedialm and sub-marginal lines fuscous. Post-medial and sub-marginal lines of hindwing rufous ..... *ferrilineata* (Moore)

Ochreous with fuscous irroration, ante-medial line of forewing oblique and reaches upto R_1 submarginal line dentate, series of black speck on margin ..... *attentata* (Walker)

119. ***Scopula emissaria*** (Walker)

1861. *Acidalia emissaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 751.

Scopula emissaria : Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 123.

Material examined : One ♂, vi.1897, Sikkim, alt. *ca* 550 m, *G.C.Dudgeon* coll.

Length of Forewing : 9 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Himachal Pradesh (Dharmsala) and Orissa (Ganjam). *Elsewhere* : Sri Lanka, Myanmar (Moulmein), Taiwan, China, Japan, Philippihnes, Indonesia (Sulawesi, Sumatra and Sumbawa).

Remarks : The meterial is damaged.

120. *Scopula fibulata* (Guenèe)

1857. *Acidalia fibulata* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 490, pl. 15, fig. 5.

1997. *Scopula fibulata* : Mondal and Ghosh, *State fauna Series* **3** : *Fauna West Bengal*, (7) : 508.

Material examined : 10 examples (1 ♂, 1 ♀), one example, 10.ix.1890, six examples, vi-x. 1896 and two examples vi.1897, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : ♂ 11 mm, ♀ 12 mm (specimens are badly damaged).

For other details : Vide Mondal and Ghosh 1997.

121. *Scopula ferrilineata* (Moore)

1887. *Runeca ferrilineata* Moore, *Descr. New Indian Lep. Ins. Coll. Atkinson*, p. 252.

1997. *Scopula ferrilineata* : Mondal and Ghosh, *State Fauna Series* **3** : *Fauna West Bengal* part 7 : 527.

Material examined : One ♂, two ♀ (badly damaged) vii-xi. 1896, Sikkim, alt. *ca* 550 m. *G. C. Dudgeon* coll.

Length of Forewing : ♂ 13 mm, ♀ 14 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling). Elsewhere : Bhutan and Tonkin.

122. *Scopula pulchellata* (Fabricius)

1794. *Phalaena pulchellata* Fabricius, *Ent. Syst.*, **3** (2) : 171.

1997. *Scopula pulchellata* : Mondal and Ghosh, *State Fauna Series* **3** : *Fauna West Bengal* (7) : 507.

Material examined : One ♀ (damaged), 15.v.1887, Sikkim. *G. C. Dudgeon* Coll.

For other details : Refer Mondal and Ghosh (1997).

Remarks : 'A member of this facies group was reared from Nephelium (Sapindaceae) in Peninsular Malaysia, and *S.malayana* has been recorded at mammalial lachrymal secretion' by Banziger and Fletcher (1985).

123. *Scopula extimaria* (Walker)

1861. *Acidalia extimaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 782.

1934. *Scopula extimaria* : Prout, *Lep. Cat.*, **63** (2) : 224.

Material examined : Two ♀, 15.x.1890 and vii.1897, alt. *ca* 550 m, one example (damaged, sex in det), iii.1896, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♀ 14 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Nagaland and North India (Prout 1934). *Elsewhere* : Bangladesh (Sylhet).

Remarks : The species *stigmata* Moore was in the synonym list of the species dealt with. Prout (1934) separated the species and treated as good species named *Scopula stigmata*. So the species is *stigmata* Which recorded from N.W. Himalaya not *extimaria*.

124. *Scopula moorei* (Cotes and Swinhoe)

1888. *Anisodes moorei* Cotes and Swinhoe, *Cat. Moths India*, **4** : 532.

1997. *Scopula moorei* : Mondal and Ghosh, *State Fauna Series* **3** : *Fauna West Bengal*, part - 7 : 506.

Material examined : One ♂, 20.viii.1890, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 18 mm.

For other details : Refer Mondal and Ghosh (1997).

125. *Scopula eulomata* Snellen

1877. *Acidalia eulomata* Snellen, *Tijd. Ent.*, **20** : 42, t. 3, f. 21.

1934. *Scopula eulomata* : Prout, *Lep. Cat.*, **63** (2) : 226.

Material examined : One example (sex indet), ix.1897, Sikkim, alt. *ca* 550 m, *G.C.Dudgeon* coll.(Damaged specimen).

Diagnosis : Refer key.

Distribution : India : Sikkim, Nagaland. *Elsewhere* : Myanmar, Sumatra, Java, Borneo, Nias, Batu Island, Singapore.

126. *Scopula mecysma* (Swinhoe)

1894. *Dithalma mecysma* Swinhoe, *Trans. ent. Soc. Lond.*, **1894** : 197.

1997. *Scopula mecysma* : Holloway, *Malayan Nat. J.*, **51** : 74.

Material examined : One ♂, vii.1897, Sikkim, alt. *c* 550 m, *G. C. Dudgeon* coll.

Lenght of Forewing : 11 mm.

Daignosis : Refer key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Nepal, Taiwan, Thailand and Indonesia (Borneo, Java, Bali and Sulawesi).

*127. *Scopula violacea* (Warren)

1897. *Triorisma ? violacea* Warren, *Nov. Zool.*, **4** : 226.

1934. *Scopula violacea* : Prout, *Lep. Cat.*, **63** (2) : 229.

Distribution : India : Sikkim.

Remarks : Warren (1897) described this endemic species. After that no record of this species is available in the literature, Prout (1934) had catalogued this species.

*128. *Scopula pallida* (Warren)

1888. *Idaea pallida* Warren, *Proc. zool. Soc. Lond.*, **1888** : 322.

1934. *Scopula pallida* : Prout, *Lep. Cat.*, **63** (2) : 245.

Distribution : India : Sikkim. *Elsewhere* : Pakistan and Shan States.

*129. *Scopula butyrosa* (Warren)

1893. *Idaea butyrosa* Warren, *Proc. zool. Soc. Lond.*, **1893** : 362.

1934. *Scopula butyrosa* : Prout, *Lep. Cat.*, **63**(2) : 256.

Distribution : India : Sikkim and Himachal Pradesh (Dharmsala). *Elsewhere* : Bhutan and Upper Myanmar.

130. *Scopula actuaria* (Walker)

1861. *Acidalia actuaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 752.

1997. *Scopula actuaria* : Mondal and Ghosh, *State Fauna Series* **3** : *Fauna west Bengal*, part 7 : 508.

Material examined : One example (sex indet), 16.vi.1890, one ♂, one ♀, iii.1896, Sikkim, *G. C. Dudgeon* coill. all three specimens are damaged.

Length of Forewing : ♂ ♀ 8 mm.

For other details : Refer Mondal and Ghosh (1997).

Host Plant : The species feeds on *Theobroma* (Cocoa, Stercliacea) Yunus and Ho (1980).

131. *Scopula aspilataria* (Walker)

1861. *Acidalia aspilataria* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 791.

1997. *Scopula aspilataria* : Mondal and Ghosh, *State Fauna Series* **3** : *Fauna West Bengal*, part 7 : 508.

Material examined : One example (sex indet) 10.v.1889, one ♀, Sikkim, *G. C. dudgeon* coll.

Length of Forewing : ♀ 10 mm.

Distribution : Refer Mondal and Ghosh (1997).

132. *Scopula attentata* (Walker)

1861. *Acidalia attentata* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 754.

1992. *Scopula attentata* : Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 124.

Material examined : Four examples (sex indet), one ♀ xi.1896, two examples (sex indet), ii and v.1897, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : ♀ 11 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Nilgiri Hills and Andaman and Nicobar Island. *Elsewhere* : Sri Lanka, Myanmar (Moulmein and Tenasserim), Tonkin, Hainan and Sunda Island.

Remarks : Hampson (1895) treated *attentata* in the synonym list of *Craspedia remotata* (Guenèe). But Prout (1934) considered *S. attenta* as a good species, he resonably separated this from members of the *remotata* Group.

63. Genus *Idaea* Treitschke

1825. *Idaea* Treitschke, *Schmett. Eur.*, **5** (2) : 446.

Diagnosis : Refer key.

Distributional range : North-East India to Indonesia and Palaearctic Region.

133. *Idaea chotaria* Swinhoe

1885. *Idaea chotaria* Swinhoe, *Proc. zool. Soc. Lond.*, **1885** : 858.

1997. *Idaea chotaria* : Holloway, *Malayan Nat. J.*, **51** : 90.

Material examined : Two examples (sex indet), x.1895, two examples (one ♂) 1896 and one ♀, iii.1897, alt. *ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 6 mm ♀ 7 mm.

Diagnosis : Antemedial, postmedial and subamrginal lines on forewing, antemedial acutely curved and other two waved , black speck on postmedial line at costa and a speck at end of the coll. On hindwing antemedial and submarginal lines are faded.

Distribution : India : Sikkim, West and South India. *Elsewhere* : Sri Lanka, Hainan, Hong Kong, Sunda land and Philippines.

*134. *Idaea mathaemaria* (Hampson)

1903. *Acidalia mathaemaria* Hampson, *J. Bombay nat. Hist. Soc.*, **14** (4) : 651.

1992. *Idaea mathaemaria* : Inoue, *Lep. Taiwan*, checklist, **1** (2) : 124.

Distribution : India : Sikkim. *Elsewhere* : Taiwan.

*135. *Idaea vacillata* (Walker)

1862. *Acidalia ? vacillata* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1608.

1997. *Idaea vacillata* : Holloway, *Malayan Nat. J.*, **51** : 91.

Distribution : India : Sikkim and Assam. *Elsewhere* : Indonesia (Borneo) and Peninsular Malaysia, Hong Kong.

*64. Genus *Sterrha* Hübner

1826. *Sterrha* Hubner, *Verz. Bek. Schmett.*, p. 309.

Remarks : The genus is synomised under *Idaea* Inoue (1992). But whether all the species of the genus is transferred to the genus *Idaea* is not clear, moreover the earlier recorded species are not available for study. Therefore undermentioned species are kept here with the earlier genus.

136. *Sterrha grisescens* Warren

1896. *Sterrha grisescens* Warren, *Nov. zool.*, **3** : 313.

1934. *Sterrha grisescens* : Prout, *Lep. Cat.*, **63** (2) : 321.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and North-West India.

Remarks : The species was described from Khasi Hills and the species *chotaria* Hampson (1898) sunk under this species, after that none studied this species but Prout (1934) catalogued.

137. *Sterrha obliquilinea* (Warren)

1896. *Ptychopoda obliquilinea* Warren, *Nov. zool.*, **3** : 115.

1934. *Sterrha obliquilinea* : Prout, *Lep. Cat.*, **63** (2) : 403.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

138. *Sterrha falcipennis* (Warren)

1893. *Idaea falcipennis* Warren, *Proc. zool. Soc. Lond.*, **1893** : 362.

1934. *Sterrha falcipennis* : Prout, *Lep. Cat.*, **63**(2) : 414.

Distribution : India : Sikkim. Elsewhere : Upper Myanmar.

139. ***Sterrha acuminata*** (Moore)

1888. *Janarda acuminata* Moore, *Descr. new Indian Lep. Ins.* coll. *Atkinson*, p. 265.

1934. *Sterrha acuminata* : Prout, *Lep. Cat.*, **63**(2) : 415.

Distribution : India : Sikkim, Assam and West Bengal (Darjiling). *Elsewhere* : Myanmar.

140. ***Sterrha informis*** (Warren)

1897. *Strophoptila informis* Warren, *Nov. zool.*, **4** : 225.

1934. *Sterrha informis* : Prout, *Lep. Cat.*, **63**(2) : 420.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

Key to genera of the subfamily Larentiinae

Sc + R_1 of Hindwing connecting with Rs by cross vein near middle of cell 1

Sc + R_1 of Hindwing anastomosing Rs to beyond middle of cell 2

1. Palpi covered with scales and generally not reaching beyond frons male antennae thickend and flattened ..... *Naxidia* Hampson

Palpi covered by long hair and reaching beyond frons, male antennae bipectinate ..... *Cryptoloba* Warren

2. Forewing R_1 anastomosing with R_2 and then with R_3 and R_4 to form double areole 3

Forewing R_1 and R_2 stalked, R_2 anastomosing with R_3 and R_4 and form a single areole 11

3. Hindwing costa and Sc + R_1 highly curved [Palpi 3rd joint short and covered with hair, a tuft of long hair below the cell of forewing] ..... *Photoscotosia* Warren

Hindwing costa and Sc +R_1 straight 4

4. Hindwing M_2 above middle of cell which is oblique 5

Hindwing cell angled and M_2 below the angle of cell 10

5. Hindwing M_1 present 6

Hindwing M_1 absent ..... *Brabira* Moore

6. Forewing apex much produced and acute, the outer margin oblique, inner area of male, hindwing reduced to a small fold at base ..... *Anaitis* Duponchel

Forewing apex rectangular 7

7. Frons with a sharp frontal tuft 8

Frons smooth and round, outer margin of forewing suberect hindwing ample ..... *Asthena* Hübner

8. Apex of hindwing extended beyond outer angle of forewing, outer margin of which is oblique, antennae of male bipectinate ..... *Eubolia* Duponchel

Outer margin of both wings rounded 9

9. Anetnnae of male simple and to some extent thickened ..... *Electrophaes* Prout

- Antennae of male serrate and fasciculata ... . *Cidaria* Treitschke

10. Frons smooth, palpi small and porrect ..... *Stamnodes* Guenèe

Frons with frontal tuft, palpi clothed with hair and reaching slightly beyond the frontal tuft ..... *Larentia* Treitschke

11. Two pairs of spur present in hind tibia of male 12

- Hind tibia of male with one pair of spurs or spur absent 15

12. M_3 and Cula of both wings stalked, forewing apex falcate ..... *Hastina* Moore

M_3 and Cula of both wings nearer or before angle of cell 13

13. In hindwing M_3 and Cula Stalked ..... *Cambogia* Guenèe

In hindwing Cula before angle of cell 14

14. M_2 of hindwing from middle of cell which is oblique ..... *Hydrelia* Hubner

- M_2 of hindwing from below middle of cell which is angled ..... *Venusia* Curtis

15. Hindwing of male with a lobe at base, M_3 and Cula from angle of cell or short stalked, Rs and M_1 on short stalk ..... *Sauris* Guenèe

- Hindwing outer margin produced to points at Rs and M_3, Rs and M_1 and M_3 and Cula on long stalk ..... *Polynesia* Swinhoe

*65. Genus ***Leptostegna*** Christ

1880. *Leptostegna* Christ, *Bull. Soc. nat. Mosc.*, 4(2) : 86.

Distributional range : Asiatic.

Remarks : Out of two species of the genus one is recorded from Sikkim (Hampson, 1895).

141. ***Leptostegna tenerata*** Chirst

1880. *Leptostegna tenerata* Chirst, *Bull. Soc. nat. Mosc.*, 4 (2) : 88.

1914. *Leptostegna tenerata* : Prout, *Macrolep.* World, 4 : 189. fig. 6c.

Distribution : India : Sikkim. *Elsewhere* : Japan, Korea and E. Siberia.

Remarks : Prout (1914) mentioned that the species *tenerata* occurring in Japan, Korea and Siberia, the species *asiatica* Warren occurring in W. China and N. India. Inoue (1982) recorded the species *asiatica* from E. Nepal.

66. Genus ***Naxidia*** Hampson

1895. *Naxidia* Hampson, *Fauna Brit. India* Moths, 3 : 334.

Distributional range : N. E. India, Nepal, Taiwan and Japan.

142. ***Naxidia punctata*** (Butler)

1880. *Argidava punctata* Butler, *Ann. Mag. nat. Hist.*, 6 (5) : 128.

1997. *Naxidia punctata* : Mondal and Ghosh, *State Fauna Series* 3 : *Fauna West Bengal*, part - 7 : 500.

Material examined : One ♂, viii.1897, alt. *ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 14 mm.

For other details : Refer Mondal and Ghosh (1997).

143. ***Naxidia irrorata*** (Moore)

1887. *Argidava irrorata* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, : 251.

1997. *Naxidia irrorata* : Mondal and Ghosh, *State Fauna Series* 3 : *Fauna West Bengal*, part-7 : 500.

Material examined : One example, 9.vi.1888, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 18 mm (specimens is badly damaged).

For other details : Refer Mondal and ghosh (1997).

*67. Genus ***Dysethia*** Warren

1893. *Dysethia* Warren, *Proc. zool. Soc. Lond.*, **1893** : 347.

Distributional range : North-East India.

144. ***Dysethia bicommata*** Warren

1893. *Dysethia bicommata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 348, pl. 32, fig. 1.

1895. *Dysethia bicommata* : Hampson, *Fauna Brit. India*, Moths, 3 : 335.

Distribution : India : Sikim and Nagaland.

145. ***Dysethia ocyptaria*** Swinhoe

1893. *Dysethia ocyptaria* Swinhoe, *Anm. Mag. nat. thist.*, 12 (6) : 157.

1895. Dysethia ocyptaria : Hampson, *Fauna Brit. India Moths*, 3 : 335.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nagaland.

146. ***Dysethia straminea*** Warren

1893. *Dysethia straminea* Warren, *proc. zool. Soc. Lond.*, **1893** : 347.

1895. *Dysethia straminea* : Hampson, *Fauna Brit. India* Moths, **3** : 336.

Distribution : India : Sikkim.

Remarks : All the three species of the genus were last delt with by Hampson (1895), after that none studied these species.

68. Genus ***Stamnodes*** Guenèe

1857. *Stamnodes* Guenee, *Hist. nat. Ins. Lep.*, **2** : 515.

Distributional range : Palaearctic Asia and America. India : Western and Eastern Himalaya.

147. ***Stamnodes pamphilata*** Felder

1874. *Stamnodes pamphilata* Felder, *Reise Novara*, pl. 132, fig. 34.

1914. *Stamnodes pamphilata* : Prout, *Macrolep. World*, **4** : 168.

Material examined : One ♂, one ♀, Thanggoo, N. Sikkim, 13.viii.1989, alt. *ca* 700 m. (Old Collection).

Length of Forewing : ♂ 17 mm, ♀20 mm.

Diagnosis : Costa of forewing fuscous, four elongated white spots from costa, the post median fuscous patch from costa to M_3. Apical fuscous area gradually narrowing towards outer angle.

Distribution : India : Sikkim and Western Himalaya (Koksar, Kulu and Dharmsala).

Remarks : Forewing of the specimens differ by colour being pink instead of yellow. Hindwing brown.

69. Genus ***Brabira*** Moore

1888. *Brabira* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, p. 271.

Distributional range : India : (Sikkim), Peninsular Malaysia, Indonesia (Sumatra and Borneo), Japan, Taiwan and Siberia.

148. ***Brabira artimidora*** (Oberthur)

1888. *Melanippe artimidora* Oberthur, *Etud. Ent.*, **10** : 33. pl. 1, fig. 6.

1992. *Brabira artimidora* : Inoue *Lep. Taiwan*, Checklist, **1** (2) : 125.

Material examined : One ♀, 03.x.1988, Rabangla, South Sikkim, alt. *ca* 2010 m. *V. C. Agrawal* Coill.

Length of Forewing : 14 mm.

Diagnosis : Greyish white specimens. In forewing double ante and post medial lines originate from triangular spots of costa, a black end-cell spot, in female all veins present in hindwing, Cula before angle of cell, Rs and M_1 on long stalk.

Distribution : India : Sikkim. *Elsewhere* : Japan and Taiwan.

Remarks : The species shows sexual variations particularly in respect of the venetions in hindwing, which are more in female than in male.

70. Genus ***Sauris*** Guenèe

1857. *Sauris* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 361.

Dsitributional range : Indian subregion to the Pacific as far east and upto Australia. Thirteen species recorded from Indonesia (Borneo) only.

Remarks : Out of twelve Indian species four species recorded from Sikkim.

*149. ***Sauris normis*** Hampson

1895. *Sauris normis* Hampson, *Fauna Brit. India*, Moths, **3** : 408.

Distribution : India : Sikkim.

Remarks : Hampson (1895) described the species from Sikkim, after that none dealt with this species.

*150 ***Sauris olivacea*** Warren

1893. *Sauris olivacea* Warren, *Proc. zool. Soc. Lond.*, **1893** : 363, pl. 31, fig. 20.

1992. *Sauris olivacea* : Inoue, *Lep. Taiwan*, Checklist, **1**(2) : 125.

Distribution : India : Sikkim. *Elsewhere* : Myanmar (E. Pegu), Hong Kong and Taiwan.

151. *Sauris interruptata* (Moore)

1887. ***Remodes interruptata*** Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, : 270.

1997. ***Sauris interruptata*** : Holloway, *Malayan Nat. J.*, **51** : 116.

Material examined : One ♂ (damaged), ix.1897, Sikkim, alt *ca* 550 m, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 13 mm.

Diagnosis : Forewing elongate, olive green with silvery irroration, one basal, two antemedial three postmedial and one submarginal line, the lines are indistinct. Hindwing pale brown and distally lobed.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Tamil Nadu, (Nilgiri hills), West Bengal (Darjiling), and Andamans. *Elsewhere* : Sri Lanka, Ryukyu Is., Taiwan, Myanmar, Peninsular Malaysia, Indonesia (Borneo), Philippines, and probably Moluccas and New Guinea (Holloway, 1997).

The species feeds on *Cinnamomum* (Lauraceae) in Andamans (Holloway, 1997).

*152. *Sauris lineosa* (Moore)

1887. *Remodes lineosa* Moore, *descr. new Indian Lep. Ins. Coll. Atkinson*, p. 270.

1976. *Sauris lineosa* : Hollway, *Moths Borneo*, Mount Kinabalu, p. 73.

Distribution : India : Sikkim, Meghalaya (Khasi hills) and West Bengal (Darjiling). *Elsewhere* : Sri Lanka, Malaya, Indonesia (Sumatra and Borneo).

Remarks : Occurrence of the species from Sri Lanka by Hampson (1895) not supported by any other author.

71. Genus *Cambogia* Guenèe

1857. *Cambogia* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 431.

Distributional range : South America, Indo-Australian Region and a Few stragglers in the Palearctic Region. Out of eight Indian species six represented from Sikkim.

Key to the species

Male antennae ciliated, Cula and M_3 of hindwing from angle of cell 1

Antennae bipectinate in both sexes Cula and M_3 of hindwing stalked 2

1. Yellow, wings with end-cell speck, several waved lines of forewing formed by minute crimson lunules ..... *memorata* (Walker)

   Cinnamon-brown, a subbasal yellow line on forewing, ante and postmedial bands with two waved lines, some specks between bands and lines ..... *pluristrigata* (Moore)

2. Yellow, crimson fascia on subcostal area of Forewing, among many fade lines on both wings, medial and post-medial lines prominent, a less developed marginal crimson band with sylvery patch at outer angle ..... *lunulosa* (Moore)

   Crimson, numerous waved lines on both wings, space between two postmedial waved lines bright yellow ..... *grataria* (Walker)

153. *Cambogia memorata* (Walker)

1861. *Pomasia memorata* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 657.

1895. *Cambogia memorata* : Hampson, *Fauna Brit. India* Moths, **3** : 419.

Material examined : One ♂, 15.vi.1895, two examples (sex indet), iv.1896 and iii.1897, alt *ca* 550 m, Sikkim, one example (sex indet), Yatang, 1894, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 10 mm.

Diagnosis : As per key.

Distribution : India : Sikkim (Yatang), Nagaland and Meghalaya (Khasi Hills). *Elsewhere* : Sri Lanka, Myanmar and Indonesia (Borneo).

Remarks : Swinhoe (1900) put this species under the genus *Psilocambogia* Hampson.

154. *Cambogia pluristrigata* (Moore)

1867. *Hyria ? pluristrigata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 643.

1895. *Cambogia pluristrigata* : Hampson, *Fauna Brit. India* Moths, **3** : 419.

Material examined : One ♂, Sikkim, viii.1896, alt. *ca* 550 m. *G. C. Dudgeon* Coll.

Length of Forewing : ♂ 10 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim.

*155. ***Cambogia marginata*** Warren

1893. *Cambogia marginata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 366.

1895. *Cambogia marginata* : Hampson, *Fauna Brit. India*, Moths, **3** : 420.

Distribution : India : Sikkim. *Elsewhere* : Myanmar.

Remarks : After Hampson (1895) this species is not reported so far.

*156. ***Cambogia pulchella*** Hampson

1891. *Cambogia pulchella* Hampson, *Ill. Typ. Lep. Het. Brit. Mus.*, **8** : 124, pl. 153, f. 22.

1964. *Cambogia pulchella* : Prout, *Macrolep. World.* **4** : 273.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nilgiris Hills. *Elsewhere* : Japan (Yokohama) Prout (1914).

157. ***Cambogia lunulosa*** (Moore)

1887. *Pseudasthena lunulosa* Moore, *Lep. Ceylon*, **3** : 450, pl. 200, figs. 5, 5a.

1895. *Cambogia lunulosa* : Hampson, *Fauna Brit. India*, Moths, **3** : 421.

Material examined : One ♂, Sikkim, 11.vi.1890, *G. C. Dudgeon* coll.

Length of Forewing : 12 mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim and Meghalaya (Khasi hills). *Elsewhere* : Sri Lanka.

158. ***Cambogia grataria*** (Walker)

1861. *Hyria grataria* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 663.

1900. *Cambogia grataria* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 358.

Material examined : One example, vii.1889, Five ♂ ♀, x-xi.1896, one ♀ xi.1897, Sikkim, alt. *ca* 550 m, *G.C.Dudgeon* coll.

Length of Forewing : ♂ 10 mm, ♀ 12-13 mm.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Maharashtra (Mahableswar and Pune) and Nilgiri Hills. *Elsewhere* : Sri Lanka and Myanmar (Yangon).

72. Genus ***Cryptoloba*** Warren

1893. *Cryptoloba* Warren, *Proc. zool. Soc. Lond.*, **1893** : 343.

Distributional range : Himalayas including Bhutan, Nilgiri and just reaches Palaearctic Region.

Remarks : Out of five Indian species four occur in Sikkim.

Key to the species

Forewing with double areole, Oblique antemedial and medial and curved sub-marginal and marginal blue spots, a blue spot at end of cell ..... *aerata* (Moore)

- Forewing with single areole 1

1. Glossy leaden grey, ante and postmedial lines are waved and arising from short black lines arising from costa ..... *cinerea* (Butler)

Ochreous, ante and post medial lines are neither wavy nor arising from any black line. Black end cell spot and speck on fore and hindwings respectively ..... *bifasciata* Warren

159. ***Cryptoloba aerata*** (Moore)

1867. *Larentia aerata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 654.

1895. *Cryptoloba aerata* : Hampson, *Fauna Brit. India* Moths, **3** : 336, fig. 166.

Material examined : One ♂, Sikkim, 9.vi.1888, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 13 mm.

Diagnosis : As per key.

Distribution : India : Sikkim and Meghalaya **(Khasi Hills).**

160. ***Cryptoloba cinerea*** (Butler)

1880. *Lygranoa cinerea* Butler, *Ann. Mag. nat. Hist.*, **6** (5) : 228.

1914. *Cryptoloba cinerea* : Prout, *Macrolep. World*, **4** : 191.

Material examined : One example (sex indet), 14.vi.1888, alt. *ca* 1600 m, one ♀ viii.1895, alt. *ca* 2250 m. Sikkim. *G.C.Dudgeon* coll.

Length of Forewing : ♀ 9 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim and Himachal Pradesh (Dahrmsala).

161. ***Cryptoloba bifasciata*** Warren

1893. *Cryptoloba bifasciata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 345, pl. 32, fig. 18.

1895. *Cryptoloba bifasciata* : Hampson, *Fauna Brit. India*, Moths, **3** : 337.

Material examined : One ♂, Sikkim, vi.1888, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 16 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim.

*162. ***Cryptoloba trinotata*** Warren

1893. *Cryptoloba trinotata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 344, pl. 32, fig. 12.

1895. *Cryptoloba trinotata* : Hampson, *Fauna Brit. India*, Moths, **3** : 338.

Distribution : India : Sikkim.

Remarks : After Hampson (1895) this species has not been studied so far.

*73. Genus ***Syzeuxis*** Hampson

1895. *Syzeuxis* Hampson, *Fauna Brit. India*, Moths **3** : 339, fig. 168.

Distribution : India : Sikkim and Meghalaya.

Remarks : This genus was described by Hampson (1895) there after no record of this genus is available.

163. ***Syzeuxis trinotaria*** (Moore)

1867. *Osicerda trinotaria* Moore, *Proc. zool. Soc. Lond.*, **1867** : 650.

1895. *Syzeuxis trinotaria* : Hampson, *Fauna Brit. India* Moths, **3** : 339, fig. 165.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Eastern Nepal.

*74. Genus ***Goniopteroloba*** Hampson

1895. *Goniopteroloba* Hampson, *Fauna Brit. India*, Moths **3** : 339, fig. 169.

Distributional range : India : Sikkim and Meghalaya.

Remarks : Description of this genus is based on *zalska* Swinhoe from Cherrapunji, Khasi Hills, Meghalaya and deposited in British Museum, Swinhoe (1900).

164. ***Goniopteroloba zalska*** (Swinhoe)

1894. *Carige zalska* Swinhoe, *Trans. ent. Soc. Lond.*, **1894** : 185.

1895. *Goniopteroloba zalska* : Swinhoe, *cat. East. Austral. Lep. Hist.*, **2** : 332.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

75. Genus ***Hastina*** Moore

1887. *Hastina* Moore, *Descr. new Indian Lep. Ins. coll. atkinson*, p. 260.

Distributional range : North East India and Japan.

165. ***Hastina gemmifera*** (Moore)

1867. *Acidelia gemmifera* Moore, *Proc. zool. Soc. Lond.*, **1867** : 644.

1895. *Hastina gemmifera* Hampson, *Fauna Brit. India*, Moths, **3** : 422.

Material examined : One ♂, Sikkim, vii.1895, alt.*ca* 2200 m, *J. G. Pilcher*. coll.

Length of Forewing : 11 mm.

Diagnosis : Head and thorax black brown with silvery irroration, medial band of forewing is crimson and wider at M_3, submarginal diffused brown band with white specks, apical area white. In hindwing, postmedial brown band ornamented with white silvery band, margin produced at veins. Underside of both wings with a postmedial bands.

Distribution : India : Sikkim and West Bengal (Darjiling).

76. Genus ***Anaites*** Duponchel

1844. *Anaites* Duponchel, *Cat. Lep. Eur.*, p. 247.

Distributional range : India : N. W. Himalaya and Sikkim and Outside India Palaearctic Region.

Remarks : Out of six Indian species only three species occur in Sikkim.

*166. ***Anaitis pudicata*** Guenèe

1857.*Anaitis pudicata* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 497.

1914. *Anaitis pudicata* : Prout, *Macrolep. World*, **4** : 178.

Distribution : India : Sikkim and Uttar Pradesh (Almorah). *Elsewhere* : Afghanistan.

167. ***Anaitis fulgurata*** Guenèe

1857. *Anaitis fulgurata* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 498.

1914. *Anaitis fulgurata* : Prout, *Macrolep. World*, **4** : 178.

Material exqamined : One ♂, vi.1895, alt. *ca* 2300 m, *J. G. Piltcher* coll., two ♂ viii-ix.1897, alt. *ca* 2100 m. Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 18 20 mm.

Diagnosis : Two blackish bands (one antemedial and one postmedial) are present in forewing. A grey white straight band present in between these two bands, the antemedial band incurved and postmedial band excurved and the later bordered with black and white lines outwardly, there is one white apical patch. Hindwing whitish.

Distribution : India : Sikkim and North-West Himalaya.

*168. ***Anaitis roseifascia*** Hampson

1895. *Anaitis roseifascia* Hampson, *Fauna Brit. India* Moths, **3** : 342.

Distribution : Sikkim.

Remarks : Hampson (1895) described this species, after that no body has studied this species.

77. Genus ***Eubolia*** Duponchel

1844. *Eubolia* Duponchel, *Cat. Lep. Eur.*, p. 248.

Diagnosis : As per key.

Distributional range : Europe, S.Africa, Malagasy and Himalaya, Hampson (1895).

Remarks : Janse (1933) treated this genus under *Ortholitha* Hübner.

169. ***Eubolia duplicata*** Warren

1893. *Eubolia duplicata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 385.

1895. *Eubolia duplicata* : Hampson, *Fauna Brit. India*, Moths, **3** : 343.

Material examined : One example, Yatang, 1894, *G. C. Dudgeon* coll. (Due to damaged condition of the specimen, Length of forewing or sex cannot be determined).

Diagnosis : Dark and white lines on basal area of forewing present, a white band just touching cell from upper angle to inner margin, a submarginal white band beyond that the wing is dark. Hindwing white with dark marks at apex and anal angle. Underside of hindwing with a postmedial line and marginal and submarginal area covered with yellow band.

Distribution : India : Sikkim (Yatang). *Elsewhere* : Tibet (Chumbi).

*78. Genus ***Triphosa*** Stephens

1829. ***Triphosa*** Stephens, *Ill. Brit. Ent. Haust.*, **3** : 261.

Distributional range : Palaearctic Reigion, India and America to Chili.

170. ***Triphosa dubiosata*** (Walker)

1862. *Scotosia dubiosata* Walker, *Cat. Lep. Het. Brit. Mus.*, **25** : 1352.

1914. *Triphosa dubiosata* : Prout, *Macrobp. World*, **4** : 198, pl. 11, fig. g.

Distribution : India : Sikkim, N. W. Himalaya and Nilgiri Hills. *Elsewhere* : Afghanistan.

171. ***Triphosa rubrodotata*** (Walker)

1862. *Scotosia rubrodotata* Walker, *Cat. Lep. Het. Brit. Mus.*, **25** : 1353.

1914. *Triphosa rubrodotata* : Inoue *Lep. Taiwan*, Chec list, **1** (2) : 126.

Distribution : India : Sikkim and Punjab. ***Elsewhere*** : Nepal (Kathmandu), W. China (Kwei-chow) and Taiwan.

79. Genus ***Electrophaes*** Prout

1923. *Electrophaes* Prout, *Novit. zool.*, **30** : 197.

Distributional range : India, Bhutan, Nepal and Taiwan.

172. ***Electrophaes aliena*** (Butler)

1880. *Cidaria aliena* Butler, *Ann. Mag. nat. Hist.*, **6** (5) : 230.

1987. *Electrophaes aliena* : Inoue, *Bull. Fac. Domest. Sci. Otsuma Wom. Univ.*, **23** : 223.

Material examined : One ♀, Thangu, N. Sikkim, 20.vii.1989, *M. S. Shishodia* Coll.

Length of Forewing : 17 mm.

Diagnosis : Base of the wing dark, a dark band covering cell, at costa it is broad and gradually it is thinner, postmedially the edge of the band is very much irregular, antemedially it is crenulated, apical region of costa whitish before that a small dark band along costa, a dark band starting marginally just below costa reaches upto M_3 then white, after that the band reaches anal angle. Hindwing whitish.

Distribution : India : Sikkim. *Elsewhere* : E. Nepal and Bhutan.

Remarks : Hampson (1895) synonomised this species under *Cidaria aurata* Moore, Inoue (1982) treated this species as valid species. The species reported for the first time from India.

80. Genus ***Photoscotosia*** Warren

1888. *Photoscotosia* Warren, *Proc. zool. Soc. Lond.*, **1888** : 328.

Distributional range : India : Himalaya, mountains of Turkestan, Tibet, but stragglers reach Japan and Indonesia (Java).

Remarks : Most of hte Indian species restricted to Sikkim Himalaya only.

Key to the species

Forewing with antemedial double curved lines 1

Forewing with antemedial dark band instead of lines Basal area of forewing grey, marked by a white subbasal line, the post medial line dark brown, dentate below costa and started from costa with a dark grey line .... *multilinea* Warren

1. Red-brown specimen. Hindwing with a large oval bright orange apical patch extending upto M_3 ..... *miniosata* (Walker)

   Black brown. Hindwing not with oval orange patch, rather with fuscous patch on the anal half of the outer margin 2

2. On forewing a pale subbasal line straight and oblique, antemedial line angled on median nervure, a pale brown patch starting from costa, at median area, turns towards post medial pale line, a brown patch at apex .... *metachriseis* Hampson

   On forewing subbasal line curved and black, antemedial line black, curved and dentate on mediam nervure, postmedial line below costa, and at M_3 it approaches the antemedial line ..... *atromarginata* Warren

173. ***Photoscotosia multilinea*** Warren

1893. *Photoscotosia multilinea* Warren, *Proc. zool. Soc. Lond.*, **1893** : 369, pl. 30, fig. 10.

1982. *Photoscotosia multilinea* : Inoue, *Bull. Fac. domkest. Sci., Otsuma Women's Univ.*, **18** : 145, fig. 15

Material examined : Two ♂ ♀, vii.1989, Lachen, N. Sikkim, *S.S.Saha* coll.

Length of Forewing : ♂ 24 mm; ♀ 26 mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim (Lachen). *Elsewhere* : E. Nepal and Tibet.

Remarks : Hindwing of female with a crenulated post medial line extended from outer border to Rs. Hampson (1895) treated this species under *undulosa* Alpheraki as synonym.Inoue (1982) treated *multilines* Warren as good species.

174. ***Photoscotosia atromarginata*** Warren

1893. *Photoscotosia atromarginata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 369, pl. 30, fig. 1.

1982. *Photoscotosia atromarginata* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **18** : 145, fig. 18A.

Material examined : One ♀, Yatang, Sikkim, Old collection.

Length of Forewing : 17 mm.

Diagnosis : Refer Key.

Distribution : India : Sikim (Yatang). *Elsewhere* : E. Nepal.

Remarks : The specimen is bigger (37 mm) in wing expanse in comparison with the specimens (32 mm) from E. Nepal reported by Inoue (1982).

175. ***Photoscotosia metachriseis*** Hampson

1896. *Photoscotosia metachriseis* Hampson, *Fauna Brit. India*, Moths, **4** : 557.

1982. *Photoscotosia metachriseis* : Inoue, *Bull. Fac. domest. Sc. Otsuma Wom. Univ.*, **18** : 146, fig. 18B.

Material examined : One ♀ five mile camp Nathula Road, ♀ N. of Lachen, N. Sikkim, 27.vii.1989, alt. *ca* 3500 m. *S. S. Saha* coll.

Length of Forewing : 23-26 mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim (Nathula Road and Lachen). *Elsewhere* : E. Nepal.

Remarks : Specimens from E. Nepal are smaller in wing expanse than specimens from Sikkim.

176. ***Photoscotosia miniosata*** (Walker)

1862. *Scotosia miniosata* Walker, *Cat. Lep. Het. Brit. Mus.*, **25** : 1354.

1992. *Photoscotosia miniosata* : Inoue, *Lep. Taiwan*, checklist, **1** (2) : 126.

Material examined : One ♀, Tadong, E. Sikkim, 28.x.1994, *G. C. Sen* coll.

Length of Forewing : 24 mm.

Distribution : India : Sikkim (Tadong), Meghalaya (Cherrapunji), West Bengal and Himachal Pradesh (Kulu). *Elsewhere* : Bangladesh (Sylhet), Taiwan, West China and Philippines.

*177. ***Photoscotosia fulguritis*** Warren

1893. *Photoscotosia fulguritis* Warren, *Proc. zool. Soc. Lond.*, **1893** : 370, pl. 30, fig. 11.

1982. *Photoscotosia fulguritis* : Inoue, *Bull. Fac. domest. Sc. Otsuma Wom. Univ.*, **18** : 145, fig. 15g.

Distribution : India : sikkim. *Elsewhere* : E. Nepal.

*178. ***Photoscototia venipicta*** Warren

1893. *Photoscototia venipicta* Warren, *Proc. zool. Soc. Lond.*, **1893** : 370.

1893. *Photoscototia venipicta* : Hampson, *Fauna Brit. India*, Moths, **3** : 383.

Distribution : India : Sikkim.

*179. ***Photoscototia aurantiaria*** (Moore)

1867. *Cidaria aurantiaria* Moore, *Proc. zool. Soc. Lond.*, **1867** : 661, pl. 33, fig. 8.

1895. ***Photoscotodia aurantiaria*** : Hampson, *Fauna Brit. India*, Moths, **3** : 383.

Distribution : India : Sikkim.

Remarks : The last two species of the genus were studied by Hampson (1895). After that no record is available.

*81. Genus ***Gymnoscelis*** Mabille

1867. *Gymnoscelis* Mabille, *Ann. Soc. ent. Fr.*, **7** (4) : 656.

Distributional range : Chiefly Indo-Australian, also represented in Palaearctic Region and N. America.

180. ***Gymnoscelis ectochlora*** Hampson

1891. *Gymnoscelis ectochlora* Hampson, *Ill. Typ. Lep. Het. Brit. Mus.*, **8** : 118, pl. 152.

1895. *Gymnoscelis ectochlora* : Hampson, *Fauna Brit. India*, Moths, **3** : 388.

Distribution : India : Sikkim and Nilgiris. ***Elsewhere*** : Sri Lanka and Taiwan.

Remarks : Inoue (1992) treated this species as synonym of *albicaudata* Warren.

181. ***Gymnoscelis polyodonta*** Swinhoe

1895. *Gymnoscelis polyodonta* Swinhoe, *Ann. Mag. nat. Hist.*, **16** (6) : 296.

1976. *Gymnoscelis polyodonta* : Holloway, *Moths Borneo*, Mount Kinabalu, p. 70, fig. 496.

Distribution : India : Sikkim and Assam. ***Elsewhere*** : Bhutan, Sri Lanka, Borneo and New Guinea.

82. Genus ***Cidaria*** Treitschke

1828. *Cidaria* Treitschke, *Schmett. Eur.*, **6** (2) : 140.

Distributional range : World wide.

*182. ***Cidaria chalybearia*** Moore

1867. *Cidaria chalybearia* Moore, *Proc. zool. Soc. Lond.*,**1867** : 663.

1895. *Cidaria chalybearia* : Hampson, *Fauna Brit. India*, Moths **3** : 350.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nagaland.

*183. ***Cidaria lativittaria*** (Moore)

1867. *Scotosia lativittaria* Moore, *Proc. zool. Soc. Lond.*, **1867** : 657.

1900. *Cidaria lativittaria* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 339.

Distribution : India : Sikkim and West Bengal (Darjiling).

*184. ***Cidaria albapex*** Hampson

1895. *Cidaria albapex* Hampson, *Fauna Brit. India*, Moths. **3** : 352.

Distribution : India : Sikkim.

Remarks : After Hampson (1895) no record of this species is available.

*185. ***Cidaria scortea*** Swinhoe

1891. *Cidaria scortea* Swinhoe, *Trans. ent. Soc. Lond.*, **1891** : 493.

1997. *Cidaria scortea* Mondal and Ghosh, *State Fauna Series* **3** : *Fauna West Bengal*, part 7 : 503.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Kurseong).

*186. ***Cidaria intertexta*** Warren

1893. *Cidaria intertexta* Warren, *Proc. zool. Soc. Lond.*, **1893** : 347, pl. 30, fig. 3.

1895. *Cidaria intertexta* : *Hampson, Fauna Brit. India*, Moths, **3** : 354.

Distribution : India : Sikkim.

*187. ***Cidaria aurata*** Moore

1867. *Cidaria aurata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 664.

1914. *Cidaria aurata* : Prout, *Macrolep. World.* **4** : 252.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Himachal Pradesh (Dharmsala).

* 188. *Cidaria dentistrigata* Warren

1893. *Cidaria dentistirgata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 374, pl. 30, fig. 4.

1895. *Cidaria dentistrigata* : Hampson, *Fauna Brit. India*, Moths, **3** : 356.

Distribution : India : Sikkim.

*189. *Cidaria mediovittaria* (Moore)

1867. *Coremia mediovittaria* Moore, *Proc. zool. Soc. Lond.*, **1867** : 656

1900. *Cidaria mediovittaria* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 338.

Distribution : India : Sikkim and West Bengal (Darjiling).

Remarks : This species is similar to *azonaira* Oberthur, the species from W. China (Prout, 1914), but differs by hind wing facies.

*190 *Cidaria interplagata* Guenée

1857. *Cidaria interplagata* Guenée, *Hist. nat. Ins. Lep.*, **2** : 463.

1895. *Cidaria interplagata* : Hampson, *Fauna Brit. India*, Moths, **3** : 358.

Distribution : India : Sikkim.

* 191. *Cidaria mixtilineata* Hampson

1895. *Cidaria mixtilineata* Hampson, *Fauna Brit. India*, Moths, **3** : 359.

Distribution : India : Sikkim.

Remarks : After Hampson (1895) this species has not been studied so far.

*192. *Cidaria relata* Butler

1880. *Cidaria relata* Butler, *Ann. Mag. nat. Hist.*, **6** (5) : 229.

1895. *Cidaria relata* : Hampson, *Fauna Brit. India*, Moths, **3** : 359.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

* 193 *Cidaria intextricata* Walker

1866. *Cidaria intextricata* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1691.

1895. *Cidaria intextricata* : Hampson, *Fauna Brit. India*, Moths, **3** : 360.

Distribution : India : Sikkim. *Elsewhere* : W. China to Japan.

Remarks : Prout (1914) and Inoue (1982) dealt this species under the genus *Eustroma* Hübner. Inoue (1982) studied the species from E. Nepal.

* 194. *Cidaria aurigena* Butler

1880. *Cidaria aurigena* Butler, *Ann. Mag. nat. Hist.*, **6** (5) : 230.

1895. *Cidaria aurigena* : Hampson, *Fauna Brit. India*, Moths, **3** : 360.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Himachal Pradesh (Dalhousie).

Remarks : Prout (1914) and Inoue (1982) treated this species under the genus *Eustroma* Hübner. Inoue dealt with the species from E. Nepal and Prout in his distributional list reported from Kashimir etc.

* 195. *Cidaria chalcoptera* Hampson

1885. *Cidaria chalcopera* Hampson, *Fauna Brit. India*, Moth, **3** : 360.

Distribution : India : Sikkim.

Remarks : Inoue (1982) treated this species under the genus *Eustroma* Hübner from E. Nepal.

* 196 *Cidaria viridata* Moore

1867. *Cidaria viridata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 661.

1895. *Cidaria viridata* : Hampson, *Fauna Brit. India*, Moths, **3** : 365.

Material examined : One example, (sex indet), 26.ix. 1988, Tumin, E. Sikkim, alt. c 1800 m; two ♂, 3.x. 1988, Rabangla, S. Sikkim, alt. c 2010 m, coll. V.C. Agrawal.

Length of Forewing : 9-10 mm.

Diagnosis : Black marks present on the thorax, abdomen and at the base of wing at costa. The edges of antemedial band waved, medial area having cell-speck and two waved lines, submarginal line waved and fade. In hindwing traces of cell-speck and postmedial band present.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling). ***Elsewhere*** : W. China and Taiwan.

Remarks : Prout (1914) described the species under the genus *Apithecia* Prout. The specimens are damaged and too much rubbed up.

* 197. *Cidaria obfuscata* (Warren)

1893. *Xanthorhoe obfuscata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 376.

1895. *Cadiria obfuscata* : Hampson, *Fauna Brit. India*, Moths, **3** : 365.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nagaland.

Remarks : Swinhoe (1900) kept this species under the genus *Ochyria* Hübner. Inoue (1972) synnonomised the genus Ochyria under the genus Xanthorahoé Hübner. Larva feeds on *Impatiens* sp. (mihi) Sivastopulo (1948).

83. Genus *Larentia* Treitschke

1828. *Larentia* Treitschke, *Schmett. Eur.*, **6** (2) : 75.

Diagnosis : Refer key.

Distributional range : World wide.

Key to the species

Fuscous brown; palpi reaching beyond frons, white subbasal line of forewing indistinct, medial area with a dark broad patch lines on it. Underside of hindwing with a post medial line angled at M_3 ..... *siderifera* Moore

- Leaden grey; palpi not reaching beyond frons. In forewing a black basal patch, medial black patch oblique and white edged near costa. Underside of hindwing having a waved post medial line and a cell speck .... *olivacea* Warren

* 198. *Larentia argentilineata* (Moore)

1867. *Cidaria argentilineata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 660, pl. 33, fig. 5.

1895. *Larentia argentilineata* : Hampson, *Fauna Brit. India*, Moths, **3** : 368.

Distribution : India : Sikkim.

Remarks : Inoue (1982, 1992) reported this species from E. Nepal and Taiwan under the genus *Lamropteryx* Stephens.

* 199 *Larentia punctatissima* Warren

1893. *Larentia punctatissima* Warren, *Proc. zool. Soc Lond.*, **1893**. 368.

Distribution : India : Sikkim.

Remarks : Hamson (1895) studied the species last after that no worker dealt with this species.

* 200 *Larentia stellata* (Warren)

1893. *Glaucopteryx stellata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 367.

1895. *Larentia stellata* : Hampson, *Fauna Brit. India*, Moths, **3** : 369.

Distribution : India : Sikkim. *Elsewhere* : Tibet.

Remarks : Prout (1914) dealt with the species under the genus *Cidaria* Treitschke.

* 201 *Larentia hypolopha* Hampson

1895. *Larentis hypolopha* Hampson, *Fauna Brit. India*, Moths, **3** : 372.

Distribution : India : Sikkim.

Remarks : After the discovery of this and the next species by Hampson (1895) no worker dealt with these species.

* 202 *Larentia abraxidia* Hampson

1895. *Laretia abraxidia* Hampson, *Fauna Brit. India*, Moths, **3** : 372.

Distribution : India : Sikkim.

*203 ***Larentia lacteiguttata*** (Warren)

1893. *Perizoma lacteiguttata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 378, pl. 30, fig. 16.

1895. *Larentia lacteiguttata* Hampson, *Fauna Brit. India*, Moths, **3** : 372.

Distribution : India : Sikkim.

* 204 ***Larentia bicolor*** (Warren)

1893. *Perizoma bicolor* Warren, *Proc. zool. Soc. Lond.*, **1893** : 379.

1895. *Larentia bicolor* Hampson, *Fauna Brit. India*, Moths, **3** : 373.

Distribution : India : Sikkim.

*205. ***Larentia apicistrigata*** (Warren)

1893. *Perizoma apicistrigata* Warren, *Proc. Zool. Soc. Lond.*, **1893** : 378, pl. 30, fig. 19.

1895. *Larentia apicistrigata* : Hampson, *Fauna Brit. India*, Moths, **3** : 373.

Distribution : India : Sikkim.

Remarks : This and the two former species were studied by Hampson (1895) after that no worker dealt with these three species.

* 206 ***Larentia variabilis*** (Warren)

1893. *Perizoma variabilis* Warren, *Proc. zool. Soc. Lond.*, **1893** : 377, pl. 30, fig. 17.

1895. *Larentia variabilis* : Hampson, *Fauna Brit. India*, Moths, **3** : 373.

Distribution : India : Sikkim.

Remarks : Prout (1914) treated this species under the genus *Cidaria*. Treitschke.

* 207. ***Larentia minuta*** (Butler)

1889. *Hyria minuta* Butler, *Ill. Typ. Lep. Het. Brit. Mus.*, **7** : 117, figs. 15, 16.

1895. *Larentia minuta* : Hampson, *Fauna Brit. India*, Moths, **3** : 374.

Distribution : India : Sikkim, Nagaland and N. W. Himalayas. *Elsewhere* : Tibet.

Remarks : Now this species is *Cidaria minuta*.

* 208. ***Larentia fasciata*** (Warren)

1893. *Perizoma fasciata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 379.

1895. *Larentia fasciata* : Hampson, *Fauna Brit. India*, Moths, **3** : 375.

Distribution : Inida : Sikkim.

* 209. ***Larentia interrupta*** (Warren)

1893. *Perizoma interrupta* Warren, *Proc. zool. Soc. Lond.*, **1893** : 380, pl. 30, fig. 18.

1895. *Larentia interrupta* : Hampson, *Fauna Brit. India*, Moths, **3** : 375.

Distribution : India : Sikkim.

* 210. ***Larentia niveopicta*** (Warren)

1893. *Amoebe ? niveopicta* Warren, *Proc. zool. Soc. Lond.*, **1893** : 372, pl. 30, fig. 5.

1895. *Larentia niveopicta* : Hampson, *Fauna Brit. India*, Moths, **3** : 377.

Distribution : India : Sikkim.

Remarks : Inoue (1982) reported this species under the genus *Electrophaes* (?) and reported from Nepal.

* 211. ***Larentia albiseriata*** (Warren)

1893. *Polyphasia albiseriata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 373.

1895. *Larentia albiseriata* : Hampson, *Fauna Brit. India*, Moths, **3** : 379.

Distribution : India : Sikkim.

Remarks : After Hampson (1895) it is not yet reported from any where.

* 212. ***Larentia comis*** Butler

1879. *Larentia comis* Butler, *Ann. Mag. nat. Hist.*, (5) **4** : 443.

1895. *Larentia comis* : Hampson, *Fauna Brit. India*, Moths, **3** : 379.

Distribution : India : Sikkim. *Elsewhere* : **Japan.**

Remarks : Now this is kept under *Cidaria* ***comis*** Prout (1914).

* 213. *Larantia siderifera* (Moore)

1887. *Eustroma siderefera* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, p. 276.

1895. *Larentia siderifera* : Hampson, *Fauna Brit. India*, Moths, **3** : 368.

Material examined : One ♀, 19.vii. 1989, Thangu, N. Sikkim, alt. c. 3750 m. coll. *S. S. Saha.*

Langth of Forewing : 15 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

Remarks : Cotes and Swinhoe (1988) reported it from Darjiling (W. Bengal). At present it is under *Lampropteryx siderifera* Inoue (1982) reported from Nepal.

214. *Larentia olivacea* (Warren)

1893. *Gagitodes olivacea* Warren, *Proc. Zool. Soc. Lond.*, **1893** : 382, pl. 30, fig. 6.

1895. *Larentia olivacea* : Hampson, *Fauna Brit. India*, Moths. **3** : 376.

Material examined : One ♀, vii.1989, Lachen, N. Sikkim, alt. *ca* 3500 m. coll. S.S. Saha.

Length of Forewing : 23 mm.

Diagnosis : As per key.

Distribution : India : Sikkim.

Remarks : Inoue (1982) reported the species from E. Nepal under the genus *Gagitodes* Warren. The specimen studied in this paper is much bigger than that of the specimen described by Hampson (1895).

* 84. *Genus Gnamptopteryx* Hampson

1893. *Gnamptopteryx* Hampson, *Ill. Typ. Lep. Het. Brit. Mus.*, **9** : 155.

Distributional Range : India (Sikkim), Sri Lanka and Taiwan.

215. *Gnamptopteryx cymatia* (Hampson)

1902. *Cidaria cymatia* Hampson, *J. Bombay nat. Hist. Soc.*, **14** : 515.

1992. *Gnamptopteryx cymatia* : Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 127.

Distribution : India : Sikkim. *Elsewhere* : Taiwan.

* 85. *Genus Ecliptopera* Warren

1895. *Eclitopera* Warren, *Novit. zool.*, **1** : 679.

Distributional range : There are several Holarctic species, but most of the species are reported from E. Asia.

216. *Ecliptopera rectilinea* Warren

1894. *Ectiptopera rectilinea* Warren, *Novit. zool.*, **1** : 679.

1997. *Ecliptopera rectilinea* : Holloway, *Malayan Nat. J.*, **51** : 195.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Peninsular Malaysia and Indonesisa (Bali, Borneo).

Remarks : Hampson (1895) synonymised this species under *Cidaria dissecta* Moore. Later on Inoue (1992) treated this as good species.

* 86. Genus *Dysstroma* Hübner

1825. *Dysstroma* Hübner, *Verz. Bek. Schmett.*, (21) : 333.

Distributional range : Throughout Holarctic but its greatest diversity is in the North-East Himalaya and Western China. A few species are repoted from Taiwan and Indonesia (Borneo).

217. *Dysstroma dentiferum* (Warren)

1896. *Polyphasia dentiferum* Warren, *Novit. zool.*, **3** : 387.

1992. *Dysstroma dentiferum* : Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 127.

Distribution : India : Sikkim. *Elsewhere* : E. Nepal and Taiwan.

218. *Dysstroma sikkimense* Heydemann

1932. *Dysstroma sikkimens* Heydemann, *Int. ent. Z.*, **26**, figs. 12, 12a.

1992. *Dysstroma sikkimense* : Inoue, *Lep. Taiwan*, checklist, **1** (2) : 127.

Distribution : India : Sikkim. *Elsewhere* : E. Nepal and Taiwan.

87. Genus *Venusia* Curtis

1893. *Venusia* Curtis, *Brit. Ent.*, **16** : 759.

Distributional range : Holarctic, Himalaya and Taiwan.

* 219. *Venusia sikkimensis* (Elwes)

1893. *Hydrelia sikkimensis* Elwes, *Proc. zool. Soc. Lond.*, **1893** : 365.

1987. *Venusia sikkimensis* : Inoue, *Bull. Fac. domest. Otsuma Univ.* **23** : 224.

Distribution : India : Sikkim. *Elsewhere* : E. Nepal and Taiwan.

* 220. *Venusia lilacina* (Warren)

1893. *Hydrelia lilacina* Warren, *Proc. zool. Soc. Lond.*, **1893** : 364, pl. 32, fig. 4.

1987. *Venusia lilacina* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 225.

Distribution : India : Sikkim. *Elsewhere* : E. Nepal.

Remarks : Inoue (1982) reported the species from Nepal as V. *lilacina lilacina* (Warren).

221. *Venusia obliquisigna* (Moore)

1887. *Cidaria ? obliquisigna* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson* : 278.

1987. *Venusia obliquisigna* : Inoue, *Bull. Fac. domest. Sc. Otsuma Wom. Univ.*, **23** : 227.

Material examined : One ♂, vii.1895, Sikkim, alt. Ca 2800 m, coll. J.G. Pilcher.

Length of Forewing : 14 mm.

Diagnosis : Forewing having subbasal line, a double waved antemedial line, an oblique black line costa to lower angle of cell, four waved postmedial lines angled below M_3, three waved submarginal lines bent after M_3 to the margin, Hindwing whiter, with waved postmedial line and three submarginal lines.

Distribution : India : Sikkim. *Elsewhere* : E. Nepal.

88. Genus *Hydrelia* Hübner

1818. *Hydrelia Hübner, Verz. bek. Schmett.*, p. 322.

Distributional range : Himalaya, Meghalaya (Khasi Hills), Nagaland, Taiwan, Philippines and Indonesia.

Remarks : Out of 14 Indian species eleven species of this genus recorded from Sikkim.

Key to the species

Both wings with rounded outer margin [Wings yellow, both wings having black cell speck and five orange lines at marginal and submarginal area] ..... *flavilinea* Warren

Forewing with rounded outer margin, outer margin of hindwing strongly crenulate 1

1 Forewing pale yellow having pale black basal patch, one curved, medial brown shade, posteriorly it is slender, a discal dot on this shade, one submarginal line formed of brown spots .... *pictaria* (Moore)

Wings silvery white. Forewing with sinuous subbasal dark line, adjacent to discal dot there is one excurved line, two sinuous postmedial

lines submarginal line formed of black dots and veins. Hindwing having black discal dot and fuscous bands .... *recurvilineata* (Moore)

*222. *Hydrelia rufigrisea* (Warren)

1893. *Asthena ? rufigrisea* Warren, *Proc. zool. Soc. Lond.*, 1893 : 364, pl. 32, fig. 6.

1987. *Hydrelia rufigrisea* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 227.

Distribution : India : Sikkim. *Elsewhere* : E. Nepal.

* 223. *Hydrelia marginepunctata* Warren

1893. *Hydrelia marginepunctata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 364, pl. 32, fig. 5.

1987. *Hydrelia marginepunctata* : Inoue, *Bull. Fac. domest. Otsuma Wom. Univ.*, **23** : 233, fig. 26R.

Distribution : India : Sikkim. *Elsewhere* : E. Nepal.

224. *Hydrelia flavilinea* Warren

1893. *Hydrelia flavilinea* Warren, *Proc. Zool. Soc. Lond.*, **1893** : 363.

1895. *Hydrelia flavilinea* : Hampson, *Faua Brit. India*, Moths, **3** : 431.

Material examined : One ♂, 1894, Yatang, Sikkim, coll. *G. C. Dudgean.*

Length of Forewing : The specimen is badly damaged, therefore, measurement cannot be taken.

Diagnosis : Refer key.

Distribution : India : Sikkim.

*225. *Hydrelia rhodoptera* Hampson

1895. *Hydrelia rhodoptera* Hampson, *Fauna Brit. India*, Moths, **3** : 414.

1987. *Hydrelia rhodoptera* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 229.

Distribution : India : Sikkim. *Elsewhere* : E. Nepal.

Remarks : Inoue (1982) reported two types of specimens, one pinkish and one ochreous brown from Gunsa (E. Nepal).

* 226. *Hydrelia plumbeolineata* Hampson

1895. *Hydrelia plumbeolineata* Hampson, *Fauna Brit. India*, Moths, **3** : 415.

Distribution : India : Sikkim.

Remarks : Hampson (1895) described the species from Sikkim, after that no report rgarding this species is available.

* 227. *Hydrelia rufinota* Hampson

1896. *Hydrelia rufinota* Hampson, *Fauna Brit. India*, Moths, **4** : 560.

1987. *Hydrelia rufinota* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 233.

Distribution : India : Sikkim. *Elsewhere* : Nepal.

* 228. *Hydrelia cingulata* Hampson

1896. *Hydrelia cingulata* Hampson, *Fauna Brit. India*, Moths, **4** : 560.

1987. *Hydrelia cingulata* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 231.

Distribution : India : Sikkim (Yatang). *Elsewhere* : Nepal.

* 229. *Hydrelia crocearia* Hampson

1896. *Hydrelia crocearia* Hampson, *Fauna Brit. India*, Moths, **4** : 561.

Distribution : India : Sikkim (Yatang).

Remarks : Inoue (1982) reported the species from Nepal as *Agnibesa crocearia.*

* 230. *Hydrelia sanguiflua* Hampson

1896. *Hydrelia sanguiflua* Hampson, *Fauna Brit. India*, Moths, **4** : 561.

1987. *Hydrelia sanguiflua* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 227.

Distribution : India : Sikkim (Yatang). *Elsewhere* : Nepal.

231. ***Hydrelia pictaria*** (Moore)

1867. *Somatina ? Pictaria* Moore, *Proc. zool Soc Lond.*, **1867** : 645.

1895. *Hydrelia pictaria* : Hampson, *Fauna Brit. India*, Moths, **3** : 415.

Material examined : One ♂ and two examples, 11-28.v. 1888, Sikkim, coll. *G. C. Dudgeon.*

Length of forewing : 1 ♂, 15 mm (due to damaged condition measurement and sex of two examples could not be determined).

Diagnosis : As per key.

Distribution : India : Sikkim.

Remarks : Cotes and Swinhoe (1888) kept the species under the genus *Agnibesa* Moore. Hampson (1895) dealt this species under *Hydrelia* but Inoue (1982) reported *Agnibesa pictaria pictaria* (Moore) from Nepal.

232. ***Hydrelia recurvilineata*** (Moore)

1887. *Agnibesa recurvilineata* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, p. 256.

1895. *Hydrelia recurvilineata* : Hampson, *Fauna Brit. India*, Moths, **3** : 415.

Material examined : One ♂ vii.1890, Gnatang, Sikkim (Old coll).

Length of Forewing : 15 mm.

Daignosis : As per key

Distribution : India : Sikkim and West Bengal (Darjiling), Cotes and Swinhoe (1888).

Remarks : The specimen is damaged. Inoue (1982) reported the species from Nepal under the genus *Agnibesa* Moore.

89. Genus ***Asthena*** Hübner

1818. *Asthena* Hubner, *Verz. bek. Schmett.*, p. 310.

Diagnosis : As per key.

Distributional range : Palaearctic Region, North America, Himalayan Region and Taiwan.

*233. ***Asthena plurilinearia*** (Moore)

1867. *Somatina plurilinearia* Moore, *Proc. zool. Soc. Lond.*, **1867** : 645.

1997. *Asthena plurilinearia* : Mandal and Ghosh, *State Fauna series* **3** : *Fauna of West Bengal* (7) : 504.

Distribution : India : Sikkim, Meghalaya, West Bengal (Darjiling), North West Himalaya. *Elsewhere* : Japan and U. S. S. R.

234. ***Asthena albosignata*** (Moore)

1887. *Idaea albosignata* Moore, *Descr. new Indian Lrp. Ins. Coll. Atkinson*, p. 253.

1895. *Asthena albosignata* : Hampson, *Fauna Brit. India*, Moths, **3** : 418.

Material examined : One ♀, 1.iv.1889, Sikkim, coll. *J.G.Pilcher.*

Length of Forewing : 16 mm.

Daignosis : Reddish brown specimens. Forewing having pleanty of dark waved lines which are more prominent on veins; antemedial, postmedial and submarginal lines are indistinct. Hindwing whiter, two antemedial, two postmedial and two submarginal lines, the first one is less prominent, all the lines darker on veins.

Distribution : India : Sikkim, West Bengal (Darjiling) Cotes and Swinhoe (1888).

Remarks : Compared to Hampson's (1895) specimen, the wing expanse of this specimen is larger.

90. Genus ***Polynesia*** Swinhoe

1892. *Polynesia* Swinhoe, *Trans. ent. Soc. Lond.*, **1892** : 4.

Distributional range : North East India, Kerala, Andamans, Sri Lanka, Peninsular Malaysia, Indonesia and New Guinea.

235. ***Polynesia sunandeva*** (Walker)

1861. *Pomasia sunandeva* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 657.

1997. ***Polynesia sunandeva*** : Holloway, *Malayan Nat. J.*, **51** : 189.

Material examined : Two ♀ x.1895 and xi.1896, Sikkim, alt. *ca* 550 m. coll. *G. C. Dudgeon.*

Length of Forewing : 13 14 mm.

Daignosis : Bright yellow wings marked with red fasciae. The large red patches are grey centred. Hindwing falcated between M_1 and M_3, Rs and M_1 pointed.

Distribution : India : Sikkim, Andamans. ***Elsewhere*** : Sri Lanka and Indonesia (Borneo).

Remarks : Hampson (1895) mentioned Travancore one of the localities of the species, but thereafter it is not reported from there.

*236. ***Polynesia truncapex*** Swinhoe

1892. *Polynesia truncapex* Swinhoe, *Trans. ent. Soc. Lond.*, **1892** : 4.

1897. *Polynesia truncapex* : Holloway, *Malayan Nat. J.*, **51** : 189.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewherer* : Peninsualr Malaysia and Indonesia (Bali and Borneo).

*91. Genus ***Xanthorhoe*** Hübner

1825. *Xanthorhoe* Hübner, *Verz. bek. Schmett.*, p. 327.

Distributional range : Almost cosmopolitan (Holloway, 1997).

*237. ***Xanthorhoe albigirata*** (Koller)

1848. *Cidaria albigirata* Koller, *Hugel Kasch*, **4** (2) : 489.

1900. *Xanthorhoe albigirata* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 345.

Distribution : India : Sikkim and West Bengal (Darjiling), Punjab and Kashmir. *Elsewhere* : Afghanistan.

*92. Genus ***Horisme*** Hübner

1895. *Horisme* Hübner, *Verz. bek. Schmett.*, (21) : 331.

Distributional range : N. E. India, sri Lanka, Myanmar, Taiwan, Japan and Indonesia.

238. ***Horisme hyperythra*** (Hampson)

1895. *Phibalapteryx hyperythra* Hampson, *Fauna Brit. India*, Moths, **3** : 347.

1976. *Horisme hyperythra* : Holloway, *Moths Borneo*, Mount Kinabalu, p. 66.

Distribution : India : Sikkim and Assam. *Elsewhere* : Sri lanka, Taiwan, Japan, Myanmar and Indonesia (Java and Sulawesi).

*93. Genus ***Chloroclystis*** Hübner

1818. *Chloroclystis* Hübner, *Verz. bek. Schmett.*, p. 323.

Distributional range : Mostly Indo-Australian and extended upto Palearctic and Aethiopian Regions.

239. ***Chloroclystis rubrinotata*** Warren

1893. *Chloroclystis rubrinotata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 384.

1895. *Chloroclystis rubrinotata* : Hampson, *Fauna Brit. India*, Moths, **3** : 392.

Distribution : India : Sikkim.

240. ***Chloroclystis xanthocomes*** (Prout)

1926. *Rhinoprora xanthocomes* Prout, *J. Bombay nat. Hist. soc.*, **31** : 320.

1976. *Chloroclystis xanthocomes* : Holloway, *Moths Borneo*, Mount Kinabalu, p. 69.

Distribution : India : Sikkim ans Assam. *Elsewhere* : Myanmar and Indonesia (Borneo and Bali).

241. ***Chloroclystis filicata*** (Swinhoe)

1892. *Eupithecia filicata* Swinhoe, *Trans. ent. Soc. Lond.*, **1892** : 1.

1976. *Chloroclystis filicata* : Holloway, *Moths Borneo*, Mount Kinabalu, p. 69.

Distribution : India : Sikkim and Meghalya (Khasi Hills). *Elsewhere* : Sri Lanka, Myanmar (E. Pegu) and Indonesia (Sulawesi and Ceram).

242. *Chlcroclysits spissidentata* Warren

1893. *Chloroclystis spissidentata* Warren. *Prox. zool. Soc. Lond.*, **1893** : 383.

1895. *Chloroclystis spissidentata* : Hampsom, Fauna Brit. India, Moths **3** : 395.

Distribution : India : Sikkim.

243. *Chloroclystis lucinda* (Butler)

1879. *Simotricha lucinda* Butler, *Ann. Mag. nat. Hist.*, (5) **4** : 442.

1895. *Chloroclystis lucinda* : Hampson, *Fauna brit. India*, Moths, **3** : 396.

Distribution : India : Sikkim, Himachal Pradesh (Dharmsala) and Nilgiris. *Elsewhere* : Sri Lanka and Japan.

244. *Chloroclystis modesta* Warren

1893. *Chloroclystis modesta* Warren, *Proc. zool. Soc. Lond.*, **1893** : 383.

1895. *Chloroclystis modesta* : Hampson, *Fauna Brit. India*, Moths, **3** : 396.

Distribution : India : Sikkim. *Elsewhere* : Myanmar.

Remarks : The last three species under the genus are reported by Hampson (1895) thereafter no record are available.

*94. Genus *Eupithecia* Curtis

1825. *Eupithecia* Curtis, *Brit. Ent.*, **6** : 64.

Distributional range : Almost throughout the world.

Remarks : In india the genus is distributed in mountain and submountain region only.

245. *Eupithecia costipicta* Warren

1893. *Eupithecia costipicta* Warren, *Proc. zool. Soc. Lond.*, **1893** : 383, pl. 30, fig. 21.

1895. *Eupithecia costipicta* : Hampson, *Fauna Brit. India*, Moths, **3** : 401.

Distribution : India : Sikkim.

246. *Eupithecia rufipicta* Hampson

1895. *Eupithecia rufipicta* Hampson, *Fauna brit. India*, Moths, **3** : 402.

Distribution : India : Sikkim.

247. *Eupithecia irambata* Warren

1883. *Eupithecia irambata* Warren, Proc. zool. Soc. Lond., **683** : 382.

1895. *Eupithecia irambata* : Hampson, Fauna Bril. India, Mothsn, **3** : 402.

Distribution : India : Sikkim.

248. *Eupethecia rubridorsata* Hampson

1895. *Eupethecia rubridorsata* Hampson, *Fauna Brit. India*, Moths, **3** : 403.

Distribution : India : Sikkim.

Remarks : Hampson (1895) described this endemic species, later on no record of this species is available.

*95. Genus *Trichopterigia* Hampson

1895. *Trichopterigia* Hampson, *Fauna Brit. India*, Moths, **3** : 403.

Distributional range : Oriental subtropics extended upto Sundaland Holloway (1997).

249. *Trichopterigia sanguinipunctata* (Warren)

1893. *Amathia sanguinipunctata* warren, *Proc. zool. soc. Lond.*, **1893** : 363.

1997. *Trichopterigia sanguinipunctata* : Holloway, *Malayan Nat. J.*, **51** : 103, pl. 8, fig. 271.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : China, Taiwan, Myanmar, Philippines (Luzon) and Indonesia (Borneo).

*96. Genus *Trichopteryx* Hübner

1825. *Trichopteryx* Hübner, *Verz. bek. Schmett.*, p. 323.

Distributional range : Himalaya, Khasi Hills,

Taiwan, Palaearctic and Nearctic Region **Hampson** (1895).

250. *Trichopteryx sikkima* (Moore)

1887. ***Lobophora sikkima*** Moore, *Descr. new Indian Lep. Ins. Coll. atkinson, p. 272, pl. 8., fig. 30.*

1895. ***Trichopteryx sikkima*** : Hampson, *fauna brit. india.* **Moths, 3 : 404.**

Distribution : India : Sikkim (Rungchu Valley).

251. *Trichopteryx viretata* Hübner

1806-24. *Trichopteryx viretata* Hübner,*Samml.eur. Schmett., Geom.*, fig. 230.

1895. *Trichopteryx viretata* : Hampson, *Fauna Brit. India,* Moths, **3** : 405.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Himachal Pradesh (Dharmsala). *Elsewhere* : Europe.

Remarks : Prout (1912-15) dealt this species under the genus *Acasis* Duponchel and cites its distribution as Central Europe, Russia, N. W. India, Taiwan (Formosa) and he also added according to Staudinger in Eastern Siberia and Japan.

*97. Genus *Microloba* Hampson

1895. *Microloba* Hampson, *Fauna Brit. India,* Moths, **3 : 405.**

Distributional range : Eastern Asia.

252. *Microloba bella* (Butler)

1878. *Tyloptera bella* Butler, *Ann. Mag. nat. Hist.*, (5) **1** : 448.

1914. *Microloba bella* : Prout, *Macrolep. world,* **4** : 189, fig. 6d.

Distribution : India : Sikkim. *Elsewhere* : **Japan,** Korea, E. Siberia and China.

Subfamily ENNOMINAE
Key to the genera

Hindwing tailed at M_3 1

\- Hindwing not tailed at M_3 4

1. R_2 absent in forewing .... *Ourapteryx* Leach

   R_2 present in forewing 2

2. Rs and M_1 of hindwing stalked, tail at M_3 short ..... *Srinopteryx* Butler

   Rs and M_1 of hindwing arise from cell 3

3. R_1 and R_2 of forewing stalked and anastomoses with Sc ..... *Thinopteryx* Butler

   R_1 anastomoses with R_2 and R_1 arises from Sc, R_2-R_5 stalked ..... *Xeropteryx* Butler

4. Body smothly covered with scale 5

   Body roughly covered with scale mixed with hair 43

5. Palpi upturned and covered with smooth scales, hindwing Sc + R_1 anastomoses with the cell ..... *Aplochlora* Warren

   Palpi porrect 6

6. Palpi not reaching beyond the frons 7

   Palpi reaching well beyond the frons 12

7. R_1 and R_2 of forewing stalked 8

   R_1 and R_2 of forewing not stalked 9

8. Rs of hindwing from angle of cell .... *Myrteta* Walker

   Rs of hindwing before angle of cell .... *Scardamia* Guenèe

9. Forewing R_2 R_5 stalked 10

   Forewing R_3 R_5 stalked R_2 absent 11

10. Antennae is not unipectinate; M_1 and M_2 of fore wing stalked ..... *Peratophyga* Warren

    Antennae of both sexex unipectinate, M_1 and M_2 of forewing not stalked .... *Plutodes* Guenèe

11. Wing covered with scale and long hair .... *stegania* Guenèe

    Wings hyaline ..... *Zamarada* Moore

12. Palpi covered with much longer hair 13

    Second joint of palpi clothed with hair and up turned, 3rd joint naked and porrect 33

13. Forewing apex very much falcate 14

Apex of forewing not highly falcate 16

14. M_2 of forewing from the middle of cell 15

M_2 of forewing from above middle of cell and obolescent in female ..... *Hyposidra* Guenèe

15. Hind wing outer margin not produced at R_s Fore wing R_1 and R_2 stalked and anastomosing with S_c ..... *Oxymacaria* Waren

Hind wing outer margin produced to a point at R_s. Fore wing R_2 absent, R_1 free ..... *Krananda* Moore

16. Outermargin of hind wing not angled at M_3 17

Outermargin of hindwing angled at M_3 ... 29

17. Inner margin of fore wing and costa of hind wing evently curved 18

Inner margin of forewing and costa of hindwing excised beyond middle ..... *corymica* Walker

18. In Forewing outer margin suberect, apex not produced 19

Apex of forewing produced with very oblique outer margin 23

19. Forewing of normal bredth 20

Forewing long and narrow 21

20. Outer margin of forewing evenly curved, R_1 coincidents with Sc ..... *Abraxas* Leach

Outer margin of forewing excised below apex ..... *Pseudopanthera* Hübner

21. Abdomen short, in forewing M_2 above midle of cell ..... *Percnia* Guenèe

Abdomen very long and narrow 22

22. Antennae shorter, not dilated at extrimity ... . *Obeidia* walker

Antennae long and dilated at extrimity ..... *Vithora* Moore

23. R_2 present in forewing 24

R_2 absent in forewing ..... *Luxiaria* Walker

24. R_1 and R_2 of forewing stalked and R_1 connected Sc by bar ..... *Hypochrosis* Guenèe

R_1 of forewing not connected Sc by bar 25

25. Cu_{1a} of both wings from angle of cell, R_1 of forewing anastomoses with Sc 26

Cu_{1a} of both wings from before angle of cell 27

26. R_3 - R_5 from angle of cell ..... *Euremene* Duponchel

R_3 R_5 from before angle of cell ..... *Prionia* Hubner

27. Large strongly built moths, M_2 of fore wing from middle of cell ..... *Dalima* Moore

- M_2 of forewing above middle of cell 28

28. R_2 - R_5 of fore wing stalked ..... *Loxaspilates* Warren

- R_1 and R_2 of fore wing stalked ..... *Anonychia* Warren

29. Cu_{1a} of wings from angle of cell 30

Cu_{1a} of wings from before angle of cell ..... *Tanaoctenia* Warren

30. R_2 of fore wing absent ..... *Macaria* Curtis

- R_2 of fore wing present 31

31. R_1 and R_2 of fore wing free ..... *Orsonoba* Walker

R_2 R_5 of fore wing stalked 32

32. R_1 of fore wing free, hind tibiae not dilated ..... *Spilopera* Warren

R_1 anastomoses with Sc, hind tibiae of male diliated with a tuft of hair ..... *Callerinnys* Warren

33. Eyes not hairy 34

Eyes hairy 42

34. R_1 and R_2 of forewing stalked and connected with Sc and R_3 35

R_3 - R_5 fore wing stalked or from cell 37

35. Antennae of male bipectinate 36

Antennae of male simple ..... *Heterostegane* Hampson

36. Antennae of male with short branch which ends as bristle, retinaculam a tuft of hair .... *Synegia* Guenèe

- Antennae of male moderate, branches near to apex, retinaculam of male a plate like or bar shaped structure .... *Parasynegia* Warren

37. R_2 - R_5 of fore wing stalked 38

- R_1 and R_2 of fore wing from cell 40

38. Outer margin of both wings rounded 39

- Both wings angled at M_3 ..... *Psyra* Walker

39. Frons having sharp tuft. Second joint of palpi not reaching vertex .... *Hyperythra* Guenèe

- Frons having no tuft, 2nd joint of palpi reaches vertex .....*Petalia* Herrich-Schaeffer

40. Scaling smooth in thorax 41

- Long wooly hair covers throax .... *Odontopera* Stephens

41. Outer margin of forewing suberect and hindwing angled .....*Mimochroa* Warren

- Outer margin of both wings irregular .... *Leptomiza* Warrem

42. R_1 and R_2 of forewing stalked .... *Fascellina* Walker

- R_1 and R_2 of forewing free .... *Garaeus* Moore

43. Frontal side of palpi fringed with hair, palpi upturned 44

- Palpi porrect 45

44. R_1 of forewing given free, apex prodeced. M_3 of hindwing produce .... *Amblychia* Guenèe

- R_1 of forewing given off from Sc, costa arched towards apex. M_3 of hindwing not produced ..... *Chorodna* Walker

45. Palpi short. Cell of hindwing long, extending two thirds of its length 46

- Palpi long. Cell of hindwing of normal length 47

46. Frons covered with dense hair. Proboscis weak, male hind tibial 1st pair of spur nearer to apex ..... *Biston* Leach

- Frons less hairy. Proboscis strong. Hind tibial 1st pair of spuramedial ..... *Buzur* Walker

47. Outer margin of hindwing rounded 48

Outer margin of hind wing irregular, angled at Rs and M_3..... *Erebomorpha* Walker

48. Sc and R_1 of fore wing seperate 49

R_1 of fore wing arises from Sc .... *Medasina* Moore

49. Outer margin of wings crenulated 50

Outer margin of wings non crenulate .... *Arichana* Moore

50. Fore wing of male with fovea 51

Forewing without fovea 57

51. Antennae bipectinate 52

- Antannae simple 54

52. Antannae of male bipectinate to all segments ..... *Cleora* Curtis

- Antennae of male bipectinate to three fourth length 53

53. Hind tibia of male diliated with a fold containing a ridge of hair .....*Alcis* Curtis

- Hind tibia of male not diliated and without ridge of hair .....*Boarmia* Treitshke

54. Antennae of male robustly ciliate ....*Rutellerona* Swinhoe

- Antennae of male fasciculate 55

55. Hind tibia dilated..... *Paradarisa* Warren

Hind tibia not dilated 56

56. Male with no tuft of hair from hind coxae .. .. *Ectropis* Hübner

Male with tufts of hair from hind coxae..... ..... *Psilalcis* Warren

57. Antennae of both sexes bipectinate. R_1 and R_2 of fore wing stalked .... *Phthonandria* Warren

Antennae flattened and thickened. Fore wing with R_2 stalked with R_3 - R_5 and anastomasing with R_2 stalked with R_3 - R_5 and anastomasing with R_1 .... *Micrabraxas* Butler.

98. Genus *Abraxas* Leach

1815. *Abraxas* Leach, *Edinb. Encycl.*, **9** : 134.

Diagnosis : Refer key.

Distributional range : Palaearctic and Oriental regions, extended upto North Austarlia.

Key to the species

Head to abdomen orange yellow 1

Head to abdomen pale yellow, black spots on abdomen dorsally and two pairs of black spots laterally. Forewing with diffused orange antemedial band, dark medial and post medial bands ..... *irrorata* Moore

1. Forewing with fulvous patch at base 2

Forewing with basal orange patch, wings white with fuscous irroration, veins black .... *nigrivena* Warren

2. Basal fulvous patch of forewings bigger, another patch with silvery marks on inner margin beyond middle, an end cell grey patch with dark marking extending upto costa, series of curved postmedial spots with dark streaks at veins .... *sylvata* (Scopuli)

Basal fulvous patch smaller, other markings blue grey, no dark mark at end of cell, postmedial spots in straight line, no dark mark at end of cell, post medial spots in straight line, no dark streaks at veins ..... *martaria* Guenèe

253. *Abraxas sylvata* (Scopuli)

1763. *Sylvata* Scopuli, *Ent. Carn.* p. 220.

1915. *Abraxas sylvata,* Prout in Seitz, *Macrolep. World,* **4** : 311, fig. 15b.

Material examined : One ♀, 5.x.1888; one ♂, vii.1893; one ♂, viii.1897, alt. *ca* 550 m.; Sikkim, G. C. Dudgeon coll. three ♂, 5.x.1988, alt. 2010 m, Rabangla, S. Sikkim and one ♂, 24.x.1988, Tumin, alt. 1800 m, E. Sikkim, coll. V. C. Agrawal. 24.x.1988, Tumin, alt. 1800 m, E. Sikkim, coll. V. C. Agrawal.

Length of Forewing : ♂ 18-25 mm, ♀27 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim (S. Sikim), Assam, N. W. Himalaya and Nilgiris. *Elsewhere* : Central Europe to Asia.

Remarks : Entire forewing of the specimens, collected during 1988, covered with leaden grey. Other characters agree well with the description made by Hampson (1895).

254. *Abraxas irrorata* Moore

1867. *Abraxas irrorata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 652.

1987. *Abraxas irrorata* : Inoue, *Bull. Fac. Domest. Sci Otsuma Wom. Univ.*, **23** : 245.

Material examinrd : Two ♀, Sikkim (Yatang), *Old Collection.*

Length of Forewing : 22-25 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim (Yatang), West Bengal (Darjiling) and Uttar Pradesh (Mumaun). *Elsewhere* : Nepal.

*255. *Abraxas fulvosparsa* Hampson

1895. *Abraxas fulvosparsa* Hampson, *Fauna Brit. india,* Moths, **3** : 298.

Distribution : India : Sikkim.

Remarks : After the discovery of the species no record of the species is available.

*256. *Abraxas spontaneata* Walker

1862. *Abraxas spontaneata* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1120.

1895. *Abraxas spontaneata* : Hampson, *fauna Brit. India,* Moths, **3** : 298.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

Reamrks : Inoue (1982) recorded the species from Nepal as *Heterabraxas spontaneata.*

*257. *Abraxas fasciata* Swinhoe

1894. *Abraxas fasciata* Swinhoe, *Trans. ent. Soc. Lond.*, **1894** : pl. ii, fig. 11.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

Remarks : Further no record of this species is available except Hampson (1895) who had recorded the species from the area mentioned in distribution.

258. *Abraxas martaria* Guenèe

1857. *Abraxas martaria* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 205.

1987. *Abraxas martaria* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.* **23** : 249.

Material examined : One ♂, iv.1889, one ♂, 7.vii.1891, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 18 - 23 mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim, Assam (Sibsagar), Meghalaya (Khasi Hills), Bihar (Buxar) and Himachal Pradesh (Kulu). *Elsewhere* : Bangladesh (Sylhet), Bhutan and Nepal.

Reamrks : Inoue (1987) recorded the species from Nepal as *Abraxas* (*Calospilos*) *martaria*. But Holloway (1997) treated it as subgenus *Calospilos* Hübner, in the synonymy list.

*259. *Abraxas metamorpha* Warren

1893. *Abraxas metamorpha* Warren, *Proc. zool. Soc. Lond.*, **1893** : 392.

1895. *Abraxas metamorpha* : Hampson, *Fauna Brit. India*, Moths, **3** : 301.

Distribution : India : Sikkim.

*260. *Abraxas alpestris* Warren

1893. *Abraxas alpestris* Warren, *Proc. zool. Soc. Lond.*, **1893** : 394, pl. 30, fig. 15.

1895. *Abraxas alpestris* : Hampson, *Fauna Brit. India*, Moths, **3** : 302.

Distribution : India : Sikkim.

*261. *Abraxas diaphana* Warren

1893. *Abraxas diaphana* Warren, *Proc. zool. Soc. Lond.*, **1893** : 393.

1895. *Abraxas diaphana* : Hampson, *Fauna Brit. India*, Moths, **3** : 302.

Distribution : India : Sikkim.

Remarks : The last three species, including this, Hampson (1895) recorded from Sikkim after that no worker reported these species.

262. *Abraxas nigrivena* Warren

1893. *Abraxas nigrivena* Warren, *Proc. zool. Soc. Lond.*, **1893** : 394.

1987. *Abraxas nigrivena* Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 247.

Material examined : One ♂, vii.1895, Gnatang, Sikkim, alt. *ca* 3600 m. *Old collection.*

Length of Forewing : 16 mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim (Gnatang). *Elsewhere* : Nepal.

99. Genus *Peratophyga* Warren

1894. *Peratophyga* Warren, *Nov. zool.*, **1** : 407.

Distributional range : From Himalaya, Khasi Hills upto Indonesia.

Diagnosis : Refer Key.

Remarks : This genus can easily be recognised by the position of M_2 and a kidney shaped fovea.

263. *Peratophyga aerata* Moore

1867. *Acidalia aerata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 643.

1895. *Peratophyga aerata* : Hampson, *Fauna brit. india*, Moths, **3** : 164.

Material examined : One ♀ 6.vi.1884, Sikkim, coll. J. G. Pilcher.

Lenght of Forewing : 12 mm.

Daignosis : Ochreous. Basal patch of forewing fuscous, submarginal broad band concave outwardsly and convex inwardly, looks like a second bracket, its outer area yellowish. Hindwing to some extent similar with variation of size of bands.

Distribution : India : Sikkim, Meghalaya

(Khasi Hills), West Bengal (Darjiling) and Himachal Pradesh (Kasauli, Kulu and Simla). *Elsewhere* : Japan.

Remarks : First of all this species was reported as *Ephyra grata* Butler (swinhoe, 1900) which is later on synonomised under *aerata* (Moore) (Hampson 1895).

*264. ***Peratophyga xanthyala*** (Hampson)

1895. *Zamarada xanthyla* Hampson, *Fauna Brit. India*, Moths, **4** : 553.

1993. *Peratophyga xanthyala* : Holloway, *Moths Borneo* Geometridae : Ennominae, **11** : 135.

Distribution : India : Sikkim. *Elsewhere* : Peninsular Malaysia and Indonesia (Borneo).

100. Genus ***Heterostegane*** Hampson

1893. *Heterostegane* Hampson, *Ill. Typ. Lep. Het. Brit. Mus.*, **9** : 142.

Diagnosis : Refer key.

Distributional range : Old world tropics extends into Palaearctic region.

265. ***Heterostegane subtessellata*** (Walker)

1861. *Macaria subtessellata* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1862.

1993. *Heterostegane subtessellata* : Hollway, *Moths Borneo*, **11** : 126.

Material examined : One ♂ one ♀ ♂ 20.viii.1890, alt. *ca* 550 m, ♀ vi.1896, Sikkim, *G. C. Dudgeon* coll.

Diagnosis : Yellow coloured specimen. Forewing antemedial line curved at M_2 and M_3, postmedial line concave and the submarginal line angled outwardly at M_1 and terminate at outer angle in a dark shed. Hind tibia of male is to some extent dilated.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Himachal Pradesh (Dharmsala), Karnataka (Canara) and Nilgiris. *Elsewhere* : Nepal, Myanamr, Malaya, Taiwan and Sundaland.

Remarks : Larva is the defoliator of *Acacia* (Leguminosae).

101. Genus ***Cassyma*** Guenèe

1857. *Cassyma* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 17.

Distributional range : Restricted to Oriental tropics and is not represented east of Sundalalnd, Holloway (1993).

266. ***Cassyma heteroneurata*** Guenee

1857. *Cassyma heteroneurata* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 19.

1900. *Cassyma heteroneurata* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 266.

Distribution : India : Sikkim. *Elsewhere* : Indonesia (Java and Borneo).

Remarks : Swinhoe (1900) catalogued this species. After that no record of this species is available.

102. Genus ***Zamarada*** Moore

1887. *Zamarada* Moore, *Lep. Ceylon.*, **3** : 432.

Diagnosis : Refer key.

Distributional range : This genus chiefly in African tropics, but a few species occur in Oriental tropics.

267. ***Zamarada scriptifasciata*** (Walker)

1862. *Comibaena scriptifasciata* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1566.

1993. *Zamarada scriptifasciata* : Holloway, *Moths Borneo*, **11** : 136.

Material examined : One (sex indet), vi.1897, alt. *ca* 550 m, one ♂, ix.1897, alt. *ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Diagnosis : Wings yellowish hyaline, broad greyish marginal band on both wings deep notch between M_3 and culb, a grey small end cell spot at forewing.

Distribution : India : Sikkim. *Elsewhere* : Indonesia (Borneo).

103. Genus ***Petalia*** Herrich-Schäeffer

1854. *Petalia* Herrich-Schaeffer, *Samml. ausser. Schmett.*, p. 84.

Diagnosis : Refer key.

Distributional range : Mostly Indo-Australian, but a few species are found in the E. Palearctic nefion, E. Africa and S. America.

Key to the species

- Male with a fovea, at the base of Sc + R_1 of hindwing. Both wings with antemedial and post medial rufous bands. Underside of wings brownish, outer area fuscous, no cell spot on any wings ..... *riobearia* (Walker)
- Male without any fovea. Black cell spot on undeside of both wings present 1

1. Forewing with antemedial line, both wings with straight medial line. Underside whitish, outer area fuscous .... *medardaria* Herrich-Schaeffer
- Forewing with antemedial brown band and both wings with medial brown bands, two less prominent postmedial bands. Underside brownish, the marginal area darker .... *fasciata* (Moore)

268. *Petalia medardaria* Herrich-Schaeffer

1854. *Petalia medardaria* Herrich-Schaeffer, *Samml. ausser. Schmett.*, p. 84. fig. 534.

1993. *Petalia medardaria* : Holloway, *Moths Borneo*, **11** : 102, pl. 5, figs. 188, 192.

Material examined : Two ♂, one ♀; one ♂, 16.viii.1888, alt. *ca* 600 m; one ♂, v.1897, alt.*ca* 550 m; one ♀ 22.viii.1890; Sikkim, *G. C. Dudgeon* coll.

Diagnosis : As per key.

Distribution : Indo-Australian Region.

Remarks : Larvae of this species group are defoliator of *Zizyphus* spp., *Hovenia dulcis* and *Gounia leptostachia* (Rhamnaceae).

*269. *Petelia capitata* (Walker)

1861. *Petelia capitata* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 1019.

1976. *Petelia capitata* : Holloway, *moths Borneo*, Mount Kinabalu, p. 74, fig. 527.

Distribution : India : Sikkim and Assam. *Elsewhere* : Sri Lanka.

* 270. *Petalia immaculata* Hampson

1893. *Petalia immaculata* Hamson, *Ill. Typ. Lep. Het. Brif. Mus.*, **9** : p. 140, pc. 168, figs. 6, 12.

Distribution : India : Sikkim and Nagaland. *Elsewhere* : Sri Lanka.

Remarks : After Hampson (1895) no walker dealt with this species.

271. *Petalia fasciata* (Moore)

1867. *Bargosa fasciata* Moore, *Proc. zool. soc. Lond.*, **1867** : 634, pl. 32, fig. 8.

1900. *Petalia fasciata* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 251.

Material examined : One ♂, 22.viii.1890, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 24 mm.

Diagnosis : Refer Key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Bengal (Swinhoe, 1900). *Elsewhere* : Japan (from *rivulora* Butler).

Remarks : The specimen is larger in size compare to Hampson's (1895) specimen.

272. *Petalia riobearia* (Walker)

1860. *Hyperythra* ? *riobearia* Walker, *cat. Lep. Het. Brit. Mus.*, **20** : 129.

1987. *Petalia riobearia* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 250.

Material examined : Three ♂, ix-x.1888, *G. C. Dudgeon* coll.

Length of Forewing : 21 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), and Nilgiri Hills. *Elsewhere* : Nepal.

Remarks : Hampson (1895) synonomised this species under *vaxillaria* Guenee, later on Swinhoe (1900) treated this as a good species.

104. Genus *Myrteta* Walker

1861. *Myrteta* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 831.

Diagnosis : Refer key.

Distributional range : Mostly Indian species, a few species from Sri Lanka, Indonesia (Borneo) to New Guinea, Taiwan and Japan.

*273. *Myrteta planaria* Walker

1861. *Myrteta planaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 831.

1900. *Myrteta planaria* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 232.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), and West Bengal (Darilling) (Cotes and Swinhoe 1888).

274. *Myrteta sericea* Butler

1879. *Myrteta sericea* Butler, *Ann. Mag. nat. Hist.*, (5) **4** : 439.

1992. *Myrteta sericea* : Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 112.

Material examined : One ♂, 2 ♀, 15.vii.1888 and one ♀, v.1886, alt. 2500 m., Sikkim, *G.C.Dudgeon* coll.

Diagnosis : White. A double fulvous line starts from the base of inner margin meet together at cell to from a single line, double waved line from below open to middle of inner margin, another similar submarginal line becomes double and run towards inner margin, single submarginal and marginal line. Hind wing with single antemedial, danlstemedial, single marginal and marginal line.

Distribution : India : Sikkim, Meghalaya (Khasi Hills). *Elsewhere* : Japan and Taiwan.

Remarks : Inoue (1987) recorded the species, *M. sericea brunneiceps* (Warren) from Nepal (Chitrei).

*275. *Myrteta subvitrea* Hampson

1895. *Myrteta subvitrea* Hampson, *Fauna Brit. India*, Moths, **3** : 152.

Distribution : India : Sikkim.

*276. *Myrteta subpunctata* Warren

1893. *Myrteta subpunctata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 387, pl. 31, fig. 11.

Distribution : India : Sikkim.

Remarks : After Hampson (1895) no worker dealt with this and the former species.

*277. *Myrteta simpliciata* (Moore)

1867. *Micronia simpliciata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 646.

1895. *Myrteta simpliciata* : Hampson, *Fuana Brit. India*, *Moths*, **3** : 153.

Distribution : India : Sikkim, Meghalaya (Khasi Hills).

Remarks : No worker after Hampson (1895) studied this species.

*105. Genus *Tasta* Walker

1862. *Tasta* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1569.

Distributional range : North East India to Borneo.

278. *Tasta micaceata* Walker

1862. *Tasta micaceata* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1570

1993. *Tasta micaceata* : Holloway, *Moths Borneo*, **11** : 63.

Distribution : India : Sikkim, Meghalaya (Khasi Hills). *Elsewhere* : Peninsular Malaysia, S. Thailand and Indonesia (Borneo and Sumatra).

*106. Genus *Bapta* Stephes

1829. *Bapta* Stephes, *Ill. Brit. Ent. Haust.*, **3** : 294.

Distributional range : Indo-Australian, Palaearctic and American.

279. *Bapta platyleucata* (Walker)

1866. *Acidalia platyleucata* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1628.

1997. *Bapta platyleucata* : Mondal and Ghosh, *State Fauna Series* **3** : *fauna West Bengal* part **7** : 493.

For other detail refer Mondal and Ghosh (1997).

Remarks : Inoue (1987) recorded the species from Nepal as *Lomographa platyleucata.*

280. *Bapta mytylata* (Guenèe)

1857. *Corycia mytylata* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 59.

1895. *Bapta mytylata* : Hampson, *Fauna Brit. India*, Moths, **3** : 155.

Distribution : India : Sikkim; Meghalaya (Khasi Hills); N. W. Himalaya and Punjab (Thundiani).

Remarks : Prout (1915) reported that the species *foedata* Warren (mytylata Leech) nec Guenèe.

107. Genus *Stegania* Guenèe

1844. *Stegania* Guenèe in Duponchel, *Cat. Lep. Eur.*, p. 270.

Diagnosis : Refer key.

Distributional range : Throughout India, Sri lanka, Myanmar, Indonesia (Borneo) and Europe Hampson (1895)

Key to the species

Antennae of male ciliated 1

- Antennae of male serrated. Forewing antemedial line curved, medial and post medial lines to some extent straight hindwing medial and post medial lines slightly crenulate, lines of both wings orange yellow..... ..... *trilineata* (Moore)

1. Fore wing of male with fovea. Forewing ochreous, base and costa purple brown, an elongated spot at cell nearer to costa, a dark line starting form costa before apex becomes convex near outer margin, bent inwards near inner angle. The area between the line and outer margin purple brown. Hindwing purple brown double lines at outer margin .... *marginata* Warren

- Forewing of male without fovea 2

2. Forewing with less prominent antemedial line, a straight medial line and a lunulate post medial line angled outwardly at median area. Lines of hindwing irregular ....*urbica* (Swinhoe)

Forewing with antemedial and submarginal line, no medial line. Hindwing with prominent antemedial line, post medial line less prominent ..... *rectifascia* Hampson

281. *Stegania marginata* Warren

1893. *Stegania marginata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 388, pl. 32, fig. 22.

Material examined : One ♂, x.1888; one ♂, vii.1896 and one ♂, viii.1897, alt. *ca* 550 m.; Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : !2 - 13 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nagaland.

*282. *Stegania strigata* (Warren)

1893. *Chiasma strigata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 412, pl. 31, fig. 22.

1895. *Stegania strigata* : Hampson, *Fauna Brit. India*, Moths, **3** : 165.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nagaland.

Remarks : Inoue (1987) reported this species as *Monocerotesa strigata* (Warren) from Nepal.

283. *Stegania urbica* (Swinhoe)

1885. *Asthena urbica* Swinhoe, *Proc. zool. Soc. Lond.*, **1885** : 859.

1895. *Stegania urbica* : Hampson, *Fauna Brit. India*, Moths, **3** : 165.

Material examined : One ♀ 28.v.1890 and one ♂, 14.viii.1890, Sikkim, *G.C.Dudgeon* coll.

Lenght of Forewing : ♂ ♀ 8 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Maharashtra Mumbai (Bombay), Karnataka (N. Candra) and Tamil Nadu (Nilgiris). *Elsewhere* : Myanmar.

284. ***Stegania rectifascia*** Hampson

1893. *Stegania rectifascia* Hampson, *Ill. Typ. Lep. Het. Brit. Mus.*, **9** : 142, pl. 170, fig. 8.

Material examined : One ♂ and one ♀, vi.1896, alt. *ca* 550 m. Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ ♀ 9 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Nagaland and Kangra Vally (H.P.). *Elsewhere* : Sri Lanka and Bhutan.

*285. ***Stegania latifasciata*** Moore

1887. *Stegania latifasciata* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, p. 260.

Distribution : India : Sikkim, Meghalaya (Khasi Hills); and W. Bengal (Darjiling) Cotes and Sunhoe (1888).

286. ***Stegania trilineata*** (Moore)

1867. *Hyria trilineata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 642.

1895. *Stegania trilineata* Hampson, *Fauan Brit. India*, Moths, **3** : 166.

Material examined : One ♂ vii.1895, Gnatang and one ♂, viii.1895, alt. *ca* 2200 m; Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 13 14 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim and W. Bengal (Darjiling).

108. Genus ***Synegia*** Guenèe

1857. *Synegia* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 423.

Diagnosis : As per key.

Distributional range : Indian subcontinent to Japan and extending east upto New Caledonia.

Key to the species

Shape of Retinaculum like flattened spoon 1

Retinaculum bar shaped. Costal area of forewing purplish grey, below this area a ferruginous line from apex to base of the wing, one oblique antemedial line, one postmedial band and the submarginal band which forms a qua drangular blotch at inner margin.In hindwing area between ante and post medial lines and apical area rufous. End cell speck on both wings, undersides pale and patches on the lines .... *camptogrammaria* (Guenèe)

1. Shaft of antennae white. Wings yellow irrorated with crimson, outer margin of hindwing slightly excised towards anal angle Forewing having ante and post medial lines, a speck at end of cell. Hindwing having sub marginal line angled to the margin below M_1 .... *erythra* Hampson

Shaft of antennae dark colour. Wings yellow, irrorated with orange, the oblique band of the forewing meets a quadrate patch between R_5 and culb. Hind wing subbasal line black, submar ginal lines from a black patch at middle ..... *lidderdalii* (Butler)

287. ***Synegia erythra*** Hampson

1891. *Synegia erythra* Hampson, *Ill. Typ. Lep. Het. Brit. Mus.*, **8** : 104. pl. 150, fig. 2.

Material examined : One ♀, i.1897, alt. *ca* 550 m., Sikkim, *G. C. Dudgeon* coll.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Nagaland and Nilgiris. *Elsewhere* : Bhutan.

288. *Synegia lidderdalii* (Butler)

1880. *Anisodes lidderdalii* Butler, *Ann. Mag. nat. Hist.*, (5) **6** : 220.

1895. *Synegia lidderdalii* : Hampson, *Fauna Brit. India*, Moths, **3** : 169.

Material examined : One ♂, viii.1889, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 16 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim.

289. *Synegia camptogrammaria* (Guenèe)

1857. *Anisodes camptogrammaria* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 420.

1993. *Synegia camptogrammaria* : Holloway, *Moths Borneo*, **11** : 76, pl. 5, fig. 135.

Material examined : One ♂, 8.vii.1889; one ♂, x.1896, one ♂, ix.1897, alt. *ca* 550 m; one ♀ 7.x.1890 and two ♀ ix.1896, alt *ca* 550 m; Sikkim, *G. C. Dudgeon* coll.

Diagnosis : Refer key.

Distribution : India : Sikkim.

*290. *Synegia lunulosa* (Moore)

1887. *Anisodes lunulosa* Moore, *Descr. new Indian Lep. Ins. coll. Atkinson*, p. 250, pl. 8, fig. 8.

1895. *Synegia lunulosa* : Hampson, *Fauna Brit. India*, Moths, **3** : 170.

Distribution : India : Sikkim. *Elsewhere* : Nepal.

Remarks : Inoue (1987) recorded the species from Nepal as *Heterostegania lunulosa*

*291. *Synegia pardaria* (Guenèe)

1857. *Anisodes pardaria* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 420.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Sri Lanka, Indonesia (Sumatra, Java and Borneo) and New Guinea.

Remarks : Now this species is known as *Borbachaa pardaria* Swinhoe (1900).

109. Genus *Parasynegia* Warren

1893. *Parasynegia* Warren, *Proc. zool. Soc. Lond.*, **1893** : 413.

Diagnosis : Refer key.

Distributional range : Himalaya, Assam and Meghalaya (Khasi Hills) and Indonesia.

Key to the species

Yellow, irrorated with orange, Forewing with medial band formed by two lunulate lines, one illdefined submarginal band formed by series of black specks. Hindwing having one subbasal band, two lunulate medial lines, a sub marginal band. Both wings having dark specks at end of cell, a very small white dot at the centre of the speck ..... *diffusaria* (Moore)

Yellow, irrorated with ferruginous. Forewing with highly curved antemedial line, a slightly crenulate postmedial line, an oblique line from apex anastomoses with post medial lime between M_1 and Cu_{1a} reaches inner margin, a dark ringed white spot at end of cell. Hindwing with five lines, of which post medial one lunulate and submarginal one forms a fork near apex, ringed end cell spot smaller .... *pluristriaria* (Walker)

292. *Parasynegia pluristriaria* (Walker)

1862. *Anisodes pluristriaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1581.

1900. *Parasynegia pluristriaria* : Swinhoe, *Cat. East. Au tral. Lep. Het.*, **2** : 239.

Material examined : One ♂, 7.x.1890 and two ♀, v.1896, alt. *ca* 550 m.; Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 23 mm, ♀ 22 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Assam (Sibsagar), West Bengal

(Darjiling) and Himachal Pradesh (Dharmsala). *Elsewhere* : Bhutan.

293. ***Parasynegia diffusaria*** (Moore)

1867. *Anisodes diffusaria* Moore, *Proc. zool. Soc. Lond.*, **1867** : 641.

1900. *Parasynegia diffusaria* : Swinhoe, *cat. East. Aystral. Lep. Het.*, **2** : 239.

Material examined : One ♀, ii.1897, alt. *ca* 550 m., Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 22 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling), *Elsewhere* : Bhutan.

Remarks : Both the species are placed here with *Parasynegia* after Swinhoe (1900), in which the specimens examined fit well.

110. Genus ***Hyperythra*** Guenèe

1857. *Hyperythra* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 99.

Diagnosis : Refer key.

Distributional range : Indo-Australian.

Remarks : The genus has similarity with *Erastria* Hubner (American) and *Petrodava* Walker (African). Out of six species known so far under this genus, two occur in Sikkim. Here both the species are dealt with.

Key to the species

Yellow with pink suffusion and fucous striation. Forewing antemedial line angled below costa, indistinct medial and post medial bands pinkish. Hindwing with antemedial line and postmedial band, one or two black marks below costa. Underside apical patch whitish .... *lutea* (Stoll)

Olive green, no pink suffusion on upper and undersides. Medial and postmedial reddish bands of both wings indistinct, underside apical grey patch prominent, the postmedial bands of both wing prominent ....*phoenix* Swinhoe

294. ***Hyperythra lutea*** (Stoll)

1782. *Phalena (Geometra) lutea* Stoll in Cramer, *Pap. Exot.*, **4** : 157, pl. 370, fig. C.D.

1993. *Hyperythra lutea* : Holloway, *Moths Borneo*, **11** : 100, pl. 5, figs. 155, 196.

Material examined : One ♀, 7.xii.1888, one ♀, 1.ix.1889, alt. *ca* 550 m., one ♀, i.1897, one ♀, iii 1897, Sikkim, *G. C. Dudgeon* coll.

Diagnosis : As per key.

Distribution : Indian Subregion including Sikkim. *Elsewhere* : S. E. Asia and Sundaland.

Remarks : Larvae feed on *Goania* (Rhamnaceae).

295. ***Hyperythra phoenix*** Swinhoe

1891. *Hyperythra phoenix* Swinhoe, *Trans. ent. soc. Lond.*, **1891** : 484.

1993. *Hyperythra phoenix* : Holloway, *Moths Borneo*, **11** : 99.

Material examined : One ♂, v.1892, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 21 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nagaland. *Elsewhere* : Peninsular Malaysia.

Remarks : The host palnt *Ziziphus* (Rhamnaceae).

111. Genus ***Krananda*** Moore

1867. *Krananda* Moore, *Proc. zool. Soc. Lond.*, **1867** : 648.

Diagnosis : As per key.

Distributional range : Oriental tropices and subtropics, extends towards east upto New Guinea (Holloway, 1993).

296. *Krananda semihyalina* Moore

1867. *Krananda semihyalina* Moore, *Proc. zool. Soc. Lond.*, **1867** : 648.

1993. *Krananda semihyalina* : Holloway, *Moths, Borneo,* **11** : 191, pl. 10, figs. 400, 405.

Material examined : One ♀, vi.1892, one ♂, vi.1896 and one example without date of collection, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : ♂ 20-23 mm, ♀ 29 mm.

Diagnosis : Central area of wings diaphanous, scaleless, both wings having inner marginal markings, wings margin cremulated and the tail of the hindwing strongly produced. Beyond hyaline area of underside of wings with diffused rufous and fuscous.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Himachal Pradesh (Dalhousie) and Bengal, Swinhoe (1900).

112. Genus *Gonodontis* Hübner

1816. *Gonodontis* Hübner, *Verz. bek. Schmett.*, p. 287.

Diagnosis : As per key.

Distribution : Indian subcontinent to Australia.

297. *Gonodontis clelia* (Cramer)

1780. *Phalaena clelia* Cramer, *Pap. Exot.* **3** 172, pl. 288, figs. B. C.

1993. *Gonodontis clelia* : Holloway, *Moths Borbneo,* **11** : 12 ol. 8, figs 219, 223.

Material examined : One ♂, ix.1897, alt. *ca* 550 m., Sikkim, *G. C. Dudgeon* coll.

Diagnosis : Pale reddish with brown irroration. Forewing ante and postmedial lines angled below costa, an indistinct band from cell to inner margin, a brown speck on costa near apex. Hindwing with medial and slightly angled post medial lines, outer margin darker and angled at M_2.

Distribution : India : Sikkim, Maharashtra (Bombay), S.India and Andamans. *Elsewhere* : Sri Lanka, Singapore and Indonesia (Borneo).

Remarks : The species is placed here with *Gonodontis* after Swinhoe (1900), in which specimen examined fits well. The larva feed on *Excaecaria* (Euphorbiaceae) recorded from Andamans, Holloway (1993).

113. Genus *Luxiaria* Walker

1860. *Luxiaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 231.

Diagnosis : As per key.

Distributional range : Mainly Indo-Australian but reaches upto Japan.

Key to the species

Hindwing cell short, Cula from before angle of cell. [Crenulate outer margin of hindwing, not having angle at M_3. both wings with sinuous medial line, post medial and submarginal waved lines conjoined to from a brown band. Under side of forewing apex white] .... *contigera* (Walker)

Hindwing cell of normal size and Cula from the angle of cell 1

1. Outer margin of hindwing angled at M_3. Pale yellow, Forewing with postmedial series of specks very oblique and continued on hindwing as antemedial line, hindwing having series of medial specks. Underside with postmedial and subnmarginal bands ..... *exclusa* Walker

Outermargin of hindwing rounded and not angle at M_3. [Orange yellow. Forewing with ante and medial spots and a big postmedial patch.Hindwing having broad submarginal dark band. Under side having marginal band on forewing and submarginal band on hind wing] ..... *phyllosaria* (Walker)

298. *Luxiaria contigaria* (Walker)

1961. *Acidalia contigaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 745.

1997. *Luxiaria contigaria* Mondal and Ghosh, *State Fauna Series* 3 : *Fauna West Bengal* (7) : 495.

Material examined : One ♂, 29.vi.1888, one ♂, 20.viii.1890, one example 22.viii.1890 and one ♀, x.1896, alt. *ca* 550 m.; Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ ♀ 20 mm.

Diagnosis : Refer key.

For other detail refer Mondal and ghosh (1997).

299. ***Luxiaria exclusa*** (Walker)

1860. *Hemerophila* (?) *exclusa* Walker, *Cat. Lep. Het. Brit., Mus.*, **21** : 320.

1900. *Luxiaria exclusa* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 263.

Material examined : One ♀ x.1897, alt. *ca* 550 m., Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 21 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Karnataka (N. Canara). *Elsewhere* : Sri Lanka, Myanmar, Indonesia (Borneo and Java) Hampson (1995), Sumatra and Moluccas Swinhoe (1900).

*300. ***Luxiaria obliquata*** Moore

1888. *Luxiaria obliquata* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, p. 254.

1992. *Luxiaria obliquata* : Inoue, *Lep. Taiwan*, Checklist, **1**(2) : 113.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling). *Elsewhere* : Taiwan.

301. ***Luxiaria phyllosaria*** (Walker)

1860. *Drepanodes* (?) *phyllosaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 82.

1993. *Luxiaria phyllosaria* : Holloway, *Moths Borneo*, **11** : 149, pl. 6, fig. 310.

Material examined : One ♂, vi.1896, alt. *ca* 550 m, sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 19 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Sri Lanka, Indonesia (Sumatra, Borneo and Sulawesi) and Philippines.

*302. ***Luxiaria acutaria*** (Snellen)

1877. *Boarmia acutaria* Snellen, *Tijdschr. Ent.*, **20** : 75.

1993. *Luxiaria acutaria* : Holloway, *Moths Borneo*, **11** : 150.

Distribution : India : Sikkim. *Elsewhere* : Indonesia (Sumatra, Java and Borneo).

*303. ***Luxiaria mitorrhaphes*** Prout

1925. *Luxiaria mitorrhaphes* Prout, *Novit. zool.*, **32** : 64.

1993. *Luxiaria mitorrhaphes* : Holloway, *Moths Borneo*, **11** : 152.

Distribution : India : Sikkim and Assam. *Elsewhere* : Nepal, Japan, Taiwan, Myanmar and Indonesia (Borneo and Java).

*114. Genus ***Tephrina*** Duponchel

1844. *Tephrina* Duponchel, *Cat. Lep. Eur.*, p. 246.

Distribution : Widely distributed, some species have wide range in the old world.

304. ***Tephrina ? purpurascens*** (Moore)

1887. *Stegania purpurascens* Moore, *Descri. new Indian Lep. Ins. Coll. Atkinson*, p. 261, pl. 8, fig. 19.

1995. *Tephrina ? purpurascens* : Hampson, *Fauna Brit. India*, Moths, **3** : 211.

Distribution : India : Sikkim and West Bengal (Darjiling).

Remarks : After Hampson (1895) no worker studied this species.

115. Genus ***Oxymacaria*** Warren

1894. *Oxymacaria* Warren, *Novit. zool.*, **1** : 438.

Diagnosis : As per key.

Distributional range : India and Borneo.

305. ***Oxymacaria palliata*** (Hampson)

1891. *Oxymacaria palliata* Hampson, *Ill. Typ. Lep. Het. Brit. Mus.*, **8** : 113, 151, figs. 5, 11.

1895. *Oxymacaria palliata* : Hampson, *Fauna Brit. India*, Moths, **3** : 211.

Material examined : One example (badly damaged), vi.1897, alt. *ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 17 mm.

Diagnosis : White with olive-brown irroration, Sinuous ante and medial lines, a submarginal band sharply bent at M_1 towards outer margin. On underside all the lines and band prominent.

Distribution : India : Sikkim and Nilgiris.

*116. Genus ***Zeheba*** Moore

1887. *Zeheba* Moore, *Lep. Ceylon*, **3** : 468.

Distributional range : India, Sri Lanka and Indonesia.

306. ***Zeheba lucidata*** (Walker)

1862. *Macaria lucidata* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1651.

1993. *Zeheba lucidata* : Holloway, *Moths Borneo*, **11** : 148.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nilgiris. ***Elsewhere*** : Sri Lanka, Indonesia (Sumatra, Java and Borneo) and Australia (Cape York).

Remarks : Hollow (1993) cited Borneo as geographical range. He also narrated *lucidata* as a complex of three species *viz. aureta* Moore and *marginata* Walker.

117. Genus ***Macaria*** Curtis

1823. *Macaria* Curtis, *Brit. Ent.*, **6** : 132.

Diagnosis : As per key.

Distributional range : Almost cosmopolitan. But some authors have split off the genus, Prout (1915).

Key to the species

- Hind tibia of male dilated 1

  Hind tibia not dilated 8

1. Outer margin of forewing autcaly angled at M_3 Antemedial medial and postmedial lines of forewing sharply bent near costa. Hind wing having antemedial and double postmedial lines. End-cell speck on both wings. Underside having dark area beyond post medial line of both wings ..... *effusata* Guenèe

   Outer margin of forewing slightly angled at M_3 2

2. Underside of the wing orange 3

   Underside of the wing not so 5

3. Underside of base of wing orange. Forewing having waved antemedial line, a white band starting from below costa reaches inner margin. Hindwing medial white band having an end cell speck, and a dark line parallel to it .... *fasciata* (Fabricious)

   Underside of wings wholly orange 4

4. In forewing outer part of medial band with orange suffusion. The band of hindwing orange, beyond medial band a black patch at the centre of the wing ..... *xanthonora* Walker

   Band of wings not being differentiated rather suffered with purple grey. Underside orange, beyond postmedial line having purplish fuscous blotch ..... *elvirata* Guenèe

5. Hindwing having double postmedial line 6

   Hindwing not having double line, hindwing with medial band and having numerous black patches beyond it, a white patch nearer to outer margin below M_3 ..... *nora* (Walker)

6. Margin of hind wing strongly crenulate. Postmedial line of forewing straight and dark marks beyond it. Underside of hindwing rufous and having a postmedial band .... *odataria* Swinhoe

   Margin of hind wing not so 7

7. Greyish with fuscous irroration. Forewing with ante- and medial lines, postmedial line ochreous. Hindwing having antemedial line and end cell spot, clear patches towards apex beyond double postmedial black line. Both wings having marginal line .... *pulviata* (Fabricius ?)

   Rufous. Forewing having ante- and medial

lines, a quadrangular spot between Cula and culb nearer to base, the double postmedial line strongly curved near costa, the area between this and margin purplish and one apical speck hindwing having no cell spot, a dark line beyond the double postmedial line .... *azataria* Walker

8. Outer margin of forewing slightly angled. Whitish with brown suffusion. Forewing with oblique antemedial, medial and postmedial lines angled below costa, and a spot below M_2. Hindwing having antemedial and postmedial lines and a marginal crenulate black line and spot at Culb. Black spot at end of cell of both wings ..... *pervolgata* (Walker)

   Outer margin of forewing strongly angled at M_3 9

9. Whitish with fuscous suffusion. Forewing having antemedial and medial spots on costa, a double line below medial nervure, a triangular patch nearer to apex, an oblique band from M_2 to innermargin. Hindwing with antemedial and oblique post medial lines angled at apex. Underside of both wings having dark submarginal bands ..... *acutaria* Walker

   Grey with dark brown irroration. Forewing with subbasal speck, sinuous antemedial, oblique medial and postmedial lines angled below costa, a dark oblique band just beyond postmedial line. Hindwing with antemedial, waved postmedial line and rufous band bey ond it. Both wings having dark specks at end of cell. Underside of both wings having sinu ous medial line and rufous post medial band .... *emersaria* Walker

307. *Mcaria fasciata* (Fabricius)

1775. *Phalaena fasciata* Fabricius, *Syst. Ent.*, p. 629.

1900. *Macaria fasciata* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 267.

Material examined : Three ♂ iii-vi.1896, alt. *ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 19 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, West Bengal (Darjiling), Bihar (Buxar and Ranchi), Himachal Pradesh (Solan and Kasauli), M. P. (Mhow), Maharashtra (Mumbai) and Nilgiri Hills. *Elsewhere* : Sri Lanka.

308. *Macaria nora* Walker

1861. *Macaria nora* Walker, *Cat,. Lep. Het. Brit. Mus.*, **23** : 934.

1900. *Macaria nora* : Swinhoe, *Cat. East. Austarl. Lep. Het.*, **2** : 268.

Material examined : One ♂ and one ♀, iii and v.1896, alt. *ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ ♀ 19 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), West Bengal (Darjiling) and Bihar (Buxar). *Elsewhere* : Indonesia (Sulawesi).

309. *Macaria xanthonora* Walker

1861. *Macaria xanthonora* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 935.

1900. *Macaria xanthonora* : Swinhoe, *Cat. East Austral. Lep. Het.*, **2** : 268.

Material examined : One ♀, iv.1896, one ♀ v.1896 alt. *ca* 550 m; 2 ♂, v.1896 and viii.1897; Sikkim, *G.c.Dudgeon* coll.

Length of Forewing : ♂ 16 mm, ♀ 19 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nilgiris. *Elsewhere* : Bhutan and Myanmar.

310. *Macaria elvirata* Guenèe

1857. *Macaria elvirata* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 90.

1900. *Macaria elvirata* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 269.

Material examined : One ♂, one ♀, v and vii.1896, Sikkim, *G. C. Dudgeon* coll. (only wings of the specimens).

Length of Forewing : ♂ ♀ 16 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), West Bengal (Darjiling) ***metagonaria*** Walker, Maharashtra (Mumbai) and Nilgiris.

311. *Macaria odataria* (Swinhoe)

1893. *Evarzia odataria* Swinhoe, *Ann. Mag. nat. Hist.*, (6)**12** : 154.

1900. *Macaria odataria* : Swinhoe, *Cat. East Austral. Lep. Het.*, **2** : 269.

Material examined : One ♂, 10/16.viii.1888, alt. *ca* 550 m, Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 16 mm.

Daignosis : Refer key.

Distribution : India : Sikkim, Meghalaya (Shillong) and West Bengal (Darjiling). *Elsewhere* : Myanmar (Tenasserim).

*312. *Macaria ozararia* (Walker)

1860. *Evarzia ozararia* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 274.

1895. *Macaria ozararia* : Hampson, *Fauna Brit. India.*, Moths, **3** : 206.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Travancore. *Elsewhere* : Sri Lanka, Indonesia (Borneo, Sumatra and Java).

313. *Macaria pulviata* (Fabricius)

1793. *Phălaena pulviata* Fabricius, *Syst. Ent.*, (o.s. unseen).

1997. *Macaria pulviata* : Mondal and Ghosh, *State Fauna Series* 3 : *Fauna of West Bengal*, part 7 : 495.

Material examined : Three ♂, one ♀, iii.1896, alt. *ca* 550 m; *G. C. Dudgeon* coll.

Length of Forewing : ♂ ♀ 15 mm.

For other detail Mondal and Ghosh (1997) may be consulted.

314. *Macaria ozataria* Swinhoe

1893. *Macaria ? Ozataria* Swinhoe, *Ann. Mag. nat. hist.*, (6)**12** : 154.

1895. *Macaria Ozataria* : Hampson, *Fauna Brit. India*, Moths, **3** : 205.

Material examined : One ♂, 1890, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 14 mm.

Daignosis : As per key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

315. *Macaria pervolgata* Walker

1861. *Macaria pervolgata* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 930.

1895. *Macaria pervolgata* : Hampson, *Fauna Brit. India*, Moths, **3** : 205.

Material examined : One ♀ vi.1896, alt. *ca* 550 m., *G. C. Dudgeon* coll.

Length of Forewing : 14 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim, 'Bengal', Punjab and Maharashtra (Pune).

316. *Macaria effusata* Guenèe

1857. *Macaria effusata* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 57, 1057.

1895. *Macaria efusata* : Hampson, *Fauna Brit. India*, Moths, **3** : 206.

Material examined : One ♂, 3.x.1890, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 17 mm.

Daignosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Himachal Pradesh (Dharmsala and Simla).

317. *Macaria acutaria* Walker

1869. *Macaria acutaria* Walker, *Char undercr. Lep. Het. Lond.*, p. 100.

1895. *Macaria acutaria* : Hampson, *Fauna Brit. India*, Moths, **3** : 207.

Material examined : Two ♀ xi.1896 and xii.1897, one ♂, xii.1897, alt. *ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 15 mm, ♀ 17 mm.

Distribution : India : Sikkim, Meghalaya (Khasi Hills). Nagaland and U. P. (Varanasi).

318. ***Macaria emersaria*** Walker

1861. *Macaria emersaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 92.

1895. *Macaria emersaria* : Hampson, *Fauna Brit. India*, Moths, **3** : 207.

Material examined : One ♂, vi-1888, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 17 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Assam (Sibsagar), Bihar (Ranchi) and Nilgiri Hills. *Elsewhere* : Sri Lanka, and Myanmar.

319. ***Macaria perfusaria*** Walker

1866. *Macaria perfusaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1659.

1895. *Macaria perfusaria* : Hampson, *Fauna Brit. India*, Moths, **3** : 208.

Material examined : One ♀, vi.1896, one ♀, xii.1897, alt. *ca* 550 m., Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 12-14 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Nagaland, Himachal Pradesh (Dharmsala) and Nilgiris. *Elsewhere* : Sri Lanka, Myanmar, Malacca and Indonesia (Borneo).

*320. ***Macaria avitusaria*** (Walker)

1860. *Evarzia avitusaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 274.

1900. *Macaria avitusaria* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 269.

Distribution : India : Sikkim, Assam. ***Elsewhere*** : Malaya to Sulawesi and New Guinea.

*118. Genus ***Calletaera*** Warren

1895. *Calletaera* Warren, *Novit. zool.*, **2** : 132.

Distributional range : North-east India to Sulawesi.

321. ***Calletaera subexpressa*** (walker)

1861. *Acidalia subexpressa* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 773.

1976. *Calletaera subexpressa* : Holloway, *Moths Borneo*, mount Kinabalu, p. 78.

Distribution : India : Sikim and Assam. *Elsewhere* : Malaya, Indonesia (Borneo Sulawesi) and Philippines.

119. Genus ***Obeidia*** Walker

1862. *Obeidia* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1139.

Diagnosis : As per key.

Distributional range : North-East India, Malay, China and Japan.

Remarks : Mostly Chinese species only two species are reported from N. E. India.

322. ***Obeidia tigrata*** (Guenèe)

1857. *Abraxas tigrata* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 202, 1252.

1992. *Obeidia tigrata* : Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 114.

Material examined : One ♂, 30.vi.1888, one ♂, 1895, one ♀, iii.1895, Sikkim; one ♀, 15.vii.1989, alt. 3750 m. Thangu and one ♀, 25.vii.1989, Jeema, N. Sikkim, coll *S. Chatterjee.*

Length of Forewing : ♂ 33-34 mm, ♀ 30-32 mm.

Diagnosis : Ground colour yellow spotted with black. Basal and outer area of both wings having small spots on basal and outer area, spot of end of

cell of both wings bigger, the spot at postmedial series on both wings.

Distribution : India : Sikkim, Meghalaya (Khasi hills), Nagaland and West Bengal (Darjiling). *Elsewhere* : China, Malay and Taiwan.

*323. ***Obeidia millepunctata*** Warren

1893. *Obeidia millepunctata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 389.

1895. *Obeidia millepunctata* : Hampson, *Fauna Brit. India*, Moths, **3** : 310.

Distribution : Hampson (1895) is the last worker who dealt with this species.

120. Genus ***Vithora*** Moore

1865. *Vithora* Moore, *Proc. zool. Soc. Lond.*, **1865** : 795.

Diagnosis : As per key.

Distributional range : N. E. India, China and Japan.

324. ***Vithora indrasana*** Moore

1865. *Vithora indrasana* Moore, *Proc. zool. Soc. Lond.*, **1865** : 795, pl. 42, fig. 5.

1895. *Vithora indrasana* : Hampson, *Fauna Brit. India*, Moths, **3** : 311.

Material examined : One ♂, 17.ix.1889, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 30 mm.

Diagnosis : Body yellow with black marking. Forewing black, its yellowish base, a white patch at cell, two quadrate patches, one below the cell another nearer to antemedial area, three white patches at postmedial area. Hindwing with whitish postmedial incomplete dark band, a black cell spot and a dark irregular marginal band.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and 'Bengal' (Cotes and Swinhoe 1888).

121. Genus ***Percnia*** Guenèe

1857. *Percnia* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 216.

Daignosis : Refer key.

Distributional range : North India to Japan.

Key to the species

Head and thorax with black spots, dorsal side of abdomen with pair black spots. Forewing with paired black spots basally, dots of forewing arranged in five rows. In hindwing dots are arranged in four rows .... *belluaria* Guenèe

No dots on head, thorax and abdomen. Forewing with lines instead of dots, antemedial line lunulate, medial line straight, in between crenulated postmedial and submarginal line a fuscous band. In hindwing dot absent antemedial line absent, other lines or band similar to forewing and having a small cell spot ..... *maculata* (Moore)

*325. ***Percnia ductaria*** (Walker)

1862. *Rhyparia ductaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1111.

1895. *Percnia ductaria* : Hampson, *Fauna Brit. India*, Moths, **3** : 306.

Distribution : India : Sikkim.

Remarks : Now this is *Hetrabraxas ductaria* after Swinhoe (1900).

*326. ***Percina coryneta*** Swinhoe

1894. *Percina coryneta* Swinhoe, *Trans. ent. Soc. Lond.*, **1894** : 213.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nagaland. *Elsewhere* : Myanmar.

Remarks : Hampson (1985) reported the species from India. Inoue (1982) reported the species from Nepal under the genus *Matabraxas* Butler.

*327. ***Percnia tincta*** Hampson

1895. *Percnia tincta* Hampson, *Fauna Brit. India*, Moths, **3** : 307.

Distribution : India : Sikkim.

Remarks : Hampson (1895) described the species from Sikim, after that no record of this species is available.

*328. ***Percnia felinaria*** Guenèe

1857. *Percnia felinaria* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 216, pl. 19, fig. 1.

1987. *Percnia felinaria* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 257.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Nagaland. *Elsewhere* : Nepal.

329. ***Percnia belluaria*** Guenèe

1857. *Percnia belluaria* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 217.

1895. *Percnia belluaria* : Hampson, *Fauna Brit. India*, Moths, **3** : 308.

Material examined : Three ♂, 20.viii.1890, Sikkim, G. C. Dudgeon coll and one ♂, 15.vii.1989, Thangoo, N. Sikkim, alt. *ca* 3750 m. S.Chatterjee coll.

Length of Forewing : 31-34 mm.

Daignosis : As per key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : China.

Reamrks : Size of the spots varies directly with the size of wings. Inoue (1982) reported *Percnia belluaria belluaria* from Nepal.

330. ***Percnia maculata*** (Moore)

1868. *Rhyparia maculata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 651.

1987. *Percnia maculata* : Inoue, *Bull Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 257, fig. 43B.

Material examined : One ♀, viii.1897, alt. *c* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 28 mm.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal. *Elsewhere* : Nepal.

122. Genus ***Arichanna*** Moore

1868. *Arichanna* Moore, *Proc. zool. Soc. Lond.*, **1867** : 658.

Daignosis : Refer key.

Distributional range : This species mostly found in India, but also reprted from S. China, Japan and Taiwan, a few species from Europe and Borneo.

Key to the species

Hind tibiae of male dilated and with tuft of hair 1

Hind tibiae not dilated 3

1. Head, thorax and abdomen black. Hindwing orange. Olive-yellow forewing with eight series of black spots. Hindwing with large marginal and submarginal spots, medial spots less prominent ..... *transectata* (Walker)

- Head, thorax and abdomen not black. Hindwing whitish 2

2. Head and thorax green and fuscous. Forewing olive green with Sc free and traces of four bands. Hindwing with postmedial and submarginal lines and a cell spot ..... *tenebraria* Moore

- Head and thorax yellow, spotted with black. Forewing greenish-yellow with Sc and R_1 stalked and traces of seven maculated bands Hindwing with numerous submarginal and marginal spots and one end cell spot following another spot beyond this .... *lapsariata* (Walker)

3. Antennae of male fasciculate 4

- Antennae of male serrated and fasciculate yellow-brown. Forewing with indistinct double series of patches, in medial area and beyond postmedial patches having white scales. Hindwing with postmedial line, marginal band and less distinct cell spot .... *plagifera* (Walker)

4. Forewing with antemedial line or band 5

- Forewing without any antemedial line or band. Veins of forewing reddish-brown, postmedial line whitish near the margin and continued with a double black line, submarginal series of white specks less distinct .... *rubrivena* Warren

5. **Forewing black** with white and ochreous **irroration, antemedial** white line faded, medial **white band** bifurcated at median area to costa, **postmedial** white band also bifurcated near **apex. Hindwing white** with a dark spot at end **od cell and** postmedial and submarginal band ..... *ramosa* (Walker)

- Forewing fuscous brown with black striation, double maculated antemedial band, double postmedial patches, a patch on costa nearer to apex and large patch at cell and beyond it. Hindwing pale with a cell spot and a post medial line ..... *biquadrata* Warren

*331. *Arichanna maculata* Moore

1867. *Arichanna maculata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 658.

1976. *Arichanna maculata* : Holloway, *Moths Borneo, Mount Kinabalu*, p. 84.

Distribution : India : Sikkim and Assam. *Elsewhere* : Tibet and Indonesia (Sumatra).

332. *Arichanna transectata* (Walker)

1862. *Rhyparia transectata* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1112.

1895. *Arichanna transectata* : Hampson, *Fauna Brit. India*, Moths., **3** : 294.

Material examined : One ♂, 1889, Sikkim, one ♀, 1894, Yatang, *G. C. Dudgeon* coll.; two ♂, and six ♀, 25.vii.1989, Jeema, alt. *c* 2620 m, two ♂, five ♀ 28.vii.1989, Lachen, alt. *C* 3500 m., N. Sikkim, *S.Chatterjee* coll., 27.x.1992, Tadong, Gangtok, alt. *c* 1250 m, Sikkim, *M. S. Shishodia* coll. All the collection at light.

Length of Forewing : ♂ 25-27 mm, ♀ 27-29 m.

Diagnosis : Refer key.

Distribution : India : Sikkim, Uttar Pradesh (Kumaun) and Himachal Pradesh (Chamba).

Remarks : On the hindwing of one ♂ and one ♀ the medial spots joined together to form a wavy band. Inoue (1987) recorded this species from Nepal as *A.(Epictcrodes) transectata* (Walker).

333. *Arichanna lapsariata* Walker

1862. *Abraxas lapsariata* Walker, *cat. Lep. Het. Brit. Mus.*, **24** : 1121.

1895. *Arichanna lapsariata* : Hampson, *Fauna Brit. India.*, Moths, **3** : 293.

Material examined : Two ♂, 1894, Yatang, Sikkim, *G. C. Dudgeon* coll. and one ♀, 25.vii.1989, Thangu, alt. *c* 3750 m. N. Sikkim, *S. Chatterjee* coll.

Length of Forewing : ♂ 30-35 mm and ♀ 40 mm.

Diagnosis : Refer key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

Remarks : Inoue reported this species from Nepal as *Arichana (Paricterodes) lapsariata consocia* (Butler). The species *consocia* (Butler) was synonomised by Hampson (1895).

334. *Arichanna rubrivena* Warren

1893. *Arichanna rubrivena* Warren, *Proc. zool. soc. Lond.*, **1893** : 424, pl. 30, fig. 13.

Material examined : One ♂, vii.1895, Gnatang, Sikkim, *G. C. Dudgeon* coll. and one ♀ Yatang (Old Collection). (Both the specimens are damaged).

Length of Forewing : ♂ 20 mm ♀ 22 mm.

Diagnosis : As per key.

Distribution : India : Sikkim.

Remarks : Inoue (1987) reported the species from Nepal as *Arichanna (Phyllabraxas) rubrivena* Warren.

*335. *Arichanna violacea* (Warren)

1893. *Paricterodes* (?) *violacea* Warren, *Proc. zool. Soc. Lond.*, **1893** : 391, pl. 30, fig. 12.

1895. *Hampson, Fauna Brit. India*, Moths, **3** : 291.

Distribution : India : Sikkim.

Remarks : Inoue (1987) reported the species

from Nepal as *Arichanna (Phyllabraxas) violacea* (Warren).

*336. ***Arichanna transfasciata*** Warren

1893. *Arichanna transfasciata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 425.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nagaland.

Remarks : After Hampson (1895) no record of the species available.

*337. ***Arichanna marginata*** Warren

1893. *Arichanna marginata* Warren, *Proc. Zool. Soc. Lond.*, **1893** : 423.

1915. *Arichanna marginata* : Prout, *Macrolep. World*, **4** : 303, fig. 14a.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Nagaland and Himachal Pradesh (Dharmsala). *Elsewhere* : Bhutan and Taiwan.

338. ***Arichanna ramosa*** (Walker)

1866. *Scotosia ramosa* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1688.

1915. *Arichanna ramosa* : Prout, *Macrolep. World*, **4** : 303., fig. 14a.

Material examined : One example, 1894, Yatang, Sikkim, *G. C. Dudgeon* coll (specimen damaged, sex in det).

Length of Forewing : 22 mm.

Diagnosis : As per key.

Distribution : India : Sikkim. *Elsewhere* : Chang-Yang, Pu-tsu-fang and Tibet (Prout 1915).

339. ***Arichanna biquadrata*** Warren

1893. *Arichanna biquadrata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 423.

Material examined : One ♂, two ♀ vii.1895, Gnatang alt. *c* 3200 m, seven ♂, vii.1895, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 18-20 m ♀ 18 mm.

Daignosis : Refer key.

Distribution : India : Sikkim.

Remarks : Inoue (1987) reported the species from Nepal as *Arichanna (Phyllabraxas) biguadrata* Warren.

*340. ***Arichanna albovittata*** Moore

1887. *Arichanna albovittata* Moore, *Descr. new Indian Lep. Ins. coll. Atkinson*, p. 274.

Distribution : India : Sikkim (Hampson, 1895) and West Bengal (Darjiling) (Cotes and Swinhoe 1888).

Remarks : After Hampson (1895) no report of this species is available.

341. ***Arichanna plagifera*** Walker

1866. *Arichanna Plagifera* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1686.

1900. *Arichanna plagifera* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 302.

Material examined : One ♂, 30.v.1887, one ♀, vii.1895, alt. *c* 3200 m., Sikkim, *G. C. Dudgeon* coll. and one ♀ 1.viii.1989, N. Sikkim (Old Coll.).

Length of Forewing : ♂ ♀ 22 mm.

Daignosis : As per key.

Distribution : India : Sikkim and N. India (Swinhoe 1900).

Remarks : Inoue (1987) reported the species from Nepal.

342. ***Arichanna tenebraria*** (Moore)

1867. *Abraxas* (?) *tenebraria* Moore, *Proc. zool. Soc. Lond.*, **1867** : 652.

1895. *Arichanna tenebraria* : Hampson, *Fauna Brit. India*, Moths, **3** : 293.

Material examined : One ♂ and two ♀, 27.vii.1989, 5 kms N. W. of Lachen, alt. *c* 3500 m, N. Sikkim, coll. *S. S. Saha.*

Length of Forewing : ♂ 33 and ♀ 34 mm.

Diagnosis : As per key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills) (Hampson, 1895).

Remarks : Inoue (1987) reported the species from Nepal as *Arichanna (Paricterodes) tenebraria* (Moore).

*343. *Arichanna ? subaenescens* Warren

1893. *Arichanna subaenescens* Warren, *Proc. zool. soc. Lond.*, **1893** : 426.

1897. *Arichanna ? subaenescens* : Inoue, *Bull. Fac. domest. Sc. Otsuma Wom. Univ.*, **23** : 259.

Distribution : India : Sikkim. *Elsewhere* : Nepal.

*344. *Arichanna negans* Prout

1932. *Arichanna negans* Prout, *F. fed Malay. St. Mus.*, **17** : 109.

1976. *Arichanna negans* : Holloway, *Moths Borneo*, Mount Kinabalu, p. 84.

Distribution : India : Sikkim and Assam. *Elsewhere* : Tibet and Indonesia (Sumatra).

123. Genus *Paradarisa* Warren

1894. *Paradarisa* Warren, *Novit. Zool.*, **1** : 433.

Diagnosis : Refer key.

Distributional range : India to China.

345. *Paradarisa comparataria* (Walker)

1866. *Boarmia comparataria* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1582.

1992. *Paradarisa comparataria* Inoue, *Lep. Taiwan*, Checklist, **1** (2) : 115.

Material examined : One ♂, 10.vi.1890, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 20 mm.

Daignosis : Red-brown with greenish tinge. Collar to abdomen with brown lines. Fore wing R_1 given off from Sc, double antemedial line prominent, medial line forms of some specks. hind wing base dark brown, antemedial line from cell to inner margin, an end cell speck. Both wings having crenulate marginal line.

Distribution : India : Sikkim, N. W. Himalaya and Travancore. *Elsewhere* : Taiwan.

Remarks : Swinhoe (1900) synonymised this species under *exclusaria* Walker (1860). Later on Inoue (1982) reported this species as *Paradarisa comparataria comparataria* (Walker) from Nepal. The specimen present in the collection was examined and fits well under the genus *Paradarisa* Warren.

124. Genus *Alcis* Curtis

1829. *Alcis* Curtis, *Brit. Ent.*, p. 113.

Diagnosis : Refer key.

Distributional range : The genus comprised of large number of Oriental species.

Remarks : Some of the species of the genus are polyphagous, Sato (1984) and Holloway (1992) have reported ferns and gymosperms as well as numerous angrosperm families as host plants.

346. *Alcis nigridorsaria* (Guenèe)

1857. *Cleora nigridorsaria* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 232.

1987. *Alcis nigridorsaria* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 259.

Material examined : One ♂, 1.ix.1891, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 13 mm.

Diagnosis : Head and abdomen whitish, dorsal side of abdomen with black bands. Both wings white. Fore wing with black basal patch, a black patch on costa near middle from which antemedial and medial lines arise, postmedial line indistinct and angled at M_2. Hind wing with a speck at end of cell. Under side of both wings with cell spot, fore wing with submarginal band.

Distribution : India : Sikkim and Western Himalaya. *Elsewhere* : Nepal.

*347. *Alcis tenera* Warren

1893. *Alcis tenera* Warren, *Proc. zool. Soc. Lond.*, **1893** : 422.

1987. *Alcis tenera* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 259.

Distribution : India : Sikkim. *Elsewhere* : Nepal.

125. Genus *Cleora* Curtis

1825. *Cleora* Curtis, *Brit. Ent.*, p. 88.

Daignosis : As per key.

Distributional range : It is well represented in Old World tropics, sparsely represented into temperate latitudes and N. America. It is also well represented in Pacific Islands.

348. *Cleora fraterna* (Moore)

1888. *Chogada fraterna* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, : 245.

1992. *Cleora fraterna* : Inoue, *Lep. Taiwan*, Checklist, 1 (2) : 115.

Material examined : One ♂, viii.1888; one ♀, 5.ix.1888, alt. *c* 1750 m, Sikkim, one ♂, 1891, ♂, and ♀, viii.ix.1896 alt. *c.* 550 m, one ♂, x.1897, alt. *c.* 550 m, *G. C. Dudgeon* coll. and one ♂, 26.ix. 1988, Tumin, E. Sikkim, alt. 1800 m, coll. *V. C. Agarwal* (At light).

Length of Forewing : ♂ 21-23 mm, ♀ 20-24 mm.

Diagnosis : A rufous band on second abdominal segment.Ground colour of wing yellowish, a rufous band prior to antemedial line, a fuscous band beyond postmedial line nearer to costa, a white centred cell spot, one rufous spot touching it. Under side of both wings having rufous cell spots, on fore wing it is triangular.

Distribution : India : Sikkim, Assam, Meghalaya, West Bengal, Maharashtra and Andaman Island. *Elsewhere* : Bangladesh, Sri Lanka and Australia.

Remarks : Hampson (1895) confused *B. acaciaria* Boisduval with a few species as treated in the synonym list. Prout (1915) observed this composite group of species from Indo-Australian and Africa. *C. fraterna* is considered here as a good species after Inoue (1982), who resonably separated this from other members of *acaciaria* group.

*349. *Cleora inoffensa* (Swinhoe)

1902. *Boarmia inoffensa* Swinhoe, *Trans ent. Soc. Lond.*, **1902** : 625.

1976. *Cleora inoffensa* : Holloway, *Moths Borneo*, Mount Kinabalu, : 82.

Distribution : India : Sikkim and Assam. *Elsewhere* : Sundaland, Philippines, Indonesia (Sulawesi) and Solomons.

*126. Genus *Diplurodes* Warren

1896. *Diplurodes* Warren, *Novit. zool.* **3** : 132.

Distributional range : Oriental region and greatest diversity in Sundalnd, Hollow (1993).

*350. *Diplurodes parvularia* (Leech)

1891. *Tephrosia parvularia* Leech, *Entomologist*, **24** : 47.

1976. *Diplurodes parvularia* : Holloway, *Moths Borneo*, Mount Kinabalu, : 80.

Distribution : India : Sikkim. *Elsewhere* : Japan and Taiwan.

127. Genus *Ectropis* Hübner

1825. *Ectropis* Hübner, *Verz. bek. Schmett.*, p. 316.

Diagnosis : As per key.

Distributional range : Northern temperate latitudes but also moderate diversity in the Indo-Australian tropics Holloway (1993). The taxa are mostly montane Holloway (1993).

Key to the species

Bright pink. In forewing traces of antemedial and submarginal lines, post medial line indistinct and bent outwards beyond cell .... *rubrifusa* (Warren)

- Olive green. In fore wing double antemedial black band, a medial diffused band and a submarginal band becomes a patch near apex ..... *duplex* (Moore)

351. *Ectropis rubrifusa* (Warren)

1893. *Myrioblephara rubrifusa* Warren, *Proc. zool. soc. Lond.*, 1893 : 429.

1982. *Ectropis rubrifusa* : Inoue, *Bull. Fac. domest. Sci. Otsuma wom. Univ.*, 18 : 184.

Material examined : One ♂, 1891, Gnatang, alt. *c.* 3800 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 18 mm.

Distribution : India : Sikkim. *Elsewhere* : Nepal.

128. *Boarmia* Treitchke

1825. *Boarmia* Treitchke, *Schmett. Eur.*, 5, ii : 433.

Diagnosis : As per key.

Distributional range : Cosmopolitan.

Remarks : Prout (1915) has pointed out that this is a very large genus or group of genera, very difficult to subdivide satisfactorily although showing considerable variation in structure, chiefly in the secondary sexual characters of the male.

Key to the species

- Male having fovea at the base of fore wing 1

  Male without fovea at the base of fore wing 15

1. Antennae of male fasciculate 2
- Antennae of male bipectinate 7
2. R_1 and R_2 of fore wing not stalked 3
- R_1 and R_2 of fore wing stalked 5
3. Sc anastomoses with R_1. Grey , with fuscous irroration; Fore wing having sinuous antemedial line, a spec on cell. hind wing postmedial and submarginal lines indistinct. No cell speck ... . *diversicolor* Warren

   Sc not anastomoses with R_1 4
4. Grey, suffused with green. Fore wing postmedial line with a sinuas beyond cell and a rufous patch below the sinuas. Hind wing sub marginal line having dark marks ..... *cnifera* Moore

   Pale grey, suffused with fuscous. both wings with prominent antemedial lines. Hind wing submarginal line crenulated with pale outer edge ..... *idaeoides* Moore
5. Fore wing having double antemedial and postmedial lines 6
- No clear lines on fore wing. Antemedial, medial and postmedial series of speck on fore wing. Hind wing with antemedial and post medial lines. Both wings with brown patch at the middle post medially. Underside of both wings with cell spots ..... *boarmiaria* Guenèe
6. Grey brown with fuscous irroration. Lines of fore wing prominent .... *crepuscularia* Hübner
- Brown. Lines of fore wing less prominent... ..... *bhurmitra* Walker
7. Hind tibia of male dilated 8
- Hind tibia of male not dilated 13
8. Male having no hair on inner margin of hind wing 9

   Male having a fold on inner margin of hind wing with fringes of long hair. Antemedial line of fore wing irregular, one small cell spot. Postmedial line of both wings oblique .... *trancissa* Walker
9. Antemedial line of fore wing and postmedial line of both wings double. Underside white large cell spots, margin black .... *propulsaria* Walker

   The lines are not double 10
10. First segment of abdomen with band 11

    No band on first segment of abdomen 12
11. Red brown, Abdomen with dark band on first segment. Fore wing with stigma at end of

cell ..... *variegata* (Moore)

Rufous with black irroration. First segment of abdomen with white band. Fore wing with black cell spot at end of cell. Underside with black cell spots ..... *semiclarata* (Walker)

12. Antennae of male with long branches. R_1 and R_2 not stalked ..... *cineracea* (Moore)

Branches of antannae of male smaller. R_1 and R_2 stalked .....*sublavaria* Guenèe

13. Breadth of fore wing of male normal..... 14

Forewing of male long and narrow R_2 - R_5 stalked. Large basal rufous patch at forewing. Both wings with dark specks at end of cell ..... *nigricens* Warren

14. Pale rufous. Ante- and Post-medial lines of forewing angled beyond cell and between the two lines covered with black suffusion. No cell spots .....*fuliginea* Hampson

Grey. All the lines of forewing present, no black suffusion between lines. Both wings with cell spots ..... *nilgirica* Hampson

15. Antennae of male bipectinate with decumbent branches 16

Antennae of male serrate and fasciculate. Red brown. Wing with olive green tinge. Forewing with a balck lunule at end of cell. Hind wing with end cell spot..... ..... *virescens* Butler

16. R_1 of fore wing from the cell 17

R_1 and R_2 of fore wing stalked. Rufous. In forewing an indistinct broad fascia from base to outer margin below apex, an indistinct annulus at the end of cell. Underside with prominent cell spots .....*separata* Walker

17. Forewing produced. Underside with broad dark subnmarginal band.No rough hair .... *subplagiata* (Walker)

- Forewing less produced. Underside of hind wing of male clothed with rough hair and scale below the middle of cell..... ..... *delineata* (Walker)

353. ***Boarmia diversicolor*** (Warren)

1888. *Abraxas diversicolor* Warren, *Proc. zool. Soc. Lond.*, **1888** : 325.

1997. *Boarmia diversicolor* : Mondal and Ghosh, ***State Fauna Series*** 3 : *Fauna West Bengal*, (7) : **497.**

Material examined : One ♂, 1895, Yatang, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 18 mm.

Distribution : India : Sikkim, West Bengal (Darjiling) and Punjab.

*354. ***Boarmia conspurcata*** (Walker)

1866. *Scotosia conspurcata* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 186.

1915. *Boarmia conspurcata* : Prout. *Macrolep. World*, **4** : 379.

Distribution : India : Sikkim, West Bengal (Darjiling).

Remarks : Prout (1915) stated its occurrance from Darjiling, after that no record of this species is available.

*355. ***Boarmia cervina*** Hampson

1895. *Boarmia cervina* Hampson, *Fauna Brit. India*, Moths, **3** : 258.

Distribution : India : Sikkim.

Remarks : Hampson (1895) described this species from Sikkim after that it is not reported so far.

356. ***Boarmia conifera*** (Moore)

1887. *Cleora conifera* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, : 239.

1895. *Boarmia conifera* : Hampson, *Fauna Brit. India*, Moths, **3** : 259.

Material examined : One ♂, 1891, Gnatang, Sikkim, alt. *c* 3800 m, *G. C. Dudgeon* coll.

Length of Forewing : 18 mm.

Diagnosis : As per key.

Distribution : India : Sikkim and West Bengal (Darjiling) Cotes and Swinhoe (1887).

357. ***Boarmia idaeoides*** (Moore)

1887. *Cleora idaeoides* moore, *Descr. new Indian Lep. Ins. coll. Atkinson*, : 239.

1895. ***Boarmia idaeiodes*** : Hampson, *Fauna Brit. India*, Moths, **3** : 259.

Material examined : One example, 6.v.1889, coll. J. G. *Pilcher*, one example, 15.x.1890, Sikkim, *G. C. Dudgeon* coll. (all collection badly damaged).

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Naga and Karen Hills and West Bengal (Darjiling).

*358. ***Boarmia marmorata*** (Moore)

1867. *Arichana marmorata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 659, pl. 33, fig. 3

1895. *Boarmia marmorata* : Hampson, *Fauna Brit. India*, Moths, **3** : 258.

Distribution : India : Sikkim and 'Bengal' Cotes and Swinhoe (1887).

Remarks : The species was reported from Sikkim by Hampson (1895) after that it is not reported so far.

359. ***Boarmia crepuscularia*** Hübner

Boarmia crepuscularia Hübner, *samml. Eur. Schmett.*, Geom., : 158.

1915. *Boarmia crepuscularia* : Prout, *Macrolep. World*, **4** : 376.

Material examined : Teo, VII. 1896 and VIII. 1897. Sikkim, alt. *Ca* 550 m. *G.C. Dudgeon* coll.

Length of Forewing : 18 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya, (Khasi Hills) and Western Himalaya (Hampscn, 1895). *Elsewhere* : Europe, China and Japan (Hampson, 1895).

360. ***Boarmia bhurmitra*** walker

1860. *Boarmia blurmiper* walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 381.

1895. *Boarmia bhusmitra* Hampson, *Fauna Brit. India* Moths, **3** : 260.

Material examined : Two ♂ and one ♀, 15.x.1889, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 18 mm.

Daignosis : As per key.

Distribution : India : Sikkim, Punjab, Maharashtra (Khandala) Nilgiris and Andaman. *Elsewhere* : Nepal, Sri Lanka, Indonesia and Solomons.

Remarks : Holloway (1993) reported the species *Ectropis bhurmitra* (Walker) from Borneo.

361. ***Boarmia boarmiaria*** (Guenèe)

1857. *Hypochroma boarmiaria* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 282.

1895. *Boarmia boarmiaria* : Hampson, *Fauna Brit. India*, Moths, **3** : 261.

Material examined : Six ♂, ix.1889, one ♀, vi.1896, Sikkim, *G.C. Dudgeon* coll.

Length of Forewing : ♂ 23-24 mm and ♀ 24 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Assam, Nagaland and West Bengal (Darjiling). *Elsewhere* : Sri Lanka and Taiwan.

Remarks : Holloway (1976) reported the species as *Racotis boarmiaria* from Borneo.

*362. ***Boarmia bisinuata*** Hampson

1895. *Boarmia bisinuata* Hampson, *Fauna Brit. India*, Moths, **3** : 261.

1976. *Boarmia bisinuata* : Holloway, *Moths Borneo*, Mount Kinabalu, : 82.

Distribution : India : Sikkim, Assam, and Punjab. *Elsewhere* : Nepal, W. China, Myanmar, Taiwan and Borneo.

363. ***Boarmia propulsaria*** Walker

1860. *Boarmia propulsaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 385.

1900. *Boarmia propulsaria* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2**, : 291.

Material examined : One ♂, 20.viii.1890, *G.C. Dudgeon* coll.

Length of Forewing : 20 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Nagaland and West Bengal (Darjiling dist.). *Elsewhere* : Myanmar and Indonesia (Sumatra and Borneo).

364. ***Boarmia variegata*** (Moore)

1887. *Pseudocoremia variegata* Moore, *Descr. new. Indian. Lep. Ins.*, coll. *Atkinson* : 240.

1995. *Boarmia variegata* : Hampson, *Fauna Brit. India.* Moths, **3** : 266.

Material examined : One ♂, 30.iv.1891, Sikkim *G.C. Dudgeon* coll.

Length of Forewing : 16 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling).

*365. ***Boarmia melanosticta*** Hampson

1895. *Boarmia melanosticta* Hampson, *Fauna Brit. India.* Moths, **3** : 266.

Distribution : Sikkim, alt. *c* 3800 m.

Remarks : Hampson (1895) described this species from Sikkim after that it is not reported so far.

366. ***Boarmia nigralbata*** (Warren)

1893. *Alcis nigralbata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 421.

1895. *Boarmia nigralbata* : Hampson, *Fauna Brit. India.* Moths, **3** : 266.

Distribution : India : Sikkim.

Remarks : Inoue (1982) reported the species from Nepal as *Alcis nigralbata.*

367. ***Boarmia Semiclarata*** Walker

1862. *Selidosema* (?) *semiclarata* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 1029.

1915. *Boarmia semiclarata* : *Macrolep. World*, **4**, : 373.

Material examined : One ♂, 16.ii.1897, alt. *c.* 550 m Sikkim, *G.C. Dudgeon* coll.

Length of Forewing : 16 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and N.W. Himalaya.

*368. ***Boarmia atrostipata*** Walker

1862. *Scotosia atrostipata* Walker, *Cat. Lep. Het. Brit. Mus.*, **25** : 1354.

1895. *Boarmia atrostipata* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2**, : 292.

Distribution : India : Sikkim, West Bengal (Darjiling) and Himachal Pradesh (Shimla and Solan).

*369. ***Boarmia trispinaria*** Walker

1860. *Boarmia trispinaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 378.

1900. *Boarmia trispinaria* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2**, : 294.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Kalu. *Elsewhere* : Bangladesh (Sylhet) and Myanmar (Mergui).

370. ***Boarmia cineracea*** (Moore)

1887. *Astacuda cineracea* Moore, *Descr. new Indian Lep. Ins. coll. Atkinson*, : 244.

1976. *Boarmia cineracea* : Holloway, *Moths Borneo*, Mount Kinabalu, : 82.

Material examined : One ♂, 10.viii.1889, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 30 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Assam (Holloway 1976), Meghalaya (Khasi Hills) Hampson (1895) and West Bengal (Darjjiling) Cotes and Swinhoe (1988). *Elsewhere* : Indonesia (Sumatra).

Remarks : Occurrance of the species from Assam may be because earlier Khasi Hills was in Assam state.

371. *Boarmia sublavaria* Guenèe

1857. *Boarmia sublavaria* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 256.

1900. *Boarmia sublavaria* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 293.

Material examined : Two ♂, 1888 and vi.1897, alt. *c.* 550 m, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 21-23 mm.

Daignosis : As per key.

Distribution : Throughout India. *Elsewhere* : Sri Lanka, Myanmar and Indonesia (Borneo) (Hampson 1895).

372. *Boarmia transcissa* Walker

1860. *Boarmia transcissa* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 380.

1895. *Boarmia transcissa* : Hampson, *Fauna Brit. India*, Moths, **3** : 271.

Material examined : 3 ♂, 3 ♀, ♂ (vii.1896, vi.1897 and x.1897) and ♀ (vii.1896, ii.1897 and viii.1897) alt. *c.* 550 m, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : ♂ 19-21 mm and ♀ 22 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Assam (Sibsagar), Himachal Pradesh (Dharmsala) and Nilgiris. *Elsewhere* : Sri Lanka, Myanmar and Indonesia (Java).

373. *Boarmia fuliginea* Hampson

1891. *Boarmia fuliginea* Hampson, *Ill. Lep. Het. Brit. Mus.*, **8** : 120, pl. 152, fig. 4.

1915. *Boarmia fuliginea* : Prout, *Macrolep. World*, **4** : 273.

Material examined : Two ♂ (Specimens badly damaged), xii.1896 and ix.1897, alt. *c.* 550 m., Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 14 mm.

Distribution : India : Sikkim and Nilgiris.

374. *Boarmia nilgirica* Hampson

1891. *Boarmia nilgirica* Hampson, *Ill. Lep. Het. Brit. Mus.*, **8** : 107, pl. 150, fig. 12.

Material examined : One ♂, Yatang, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 20 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Nilgiri plateau and Travancore.

375. *Boarmia nigrescens* (Warren)

1893. *Dryocoetis nigrescens* Warren, *Proc. zool. Soc. Lond.*, **1893** : 420.

1895. *Boarmia nigrescens* : Hampson, *Fauna Brit. India*, Moths, **3** : 274.

Material examined : Two ♂, two ♀; ♂, viii.1895 and ii.1897, ♀, i.1896 and xii.1897; alt. *c* 550 m, Sikkim, *G.C. Dudgeon* coll.

Length of Forewing : ♂ 17 mm and ♀ 23 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Assam (Margharita) and Meghalaya (Khasi Hills).

376. *Boarmia subplagiata* (Walker)

1860. *Hemerophila subplagiata* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 319.

1895. *Boarmia subplagiata* : Hampson, *Fauna Brit. India*, Moths, **3** : 275.

Material examined : One ♂ (vi.1896), one ♀ (viii.1896) alt. *c* 550 m, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 23 mm.

Diagnosis : As per Key.

Distribution : India : Sikkim and Himalaya (Cotes and Swinhoe 1888). *Elsewhere* : Japan (Hampson 1895).

Remarks : Inoue (1982) reported the species as *Menophra subplagiata* from Nepal. Swinhoe (1900) and Prout (1915), have reported this species under the genus *Hemerophila.*

377. ***Boarmia delineata*** (Walker)

1860. *Psilalcis delineata* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 387.

1895. *Boarmia delineata* : Hampson, *Fauna Brit. India*, Moths, **3** : 276.

Material examined : One ♂, vii.1897, alt. *c* 550 m, eight ♀ one, 12.ix.1891, alt. *c* 550 m, iv and xi.1895 (2), xi-xii.1896 (2). ii, iii and xii.1897 (3), Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : ♂ 18 mm. ♀ 18-21 mm.

Daignosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Nilgiris. *Elsewhere* : Sri Lanka and Indonesia (Borneo).

378. ***Boarmia separata*** Walker

1860. *Boarmia separata* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 381.

1895. *Boarmia separata* : Hampson, *Fauna Brit. India*, Moths, **3** : 276.

Material examined : Four ♂ one ♀, ♂ (vi-x. 1896 and iv-viii.1897), ♀, vii.1897, alt. *c* 550 m; Sikkim, *G.C.dudgeon* coll.

Length of Forewing : ♂ 22-23 mm, ♀ 27 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills). *Elsewhere* : Sri Lanka and Indonesia (Java and Borneo) (Hampson 1895).

*379. ***Boarmia dentilinea*** Warren

1893. *Boarmia dentilinea* warren, *Proc. zool. soc. Lond.*, **1893** : 431.

Distribution : India : Sikkim. *Elsewhere* : Myanmar (Yangon).

*380. ***Boarmia albibasis*** Hampson

1895. *Boarmia albibasis* Hampson, *Fauna Brit. India*, Moths, **3** : 278.

Distribution : india : Sikkim.

Remarks : After Hampson (1895) description of this species, is not reporetd by any other worker so far.

*381. ***Boarmia albipicta*** (Warren)

1893. *Anagoge* (?) *albipicta* Warren, *Proc. zool. soc. Lond.*, **1893** : 410.

1895. *Boarmia albipicta* : Hampson, *Fauna Brit. India*, Moths, **3** : 278.

Distribution : India : Sikkim.

*382. ***Boarmia sericea*** (Warren)

1893. *Apophyga sericea* Warren, *Proc. zool. soc. Lond.*, **1893.** : 418.

1895. *Boarmia sericea* : Hampson, *Fauna Brit. India*, Moths, **3** : 279.

Distribution : India : Sikkim.

383. ***Boarmai virescens*** (Butler)

1880. *Hemerophila virescens* Butler, *Ann. Mag. nat. Hist.*, (5), **6** : 126.

1895. *Boarmia virescens* : Hampson, *Fauna Brit. India*, Moths, **3** : 279.

Material examined : One ♂, 1895, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 37 mm.

Daignosis : As per key.

Distribution : India : Sikkim.

*384. ***Boarmia euryzona*** (Hampson)

1893. *Poecilalcis latifasciata* Warren, *Proc. zool. soc. Lond.*, **1893** : 427.

1895. *Boarmia euryzona* : Hampson, *Fauna brit. India*, Moths, **3** : 281.

Distribution : India : Sikkim and Meghalaya (Khasi hills).

*385. ***Boarmia incolorata*** (Warren)

1893. *Micrabraxas* (?) *incolorata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 427.

1895. *Boarmia incolorata* : Hampson, *Fauna Brit. India*, Moths, **3** : 282.

Distribution : india : Sikkim, alt. *ca* 3800 m.

*386. ***Boarmia lignicolor*** Warren

1893. *Anagoge lignicolor* Warren, *Proc. zool. soc. Lond.*, **1893** : 411.

1895. *Boarmia lignicolor* : Hampson, *Fauna Brit. India*, Moths, **3** : 283.

Distribution : India : Sikkim.

*387. ***Boarmia thricophora*** Hampson

1895. *Boarmia thricophora* Hampson, *Trans. ent. Soc.*, **1895** : 311.

1896. *Boarmia thricophora* Hampson, *Fauna Brit. India*, Moths, **4** : 555.

Distribution : india : Sikkim.

*129. Genus ***Hirasa*** Moore

1888. *Hirasa* Moore, *Descr. new Indian Lep. Ins. Coll. Atkinson*, p. 238.

Distributional range : India to Japan.

388. ***Hirasa scripturaria*** (Walker)

1866. *Tephrosia scripturaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1590.

1900. *Hirasa scripturaria* : Swinhoe, *Cat. East. Austral. Lep. Het.*, **2** : 299.

Distribution : India : Sikkim, Nagaland, Meghalaya (Khasi Hills) and Himachal Pradesh (Kulu). *Elsewhere* : Bhutan, Myanmar and Indonesia (Java).

130. Genus ***Phthonandria*** Warren

1894. *Phthonandria* Warren, *Novit. zool.*, **1** : 438.

Diagnosis : As per key.

Distributional range : Himalaya, W.China, Japan and Korea.

389. ***Phthonandria atrilineata*** (Butler)

1881. *Hemerophila atrilineata* Butler, *Trans. ent. soc. Lond.*, **1881** : 405.

1900. *Phthonandria atrilineata* : Swinhoe, *Cat. East. Australian. Lep. Het.*, (2) : 299.

Material examined : One ♀ vii.1897, alt. *c* 550 m, sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 27 mm.

Diagnosis : Reddish grey specimen with black frons and Palpi. Medial and post medial black lines of fore wing dentate. Underside pale and with cell spot.

Distribution : India : Sikkim and Himachal Pradesh (Dharmsala). *Elsewhere* : W.China, Japan and Korea.

Remarks : Hampson (1895) treated it under the genus *Boarmia,* Swinhoe (1900) palced it with *Phthonandria;* the latter has been resonably followed here.

131. Genus ***Ruttellerona*** Swinhoe

1894. *Rhuttellerona* Swinhoe, *Trans. ent. Soc. Lond.*, **1894** : 220.

Diagnosis : As per key.

Distribution : Indo-Australian tropics with a range of low land to montane species (Holloway, 1993).

390. ***Ruttellerona cessaria*** (Walker)

1860. *Boarmia cessaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 383.

1993. *Ruttellerona cessaria* : Holloway, *Malayan Nat. J.*, **47** : 223.

Material examined : One ♀, ix.1897, alt. *c* 550 m, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 26 mm.

Diagnosis : Antenna simple. Under side : basal area of the wing grey and black-specked, cell-spots prominent. Hind wing having small pale band above anal angle.

Distribution : India : Sikkim, Meghalaya (Khasi hills), Kanara and Nilgiris. *Elsewhere* : Sri Lanka, Malaya, Indonesia (Borneo) and New Guinea.

Remtarks : The species was described under the genus *Boarmia* Walker (1860), subsequently Hampson (1895) placed it with the same genus. Recently Burlow (1982) and Holloway (1993) treated with the genus *Ruttellerona,* in which the specimen examined fits well.

*132. Genus ***Menophra*** Moore

1887. *Menophra* Moore, *Lep. Ceylon,* **3** : 409.

Distributional range : N.E.India, W.China and Malayasia.

391. ***Menophra subterminalis*** (Prout)

1925. *Hemerophila subterminalis* Prout, *Novit. zool.*, **32** : 56.

1976. *Menophra subterminalis* : Holloway, *Moths Borneo,* Mount Kinabalu, : 79.

Distribution : India : Sikkim and Assam. *Elsewhere* : W.China.

133. Genus ***Amblychia*** Guenèe

1857. *Amblychia* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 214.

Daignosis : As per key.

Distributional range : Oriental tropics, a single species known from New Caledonia (Holloway, 1993).

392. ***Amblychia angeronaria*** Guenèe

1857. *Amblychia angeronaria* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 215.

1993. *Amblychia angeronaria* : Holloway, *Malayan Nat. J.*, **47** : 205.

Material examined : One ♂, viii.1889, Sikkim, *G.C.dudgeon* coll.

Length of Forewing : 44 mm.

Diagnosis : Pale brown, mottled with ochreous. the ante medial line with whitish lunule at inner edge the medial fasciae of fore wing narrow. Hind wing with straight medial, lunulate postmedial and submarginal lines. Underside paler, postmedial dark band of fore wing straight.

Distribution : India : Sikkim. *Elsewhere* : N.E.Himalaya to Taiwan and Indonesia (Borneo and Sumatra).

Remarks : *A.torrida* Moore from Andaman synonymised by Hampson (1895) is probably a distinct species (Holloway, 1993). Host plant Lauraceae (Holloway, 1993)

134. Genus ***Chorodna*** Walker

1860. *Chorodna* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 314.

Diagnosis : As per key.

Distributional range : Diversity on the Asian mainland and extended upto Sundaland.

Key to the species

- Outer margin of hind wing produced at veins 1

- Outer margin of hind wing evenly curved. In fore wing a line from middle of costa angled at each angle of cell, then oblique extending near base of inner margin .... *erebusiaria* Walker

1. Fore wing fuscous, a black patch above upper angle of cell. Outer margin of hind wing more produced at veins ..... *adumbrata* Moore

- Pale fuscous, irrorated with black, a ring spot at upper angle of cell of both wings. Outer margin of hind wing at veins less produced ..... *metaphaearia* (Walker)

*393. ***Chorodna pallidularia*** Moore

1867. *Chorodna pallidularia* Moore, *Proc. zool. soc. Lond.*, **1867** : 613.

1993. *Chorodna pallidularia* : Holloway, *Malayan Nat. J.* **47** : 201.

Distribution : India : Sikkim, Assam (Sibsagar) and West Bengal (Darjiling). *Elsewhere* : Bhutan, China, N.Thailand, Peninsular Malaysia and Indonesia (Sumatra and Borneo).

394. ***Chorodna adumbrata*** Moore

1887. *Chorodna adumbrata* Moore, *Descr. new Indian Lep. Ins. Coll. Atk*, : 235.

1995. *Chorodna adumbrata* : Hampson, *Fauna Brit. India*, Moths. **3** : 243.

Material examined : Two ♂, 27.vi.1989, Jeema, N.Sikkim, coll. *S. Chatterjee.*

Length of Forewing : 40-43 mm.

Daignosis : As per key.

Distribution : India : Sikkim and West Bengal (Darjiling).

Remarks : According to Hampson (1895) this species is from Sikkim, after that this species is reported in this paper from Sikkim.

395. *Chorodna metaphaearia* (Walker)

1862. *Cyclidia metaphaeria* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1482.

1900. *Chorodna metaphaearia* : Swinhoe, *Cat. East. Australian. Lep. Het.* (2) : 281.

Material examined : One ♂, 15.viii.1889, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 37 mm.

Daignosis : As per key.

Distribution : India : Sikkim and West Bengal (Darjiling).

396. *Chorodna erebusaria* Walker

1860. *Chorodna erebusaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 314.

1993. *Chorodna erebusaria* Holloway, *Malayan Nat. J.*, **47** : 200.

Material examined : One ♂, 26.ix.1988, Tumin, S.Sikkim, alt. *c* 1800 m. coll. *V.C.Agarwal and party.*

Distribution : India : Sikkim, Meghalaya (Shillong) and West Bengal (Darjiling). *Elsewhere* : Myanmar.

Remarks : Swinhoe (1900) wrote Assam as locality as because earlier Shillong was in Assam.

135. Genus *Srinopteryx* Butler

1883. *Srinopteryx* Butler, *J. Linn. Soc.*, **27** : 201.

Daignosis : As per key.

Distributional range : Restricted to N.E.India, and Nepal Himalaya.

Key to the species

Brigth yellow. Post medial line of forewing oblique and arising from costa. No cell speck on any wing ..... *rufivinctata* (Walker)

Ochreous. Post medial line of forewing waved and arising from apex. An end cell speck on both wings ..... *undulifera* Warren

397. *Srinopteryx rufivinctata* (Walker)

1862. *Urapteryx rufivinctata* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1747.

1987. *Srinopteryx rufivinctata* : Inoue, *Bull. Fac. domest. Sci., Otsuma Wom. Univ.*, **23** : 270.

Material examined : One ♂, 23.iv.1889, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 23 mm.

Daignosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Nagaland and Darjiling. *Elsewhere* : Nepal.

398. *Srinopteryx undulifera* Warren

1893. *Srinopteryx undulifera* Warren, *Proc. zool. soc. Lond.*, **1893** : 385.

1895. *Srinopteryx undulifera* : Hampson, *Fauna Brit. India*, Moths. **3** : 148.

Material examined : One ♀, Tumin, E.Sikkim, alt. *ca* 1475 m. 01.x.1988, coll. *V.C.Agarwal.*

Length of Forewing : 23 mm.

Diagnosis : As per key.

Distribution : India : sikkim.

Remarks : This species is endemic to Sikkim. Hampson (1895) reported this species from Sikkim, after that this species is reported in this paper.

136. Genus *Ourapteryx* Leach

1814. *Ourapteryx* Leach, *zool. misc.*, p. 79.

Diagnosis : As per key.

Distributional range : Palearctic and Oriental regions.

Key to the species

In hind wing prominent submarginal band meets bigger medial one. Marginal line of each side of tail black, a black spot in the small rectangular lobe at the begining of the hindwing tail ..... *podaliriata* Guenèe

In hind wing no submarginal band, medial band smaller 1

1. Costa of fore wing striated 2

Costa of fore wing not striated. Palpi and frons pale. Wings striated with fuscous .... *ebuleata* Guenèe

2. Bright yellow. Bands of wings thicker, cillia of both wings orange except on M_1 and M_3 of hind wing ..... *primularis* Butler

Almost white. Lines on the wings thinner. Ante-and post medial lines of forewing approaching each other towards inner margin. Cilia of hind wing red ....*picticaudata* Walker

399. *Ourapteryx ebuleata* Guenèe

1857. *Urapteryx ebuleata* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 32.

1987. *Ourapteryx ebuleata* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 270.

Material examined : One ♂, 1894, Yatang, one ♂, iv.1895, sikkim, *G.C.Dudgeon* coll., one ♀ 5.x.1988, Rabangla, S.Sikkim, alt. *c* 2010 m, coll. *V.C.Agarwal*, one ♀, 28.vii.1989 Lachen, N.Sikkim, one ♀ 7.x.1992, Gangtok, alt. 1230 m, coll. *M.S.Shishodia and party.*

Length of Forewing : 29-32 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), West Bengal (Darjiling) and N.W.Himalaya. *Elsewhere* : Nepal.

400. *Ourapteryx picticaudata* Walker

1860. *Urapteryx picticaudata* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 12.

1993. *Ourapteryx picticaudata* Holloway, *Malayan Nat. J.* **47** : 57.

Material examined : One ♂, 25.viii.1888, alt. 1700 m. one ♂, one ♀, 1894, Yatang, two examples, v.1897, alt. *c* 550 m., Sikkim, *G.C.Dudgeon* coll., three ♂, 27.vii.1989, alt. *ca* 3500 m, Lachen, N.Sikkim, coll. *S.S.Saha*

Length of Forewing : ♂ 26-30 mm, ♀ 33 mm.

Diagnosis : As per key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills), Nagaland and Himachal Pradesh (Shimla). *Elsewhere* : Malaya, and Indonesia (Sumatra and Borneo).

*401. *Ourapteryx clara* Butler

1880. *Urapteryx clara* Butler, *Ann. Mag. nat. Hist.* (5) **6** : 120.

1976. *Ourapteryx clara* : Holloway, *Moths Borneo*, Mount Kinabalu, p. 79.

Distribution : India : Sikkim and Assam. *Elsewhere* : Indonesia (Java)

Remarks : Hampson (1895) put this species in synonymy list of *picticaudata* Walker later on this species treated reasonably as a good species from Sikkim by Holloway (1976). Another alied species *claretta* described by Hollow (1982) from Malaysia.

402. *Ourapteryx podaliriata* Guenèe

1857. *Urapteryx podaliriata* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 32.

1976. *Ourapteryx podaliriata* Guenèe, *Moths Borneo*, Mount Kinabalu, : 79.

Material examined : One ♂, 1893, Sikkim, *G.C. Dudgeon* coll.

Length of Forewing : 28 mm.

Distribution : India : Sikkim and Kashmir. ***Elsewhere*** : Bangladesh (Sylhet), Mayanmar to Indonesia (Sulawesi).

Remarks : Locality 'Assam' reported by Holloway (1976) probably wrong as because earlier Sylhet was in undivided Assam.

403. *Ourapteryx primularis* Butler

1886. *Urapteryx primularis* Butler, *Ill. Typ. Het. Brit. Mus.*, **6** : 49, pl. 113, fig. 4.

1895. *Urapteryx primularis* : Hampson, *Fauna Brit. India*, Moths, **3** : 145.

Material examined : One ♂, 17.ix.1888, Sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 37 mm.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling). *Elsewhere* : Nepal.

*404. *Ourapteryx sciticaudaria* Walker

1862. *Urapteryx sciticaudaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1480.

1900. *Ourapteryx sciticaudaria* : Swinhoe, *Cat. East. Austral. Lep. Het.*, (2) : 229.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

*405. *Ourapteryx margaritata* Moore

1867. *Urapteryx margaritata* Moore, *Proc. zool. Soc. Lond.*, p. 612.

1895. *Urapteryx margaritata* : Hampson, *Fauna Brit. India*, Moths, **3** : 146.

Distribution : India : Sikkim and 'Bengal' (Cotes & Swinhoe, 1888).

137. Genus *Thinopteryx* Butler

1883. *Thinopteryx* Butler, *J. Linn. Soc. Lond.*, **17** : 202.

Diagnosis : As per key.

Distributional range : Sri Lanka, India to China, Japan, Taiwan, Malay and Sunda lands.

*406. *Thinopteryx citrina* Warren

1894. *Thinopteryx citrina* Warren, *Nov. zool.*, **1** : 401.

1915. *Thinopteryx citrina* : Prout. *Macrolep. World*, **4** : 337.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Omei-Shan.

407. *Thinopteryx crocoptera* (Kollar)

1844. *Urapteryx crocoptera* Koller, *Hugel Kaschmir*, **4** : 483.

1997. *Thinopteryx crocopterata* : Holloway, *Malayan Nat. J.*, **47** : 108.

Material examined : Two ♀ x.1896 and iv.1897, alt. *c* 550 m, 3 ♂, 16.vii.1888, 17.ix.1888, Sikkim, *G.C.Dudgeon* coll., one ♂, 27.x.1992, Gangtok, E.Sikkim, coll. *M.S.Shishodia and party.*

Length of Forewing : ♂ 32-35 mm. ♀ 31-37 mm.

Diagnosis : Pale orange. Fore wing costa white, ante and post medial line oblique. In hind wing submarginal line double, angled at M_3.

Distribution : India : Sikkim, Assam (Cachar and Sibsagar), West Bengal (Darjiling), Bihar (Buxar) and Himachal Pradesh (Kulu and Solan). *Elsewhere* : Sri Lanka, Bangladesh (sylhet), Myanmar, China, Japan and Malaya to Sundaland.

Remarks : The larva feed on Vine, Virginia Creeper (Sevastopulo, 1947).

138. Genus *Xeropteryx* Butler

1883. *Xeropteryx* Butler, *J. Linn. soc. Lond.*, **17** : 203.

Diagnosis : As per key.

Distribution range : India : Myanmar and Indochina to Sunadaland.

408. *Xeropteryx columbicola* (Walker)

1860. *Urapteryx columbicola* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 11.

1997. *Xeropteryx columbicola* : Holloway, *Malayan Nat. J.*, **47** : 109.

Material examined : One ♂, iv.1896, alt. *ca* 550 m. sikkim, *G.C.Dudgeon* coll.

Length of Forewing : 30 mm.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). *Elsewhere* : Myanmar, Indochina and Sundaland.

139. Genus ***Biston*** Leach

1815. *Biston* Leach, *Edinb. Encycl.*, **9** : 134.

Diagnosis : As per key.

Distributional range : Palaearctic, Indo Australian and Nearctic regions.

Remarks : Most species of the genus highly polyphagous and defoliators, Holloway (1993).

Key to the species

Ante-and post medial lines of both wing prominent and continuous 1

Ante-and postmedial lines not prominent. outer margin of fore wing falcated, some fulvous spots on margin..... .....*falcata* (Warren)

1. In both wings ante-and post medial lines broader, in fore wing a fulvous band prior to ante-medial line and outwardly a fulvous patch from M_2 to tornus, post-medial line rounded between M_1 and M_3. In hind wing sharply angled near M_2 .... *regalis* (Moore)

In both wings ante-and post medial lines thinner, no fulvous patch or band, the lines sharply angled near M_2 ....*contectaria* (Walker)

409. ***Biston falcata*** (Warren)

1893. *Eubyiodonta falcata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 416.

1987. *Biston falcatus* : Inoue, *Bull. Fac. domest. Sci. otsuma wom, Univ.*, **23** : 255.

Material examined : One ♂, ix. 1897, alt. *Ca* 550 m, Sikkim, *G. C. Dudgeon* coll., one ♀, 20. vii. 1989, alt. 3750 m. Thangu, N. Sikkim, coll. *S. S. Saha and party.*

Length of Forewing : ♂ 30 mm and ♀ 34 mm.

Diagnosis : As per key.

Distribution : India : Sikkim; *Elsewhere* : Nepal.

410. ***Biston regalis*** (Moore)

1887. *Amphidasya regalis* Moore, *Descr. new Indian Lep. Ins. Coll. Atk.*, p. 234.

1992. *Biston regalis* : Inoue, *Lep. Taiwan* Checklist, **1**(2) : 117.

Material examined : One ♀, 21. ix. 1888, alt. *Ca* 1700 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 46 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, W. Bengal (Darjiling Cotes and Swinhoe, 1888), N. W. Himalaya and Meghalaya (Khasi Hills) Hampson, 1895; *Elsehere* : Japan (Hampson, 1895) and Taiwan.

*411. ***Biston sinuata*** Hampson

1895. *Biston sinuata* Hampson, *Fauna Brit. India*, Moths, **3** : 246.

Distribution : India : Sikkim.

412. ***Biston contectaria*** (Walker)

1863. *Amphidasis contectaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1529.

1987. *Biston contectarius* : Inoue, *Bull. Fac. domest. Sci. otsuma Wom. Univ.*, **23** : 256.

Marerial examined : One ♀, 16. iv. 1888, one ♂, vi. 1897, alt. *C* 550 m., Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 25 mm, ♀ 40 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Shillong), West Bengal (Darjiling) and Himachal

Pradesh (Solun); *Elsewhere* : Bangladesh **(Sylhet) and** Nepal.

Remarks : Hampson (1895) kept this species **under the** synonymy list of the species ***bengaliaria*** Guenèe. *B. contectaria* is **considered** here as a good species after Inoue **(1982)** who resonably treated this as a good **species.**

*140. Genus ***Elphos*** Guenèe

1857. ***Elphos*** Guenèe, *Hist. nat. Ins. Lep.*, **1** : 285.

Distributional range : Indo-Australian, a **single** species reported from Japan.

413. ***Elphos hymenaria*** Guenèe

1857. ***Elphos hymenaria*** Guenèe, *Hist. nat. Ins. Lep.*, **1** : 285.

1900. ***Elphos hymenaria*** : Swinhoe, *Cat. East. Austrl. Lep. Het.*, **2** : 281.

Distribution : India : Sikkim, Assam (Sibsagar) Meghalaya (N. Khasi Hills) and U. P. (Mussoorie); *Elsewhere* : Bangladesh (Sylhet), Myanmar, Singapore and Indonesia (Sumatra and Borneo).

414. ***Elphos pardicelata*** Walker

1862. ***Elphos pardicelata*** Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1544.

1987. ***Elphos pardicelata*** : Inoue, *Bull. Fac. domest. Sci. otsuma Wom. Univ.*, **23** : 267.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and N. W. Himalaya; *Elsewhere* : Bangladesh (Sylhet) and Nepal.

*141. Genus ***Xandrames*** Moore

1867. ***Xandrames*** Moore, *Proc. zool. Soc. Lond.*, **1867** : 634.

Distributional rang : Himalaya to Japan, Taiwan and Malaya to Indonesia (Borneo).

415. ***Xandrames albofasciata*** Moore

1867. ***Xandrames albofasciata*** Moore, *Proc. zool. Soc. Lond.*, **1867** : 635, pl. 32, fig. 5.

1987. *Xandrames albofasciata (albofasciata)* : Inoue, Bull. Fac. domest. Sci. Otsuma Wom, Univ., **23** : 267.

Distribution : India : Sikkim and H. P. (Solun); *Elsewhere* : Nepal.

*142. Genus ***Gnophos*** Treitschke

1827. *Gnophos* Treitsckke, *Schmett. Eur.*, **6**(1) : 160.

Distributional range : Palearctic region, N. India, Taiwan, Africa and America.

416. ***Gnophos muscosaria*** Walker

1866. *Gnophos nuscosaria* Walker, Cat. Lep. Het. Brit. Mus., **35** : 1596.

1895. *Gnophus muscosarius* : Hampson, *Fauna Brit. India*, Moths, **3** : 251.

Distribution : India : Sikkim and N. W. Himalaya.

Remarks : Inoue (1987) reported the species *Hirasa muscosaria* (Walker) from Nepal.

417. ***Gnophos colaria*** Guenèe

1857. *Gnophos colaria* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 294.

1915. *Gnophos colaria* : Prout, *Macrolep. World*, **48** : 4, fig. 226.

Distribution : India : Sikkim and throughout Himalaya; *Elsewhere* : W. China.

418. ***Gnophos licheneus*** Oberthür

1886. *Gnophos lichenea licheneus* Oberthür, *Et. Ent.*, **11** : 33, pl. 5, fig. 33.

1915. *Gnophos lichenea* : Prout, *Macrolep. World*, **4** : 384.

Distribution : India : Sikkim; *Elsewhere* : Tibet, W. China and Chang Yang.

*143. Genus ***Ophthalomodes*** Guenèe

1857. *Ophthalomodes* Guenèe *Hist. nat. Ins. Lep.*, **1** : 283.

Distributional range : Oriental region.

Remarks : Holloway (1993) treated *Ophthalomides* as a synonym of *Ophthalmites* Fletcher, 1979, as replaced name.

419. *Ophthalomides herbidaria* Guenèe

1857. *Ophthalmodes herbidaria* Guenèe, *Hist. nat. Ins. Lep.*, **1** : 283.

1992. *Ophthalmitis herbidaria* : Inoue, *Lep. Taiwan*, Checklist, **1**(2) : 115.

Distribution : India : Sikkim and W. Himalaya; *Elsewhere* : Banglandesh (Sylhet), Sri Lanka and Taiwan.

420. *Ophthalomides cordularia* Swinhoe

1893. *Ophthalmodes cordularia* Swinhoe, *Ann. Mag. nat. Hist.*, (6)**12** : 155.

1895. *Ophthalmodes cordularia* : Hampson, *Fauna Brit. India*, Moths, **3** : 256.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

144. Genus *Buzura* Walker

1862. *Buzura* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1531.

Diagnosis : As per key.

Distributional range : Indo-Australian and India to S. Russia, Japan, Korea.

421. *Buzura supperessaria* (Guenèe)

1857. *Amphidasys suppressaria* Guenèe *Hist. nat. Ins. Lep.*, **1** : 210.

1982. *Buzura suppressaria* : Burlow, *Intr. Moths S. E. Asia*, ed **1** : 132.

Material examined : One ♂, 15. viii. 1890, three ♀, 22. viii. 1890; x. 1896 and iv. 1897, alt *C* 550 m, Sikkim *G. C. Dudgeon* coll.

Length of Fore wing : ♂ 30 mm and ♀ 35-42 mm.

Diagnosis : White irrorated with brown and black. Three yellow irregular bands on fore wing and two on hind wing.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and H. P. (Dharmsala); *Elsewhere* : Bangladesh (Sylhet) and Myanmar and Indonesia (Borneo).

145. Genus *Erebomorpha* Walker

1860. *Erebomorpha* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 494.

Diagnosis : As per key.

Distributional range : N. E. India to Japan, Taiwan and Korea.

Key to the species

Outer margin of hind wing produced at Rs and M_3 1

Outer margin of hind wing not so, excurved between M_1 and C_{ula}. Apex of fore wing with a grey-patch with a white spot in it, a submarginal band with some lunules arising from apical patch reaches inner margin ... . *compositata* (Guenèe)

1. A white band on metathorax. A white band from base of fore wing to apex where is striated, white medial and submarginal lines are from band to inner margin .... *fulgurita* Walker

A white band on first segment of abdomen. In fore wing a white medial band starting from costa reaches cula and turing upward reaches costa postmedially forming a curved band, one white curved band starting from apex meets the former curved band at cula. In hind wing a white band starting from base runs parallel to costa and turns downward postmedially to reach inner margin .... *fulguraria* Walker

422. *Erebomorpha fulgurita* Walker

1860. *Erebomorpha fulgurita* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 495.

1900. *Erebomirpha fulgurita* : Swinhoe, *Cat. East. Ausrl. Lep. Het.*, (2) : 303.

Material examined : One ♂, 13. ix. 1888, one ♂, 4. iv. 1889, Two ♀ Sikkim *G. C. Dudgeon* coll One ♂, 01. x. 1988, Tumin, alt. *C* 1475 m, E. Sikkim, coll *V. C. Agrawal* and party; one ♀, 18. x. 1995 Demtam, coll. *S. C. Mitra* and *party, Sikkim.*

Length of Forewing : ♂ 37-45 mm and ♀ 45-53 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling) (*xanthosoma* Felder, 1874).

423. *Erebomorpha fulguraria* Walker

1860. *Erebomorpha fulguraria* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 495.

1992. *Erebomorpha fulguraria* : Inoue, *Lep. Taiwan*, Checklist, **1**(2) : 117.

Material examined : One ♂, vii. 1889, Sikkim (*Old collection*).

Length of Forewing : 45 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling); *Elsewhere* : Nepal and Taiwan.

Remarks : Inoue (1987) reported the species as *E. fulguraria fulguraria* Walker from Nepal.

424. *Erebomorpha compositata* (Guenèe)

1857. *Abraxas compositata* Guenèe, *Hist. nat. Ins. Lep.*, **2** : 207.

Erebomirpha compositata : Swinhoe, *Cat. East. Austrl. Lep., Het.* (2) : 304.

Material examined : One ♂, 8. iv. 1889, Sikkim *G. C. Dudgeon* coll.

Length of Forewing : 35 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling).

Remarks : Inoue (1992) reported *comositata* Moore, 1868 (not Guenèe, 1857) as synonym of *moorei* (Thierry-Mieg, 1899) under the genus *Vindusara* Moore, 1868 from Taiwan.

146. Genus *Micrabraxas* Butler

1889. *Micrabraxas* Butler *Ill. Lep. Het. Brit. Mus.*, 7 : 113.

Diagnosis : As per key.

Distributional range : Himalaya.

Key to the species

R_1 and R_2 anastomosed ..... *punctigera* Butler

R_1 and R_2 approximated ..... *melanodonta* (Hampson)

425. *Micrabraxas punctigera* Butler

1889. *Micrabraxas punctigera* Butler, Ill. Typ. Lep. Het. Brit. Mus., **7** : 113, pl. 137, fig. 7.

1987. *Micrabraxas punctigera* : Inoue, *Bull. Fac. domest. Sci. otsuma Wom. Univ.*, **23** : 268, fig. 80A.

Material examined : One (damaged), vii. 1895, Gnatang, Sikkim, *G. C. Dudgeon* coll.

Diagnosis : As per key.

Distribution : India : Sikkim and Himachal Pradesh (Dharmsala); *Elsewhere* : Nepal.

426. *Micrabraxas melanodonta* (Hampson)

1907. *Boarmia melanodonta* Hampson, *J. Bombay nat. Hist. Soc.*, **18** : 40.

1987. *Micrabraxas melanodonta* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 268

Material examined : One ♀, 30. vii. 1989, 5 kms N. W. of Lachen, N. Sikkim, alt. *C* 3500 m, (*old collection*).

Length of Forewing : 18 mm.

Diagnosis : As per key.

Distribution : India : Sikkim; *Elsewhere* : Nepal.

147. Genus *Psyra* Walker

1860. *Psyra* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 482.

Diagnosis : As per key.

Distributional range : N. India to Japan.

Key to the species

Yellow-brow with fuscous irroration. In forewing rufous bands beyond ante- and postmedial lines. In hind wing with medial and post medial oblique lines having dark suffusion in between them .... *spurcataria* (Walker)

Purple-grey. Ante-, postmedial and submarginal lines are ill defined and with yellow edged black spots on them. The submarginal line with three triangular black spots. In hind wing no such lines..... ..... *angulifera* Walker

427. *Psyra spurcataria* (Walker)

1862. *Hyperythra spurcataria* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1498.

1992. *Psyra spurcataria* : Inoue, *Lep. Taiwan, Checklist*, 1(2) : 117.

Material examined : One ♂, 18. iii. 1889, one ♀, vii. 1889, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 22 mm, ♀ 28 mm.

Diagnosis : As per key.

Distribution : India : Sikkim Meghalaya (Khasi Hills), West Bengal (Darjiling) and N. W. Himalayas; *Elsewhere* : Nepal and Taiwan.

428. *Psyra angulifera* (Walker)

1862. *Scotosia angulifera* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1687.

1915. *Psyra angulifera* : Prout, *Macrolep. World*, **4** : 410, fig. 24g.

Material examined : One ♂, 15. iii. 1884, one ♀, Yatang, Sikkim, *G. C. Dudgeon* coll., one ♀, vi. 1896, alt. *C* 2200 m, coll. *J. G. pilcher.*

Diagnosis : As per key.

Distribution : India : Sikkim Assam (Swinhoe, 1900), West Bengal (Darjiling) Cotes and Swinhoe, 1888 and Himachal Pradesh (Dharmsala).

148. Genus *Medasina* Moore

1887. *Medasina* Moore, *Lep. Ceylon*, **3** : 409.

Diagnosis : As per key.

Distributional range : Mostly Indo-Burmese, some species reported from Indonesia and philippines.

Key to the species

Hind tibiae dilated. Antennae of male with shorter branch 1

Hind tibiae not dilated. Antennae of male with longer branches 8

1. Fore wing with spot on costa 2

   Costa of fore wing with facis or striae or without spot 3

2. Red brown. Fore wing with black ante- and post medial lines, the costal spot above end cell speck. Hind wing margin produced at M_3 and C_{ula} ..... *basistrigaria* Moore

   White. Fore wing with antemedial black band narrowing inner margin, triangular medial spot on costa coinjoined discocellular spot. Margin on hindwing not produced at M_3 and C_{ula}. ..... *contaminata* Moore

3. Costa of fore wing without spot 4

   Costa of fore wing with striae or facis ... 6

4. Endcell spot on fore wing only. Double antemedial line, a patch between M_3 and C_{ula}. Both wings with marginal series of black speks ..... *muscidaria* Walker

   End cell spot on both wings 5

5. Red-brown. Thorax and abdomen barred with black. Fore wing with sinuous crenulate post medial line, a submarginal line with white spot at middle..... ..... *combustaria* Walker

   Brown. Thorax and abdomen not barred with black. Fore wing with irregular sinuous black post medial line excurved between R_5 and

M_3, submarginal line without any spot .... *strixaria* Guenée

6. White, spotted with pale brown. Fore wing with ante-, medial post medial and submarginal lines A black mark between M_3 and cula..... *albidaria* Walker

- Brown irrorated with black. In fore wing no such clear lines 7

7. Fore wing with pale fascia from base to apex. Hind wing with submarginal line .... *similis* Moore

- In fore wing no fascis from base to apex, costal fascia more striated with fuscous. Hind wing without submarginal line .... *enterruptaria* Moore

8. Ante-, medial and postmedial bands of fore wing not prominent, a whitish sinuous submarginal line with black spots on it. Hind wing with a speck at end of cell .... *scotosiaria* Warren

- Fore wing with a broad black band from median nervure to inner margin with a line on it, submarginal line having no spot on it. Hind wing without cell speck .... *nigrovittata* Moore

429. *Medasia similis* Moore

1887. *Medasina similis* Moore, *Descr. new Indian Lep. Ins. Coll. Atk.*, P. 235.

1990. *Medasina similis* : Swinhoe, *Cat. East. Austrl. Lep. Het.*, (2) : 301.

Material examined : Three ♂ (one example, 18. iv. 1888, one example, 18. viii. 1888, alt. *Ca* 1700 m, one example, 1. viii. 1897, alt *C* 550 m, Sikkim, *G. C. Dudgeon* coll., one ♂ 30. iv. 1992, Tadong, N. Sikkim, coll. *A. R. Lahiri.*

Length of Forewing : 33-35 mm.

Diagnosis : As per key.

Distribution : India : Sikkim Meghalaya (Khasi Hills) and West Bengal (Darjiling).

430. *Medasina strixaria* (Guenèe)

1887. *Hemerophila strixaria* Guenèe, *Hist. nat. Ins. Lep.*, 1 : 217.

1900. *Medasina strixaria* : Swinhoe, *Cat. East. Austrl. Lep. Het.*, (2) : 300.

Material examined : One ♀ vii. 1889, one ♀ x. 1896, alt *C* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 43-53 mm.

Diagnosis : As per key.

Distribution : India : Sikkim Assam (Sibsagar), Meghalaya (Khasi Hills) and West Bengal (Darjiling); *Elsewhere* : Myanmar.

431. *Medasina Muscidaria* (Walker)

1866. *Boarmia muscidaria* Walker, *Cat. Lep. Het. Brit. Mus.*, 35 : 1581.

1987. *Medasina muscidaria* : Inoue, *Bull. Fac. domest. Sci. Otsuma, Wom. Univ.*, 23 : 156.

Material examined : One ♂, 1887, one ♀, v. 1894; one ♀, vi. 1897, alt. *C* 2150 m, Sikkim, *G. C. Dudgeon* coll.; One ♂, 3. x. 1988, Rabangla, S. Sikkim, alt. 2010 m. coll. *S. S. Saha.*

Length of Forewing : ♂ 22-29 m, ♀ 30 mm.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling); *Elsewhere* : Nepal.

Remarks : In Rabangla specimen differs from description of fauna by a broad submarginal fuscous band in underside of Fore wing.

432. *Medasina basistrigaria* (Moore)

1868. *Hemerophila basistrigaria* Moore, *Proc. Zool. Soc. Lond.* 1867 : 626.

1987. *Medasina basistrigaria* : Inoue, *Bull. Fac. domest. Sc. Otsuma, Wom. Univ.*, 23 : 256.

Material examined : One ♂, 7. v. 1888, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 23 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling); *Elsewhere* : Nepal.

433. ***Medasina contaminata*** (Moore)

1887.*Lassaba contaminata* Morre, *Descr. new Indian Lep. Ins. coll. Atk.*, p. 246.

1895.*Medasina contaminata* : Hampson, *Fauna Brit. India.* Moths, **3** : 289.

Material examined : One ♀, 1894, Yatang, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 28 mm.

Diagnosis : As per key.

Distribution : India : Sikkim and West Bengal (Darjiling) (Cotes and Swinhoe, 1887).

*434. ***Medasina quadrinotata*** Warren

1893.*Medasina quadrinotata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 417.

1895.*Medasina quadrinotata* : Hampson, *Fauna Brit. India.* Moths, **3** : 287.

Distribution : India : Sikkim.

*435. ***Medasina livida*** (Warren)

1893.*Deinotrichia livida* Warren, *Proc. zool. Soc. Lond.*, **1893** : 419.

1895.*Medasina livida* : Hampson, *Fauna Brit. India.* Moths, **3** : 289.

Distribution : India : Sikkim.

*436. ***Medasina creataria*** (Guenée)

1857.*Hemerophila creataria* Guenée, *Hist. nat. Ins. Lep.*, **1** : 217.

1992.*Medasina creataria* : Inoue, *Lep. Taiwan, Checklist*, **1**(2) : 117.

Distribution : India : Sikkim, Assam (Sibsagar) and West Bengal (Darjiling); *Elsewhere* : Nepal and Taiwan.

437. ***Medasina albidaria*** (Walker)

1866.*Boarmia albidaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1582.

1915.*Medasina albidaria* : Prout *Macrolep. World*, **4** : 361.

Material examined : One ♂,23. iii. 1997, Rhenok, E. Sikkim, name of the collector not mentioned.

Length of Forewing : 23 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Shillong), West Bengal (Darjiling) and Himachal Pradesh (Dharmsala and Simla); *Elsewhere* : Nepal, Chang and Omeo-Shan.

Remarks : Inoue (1982) has reported this species as *M. albidaria albidaria* (Walker) from Nepal.

438. ***Medasina combustaria*** (Walker)

1866.*Gnophos combustaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1597.

1987.*Medasina combustaria* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23**: 256.

Material examined : One ♀, 30. ix. 1988, Tumin, E. Sikkim alt. 1470 m., coll. V. C. Agrawal. (Specimen collected at light).

Length of Forewing : 17 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, West Bengal (Darjiling); *Elsewhere* : Nepal.

Remarks : The species is placed here under the genus *Medasina* by Inoue (1982, 87) in which the specimen examined fits well.

439. ***Medasina interruptaria*** (Moore)

1868.*Hemerophila interruptaria* Moore, *Proc. zool. Soc. Lond.*, **1867** : 626.

1987.*Medasina interruptaria* : Inoue, *Bull. Fac. domest. Sci. otsuma Wom. Univ.*, **23**: 256.

Material examined : One ♂, 27. vii. 1989, N. W. of Lachen, N. Sikkim, alt. 3500 m, coll. *S. S. Saha.*

Length of Forewing : 32 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, and Bengal Cotes and Swinhoe (1887); *Elsewhere* : Nepal.

440. *Medasina scotosiaria* (Warren)

1893.*Deinotrichia scotosiaria* Warren, *Proc. zool. Soc. Lond.*, **1893** : 420, pl. 30, fig. 9.

1915.*Medasina scotosiaria* : Prout, *Macrolep. world*, **4** : 361.

Material examined : Three ♂, vii. 1885, Gnatang; one ♀, 1894, Sikkim, *G. C. Dudgeon* coll.7. vii. 1989, N. W. of Lachen, N. Sikkim, alt. 3500 m, coll. *S. S. Saha.*

Length of Forewing : ♂ 20-27 mm ♀ 33 mm.

Diagnosis : As per key.

Distribution : India : Sikkim. *Elsewhere* : W. China.

441. *Medasina nigrovittata* (Moore)

1867. *Hemerophila nigrovittata* Moore, *Proc. Zool. Soc. Lond.*, **1867** : 626.

1895. *Medasina nigrovittata* : Hampson, *Fauna Brit. India*, Moths, **3** : 285.

Material examined : One ♂, viii. 1895, Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 20 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Nagaland and "Bengal" (Cotes and Swinhoe, 1887).

*442. *Medasina reticulata* Hampson

1895. *Medasina reticulata* Hampson, *Trans. ent. Soc. Lond*, **1895** : 311.

1896. *Medasina reticulata* : Hampson, *Fauna Brit. India*, Moths, **4** : 556.

Distribution : India : Sikkim.

149. Genus *Loxaspilates* Warren

1893.*Loxaspilates* Warren, *Proc. zool. Soc. Lond.*, **1893** : 413.

Diagnosis : As per key.

Distributional range : North India to Tibet, China and Taiwan.

Key to species

Cloudy antemedian fascia present, post median line oblique, subnarginal fascia dense at R_5 and cubital region ..... *unidiluta* Inoue

No antemedial fascia, only three dash on fore wing, postmedial line being sinuous, submarginal line less proment, discontinued before costa ..... *hastigera* (Butler)

*443. *Loxaspilates obliquaria* (Moore)

1867. *Aspilates obliquaria* Moore, *Proc. zool. Soc. Lond.*, **1867** : 649.

1915.Loxaspilates obliquaria : Prout, *Macrolep. World*, **4** : 410.

Distribution : India : Sikkim and North Western Himalaya; *Elsewhere* : Afghanistan and West China.

444. *Loxaspilates hastigera* (Butler)

1889. *Aspilates hastigera* Butler, *Ill. Typ. Lep. Het. Brit. Mus.*, **7** : 112, pl. 137, figs. 4, 5.

1987. *Loxaspilates hastigera* : Inoue, *Bull. Fac. demest. Sci. otsuma Wom. Univ.*, **23** : 269.

Material examined : One ♂, 1894, Yatang, Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 19 mm.

Distribution : India : Sikkim and N. W. Himalayas; *Elsewhere* : Afghanistan and Nepal.

*445. *Loxaspilates dispar* Warren

1893. *Loxaspilates dispar* Warren, *Proc. zool. Soc. Lond.*, **1893** : 413, pl. 30, fig. 14.

1895. *Loxaspilates dispar* Hampson, *Fauna Brit. India,* Moths, 3 : 182.

Distribution : India : Sikkim.

446. ***Loxaspilates unidiluta*** Inoue

1987. *Loxaspilates unidiluta* Inoue, *Bull. Fac. domest. Sci. otsuma Wom. Univ.*, **23** : 269.

Material examined : One ♀, vii. 1989, Yumthang, N. Sikkim, alt. 3984 m. *S. S. Saha* Coll.

Length of Forewing : 20 mm.

Diagnosis : As per key.

Distribution : India : Sikkim; *Elsewhere* : Nepal.

Remarks : The species, with its limited distributional range within Nepal. This is recorded for the first time from India (Sikkim).

150. Genus ***Scardamia*** Guenée

1857. *Scardamis* Guenée, *Hist, nat. Ins. Lep.*, **1** : 89.

Diagnosis : As per key.

Distributional range : Chiefly Indo-Australian and African, a few species occurs in E. Siberia, China, Japan and Korea.

447. ***Scardamia metallaria*** Guenée

1857. *Scardamia metallaria* Guenée, *Hist, nat. Ins. Lep.*, **1** : 89.

1992. *Scardamia metallaria* : Inoue, *Lep. Taiwan,* Checklist, **1**(2) : 117.

Material examined : One ♂, vi. 1895, alt. *Ca* 950 m, One ♂, viii. 1895, alt. 650 m, Sikkim, Coll. *J. G. Pilcher* and One ♂, viii. 1889, Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 13 mm.

Diagnosis : Scarlet yellow, suffused with ferruginous. Curved antemedial line reaches medially at innermargin, postmedial curved line and speck at end of cell on both wings. Underside pale, curved postmedial line prominent.

Distribution : India : Sikkim, Himachal Pradesh (Solan), Maharashtra (Pune and Bombay), Travancore; *Elsewhere* : Sri Lanka, Taiwan, Indonesia (Java) and Siberia.

151. Genus ***Tanaoctenia*** Warren

1894. *Tanaoctenia* Warren, *Novit. zool.*, **1** : 464.

Diagnosis : As per key.

Distributional range : This and the next genus occur in Nearctic and palaearctic regions, Sikkim and Meghalaya.

448. ***Tanaoctenia haliaria*** (Walker)

1861. *Geometra haliaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 518.

1992. *Tanaoctenia haliaria* : Inoue, *Lep. Taiwan,* Checklist, **1**(2) : 117.

Material examined : One ♀ Sikkim One ♀, 1894, Yatang, Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 21-23.

Diagnosis : Bright green (light green in old ♀ specimens). Palpi, frons and antennae rufous, abdomen whitish (old specimen). Fore wing with white antemedial oblique line joined in margin, white, oblique slightly curved post medial line at inner margin meets with ante-medial line of hind wing, a speck at end of cell.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling). *Elsewhere* : Nepal and Taiwan.

Remarks : This species in placed herewith *Tanaoctenia* after Inoue (1982), in which the specimen examined fits well.

*152. Genus ***Metrocampa*** Latreille

1825. *Metrocampa* Latreille, *Fauna nat. Reg. An.*, p. 477.

Remarks : The genus differes from *Tanoctenia* by the absence of white scales in shaft of antennae.

449. *Metrocampa biseriata* (Moore)

1887. ***Geometra biseriata*** Moore, *Descr. new. India Lep. Ins. Coll. Atk.*, p. 249.

1895. ***Metrocampa biseriata*** : Hampson, *Fauna Brit. India,* Moths, **3** : 158.

Distribution : India : Sikkim and West Bengal (Darjiling).

153. Genus *Aplochlora* Warren

1893. ***Aplochlora*** Warren, *Proc. zool. Soc. Lond.*, **1893** : 386.

Diagnosis : As per key.

Distributional range : Indo-Australian.

450. *Aplochlora dentisignata* (Moore)

1868. ***Geometra dentisignata*** Moore, *Proc. zool. Soc. Lond.*, **1867** : 636.

1987. ***Aplochlora dentisignata dentisignata*** : Inoue, *Bull. Fac. domest. Sci. otsuma Wom. Univ.*, **23** : 251.

Material examined : One ♀ vi. 1897, alt. *C* 2200 m, Sikkim *G. C. Dudgeon* Coll.

Length of Forewing : 26 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, West Bengal (Darjiling) and Himachal Pradesh (Dalhousie); ***Elsewhere*** : Nepal.

Remarks : This species in placed here with ***Aplochlora*** after Inoue (1982), in which the specimene examined fits well. Inoue (1982) reported this species as *A. dentisignata* ***dentisignata*** from Nepal.

*451. *Aplochlora vivilaca* (Walker)

1861. ***Iodis vivilaca*** Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 544.

1992. ***Aplochlora vivilaca*** : Inoue, *Lep. Taiwan,* Checklist, **1**(2) : 118.

Distribution : India : Sikkim and Maharashtra (Bombay and Khandala); ***Elsewhere*** : Sri Lanka and Taiwan.

*452. *Aplochlora viridis* Warren

1893. *Aplochlora viridis* Warren, *Proc. zool. Soc. Lond.*, **1893** : 386.

1992. *Aplochlora viridis* : Inoue, *Lep. Taiwan,* Checklist, **1**(2) : 118.

Distribution : India : Sikkim; *Elsewhere* : Taiwan.

Remarks : Hampson (1895) treated it under the genus *Caberodes* Guenée, but Inoue (1992) placed it under *Aplochlora;* the latter has been resonably followed here.

*145. Genus *Caberodes* Guenée

1857. *Caberodes* Guenée, *Hist. nat. Ins. Lep.*, **1** : 135.

Distributional range : North East India and Bhutan.

*453. *Caberodes cinerascens* (Moore)

1887. *Corycia cinerascens* Moore, *Descr. new Indian Lep. Ins. Atk.*, p. 261.

1895. *Caberodes cinerascens* : Hampson, *Fauna Brit. India,* Moths, **3** : 159.

Distribution : India : Sikkim (Hampson, 1895) and West Bengal (Darjiling) (Cotes and Swinhoe, 1888).

454. *Caberodes costalis* (Moore)

1868. *Cimicodes costalis* Moore, *Proc. zool. Soc. Lond.*, **1867** : 616.

1895. *Caberodes costalis* : Hampson, *Fauna Brit. India,* Moths, **3** : 160.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) (Hampson, 1895) and Bengal (Cotes and Swinhoe, 1888).

155. Genus *Plutodes* Guenée

1857. *Plutodes* Guenée, *Hist. nat. Ins. Lep.*, **2** : 117.

Diagnosis : As per key.

Distribution : The diversity of the species is in the oriental tropics and extending weekly in the Australian tropics and to subtropical latitudes in eastern Asia (Holloway, 1993).

Key to the species

R_1 of fore wing free. Outer margin of both wings slightly angled at C_{ula}. Fore wing costa yellow with some silvery scales below, three downward traingular spars downwards, middle one biggest, outer angle with a yellow patch. A narrow yellow patch at the apex of hind wing ..... *costatus* (Butler)

- R_1 stalked with R_2-R_5; outer margin of both wings rounded 1

1. Basal patch of fore wing small, outer patch oval, with silvery line forming double inner edges, a rofous waved line crossing the oval patch. Basal patch of hind wing bigger and covers the whole base, the outer patch smaller ..... *discigera* Butler

- Basal patch of fore wing smaller, outer patch being rectangular with double silvery inner edge. Basal patch of hind wing narrow, running along inner arrea to meet outer band with same double silvery inner edge, a black small spot on it near anal angle..... ..... *exquisita* Butler

*455. ***Plutodes prasina*** (Swinhoe)

1892. *Asthena prasina* Swinhoe, *Trans. ent. Soc. Lond.*, **1892** : 13, pl. 1, fig. 10.

1895. *Plutodes prasina* : Hampson, *Fauna Brit. India*, Moths, **3** : 160.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

*456. ***Plutodes delphinaria*** (Swinhoe)

1893. *Micronissa delphinaria* Swinhoe, *Ann. Mag. nat. Hist.* (6), **12** : 152.

1895. *Plutodes delphinaria* : Hampson, *Fauna Brit. India*, Moths, **3** : 160.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

*457. ***Plutodes subcaudata*** Butler

1880. *Plutodes subcaudata* Butler, *Ann. Mag. nat. Hist.* (5), **6** : 224.

1895. *Plutodes subcaudata* : Hampson, *Fauna Brit. India* Moths, **3** : 161.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Darjiling).

458. ***Plutodes costatus*** (Butler)

1886. *Garaeus costatus* Butler, *Ill. Typ. Lep. Het. Brit. Mus.*, **6** : 53, pl. 114, f. 4.

1895. *Plutodes costatus* : Hampson, *Fauna Brit. India*, Moths, **3** : 161.

Material examined : One ♂, 28. vi. 1889, Sikkim, *J. G. pilcher* Coll.

Length of Forewing : 23 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Himachal Pradesh (Shimla).

459. ***Plutodes discigera*** Butler

1880. *Plutodes discigera* Butler, *Ann. Mag. nat. Hist.*, (5) **6** : 223.

1895. *Plutodes discigera* : Hampson, *Fauna Brit. India*, Moths, **3** : 162.

Material examined : One ♂, xii. 1897, alt. *C* 550 m, Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 18 mm.

Diagnosis : As per key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

460. ***Plutodes exquisita*** Butler

1880. *Plutodes exquisita* Butler, *Ann. Mag. nat. Hist.*, (5) **6** : 223.

1895. *Plutodes exquisita* : Hampson, *Fauna Brit. India*, Moths, **3** : 162.

Material examined : One ♂, 29. viii. 1889, Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 15 mm.

Diagnosis : As per key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

460. *Plutodes exquisita* Butler

1880. *Plutodes exquisita* Butler, *Ann. Mag. nat. Hist.*, (5) **6** : 223.

1895. *Plutodes exquisita* : Hampson, *Fauna Brit. India*, Moths, **3** : 162.

Material examined : One ♂, 29. viii. 1889, Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 15 mm.

Diagnosis : As per key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

156. Genus *Odontopera* Stephens

1829. *Odontopera* Stephens, *Ill. Brit. Ent.*, Haustellata, **3** : 162.

Diagnosis : As per key.

Distributional range : Himalayas and Taiwan.

Remarks : Hampson (1895) kept the genus in the synonymy list under *Crocalis* Treitschke, Swinhoe (1900) resonably treated this as valid genus. Subsequently, Inoue (1982, 87 and 92) agreed with views of Swinhoe.

461. *Odontopera bilinearia* (Swinhoe)

1889. *Crocallis bilinearia* Swinhoe, *Proc. zool. Soc. Lond.*, **1889** : 423.

1992. *Odontopera bilinearia* : Inoue, *Lep. Taiwan*, Checklist, 1(2) : 118.

Material examined : One ♀, iii. 1896, alt *C* 550 m. Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 26 mm.

Diagnosis : Outer margin of fore wing angled, the antemedial line excurved and prominent, post medial line oblique, a white centred spot at cell. Outer margin of hind wing rounded, post medial line prominent, cell spot smaller.

Distribution : India : Sikkim, Uttar Pradesh (Kasouli) and Madhya Pradesh (Indore); *Elsewhere* : Nepal and Taiwan.

Remarks : Hampson (1895) synonymised *O. bilinearia* Swinhoe along with other species, but later on. Swinhoe (1900) and Inoue (1992) treated it as a valid species.

*157. Genus *Crocallis* Treitschke

1827. *Crocallis* Treitschke, *Schmett. Eur.*, **6**(1) : 151.

Distributional range : Europe, Japan and India (Himalayas and Khasi Hills).

462. *Crocallis cervinaria* (Moore)

1867. *Corotia cervinaria* Moore, *Proc. zool. Soc. Lond.*, **1867** 625, pl. 32, fig. 10.

1895. *Crocallis cervinaria* : Hampson, *Fauna Brit. India*, Moths, **3** : 232.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal.

Remarks : After Hampson (1895) this species is not yet reported so far.

158. Genus *Hyposidra* Guenée

1857. *Hyposidra* Guenée, *Hist. nat. Ins. Lep.*, **2** : 150.

Diagnosis : As per key.

Distributional range : Diversity in Indo-Australian tropics but a few taxa are reported from Africa.

Remarks : The species of the genus are famous for its sexual dimorphism, the female is much larger with crenulated wing margin.

Key to the species

Antennae pectinated. Outer margin of neither wings of male excised 1

Antennae of male ciliated. Outer margin of both wings excised between M_1 and M_3. Leaden grey. Both wings with incomplete ante medial line, large patch at end of cell with bracket-shaped hyaline marked on it ..... *megaspila* Moore

1. Outer margin of hind wing of female non crenulated but angled at M_3 2

   Outer margin of hind wing of female produced at veins. Ochreous. Fore wing with a basal costal fascia joining a rufous streak which arises from apex, together looks like a fascia running parallel to costa, a dark speak at end of cell, a submarginal sinuous line with some white lunules on it nearer costa ..... *infixaria* (Walker)

2. Fore wing with traces of antemedial line and crenulate postmedial line, no cell speck or spot ..... *talaca* (Walker)

   Fore wing with traces of waved antemedial line and a postmedial purplish-white line angled below costa, a discocellular dark striga angled below costa, a discocellular dark striga angled inwardly the stigma is more cleat at underside .... *violescens* Hampson

463. ***Hyposidra talaca*** (Walker)

1860. *Lagyra talaca* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 59.

1993. *Hyposidra talaca* : Holloway, *Moths Borneo,* **11** : 179, pl. 9, fig. 378.

Material examined : One ♂, 20. viii. 1890, one ♂, vii. 1896, and one ♂, vii. 1897, alt. *C* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 18-21 mm.

Diagnosis : As per key.

Distribution : Indo-Australian tropics from N. E. India to Queensland and Solomons.

Remarks : It is polyphagous, the larva is often recorded as a defoliator and flower feeder on tree crops and can attain pest status (Holloway, 1993).

464. ***Hyposidra violescens*** Hampson

1895. *Hyposidra violescens* Hampson, *Fauna Brit. India,* Moths, **3** : 213.

1976. *Hyposidra violescens* : Holloway, *Moths Borneo,* **11** : 180, pl. 9, fig. 380.

Material examined : One ♂, vii. 1896, alt. *C* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 19 mm.

Diagnosis : As per key.

Distribution : N. E. Himalaya; *Elsewhere* : N. Vietnam, N. Thailand, Peninsular Malaysia, Indonesia (Sumatra and Borneo).

*465. ***Hyposidra aquilaria*** (Walker)

1862. *Lagyra aquilaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1485.

1993. *Hyposidra aquilaria* : Holloway, *Moths Borneo,* **11** : 181.

Distribution : India : Sikkim and Meghalaya (Shillong); *Elsewhere* : W., S. and E. China, Taiwan, peninsular Malaysia and Indonesia (Sumatra and Borneo).

Remarks : This is a rare species of low land forest (Holloway, 1993).

466. ***Hyposidra infixaria*** (Walker)

1860. *Lagyra infixaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 60.

1993. *Hyposidra infixaria* : Holloway, *Moths Borneo,* **11** : 182.

Material examined : One ♂, i. 1897, alt. *Ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 18 mm.

Diagnosis : As per key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills); *Elsewhere* : From Myanmar to Taiwan and Sundaland.

Larva feeds on Guava (Myrtaceae), *Desmos* (Annonaceae), *Buchanania* (Anacardiaceae) and *Punica* (Punicaceae) (Holloway, 1993).

467. ***Hyposidra megaspila*** (Moore)

1867. *Lagyra megaspila* Moore, *Proc. zool. Soc. Lond.*, **1867** : 616.

1895. *Hyposidra megaspila* : Holloway, *Fauna Brit. India,* Moths, **3** : 215.

Material examined : One ♂, viii. 1895, alt. *Ca* 2200 m, Sikkim, coll *J. G. pilcher.*

Length of Forewing : 15 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and "Bengal" (Cotes and Swinhoe, 1888).

159. Genus *Dalima* Moore

1867. *Dalima* Moore, *Proc. zool. Soc. Lond.*, **1867** : 614.

Diagnosis : As per key.

Distributional range : Greatest specific diversity in N. E. India, the genus is Oriental.

Key to the species

- Antennae of male bipectinate, branches long. Apex of both wings truncate .... *truncataria* (Moore)
- Antennae of male with short branches, ending in fasciculate cilia. Apex of wings not truncate ..... *patularia* (Walker)

468. *Dalima truncataria* (Moore)

1868. *Panisala truncataria* Moore, *Proc. zool. Soc. Lond.*, **1867** : 620.

1987. *Dalima truncataria* : Inoue, *Bull. Fac. domest. Sci. otsuma Wom. Univ.*, **23** : 254.

Material examined : One ♂, ix. 1889, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 36 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and West Bengal (Cotes and Swinhoe, 1888); *Elsewhere* : Nepal.

*469. *Dalima apicata* Moore

1868. *Dalima apicata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 615; pl. 32, fig. 4.

1987. *Dalima apicata apicata* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 254.

Distribution : India : Sikkim and Bengal (swinhoe, 1900); *Elsewhere* : Nepal.

*470. *Dalima lucens* Warren

1893. *Hololoma lucens* Warren, *Proc. zool. Soc. Lond.*, **1893** : 396.

1987. *Dalima lucens lucens* : Inoue, *Bull. Fac. domest. Sc. otsuma Wom. Univ.*, **23** : 254.

Distribution : India : Sikkim; *Elsewhere* : Nepal.

471. *Dalima patularia* (Walker)

1860. *Omiza patularia* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 247.

1993. *Dalima patularia* : Holloway, *Moths Borneo*, **11** : 177.

Material examined : One ♂, viii. 1889, one example damaged iii. 1897, alt. *Ca* 550 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 27 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Himachal Pradesh (Solan); *Elsewhere* : N. Thailand, West China and Indonesia (Borneo, Sumatra and Sulawesi).

*472. *Dalima latitans* (Warren)

1893. *Leptostichia latitans* Warren, *Proc. zool. Soc. Lond.*, **1893** : 397.

1895. *Dalima latitans* : Hampson, *Fauna Brit. India, Moths*, **3** : 240.

Distribution : India : Sikkim N. W. Himalaya and Meghalay (Khasi Hills).

Remark : Hampson (1895) reported the species last. After that it is not cited any where.

160. Genus *Eurymene* Duponchel

1844. *Eurymene* Dupolchel, *Cat. Lep. Eur.*, p. 220.

Diagnosis : As per key.

Distributional range : Very small genus, but occur in palacerctic, N. America, W. Himalaya and N. E. India.

Remarks : Only two species occur in India.

*473. ***Eurymene inustaria*** Moore

1867. *Eurymene inustaria* Moore, *Proc. zool. Soc. Lond.*, **1867** : 620.

1895. *Eurymene inustaria* : Hampson, *Fauna Brit. India, Moths*, **3** : 177, fig. 96.

Distribution : India : Sikkim and Meghalay (Khasi Hills).

Remark : Hampson (1895) reported the species last, after that none reported the species.

474. ***Eurymene reticulata*** (Warren)

1893. *Plagodis reticulata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 408.

1895. *Eurymene reticulata* : Hampson, *Fauna Brit. India, Moths*, **3** : 178.

Material examined : One ♂, 1894, Yatang, *G. C. Dudgeon* coll.

Length of Forewing : 18 mm.

Diagnosis : Antennae of male minutely serrate and fasciculate. Head and collar pinkish. Near to apex of fore wing a rufous patch, both wings striated with chestnut. In hind wing one end cell spot which is more prominent on underside.

Distribution : India : Sikkim and Himachal Pradesh (Dalhousie).

161. Genus ***Prionia*** Hübner

1832. *Prionia* Hübner, *Zutr. Samml. Schmett.*, **4** : 787.

Diagnosis : As per key.

Remarks : Here the genus *Prionia* followed after Hampson 1895 and Swinhoe (1900). but Prout 1915 replaced this by *Osicerda* Walker. He stated "Guenée and Hampson wrongly called this genus *Prionia*"

Key to the species

Fore wing with R_1 amd R_2 closely arise from cell, two waved lines, one from medial and another from postmedial, patches near costa. No cell spot ..... *squalidaria* Hubner

R_1 and R_2 of fore wing on long stalk, antemedial band curved, post medial band forms an acute angle near middle of outer margin, then recurved to $c_{ulb,}$ a speck at end of cell. Three fourths of costal side orange. Apex of fore wing yellowish grey and anal area of hind wing grey, bounded by a black band. Under side of each wing with a cell spot ..... *incitata* (Walker)

475. ***Prionia squalidaria*** Hübner

1832. *Prionia squalidaria* Hübner, *Zutr. Samml. Schmett.*, **4** : 787.

1900. *Prionia squalidaria* : Swinhoe, *Cat. East. Austrl. Lep. Het.*, **2** : 243.

Material examined : One ♂, one ♀, viii. 1888, alt., *C* 650 m. one example (damaged). 15. vii. 1889, one ♀, 13. ix. 1890, one ♀, vi. 1896, 1 ♂, x. 1896, alt. *C* 550 m., one ♀, vi 1897, one ♂, xii. 1897, alt. *C* 550 m, Sikkim, (old collectioon).

Length of Forewing : ♂ 12-13 mm, ♀ 14-15 mm.

Diagnosis : As per key.

Distribution : India : Sikkim West Bengal (Darjiling) and Barrackpore), Orissa (Ganjam), Nilgiri Hills and Maharashtra (Pune and Alibagh); *Elsewhere* : Sri Lanka, Myanmar and Indonesia (Java).

*476. ***Prionia lithosiaria*** (Walker)

1862. *Omiza lithosiaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1085.

1900. *Prionia lithosiaria* : Swinhoe, *Cat. East. Austrl. Lep. Het.*, **2** : 244.

Distribution : India : Sikkim Meghalaya (Khasi Hills), and Nagaland; *Elsewhere* : Indonesia (Sarawak and Borneo).

477. *Prionia incitata* (Walker)

1862. *Omiza incitata* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1085.

1900. *Prionia incitata* : Swinhoe, *Cat. East. Austrl. Lep. Het.*, **2** : 244.

Material examined : One ♂, ii. 1897, alt. *Ca* 550 m, and one ♀, vi. 1888, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 16 mm, ♀ 19 mm.

Diagnosis : As per key.

Distribution : India : Sikkim West Bengal (Darjiling) Maharashtra (Khandala), Nilgiri Hills and Andaman Islands.

162. Genus *Anonychia* Warren

1893. *Anonychia* Warren, *Proc. zool. Soc. Lond.*, **1893** : 412.

Diagnosis : As per key.

Distributional range : North India to W. China.

Key to the species

- Band of the fore wing not prominent, inner-margin of the band is prominent and straight, in outer area, the postmedial line forms an acute angle, followed by a strong curve. Post medial line of the hind wing straight .... *grisea* (Butler)
- The band of fore wing dark, broad and prominent, inner margin of the band is not straight, the angle of the post medial line less acute followed by an irregular curve. Hind wing having no post-medial line .... *lativitta* (Moore)

478. *Anonychia grisea* (Butler)

1883. *Nadagara grisea* Butler, *Proc. zool. Soc. Lond.*, **1883** : 172.

1915. *Anonychia grisea* : Prout, *Macrolep. World*, **4** : 338.

Material examined : One ♂, 1. vi. 1888, one ♂, ix. 1897, alt. *Ca* 1500 m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 12-14 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, West Bengal (Darjiling), Maharashtra (Khasi Hills) and N. W. Himalaya; *Elsewhere* : West China.

479. *Anonychia lativitta* (Moore)

1887. *Onychia lativitta* Moore, *Descr, new Indian Lep. Ins. Coll. Atk.*, p. 279.

1987. *Anonychia lativitta* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 255.

Material examined : Two ♀, 1894 Yatang, three ♂ and one ♀, vii. 1895, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 16-21 mm, ♀ 16-18 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, West Bengal (Darjiling) and N. W. Himalaya; *Elsewhere* : Nepal.

*163. Genus *Heterolocha* Lederer

1853. *Heterolocha* Lederer, *Verh. zool. bot., Ges., Wien*, **3** : 207.

Distributional range : Oriental and Southern Palaearctic.

480. *Heterolocha falconaria* (Walker)

1866. *Aspilates falconaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1665.

1987. *Heterolocha falconaria* : Inoue, *Bull. Fac. domest. Sci. Otsuma Wom. Univ.*, **23** : 254.

Distribution : India : Sikkim, West Bengal (Darjiling) Punjab and N. W. Himalaya; *Elsewhere* : Nepal and Sundaland.

164. Genus *Fascellina* Walker

1860. *Fascellina* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 215.

Diagnosis : As per key.

Distributional range : Himalaya, Assam, Nilgiris, Andamans, E. China, Taiwan, Myanmar and Indonesia (Sumatra to Celebes).

Key to the species

Inner and outer margins of fore wing excised near outer angle. Costa of hind wing truncate and excised 1

Inner and outer margin of fore wing not excised. Apex of hind wing truncate. A red fascia below S_c from base to end of cell of fore wing, the post medial line angled below costa, then oblique and double to inner margin ..... *porphyreofusa* Hampson

1. Antemedial grey line of fore wing angled below costa, a grey patch on costa, a hyaline speck at end of cell .... *hypochryseis* Swinhoe

Antemedial line of fore wing dark and broken, angled below costa, no speck at the end of cell ..... *plagiata* (Walker)

481. ***Fascellina hypochryseis*** Swinhoe

1894. *Fascellina hypochryseis* Swinhoe, *Ann. Mag. nat. Hist.*, (6), **14** : 138.

1895. *Fascellina hypochryseis* : Hampson, *Fauna Brit. India*, Moths, **3** : 226.

Material examined : One ♀, x. 1896, alt. *Ca* 550 m, one ♀, x. 1897, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 20-21 mm.

Diagnosis : As per key.

Distribution : India : Sikkim and Meghalaya (Khasi Hills).

482. ***Fascellina plagiata*** (Walker)

1866. *Geometra plagiata* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1601.

1993. *Fascellina plagiata* : Holloway, *Malayan Nat. J.* **47** : 46 pl. 2, fig. 57.

Material examined : One ♂, 29. vi. 1889, one ♀, xii. 1896 and two ♀, xii. 1897, alt. *C* 550m, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : ♂ 15mm and ♀ 18mm.

Diagnosis : As per key.

Distribution : India : Sikkim Himachal Pradesh and Assam; *Elsewhere* : Nepal, S. China, Taiwan, peninsular Malaysia and Indonesia (Borneo).

*483. ***Fascellina vinosa*** (Warren)

1893. *Gonodontis vinosa* Warren, *Proc. zool. Soc. Lond.*, **1893** : 398, pl. 32, fig. 21.

1895. *Fascellina vinosa* : Hampson, *Fauna Brit. India*, Noths, **3** : 226.

Distribution : India : Sikkim.

Remarks : Hampson (1895) dealt this species, after that no report is available.

*484. ***Fascellina subsignata*** Warren

1893. *Fascellina subsignata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 399.

1992. *Fascellina subsignata* : Inoue, *Lep. Taiwan*, Checklist, **1**(2) : 118.

Distribution : India : Sikkim and Meghalaya (Khasi Hills); *Elsewhere* : Taiwan.

485. ***Fascellina porphyreofusa*** Hampson

1895. *Fascellina porphyreofusa* Hampson, *Fauna Brit. India*, **3** : 227.

Meterial examined : One ♀, 17. iv. 1889, Sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 20 mm.

Diagnosis : As per key.

Distribution : India : Sikkim.

*486. ***Fascellina inormata*** Warren

1893. *Fascellina inormata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 399.

1895. ***Fascellina inormata*** : Hampson, *Fauna Brit. India,* Moths, **3** : 228.

Distribution : India : Sikkim.

165. Genus *Mimochroa* Warren

1894. ***Mimochroa*** Warren, *Nov. zool.*, **1** : 443.

Diagnosis : As per key.

Distributional range : N. E. India.

Remarks : Hampson (1895) treated these two species dealt here under the genus ***Pericallia*** Stephens, but Swinhoe (1900) placed these with *Mimochroa* the latter has been resonably followed here.

487. *Mimochroa lugens* (Butler)

1880. ***Endropia iugens*** Butler, *Ann. Mag. nat. Hist.*, (5) **6** : 124.

1900. ***Mimochroa lugens*** : Swinhoe, *Cat. East. Austrl. Lep. Het.*, **2** : 256.

Meterial examined : One ♀, 1889, sikkim, *G. C. Dudgeon* coll.

Length of Forewing : 20 mm.

Diagnosis : Waved antemedial line of fore wing with purple grey on its inner edge, a lunulate submarginal line. A speck at end of cell of both wings.

Distribution : India : Sikkim and West Bengal (Darjiling).

*488. *Mimochroa gynopteridia* (Butler)

1880. ***Epione gynopteridia*** Butler, *Ann. Mag. Nat. Hist.*, (5) **6** : 123.

1900. ***Mimochroa gynopteridia*** : Swinhoe, *Cat. East. Austrl. Lep. Het.*, **2** : 257.

Distribution : Sikkim and Meghalaya (Khasi Hills).

166. Genus *Garaeus* Moore

1867. ***Garaeus*** Moore, *Proc. zool. Soc. Lond.*, **1867**, 623.

Diagnosis : As per key.

Distributional range : Oriental.

Remarks : In India the genus predominantaly Himalayan.

Key to the species

Outer margin of both wings not produced at veins 1

Outer margin of both wings produced at veins ..... *absona* (Swinhoe)

1. In forewing oblique post medial series of black specks, angled below costa. In hind wing no medial line but ante medial dark line ..... *discolor* Warren

   In fore wing a double postmedial line. In hind wing a double medial line 2

2. Olive brown suffused with purple. In fore wing no speck at end of cell, post medial line from costa away from apex ..... *apicata* (Moore)

   Chestnut and irrorated with fuscous. In fore wing a dark speck at end of cell, a purple and chestnut line from apex to middle of inner margin of hind wing ..... *argillaceus* Butler

*489. *Garaeus cruentatus* Butler

1880. ***Garaeus cruentatus*** Butler, *Ann. Mag. Nat. Hist.*, (5) **6** :124.

1895. ***Garaeus cruentatus*** : Hampson, *Fauna Brit. India,* Moths, **3** : 234.

Distribution : India : Sikkim.

Remarks : This endemic species is not reported after 1895.

*490. *Garaeus coloratus* (Warren)

1893. ***Ischalis colorata*** Warren, *Proc. zool. Soc. Lond.*, **1893** : 401, pl. 32, fig. 26.

1895. ***Garaeus coloratus*** : Hampson, *Fauna Brit. India,* Moths, **3** : 234.

Distribution : India : Sikkim.

*491. ***Garaeus muscorarius*** Hampson

1895. *Garaeus muscorarius* Hampson, *Fauna Brit. India,* Moths, **3** : 235.

Distribution : India : Sikkim.

Remarks : Species numbering Sl. No. 489 to 491 were last reported by Hampson (1895) after that these are not reported by any scientist so far.

492. ***Garaeus discolor*** Warren

1893. *Garaeus discolor* Warren, *Proc. zool. Soc. Lond,* **1893** : 400, pl. 32, fig. 19.

1895. *Garaeus discolor* : Hampson, *Fauna Brit, India, Moths,* **3** : 234.

Material examined : One ♂, iii. 1896, alt. *ca* 550 m, Sikkim, *G.C. Dudgeon coll.*

Length of Forewing : 16 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghlaya (Khasi Hills) and Nagaland.

493. ***Garaeus apicata*** (Moore)

1876. *Auzea apicata* Moore, *Proc. zool. Soc. Lond.,* **1876** : 617.

1993. *Garaeus apicata* : Holloway, *Malayan Nat. J.,* **47** : 42, pt. 2, fig. 45.

Material examined : One ♀, 15. v. 1887, Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 21 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Murree and Dharmsala. *Elsewhere* : Nepal, Myanmar, Taiwan (Spp. *violaria* Prout) and Indonesia (Sumatra and Borneo).

Remarks : The larva feeds on Verbnenaceae (Holloway, 1993).

494. ***Garaeus argillaceus*** Butler

1898. *Garaeus argillaceus* Butler, *Ill. Typ. Lep. Het. Brit. Mus.,* **7** : 100, pl. 135, fig. 15.

1915. *Garaeus argillacea* : Prout, *Macrolep. world,* **4** : 327. fig. 25b.

Material examined : One ♂, iii. 1897, 4 ♀, x. 1896 and i. 1897, alt. *C* 550 m, Sikkim, *G. C. Dubgeon* coll.

Length of Forewing : ♂,13 mm and ♀ 20-22 m.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) and Himachal Pradesh (Dalhousie and Dharmsala). *Elsewhere* : W. China.

495. ***Garaeus absona*** (Swinhoe)

1898. *Epifidonia absona* Swinhoe, *Proc, zool Soc. Lond.,* **1898** : 427.

1982. *Garaeus absona* : Inoue, *Bull. Fac. domest. Sci. otsuma Wom. Univ.,* **18** : 169, fig. 35c.

Material examined : One ♂, v. 1897, alt *ca* 550 m, *G. C. Dudgeon* Coll.

Length of Forewing : 17 mm.

Distribution : India : Sikkim and Himachal Pradesh (Dharmasala). *Elsewhere* : Nepal.

167. Genus ***Pseudopanthera*** Hübner

1825. *Pseudopanthera* Hübner, *Verz. bek. Schemett.,* p. 295.

Diagnosis : As per key.

Distributional range : Mainly palearctic, single species occurs in Himalayan region.

496. ***Pseudopanthera himalayica*** (Kollar)

1844. *Ennomos himalayica* Kollar, in *Hugel, Karsch. Reich Seik,* **4** : 485.

1997. *Pseudopanthera himalayica* : Mondal and Ghosh, *State Fauna Series* 3 : *West Bengal* part **7** : **494.**

Material examined : Three ♂, 16. iv. 1888, 10. ix. 18888 and viii. 1897, two ♀, 4. v. 1889, viii 1897, alt. *Ca* 1450 m. *G.C. Dudgen* coll. and one ♀ 26. ix. 1988. Tumin, E. Sikkim, alt. *C* 1800 m, Coll. *V. C. Agrawal* (the specimen collected at light).

Length of Forewing : ♂ 15-17 mm and ♀ 16-19 mm. For other details Mondal and Ghosh, 1997.

168. Genus *Spilopera* Warren

1893. *Spilopera* Warren, *Proc. Sool. Soc. Lond.*, **1893** : 402.

Diagnosis : As per key.

Distributiona range : India to Japan.

* 497. *Spilopera fuscomarginata* (Warren)

1893. *Leptomiza fuscomarginata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 407.

1895. *Spilopera fuscomarginata* : Hampson, *Fauna Brit. India,* Moths. **3** : 191.

Distribution : Sikkim.

Remarks : The species is not reported after its discovery Hampson (1895).

498. *Spilopera ferrifera* (Moore)

1887. *Trygodes ferrifera* Moore, *Descr. new Indian Lep. Ins. Coll. Atk.*, p. 255, fig. 18, pl. 8.

1895. *Spilopera ferrifera* : Hampson, *Fauna Brit. India, Moths,* **3** : 192.

Material examined : One ♀ (badly damaged), 8.1.1891, Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 15 mm.

Diagnosis : Subbasal and medial brown bands are not prominent on fore wing. In hind wing with indistinct antemedial band. Underside of fore wing with sinuous antemedial black band and a broad black postmedial band. In hind wing only with post medial black thinner band.

Distribution : India : Sikkim.

169. Genus *Callerinnys* Warren

1894. *Callerinnys* Warren, *Novit. zool.*, **1** : 447.

Diagnosis : As per key.

Distributional range : India to Indonesia and a few species from China.

*499. *Callerinnys combusta* (Warren)

1893. *Erinnys combusta* Warren, *Proc. zool. Soc. Lond.*, **1893** : 415.

1992. *Callerinnys combusta* : Inoue, *Lep. Taiwan,* Checklist, **1**(2) : 119.

Distribution : India : Sikkim. *Elsewhere* : Sri Lanka and Taiwan.

Remarks : The species is placed here with *Callerinnys* after Inoue (1992).

500. *Callerinnys obliquilinea* (Moore)

1887. *Epione obliquilinea* Moore, *Descr. new Indian Lep. Ins. Coll. Atk.*, p. 229.

1987. *Callerinnys obliquilinea obliquilinea* : Inoue, *Bull. Fac. domest. Sci. otsuma Wom. Univ.*, **23** : 255.

Material examined : One example (sex in det), xii. 1897, alt. *Ca* 550m., Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 16 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), and west Bengal (Darjiling). *Elsewhere* : Bhutan, Nepal and Myanmar (Karen Hills).

170. Genus *Leptomiza* Warren

1893. *Leptomiza* Warren, *Proc. zool. Soc. Lond.*, **1893** : 406.

Diagnosis : As per key.

Distribution : Chiefly Indian, a few species from China.

Key to the Species

A sap green band bounded by two antemedial chocolate line from costa to inner margin of fore wing, one similar postmedial line with dentate green band beyond the line. Outer margin of both wings porduced at M_1 and M_3 ..... *decorata* (Moore)

In fore wing single antemedial line, a fuscous streak below Sc from base to apex, a post medial line starting post medialy runs upto outer angle. Outer margin of fore wing and hind wing produced at M_1, M_3 and R_5, M_1, M_3 respectively ..... *translineata* (Walker)

501. ***Leptomiza decorata*** (Moore)

1867. *Selenia decorata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 621, pl. 32, fig. 9.

1895. *Leptomiza decorata* : *Hampson,* Fauna Brit. India, Moths, **3** : 228, fig. 124.

Material examined : One ♀, 4. iv. 1889, Sikkim, *G. C. Dudgeon* Coll., one ♀, Tumin, alt. 1800 m, 26. ix. 1899, coll. *V. C. Agrawal.*

Length of Forewing : 23 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), and west Bengal (Darjiling).

Remarks : The specimen collected at light.

502. ***Leptomiza translineata*** (Walker)

1869. *Selenia translineata* Walker, *Char. undescr. Lep. Het.*, p. 93.

1895. *Leptomiza translineata* : Hampson, *Fauna Brit. India,* Moths, **3** : 229.

Material examined : One ♂, ii. 1896, alt. *C* 550 m., Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 21 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), and U. P. (Benaras).

Remarks : The specimen in much smaller in comparison to Hamson's description.

*503. ***Leptomiza amethystina*** (Warren)

1893. *Prionodonta amethystina* Warren, *Proc. zool. Soc. Lond.*, **1893** : 402.

1895. *Leptomiza amethystina* : Hampson, *Fauna Brit. India,* Moths, **3** : 230.

Distribution : India : Sikkim.

*504. ***Leptomixza calcearia*** (Walker)

1860. *Hyperythra calcearia* Walker, *Cat. Lept. Het. Brit. Mus.*, **20** : 402.

1992. *Leptomiza calcearia* : Inoue, *Lep. Taiwan* Checklist, **1**(2) : 119.

Distribution : India : Sikkim, and Himachal Pradesh (Kulu and Solan). *Elsewhere* : Taiwan.

* 171. Genus ***Pseudomiza*** Butler

1889. *Pseudomiza* Butler, *Ill. Typ. Lep. Het., Brit. Mus.*, p. 100.

Distributionl range : Mostly Indian extended its range towards China, Taiwan and Korea.

505. ***Pseudomiza castanearia*** (Moore)

1867. *Cimicodes castanearia* Moore, *Proc. zool. Soc. Lond.*, **1867** : 616, pl. 32, fig. 1.

1900. *Pseudomiza castanearia* : Swinhoe, *Cat. East. Austrl. Lep. Het.*, **2** : 259.

Distribution : India : Sikkim, and West Bengal (Darjiling).

Remarks : Butler (1889) made this species type of the genus. Hampson (1895) treated it under the genus *Heteromiza* Warren, but Swinhoe (1900) placed it with *Pseudomiza,* the latter has been resonably followed here.

172. Genus ***Hypochrosis*** Guenée

1857. *Hypochrosis* Guenée, *Hist. nat. Ins. Lep.*, **2** : 536.

Diagnosis : As per key.

Distributional range : Cheifly Indo-Australian genus.

Remarks : Some species are being attracted to saline secretions from the human eye, and also capable of sucking human blood wounds and by piercing soft tissue (Burlow, 1982).

Key to the species

Outer margin of fore wing evenly curved or oblique 1

- Outer margin of fore wing excurved at middle. Grey, the head, thorax and abdomen spotted with black. Fore wing with black spots at base, a band of black spots beyond middle. Hind wing with double submarginal line. Apical area of underside of fore wing bright yellow ..... *pyrrhularia* (Guenée)

1.Bright yellow, apex of fore wing not sharply pointed, outer margin curved .... *pachiaria* (Walker)

- Pale red, apex of fore wing sharply pointed, outer margin oblique..... *hyadaria* Guenée

506. ***Hypochrosis pachiaria*** (Walker)

1860. *Omiza pachiaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 247.

1900. *Hypochrosis pachiaria* : Swinhoe, *Cat. East. Austrl. Lep. Het.*, **2** : 241.

Material examined : One ♂, ix. 1889, Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 24 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), West Bengal (Darjiling), Himachal Pradesh (Kulu), Nilgiris, Shevaroys and Andaman (Port Blair). *Elsewhere* : Myanmar.

*507. ***Hypochrosis iris*** (Butler)

1880. *Phoenis iris* Butler, *Ann. Mag. nat. Hist.*, (5)**6** : 122.

1895. *Hypochrosis iris* Hanpson, *Fauna Brit. India*, Moths, **3** : 171.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), and Khyeng Hills (Hampson 1895).

Remarks : Hampson (1895) included this species in Fauna of British India, but after that this in not reported by any worker.

508. ***Hypochrosis hyadaria*** Guenée

1857. *Hypochrosis hyadaris* Guenée, *Hist. nat. Ins. Lep.*, **2** : 537.

1993. *Hypochrosis hyadaria* : Holloway, *Malayan Nat. J.*, **47** : 21.

Material examined : One ♂, v. 1897, alt. *C* 550 m., Sikkim, *G. C. Dudgeon* Coll.

Length of Forewing : 19 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, Meghalaya and West Bengal (Darjiling). *Elsewhere* : Sri Lanka and a few forms from Myanmar, Thailand and Indonesia.

Remarks : *H. hyadaria* belongs to a complex of species which are similar in wing pattern, but by the character of genitalia they are differentiated as different ssp. from different countries (Holloway, 1993).

*509. ***Hypochrosis festivaria*** (Fabricius)

1794. *Phalaena festivaris* Fabricius, *Ent, Syot.*, **3**(2) : 84.

1992. *Hypochrosis festivaria* : Inoue, *Lep. Taiwan*, Checklist, **1**(2) : 119.

Distribution : India : Sikkim, Assam and Andamans. *Elsewhere* : Taiwan, Riu Kiu Is. and (Indonesia Holloway, 1976).

510. ***Hypochrosis pyrrhularia*** (Guenée)

1857. *Achrosis pyrrbularia* Guenee, *Hist. nat. Ins. Lep.*, **2** : 539.

1900. *Hypochrosis pyrrhularia* : Swinhoe, *Cat. East. Austrl. Lep. Het.*, **2** : 243.

Material examined : One ♂, vi. 1897, alt. *C*, 550 m. *G. C. Dudgeon* Coll.

Length of Forewing : 18 mm.

Diagnosis : As per key.

Distribution : India : Sikkim, and Assam. *Elsewhere* : Bangladesh (Sylhet) Cotes and Swinhoe (1888).

*511. ***Hypochrosis rufescens*** (Butler)

1880. *Pagrasa rufescens* Butler, *Ann. Mag. nat. Hist.*, (5) **6** : 224.

1992. *Hypochrosis rufescens* : Inoue, *Lep. Taiwan. Checklist*, **1**(2) : 119.

Distribution : India : Sikkim, *Elsewhere* : Taiwan.

173. Genus ***Corymica*** Walker

1860. *Corymica* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 230.

Diagnosis : As per key.

Distribution range : Chiefly Oriental, one species extending to New Guonea and Queensland (Holloway, 1993).

Remarks : Very small genus and mostly Indian, out of six Indian species three species already reported from Sikkim.

512. ***Corymica arnearia*** Walker

1860. *Corymica arnearia* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 231.

1993. *Corymica arnearia* : Holloway, *Malayan Nat. J.* **47** : 50, pl. 2, fig. 67.

Material examined : One ♀, 6. x. 1988, Rabangla, S. Sikkim, *V. C. Agrawal* Coll.

Length of Forewing : 16 mm.

Diagnosis : Bright yellow, irrorated with rufous, collar rufous. Fore wing with a medial rufous line starting from a spot at costa and touching a white centred spot at inner margin, a rufous patch apically at outer margin. In hind wing white centred spot at costa medially, rufous post medial specks. Apical patch of underside more prominent..

Distribution : India : Sikkim, Meghalaya (Khasi Hills), *Elsewhere* : Sri Lanka, W. China, Japan, Korea and N. E. India to Sulawesi.

Remarks : This species in reported for the first time from Sikkim.

*513. ***Corymica specularia*** (Moore)

1867. *Caprilia specularia* Moore, *Proc. zool. Soc. Lond.*, **1867** : 649. pl. 33, f. 11.

1992. *Corymica specularia* : Inoue, *Lep Taiwan.* Checklist, **1** : 119.

Distribution : India : Sikkim, Assam, Himachal Pradesh (Dharmsala) and Nilgiris. *Elsewhere* : Sri Lanka, W. China, Japan and Indonesia (Sumatra).

*174. Genus ***Milionia*** Walker

1858. *Milionia* Walker, *Cat. Lep. Het. Brit. Mus.*, **2** : 365.

Distributional range : Mostly Australian tropics, only three species reported from India. Most of the species of the genus is day flier, a few comes at light (Holloway, 1993).

514. ***Milionia pulchrinervis*** Felder

1868. *Milionia pulchrinervis* Felder, *Reise Nov. Lep.*, pl. 104, fig. 6.

1900. *Millionia pulchrinervis* : Swinhoe, *Cat East. Austrl. Lep. Het.*, **2** : 317.

Distribution : India : Sikkim, *Elsewhere* : Bangladesh (Sylhet)

515. ***Milionia zonea*** Moore

1872. *Milionia zonea* Moore, *Proc. zool. Soc. Lond.*, **1872** 569.

1900. *Milionia zonea* : Swinhoe, *Cat. East. Austrl, Lep. Het.*, **2** : 317.

Distribution : India : Sikkim, and Assam (Cachar and Sibsagar). *Elsewhere* : Myanmar and Indonesia (Borneo).

*175. Genus ***Eilicrinia*** Hübner

1825. *Eilicrinia* Hübner *Verz, bek. Schmett.*, p. 287.

Distributional range : Palearctic, N. India and Taiwan.

Remarks : This is a small genus, only two species are reportecd form India of which one species is recorded.from Sikkim.

516. ***Eilicrinia flava*** Moore

1887. *Noreia flava* Moore, *Descr. new. Indian. Lep. Ins. Atk.*, p. 233, pl. 8, fig. 2.

1992. *Eilicrinia flava* : Inoue, *Lep. Taiwan*, **1**(2) : 118.

Distribution : India : Sikkim, Meghalaya (Khasi Hills), Nagaland (Hampson, 1895) and West Bengal (Darjiling) Swinhoe (1900) *Elsewhere* : Cheking, China and Taiwan.

*176. Genus ***Eurytaphria*** Warren

1893. *Eurytaphria* Warren, *Proc. zool. Soc. Lond.*, **1893** : 409.

Distributional range : India to Indonesia.

Remarks : Only three species represented from India and all these species are reported from Sikkim. All these species were reported by Hampson (1895) after that these were not reported by any one.

517. *Eurytaphria undilineata* Warren

1893. *Eurytaphria undilineata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 410.

1895. *Eurytaphria undilineata* : Hampson, *Fauna Brit. India*, Moths, **3** : 187.

Distribution : India : Sikkim, and Travancore. *Elsewhere* : Myanmar (Toungoo).

518. *Eurytaphria bisinuata* Hampson

1895. *Eurytaphria bisinuata* Hampson, *Fauna Brit. India*, Moths, **3** : 188.

Distribution : India.

519. *Eurytaphria pachyceras* Hampson

1896. *Eurytaphria pachyceras* Hampson, *Fauna Brit. India*, Moths, **4** : 551.

Distribution : India : Sikkim, *Elsewhere* : Bhutan.

*177. Genus *Peetula* Moore

1887. *Peetula* Moore, *Descr, new Indian Lep. Ins. Coll., Atk.*, 230.

Distribution : N. W. Himalaya and Sikkim.

Remarks : This Indian genus is with only two species.

520. *Peetula exanthemata* Moore

1887. *Peetula exanthemata* Moore, *Descr, new India Lep. Ins. Coll.* Atk., p. 231.

1895. *Peetula exanthemata* : Hampson, *Fauna Brit, India, Moths*, **3** : 188, fig. 103.

Distribution : India : Sikkim, and west Bengal (Cotes and Swinhoe, 1888).

*178. Genus *Xenographia* Warren

1893. *Xenographia* Warren, *Proc. zool. Soc. Lond.*, **1893** : 404.

Distribution : Sikkim, Meghalaya and Nagaland.

Remarks : Out of three species of the genus one species is reported form Sikkim.

521. *Xenographia lignataria* Warren

1893. *Xenographia lignataria* Warren, *Proc. zool. Soc. Lond.*, **1893** : 404.

1895. *Xenographia lignataria* : Hampson, *Fauna Brit, India, Moths*, **3** : 189, fig. 104.

Distribution : India : Sikkim.

*179. Genus *Hypulia* Swinhoe

1894. *Hypulia* Swinhoe, *Trans. ent. Soc. Lond.*, **1894** : 205.

Distributional range : Sikkim, Meghalaya and Sundaland.

Remarks : Very small genus, only a single species from India and four species from Sundaland.

522. *Hypulia dirempta* (Walker)

1861. *Thalera dirempta* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 595.

1993. *Hypulia dirempta* : Holloway, *Malayan Nat. J.*, **47** : 67.

Distribution : India : Sikkim, and Meghalaya (Khasi Hills) *Elsewhere* : Myanmar and Singapore.

*180. Genus *Rhynchobapta* Hampson

1895. *Rhynchobapta* Hampson, *Fauna Brit. India*, Moths, **3** : 194.

Distributional range : N. E. India to Japan and one species from Indonesia (Borneo, Sumatra and Sulawesi).

523. *Rhynchobapta cervinaria* (Moore)

1887. *Noreia cervinaria* Moore, *Descr, new Indian Lep. Ins. Coll.* Atk., p. 233.

1915. *Rhynchobapta cervinaria* : Prout, *Macrolep. World*, **4** : 345, fig, 18f.

Distribution : India : Sikkim, Meghalaya (Khasi Hills) Hampson, 1895, West Bengal (Darjiling) Cotes and Swinhoe. *Elsewhere* : West China.

The following species have been incorporated after the writing of rhe manuscript.

181. Genus *Psilalcis* Warren

1893. *Psilalcis* Warren, *Proc. zool. Soc. Lond.*, **1893** : 430.

Diagnosis : Fovea present at the base of fore wing of male. Antennae fasciculate. Hind tibia not dilated. Tufts of long hair from coxae of hind legs.

Distributional range : India to Indonesia.

524. *Psilalcis inceptaria* (Walker)

1866. *Tephrosia inceptaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1590.

1993. *Psilalcis inceptaria* : Holloway, *Malayan Nat. J.*, **47** : 234.

Material examined : One ♂ and one ♀, i. 1897 and two ♀ v. 1897, Sikkim, G. C. Dudgeon Coll.

Length of Forewing : ♂ ♀16 mm.

Diagnosis : Brown, with fuscous irroration, Fore wing with indistinct waved, antemedial, curved medial and a post medial line bent outwards at M_1, a black spot at end of cell.Both wings with crenulate black marginal line.

Distribution : India : Sikkim, and Nilgiris. *Elsewhere* : Sri Lanka, Myanmar and Indonesia (Flores).

Remarks : Larva feeds on dry and green grass (Singh, 1953).

182. Genus *Opisthograptis* Hübner

1825. *Opisthograptis* Hübner, *Verz. bek. Schmett.*, p. 292.

Diagnosis : Antenna of male simple. Fore wing of male with fovea at base, Cula from angle of cell, R_4 and R_5 stalked, R_2 absent, discocellular bend. Hind tibia not dilated. C_{ula} of hind wing before angle of Cell.

Distributional range : Palearctic and Northern Indo-Australian.

525. *Opisthograptis rumiformis* (Hampson)

1902. *Venilis rumiformis* Hampson, *J. Bombay nat. Hist. Soc.*, **14** : 498.

1987. *Opisthograptis rumiformis* : Inoue, *Bull. Fac. domet. Sc. otsuma Wom. Univ.*, **23** : 254.

Material examined : Two ♂ Lanchen, alt. 3500 m. 27. vii. 1989, One ♀, N. W. of Lachen, N. Sikkim, 2. viii. 1989, Old collection.

Length of Forewing : ♂ 21 mm, ♀ 18 mm.

Diagnosis : Basal area of fore wing chocolet brown, beyond post medial area chocolet brown except apical region, the cell spot slightly cresent shape which is chocolet brown. Hind wing with chocolet brown crenulated sub-marginal line, beyond which brownish, chocolet brown cell spot smaller, underside of hind wing beyond postmedial line with deep chocolet brown. In fore wing which is lighter.

Distribution : India : Sikkim; *Elsewhere* : Nepal and Tibet.

Remarks : The species reported for the first time from India (Sikkim).

SUMMARY

The paper deals with systematic account of 525 species of Geometridae belonging to 182 genera and five subfamilies from the state of Sikkim of these three species are reported for the first time from India. Most of the species are wide spread throughout the world but 83 species are restricted to Indian limit only. Out of these 83 species 43 species, 70 species and 73 species are restricted to Sikkim, North East India and North India respectively.

ACKNOWLEDGEMENTS

I am grateful to Dr. J. R. B. Alfred, Director, Zoological Survey of India, for permission to carry out this work. I am also thankful to Dr. S. K. Mitra, Scientist - SF (Retd) and Shri I. J. Gupta, Scientist C for providing laboratory facilities to my work. Thanks are also due to Dr. G. K. Srivastava, Scientist SG (Retd) for critically going through the paper. I am also thankful to Dr. M. Prasad, Scientist - C for various suggestions.

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INSECTA : TRICHOPTERA

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INTRODUCTION

There are 7000 species (approximately) of order Trichoptera known in the world. Out of these, about 1000 species of caddiflies occur in India, Sikkim alone has a good number of 179 species constituting 17.9% of the known trichopterans from India.

The contributions to the Indian Trichoptera including Sikkim have been mainly by Betten (1909), Martynov (1930, 1935, 1936), Kimmins (1952, 1953), Wiggins (1959, 1969), Schmid (1962, 1968-1972, 1982, 1983, 1987, 1994), Wiggins *et al* (1985), Higler (1992), Ghosh & Chaudhury (1992, 1998), Weaver (1998) and Saini *et al* (2001).

The material studied belonged to collections received from Dr. F. Schmid, Canada, as well as that available in the National Zoological Collection of Zoological Survey of India. Altogether 179 species of caddiflies have been treated from Sikkim representating 45 genera and 21 families. It is interesting to observe that 98 species are endemic to the state of Sikkim and only one i.e. *Stenopsyche splendida* Martynov is a first record from Sikkim. The representatives of 45 species available in the collection of Z. S. I. have been examined and the other 134 species have been reviewed from literature.

SYSTEMATIC ACCOUNT

Family RHYACOPHILIDAE

Genus ***Rhyacophila*** Pictet

1. ***Rhyacophila alticola*** Kimmins

1953. *Rhyacophila alticola* Kimmins, *Ark. Zool.* Stockholm (N.S.), **4** : 544-545.

2001. *Rhyacophila alticola* : Saini *et al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Distribution : India : Sikkim. *Elsewhere* : Tibet.

2. ***Rhyacophila anatina*** Morton

1900. *Rhyacophila anatina* Morton, *Trans. ent. Soc. London,* 6, pt. 1 : figs. 17, 18.

2001. *Rhyaxophila anatina* : Saini *et al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Material examined : 1 ex., Sikkim, Singbang, 14.x.1959 (Coll. *F. Schmid).*

Wing espanse : 16 mm.

Distribution : India : Sikkim and Meghalaya.

3. ***Rhyacophila angden*** Schmid

1970. *Rhyacophila angden* Schmid, *Mem. ent. Soc. Can.,* no. **66** : 183.

2001. *Rhyacophila angden* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 203.

Distribution : India : Sikkim.

4. ***Rhyacophila auriostigma*** Schmid

1970. *Rhyacophila auriostigma* Schmid, *Mem. ent. Soc. Can.,* No. **66** : 184.

2001. *Rhyacophila auriostigms* : Saini *et. al. Rec. zool. Surv. India,* **99** (1-4) : 203.

Material examined : 1 ex., Sikkim, Rapham, 2.iv.1959; 2 exs., Manu, 10.v.1959; 3 exs., Teng, 12.v.1959; 1 ex., Lathong, 15.v.1959; 2 exs., Chachu, 21.v.1959; 1 ex., Nanga, 3-4. viii. 1959 (coll. *F. Schmid).*

Wing expanse : 12-17 mm.

Distribution : India : Sikkim and West Bengal.

5. ***Rhyacophila bidens*** Kimmins

1953. *Rhyacophila bidens* Kimmins, *Ark. Zool.* Stockholm (N. S.), **4** : 521.

2001. *Rhyacophila bidens* : Saini *et. al. Rec. zool. Surv. India*, **99** (1-4) : 203.

Material examined : 3 exs., Sikkim, Uttare, 5.iv.1959; 2 exs., Rantang, 24.iv.1959; 1 ex., Chunjam, 23.iv.1959; 5 exs., Singha, 30.vi.1959; 4 exs., Namnasa, 1.vii.1959; 3 exs., Lachung, 2-13.vii.1959; 2 exs., Teng, 2.viii.1959; 2 exs., Yoksam, 30.ix.1959; 2 exs., Zambuk, 1.x.1959; 1 ex., Bakhim, 2.x.1959; 3 exs., Ramtang, 13.x.1959 (coll. *F. Schmid*).

Wing expanse : 20-25 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Manipur and Uttar Pradesh. *Elsewhere* : Myanmar.

6. ***Rhyacophila chakungpa*** Schmid

1970. *Rhyacophila chakungpa* : Schmid, *Mem. ent. Soc. Can.*, no. **66** : 161-162.

2001. *Rhyacophila chakungpa* : Saini *et. al. Rec. zool. Surv. India*, **99** (1-4) : 203.

Distribution : India : Sikkim.

7. ***Rhyacophila changpo*** Schmid

1970. *Rhyacophila changpo* : Schmid, *Mem. ent. Soc. Can.*, no. **66** : 217.

2001. *Rhyacophila changpo* : Saini *et. al. Rec. zool. Surv. India*, **99** (1-4) : 203.

Material examined : 2 exs., Sikkim, Bakhim, 12.iv.1959 (coll. *F. Schmid*).

Wing expanse : 24 mm.

Distribution : India : Sikkim.

8. ***Rhyacophila chayulpa chayulpa*** Schmid

1970. *Rhyacophila chayulpa chayulpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 190.

2001. *Rhyacophila chayulpa chayuepa* : Saini *et. al. Rec. zool. Surv. India*, **99** (1-4) : 203.

Material examined : 1 ex., Lingdok, 7.v.1959; 2 exs., Teng, 12.v.1959; 1 ex., Moreh, 5-6.viii.1959; 2 exs., Singhik, 7-10.viii.1959; 3 exs., Lingtham, 8-10.viii.1959; 2 exs., Kambur, 15.viii.1959; 2 exs., Changpung, 27.ix.1959; 1 ex., Yoksam, 30.ix.1959 (coll. *F. Schmid*).

Wing expanse : 22- 24 mm.

Distribution : India : Sikkim.

9. ***Rhyacophila chematangpa*** Schmid

1970. *Rhyacophila chematangpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 171-172.

2001. *Rhyacophila chematangpa* : Saini *et. al. Rec. zool. Surv. India*, **99** (1-4) : 203.

Distribution : India : Sikkim.

10. ***Rhyacophila chugalungpa*** Schmid

1970. *Rhyacophila chugalungpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 172.

2001. *Rhyacophila chugalungpa* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 203.

Distribution : India : Sikkim.

11. ***Rhyacophila chulukpa*** Schmid

1970. *Rhyacophila chulukpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 193.

2001. *Rhyacophila chulukpa* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 203.

Distribution : India : Sikkim and West Bengal.

12. ***Rhyacophila curvata*** Morton

1900. *Rhyacophila curvata* Morton, *Trans. ent. Soc. Lond.*, : 5, pl. 1, figs. 12-14.

2001. *Rhyacophila curvata* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 204.

Distribution : India : Sikkim, Manipur and Meghalaya.

13. ***Rhyacophila dakshi*** Schmid

1970. ***Rhyacophila dakshi*** Schmid, *Mem. ent. Soc. Can,* no, **66** : 186.

2001. ***Rhyacoph-ila dakshi*** : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 204.

Distribution : India : Sikkim and West Bengal. ***Elsewhere*** : Nepal.

14. ***Rhyacophila dongkyapa*** Schmid

1970. ***Rhyacophila dongkyapa*** Schmid, *Mem. ent. Soc. Can,* no, **66** : 138.

2001. ***Rhyacophila dongkyapa*** : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 204.

Material examined : 5 exs., Samdong, 30.iii.1959; 2 exs., Delthong, 1.iv.1959; 24 exs., Hi, 3.iv.1959; 1 ex., Changlong, 8.iv.1959; 2 exs., Zomphyk, 11.iv.1959; 10 exs., Singbang, 26.iv.1959; 8 exs., Lingdok, 8.v.1959; 2 exs., Nampung, 16.viii.1959; 2 exs., Mangaon, 9.v., 11.viii.1959; 3 exs., Teng, 12.v.1959; 3 exs., Nanga, 11.v., 3-4.viii.1959; 3 exs., Manu, 5-6.viii.1959; 8 exs., Lingthang, 8,10.viii.1959 9 exs., Yoksam, 30.ix.1959; 1 ex., Ramthang, 13.x.1959; 4 exs., Singbang, 14.x.1959 (coll. *F. Schmid*).

Wing expanse : 15-22 mm.

Distribution : India : Sikkim, Arunachal Pradesh and Manipur.

15. ***Rhyacophila dongre*** Schmid

1970. ***Rhyacophila dongre*** Schmid, *Mem. ent. Soc. Can,* no, **66** : 191.

2001. ***Rhyacophila dongre*** : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 204.

Distribution : India : Sikkim.

16. ***Rhyacophila drokpa nyanpa*** Schmid

1970. ***Rhyacophila drokpa nyanpa*** Schmid, *Mem. ent. Soc. Can,* no, **66** : 221.

2001. ***Rhyacophila drokpa nyanpa*** : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 221.

Distribution : India : Sikkim.

17. ***Rhyacophila drotangpa*** Schmid

1970. ***Rhyacophila drotangpa*** Schmid, *Mem. ent. Soc. Can,* no, **66** : 138.

2001. ***Rhyacophila drotangpa*** : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 204.

Distribution : India : Sikkim.

18. ***Rhyacophila fletcheri*** (Kimmins)

1952. ***Rhyacophila fletcheri*** Kimmins, *Ann. Mag. nat. Hist. Soc.,* **12** : (5) : 356.

2001. ***Rhyacophila fletcheri*** : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 204.

Material examined : 1 ex., Sikkim, Lingdok, 7.v.1959; 1ex., Mangaon, 9.v.1959; 1 ex., Tung, 2.viii.1959; 3 ex., Lingthan, 8-10.viii.1959 (coll. *F. Schmid*).

Wing expanse : 20-24 mm.

Distribution : India : Sikkim and Arunachal Pradesh.

19. ***Rhyacophila gelukpa*** Schmid

1970. ***Rhyacophila gelukpa*** Schmid, *Mem. ent. Soc. Can.,* no. **66** : 214.

2001. ***Rhyacophila gelukpa*** : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 204.

Material examined : 7 exs., Sikkim, Lanchung, 2-13.viii.1959; 1 ex., Rongme, 21.viii.1959; 1 ex., Chamitang, 24.viii.1959; 5 exs., Chatong, 28.viii.1959 (coll. *F. Schmid*).

Wing expanse : 25-40 mm.

Distribution : India : Sikkim and Arunachal Pradesh.

20. ***Rhyacophila gyelbu*** Schmid

1970. ***Rhyacophila gyelbu*** Schmid, *Mem. ent. Soc. Can.,* no. **66** : 187.

2001. ***Rhyacophila gyelbu*** : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 204.

Distribution : India : Sikkim and Manipur.

21. ***Rhyacophila hingstoni*** Martynov

1930. *Rhyacophila hingstoni* Martynov, *Proc. zool. Soc. London* : 67-69.

2001. *Rhyacophila hingstoni* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 204.

Material examined : 4 exs., Sikkim, Yadang, 25.v.1959; 2 exs., Thomrachen, 26.v.1959; 1 ex., Yahul, 27.v.1959; 3 exs., Thomphyak, 29.v.1959; 4 exs., Rangapa, 8.vi.1959: 2 exs., Zeema, 11.vi.1959 (coll. *F. Schmid*).

Wing expanse : 30-35 mm.

Distribution : India : Sikkim. *Elsewhere* : Nepal.

22. ***Rhyacophila hobsoni*** Martynov

1930. *Rhyacophila hobsoni* Martynov, *Proc. zool. Soc. London* : 69.

2001. *Rhyacophila hobsoni* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 204.

Material examined : 2 exs., Sikkim, Yamtang, 27.vi.1959; 12 exs., Singha, 30.vi.1959; 7 exs., Karpanong, 23.viii.1959; 4 exs., Chamiteng, 24.viii.1959; (coll. *F. Schmid*).

Distribution : India : Sikkim, Uttar Pradesh. *Elsewhere* : Tibet.

23. ***Rhyacophila kando*** Schmid

1970. *Rhyacophila kando,* Schmid, *Mem. ent. Soc. Can.,* no. **66** : 206.

2001. *Rhyacophila kando* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 205.

Distribution : India : Sikkim, Arunachal Pradesh and Uttar Pradesh.

24. ***Rhyacophila khasiorum*** Schmid

1970. *Rhyacophila khasiorum,* Schmid, *Mem. ent. Soc. Can.,* no. **66** : 187.

2001. *Rhyacophila khasiorum* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 205.

Material examined : 3 exs., Sikkim, Hi, 3.iv.1959; 1 ex., Chongnung, 8.iv.1959; 5 exs., Singbang, 26,iv.1959; 1 ex., Mangalbary, 30.iv.1959; 1 ex., Manu, 10.v.1959; 1 ex., Yugang, 14.v.1959; 1 ex., Rupa, 3.iv.1961 (coll. *F. Schmid*).

Wing expanse : 12-15 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Manipur, Meghalaya and Uttar Pradesh.

25. ***Rhyacophila khiyampa*** Schmid

1970. *Rhyacophila khiyampa,* Schmid, *Mem. ent. Soc. Can.,* no. **66** : 170-171.

2001. *Rhyacophila khiyampa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 205.

Material examined : 1 ex., Sikkim, Tangsing, 17.v.1958 (coll. *F. Schmid*).

Wing expanse : 32 mm.

Distribution : India : Sikkim.

26. ***Rhyacophila kubra*** Schmid

1970. *Rhyacophila kubra,* Schmid, *Mem. ent. Soc. Can.,* no. **66** : 178.

2001. *Rhyacophila kubra* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 205.

Distribution : India : Sikkim.

27. ***Rhyacophila kyadongpa*** Schmid

1970. *Rhyacophila kyadongpa,* Schmid, *Mem. ent. Soc. Can.,* no. **66** : 176.

2001. *Rhyacophila kyadongpa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 205.

Distribution : India : Sikkim.

28. ***Rhyacophila laptsapa*** Schmid

1970. *Rhyacophila laptsapa,* Schmid, *Mem. ent. Soc. Can.,* no. **66** : 200.

2001. *Rhyacophila laptsapa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 205.

Material examined : 1 ex., Sikkim, Teng, 12.v.1959 (coll. *F. Schmid*).

Wing expanse : 18 mm.

Distribution : India : Sikkim.

29. *Rhyacophila lepcha* Schmid

1970. *Rhyacophila lepcha* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 193.

2001. *Rhyacophila lepcha* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 205.

Material examined : 1 ex., Sikkim, Zomphuk, 11.iv.1959; 2 exs., Nanga, 11.v.1959, 3,4.viii.1959; 1 ex., Chetang, 22.v.1959; 4 exs., Lachung, 12-13.vii.1959; 2 exs., Bop, 15.vii.1959; 1 ex., Manu, 5-6.viii.1959; 1 ex., Sherabtang, 28.viii.1959; 3 ex., Sikkim, 30.ix.1959 (coll. *F. Schmid*).

Wing expanse : 17-25 mm.

Distribution : India : Sikkim.

30. *Rhyacophila nabochepa* Schmid

1970. *Rhyacophila nabochepa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 178.

2001. *Rhyacophila nabochepa* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 206.

Material examined : 1 ex., Sikkim, Lachung, 2-13.viii.1959; 1 ex., Yoksam, 30.ix.1959 (coll. *F. Schmid*).

Wing expanse : 15 mm.

Distribution : India : Sikkim, Arunachal Pradesh and West Bengal.

31. *Rhyacophila ngorpa* Schmid

1970. *Rhyacophila ngorpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 215.

2001. *Rhyacophila ngorpa* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 206.

Material examined : 1 ex., Sikkim, Singbeng, 26.iv.1959; 3 exs., Nanga, 11.v.1959; 3-4.viii.1959; 4 exs., Teng, 12.v.1959; 1 ex., Bop, 15.viii.1959; 4 exs., Manu, 5,6.viii.1959; 5 exs., Yoksam, 30.ix.1959; 2 exs., Zomphuk, 6.x.1959 (coll. *F. Schmid*).

Wing expanse : 25-34 mm.

Distribution : India : Sikkim and West Bengal.

32. *Rhyacophila nyamangpa* Schmid

1970. *Rhyacophila nyamangpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 194.

2001. *Rhyacophila nyamangpa* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 206.

Distribution : India : Sikkim.

33. *Rhyacophila obscura* Martynov

1927. *Rhyacophila obscura* Martynov, *Ann. Mag. Zool. Acad. Sci. Nov. V.S.S.R.*, **28** : 163, pl. VII, figs 1-4.

2001. *Rhyacophila obscura* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 206.

Distribution : India : Sikkim, Himachal Pradesh and Uttar Pradesh.

34. *Rhyacophila poba* Schmid

1970. *Rhyacophila poba* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 166.

2001. *Rhyacophila poba* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 207.

Material examined : 6 exs., Sikkim, Tangching, 17.iv.1959, 1 ex., Gey, 19.v.1959 (coll. *F. Schmid*).

Wing expanse : 18 mm.

Distribution : India : Sikkim.

35. *Rhyacophila rongpa* Schmid

1970. *Rhyacophila rongpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 222.

2001. *Rhyacophila rongpa* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 207.

Material examined : 1 ex., Sikkim, Singbeng, 26.iv.1959, 1 ex., Chumtang, 16-23.vii.1959; 1 ex., Teng, 1.viii.1959; 3 exs., Nanga, 3-4.viii.1959; 2 exs., Singhik, 7-10.viii.1959; 2 exs., Lingham, 8-10.viii.1959 (coll. *F. Schmid*).

Wing expanse : 20-27 mm.

Distribution : India : Sikkim, Arunachal Pradesh and Manipur.

36. ***Rhyacophila sanglungpa*** Schmid

1970. *Rhyacophila sanglungpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 202.

2001. *Rhyacophila sanglungpa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 207.

Distribution : India : Sikkim.

37. ***Rhyacophila scissa*** Morton

1900. *Rhyacophila scissa* Morton, *Trans. ent. Soc. Lond.*, : 5 pl. 1, figs. 15, 16.

2001. *Rhyacophila scissa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 207.

Material examined : 1 ex., Sikkim, Hi, 3.iv.1959; 1 ex., Tongsing, 15.iv.1959; 8 exs., Lathong, 26.iv.1959; 4 exs., Lingdok, 7.v.1959; 17.viii.1959, 1 ex., Dikchu, 9.v.1959; 6 exs., Nanga, 11.v.1959; 3-4.viii.1959; 2 exs., Namgung, 8.v.1959; 16.viii.1959; 13 exs., Teng, 1,2.viii.1959; 17 exs., Manu, 5-6.viii.1959; 2 exs., Singhik, 7-10.viii.1959; 8 exs., Lingtham, 8-10.viii.1959; 1 ex., Chunglang, 27.ix.1959 (coll. *F. Schimd*).

Wing expanse : 20-27 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Meghalaya and Uttar Pradesh.

38. ***Rhyacophila scissoides*** Kimmins

1953. *Rhyacophila scissoides* Kimmins, *Ark. Zool. Stockholm (N. S.)* **4** : 520.

2001. *Rhyacophila scissoides* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 207.

Material examined : 1 ex., Sikkim, Dikchu, 12.viii.1959; 4 exs., Chumtang, 16-23.viii.1959; 2 ex., Teng, 2.viii.1959; 1 ex., Lingthang, 8-10.viii.1959; 6exs., Nanga, 3-4.viii.1959, 1 ex., Chongpung, 27.ix.1959 (coll. *F. Schimd*).

Wing expanse : 15-18 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Himachal Pradesh, Meghalaya, Mizoram, Punjab and Uttar Pradesh.

39. ***Rhyacophila sherpa*** Schmid

1970. *Rhyacophila sherpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 156.

2001. *Rhyacophila sherpa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 207.

Distribution : India : Sikkim.

40. ***Rhyacophila shingripa*** Schmid

1970. *Rhyacophila shingripa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 179.

2001. *Rhyacophila shingripa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 207.

Distribution : India : Sikkim.

41. ***Rhyacophila stenostyla*** Martynov

1930. *Rhyacophila stenostyla* Martynov, *Proc. Zool. Soc. Lond.*, : 70-71.

2001. *Rhyacophila stenostyla* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Material examined : 1 ex., Sikkim, Zeema, 24.v.1959; 4 exs., Yadong, 26.v.1959; 7 exs., Thompyak, 29.v.1959; 1 ex., Daimasampa, 1.vi.1959; 5 exs., Rongha, 8.vi.1959; 2 exs., Kaieg, 18.iv.1959; 1 ex., Tanggu, 19.vi1959; 1 ex., Taling, 21.vi.1959; 4 exs., Yamthang, 27.vi.1959; 1 ex., Chachu, 29.iv.1959; 1 ex., Singha, 30.vi.1959 (coll. *F. Schmid*).

Wing expanse : 25-30 mm.

Distribution : India : Sikkim and Uttar Pradesh. *Elsewhere* : Nepal and Tibet.

42. ***Rhyacophila tarkiya*** Schmid

1970. *Rhyacophila tarkiya* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 194.

2001. *Rhyacophila tarkiya* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Distribution : India : Sikkim.

43. ***Rhyacophila tashepa*** Schmid

1970. *Rhyacophila tashepa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 143.

2001. *Rhyacophila tashepa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Distribution : India : Sikkim.

44. ***Rhyacophila tashidingpa*** Schmid

1970. *Rhyacophila tashidingpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 195.

2001. *Rhyacophila tashidingpa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Distribution : India : Sikkim, Arunachal Pradesh and West Bengal.

45. ***Rhyacophila tengyelingpa*** Schmid

1970. *Rhyacophila tengylingpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 173.

2001. *Rhyacophila tengylingpa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Material Examined : 1 ex., Sikkim, Lachen, 23.v.1959 (coll. *F. Schmid*).

Wing expanse : 15 mm.

Distribution : India : Sikkim.

46. ***Rhyacophila tshringpa*** Schmid

1970. *Rhyacophila tshringpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 157.

2001. *Rhyacophila tshringpa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Material Examined : 38 exs., Sikkim, Lachung, 2-13.viii.1959; 1 ex., Namnasa, 11.viii.1959; 2 exs., Karponang, 23.viii.1959; 4 exs., Chamiteng, 24.viii.1959 (coll. *F. Schmid*).

Wing expanse : 18-26 mm.

Distribution : India : Sikkim.

47. ***Rhyacophila tshogpa*** Schmid

1970. *Rhyacophila tshogpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 213.

2001. *Rhyacophila tshogpa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Material Examined : 4 exs., Sikkim, Teng, 2.viii.1959; 2 exs., Nanga, 3-4.viii.1959; 3 exs., Singhik, 7-10.viii.1959; 3 exs., Chungtang, 10-13.viii.1959 (coll. *F. Schmid*).

Wing expanse : 17-25 mm.

Distribution : India : Sikkim.

48. ***Rhyacophila tshongkhapa*** Schmid

1970. *Rhyacophila tshongkhapa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 219.

2001. *Rhyacophila tshongkhapa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Material Examined : 24 exs., Tongsing, 15.iv.1959 (coll. *F. Schmid*).

Wing expanse : 25-32 mm.

Distribution : India : Sikkim.

49. ***Rhyacophila yarlungpa*** Schmid

1970. *Rhyacophila yarlungpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 182.

2001. *Rhyacophila yarlungpa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Material Examined : 1 ex., Sikkim, Dikchu, 12.viii.1959 (coll. *F. Schmid*).

Wing expanse : 15 mm.

Distribution : India : Sikkim.

50. ***Rhyacophila yigrongpa*** Schmid

1970. *Rhyacophila yigrongpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 141.

2001. *Rhyacophila yigrongpa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Material Examined : 1 ex., Sikkim, Tashong, 3.iv.1959 (coll. *F. Schmid*).

Wing expanse : 16 mm.

Distribution : India : Sikkim.

51. *Rhyacophila yishepa* Schmid

1970. *Rhyacophila yishepa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 177.

2001. *Rhyacophila yishepa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Material Examined : 1 ex., Sikkim, Tashong, 3.iv.1959 (coll. *F. Schmid*).

Wing expanse : 16 mm.

Distribution : India : Sikkim.

52. *Rhyacophila yulha* Schmid

1970. *Rhyacophila yulha* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 195.

2001. *Rhyacophila yulha* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Distribution : India : Sikkim.

53. *Rhyacophila zhungpa* Schmid

1970. *Rhyacophila zhungpa* Schmid, *Mem. ent. Soc. Can.*, no. **66** : 199.

2001. *Rhyacophila yulha* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 208.

Material examined : 1 ex., Sikkim, Chungdam, 23.iv.1959; 4 exs., Lingdok, 7.v.1959 1 ex., Mangaon, 9.v.1959; 1 ex., Chumtang, 16-23.viii.1959; 1 ex., Yoksam, 30.ix.1959 (coll. *F. Schmid*).

Wing expanse : 18-25 mm.

Distribution : India : Sikkim, Arunachal Pradesh and Uttar Pradesh.

Remarks : Schmid (1970) described this species from Sikkim. Higler (1992) and Saini *et. al.* (2001) did not mention its occurrence in Sikkim.

Genus *Himalopsyche* Banks

54. *Himalopsyche amitava* Schmid & Botsoneanu

1966. *Himalopsyche amitava* Schmid & Botsoneanu, *Ann. ent. Soc. Quebec,* **11** : 148.

2001. *Himalopsyche amitava* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Distribution : India : Sikkim.

55. *Himalopsyche angnorbui* Schmid

1968. *Himalopsyche angnorbui* Schmid, *Bonn. Zool. Beitr.,* **14** : 208.

2001. *Himalopsyche angnorbui* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Material examined : 7 exs., Sikkim, Chachu, 29.vi.1959; 5 exs., Singha, 30.vi.1959; 7 exs., Lachung, 2-13.viii.1959 (coll. *F. Schmid*).

Wing expanse : 44-50 mm.

Distribution : India : Sikkim and Uttar Pradesh.

56. *Himalopsyche biansata* Kimmins

1952. *Himalopsyche biansata* Kimmins, *Ann. Mag. nat. Hist. Soc.,* (12) **5** : 351.

2001. *Himalopsyche biansata* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Distribution : India : Sikkim. *Elsewhere* : Tibet.

57. *Himalopsyche digitata* (Martynov)

1935. *Rhyacophila digitata* Martynov, *Rec. Indian Mus.,* **37** : 102-103, figs. 8a-c.

2001. *Himalopsyche digitata* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Material examined : 2 exs., Sikkim, Chunjan, 23.iv.1959; 1 ex., Karponang, 22.viii.1959; 2 exs., Changlong, 24.viii.1959 (coll. *F. Schmid*).

Wing expanse : 30 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Uttar Pradesh and West Bengal.

58. *Himalopsyche dolmasampa* Schmid

1963. *Himalopsyche dolmasampa* Schmid, *Bonn. Zool. Beitr.,* **14** : 212.

2001. *Himalopsyche dolmasampa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Material examined : 5 exs., Sikkim, Tangsing, 15.iv.1959; 1 ex., Banshal, 15.v.1959; 4 ex., Zemp, 24.v.1959; 3 exs., Yadang, 25.v.1959; 1 ex., Theulocha, 30.v.1959; 52 exs., Dolmasampa, 1.vi.1959; 2 exs., Changlong, 2.vi.1959; 6 exs., Sasa, 4.vi.1959; 3 exs., Rongsha, 8.vi.1959; 1 ex., Taling, 21.v.1959 (coll. *F. Schmid*), 4 exs., Thanggu, 3250 m, 22.vii.1989; 1 ex., Yamthang, 3475 m, 2.vii.1989 (coll. *S. S. Saha*).

Distribution : India : Sikkim and Uttar Pradesh.

59. ***Himalopsyche gyamo*** Schmid

1963. *Himalopsyche gyamo* Schmid, *Bonn. Zool. Beitr.*, **14** : 228.

2001. *Himalopsyche gyamo* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Material examined : 8 exs., Sikkim, Tongsing, 15-17.iv.1959; 4 exs., Onglaktang, 16.iv.1959; 8 exs., Tikiachu, 19,20.iv.1959 (coll. *F. Schmid*).

Wing expanse : 45-55 mm.

Distribution : India : Sikkim and Uttar Pradesh.

60. ***Himalopsyche horai*** (Martynov)

1935. *Rhyacophila pallida* Martynov, *Rec. Indian Mus.*, **37** : 100-102.

2001. *Himalopsyche horai* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Distribution : India : Sikkim, Uttar Pradesh, Himachal Pradesh and Uttar Pradesh.

61. ***Himalopsyche ianceolata*** (Morton)

1900. *Rhyacophila lanceolata* Morton, *Trans. ent. Soc. Lond.*, 2, pl. 1, figs. 1-4.

2001. *Himalopsyche lanceolata* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Material examined : 1 ex., Sikkim, Lingtham, 8-10.viii.1959 (coll *F. Schmid*).

Wing expanse : 30-46 mm.

Distribution : India : Sikkim, Manipur and Meghalaya.

62. ***Himalopsyche lepcha*** Schmid

1963. *Himalopsyche lepcha* Schmid, *Bonn. Zool. Beitr.*, **14** : 222.

2001. *Himalopsyche lepcha* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Material examined : 4 exs., Sikkim, Yoksam, 30.ix.1959; 2 exs., Zomphuk, 1.x.1959 (coll *F. Schmid*).

Wing expanse : 22 mm.

Distribution : India : Sikkim, Uttar Pradesh and West Bengal.

63. ***Himalopsyche malenanda*** Schmid

1963. *Himalopsyche malenanda* Schmid, *Bonn. Zool. Beitr.*, **14** : 210.

2001. *Himalopsyche malenanda* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Material examined : 1 ex., Sikkim, Tangshing, 15.iv.1959; 4 exs., Bambol, 16.v.1959; 2 exs., Lachung, 2-3.viii.1959; 1 ex., Tangkhul, Hangdung, 18.viii.1959; 1 ex., Karpanong, 22.viii.1959; 2 exs., Chamiteng, 24.viii.1959; 1 ex., Ramiteng, 13.x.1959 (coll *F. Schmid*). 1 ex., Thangu, 3750 m, 20.vii.1989 (coll. *S. S. Saha*).

Wing expanse : 35-40 mm.

Distribution : India : Sikkim, Arunachal Pradesh and Uttar Pradesh.

64. ***Himalopsyche phedogensis*** Kimmins

1952. *Himalopsyche phedogensis* Kimmins, *Ann. Mag. nat. Hist. Soc.*, (12) **5** : 356.

2001. *Himalopsyche phedogensis* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Distribution : India : Sikkim.

65. ***Himalopsyche tibetana*** (Martynov)

1930. *Rhyacophila tibetana* Martynov, *Proc. zool. Soc. Lond.*, 65, text fig. 1,2.

2001. *Himalopsyche tibetana* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Material examined : 1 ex., Sikkim, Yaktang, 17.vi.1959; 2 exs., Tangau 19.vi.1959; 2 exs., Naminanga, 11.vi..1959; 2 exs., Yamthang, 27.vii.1959; 2 exs., Chachu, 29.vii.1959; 3 exs., Singha, 30.vii.1959; 4 exs., Chamlong, 24.viii.1959 (coll. *F. Schmid*).

Wing expanse : 40-45 mm.

Distribution : India : Sikkim and Uttar Pradesh.

66. ***Himalopsyche yongma*** Schmid

1963. *Himalopsyche yongma* Schmid, *Bonn. Zool. Beitr.*, **14** : 217.

2001. *Himalopsyche yongma* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 202.

Material examined : 3 exs., Sikkim, Tongsing, 15.iv.1959; 2 exs., Tikiachu 19.iv.1959 (coll. *F. Schmid*).

Wing expanse : 38 mm.

Distribution : India : Sikkim.

Family HYDROBIOSIDAE

Genus ***Apsilochorema*** Ulmer

67. ***Apsilochorema annandalei*** Martynov

1935. *Apsilochorema annandalei* Martynov, *Rec. Indian Mus.*, **35** : 110-112, figs. 15-16.

2001. *Apsilochorema annandalei* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 209.

Distribution : India : Sikkim, Himachal Pradesh, Manipur, Punjab and Uttar Pradesh.

68. ***Apsilochorema tigmatejanam*** Schmid

1970. *Apsilochorema tigmatejanam* Schmid, *Tijdschr. V. Ent.*, **113** : 266.

2001. *Apsilochorema tigmatejanam* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 209.

Distribution : India : Sikkim and Uttar Pradesh.

69. ***Apsilochorema vaneyam*** Schmid

1970. *Apsilochorema vaneyam* Schmid, *Tijdschr. V. Ent.*, **113** : 262.

2001. *Apsilochorema vaneyam* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 209.

Distribution : India : Sikkim, Assam and Arunachal Pradesh.

Family HYDROPTILIDAE

Genus ***Stactobia*** Mclachlan

70. ***Stactobia calin*** Schmid

1983. *Stactobia calin* Schmid *Nat. Can.*, **110** (3) : 276.

2001. *Stactobia calin* : Saini *et. al., Rec. zool. Surv. India,* **99** : (1-4) : 210.

Distribution : India : Sikkim, Arunachal Pradesh, Uttar Pradesh and West Bengal.

71. ***Stactobia ori*** Schmid

1983. *Stactobia ori* Schmid *Nat. Can.*, **110** (3) : 254.

2001. *Stactobia ori* : Saini *et. al., Rec. zool. Surv. India,* **99** : (1-4) : 211.

Distribution : India : Sikkim.

72. ***Stactobia snori*** Schmid

1983. *Stactobia snori* Schmid *Nat. Can.*, **110** (3) : 260.

2001. *Stactobia snori* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 211.

Distribution : India : Sikkim, Arunachal Pradesh and West Bengal.

73. ***Stactobia snufi*** Schmid

1983. *Stactobia snufi* Schmid, *Nat. Can.*, **110** (3) : 262.

2001. *Stactobia snufi* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 211.

Distribution : India : Sikkim.

74. ***Stactobia thrain*** Schmid

1983. *Stactobia thrain* Schmid, *Nat. Can.*, **110** (3) : 250.

2001. *Stactobia thrain* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 211.

Distribution : India : Sikkim.

75. *Stactobia throli* Schmid

1983. *Stactobia throli* Schmid, *Nat. Can.*, **110** (3) : 258.

2001. *Stactobia throli* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 211.

Distribution : India : Sikkim.

Family GLOSSOSOMATIDAE

Genus *Glossosoma* Curtis

76. *Glossosoma caudatum fissum* Martynov

1935. *Glossosoma fissum* Martunov, *Rec. Indian Mus.*, **37** : 106-107, figs. 11.

1971. *Glossosoma caudatum fissum* : Schmid, *Nat. Can.*, **98** : 626-627.

1992. *Glossosoma caudaum* (sic) *fissum*, Higler, *Oriental Insects*, **26** : 75.

2001. *Glossosoma caudadum* (sic) *fissum* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 212.

Distribution : India : Sikkim, Arunachal Pradesh, Himachal Pradesh, Manipur, Uttar Pradesh and West Bengal.

77. *Glossosoma dentatum akhandam* Schmid

1971. *Glossosoma dentatum akhandam* Schmid, *Nat. Can.*, **98** : 628-29, figs. 45-50.

2001. *Glossosoma dentatum akhandam* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 212.

Distribution : India : Sikkim, Arunachal Pradesh, Manipur, and Meghalaya.

78. *Glossosoma dirghakantakam* Schmid

1971. *Glossosoma (Lipoglossa) dirghakantakam* Schmid, *Nat. Can.*, **98** : 613-14, figs. 4, 13-15.

2001. *Glossosoma dirghakantakam* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 212.

Distribution : India : Sikkim and Arunachal Pradesh.

79. *Glossosoma kamarasikam* Schmid

1971. *Glossosoma (Muroglossa) kamarasikam* Schmid, *Nat. Can.*, **98** : 625, figs. 38-39.

2001. *Glossosoma kamarasikam* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 212.

Distribution : India : Sikkim and Arunachal Pradesh.

80. *Glossosoma kchinam* Schmid

1971. *Glossosoma (Lipoglossa) kchinam* Schmid, *Nat. Can.*, **98** : 614-616, figs. 16-19.

2001. *Glossosoma kchinam* : Saini *et. al., Rec. zool, Surv. India,* **99** (1-4) : 212.

Distribution : India : Sikkim.

81. *Glossosoma nigroroseum* Schmid

1971. *Glossosoma (Lipoglossa) nigraroseum* Schmid, *Nat. Can.*, **98** : 617-618, figs. 2, 22-23.

2001. *Glossosoma nigroroseum* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 212.

Distribution : India : Sikkim.

82. *Glossosoma varjakantakam* Schmid

1971. *Glossosoma (Muroglossa) varjakantakam* Schmid, *Nat. Can.*, **98** : 625-626, figs. 29, 40-43.

2001. *Glossosoma varjakantakam* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 212.

Distribution : India : Sikkim, Arunachal Pradesh, Manipur, Meghalaya and Uttar Pradesh.

Family STENOPSYCHIDAE

Genus *Stenopsyche* Mc Lachlan

83. *Stenopsyche dirghajihvi* Schmid

1969. *Stenopsyche dirghajihvi* Schmid, *Can. Ent.*, **101** : 213, pl. iv, figs. 9,10,30.

2001. *Stenopsyche dirghajihvi* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 213.

Distribution : India : Sikkim and Arunachal Pradesh.

84. ***Stenopsyche griseipennis*** Mc Lachlan

1866. *Stenopsyche griseipennis* Mc lachlan, *Trans. ent. Soc. London,* (3) **5** : 265, pl. 17, fig. 5.

2001. *Stenopsyche griseipennis* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 213.

Material examined : 3 exs., Sikkim (coll. *E. Barlow*).

Wing expanse : 25 mm.

Distribution : India : Sikkim, Assam, Arunachal Pradesh, Manipur, Meghalaya, Uttar Pradesh and West Bengal.

85. ***Stenopsyche haimavatika*** Schmid

1969. *Stenopsyche haimavatika* Schmid, *Can. Ent.,* **101** : 215-216, pl. v. fig. 12, 29, pl. VI. fig. 5.

2001. *Stenopsyche haimavatika* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 213.

Distribution : India : Sikkim, Arunachal Pradesh, Meghalaya, and Uttar Pradesh.

86. ***Stenopsyche himalayana*** Martynov

1926. *Stenopsyche himalayana* Martynov, *Eos. Mads.,* **2** : 298.

2001. *Stenopsyche himalayana* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 213.

Distribution : India : Sikkim, Assam, Jammu & Kashmir, Meghalaya, and Uttar Pradesh.

87. ***Stenopsyche similis*** Ulmer

1927. *Stenopsyche similis* Ulmer, *Entomol,* : **16** : 175, pl. 5, fig. 8.

2001. *Stenopsyche similis* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 214.

Distribution : India : Sikkim, Arunachal Pradesh, Punjab, Uttar Pradesh and West Bengal.

88. ***Stenopsyche splendida*** Martynov

1935. *Stenopsyche splendida* Martynov, *Rec. Indian Mus.,* **37** : 133-134, figs. 37.

2001. *Stenopsyche splendida* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 214.

Material examined : 1 ex., Tumin, 1800 m, Sikkim, East Dist., 28.ix.1988; 1 ex., Sikkim, Thanggu, 3750 m., 20.vii.1989, (coll. *V. C. Agarwal*); 2 exs., East Sikkim, Tarku, 27.iv.1994, 1 ex., Gayzing, West Sikkim, 9.iv.1995 (coll. *S. S. Saha*).

Wing expanse : 40-45 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Maharashtra and West Bengal.

Remarks : This species is first recorded from Sikkim.

Family PHILOPOTAMIDAE

Genus ***Gunungiella*** Ulmer

89. ***Gunungiella dvitiya*** Schmid

1968. *Gunungiella dvitiya* Schmid, *Can Ent.,* **100** : 917.

2001. *Gunungiella dvitiya* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 215.

Distribution : India : Sikkim, Arunachal Pradesh, Maharashtra and Uttar Pradesh.

90. ***Gunungiella prathama*** Schmid

1968. *Gunungiella prathama* Schmid, *Can Ent.,* **100** : 914.

2001. *Gunungiella prathama* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 216.

Distribution : India : Sikkim, Arunachal Pradesh, and Uttar Pradesh.

Genus ***Wormaldia*** Mc Lachlan

91. ***Wormaldia melanion*** Schmid

1991. *Wormaldia melanion* Schmid, *Beautiforia,* **42** (4) : 95.

2001. *Wormaldia melanion* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 216.

Distribution : India : Sikkim.

Family XIPHOCENTRONIDAE

Genus ***Proxiphocentron*** Schmid

92. ***Proxiphocentron prathamajam*** Schmid

1982. *Proxiphocentron prathamajam* Schmid, *Mem. ent. Soc. Can.,* **121** : 14.

2001. *Proxiphocentron prathamajam* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 218.

Distribution : India : Sikkim.

Genus ***Condocentron*** Schmid

93. ***Condocentron tchaturbhuja*** Schmid

1982. *Condocentron tchaturbhuja* Schmid, *Mem. ent. Soc. Can.,* **101** : 40.

2001. *Condocentron tchaturbhuja* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 217.

Distribution : India : Sikkim and Arunachal Pradesh.

Genus ***Drepanocentron*** Schmid

94. ***Drepanocentron abhimanyu*** Schmid

1982. *Drepanocentron abhimanyu* Schmid, *Mem. ent. Soc. Can.,* **121** : 75.

2001. *Drepanocentron abhimanyu* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 217.

Distribution : India : Sikkim.

95. ***Drepanocentron dacharatha*** Schmid

1982. *Drepanocentron dacharatha* Schmid, *Mem. ent. Soc. Can.,* **121** : 88.

2001. *Drepanocentron dacharatha* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 217.

Distribution : India : Sikkim.

96. ***Drepanocentron vichitravirya*** Schmid

1982. *Drepanocentron vichitravirya* Schmid, *Mem. ent. Soc. Can.,* **121** : 90.

2001. *Drepanocentron vichitravirya* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 217.

Distribution : India : Sikkim and Arunachal Pradesh.

Genus ***Abaria*** Mosely

97. ***Abaria margaritifera*** Schmid

1958. *Abaria margaritifera* Schmid, *Arch. Hydrobiol.,* **54** : 1-173.

2001. *Abaria margaritifera* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 217.

Distribution : India : Sikkim, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Tamil Nadu, Uttar Pradesh and West Bengal.

98. ***Abaria richika*** Schmid

1982. *Abaria richika* Schmid, *Mem. ent. Soc. Can.,* **121** : 100.

2001. *Abaria richika* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 217.

Distribution : India : Sikkim.

99. ***Abaria uchinara*** Schmid

1982. *Abaria uchinara* Schmid, *Mem. ent. Soc. Can.,* **121** : 100.

2001. *Abaria uchinara* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 217.

Distribution : India : Sikkim.

Family PSYCHOMYIIDAE

Genus ***Tinodes*** Leach

100. ***Tinodes achtachastra*** Schmid

1972. *Tinodes achtachastra* Schmid, *Naturliste Can.,* **99** : 151, figs. 16, 17.

2001. *Tinodes achtachastra* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 220.

Ditribution : India : Sikkim

101. ***Tinodes alpachastra*** Schmid

1972. *Tinodes alpachastra* Schmid, *Naturliste Can.,* **99** : 154, fig. 22, 23.

2001. *Tinodes alpachastra* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 221.

Distribution : India : Sikkim.

102. ***Tinodes atichastra*** Schmid

1972. *Tinodes atichastra* Schmid, *Naturliste Can.,* **99** : 149-150, figs. 13, 14.

2001. *Tinodes atichastra* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 221.

Distribution : India : Sikkim.

Genus ***Psychomyia*** Latreille

103. ***Psychomyia asvagosha*** Schmid

1961. *Psychomyia asvagosha* Schmid, *Tijdscher. Ent.*, **104** : 195.

2001. *Psychomyia asvagosha* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 219.

Distribution : India : Sikkim, Uttar Pradesh and West Bengal.

Higler (1992) did not reported this species from India.

104. ***Psychomyia dugpa*** Schmid

1975. *Psychomyia dugpa* Schmid, *Ent. Basiliensia,* **1**: 82

2001. *Psychomyia dugpa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 219.

Distribution : India : Uttar Pradesh.

Higler (1992) did not reported this species from India.

105. ***Psychomyia scottae*** Schmid

1997. *Psychomyia scottae* Schmid, *Fabreries,* **22** : (1-2) : 1-56.

2001. *Psychomyia scottae* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 220.

Distribution : India : Sikkim.

106. ***Psychomyia wangii*** Schmid

1997. *Psychomyia wangii* Schmid, *Fabreries,* **22** : (1-2) : 1-56.

2001. *Psychomyia wangii* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 220.

Distribution : India : Sikkim and West Bengal.

Family POLYCENTROPIDAE

Genus ***Plectrocnemia*** Stephens

107. ***Plectrocnemia aurea*** Ulmer

1905. *Plectrocnemia aurea* Ulmer, *Stettin. Ent. Seit.,* **66** : 101, pl. iv, figs. 130-131.

2001. *Psychomyia aurea* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 222.

Distribution : India : Sikkim and West Bengal.

108. ***Plectrocnemia banksi*** Fischer

1962. *Plectrocnemia banksi* Fischer, *Ned. Ent. Veren. Amsterdam,*

2001. *Psychomyia banksi* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 222.

Distribution : India : Sikkim.

109. ***Plectrocnemia navasi*** Ulmer

1906. *Plectrocnemia navasi* Ulmer, *Notes Leyd. Mus.,* **28** : 48, figs. 85, 86.

2001. *Psychomyia navasi* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 222.

Distribution : India : Sikkim.

Family HYDROPSYCHIDAE

Genus ***Hydropsyche*** Pictet

110. ***Hydropsyche asiatica*** Ulmer

1905. *Hydropsyche asiatica* Ulmer, *Stettin Ent. Zeit.,* **66** : 91, pl. 4, figs. 122-124.

2001. *Psychomyia asiatica* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 225.

Distribution : India : Sikkim and West Bengal.

111. ***Hydropsyche luctuosus*** (Ulmer)

1905. *Hydropsyche luctuosus* Ulmer, *Stettin Ent. Zeit.,* **66** : 92, pl. 4, figs. 125-27.

2001. *Psychomyia luctuosus* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 225.

Distribution : India : Sikkim.

Genus ***Macrostemum*** Kolenati

112. ***Macrostemum fastosum*** (Walker)

1952. *Macrostemum fastosum* Walker, *Cat. Newr. Brit. Mus.,* : 76.

2001. *Macrostemum fastosum* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 225.

Distribution : India : Sikkim, Assam and West Bengal. *Elsewhere* : Hong Kong.

Genus ***Parapsyche*** Betten

113. ***Parapsyche mahati*** Schmid

1968. *Parapsyche mahati* Schmid, *Mem. Ent. Soc. Quebec,* No. **1** : 69.

2001. *Parapsyche mahati* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 225.

Distribution : India : Sikkim.

Genus ***Arctopsyche*** Mclachlan

114. ***Arctopsyche compositus*** Martynov

1930. *Arctopsyche compositus* Martynov, *Proc. Zool. Soc.,* **75**, figs, 17-19.

2001. *Arctopsyche compositus* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 223.

Distribution : India : Sikkim, Arunachal Pradesh and Uttar Pradesh.

115. ***Arctopsyche fissa*** Schmid

1968. *Arctopsyche fissa* Schmid, *Mem. Ent. Soc., Quebec.,* No. **1** : 36.

2001. *Arctopsyche fissa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 223.

Distribution : India : Sikkim.

116. ***Arctopsyche inequispinosa*** Schmid

1968. *Arctopsyche inequispinosa* Schmid, *Mem. ent. Soc., Quebec.,* No. **1** : 32.

2001. *Arctopsyche inequispinosa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 223.

Distribution : India : Sikkim.

117. ***Arctopsyche integra*** Schmid

1968. *Arctopsyche integra* Schmid, *Mem. ent. Soc., Quebec.,* No. **1** : 42.

2001. *Arctopsyche integra* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 224.

Distribution : India : Sikkim and Arunachal Pradesh.

118. ***Arctopsyche lobata*** Martynov

1910. *Arctopsyche lobata* Martynov, *Proc. zool. Soc.,* **77**, figs. 20-21.

2001. *Arctopsyche lobata* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 224.

Distribution : India : Sikkim, Arunachal Pradesh, Manipur, Punjab, Uttar Pradesh and West Bengal. *Elsewhere* : Tibet.

Family PHRYGANOPSYCHIDAE

Genus ***Phryganopsyche*** Wiggins

119. ***Phryganopsyche latipennis*** (Banks)

1906. *Phryganopsyche latipennis* Banks, *Proc. ent. Soc. Wash.,* **7** : 107.

2001. *Phryganopsyche latipennis* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 227.

Distribution : India : Sikkim, Arunachal Pradesh and Manipur.

Family PHRYGANEIDAE

Genus ***Eubasilissa*** Martynov

120. ***Eubasilissa machlachlani*** (White)

1862. *Neuronia machlachlani* White, *Trans. ent. Soc. London,* : 26.

2001. *Eubasilissa machlachlani* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 227.

Distribution : India : Sikkim, Arunachal Pradesh, Assam Uttar Pradesh, W. & E. Himalaya and West Bengal.

121. ***Eubasilissa tibetana*** Martynov

1930. *Eubasilissa tibetana* Martynov, *Proc. zool. Soc.,* : 88, pl. 1, fig. 2.

2001. *Eubasilissa tibetana* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 227.

Distribution : India : Sikkim.

Genus ***Neurocyta*** Navas

122. ***Neurocyta arenata*** Navas

1916. *Neurocyta arenata* Navas, *Mem. Acad. Cienc. Art. Barcelona,* **12** : (13) : 240-241, fig. 1.

2001. *Neurocyta arenata* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 227.

Distribution : India : Sikkim and West Bengal.

Family LEPIDOSTOMATIDAE

Genus ***Adinarthrella*** Mosely

123. ***Adinarthrella kimsa*** Mosely

1939. *Adinarthrella Kimsa* Mosely, *J. Bombay nat. Hist. Soc.*, **41** : 333.

2001. *Adinarthrella Kimsa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 228.

Distribution : India : Sikkim.

Genus ***Adinarthrum*** Mosely

124. ***Adinarthrum kurseum*** Mosely

1949. *Adinarthrum kurseum* Mosely, *J. Bombay nat. Hist. Soc.*, **48** : 237.

2001. *Adinarthrum kurseum* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 228.

Distribution : India : Sikkim and Assam.

Genus ***Agoerodes*** Mosely

125. ***Agoerodes sika*** Mosely

1949. *Agoerodes sika* Mosely, *J. Bombay nat. Hist. Soc.*, **48** : 243.

1992. *Agoerodes sika* : Higler, *Oriental Insect,* **26** : 84.

2001. *Agoerodes sid* (sic) : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 228.

Distribution : India : Sikkim.

Genus ***Paraphlegopteryx*** Ulmer

126. ***Paraphlegopteryx prestes*** Weaver

1998. *Paraphlegopteryx prestes* Weaver, *Proc. 9th International Symposium on Trichoptera,* : 438-439, figs. 32-37.

Distribution : India : Sikkim.

Remarks : Saini *et. al.* (2001) did not refer this species from Sikkim.

127. ***Paraphlegopteryx pippini*** Weaver

1998. *Paraphlegopteryx pippini* Weaver, *Proc. 9th International Symposium on Trichoptera,* : 455, figs. 105.

Distribution : India : Sikkim.

Remarks : Saini *et al.*, (2001) did not refer this species from Sikkim.

128. ***Paraphlegopteryx ulmeri*** Weaver

1998. *Paraphlegopteryx ulmeri* Weaver, *Proc. 9th International Symposium on Trichoptera,* : 459-460.

Distribution : India : Sikkim, Uttar Pradesh. *Elsewhere* : Nepal.

Remarks : Saini *et al.*, (2001) did not refer this species from Sikkim.

129. ***Paraphlegopteryx normalis*** Mosely

1949. *Paraphlegopteryx normalis* Mosely, *J. Bombay nat. Hist. Soc.*, **48** : 788-789, pl. 10, fig. 206-209.

2001. *Paraphlegopteryx normalis* : Saini *et al., Rec. zool. Surv. India,* **99** (1-4) : 229.

Distribution : India : Sikkim, Arunachal Pradesh and West Bengal. *Elsewhere* : Nepal.

130. ***Paraphlegopteryx schmidi*** Weaver

1998. *Paraphlegopteryx Schmidi* Weaver, *Proc. 9th International Symposium on Trichop.*, 451-452, figs. 95-102.

Distribution : India : Sikkim, Arunachal Pradesh. *Elsewhere* : Nepal.

Remarks : Saini *et al.*, (2001) did not refer this species from Sikkim.

Family BRACHYCENTRIDAE

Genus ***Brachycentrus*** Curtis

131. ***Brachycentrus kozlovi*** Martynov

1909. *Brachycentrus kozlovi* Martynav, *Ann. Mus, zool.*, **14** : 291.

2001. *Brachycentrus kozlovi,* Saini *et al., Rec. zool. Surv. India,* **99** (1-4) : 230.

Distribution : India : Sikkim, Kashmir, Uttar Pradesh and Ladakh.

Remarks : Higler (1992) did not report the occurrence of this species in India.

Genus ***Micrasema*** Mclachlan

132. *Micrasema abghavyani* Schmid

1992. *Micrasema abghavyani* Schmid, *Bijdr. Dierk.*, **62** (2) : 99-109.

2001. *Micrasema abghavyani* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 230.

Distribution : India : Sikkim.

133. *Micrasema adhiram* Schmid

1992. *Micrasema adhiram* Schmid, *Bijdr. Dierk.*, **62** (2) : 99-109.

2001. *Micrasema adhiram* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 230.

Distribution : India : Sikkim.

134. *Micrasema jihmam* Schmid

1992. *Micrasema jihmam* Schmid, *Bijdr. Dierk.*, **62** (2) : 99-109.

2001. *Micrasema jihmam* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 230.

Distribution : India : Sikkim.

Family UENOIDAE

Genus ***Uenoa*** Iwata

135. *Uenoa hiberna* Kimmins

1964. *Uenoa hiberna* Kimmins, *Bull. Br. Mus. nat. Hist. Ent.*, **15** : 52, figs. 44-46.

2001. *Uenoa hiberna* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 230.

Distribution : India : Sikkim, Arunachal Pradesh, Manipur, Meghalaya, Uttar Pradesh and West Bengal.

Family LIMNEPHILIDAE

Genus ***Apatania*** Kolenati

136. *Apatania devisaraspali* Schmid

1968. *Apatania devisaraspali* Schmid, *Can. Ent.*, **100** : 1234.

2001. *Apatania devisaraspali* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 231.

Distribution : India : Sikkim and Uttar Pradesh.

Remarks : This species was originally described by Schmid (1968) from Sikkim. Higler (1992) also reported its occurrence in Sikkim but Saini *et. al.*, (2001) reported its occurrence in Uttar Pradesh only.

137. *Apatania dirgabahu* Schmid

1968. *Apatania dirgabahu* Schmid, *Can. Ent.*, **100** : 1236.

2001. *Apatania dirgabahu* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 231.

Distribution : India : Sikkim.

Genus ***Aplatyphlax*** Kimmins

138. *Aplatyphlax eupalinos* Schmid

1991. *Aplatyphlax eupalinos* Schmid, *Bull. Ins. R. Sci. nat. Belgique* (Ent.), **61** (Supplement) : 1-68, 13 pl.

2001. *Aplatyphlax eupalinos* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 231.

Distribution : India : Sikkim.

Genus ***Astratodina*** Mosely

139. *Astratodina antenor* Schmid

1991. *Astratodina antenor* Schmid, *Bull. Ins. R. Sci. nat. Belgique* (Ent.), **61** (Supplement) : 1-68, 13 pl.

2001. *Astratodina antenor* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 231.

Distribution : India : Sikkim.

Genus ***Asynarchus*** Mclachlan

140. *Asynarchus tibetanus* Schmid

1966. *Asynarchus tibetanus* Schmid, *Acta. zool. Hungarica*, **12** : 363-369.

2001. *Asynarchus tibetanus* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 231.

Distribution : India : Sikkim.

Genus ***Limnophilus*** Leach

141. ***Limnophilus fuscovittatus*** Schmid

1966. *Limnophilus fuscovittatus* Schmid, *Acta. zool. Hungarica*, **12** : 363-69.

2001. *Limnophilus fuscovittatus* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 232.

Distribution : India : Sikkim.

Genus ***Moropsyche*** Banks

142. ***Moropsyche krichnaruna*** Schmid

1968. *Moropsyche krichnaruna* Schmid, *Can. Ent.* **100** : 1258.

2001. *Moropsyche krichnaruna* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 232.

Distribution : India : Sikkim and Arunachal Pradesh.

143. ***Moropsyche trikonakarni*** Schmid

1968. *Moropsyche trikonakarni* Schmid, *Can. Ent.* **100** : 1253.

2001. *Moropsyche trikonakarni* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 232.

Distribution : India : Sikkim.

Genus ***Notania*** Kimmins

144. ***Notania adhanya*** Schmid

1968. *Notania adhanya* Schmid, *Can. Ent.* **100** : 1267.

2001. *Notania adhanya* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 232.

Distribution : India : Sikkim.

145. ***Notania itarichta*** Schmid

1968. *Notania itarichta* Schmid, *Can. Ent.* **100** : 1268.

2001. *Notania itarichta* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 232.

Distribution : India : Sikkim.

Genus ***Pseudostenophylax*** Martynov

146. ***Pseudostenophylax fimbriatofalcatus*** Schmid

1991. *Pseudostenophylax fimbriatofalcatus* Schmid, *Bull. Inst. R. Sci. nat. Belgigue* (Ent.), **61** (Supple) : 44.

2001. *Pseudostenophylax fimbriatofalcatus* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 232.

Distribution : India : Sikkim.

147. ***Pseudostenophylax glycerion*** Schmid

1991. *Pseudostenophylax glycerion* Schmid, *Bull. Inst. R. Sci. nat. Belgigue* (Ent.), **61** (Supple) : 49.

2001. *Pseudostenophylax glycerion* : Saini *et. al., Rec. zool Surv. India*, **99** (1-4) : 232.

Distribution : India : Sikkim.

148. ***Pseudostenophylax griseolus*** Martynov

1930. *Pseudostenophylax griseolus* Martynov, *Proc. zool. Soc.*, : 97-98, figs. 49-51.

2001. *Pseudostenophylax griseolus* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 233.

Distribution : India : Sikkim.

149. ***Pseudostenophylax himalayanus*** Martynov

1930. *Pseudostenophylax himalayanus* Martynov, *Proc. zool. Soc.*, : 92-95.

2001. *Pseudostenophylax himalayanus* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 233.

Distribution : India : Sikkim.

150. ***Pseudostenophylax pauper*** Schmid

1991. *Pseudostenophylax pauper* Schmid, *Bull, Inst. R. Sci. nat. Belg. Entomol.*, **61** (Supple) : 44.

2001. *Pseudostenophylax pauper* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 233.

Distribution : India : Sikkim.

151. ***Pseudostenophylax secretus*** Martyrnov

1928. *Pseudostenophylax secretus* Martyrnov, *Ann. Mus. Zool. Ac. Sci. URSS*, **28** : 477-480, pl. 23, fig. 7-12, pl. 24, fig. 1-5 (1927).

2001. *Pseudostenophylax secretus* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 233.

Distribution : India : Sikkim and Punjab.

152. *Pseudostenophylax tenuifalcatus* Schmid

1991. *Pseudostenophylax tenuifalcatus* Schmid, *Bull. Inst. R. Sci. nat. Belgique* (Ent.), **61** (Supplement) : 1-68, 13 pl.

2001. *Pseudostenophylax tenuifalcatus* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 1233.

Distribution : India : Sikkim.

Family GOERIDAE

Genus *Goera* Stephens

153. *Goera kausalya* Schmid

1991. *Goera kausalya* Schmid, *Les Goerides en Inde.*, **24** (4) : 305-326.

2001. *Goera kausalya* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 233.

Distribution : India : Sikkim.

154. *Goera mandna* Mosely

1938. *Goera mandna* Mosely, *J. Bombay nat. Hist. Soc.* **40** : 490.

2001. *Goera mandna* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 233.

Distribution : India : Sikkim, Arunachal Pradesh and Assam.

155. *Goera roghu* Schmid

1991. *Goera roghu* Schmid, *Les Goerides en Inde*, **24** (4) : 305-326.

2001. *Goera roghu* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 234.

Distribution : India : Sikkim.

Family LEPTOCERIDAE

Genus *Adicella* Mclachlan

156. *Adicella dirce* Schmid

1994. *Adicella dirce* Schmid, *Fabreries*, **19** (4) : 85-127.

2001. *Adicella dirce* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 235.

Distribution : India : Sikkim.

157. *Adicella eloa* Schmid

1994. *Adicella eloa* Schmid, *Fabreries*, **19** (4) : 85-127.

2001. *Adicella eloa* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 235.

Distribution : India : Sikkim.

158. *Adicella enone* Schmid

1994. *Adicella enone* Schmid, *Fabreries*, **19** (4) : 85-127.

2001. *Adicella enone* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 235.

Distribution : India : Sikkim.

159. *Adicella euphrosyne* Schmid

1994. *Adicella euphrosyne* Schmid, *Fabreries*, **19** (4) : 85-127.

2001. *Adicella euphrosyne* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 236.

Distribution : India : Sikkim.

160. *Adicella evohe* Schmid

1994. *Adicella evohe* Schmid, *Fabreries*, **19** (4) : 85-127.

2001. *Adicella evohe* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 236.

Distribution : India : Sikkim.

161. *Adicella myrtho* Schmid

1994. *Adicella myrtho* Schmid, *Fabreries*, **19** (4) : 85-127.

2001. *Adicella myrtho* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 236.

Distribution : India : Sikkim.

162. *Adicella nyse* Schmid

1994. *Adicella nyse* Schmid, *Fabreries*, **19** (4) : 85-127.

2001. *Adicella nyse* : Saini *et. al., Rec. zool. Surv. India*, **99** (1-4) : 236.

Distribution : India : Sikkim.

Genus ***Poecilopsyche*** Schmid

163. ***Poecilopsyche bimasena*** Schmid

1968. *Poecilopsyche bimasena* Schmid, *Mem. Soc. ent. Quebec. Entomol.*, **(1)** : 14.

2001. *Poecilopsyche bimasena* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 238.

Distribution : India : Sikkim.

164. ***Poecilopsyche pandava*** Schmid

1968. *Poecilopsyche pandava* Schmid, *Mem. Soc. ent. Quebec.* **(1)** : 24.

2001. *Poecilopsyche pandava* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 239.

Distribution : India : Sikkim.

165. ***Poecilopsyche suyadhana*** Schmid

1968. *Poecilopsyche suyadhana* Schmid, *Mem. Soc. ent. Quebec.* **(1)** : 26.

2001. *Poecilopsyche suyadhana* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 239.

Distribution : India : Sikkim.

Genus ***Setodes*** Rambur

166. ***Setodes aparimeya*** Schmid

1987. *Setodes aparimeya* Schmid, *Bull. Inst. R. Sci. Nat. Belg. Entomol.*, **57** (Supple) : 72.

2001. *Setodes aparimeya* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 239.

Distribution : India : Sikkim, Arunachal Pradesh.

167. ***Setodes dhanavriddha*** Schmid

1987. *Setodes dhanavriddha* Schmid, *Bull. Inst. R, Sci. Nat. Belg. Entomol.*, **57** (Supple) : 45.

2001. *Setodes dhanavriddha* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 240.

Distribution : India : Arunachal Pradesh and Uttar Pradesh.

168. ***Setodes tchaturadanta*** Schmid

1987. *Setodes tchaturadanta* Schmid, *Bull. Inst. R. Sci. Nat. Belg. Entomol.*, **57** (Supple) : 68.

2001. *Setodes tchaturadanta* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 242.

Distribution : India : Sikkim.

169. ***Setodes yatharupa*** Schmid

1987. *Setodes yatharupa* Schmid, *Bull. Inst. R. Sci. Nat. Belg. Entomol.*, **57** (Supple) : 70.

2001. *Setodes yatharupa* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 242.

Distribution : India : Sikkim.

Genus ***Trichosetodes*** Ulmer

170. ***Trichosetodes atidhanin*** Schmid

1987. *Trichosetodes atidhanin* Schmid, *Bull. Inst. R. Sci. Nat. Belg. Entomol.*, **57** (Supple) : 98.

2001. *Trichosetodes atidhanin* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 243.

Distribution : India : Sikkim, Uttar Pradesh and West Bengal.

Family LIMNOCENTROPODIDAE

Genus ***Limnocentropus*** Ulmer

171. ***Limnocentropus fletcheri*** Mosely

1935. *Limnocentropus fletcheri* Mosely, *J. Bombay nat. Hist. Soc.*, **38** (1) : 132, pl. 13, figs. 34-37.

2001. *Limnocentropus fletcheri* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 244.

Distribution : India : Sikkim.

172. ***Limnocentropus himalayanus*** Martynov

1930. *Limnocentropus insolitus himalayanus* Martynov, *Proc. Zool. Soc.*, : 91

2001. *Limnocentropus himalayanus* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 244.

Distribution : India : Sikkim.

173. ***Limnocentropus insolitus*** Ulmer

1907. *Limnocentropus insolitus* Ulmer, *In Collection Zoologigues de Baron Edm. de selys Longchamp. fanc VI,* : 13.

2001. *Limnocentropus insolitus* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 244.

Distribution : India : Sikkim and West Bengal.

174. *Limnocentropus mergatus* Kimmins

1950. *Limnocentropus mergatus* Kimmins, *Ann. Mag. Nat. Hist.,* (12) **3** : 597, fig. 5.

2001. *Limnocentropus mergatus* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 244.

Distribution : India : Sikkim.

Family ODONTOCERIDAE

Genus *Psilotreta* Banks

175. *Psilotreta assamensis* Parker & Wiggins

1987. *Psilotreta assamensis* Parker & Wiggins, *Life Sci. Contrib. Royal Ontraio Mus.,* **144** : 1-55.

2001. *Psilotreta assamensis* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 245.

Distribution : India : Sikkim and Arunachal Pradesh.

176. *Psilotreta schmidi* Parker & Wiggins

1987. *Psilotreta schmidi* Parker & Wiggins, *Life Sci. Contrib. Royal Ontraio Mus.,* **144** : 1-55.

2001. *Psilotreta schmidi* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 245.

Distribution : India : Sikkim.

Family HELICOPSYCHIDAE

Genus *Cochliophylax* Schmid

177. *Cochliophylax astynome* Schmid

1993. *Cochliophylax astynome* Schmid, *Beaufortia,* **43** (5) : 93 fig. d.

2001. *Cochliophylax astynome* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 245.

Distribution : India : Sikkim.

178. *Cochliophylax hippothae* Schmid

1993. *Cochliophylax hippothae* Schmid, *Beaufortia,* **43** (5) : 93 fig. d.

2001. *Cochliophylax hippothae* : Saini *et. al., Rec. zool. Surv. India,* **99** (1-4) : 245.

Distribution : India : Sikkim.

ACKNOWLEDGEMENTS

The author is grateful to the Director, Zoological Survey of India, Kolkata for providing laboratory facilities. Thanks are also due to Dr. F. Schmid, Biosystematic Research Centre, Ontario, Canada for providing collection of Trichoptera literature and also for his valuable suggestions. Thanks are also due to Dr. A. K. Hazra, Scientist-E and Sri I. J. Gupta, Officer-in-Charge, Lepidoptera Section for going through the manuscript and help in many ways.

LIST OF SPECIES FROM SIKKIM

Family RHYACOPHILIDAE

Genus *Rhyacophila* Pictet

1. *Rhyacophila alticola* Kimmins
2. *Rhyacophila anatina* Morton
3. *Rhyacophila angden* Schmid
4. *Rhyacophila auriostigma* Schimd
5. *Rhyacophila bidens* Kimmins
6. *Rhyacophila chakungpa* Schmid
7. *Rhyacophila changpo* Schmid
8. *Rhyacophila chayulpa chayulpa* Schmid
9. *Rhyacophila chematangpa* Schmid
10. *Rhyacophila chugalungpa* Schmid
11. *Rhyacophila chulukpa* Schmid
12. *Rhyacophila curvata* Morton
13. *Rhyacophila dakshi* Schmid
14. *Rhyacophila dongkyapa* Schmid
15. *Rhyacophila dongra* Schmid
16. *Rhyacophila drokpa* Schmid
17. *Rhyacophila drotangpa* Schmid
18. *Rhyacophila fletcheri* (Kimmins)
19. *Rhyacophila gelukapa* Schimd
20. *Rhyacophila gyelbu* Schmid
21. *Rhyacophila hingstoni* Martynov
22. *Rhyacophila hobsoni* Martynov

23. *Rhyacophila kando* Schmid
24. *Rhyacophila khasiorum* Schmid
25. *Rhyacophila khiyampa* Schmid
26. *Rhyacophila kubra* Schmid
27. *Rhyacophila kyadongpa* Schmid
28. *Rhyacophila laptsapa* Schmid
29. *Rhyacophila lepcha* Schmid
30. *Rhyacophila nabochepa* Schmid
31. *Rhyacophila ngorpa* Schmid
32. *Rhyacophila nyamangpa* Schmid
33. *Rhyacophila obscura* Martynov
34. *Rhyacophila poba* Schmid
35. *Rhyacophila rongpa* Schmid
36. *Rhyacophila sanglungpa* Schmid
37. *Rhyacophila scissa* Morton
38. *Rhyacophila scissoides* Kimmins
39. *Rhyacophila sherpa* Schmid
40. *Rhyacophila shingripa* Schmid
41. *Rhyacophila stenostyla* Martynov
42. *Rhyacophila tarkiya* Schmid
43. *Rhyacophila tashepa* Schmid
44. *Rhyacophila tashidingpa* Schmid
45. *Rhyacophila tengyelingpa* Schmid
46. *Rhyacophila tshringpa* Schmid
47. *Rhyacophila tshogpa* Schmid
48. *Rhyacophila tshongkhapa* Schmid
49. *Rhyacophila yarlungpa* Schmid
50. *Rhyacophila yigrongpa* Schmid
51. *Rhyacophila yishepa* Schmid
52. *Rhyacophila yulha* Schmid
53. *Rhyacophila zhungpa* Schmid

Genus ***Himalopsyche*** Banks

54. *Himalopsyche amitava* Schmid & Botsoneanu
55. *Himalopsyche angorbut* Schmid
56. *Himalopsyche biansata* Kimmins
57. *Himalopsyche digitata* (Martynov)
58. *Himalopsyche dolmasampa* Schmid
59. *Himalopsyche gyamo* Schmid
60. *Himalopsyche horai* (Martynov)
61. *Himalopsyche lanceolatata* (Morton)
62. *Himalopsyche lepcha* Schmid
63. *Himalopsyche malenanda* Schmid
64. *Himalopsyche phedogensis* Kimmins
65. *Himalopsyche tibetana* (Martynov)
66. *Himalopsyche yongma* Schmid

Family HYDROBIOSIDAE
Genus ***Apsilochorema*** Ulmer

67. *Apsilochorema annandalei* Martynov
68. *Apsilochorema tigmatejanam* Schmid
69. *Apsilochorema vaneyam* Schmid

Family HYDROPTILIDAE
Genus ***Stactonbia*** Mclachlan

70. *Stactobia colin* Schmid
71. *Stactobia ori* Schmid
72. *Stactobia snori* Schmid
73. *Stactobia snuffi* Schmid
74. *Stactobia thrain* Schmid
75. *Stactobia throli* Schmid

Family GLOSSOSOMATIDAE
Genus ***Glossosoma*** Curtis

76. *Glossosoma caudatum fissum* Martynov
77. *Glossosoma dentatum akhandam* Schmid
78. *Glossosoma dirghakantakam* Schmid
79. *Glossosoma kamarasikam* Schmid
80. *Glossosoma kchinam* Schmid
81. *Glossosoma nigroseum* Schmid
82. *Glossosoma varjakantakan* Schmid

Family STENOPSYCHIDAE
Genus ***Stenopsyche*** Mclachlan

83. *Stenopsyche dirghajivi* Schmid
84. *Stenopsyche griseipennis* Mclachlan
85. *Stenopsyche haimavatika* Schimd
86. *Stenopsyche himalayana* Martynov
87. *Stenopsyche similis* Ulmer
88. *Stenopsyche splendida* Martynov

Family PHILOPOTAMIDAE
Genus ***Gunungiella*** Ulmer

89. *Gunungiella dvitiya* Schmid
90. *Gunungiella prathama* Schmid

Genus ***Wormaldia*** Mclachlan

91. *Wormaldia melanion* Schmid

Family XIPHOCENTRONIDAE
Genus ***Proxiphocentron*** Schmid

92. *Proxiphocentron prathamajam* Schmid

Genus ***Cnodocentron*** Schmid

93. *Cnodocentron tchaturbhuja* Schmid

Genus ***Drepanocentron*** Schmid

94. *Drepanocentron abhimanyu* Schmid
95. *Drepanocentron dacharatha* Schmid
96. *Drepanocentron vichitravirya* Schmid

Genus ***Abaria*** Mosely

97. *Abaria margaritifera* Schmid
98. *Abaria richika* Schmid
99. *Abaria uchinara* Schmid

Family PSYCHOMYIIDAE
Genus ***Tinodes*** Leach

100. *Tinodes achtachastra* Schmid
101. *Tinodes alpachastra* Schmid
102. *Tinodes atichastra* Schmid

Genus ***Psychomyia*** Latrille

103. *Psychomyia asvagosha* Schmid
104. *Psychomyia dugpa* Schmid
*105. *Psychomyia karkii* Malicky.
106. *Psychomyia scottae* Schmid
107. *Psychomyia wangii* Schmid

Family POLYCENTROPIDAE
Genus ***Plectrocnemia*** Stephens

108. *Plectrocnemia aurea* Ulmer
109. *Plectrocnemia banksi* Fischer
110. *Plecrocnemia navasi* Ulmer

Family HYDROPSYCHIDAE
Genus ***Hydropsyche*** Pictet

111. *Hydropsuche asiatica* Ulmer
112. *Hydropsuche luctuosus* (Ulmer)

Genus ***Macrostemum*** Kolenati

113. *Macrostemum fastosum* (Walker)

Genus ***Parapsyche*** Betten

114. *Parapsyche mahati* Schmid

Genus ***Arctopsyche*** Mclachlan

115. *Arctopsyche compositus* Martynov
116. *Arctopsyche fissa* Schmid
117. *Arctopsyche inequispinosa* Schmid
118. *Arctopsycha integra* Schmid
119. *Arctopsyche lobata* Martynov

Family PHRYGANOPSYCHIDAE
Genus ***Phryganopsyche*** Wiggins

120. *Phryganopsyche lattipennis* (Banks)

Family PHRYGAENIDAE
Genus ***Eubasilissa*** Marynov

121. *Eubasilissa machlachlani* (White)
122. *Eubasilissa tibetana* Martynov

Genus ***Neurocyta*** Navas

123. *Neurocyta arenata* Navas

Fimily `LEPIDOSTOMATIDAE
Genus ***Adinarthrella*** Mosely

124. *Adinarthrella kimsa* Mosely

Genus ***Adinarthrum*** Mosely

125. *Adinarthrum kurseum* Mosely

Genus ***Agoerodes*** Mosely

126. *Agoerodes sika* Mosely

Genus ***Paraphlegopteryx*** Ulmer

127. *Paraphlegoperyx orestes* Weaver
128. *Paraphlegopteryx pippini* Weaver
129. *Paraphlegopteryx ulmeri* Weaver
130. *Paraphlegopteryx normalis* Mosely
131. *Paraphlegopteryx schmidi* Weaver

Famil BRACHYCENTRIDAE
Genus ***Brachycentrus*** Curtis

132. *Brachycentrus kozlovi* Martynov

* Saini *el al.* (2001) listed this species from Sikkim original reference of this species has not been seen, therefore it has not been included in the text.

Genus ***Micrasema*** Mclachlan

133. *Micrasema abghavyani* Schmid
134. *Micrasema adhiram* Schmid
135. *Micrasema jihmam* Schmid

Family UENOIDAE
Genus ***Uenoa*** Iwata

136. *Uenoa hiberna* Kimmins

Family LIMNEPHILIDAE
Genus ***Apatania*** Kolenati

137. *Apatania devisaraspali* Schmid
138. *Apatania dirghabahu* Schmid

Genus ***Aplatyphlax*** Kimmins

139. *Aplatyphlax eupalinos* Schimd

Genus ***Astratodina*** Mosely

140. *Astratodina antenor* Schmid

Genus ***Asynarchus*** Mclachlan

141. *Asynarchus tibetanus* Schmid

Genus ***Limnophilus*** Leach

142. *Limnephilus fuscovittatus* Schmid

Genus ***Moropsyche*** Banks

143. *Moropsyche kricharuna* Schmid
144. *Moropsyche trikonakarni* Schmid

Genus ***Notania*** Kimmins

145. *Notania adhanya* Schmid
146. *Notania itarichta* Schmid

Genus ***Pseudostenophylx*** Martynov

147. *Pseudostenophylax fimbriatofalcatus* Schmid
148. *Pseudostenophylax glycerion* Schmid
149. *Pseudostenophylax griseolus* Martynov
150. *Pseudostenophylax himalayanus* Martynov
151. *Pseudostenophylax pauper* Schmid
152. *Pseudostenophylax secretus* Martynov
153. *Pseudostenophylax tenuifalcatus* Schmid

Family GOERIDAE
Genus ***Goera*** Stephens

154. *Goera kausalya* Schmid
155. *Goera mandna* Mosely
156. *Goera raghu* Schmid

Family LEPTOCERIDAE
Genus ***Adicella*** Mclachlan

157. *Adicella dirce* Schmid
158. *Adicella eloa* Schmid
159. *Adicella enone* Schmid
160. *Adicella euphrosyne* Schmid
161. *Adicella evoha* Schmid
162. *Adicella myrtho* Schmid
163. *Adicella nyse* Schmid

Genus ***Poecilopsyche*** Schmid

164. *Poecilopsyche bimasena* Schmid
165. *Poecilopsyche pandava* Schmid
166. *Poecilopsyche suyodhana* Schmid

Genus ***Setodes*** Rambur

167. *Setodes aparimeya* Schmid
168. *Setodes dhanavriddha* Schmid
169. *Setodes tchaturdanta* Schmid
170. *Setodes yatharupa* Schmid

Genus ***Trichosetodes*** Ulmer

171. *Trichosetodes atidhanin* Schmid

Family LIMNOCENTROPIDAE
Genus ***Limnocentropus*** Ulmer

172. *Limnocentropus fletcheri* Mosely
173. *Limnocentropus himalayanus* Msrtynov
174. *Limnocentropus insolitus* Ulmer
175. *Limnocentropus mergatus* Kimmins

Family ODONTOCERIDAE
Genus ***Psilotreta*** Banks

176. *Psilotreta assamensis* Parker&Wiggins
177. *Psiloterta schmidi* Parker&Wiggins

Family HELICOPSYCHIDAE
Genus ***Cochlilophylax*** Schmid

178. *Cochlilophylax astynome* Schmid
179. *Cochlilophylax hippothae* Schmid

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INSECTA : HYMENOPTERA : VESPIDAE

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INTRODUCTION

The family Vespidae belongs to superfamily Vespoidea which includes true wasps. The superfamily Vespoidea is one of the seven recently recognised superfamilies of aculeate Hymenoptera. There are about 700 species known under Vespidae from the world.

The complex social organisation and nest architecture make these wasps fascinating insects. Whereas their painful sting may, sometimes, prove fatal yet their venom has its utilization in immunisation. Despite their interesting features and economic importance, they are chiefly predators of insect larvae and some of the species serve as effective predators for the control of some insect pests of agricultural crops.

Our knowledge about these wasps is very limited. The important works available on Indian wasps are by Bingham (1897), Das and Gupta (1977, 1983, 1989). Besides these, there are some important contributions on wasps of Oriental Region by van der Vecht (1935-1979), Archer (1980-1987), Kojima (1982-1988), Yamane (1974 -1987) and Williams (1983-1988). Jonathan, Roy and Kundu (2000a,b) had published a consolidated account of the family Vespidae of the state of West Bengal and Meghalaya.

An attempt has been made here to provide a consolidated information on the Vespidae fauna of the state of Sikkim in India.

The family Vespidae is characterised by the following characters : Antennae 13-segmented in male and 12-segmented in female; eyes emarginate; pronotum extending back to tegula, and mesopleurum without any oblique suture; wings longitudinally folded in repose (except in Masarinae and Stenogastrinae), fore wing with first discoidal cell elongate and longer than submedian cell, hind wing with an anal cell and enclosed cells; trochanters not divided and trochantellus absent, middle tibiae with one or two apical spurs, tarsal claws toothed, bifid or simple; thorax and gaster joined together by a long and slender or short petiole; gaster with spiracles on 1-7 segments and a sting without sheaths; male genitalia with characteristic spiniform parameres.

SYSTEMATICS

There are about 700 species of Vespidae known from the world and are classified under five subfamilies. In India, the family is represented by about 135 species/subspecies, 11 genera/ subgenera under three subfamilies.

In Sikkim, the Vespidae is represented by three subfamilies, *viz.*, Stenogastrinae, Vespinae and Polistinae. The present work records 32 species/ subspecies under 9 genera and 7 subgenera from this state.

The keys to the subfamilies, tribes, genera, subgenera, species and subspecies are provided for the identification of various taxa of this region. Illustrations of taxonomic terms used in the present work are included for ready reference.

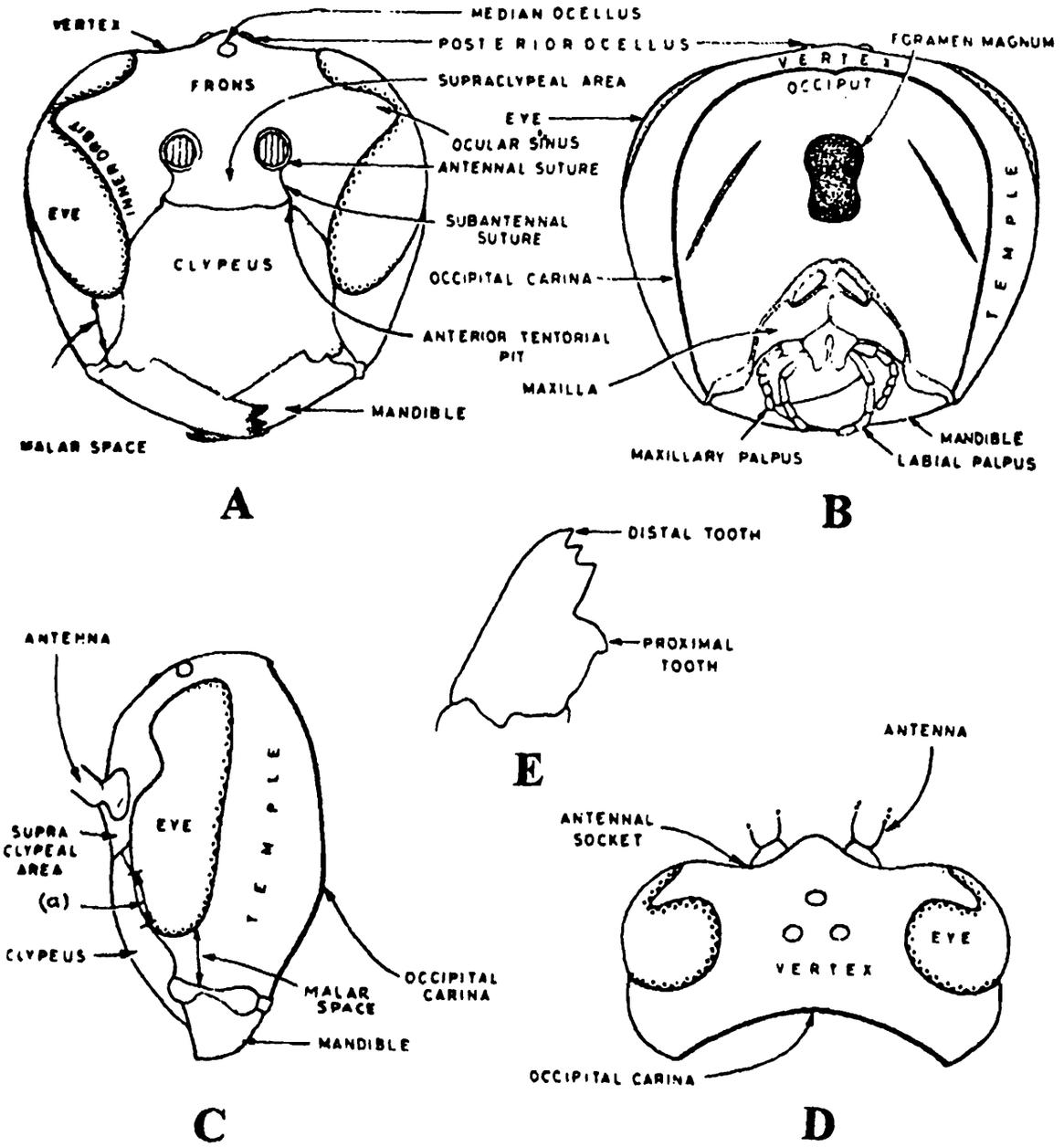


Fig. 1. Structure of head of Vespidae : A, front view; B, posterior view; C, side view – (a) lateral margin of clypeus that lies along eye margin; D, dorsal view; E, mandible (after Das and Gupta, 1989).

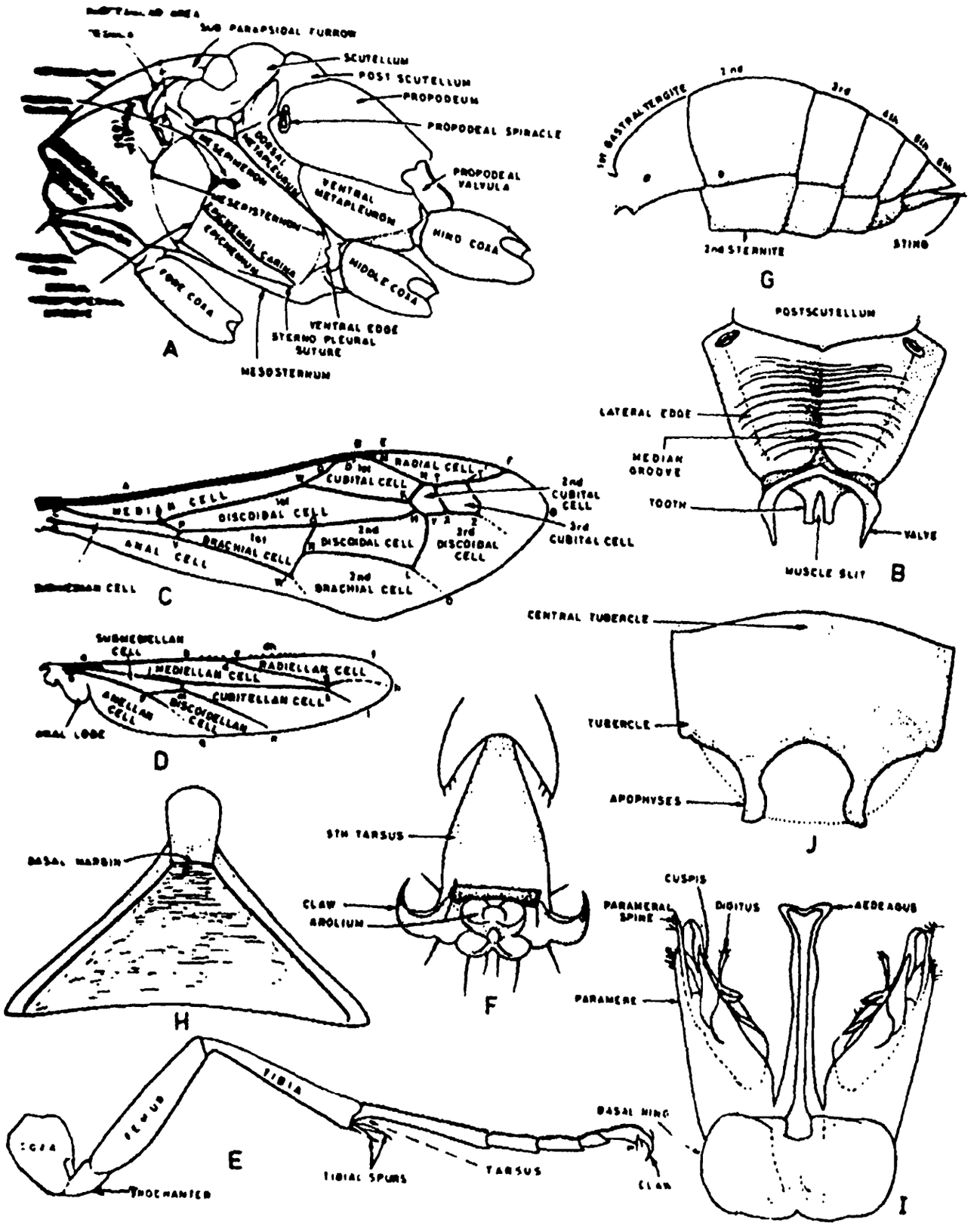


Fig. 2. Structure of thorax, wings, gaster, legs and male genital organs of Vespidae. A. Thorax, side view. B. Propodeum, dorsal view; C, D, Fore and hind wings; E. Leg; F. Fifth tarsal segment; G. Gaster, side view; H. First gastral sternite, ventral view; I. Male genitalia; J. Male subgenital plate (after Das and Gupta, 1989).

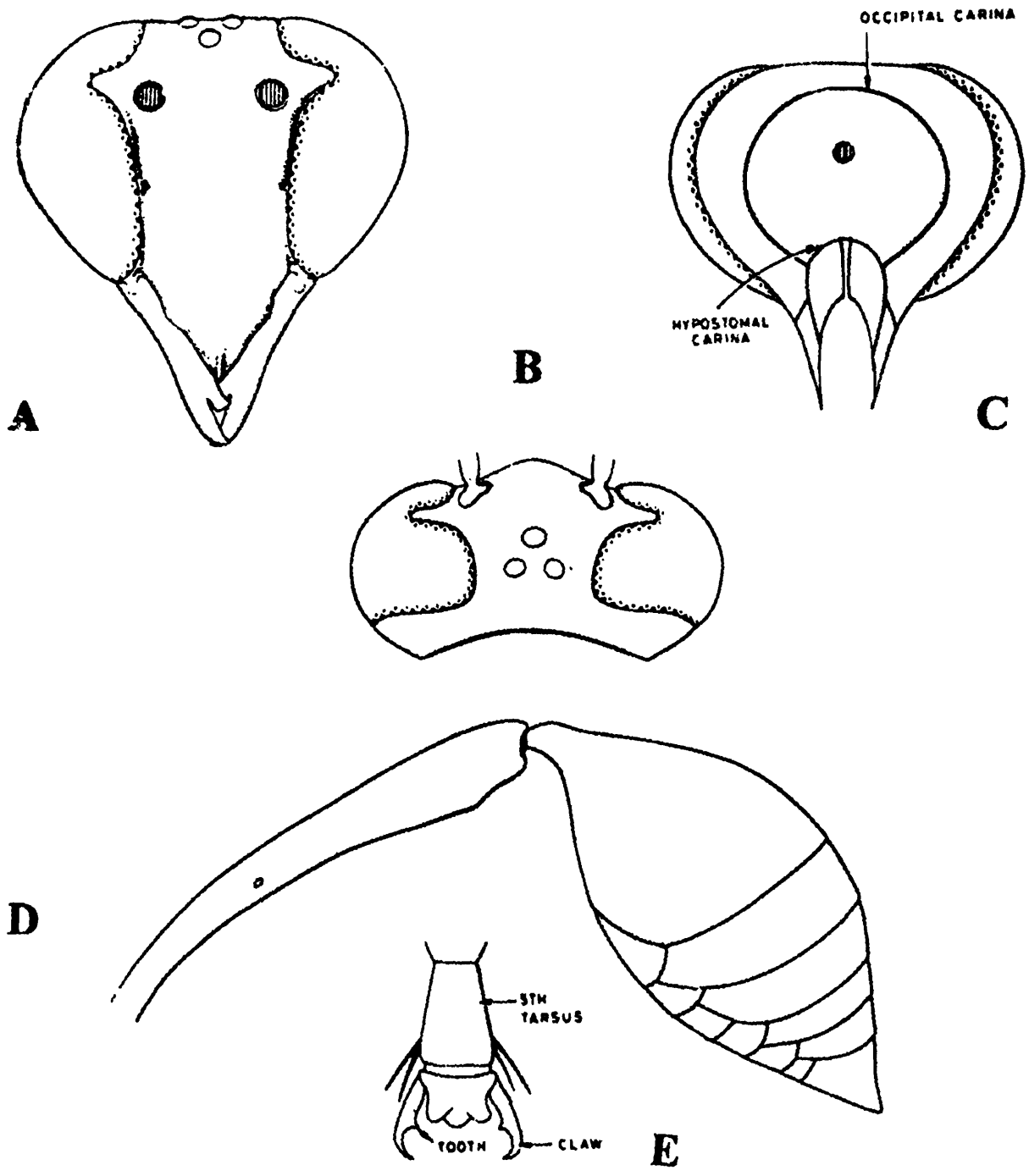


Fig. 3. Structure of head, thorax, fifth tarsal segment and gaster of Stenogastrinae : A, head, front view; B, head, dorsal view; C, head, posterior view; D, gaster; E, fifth tarsal segment (after Das and Gupta, 1989).

TAXONOMIC TERMINOLOGY

The morphological terms used in the present work are mainly based on the works of Richards (1956, 1973), Sehgal (1963), van der Vecht (1941, 1975) and Das and Gupta (1989). The morphological terms used in the text are illustrated in figures 1, 2 and 3.

SYSTEMATIC ACCOUNT

Family VESPIDAE

1. Subfamily STENOGASTRINAE

1. Genus ***Eustenogaster*** van der Vecht, 1969

1. *scitula* (Bingham), 1897
2. *hauxwellii* (Bingham), 1894

2. Genus ***Parischnogaster*** Schulthess, 1914

3. *mellyi* (Saussure), 1852

2. Subfamily POLISTINAE

1. Tribe **Polistini**

3. Genus ***Polistes*** Latreille, 1802

1. Subgenus ***Polistes (Gyrostoma)*** Kirby and Spence, 1838

4. *gigas* (Kirby and Spence), 1826

2. Subgenus ***Polistes (Nygmopolistes)*** Richards, 1973

5. *tenebricosus sulcatus* Smith, 1852

3. Subgenus ***Polistes (Megapolistes)*** van der Vecht, 1968

6. *olivaceus* (De Geer), 1773
7. *rothneyi sikkimensis* van der Vecht, 1968

4. Subgenus ***Polistes (Polistella)*** Ashmead, 1904

8. *adustus* Bingham, 1897
9. *santoshae* Das and Gupta, 1989
10. *strigosus atratus* Das and Gupta, 1989
11. *sagittarius* Saussure, 1853
12. *assamensis* Bingham, 1897

2. Tribe **Ropalidiini**

4. Genus ***Ropalidia*** Guérin, 1838

5. Subgenus ***Ropalidia (Anthreneida)*** White, 1841

13. *brevita* Das and Gupta, 1989
14. *santoshae* Das and Gupta, 1989
15. *rufocollaris rufocollaris* (Cameron), 1900
16. *stigma stigma* (Smith), 1858
17. *fasciata* (Fabricius), 1804

6. Subgenus ***Ropalidia (Icarielia)*** Dalla Torre, 1904

18. *scitula* (Bingham), 1897

3. Tribe **Polybiini**

5. Genus ***Parapolybia*** Saussure, 1853

19. *varia* (Fabricius), 1787

3. Subfamily VESPINAE

6. Genus ***Vespa*** Linnaeus, 1758

7. Subgenus ***Vespa (Vespa)*** Linnaeus, 1758

20. *analis nigrans* Buysson, 1903
21. *basalis* Smith, 1852
22. *bicolor* Fabricius, 1787
23. *mandarinia magnifica* Smith, 1852
24. *mocsaryana* Buysson, 1905
25. *tropica haematodes* Bequaert, 1936
26. *tropica ducalis* Smith, 1852
27. *velutina nigrithorax* Buysson, 1905
28. *vivax* Smith, 1870

7. Genus ***Provespa*** Ashmead, 1903

29. *anomala* (Saussure), 1853
30. *barthelemyi* (Buysson), 1905

8. Genus ***Dolichovespula*** Rohwer, 1916

31. *lama* (Buysson), 1903

9. Genus ***Vespula*** Thomson, 1869

32. *flaviceps flaviceps* (Smith), 1872

SYSTEMATIC ACCOUNT

Family VESPIDAE

Key to the Subfamilies of VESPIDAE
(After Das and Gupta, 1989)

1. Wings not folded longitudinally when at rest. Tarsal claws with one tooth. Mandible elongate. Occipital carina either joining with or almost reaching near to hypostomal carina. Antennal sockets far apart, separated from the basal margin of clypeus by a long supraclypeal area. In male, clypeus and mandible produced like a beak. Nervulus distinct. Second cubital cell rectangular. Thorax short, globular; first gastral segment petiolate, longer than rest of the gaster ..... STENOGASTRINAE

– Wings folded longitudinally when at rest. Tarsal claw simple, without tooth. Mandibles of normal shape. Occipital carina joining with or running towards the base of mandible. Antennal sockets not very far apart and separated from the basal margin of clypeus by short supraclypeal area. In male, clypeus and mandible normal, not beak shaped. Nervulus short. First cubital cell larger than second cubital cell. Thorax normal. First gastral segment petiolate or subpetiolate or sessile, not much longer than the rest of the gaster 2

2. Hind wing usually with an anal lobe. Hind coxa without a dorsal carina. Mesepimeron not completely or not at all separated from the mesepisternum. Dorsal episternal groove and epicnemial carina present or absent. Gaster petiolate or subpetiolate. 1st tergite gradually curving from base to apex. Occipital carina always present. Apical margin of clypeus in female gradually tapering into a sharp or blunt tooth. Apical margin of postscutellum not at all or weakly produced in the middle of propodeum at base. Propodeum transversely rugose and curved at sides, its apical orifice elongate. Mandibles smaller, not expanded apically. Male antenna with a hook-like bend at apex. Smaller, more slender species with nest consisting of a single horizontal or vertical naked comb that is not enclosed by papery envelopes (*Ropalidia* has species which may build an envelope round the comb; some species have more than one comb) .... POLISTINAE

– Hind wing without an anal lobe. Hind coxa with a dorsal carina on posterior surface. Mesepimeron completely separated from mesepisternum. Dorsal episternal groove and epicnemial carina always absent. Gaster sessile, 1st tergite anteriorly truncate with an anterior vertical face and a posterior horizontal face, the two making a right angle. Occipital carina absent dorsally, usually present laterally but may or may not reach base of mandible. Apical margin of clypeus broadly truncate or emarginate medially forming two lateral sharp or blunt lobes. Apical margin of postscutellum produced in the middle forming a long triangular lobe in the basal part of propodeum. Propodeum almost vertical and without rugosities, with a circular apical orifice. Mandibles large with an expanded apical margin. Male antenna straight apically, without a hook-like bend. Larger, stouter species with nest consisting of several combs on a horizontal plane and wrapped by a papery envelope VESPINAE

1. Subfamily STENOGASTRINAE

The Stenogastrinae, a primitive group of wasps, are occupying an intermediate position between solitary Eumenidae and social Polistinae and Vespinae of family Vespidae. The members of this subfamily show diversity in social behavior from solitary to primitively social to eusocial behavior. They build their nests in different forms with masticated vegetable fibres or soil particles or stones, leaves and bark of the trees. More than one female may be present in one nest. The adult wasps do not fold their wings when at rest. Bingham (1890) reported that the solitary nests are made by a single pair of the large size species,

while the several members amongst the smaller species made the celled social nests in tier which are cylindrical or bell-like or hexagonal in shape.

The subfamily Stenogastrinae is represented by seven genera : *Liostenogaster* van der Vecht, 1969; *Eustenogaster* van der Vecht, 1969; *Parischnogaster* Schulthess, 1914; *Anischnogaster* van der Vecht, 1969; *Metischnogaster* van der Vecht, 1969; *Holischnogaster* van der Vecht, 1969 and *Stenogaster* Guérin, 1838. Of these, first three genera occur in Indian subregion. Only two genera, viz., *Eustenogaster* and *Parischnogaster* have been reported from Sikkim (Das and Gupta, 1989).

Diagnostic characters : Body elongate; clypeus generally convex basally, but slightly depressed below middle and convex apically, apical margin of clypeus with a pointed tooth; in male, clypeus and mandible produced like a beak; supraclypeal area very long; occipital carina joining or reaching near hypostomal carina; in female antenna 12-segmented and in male 13-segmented; pronotal carina absent; pronotal fovea absent, apical margin of pronotum laterally with an oval area; scutellum without median groove, but median carina may or may not present mesepimeron totally separated from mesepisternum; propodeum with or without distinct median groove and striations; middle and hind tibia with one long and one short tibial spur; tarsal claw unidentate; fore wing with 4 cubital cells; first cubital cell shorter than second cubital cell; nervulus distinct; first gastral segment petiolate, much longer than the rest of the gaster.

Key to the genera of Stenogastrinae

1. Second segment of maxillary palpus more than 2x as long as third segment; hind wing with brownish narrow band on ventral margin at base; larger species ..... ***Eustenogaster*** van der Vecht
- Second segment of maxillary palpus less than 2x as long as third segment; hind wing without brownish narrow band; usually smaller species 2
2. Occipital carina meeting hypostomal carina; gastral petiole more than 1.5x as long as thorax; second gastral segment petiolate at base; mouth parts short, extended slightly beyond the tip of clypeus; antenna strongly swollen beyond seventh segment ..... ***Parischnogaster*** Schulthess
- Occipital carina not meeting hypostomal carina; gastral petiole about 1.5x as long as thorax; second gastral segment not petiolate at base; mouth parts long, extended far beyond the tip of clypeus; antenna gradually swollen apically ..... ***Liostenogaster*** van der Vecht*

(*Not recorded from Sikkim).

1. Genus *Eustenogaster* van der Vecht

1969. *Eustenogaster* van der Vecht, *Nature and Life in S.E. Asia*, **6** : 165; Das and Gupta, 1989, *Oriental Ins. Monogr.*, **11** : 22. Type-species : *Ischnogaster micans* Saussure, 1852.

This genus is represented by four species, viz., *scitula* (Bingham), 1897; *hauxwellii* (Bingham), 1894; *eximia* (Bingham), 1890 and *fraterna* (Bingham), 1897 from Indian subregion. Of these, *E. scitula* and *E. hauxwellii* have been recorded from the state of Sikkim.

Key to the species of *Eustenogaster*

1. Gaster widest at both second and third segments; propodeum with an inverted 'T'-shaped yellow mark on each side; clypeus entirely yellow .....*hauxwellii* (Bingham)
- Gaster widest at second segment only; propodeum usually entirely black; clypeus only longitudinally yellow in the middle ..... *scitula* (Bingham)

1. *Eustenogaster scitula* (Bingham)

1897. *Ischnogaster scitula* Bingham, *Fauna Biritsh India, Hymenoptera*, **1** : 377, 379 F, key, des. Type : Female, India : Assam : Margherita; Sikkim : Ranjit Valley (British Museum).

1989. *Eustenogaster scitula* (Bingham) : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 24.

Distribution : India : Sikkim, Meghalaya and Assam. *Elsewhere* : Myanmar and Thailand.

Remarks : This species is readily distinguished by having gaster widest at second segment and clypeus not continuous with inner eye margin. Propodeum entirely black (Das and Gupta, 1989).

2. ***Eustenogaster hauxwellii*** (Bingham)

1894. *Ischnogaster hauxwellii* Bingham, *J. Bombay Nat. Hist. Soc.*, **8** : 386, M, F, des., fig. Type : Female, Myanmar (British Museum).

1989. *Eustenogaster hauxwellii* (Bingham) : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 25.

Distribution : India : Sikkim, *Elsewhere* : Indonesia, Thailand, Malaysia and Myanmar.

2. Genus ***Parischnogaster*** Schulthess

1914. *Parischnogaster* Schulthess, *Zool. Jahrb. Syst.*, **37** : 255; Das and Gupta, 1989, *Oriental Ins. Monogr.*, **11** : 20. Type-species : *Ischnogaster mellyi* Saussure, 1852.

This genus is represented only by a single species, *P. mellyi* (Saussure), 1852 in Indian subregion.

3. ***Parischnogaster mellyi*** (Saussure)

1852. *Ischnogaster mellyi* Saussure, *Ann. Soc. Ent. France*, **2** (10) : 25, fig. Type : ?, Java (Geneva Museum).

1989. *Parischnogaster mellyi* (Saussure) : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 21.

Diagnostic characters : Female : Body 10 mm long; Body narrow, covered with fine silvery pubescence. Head wider than thorax; clypeus slightly longer than wide, with a pointed tooth apically; supraclypeal area, interantennal space, frons, vertex up to posterior ocelli, mesoscutum, scutellum, mesopleuron rugoso-reticulate; inner orbit, ocular sinus generally smooth; interocular distance on vertex as long as clypeus; postscutellum with a few punctures in the middle; propodeum with irregular narrow striations and distinct median groove; gastral petiole long, strongly swollen towards apex and slightly narrowed at apex; gaster widest at both second and third segment.

Head and thorax in general dark brown. Antenna, pronotum, mesopleuron, metapleuron (except the yellow marks), sides of propodeum, legs (except the yellow marks) and gaster reddish-brown. Yellow are : clypeus at apex, mandible, antennal scape, a band on pronotum, three spots on mesoscutum, two circular marks on scutellum, postscutellum at base, two marks on mesepisternum, a mark on dorsal metapleuron, two marks at the apex of propodeum, fore coxa in front, femora apically, a line below on fore and middle tibiae, a short line on gastral petiole on side at apex, another line on the side of second gastral tergite and elongate mark on either side of third to fifth tergites, second sternite on sides and third to sixth sternites largely.

Distribution : India : Sikkim, Assam and Meghalaya. *Elsewhere* : Indonesia, Malaysia, Myanmar, Thailand, Vietnam.

Remarks : Das and Gupta (1989) give a detailed account of this species.

2. Subfamily POLISTINAE

These are commonly called Paper-wasps. The nests consist of a single comb which is not enclosed in a paper envelope. In most of the Temperate zone species the nests are annual, each being founded by one or more overwintering females. One of the females becomes dominant and is the only one to lay eggs.

The normal larval food consists of dismembered caterpillers. Some species of *Polistes* exert considerable predator pressure on economically important insects such as tobacco horn worm and cotton ballworm. In an attempt to utilize the wasps as a biological control agent, shelters are sometimes placed in cultivated fields to afford nesting sites to founding females (Krombein and Burks, 1979).

Diagnostic characters : Body usually elongate; apical margin of clypeus tapering into a sharp or blunt tooth. Occipital carina always present; apical margin of postscutellum truncate to weakly produced in the middle at the base of propodeum; mesepisternum not completely or not

at all separated from mesepisternum. Hind wing usually with an anal lobe; 1st gastral segment petiolate or subpetiolate.

Key to the tribes of Polistinae

1. First gastral segment always petiolate and usually strongly swollen apically; pronotal lobe apically in front of tegula without a carina; dorsal episternal groove always absent; subtegular area basally in front of pronotal lobe not margined with a carina; second gastral tergite and sternite usually fused. ..... **Ropalidiini**

– First gastral segment either petiolate or subpetiolate; pronotal lobe apically in front of tegula with a distinct carina; dorsal episternal groove either present or absent; subtegular area basally in front of pronotal lobe margined with distinct carina, second gastral tergite and sternite never fused. 2

2. First gastral segment subpetiolate; shorter than second segment; muscle slit of propodeum long and narrow; subdiscoideus joins postnervulus at or close to middle; mesepisternum with or without epicnemial carina; apical margin of postscutellum usually almost truncate ..... **Polistini**

– First gastral segment petiolate; not shorter than second segment; muscle slit of propodeum short and wide; subdiscoideus joins postnervulus below middle; mesepisternum without epicnemial carina; apical margin of postscutellum weakly produced in the middle just at the base of propodeum. ..... **Polybiini**

1. Tribe **Polistini**

This tribe is represented by a single genus in Indian subregion.

3. Genus ***Polistes*** Latreille

1802. *Polistes* Latreille, *Hist. Nat. Ins. Paris*, 3 : 363. Type-species : *Vespa gallica* Linnaeus, 1767.

This genus is subdivided into eleven subgenera (Richards, 1978). Of these, six, viz., *Polistes (Polistes)* Latreille, 1802; *P. (Gyrostoma)* Kirby and Spence, 1826; *P. (Nygmopolistes)* Richards, 1973; *P. (Megapolistes)* van der Vecht, 1968; *P. (Stenopolistes)* van der Vecht, 1972 and *P. (Polistella)* Ashmead, 1904 are represented in Indian subregion. In Sikkim, four subgenera have been reported. These can be recognised by the following key.

Key to the subgenera of *Polistes*

1. Pronotal fovea present; clypeus not extending far beyond the anterior tentorial pits; anal lobe of hind wing large and separated from the rest of the wing membrane by a smooth incision; mesepisternum usually with epicnemial carina (except in subgenus *Nygmopolistes*) and dorsal episternal groove (except in subgenus *Gyrostoma*) 2

– Pronotal fovae absent; clypeus extending far beyond the anterior tentorial pits; anal lobe of hind wing more or less reduced; mesepisternum without epicnemial carina and with incomplete dorsal episternal groove 5

2. First gastral sternite with well-developed margin at base. In males, clypeus touching the inner eye margin; terminal antennal segment coiled apically ..... Subgenus ***Polistes*** Latreille*

– First gastral sternite with or without well-developed margin at base. In males, clypeus touching or not touching the inner eye margin; terminal antennal segment usually not coiled apically 3

3. Mesepisternum without dorsal episternal groove; parastigma of fore wing 1.4x as long as first intercubitus; interantennal space produced into a blunt tooth. In males, hind trochanter with one tooth; mandible with three teeth, proximal tooth separated from the distal teeth by a large gap; subgenital plate flat, without any tubercle and apophyses ..... Subgenus ***Gyrostoma*** Kirby and Spence

– Mesepisternum with well-developed dorsal episternal groove; parastigma shorter than first

intercubitus; interantennal space normal, not produced into a blunt tooth. In males, hind trochanter normal; subgenital plate with lateral tubercle and with or without apophyses 4

4. Mesepisternum without epicnemial carina. In males, subgenital plate not squarish, narrow at apex, without apophyses; digitus long and narrow ..... Subgenus ***Nygmopolistes*** Richards

– Mesepisternum with distinct epicnemial carina. In males, subgenital plate squarish, with a pair of apophyses; digitus basally wide ..... Subgenus ***Megapolistes*** van der Vecht

5. Anal lobe of hind wing much reduced, apex almost rounded, separated from the rest of the wing membrane by a wide gap; interocellar distance as long as, or less than the diameter of posterior ocellus; first gastral sternite without a well-developed margin at base ..... Subgenus ***Stenopolistes*** van der Vecht*

– Anal lobe of hind wing larger, apex nearly straight and separated from the rest of the wing membrane by a smaller gap; interocellar distance more than the diameter of posterior ocellus; first gastral sternite usually bounded by well developed margin at base ..... Subgenus ***Polistella*** Ashmead

[* *Polistes (Polistes)* and *Polistes (Stenopolistes)* not recorded from Sikkim.]

1. Subgenus *Polistes (Gyrostoma)* Kirby and Spence

1826. *Cyclostoma* Kirby and Spence, *Introduction to Entomology*, **3** (ed. 1) : 633. Name preocc. by *Cyclostoma* Lamarck, 1799. Type-species : *Cyclostoma gigas* Kirby and Spence, 1826.

1838. *Gyrostoma* Kirby and Spence, *Introduction to Entomology*, **3** (ed. 5) : 36, 631. New name.

This subgenus is known by its type-species from the Oriental region, which is also reported from the state of Sikkim.

4. *Polistes (Gyrostoma) gigas* (Kirby and Spence)

1826. *Cyclostoma gigas* Kirby and Spence, *Introduction to Entomology*, **3** (ed. 1) : 36, 633, M, des. Type : Male, China (? Oxford Museum).

1983. *Polistes (Gyrostoma) gigas* (Kirby and Spence) : Das and Gupta, *Oriental Ins.*, **17** : 405, cat., syn., ref., dist. India, South China, Taiwan.

Diagnostic characters : Large sized wasps, 25 mm (female) to 35 mm (male); clypeus not extended beyond anterior tentorial pits; interantennal space produced into a distinct tubercle. In males, mandibles large with three teeth, proximal tooth widely separated from distal teeth. In females, head and thorax reddish-brown; gaster, middle and hind legs and antennae, blackish- brown and in males, body in general reddish-brown; gaster, thorax and legs partly blackish and antennae largely blackish-brown.

Distribution : India : Sikkim. *Elsewhere* : Taiwan and South China.

2. Subgenus *Polistes (Nygmopolistes)* Richards

1973. *Polistes (Nygmopolistes)* Richards, *Rev. Bras. Ent.*, **17** (13) : 91, 93, 98, 99. Type-species : *Polistes sulcatus* Smith, 1852 (= *Polistes rugifrons* Cameron, 1900).

This is a small subgenus represented by a single species, viz., *P. (N.) tenebricosus* Lepeletier, 1886 in whole of Oriental region. Two subspecies, viz., *tenebricosus tenebricosus* Lepeletier, 1886 and *tenebricosus sulcatus* Smith, 1852 are known from Oriental region. Of these, only one subspecies *tenebricosus sulcatus* is reported from the state of Sikkim.

5. *Polistes (Nygmopolistes) tenebricosus sulcatus* Smith

1852. *Polistes sulcatus* Smith, *Trans. Ent. Soc. London*, (2) **2** : 38, M, F, des. Type : Female, China : Near Ningpo-foo (British Museum).

1989. *Polistes (Nygmopolistes) tenebricosus sulcatus* Smith : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 49.

Diagnostic characters : *Female* : Antennae

black, its first, second and third segments apically reddish. Head reddish, with a black mark on frons and vertex. Pronotum reddish with a black mark below. Gaster reddish, its basal half of first tergite, second tergite at base, first, second and third sternites (except for two reddish marks on both sides), black. Legs in general black, except apical half of fore femur, fore tibia, middle and hind tibiae apically, all tarsi, reddish. Wings wholly yellowish.

Material examined : India : Sikkim, 548 m, 1 male and 2 females, vii. 1897, coll. Dudgeon; 1 female, date of collection not given, coll. A. V. Knyvett.

Distribution : India : Sikkim, Assam, Meghalaya, West Bengal, Arunachal Pradesh, Kashmir and Uttar Pradesh. *Elsewhere :* China, Nepal, Japan and Indonesia (Java).

Remarks : This subspecies superficially resembles *P. (Polistella) sagittarius* Saussure, 1853, but can be differentiated by the presence of pronotal fovea. This subspecies is mainly found in the hilly areas.

3. Subgenus ***Polistes (Megapolistes)*** van der Vecht

1968. *Polistes (Megapolistes)* van der Vecht, *Bijdr. Dierk.*, **38** : 97. Type-species : *Vespa olivacea* (De Geer), 1773.

This is a moderate size subgenus and widely distributed in Oriental region. Three species, viz., *olivaceus* (De Geer), 1773; *wattii* Cameron, 1900 and *rothneyi* Cameron, 1900 are known from Indian region. Only *olivaceus* and *rothneyi* have been reported from the state of Sikkim.

Key to the species of *Polistes (Megapolistes)*

1. Transverse striation of propodeum strong; metapleuron ventrally with distinct punctures. In males, apophyses longer than wide with sparse pubescence ..... *rothneyi* Cameron
- Transverse striation of propodeum week; metapleuron ventrally impunctate or with scattered fine punctures 2

2. Occipital carina in female incomplete. In males, apophyses flattened and spatulate at apex, shiny and without pubescence .... *olivaceus* (De Geer)
- Occipital carina in female complete. In males, apophyses long and narrow with dense pubescene ..... *wattii* Cameron*

(* Not reported from Sikkim)

6. ***Polistes (Megapolistes) olivaceus*** (De Geer)

1773. *Vespa olivacea* De Geer, *Mem. Hist. Insect.*, **3** : 582, fig. Type : Sex ? (Stockholm Museum).

1787. *Vespa hebraea* Fabricius, *Mant. Ins.*, **1** : 292.

1897. *Polistes hebraeus* (Fabricius) : Bingham, *Fauna British India. Hymenoptera*, **1** : 398, F, W, des., fig., syn.

1983. *Polistes (Megapolistes) olivaceus* (De Geer) : Das and Gupta, *Oriental Ins*, **17** : 407, cat., distr., syn.; Roy and Kundu, 1985, *Rec. zool. Surv.*, **82** (1–4) : 226; Jonathan, *et al.*, 2000, *Zool. Surv. India, State Fauna Series* 3 : *Fauna of West Bengal*, Part 8 : 134.

Material examined : India : Sikkim : Gangtok, 548 m, 2 exs., vii. 1897, coll. Dudgeon.

Distribution : India : Sikkim, Assam, West Bengal, Himachal Pradesh, Arunachal Pradesh, Meghalaya, Tripura, Manipur, Jammu and Kashmir, Madhya Pradesh and Karnataka. *Elsewhere* : Japan, Iran, Tanzania (Zanzibar Is.), Seychelles, Madagascar, Mauritius; widely distributed in the Oriental Region and Oceanic islands and also found in Australia and New Zealand.

7. ***Polistes (Megapolistes) rothneyi sikkimensis*** van der Vecht

1968. *Polistes (Megapolistes) rothneyi sikkimensis* van der Vecht, *Bijdr. Dierk.*, **38** : 100, 102, F, key, des., distr. Type : Female, India : Sikkim : Ranjit Valley (British Museum).

1989. *Polistes (Megapolistes) rothneyi sikkimensis* van der Vecht : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 57.

Material examined : India : Sikkim : 2 females, vi. 1897, coll. Dudgeon; 2 females, no data; Ranjit Valley, 1 female, 27.v. 1976, coll. L.K. Sharma.

Distribution : India : Sikkim, Assam, Meghalaya, West Bengal and Bihar. *Elsewhere :* Nepal.

Remarks : This subspecies is easily distinguished by having propodeum black with four red or yellow marks; first gastral tergite black with broad yellowish apical band; mesepisternum with three reddish marks.

4. Subgenus ***Polistes (Polistella)*** Ashmead

1904. *Polistella* Ashmead, *Proc. U.S. Natl. Mus.*, **28** : 133. Type-species : *Polistes manilensis* Saussure, 1853.

Das and Gupta (1989) reported twelve species, viz., *ephippium* Cameron, 1900; *dawnae* Dover and Rao, 1922; *lepcha* Cameron, 1900; *adustus* Bingham, 1897; *santoshae* Das and Gupta, 1989; *similis* Das and Gupta, 1989; *stigma* (Fabricius), 1793; *latinis* Das and Gupta, 1989; *strigosus* Bequaert, 1940; *sagittarius* Saussure, 1853; *assamensis* Bingham, 1897 and *maculipennis* Saussure, 1853 from Indian subregion. Subsequently, Jonathan *et al.* (2000 b) transferred another species, *Polistes hoplitus* Saussure, 1853 as a new combination to this subgenus *Polistes (Polistella)* which was previously referred to subgenus *Polistes (Nygmopolistes)* by Das and Gupta (1989), because of the absence of pronotal fovea. Thus the subgenus *Polistes (Polistella)* contains a total of 13 species from Indian subregion. Of these, five species have been reported here from the state of Sikkim and these can be identified by the following key.

Key to the species/subspecies of *Polistes (Polistella)*

1. Gaster black with reddish-brown or red or yellow markings 2
– Gaster coloured other than black 3
2. Second gastral sternite angular at base, propodeum with sharp lateral edges. (Legs not completely black) ..... *adustus* Bingham
– Second gastral sternite rounded at base, propodeum with rounded lateral edges. (Propodeum with sharp striations; postscutellum with a carina at base) ..... *santoshae* Das and Gupta
3. Apical margins of first to fifth gastral tergites with apical yellow bands; mesoscutum finely punctate. ..... *assamensis* Bingham
– Apical margins of gastral tergites without apical bands 4
4. Pronotum ribbed; head narrower than thorax; second gastral tergite almost yellow; in males, subgenital plate with a broad central tubercle; thorax black with various yellow markings .... *strigosus atratus* Das and Gupta
– Pronotum not ribbed; head about as wide as thorax; second gastral tergite entirely reddish-brown; in males, subgenital plate with a small central tubercle ..... *sagittarius* Saussure

8. ***Polistes (Polistella) adustus*** Bingham

1897. *Polistes adustus* Bingham, *Fauna British India, Hymenoptera,* **1** : 397, F, key, des. Type : Female, India : Sikkim (British Museum).

1989. *Polistes (Polistella) adustus* Bingham : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 70.

Distribution : India : Sikkim, Meghalaya, West Bengal, Himachal Pradesh, Uttar Pradesh and Delhi. *Elsewhere* : Nepal.

9. ***Polistes (Polistella) santoshae*** Das and Gupta

1989. *Polistes (Polistella) santoshae* Das and Gupta, *Oriental Ins. Monogr.*, **11** : 72.

2000. *Polistes (Polistella) santoshae* Das and Gupta : Jonathan *et al.*, *Zool. Surv. India, State Fauna Series* 4 : *Fauna of Meghalaya*, Part 7 : 133.

Material examined : India : Sikkim, Ranjit Valley, 213-243 m, 1 female, 29.v.1916, coll. F. H. Gravely.

Distribution : India : Sikkim and Meghalaya. *Elsewhere* : Nepal.

Remarks : This subspecies is very close to *adustus* Bingham, 1897, differs by having head wider than high; clypeus as wide as long; temple wider than eye in profile; postscutellum with a carina at base; propodeum with round lateral

edges, its surface shiny with sharp transverse striations.

10. *Polistes (Polistella) strigosus atratus* Das and Gupta

1989. *Polistes (Polistella) strigosus atratus* Das and Gupta, *Oriental Ins. Monogr.*, **11** : 81.

2000. *Polistes (Polistella) strigosus atratus* Das and Gupta : Jonathan *et al.*, *Zool. Surv. India, State Fauna Series* **3** : *Fauna of West Bengal,* Part **8** : 162.

Material examined : India : Sikkim, 1 male, 1 female, no further data, coll. A.V. Knyvett; Gangtok, 2 females, 24. iv. 1976, coll. A.R. Bhaumick and party.

Distribution : India : Sikkim, Assam, Manipur, West Bengal, Tripura, Bihar, Delhi and Uttar Pradesh.

Remarks : This subspecies can be distinguished from *Polistes (Polistella) strigosus strigosus* Bequaert, 1940 from China by having thorax black with various yellow markings.

11. *Polistes (Polistella) sagittarius* Saussure

1853. *Polistes sagittarius* Saussure, *Études Famille Vespides*, **2** : 56, F, des. Type : Female, China. "Indes Orientales" (Geneva Museum).

1989. *Polistes (Polistella) sagittarius* Saussure : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 82.

Material examined : India : Sikkim, 547 m, 1 female, vi. 1897, coll. Dudgeon; 2 females, no other data, coll. A.V. Knyvett; 1 female, data of collection not given, Reg. No. 4710/12; 1 female, no other data, Reg. No. 1105/H_3.

Distribution : India : Sikkim, Assam, Manipur, Nagaland, West Bengal, Tripura, Himachal Pradesh, Delhi and Uttar Pradesh. *Elsewhere* : Myanmar, China, Nepal, Malaysia, Greece, Sulawesi, Thailand.

12. *Polistes (Polistella) assamensis* Bingham

1897. *Polistes assamensis* Bingham, *Fauna British India, Hymenoptera,* **1** : 397. Type : Female, India : Assam; Sikkim (British Museum).

1983. *Polistes (Polistella) assamensis* Bingham : Das and Gupta, *Oriental Ins.*, **17** : 411, cat.

Distribution : India : Sikkim and Assam.

2. Tribe **Ropalidiini**

This tribe is represented by a single genus, *Ropalidia* Guérin, 1838 (= *Icaria* Saussure, 1853), which is widely distributed in the tropical parts of the old world.

4. Genus ***Ropalidia*** Guérin

This genus is subdivided into five subgenera, viz., *Ropalidia (Anthreneida)* White, 1847; *R. (Icarielia)* Dalla Torre, 1904; *R. (Paraicaria)* Gribodo, 1892; *R. (Polistratus)* Cameron, 1900 and *R. (Ropalidia)* Guérin, 1838. Of these, first three subgenera occur in Indian subregion. In the state of Sikkim only two subgenera, viz., *R. (Anthreneida)* and *R. (Icarielia)* have been reported (Das and Gupta, 1989).

Key to the subgenera of *Ropalidia*

1. Mesopleuron with a distinct epicnemial carina Subgenus ..... ***Anthreneida*** White
- Mesopleuron without an epicnemial carina Subgenus ..... ***Icarielia*** Dalla Torre

5. Subgenus ***Ropalidia (Anthreneida)*** White

1841. *Anthreneida* White, *Ann. Mag. Nat. Hist.*, (1) **7** : 321. Type-Species : *Vespa sumatrae* Weber, 1801 (= *Anthreneida coronata* White, 1841).

This is a large subgenus, widely distributed in the Oriental, Wallacea and Australian regions. Das and Gupta (1989) reported 22 species from Indian subregion. From the state of Sikkim, five species/ subspecies have been recorded and these can be distinguished by the following key.

Key to the species/subspecies of *Ropalidia (Anthreneida)*

1. Propodeum at base with a pair of short longitudinal carinae. (Gastral petiole as long as hind femur) ..... *brevita* Das and Gupta

- Propodeum without such carinae 2

2. Second gastral tergite and sternite not fused 3

- Second gastral tergite and sternite fused 4

3. Median groove of propodeum deep and almost complete; petiole 1.7x as long as wide; scutellum with strong dense reticulate punctures *santoshae* Das and Gupta

- Median groove of propodeum not so deep, obsolete at base; petiole more than 2x as long as wide, gradually swollen apically, its apical margin normal ..... *fasciata* (Fabricius)

4. Third antennal segment atleast 3x as long as wide at apex; sides of second gastral tergite marked with yellow at base; pronotum red.. ..... *rufocollaris rufocollaris* (Cameron)

- Third antennal segment less than 3x as long as wide at apex; side of second gastral tergite not marked or differently marked; pronotum not red, but black marked with yellow. .... *stigma stigma* (Smith)

13. *Ropalidia (Anthreneida) brevita* Das and Gupta

1989. *Ropalidia (Anthreneida) brevita* Das and Gupta, *Oriental Ins. Monogr.*, **11** : 121, F. des. Type : Male, India : Delhi (Gupta Colln.). India : Himachal Pradesh, Delhi, Uttar Pradesh, Sikkim, West Bengal, Assam, Orissa, Goa, Karnataka and Kerala.

Material examined : India : Sikkim, 347 m, 1 female, vii. 1897, coll. Dudgeon.

Distribution : India : Sikkim, Assam, Tripura, Himachal Pradesh, Uttar Pradesh, Orissa, West Bengal, Delhi, Goa, Karnataka and Kerala.

Remarks : The female of this species is distinguished by having the gastral petiole as long as hind femur.

14. *Ropalidia (Anthreneida) santoshae* Das and Gupta

1989. *Ropalidia (Anthreneida) santoshae* Das and Gupta, *Oriental Ins. Monogr.*, **11** : 123, M, F, des. Type : Male, India : Meghalaya : Shillong (Gupta Collection).

2000. *Ropalidia (Anthreneida) santoshae* Das and Gupta : Jonathan *et al.*, *Zool. Surv. India, State Fauna Series* **4** : *Fauna of Meghalaya,* Part **7** : 137

Material examined : India : Sikkim : Kambur, 1000 m, 1 female, 15. viii. 1959, coll. F. Schmid (Gupta Collection).

Distribution : India : Sikkim, Meghalaya, Arunachal Pradesh and West Bengal.

Remarks : Das and Gupta (1989) gave a detailed account of this species.

15. *Ropalidia (Anthreneida) rufocollaris rufocollaris* (Cameron)

1900. *Icaria rufocollaris* Cameron, *Ann. Mag. Nat. Hist.*, (7) **6** : 497, F, des. Type : Female, India : Meghalaya : Khasi Hills (British Museum).

1989. *Ropalidia (Anthreneida) rufocollaris rufocollaris* Cameron : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 125.

Material examined : India : Sikkim : Ranjit Valley, 1 female, 29.v. 1916, coll. F. H. Gravely.

Distribution : India : Sikkim, Meghalaya, Assam, West Bengal, Tripura and Uttar Pradesh. *Elsewhere* : Myanmar, Thailand, Tibet.

Remarks : This subspecies is mainly recognised from other members of *Ropalidia (Anthreneida)* in having a yellow mark at the base of second gastral tergite and propodeum black at sides. In males, aedeagus is longer and narrower than any other species.

16. *Ropalidia (Anthreneida) stigma stigma* (Smith)

1858. *Polybia stigma* Smith, *J. Proc. Linn. Soc. Zool.*, **2** : 114, M. Type : Male, Malaysia : Sarawak (Oxford Museum).

1989. *Ropalidia (Anthreneida) stigma stigma* Smith : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 127.

Distribution : India : Sikkim, Assam, Meghalaya, West Bengal, Manipur, Tripura, Bihar, Orissa, Madhya Pradesh, Maharashtra, Uttar Pradesh and Kerala. *Elsewhere* : Sri Lanka, Myanmar, Indonesia, Indo-China, Malaysia, Philippines, Thailand.

Remarks : This species is distinguished by having body reddish with black and yellow markings. Das and Gupta (1989) gave a detailed account of this species.

17. ***Ropalidia (Anthreneida) fasciata*** (Fabricius)

1804. *Eumenes fasciata* Fabricius, *Syst. Piez.*, : 290, des. Type : Male ?, Java (Copenhagen Museum).

1989. *Ropalidia (Anthreneida) fasciata* (Fabricius) : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 140.

Material examined : India : Sikkim, 550 m, 1 female, viii. 1897, coll. Dudgeon.

Distribution : India : Sikkim, Tripura, Meghalaya, Assam, Arunachal Pradesh, West Bengal, Uttar Pradesh and Maharashtra. *Elsewhere* : Myanmar, South China, Nepal, Ryukyus, Indonesia, Philippines.

6. Subgenus ***Ropalidia (Icarielia)*** Dalla Torre

1904. *Icarielia* Dalla Torre, *Genera Insectorum*, **19** : 72. Type-species : *Icaria flavopicta* Smith., 1875.

1989. *Ropalidia (Icarielia)* Dalla Torre : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 148.

This is a small subgenus, represented in Indian subregion by four species, viz., *scitula* Bingham, 1897; *flavopicta* (Smith), 1857; *montana* Carl, 1930 and *malaisei* (van der Vecht), 1962. Only one species has been reported from Sikkim.

18. ***Ropalidia (Icarielia) scitula*** (Bingham)

1897. *Icaria scitula* Bingham, *Fauna British India, Hymenoptera*, **1** : 387, 392, W, key, des. Type : Worker, India : Sikkim : Ranjit Valley (British Museum).

1989. *Ropalidia (Icarielia) scitula* (Bingham) : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 152.

Diagnostic characters : *Female* and *Male* : Propodeum very finely transversely striated; temple wider than eye in female, 0.5x as wide in male; third antennal segment more than 2x as long as wide at apex; second tergite obliquely cut off at apex. Legs dark brown.

Distribution : India : Sikkim, Meghalaya and West Bengal. *Elsewhere* : Myanmar.

3. Tribe **Polybiini**

This tribe is represented by three genera, viz., *Parapolybia* Saussure, 1853; *Polybioides* Buysson, 1913 and *Belanogaster* Saussure, 1854 in India. Only the genus *Parapolybia* has been reported from the state of Sikkim.

5. Genus ***Parapolybia*** Saussure

1853. *Parapolybia* Saussure, *Étude Famille Vespides*, **2** : 207. Type-species : *Polybia (Parapolybia) indica* Saussure, 1853.

In India, the genus *Parapolybia* is represented by three species, viz., *varia* (Fabricius), 1787 ; *indica* (Saussure), 1853 and *nodosa* van der Vecht, 1966. Of these, only *varia* has been reported from the state of Sikkim.

19. ***Parapolybia varia*** (Fabricius)

1787. *Vespa varia* Fabricius, *Mant. Insect.*, **1** : 293, des. Type : China (Copenhagen Museum).

1989. *Parapolybia varia* (Fabricius) : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 180.

1999. *Parapolybia varia* (Fabricius) : Jonathan *et al.*, *Zool. Surv. India, State Fauna Series* **4** : *Fauna of Meghalaya*, Part **7** : 142.

Diagnostic characters : This is a highly variable species in its colour pattern. The species is characterised by having median groove of propodeum shallow; body with prominent yellow markings, second gastral tergite with a yellow mark at base; petiole shorter than head width; occipital carina incomplete; interocular distance at clypeus about as long as or shorter than at vertex level.

Material examined : India : Sikkim, 1 male, no data, Reg. No. 4729/12.

Distribution : India : Sikkim, Assam, Arunachal Pradesh, Meghalaya, Manipur, West Bengal, Himachal Pradesh, Punjab, Delhi and Uttar Pradesh. *Elsewhere* : Nepal, Myanmar, China, Indonesia, Japan, Malaysia, Philippines.

Remarks : Das and Gupta (1989) gave a detailed description of this species.

3. Subfamily VESPINAE

This is morphologically the most specialized subfamily of the social wasps. Component species are commonly called hornets (those nesting above ground) and yellow jackets (those nesting usually subterraneously). The nests consist of several to many combs of hexagonal cells composed of paper; cells constructed early in the year may be used for several larvae in succession. The combs are usually enclosed in a paper envelope. The nests are annual, new queens and males being produced late in the summer or early in the fall; the newly fertilized queens overwinter and begin new nests in the spring. There are relatively a few precise records of the nests used to feed vespine larvae; apparently dismembered and masticated adult Diptera and honeybees are commonly used; the wasps may also obtain bits of flesh from fresh and decaying carcasses. Adult vespines feed on liquid foods, primarily nectar or honey; some species are known to prey upon adult honey bees, which they kill and extract nectar from the crop.

Diagnostic characters : Apical margin of clypeus broadly truncate or concave medially and emarginate laterally, ending in two rounded lateral lobes; mandibles short and wide; maxillary palps 6-segmented; labial palps 4-segmented; antennae 12-segmented in female and worker and 13-segmented in male; mesepimeron separated from mesepisternum by a suture; hind margin of postscutellum produced in the middle forming a long, triangular lobe wedged in the upper part of the propodeum; gaster subsessile, first tergite with a distinct edge or rounded angle between the anterior vertical and the posterior horizontal face.

This subfamily is represented by four genera, viz., *Vespa* Linnaeus, 1758; *Provespa* Ashmead, 1903; *Vespula* Thomson, 1869 and *Dolichovespula* Rohwer, 1916 from Indian subregion. All these four genera have been reported from Sikkim. These can be distinguished by the following key.

Key to the genera of Vespinae
(After Das and Gupta, 1989)

1. Head small, with short vertex and narrow temples; ocelli very large, posterior ocelli much closer to the eyes than to each other, about as far from the occiput as from the eyes; carina on hind coxa incomplete, absent ventrally from posterior surface; fore wing with large stigma, basal vein joining subcosta close to stigma; first cubital cell very long, as long as the distance of its apex to the tip of the wing; first gastral segment cup-shaped, the tergite convex anteriorly. Coloration uniformly brown, clypeus sometimes brownish. Nocturnal in habits. Colonies founded by swarming ..... ***Provespa*** Ashmead

– Head large, with long vertex and broad temples. Ocelli normal (except in *Vespa binghami)*; interocellar distance shorter than ocellocular distance; hind coxa with a carina on its posterior surface; fore wing with short to inconspicuous stigma, basal vein joining subcosta at a distance of 1.0-3.0x the length of stigma; first cubital cell shorter than the distance between its apex and the tip of fore wing; first gastral segment transverse, the tergite truncate and abruptly sloping anteriorly. Coloration predominantly yellow, brown and/or black. Large size, length varying from 14-40 mm. Diurnal in habits. Colonies founded by female only 2

2. Clypeus with short hairs on its apical region; posterior ocelli at the level of the center of eyes; vertex wide; temple wider behind eyes; pronotal carina strong and bent forwards dorsally, with a pit near its lower 0.3; fore wing with a long prestigma, at least 3x as long as stigma; hind wing with hamuli originating before the tip of subcostella; male antenna with tyloids. Length more than 20 mm. ..... ***Vespa*** Linnaeus

– Clypeus with long hairs on its whole surface; posterior ocelli in level with hind margin of eyes; vertex not wide; pronotum either without a carina or with a weak carina; fore wing with prestigma equal to or less than 1.5x the stigma; hind wing with hamuli originating at the tip of subcostella; male antenna without distinct tyloids. Length less than 20 mm.....3

3. Malar space very short, shorter than the width

of pedicel; eye almost touching base of mandible; lower edge of mandible not straight but convex basally; occipital carina present laterally, reaching or not reaching base of mandible; pronotal carina weak or absent; male antenna with long scape, equal to or a little shorter than 3rd flagellar segment, the latter without tyloids; aedeagus longer than parameres; nest small or large, envelope of nest with blister-like patches on outside or with large, overlapping sheets ..... ***Vespula*** Thomson

– Malar space long, longer than the maximum width of pedicel, as long as the basal width of mandible; lower edge of mandible straight, not convex basally; occipital carina almost entirely absent; pronotal carina present; male antenna with short scape; aedeagus as long as parameres; nest usually aerial, envelope of nest with additions of large sheets, not blister-like ..... ***Dolichovespula*** Rohwer

6. Genus *Vespa* Linnaeus

This genus is divided into two subgenera : *Vespa (Vespa)* Linnaeus, 1758 and *Vespa (Nyctovespa)* van der Vecht, 1959. Only *Vespa (Vespa)* is represented in the state of Sikkim.

7. Subgenus *Vespa (Vespa)* Linnaeus

1758. *Vespa* Linnaeus, *Systema Nature*, (10th Ed.), 1 : 343. Type-species : *Vespa crabro* Linnaeus, 1758.

1983. *Vespa (Vespa)* Linnaeus : Das and Gupta, *Oriental Ins.*, **17** : 435.

Eighteen species/subspecies are recognised from India. Of these, nine species are known to occur in the state of Sikkim. These can be recognised by the following key.

Key to the species/subspecies of *Vespa (Vespa)*

(Female and Worker : antenna 12–segmented, gaster 6–segmented)
(After van der Vecht, 1957, 1959)

1. Apical margin of clypeus with a broad and deep apical emargination, forming lateral lobes and with a median triangular tooth projecting only half the length of the lateral lobes. 6th gastral segment yellow. (Head wholly yellow or orange-yellow, at most vertex with a black spot around ocelli) .... *analis nigrans* Buysson

– Apical margin of clypeus emarginate or broadly truncate, but without a median tooth 2

2. Head strongly widened and produced behind the eyes; temple in profile view more than 2x as wide as eye. Clypeus coarsely punctate, strongly emarginate apically; temple and mesopleuron finely and sparsely punctate in lower half .... *mandarinia magnifica* Smith

– Head normal; temple almost 1.5x as wide as eye 3

3. Clypeus coarsely punctate or lower vertical area of pronotum with distinct transverse striations; thorax black and head black to red, not marked with yellow; gaster brown with tergite 2 yellow 4

– Clypeus subpolished, with scattered punctures; lower vertical area of pronotum without distinct transverse ridges; head, thorax and gaster black to brown, with reddish or yellow areas 6

4. Apical margin of clypeus hairy and with a blunt triangular tooth on each side of the median emargination; body covered with stiff hairs; pronotum with strong transverse striations in its lower vertical area near the pronotal pit; tergite 2 yellow ..... *tropica* (Linnaeus)

– Apical margin of clypeus less hairy, with short rounded lobes on each side of the median emargination; striations on pronotum fine to indistinct. (Vertex, temple, postscutellum and propodeum sparsely and finely punctate; scutellum and metapleurum almost impunctate) ..... *mocsaryana* Buysson

5. First gastral tergite black, rarely with a small yellowish spot or narrow border; head and antennae mostly dark red or reddish-brown;

wings darker .... *tropica haematodes* Bequaert

– First gastral tergite more extensively marked with orange-yellow; second tergite bicolored with a broad yellow band, rarely with a black line in between; wings uniformly yellowish-brown, darker at base .... *tropica ducalis* Smith

6. Gaster largely black; apical half of clypeus impunctate, its apical emargination shallow and without lateral lobes, middle tibia with long hairs, hairs longer than the width of tibia; postscutellum brown. Body hairs yellowish-brown ..... *basalis* Smith

– Gaster black or yellow; apical 0.33 of clypeus with more crowded punctures its apical margin clearly emarginate forming lateral lobes; middle tibiae with a few long hairs. Body hairs black 7

7. Gaster largely yellow; frons, vertex and mesoscutum sparsely hairy; gaster covered with dense erect hairs; hairs on second tergite about as long as the width of hind basitarsus; body largely yellow, mesoscutum black .... *bicolor* Fabricius

– Gaster and thorax largely black; clypeus orange, temple reddish-brown; legs blackish with tarsi yellowish-brown; frons, vertex and mesoscutum with dense long hairs; gaster with short, less conspicuous hairs; hairs on second tergite shorter than the width of hind basitarsus; body extensively black, or the mesoscutum partly orange-yellow. .... *velutina nigrithorax* Buysson

(Note : *Vespa (Vespa) vivax* Smith not included in the key)

(Male : antenna 13-segmented, gaster 7-segmented)

1. Head large and swollen (as in the worker). (Malar space comparatively longer, tyloids present on segements 4-13, apical margin of 6th and 7th tergites shallowly emarginate) ... . *mandarinia magnifica* Smith

– Head normal 2

2. Sides of clypeus not touching the eyes, separated from them by narrow extensions of inner orbits 3

– Sides of clypeus touching the eyes 6

3. Emargination of 6th gastral sternite broad and semi-elliptical, its sides curving gradually towards sides of hind margin; fourth antennal segment with only the basal tyloid; clypeus rather coarsely punctate 4

– Emargination of 6th gastral sternite as wide as deep, with angular edges; fourth antennal segment with 2 tyloids; clypeus finely punctate 5

4. First gastral tergite black, rarely with a small yellowish spot or narrow border; head and antennae mostly dark red or reddish-brown; wings darker .... *tropica haematodes* Bequaert

– First gastral tergite more extensively marked with orange-yellow; second tergite bicolored with a broad yellow band, rarely with a black line in between; wings uniformly yellowish-brown, darker at base .... *tropica ducalis* Smith.

5. Body yellow, vertex and mesoscutum black; junction of postscutellum and propodeum with a Y-shaped black mark .... *bicolor* Fabricius

– Body more extensively black, thorax wholly black ..... *velutina nigrithorax* Buysson

6. Antenna long and slender, fourth segment 2x as long as wide, without tyloids; clypeus sparsely and shallowly punctate; middle and hind tibiae densely covered with long hairs.. ..... *basalis* Smith

– Antenna relatively short, fourth segment less than 2x as long as wide, with 2 distinct tyloids; clypeus more closely punctate; middle and hind tibiae with short and sparse hairs 7

7. Apical margin of clypeus depressed, the depression often produced medially into a groove reaching middle of clypeus; incision of

6th sternite semi-elliptical, wider than deep .. .. *analis* Fabricius

(Head wholly yellow or orange-yellow, sometimes with a black spot near ocelli; first to fifth tergites narrowly yellow at apex ....*analis nigrans* Buysson)

– Apical margin of clypeus hardly depressed, with short and blunt median carina; incision of 6th sternite almost as deep as wide; head thinner and body more slender..... .....*mocsaryana* Buysson

(Note : *Vespa (Vespa) vivax* Smith could not be included in the key)

20. *Vespa (Vespa) analis nigrans* Buysson

1903. *Vespa nigrans* Buysson, *Bull. Soc. Ent. France,* 1903 : 175, M, des. Type : Male, China (Paris Museum).

1939. *Vespa analis nigrans* Buysson : Bequaert, *Trans. Amer. Ent. Soc.,* **65** : 41, key, fig., tax.

1939. *Vespa analis* (subsp) *barbouri* Bequaert, *Trans. Amer. Ent. Soc.,* **65** : 40, W, key, des. Type : Worker, India : Sikkim (Cambridge, Mass. Museum). Syn. by Das and Gupta, 1989.

1983. *Vespa (Vespa) analis nigrans* Buysson : Das and Gupta, *Oriental Ins.,* **17** : 437, syn., ref., cat., distr.

1989. *Vespa analis nigrans* Buysson : Das and Gupta, *Oriental Ins. Monogr.,* **11** : 208.

Distribution : India : Sikkim, Assam, Meghalaya, West Bengal and Uttar Pradesh. *Elsewhere :* China, Indo-China, Malaysia, Nepal, Myanmar, Laos.

21. *Vespa (Vespa) basalis* Smith

1852. *Vespa basalis* Smith, *Trans. Ent. Soc. London* (N.S.), **2** (2) : 46, F, des. Type : Female, Nepal (British Museum).

1852. *Vespa obliterata* Smith, *Trans. Ent. Soc. London* (N.S.), **2** (2) : 47. Type : Worker, "Indes Orientales" (British Museum). Syn. by Bingham, 1897.

1983. *Vespa (Vespa) basalis* Smith : Das and Gupta. *Oriental Ins.* **17** : 438, syn., ref.; Roy and Kundu, 1985, *Rec. zool. Surv. India,* **82** (1–4) : 226 ; Jonathan *et al.,* 2000, *Zool. Surv. India, State Fauna Series* 4 : *Fauna of Meghalaya,* Part 7 : 147.

Distribution : India : Sikkim, Assam, Arunachal Pradesh, West Bengal and Meghalaya. *Elsewhere* : Sri Lanka, Nepal, Myanmar, China, Indo-China, Japan, Taiwan, Thailand, Indonesia (Sumatra).

22. *Vespa (Vespa) bicolor* Fabricius

1787. *Vespa bicolor* Fabricius, *Mant. Insectorum,* **1** : 288, des. Type : ? sex, "in China D. Pflug" (Copenhagen Museum).

1905. *Vespa auraria* var. *citriventris* Buysson. *Ann. Soc. Ent. France,* **73** : 552, F, W, des. Lectotype (designated by van der Vecht, 1959) : Female, India : Sikkim (Paris Museum). India : West Bengal : Darjeeling; China. Syn. by Das and Gupta, 1989.

1983. *Vespa (Vespa) bicolor bicolor* Fabricius : Das and Gupta. *Oriental Ins.,* **17** : 439, cat., syn., distr.

1989. *Vespa bicolor* Fabricius : Das and Gupta, *Oriental Ins. Monogr.,* **11** : 209.

2000. *Vespa (Vespa) bicolor* Fabricius : Jonathan *et al., Zool. Surv. India, State Fauna Series* 4 : *Fauna of Meghalaya,* Part 7 : 147.

Distribution : India : Sikkim, Assam, Meghalaya, West Bengal and Uttar Pradesh. *Elsewhere* : Bhutan, China, Indo-China, Japan, Myanmar.

Remarks : This species is readily recognised by having body colour predominently yellow with head and thorax black dorsally and body dorsally covered with dense blackish hairs.

23. *Vespa (Vespa) mandarinia magnifica* Smith

1852. *Vespa magnifica* Smith, *Trans. Ent. Soc. Lond.* (N.S.), **2** (2) : 45, des. Type : Nepal (British Museum).

1959. *Vespa (Vespa) mandarinia magnifica* Smith : van der Vecht, *Zool. Meded.,* **36** (13) : 220.

1989. *Vespa mandarinia magnifica* Smith : Das and Gupta, *Oriental Ins. Monogr.,* **11** : 212.

2000. *Vespa (Vespa) mandarinia magnifica* Smith : Jonathan *et al., Zool. Surv. India, State Fauna Series* 4 : *Fauna of Meghalaya,* Part 7 : 148.

Distribution : India : Sikkim, Assam, Meghalaya, Himachal Pradesh, Arunachal Pradesh

and West Bengal. *Elsewhere* : Bhutan, China, Indo-China, Nepal, Myanmar, Sri Lanka, Taiwan, Thailand.

Remarks : This is a distinct subspecies having the head orange-red, thorax black and gaster reddish-brown with narrow apical bands on 1st to 5th tergites, the tip of gaster yellowish-brown.

24. *Vespa (Vespa) mocsaryana* Buysson

1905. *Vespa mocsaryana* Buysson, *Ann. Soc. Ent. France,* **73** : 490, 495, 537, M, F, W, key, des. Type : Male, Burma : Tenasserim : Thagata (Genoa Museum). India : Meghalaya : Khasi Hills ; Sikkim ; Malaya.

1983. *Vaspa (Vespa) Mocsaryana* Buysson : Das and Gupta, *Oriental Ins.,* **17** : 441, cat., syn., ref., distr.

2000. *Vespa (Vespa) mocsaryana* Buysson : Jonathan *et al., Zool. Surv. India, State Fauna Series* 4 : *Fauna of Meghalaya,* Part 7 : 148

Distribution : India : Sikkim and Meghalaya. *Elsewhere* : Myanmar, China, Indo-China, Malaysia, Indonesia (Sumatra).

Remarks : This species can be identified by the characters mentioned in the key. Das and Gupta (1989) gave a detailed description of this species.

25. *Vespa (Vespa) tropica haematodes* Bequaert

1936. *Vaspa tropica* var. *haematodes* Bequaert, *Treubia,* **15** : 338, M, F, W, des., key. Type : Female, India : Himachal Pradesh : Kulu (Cambridge, Mass. Museum)

1983. *Vespa (Vespa) tropica haematodes* Bequaert : Das and Gupta, *Oriental Ins.,* **17** : 445, cat., distr.

2000. *Vespa (Vespa) tropica haematodes* Bequaert : Jonathan *et al., Zool, Surv. India, State Fauna Series* 3 : *Fauna of West Bengal,* Part 8 : 174.

Distribution : India : Sikkim, Bihar, Haryana, Himachal Pradesh, Karnataka, Kerala, Tamil Nadu, Pondicherry and West Bengal. *Elsewhere* : China, Indo-China, Myanmar, Nepal, Pakistan, Sri Lanka.

Remarks : This is one of the most common hornets of the Oriental region. It is mainly distinguished by having head and antennae mostly dark red or reddish-brown.

26. *Vespa (Vespa) tropica ducalis* Smith

1852. *Vespa ducalis* Smith, *Trans. Ent. Soc. London,* **2** (2) : 39, M, F, W. des. Type : Female, China : Tientung (British Museum).

1983. *Vespa (Vespa) tropica ducalis* Smith : Das and Gupta, *Oriental Ins.,* **17** : 444, cat., distr.

Distribution : India : Sikkim. *Elsewhere* : China, Indo-China, Myanmar, Thailand.

Remarks : Das and Gupta (1989) have expressed their doubts about the correct identity of this subspecies.

27. *Vespa (Vespa) velutina nigrithorax* Buysson

1905. *Vespa auraria* var. *nigrithorax* Buysson, *Ann. Ent. Soc. France,* **73** : 553, M, F, W, des. Lectotype : Female, India : Darjeeling (Paris Museum).

1989. *Vespa velutina nigrithorax* Buysson : Das and Gupta, *Oriental Ins. Monogr.,* **11** : 224, des.

Distribution : India : Sikkim, Assam, Meghalaya, Himachal Pradesh and Uttar Pradesh. *Elsewhere* : Bhutan, China.

28. *Vespa (Vespa) vivax* Smith

1870. *Vespa vivax* Smith, *Trans. Zool. Soc. London,* **7** (3) : 190, W, des., fig. Type : Worker, India : Uttar Pradesh (British Museum).

1983. *Vespa (Vespa) vivax* Smith : Das and Gupta, *Oriental Ins.,* **17** : 447, cat., syn., ref., distr.

Distribution : India : Sikkim, Himachal Pradesh, Jammu and Kashmir and Uttar Pradesh. *Elsewhere* : China, Myanmar, Thailand.

Remarks : This species can be distinguished by having body black, covered with long, thick black hairs; thorax and abdomen densely pruinose; head smooth, but not shiny; head, apex of femora, tibiae and tarsi, a broad band on hind margins of 1st and 3rd tergites, a narrow line on the hind margins of 2nd, 4th and 5th tergites, and whole of 6 tergite, yellow; a black ring-like mark on frons; scape and pedicel ventrally yellow; wings brownish hyaline (Das and Gupta, 1989).

7. Genus ***Provespa*** Ashmead

1903. *Provespa* Ashmead, *Ent. News*, **14** : 182. Type-species : *Vespa anomala* Saussure, 1853 (= *V. dorylloides* Saussure, 1853).

The genus *Provespa* is represented by three species, viz., *anomala* (Saussure), 1853; ***barthelemyi*** (Buysson), 1905 and *nocturna* van der Vecht, 1936. Of these, *P. anomala* and *P. barthelemyi* are known from India including Sikkim (Das and Gupta, 1989).

Key to the species of *Provespa*
(After van der Vecht, 1936, 1957)

1. Body slender, thorax in dorsal view 1.5x as long as wide; mesocutum longer than wide; first gastral tergite slender, its width at apex 1.6x its length; clypeus brownish; length 14 mm (female), 11-13 mm (worker). Male flagellum without tyloids .... *anomala* (Saussure)

– Body stouter, thorax 1.25x as long as wide; mesoscutum as long or less longer than wide; clypeus pale yellow, darker along margins; length 14-15 mm (worker). Male flagellum with tyloids ..... *barthelemyi* (Buysson)

29. ***Provespa anomala*** (Saussure)

1853. *Vespa anomala* Saussure, *Étude Famille Vespides*, **2** : 112, F, des., fig. Type : Female, Java (British Museum).

1853. *Vespa dorylloides* Saussure, *Étude Famille Vespides*, **2** : 256 (different name used in errata); Bingham, 1897, *Fauna British India, Hymenoptera*, **1** : 400, F, W, des.

1983. *Provespa anomala* (Saussure) : Das and Gupta, *Oriental Ins.* **17** : 433, syn. ref., distr.; Roy and Kundu, 1985, *Rec. zool. Surv. India*, **82** (1–4) : 227; Jonathan *et al.*, 2000, *Zool. Surv. India, State Fauna Series* 4 : *Fauna of Meghalaya*, Part 7 : 150.

Material examined : India : Sikkim (East Sikkim), 1 female, 19, iii. 1994, coll. L. K. Ghosh.

Distribution : India : Sikkim, Meghalaya, Arunachal Pradesh and Uttar Pradesh. *Elsewhere* : Myanmar, Malaysia, Indonesia.

30. ***Provespa barthelemyi*** (Buysson)

1905. *Vespa barthelemyi* Buysson, *Ann. Soc. Ent. France*, **73** : 493, 618, M, W, key, des., fig. Lectotype : Worker, Cambodia (Paris Museum). Bhutan, Myanmar.

1989. *Provespa barthelemyi* (Buysson) : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 228.

Distribution : India : Sikkim. *Elsewhere* : Bhutan, Cambodia, Laos, Myanmar, Thailand.

8. Genus ***Dolichovespula*** Rohwer

1916. *Dolichovespula* Rohwer, *Bull. Connecticut State Geol. and Nat. Hist. Survey*, **22** : 642. Type-species : *Vespa maculata* Linnaeus, 1758.

1989. *Dolichovespula* Rohwer : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 228.

This genus is known from India by two species, viz,, *asiatica* Archer, 1981 and *lama* (Buysson), 1903. Only the latter has been reported from the state of Sikkim.

31. ***Dolichovespula lama*** (Buysson)

1903. *Vespa lama* Buysson, *Bull. Soc. Ent. France*, : 175, F, des. Type : Female, India : Sikkim (British Museum).

1989. *Dolichovespula lama* (Buysson) : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 231.

Diagnostic characters : This species is mainly recognised by having a dorsal yellow stripe on pronotum; lateral yellow spots on scutellum and metanotum; gastral tergites and sternites 1–3 with yellow bands; clypeus without any punctures.

Distribution : India : Sikkim and Uttar Pradesh.

9. Gensus ***Vespula*** Thomson

1869. *Vespula* Thomson, *Opuscula Ent.*, **1** : 79. Type-species : *Vespa austriaca* Panzer, 1799.

1989. *Vespula* Thomson : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 232.

The members of this genus are commonly

called yellow jackets. They make their nests in the ground or in cavities. This genus is represented by eight species/subspecies, viz., *flaviceps flaviceps* (Smith), 1872; *vulgaris* (Linnaeus), 1758; *structor* (Smith), 1872; *germanica* (Fabricius), 1793; *orbata orbata* (Buysson), 1902; *nursei* Archer, 1981; *austriaca* (Panzer), 1799 and *koreensis stizoides* (Buysson), 1905 from India. Only *flaviceps flaviceps* (Smith) has been reported from the state of Sikkim.

32. *Vespula flaviceps flaviceps* (Smith)

1872. *Vespa flaviceps* Smith, *Trans. Zool. Soc. London*, (3) **7** : 174, 191, M, F, des., fig. Type : Female, India : Uttar Pradesh, Kumaon Hills (British Museum).

1989. *Vespula flaviceps flaviceps* (Smith) : Das and Gupta, *Oriental Ins. Monogr.*, **11** : 238.

Diagnostic characters : *Female* and *Worker* : Third mandibular tooth straight or nearly straight along its mesal margin; occipital carina distinct laterally, less developed in the worker; scape relatively short; interocellar distance more than 0.5x the width of an ocellus; cubital vein IIa as long as or longer than IIb; punctation on thorax weak; propodeum smooth, without carinae; prebasal depression of first tergite weak.

Male : Occipital carina distinct only at sides; antennae without tyloids; terminal segments slender, not curved; last gastral tergite with a flat apical lobe; mandible without a triangular black spot at base.

Body markings highly variable in female and worker. Body pale yellow : frons above, temple, vertex, black; clypeus yellow, with a basal black line; antennae black, scape dark brown. Thorax black with following yellow : posterior margin of pronotum, wing base, scutellum anteriorly a pair of spot on propodeum, gaster with bands. Legs largely yellowish (Das Gupta, 1989).

Distribution : India : Sikkim, Assam, Manipur, Himachal Pradesh and Uttar Pradesh. *Elsewhere* : China, Korea, Myanmar, USSR.

SUMMARY

The family Vespidae contains potter wasps, paper wasps, hornets or yellow jackets. Most of these wasps are beneficial, since the insects they feed their larvae are mostly injurious or atleast not useful species. By their predatory habits, they destroy a large number of insect pests and may be used as effective predators for the control of some of the pest species.

The present paper deals with the Vespidae fauna of Sikkim, India. Altogether 32 species/ ubspecies under 9 genera, 7 subgenera and 3 subfamilies are treated in the text. The keys are provided for the identification of various taxa. Illustrations of taxonomic terms used in the present work are included for ready reference.

ACKNOWLEDGEMENTS

We are grateful to Dr. J.R.B. Alfred, Director, Zoological Survey of India for providing all the facilities to carry out this research work. We are also thankful to Shri Rati Ram, P.P.O., Z.S.I., Calcutta for helping us in various ways.

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(Note : for detailed Bibliography, Das and Gupta, 1989 may be consulted).

Zool. Surv. India.
State Fauna Series 9, Fauna of Sikkim Part-4, 393-416, 2003

INSECTA : HYMENOPTERA : SCOLIIDAE

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INTRODUCTION

The family Scoliidae belongs to superfamily Scolioidea, which includes one of the most attractive groups of wasps. The superfamily Scolioidea is one of the seven recently recognised superfamilies of aculeate Hymenoptera. The superfamily has four families, *viz.*, Scoliidae, Tiphiidae, Mutillidae and Sapygidae in India.

The members of this family Scoliidae are commonly known as hairy wasps, usually black in colour, marked with spots or bands of yellow, white or red. Their wings are usually dark with a metallic iridescence. The members of this family are world-wide in distribution and their larvae are ectoparasitic on the larvae of Scarabaeidae.

Our knowledge about these wasps is very limited. Bingham (1897) made an attempt to provide an account of family Scoliidae. Betrem (1928) did a pioneering monographic work on the Indo-Australian genera and species of this family. Addition of more taxa, change in the systematic position and classification in more natural groups were significant contributions made by several workers namely : Betrem and Bradley (1964); Bradley (1964-1974); Guiglia (1965); Krombein (1963-1978); Gupta and Jonathan (1991) and Jonathan and Gupta (1993).

The members of this family are readily distinguished from other wasps by having wing membrane beyond the cells closely striolate and meso- and metasternum form a flat plate overlying the bases of the middle and hind coxae.

The family is known by two subfamilies, *viz.*, Proscoliinae and Scoliinae. The subfamily Proscolinae is known by two species, one each from Armenia and Greese. The subfamily Scoliinae is represented by a large number of species and subspecies, and is distributed throughout the World.

The subfamily Scoliinae is subdivided into two tribes, *viz.*, Campsomerini and Scoliini. In the state of Sikkim this subfamily is represented by 27 species/subspecies under nine genera.

MATERIAL AND METHODS

The present study on the scoliid fauna of the state of Sikkim, India is based on a collection present at the Zoological Survey of India, brought by various survey parties and individuals : G.C. Dudgeon, 1897; F.A. Moller, 1904; Lord Carmichael, 1912; F.H. Gravely, 1916; G.K. Srivastava, 1975; L.N. Sharma, 1976; L.K. Sharma & party, 1976; S. Biswas & G. Singh, 1976; A.N.T. Joseph & Party, 1978; G.C. Sen & party, 1994; B.C. Saha & party, 1994; B.C. Das & party, 1994 and S.C. Mitra & party, 1995 and some material borrowed from other institutions.

In the present study, the attempt has been made to provide keys to the tribes, genera, species and subspecies for the identification of various taxa recorded from Sikkim. Illus-trations of taxonomic terms used in the present work, distributional tables and maps are given.

TAXONOMIC TERMINOLOGY

The morphological terms followed by Betrem (1928) and Krombein (1928) are used in the present work. The morphological terms used in

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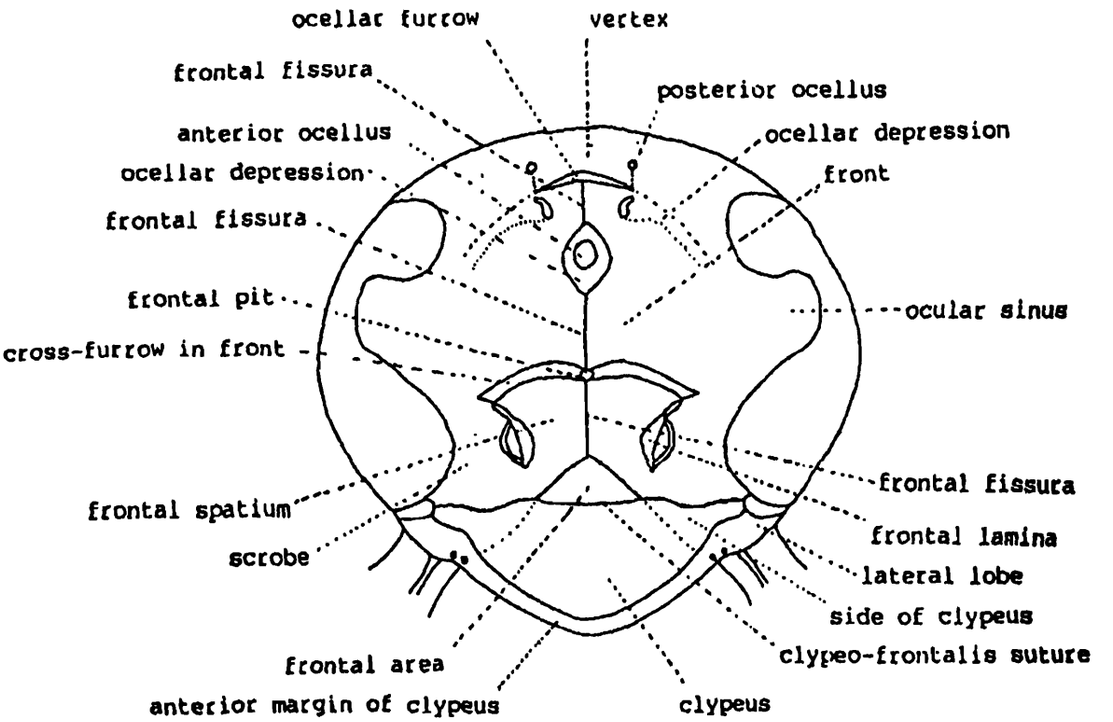


Fig. 1 : Anterior veiw of head of a Scoliid

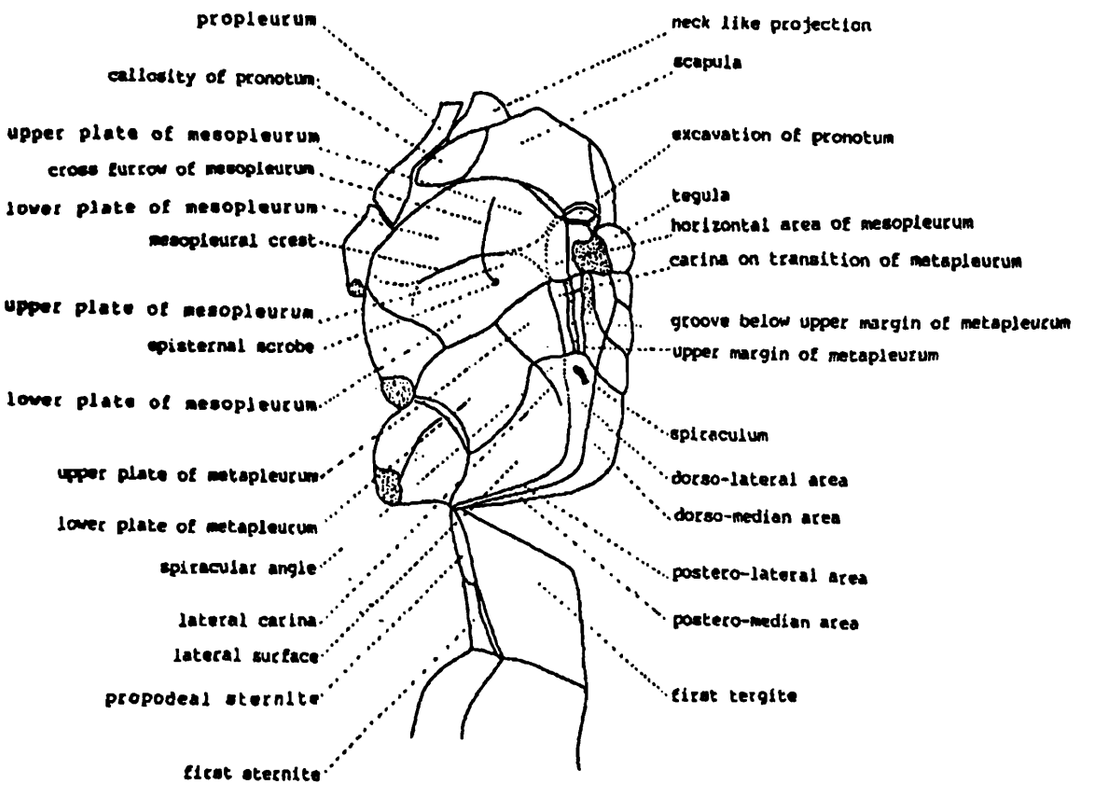
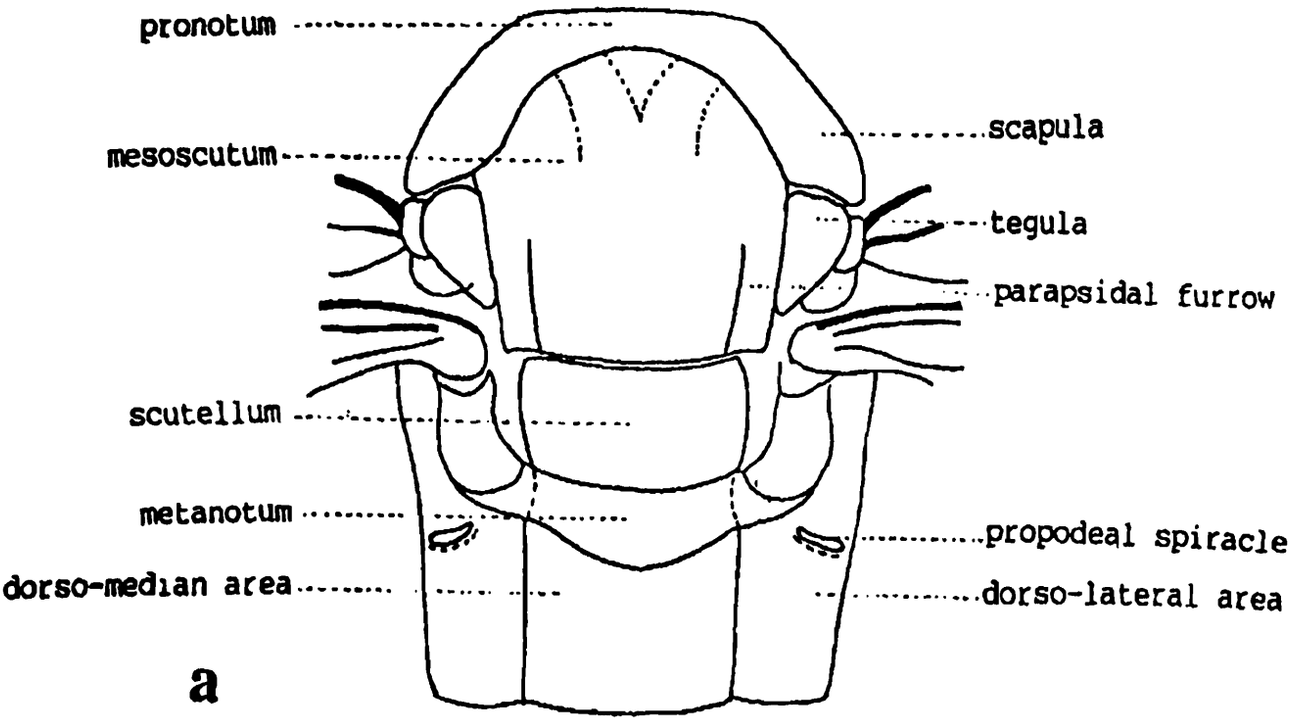


Fig. 2 : Lateral view of Thorax of a Scoliid



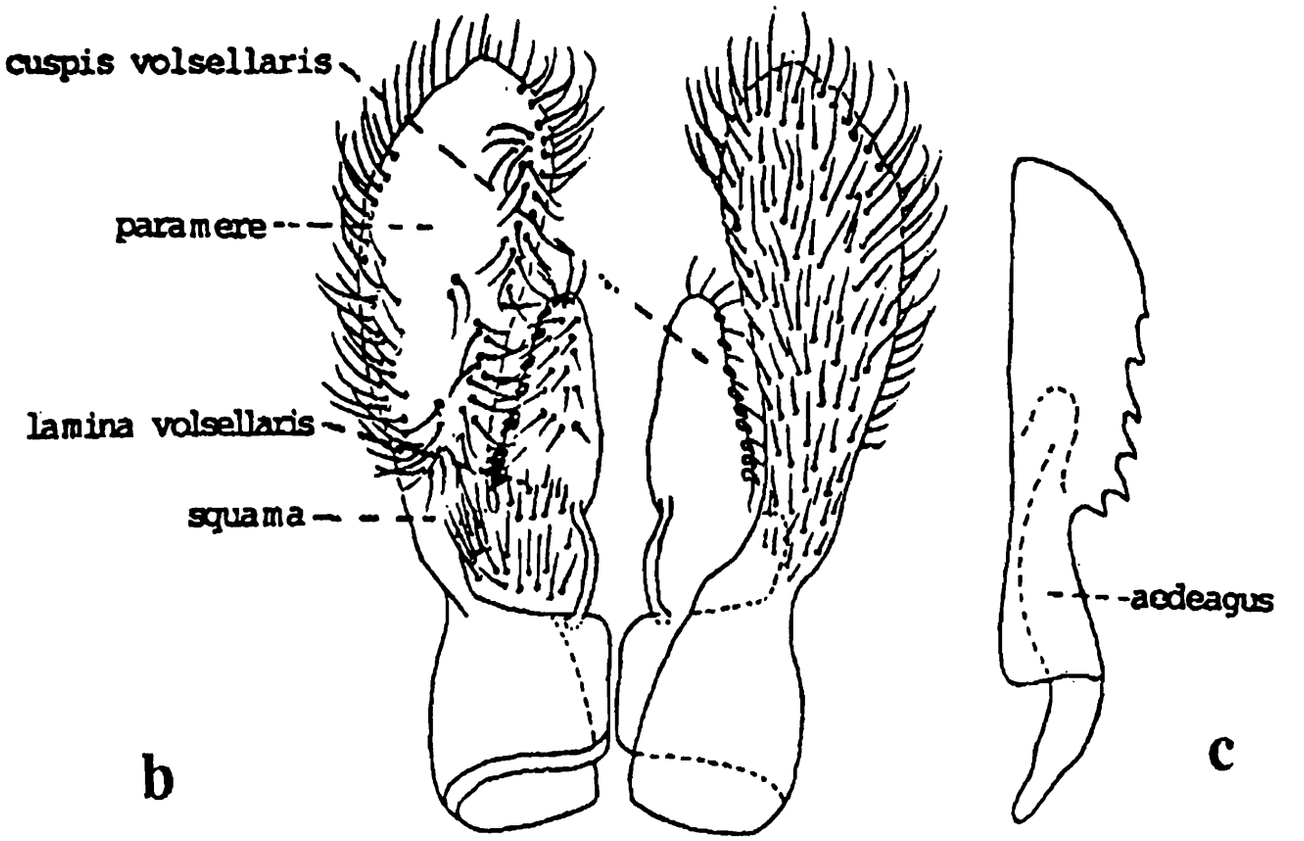


Fig. 3. : a) Dorsal view of thorax of a Scoliid; b) male genitalia, ventra aspect at left; dorsal aspect at right; c) aedeagus.

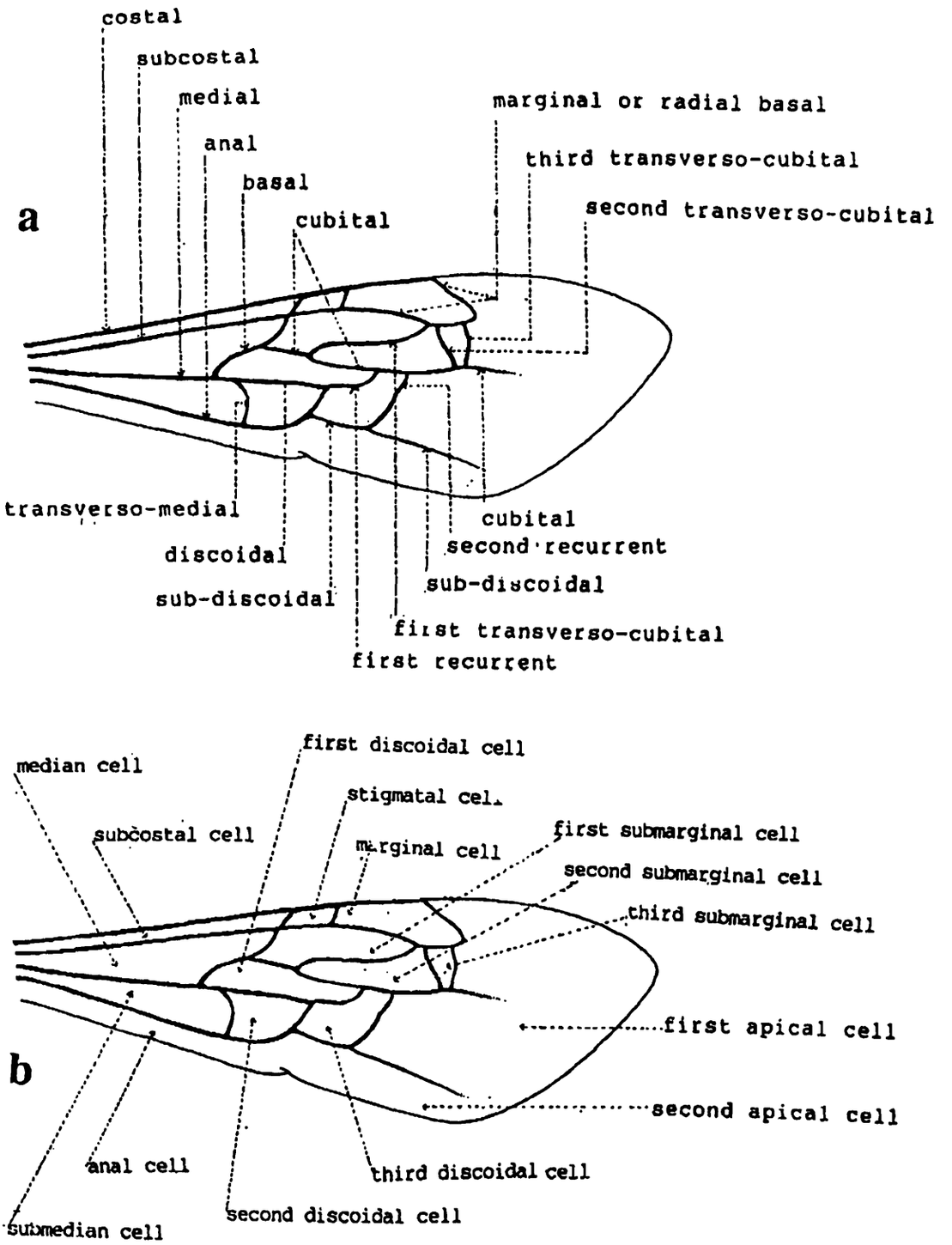


Fig. 4. : a) Diagramatic view of fore wing : a) various veins, b) various cells.

the text are illustrated in figures 1-4.

SYSTEMATIC ACCOUNT

Family SCOLIIDAE
Subfamily SCOLIINAE

I. Tribe **Campsomerini**

1. Genus ***Phalerimeris*** Betrem

1. ***Phalerimeris phalerata phalerata*** (Saussure)

2. Genus ***Colpacampsomeris*** Betrem

2. ***Colpacampsomeris indica indica*** (Saussure)

3. Genus ***Sericocampsomeris*** Betrem

3. *Sericocampsomeris stygia stygia* (Burmeister)
4. *Sericocampsomeris rubromaculata rubromaculata* (Smith)

4. Genus ***Campsomeriella*** Betrem

1. Subgenus ***Campsomeriella*** Betrem

5. *Campsomeriella (Ci), collaris collaris* (Fabricius)

2. Subgenus ***Annulimeris*** Betrem

6. *Campsomeriella (A.) annulata* (Fabricius)

5. Genus ***Megacampsomeris*** Betrem

7. *Megacampsomeris asiatica himalayana* (Betrem)
8. *Megacampsomeris shillongensis* (Betrem)
9. *Megacampsomeris prismatica* (Smith)

II. Tribe **Scoliini**

6. Genus ***Liacos*** Guerin

10. *Liacos erythrosoma erythrosoma* (Burmeister)

7. Genus ***Carinoscolia*** Betrem

11. *Carinoscolia bhamoensis* (Magretti)
12. *Carinoscolia opalina opalina* (Smith)

8. Genus ***Megascolia*** Betrem & Bradley

3. Subgenus ***Regiscolia*** Betrem

13. *Megascolia (Regiscolia) fulvifrons* (Saussure)

9. Genus ***Scolia*** Fabricius

4. *Subgenus* ***Discolia*** Betrem & Bradyle

14. *Scolia (Discolia) Sikkimensis* Bingham
15. *Scolia (Discolia) rugifrons* Betrem
16. *Scolia (Discolia) affinis* Guerin
17. *Scolia (Discolia) quadripustulata* Fabricius
18. *Scolia (Discolia) felderi* Betrem
19. *Scolia (Discolia) laeviceps* Smith
20. *Scolia (Discolia) cyanipennis* Fabricius
21. *Scolia (Discolia) venusta* Smith
22. *Scolia (Discolia) nobilis nobilis* & Saussure
23. *Scolia (Discolia) elizabethae* Bingham
24. *Scolia (Disclia) carmichaeli* Betrem
25. *Scolia (Discolia) binotata binotata* Fabricius
26. *Scolia (Discolia) wagneri* Betrem
27. *Scolia (Discolia) desidiosa* Bingham

Subfamily SCOLIINAE

Key to the tribes of SCOLIINAE

1. Fore wing with two recurrent veins, second recurrent absent in *Colpacampsomeris indica,* second recurrent not coalescent with first, however, reaching the cubital vein; sexual diamorphism well developed, males more slender and usually with extensive yellow integumental markings, while females robust and usually black; volsella divided into apical and basal parts by a transverse suture..... ..... I. Tribe **Campsomerini**

– Fore wing with single recurrent vein, second recurrent vein, when present, coalescing with first recurrent vein before reaching cubital vein; sexual diamorphism not so marked, males comparatively more robust than in Campsomerini and extensively marked with yellow only in a few species, where the famales

also maculated extensively; volsella not divided by a suture ..... II. Tribe **Scoliini.**

I. Tribe **Campsomerini**

Key to genera of the tribe Campsomerini

Female

1. Fore wing with a single recurrent vein..... .....2. *Colpacampsomeris* **Betrem**
- Fore wing with two recurrent veins 2
2. Upper plate of metapleurum entirely impunctate, transition between its dorsal and vertical areas either sharp and marked by a carina or the transition very gradual 3
- Upper plate of metapleurm usually punctate above, transition between its vertical and dorsal areas gradual to blunt, usually sharp anteriorly and gradual posteriorly 4
3. Lateral carina of propodeum abbreviated or extended up to spiracles; head behind ocelli impunctate; dorso-median area of propodeum triangularly protruded posteriorly; posterior surface of propodeum impunctate to finely and sparsely punctate; longer spur of hind tibia black, white or testaceous, usually blunt or acute but sometimes slightly spatulate at the apex. For wing yellowish hyaline to entirely fuscous, often basally hyaline and apically fuscous .....4. *Campsomeriella* Betrem
- Lateral carina of propodeuon extended beyond the spiracles; head behind the ocelli with scattered to close punctures; dorsomedian area of propodeum not triangularly protruded posteriorly; posterior surface of propodeum closely punctate at least above; longer spur of hind tibia black or testaceous, usually blunt at the apex. Fore wing usually dark brown .... 3 *Sericocampsomeris* Betrem.
4. Front infront of anterior ocellus with a group of deep punctures, scapulae without shallow longitudinal grooves; lateral carina extended beyond the spiracles; carina along the outer margin of the dorsum of propodeum distinct but the high; longer spur of hind tibia straight, acute or somewhat blunt at the apex; first submarginal cell almost entirely setose; basal abdominal tergites usually with yellow or reddish-brown bands .... 1. *Phalerimeris* Betrem
- Front infront of anterior ocellus usually without any group of deep punctures; scapulae with shallow longitudinal grooves; carina along the outer margin of dorsum of propodeum very strong and high and extended posteriorly up to the upper half of the postero-lateral area, with a deep groove along the inner side; dorso-median area, with a deep groove along the inner side; dorso-median area of propodeum sometimes with a median turbercle posteriorly; second submarginal cell bare, setose only above. Integument usually entirely black, sometimes basal tergites with yellow apical bands; vestiture usually yellowish or yellowish-brown, rarely entirely black; thorax especially the dorsum of propodeum with long vestiture. Wings hyaline to dark brown .... 5. *Magacampsomeris* Betrem

Male

1. Fore wing with a single recurrent vein. Integument entirely black, male genitalia with parameres slender and volsellae with small sparse hair on the basal portion. Body 22-28 mm. .. 2. *Colpacampsomeris* Betrem
- Fore wing with two recurrent veins, sometimes second recurrent vein faint or absent in small sized species. Integument marked with yellow or reddish-yellow spots or bands, rarely entirely black.....2.
2. Head much broader than high in frontal aspect, frontal spatium distinctly defined posteriorly by a somewhat curved groove, surface impunctate posteriorly in the middle, front largely impuctate except for a group of punctures in front of anterior ocellus, and with a large flat triangular area in front of anterior ocellus; declivity of vertex sloping and the temples receding; anterior slope of second sternite not steep, but

distinct, apical sternite usually with dense erect setae, known as copulatory brushes. Male genitalia with parameres slender, angular in circumference and their apices thickened, basal part of volsellae without dense hair .... 4. *Campsomeriella* Betrem

– Head not broader than high in frontal aspects ; front without a large punctate area in front of anterior ocellus; declivity of the vertex not strongly sloping and temple not receding; apical sternite without dense erect setae. Male genitalia with parameres slender but not angular in circumference and their apices not thickened, basal part of volsellae with sparse to dense hairs 3

3. Anterior ocellus usually large and placed in a broad shallow pit; integument entirely, or marked with bands or spots, yellow or reddish; vestiture predominantly black or white, or black mixed with white, sometimes apical abdominal segments with reddish setae; wings hyaline to fuscous. Male genitalia with paremeres short and slender, basal part of volsellae with short hair. Body length 20-26 mm ..... 3. *Sericocampsomeris* Betram

– Anterior ocellus small and usually placed in a small, shallow pit; integument usually marked with yellow or reddish-yellow spots and bands, rarely entirely black; apical abdominal segments always with black setae; wings hyaline with a subapical fuscous mark or sometimes entirely fuscous 4

4. Basal part of volsellae with short, sparse hair distance between the bases of these hairs more than their thickness .... 1. *Phalerimeris* Betrem

– Basal part of volsellee with long, dense hair, distance between the bases of these hair less than their own thickness .... 5. *Magacompsomeris* Betrem

1. Genus ***Phalerimeris*** Betrem

1967. *Campsomeris* subgenus *Phalerimeris* Betrem, *Bull. British Mus. (Nat. Hist.) Ent.*, **20** (7) : 294-295. Type-species : *Elis (Campsomeris) phalerata* Saussure, 1958.

1974. *Phalarimeris* Beterm : Bradley, *Revue suisse Zool.*, **81** (20) : 460 (*Phalerimeris* raised to generic status).

Type-species : *Elis (Camosomeris) phalerata* Saussure, 1858 (Original designation).

This genus is widely distributed in the Oriental Region and also occurs in New Guinea and adjacent Islands. The female of this genus can be easily distinguished from that of *Megacamsomeris* in having a group of deep punctures in front of anterior ocellus.

Of the three species known from Indian subregion, *viz.*, *P. madurensis* Betrem, *P. lantachneri* (Dalla-Torre) and *P. phalerata* Saussure, only *P. phalerata* subspecies *phalerata* Saussure has been recorded from Sikkim.

1. ***Phalerimeris phalerata phalerata*** Saussure

1856. *Ells (Campsmeris) phalerata* Saussure, *Ann. Soc. Ent. France* (3) **6** : 233. Female (not male) (Copenhagen Museum).

1897. *Ells iris* (Lapeletier) : Bingham, *Fauna of British India Hym.*, **1** : 94, Male. Female (specimens from North India, Myanmar and Java only).

1911. *Camposomeris albopilosa* Rohwer, *Proc. U. S. Nat. Mus.*, **39** : 480. Male, Java (synoymised by Betrem, 1928).

1972. *Phalerimeris phalerata phalerate* (Saussure) : Bradley, *Revue suisse Zool.*, **81** (20) : 460.

Diagostic characters : Female : Length 12-18 mm. Black. Antennae, tibiae and tarsi reddish; first three tergites with narrow apical orange bands, that on second narrowed towards sides. Erect vestiture reddish-golden, except black on the last abdominal segment and pygidium. Tomentum golden. Wings yellowish, apex of fore wing with large, well defined dark mark.

Male : Length 10-16 mm. Black. Abdomen with faint blue reflections. The yellow markings as follows : clypeus (except for a small to large median triangular area), a line along lower inner eye orbit, scrobes, a long mark on gena, pronotum broadly along its posterior margin, a minute postero-lateral mark on mesoscutum, a narrow anterior band on scutellum small, anterior spot on

metanotum, fore coxa, apical mark on fore femur below, middle femur with narrow stripes above and below, outer surface of fore and middle tibiae, posterior bands on first four tergites, band on first tergite usually convering apical half, band on third emarginate on sides, fourth band narrow and sometimes interrupted in the middle, rarely with postero-lateral spots on fifth tergite also; second, third and usually fourth sternites with narrow apical lateral spots, spots on second and third sternites sometimes united in the middle, those on fourth widely separated in the middle. Erect vestiture pale, except black on last three abdominal tergites. Wings slightly infumated ; fore wing usually with a light subapical mark.

Material examined : India : Sikkim : Ranjeet Valley, 1 Male, 29.v.1916, F. H. Gravely; Gangtok, 1470 m, 1 Male, 30.v.1976, L. N. Sharma; Tumlhang khola, 7 Males, 27.xii.1975, G. K. Srivastava; Melli, 235 m. 5 Males, 4.vi.1976, L. K. Sharma & G. Singh; Jorathong, 1 Female, 1 Male, 10.xi.1994; Phadong, 1 Male, 31.x.1994. G. C. Sen & party (Z.S.I., Calcutta).

Distribution : India : Sikkim; Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Meghalaya, Tripura, Uttar Pradesh and West Bengal. *Elsewhere* : China, Myanmar, Nepal, Taiwan and Sulawesi.

2. Genus ***Colpacampsomeris*** Betrem

1941. *Campsomeris* subgenus *Colpacampsomeris* Betrem, *Notes Ent. Chinoise,* **8** (4) : 101-102 Type-species : *Scolia indica* Saussure, 1855.

1974. *Colpacampsomeris* Betrem : Betrem in Bradley, *Revue Suisse Zool.,* **81** (2) : 445 (*Colpacampsomeris* raised to generic status).

Type-species : *Scolia indica* Saussure, 1855 [= *Colpacampsomeris indica indica* (Saussure, 1855)] (Original designation).

This genus is widely distributed in the Oriental Region and is hitherto known only by its genotype, *viz.*, *Colpacampsomeris indica* (Saussure).

This genus is easily separated from other genera of the tribe Campsomerini by having a single recurrent vein in the fore wing in both the sexes and body size ranging from 26-35 mm.

This genus is represented by a single subspecies from the state of Sikkim.

2. ***Colpacampsomeris indica indica*** (Saussure)

1855. *Scolia (Lacosi) indica* Saussure, *Mem. Soc. Phys. Hist. nat. Geneve,* **14** : 46. Female. Indes Orientali (lectotype designated by Bradley 1974). (Paris Meseum).

1855. *Scolia ignita* Smith, *Cat. Hym. British Mus.,* **3** : 101. Female. (British Meseum).

1928. *Campsomeris (Trielis) assamensis* Betrem, *Treubia,* **9** (suppl.) : 101. Male, Khasi Hills (syn. by Betrem in 1967).

Diagnostic characters : Female : 25-35 mm. Integument entirely black. Vestiture black except apices of second of fifth segments with bright red or golden red setae; pygidium also similarly clothed with red-golden setae, wings dark brown with strong blue reflections.

Male : Length 22-28 mm. Integument black. Vestiture predominantly white, mixed with black. Wings relatively light brown, anterior margin of fore wing darker with blue reflections. Longer spur of hind tibia spatulate; fore wing with single recurrent vein.

Material examined : India : Sikkim, 1 Male, no further data (Z.S.I., Calcutta).

Distribution : India : Sikkim ; Arunachal Pradesh, Himachal Pradesh, Meghalaya, Uttar Pradesh, S. India and West Bengal. *Elsewhere* : Bangladesh, Malacca, Myanmar and Sri Lanka.

3. Genus ***Sericocampsomeris*** Betrem

1941. *Campsomeris* subgenus *Sericocampsomeris* Betrem, *Notes Ent. Chinoise,* **8** (4) : 91-91, des. Type-species : *Scolia quadriguttulata* Burmeister.

1972. *Sericocampsomeris* Betrem. *Mon. Ned. Ent. Ver.,* **6** : 12.

Type-species : *Scolia stygia* Illiger (= *Scolia quadriguttulata* Burmeister).

This is a moderate sized genus, widely distri-

buted in the Oriental Region, and is also known from southern China and Sulawesi. It is known by four species in India, viz., *S. rubromaculata* (Smith), *S. bella* (Bingham), *S. stygia* (Illiger) and *S. flavomaculata* Gupta and Jonathan. Only *S. stygia stygia* (Illiger) and *S. rubromaculata* (Smith) are known from Sikkim. These species/ subspecies can be distinguished by the following key :

Key to the species/subspecies of *Sericocampsomeris*

1. Females 2
- Males 3
2. Integument of abdomen basically black, third andfourth tergites with paired yellow spots. ..... *stygia stygia* (Illiger)
- Integument of abdomen basically reddish-brown ..... *rubromaculata rubromaculata* (Smith)
3. Clypeus almost entirely yellow, scutellum and metanotum with yellow marks .... *stygia stygia* (Illiger)
- Clypeus, scutellum and metanotum black .... *rubromaculata rubromaculata* (Smith)

3. *Sericocampsomeris stygia stygia* (Illiger)

1802. *Scolia stygia* Illiger, *Mag. Ins.*, **1** : 195. Type Female Tranqueber (Berlin Meseum).

1854. *Scolia 4-guttulata* Burmeister, *Abn. Naturf. Gas. Halle*, **1** (4) : 21. Female. Java (Halle Museum).

1855. *Scolia luctuosa* Smith, *Cat. British Mus. Hym.*, **3** : 101. Type Female. Silhet (British Museum).

1905. *Campsomeris sericeps* Cameron, *Tidjschr. Entom.*, **48** : 55. Type Female. Java (Artis Meseum).

1915. *Dielis javanica* Leefmans, *Meded. Lab. V. Plantenziekten*, 13 : 62. Type Female. Java.

1972. *Sericocampsomeris stygia stygia* Illiger : Betrem in Betrem and Bradley, *Mon. Ned. Ent. Ver.*, **6** : 12.

Material examined : India : Sikkim, 1 Male, no further data (Z.S.I., Calcutta).

Distribution : India : Sikkim; S. India, Tripura and West Bengal. *Elsewhere* : Myanmar and Indonesia.

Remarks : This species is readily recognised by having four spots on the abdomen.

4. *Sericocampsomeris rubromaculata rubromaculata* (Smith)

1855. *Scolia rubromaculata* Smith, *Cat. Hym. British, Mus.*, **3** : 99. Female, "India" (holotype in British Mesuem).

1874. *Sericocampsomeris rubromaculata rubromaculata* (Smith) : Betrem *in* Bradley, *Revue suisse Zool.*, **81** (2) : 425-426.

Meterial examined : India : Sikkim, 1 Female, no further data (Z.S.I., Calcutta).

Distribution : India : Sikkim and Arunachal Pradesh.

4. Genus *Campsomeriella* Betrem

1941. *Campsomeris* subgenus *Campsomeriella* Betrem, *Notes Ent. Chinoise*, **8** (4) : 86-87. Type-species : *Scolia thoracica* Fabricius.

1967. *Campsomeriella* Betrem. *Entom. Bericht*, **27** : 25-29.

Type-species : *Scolia thoracica* Fabricius [=*Campsomeriella (Campsomeriella) thoracica* (Fabricius)].

This genus is widely distributed in the African, southern Palaearctic and Indo-Australian Regions, except Australia. This genus is divided into four subgenera, viz., *Campsomeriella* Betrem, *Annulimeris* Betrem, *Rodriguimer is* Betrem and *Madonimeris* Metrem. Of these, *Campsomeriella* and *Annulimeris* are widely distributed in Indian subregion.

One subspecies and one species are known under these two subgenera. These can be distinguished by the following key.

Key to the subgenera and species/ subspecies of *Campsomeriella*

Female

1. Basal portion of the lateral carina of propodeum not extending up to spiracles; impunctate areas behind the callosities usually large; spurs of middle and third tibiae black or testaceous ... . subgenus ***Campsomeriella***

Betrem. Wings dark brown, abdominal vestiture black ..... *collaris collaris* (Fabricius)

– Basal portion of the lateral carina of propodeum extending somewhat beyond the spiracles; impunctate areas behind the callosities small to very small; spurs of middle and hind tibiae white .... subgenus ***Annulimeris***

Betrem ..... Integument black, abdominal vestiture white. Abdominal segments with apical white fringe ..... *annulata* (Fabricius)

Male

1. Apical sternites with capulatory brushes ..... subgenus *Campsom eriella* Betrem ..... Pronotum, scutellum and metanotum with yellow marks; apical yellow bands on the basal tergites comparatively broad ... . *collaries collaris* (Fabricius)

– Apical sternites without copulatory brushes.....subgenus ***Annulimeris*** Betrem ..... First to fifth abdominal tergites with broad to narrow basal bands *annulata* (Fabricius)

5. *Campsomeriella (Camposomeriella) collaris collaris* (Fabricius)

1775. *Tiphia collaries* Fabricius, *Syst. Ent., p.354.* Type Female. Malahar (Copenhagen Museum).

1845. *Colpa parvula* Lepeletier, *Hist. nat. Ins. Hym.*, **3** : 548. Type Male, Indes. (Type probably lost). sys. by Betrem & Bradley, 1964.

1967. *Campsomeriella (Campsomeriella) collaris collaris Fabricius* : Betrem, Entom. Bericht., **27** : 29. *(Campsomeriella raised to genetic status and collaris placed in subgenus Campsomeriella).*

Material examined : India : Sikkim : Rabung, 1 Male, 16.ix.1995, S. C. Mitra & party (Z.S.I., Calcutta).

Distribution : India : Sikkim; Arunachal Pradesh, Andhra Pradesh, Assam, Bihar, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh.

Elsewhere : Bangladesh, Myanmar, Nepal, Sri Lanka.

Remarks : This is one of the most abundant and widely distributed Indian scoliid, breeding throughout the year in all the ecosystems and areas of low to very heavy rainfall. This species can be easily recognised by having the integument of the female black, the wings dark fuscous with strong blue reflections and the occiput and pronotum with conspicuous erect white setae. Males have more extensive yellow marks on abdomen.

6. *Campsomeriella (Annulimeris) annulata* (Fabricius)

1793. *Tiphia annulata* Fabricius, *Ent. Syst.*, **2** : 225. Type Female. China (Copenhagen Museum).

1845. *Campsomeris servillei* Lapeletier, *Hist. nat. Ins. Hym.*, **3** : 501. Type Female. Java (Italy Museum).

1901. *Elis aglaea* Cameron. *Proc. zool. Soc. London*, **2** : 19. Type Male. Malaya.

1967. *Campsomeris (Annulimeris) annulata* (Fabricius) : Betrem, *Entom. Berich.*, **27** : 29. (subgenus *Campsomeriella* raised to generic status; ***annulata*** placed under new subgenus *Annulimeris* Betrem).

Material examined : India : Sikkim : Rangpo, 2 Males, 18.ix.1987, A.N.T. Joseph & party; Jorathong, 7 Males, 4.vi.1994, B.C.Saha & party; Jorethons, 2 Females, 6.ix.1994; 1 Male, 10.xi.1994, G. C. Sen & Party; Dentam, 1 Male, 8.x.1995, S. C. Mitra & Party (Z.S.I., Calcutta).

Distribution : India : Sikkim; Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Kashmir, Meghalaya, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, China, Indonesia, Korea, Malaysia, Myanmar, Nepal and Taiwan.

Remarks : This is the only species under the subgenus *Annulimeris* Betrem. This species is widely distributed in North India and also

distributed from Bangladesh to Japan.

5. Genus *Megacampsomeris* Betrem

1928. *Campsomeris* subgenus *Megacampsomeris* Betrem, *Treubia*, **9** (supl.) : 138. Type-species : *Tipha grossa* Fabricius, 1804.

1972. *Megacampsomeris* Betrem : Betrem *in* Betrem & Bradley, *Mon. Ned. Ent. Ver.*, 6 : 167. (subgenus *Megacampsomeris* raised to generic status).

Type-species : *Tiphia grossa* Fabricius, 1804 [= *Megcampsomeris grossa* (Fabricius, 1804)] (original designation).

This is a moderately large genus, represented by 7 species and 2 subspecies from India.

The following species and subspecies are known from the state of Sikkim : *Megacampsomeris shillongensis* (Betrem), *M. prismatica* (Smith) and *M. asiatica himalayana* (Betrem).

These can be distinguished by the following key :

Key to the species/subspecies of *Magacampsomeris*

Female

1. Basal abdominal tergites with white apical fringes. Fore wing light brown; subspecies known from north India .... *asiatica himalayana* (Betrem)
- Basal abdominal tergites with fringes other than white. 2
2. Basal tergites with yellow or reddish-yellow apical bands, fore wing without any well defined dark apical spot, vestiture on abdomen golden, except on fifth, and following segments black *shillongensis* (Betrem)
- Basal tergites without such bands; vestiture on the abdomen predominantly golden. Mesoscutum with a large impunctate area in the middle ..... *presmatica* (Smith)

Male

1. Clypeus entirely yellow, except for a minute spot in the middle, sometimes black; genae with large yellow marks; all the femora almost entirely yellow on outerside .... *shillongensis* (Betrem)
- Clypeus with a black area in the middle, never entirely yellow; genae without any yellow mark; femora never marked yellow on outerside .2
2. Vestiture on legs entirely white; apical fringes of first to fourth tergites also white. (Wings yellowish hyaline ....*asiatica himalayana* (Saussure)
- Vestiture on legs never white; apical frings of abdominal tergites not white. (Second and third femora without any yellow maculations) .... *prismatica* (Smith)

7. *Megacampsomeris asiatica himalayana* (Betrem)

1928. *Campsomeris (Megacampsomeris) asiatica himalayana* Betrem, *Treubia*, **9** (suppl.) : 141. Female in Leiden Musseum; allotype in F.R.I., Dehra Dun.

1972. *Megacampsomeris asiatica himalayana* (Betrem) ; Betrem *in* Betrem and Bradley, *Mon. Ned. Ent. Ver.*, **6** : 164. (*Megacampsomeris* raised to generic status).

Material examined : India : Sikkim, no further data, A. V. Knyvett (Z.S.I., Calcutta).

Distribution : India : Sikkim; Himachal Pradesh, Karnataka, Meghalaya and Uttar Pradesh.

Elsewhere : Bhutan and Nepal.

Remarks : This subspecies is widely distributed in the himalayan region of India, Bhutan and Nepal.

8. *Megacampsomeris shillongensis* (Betrem)

1928. *Campsomeris (Magacampsomeris) shillongensis* Betrem, *Treubia*, **9** (suppl.) : 155. Type female. India : Shillong (I.A.R.I., New Delhi).

1972. *Magacampsomeris shillongensis* Betrem : Betrem & Bradley, *Mon. Ned. Ent. Ver.*, **6** : 165 (subgenus *Megacampsomeris* raised to generic status).

Material examined : India : Sikkim : Deorali, 1500m, 2 Males, 23.ix.1978, A.N.T. Joseph; Phungta, 1300m, 1 Male, 16.ix.1978, A.N.T.

Joseph: Rasibazar, 1 Male, 19.x.1975, S. C. Mitra & party (Z.S.I., Calcutta).

Distribution : India : Sikkim; Manipur, Meghalaya and West Bengal.

Elsewhere : Myanmar and Nepal.

9. *Megacampsomeris prismatica* (Smith)

1855. *Scolia prismatica* Smith, *Cat. Hym. British Mus.*, **3** : 102.

1928. *Campsomeris (Megacampsomeris) prismatica* : Betrem. *Treubia.* **9** (Suppl.) : 152-153. Male, Female ; Java, Sumatra, Borneo, Sulawesi, Malakka, North India, Taiwan and Japan.

1972. *Megacampsomeris prismatica* (Smith) : Betrem *in* Betrem & Bradley, *Mon. Ned. Ent. Ver.*, **6** : 164. (subgenus *Megacampsomeris* raised to generic status).

Material examined : India : Sikkim : Gangtok, Nam Nam, 1470m, 1 Male, 30.v.1976, G. Singh.

Distribution : India : Sikkim; Arunachal Pradesh, Himachal Pradesh, Kashmir, Manipur, Meghalaya, Orissa, Uttar Pradesh and West Bengal.

Elsewhere : China, Honshu, Indonesia, Japan, Korea, Malaysia, Myanmar, Nepal, the Philippines and Taiwan.

Remarks : This is a widely distributed species and easily recognised by having vestiture on abdomen predominantly golden, fore wing without any well defined apical spot and mesoscutum with a large impunctate area in the middle.

II. Tribe **Scoliini**

Key to the genera of tribe Scoliini

1. Fore wing with two recurrent veins (the second recurrent coalescent with first recurrent before reaching cubital vein), and with three discoidal cells ..... ***Liacos*** Guerin
- Fore wing with only first recurrent vein (the second recurrent vein absent), and with two discordal cells 2
2. Front with a transverse ridge; the frontal carina present between frontal spatium and anterior ocellus. Basal portion volsella very long, with long dense hairs ..... ***Carinoscolia*** Betrem
- Front without such a transverse carina..... 3
3. Large sized species, 19-50 mm. Fore wing with three submarginal cells, except in *M. fulvifons* Saussure with two submarginal cells; first tergite with a strong tubercle anteriorly..... ..... ***Megascolia*** Betrem
- Small to moderate sized species, 5-25 mm. Fore wing always with two submarginal cells; first tergite with a small to moderate sized tubercle anteriorly, tubercle often absent .... ***Scolia*** Fabricius

6. Genus *Liacos* Guerin

1839. *Scolia* subgenus *Liacos* Guerin, *Voy. d. Cog. Zool.*, **2** : 246. Type-species : *Scolia (Liacos) dimidiata* Guerin, 1938.

1966. *Liacos* Guerin : Bradley & Betrem, *Beitr. zur. Entom.*, **16** : 73, 74 (*Liacos* as a genus).

Type-species : *Scolia (Liacos) dimidiata* Guerin, 1838 [=*Liacos analis analis* (Fabricius, 1804)]. Original designation.

This genus is widely distributed in Indo-Australian Region and also occurs in tropical Africa. This genus is represented by a single species, *L. erythrosoma* (Burmeister) from Indian subregion.

Liacos erythrosoma is a polytypic species widely distributed in Oriental Region. Three subspecies have been recorded from India, *viz.*, *erythrosoma erythrosoma* (Burmeister), *erythrosoma fulvopicta* Cameron and *erythrosoma aurantica* Micha. Of these, *erythrosoma erythrosoma* has been recorded from Sikkim.

10. *Liacos erythrosoma erythrosoma* (Burmeister)

1854. *Scolia erythrosoma* Burmeister, *Abh. Naturf. Ges. .Halle.*, **1** : 15. Type Male. Padang, Sumatra (Halle Museum).

1855. *Scolia (Scolia) penangensis* Saussure, *Mem. Soc. Phys. Hist. Nat. Geneva*, **14** : 39, Type Female, Penang (Geneva Museum).

1927. ***Liacos erythrosoma rufocornata*** Micha, *Mitt. Zool. Mus. Berlin*, **13** : 58. Type Female, Pulo Penang (Berlin Museum).

1927. ***Liacos erythrosoma sikkimensis*** Micha, *Mitt. Zool. Mus, Berlin*, **13** : 59. Female, Male. Myanmar, India : Sikkim, Assam (Berlin Meseum).

1927. ***Liacos erythrosoms vulpes*** Micha, *Mitt. Zool. Mus. Berlin*, **13** : 59. Type male. West Sumatra, Kambang (Berlin Museum).

1927. ***Liacos erythrosoma borneensis*** Micha, *Mitt. Zool. Mus. Berlin*, **13** : 59. Type Male and Female; Kalimantan (Berlin Museum).

1927. ***Liacos erythrosoma hainana*** Micha, *Mitt. Zool. Mus. Berlin*, **13** : 60. Type Female. Hainan (Berlin).

1966. ***Liacos erythrosoma erythrosoma (Burmeister) : Bradley & Betrem***, Beitr. zur. Entom., **16** : 75.

Diagnostic characters : Female : Length 21-23 mm. Integument black. The following red : usually a pair of large rounded spots on first tergite entirely, second tergite except for a pair of lateral spots and a median spot, sometimes second tergite entirely and third to sixth tergites wholly, usually at sides or whole of second sternum and whole of third to sixth sternite. Vestiture black, red to bright red on red integument of abdomen. Wings dark brown with golden reflections.

Material examined : India : Sikkim, Ranjeet Valley, Manjitar 270m, 1 Female, 27.v.1976, S. Biswas (Z.S.I., Calcutta).

Distribution : India : Sikkim; Arunachal Pradesh, Manipur, Tamil Nadu,and West Bengal.

Elsewhere : Indonesia, Malaysia, Myanmar, Hainan, Malacca and Nepal.

Remarks : This is a widely distributed species in Oriental Region. It can be differentiated from all other subpsecies by having golden reflections on the wings and comparatively extensive reddish integument and vestiture of the abdomen.

7. Genus *Carinoscolia* Betrem

1927. *Scolia* subgenus *Carinoscolia* Betrem, *Tijdschr. Ent.*, 70 (verslag) : xcvii. Type-species : *Scolia opalia* Smith, 1958.

1967. *Carinoscolia* Betrem : Betrem *in* Bradley & Betrem, *Bull. British. Mus. (Nat. Hist.) Ent.*, **20** : (7) : 293.

Type-species : *Scolia opalina* Smith, 1858. Original designation.

This is a moderate sized genus, widely distributed in the Indo-Australian Region and also recorded from eastern Palaearctic Region. This genus is known in India by two species, *viz.*, *C. opalina* (Smith) and *C. bhamoensis* (Margretti). Both the species have been recorded from Sikkim also.

These species can be identified by the following key :

Key to species of *Carinoscolia*

1. Integument and vestiture entirely black .... *opalina* (Smith)

– Integument of head and pronotum mostly reddish-yellow; vestiture on coloured integumental parts reddish-yellow or golden..... ..... *bhamoensis* (Magretti)

11. ***Carinoscolia bhamoensis*** (Magretti)

1892. *Socolia (Discolia) bhamoensis* Magretti, *Ann. Mus. Civico Storia Nat. Genova*, **32** : 239-241. Female. Myanmar : Bhamo (holotype in Genova Museum).

1928. *Scolia (Carinoscolia) bhamoensis* (Magretti) : Betrem, *Treubia*, **9** (suppl.) : 184-185. Female, Male. India : Sikkim, Meghalaya.

1957. *Carinoscolia bhamoensis* (Megretti) : Bradley & Betrem, *Bull. British Mus. (Nat. Hist) Ent.*, **20** (7) : 293 (*Carinoscolia* raised to generic status).

Material examined : India : Sikkim, 1 Female, no further data (Z.S.I., Calcutta).

Distribution : India : Sikkim; Meghalaya. *Elsewhere* : Myanmar.

Remarks : The distribution of this species is restricted to hilly areas of Myanmar and N-E India. It can easily be distinguished from *C. opalina* Smith by having head and pronotum largely reddish-yellow.

12. *Carinoscolia opalina* (Smith)

This polytypic species is known by three subspecies, viz., *opalina opalina* (Smith) from Kalimantan, Sumatra, Malaya, Myanmar and Sikkim in India; *opalina brevicornis* (Saussure) from Java and *opalina propodealis* (Rohwer) from the Philippines.

Only one subspecies *Carinoscolia opalina opalina* is known from Sikkim.

12a. *Carinoscolia opalina opalina* (Smith)

1858. *Scolia opalina* Smith, *J. Proc. Linn. Soc. London (Zool.)*, **2** : 89, Female, Male.

1957. *Carinoscolia opalina opalina* (Smith) : Betrem & Bredley, *Bull. British Mus. (Nat. Hist.) Ent.*, **20** (7) : 317 (lectotype female of *Scolia opalina* designated).

Distribution : India : Sikkim.

Elsewhere : Kalimantan and Myanmar.

Remarks : Bingham (1897) identified 1 female from Sikkim. This subspecies is readily distinguished by its entirely black integument and vestiture; and purplish-golden reflections of the wings.

8. Genus *Megascolia* Betrem

1928. *Scolia* subgenus *Triscolia* Saussure : Betrem, *Treubia*, **9** (suppl.) : 224. Type-species : *Scolia flavifrons* Fabricius, 1775.

1928. *Scolia* subgenus *Triscolia* section *Megascolia* Betrem, *Treubia*, **9** (suppl.) 239. Type-species : *Scolia procer* Illiger, 1802.

1964. *Megascolia* Betrem : Betrem & Bradley, *Zool. Meded.* **39** : 437 (*Megascolia* raised to generic status).

Type-species : *Scolia procer* Illiger, 1802. [=*Megascolia procer procer* Illiger, 1802]. Original designation.

This genus is widely distributed in the Oriental Region and is also known from southern Palaearctic and Mediterranean regions. The genus is subdivided into two subgenera, viz., *Megascolia* Betrem and *Regiscolia* Betrem & Bradley.

These two subgenera can be distinguished by the following key :

Key to the subgenera of *Megascolia*

Female

1. Clypeus very broad, its anterior rim comparatively narrow, median portion narrow and not widely truncate or subtruncate; disc of clypeus strongly raised and punctate, neither smooth nor rugulose; scapula usually with a strong tubercle in front of tegula, sometimes this tubercle may be small or indistinct .... *Megascolia* Betrem

– Clypeus relatively small and narrow; its anterior rim broad and in the middle broadly truncate or subtruncate; disc of clypeus flat, usually regulose, scapula without any tubercle in front of tegula..... ..... *Regiscolia* Bradley & Betrem

Male

1. Apical portion of volsella without a blade-like appendage, apex of the cuspis volsellaris with long coarse conspicuous setae; plates of aedeagus with needle-like teeth .... *Megascolia* Betrem

– Apical portion of the volsella with a blade-like appendage; apex of the cuspis volsellaris often with small setae; apical-third of the plate of aedaegus often with five, small tooth .... *Regiscolia* Betrem & Bredley

Only subgenus *Regiscolia* Bradley and Betrem is reported from Sikkim, India.

3. Subgenus *Regiscolia* Bradley & Betrem

1928. *Scolia* subgenus *Triscolia* Saussure : Betrem, *Treubia*, **9** (suppl.) : 228. Type-species : *Scolia flavifrons* Fabricius, 1775.

1964. *Megascolia* subgenus *Regiscolia* Betrem & Bradley, *Zool. Meded.*, **39** 441 (established as a new subgenus).

Type-species : *Scolia flavifrons* Fabricius, 1775 [=*Megascolia (Regiscolia) flavifrons flavifrons* (Fabricius), 1775], subsequent designation.

This subgenus is widely distributed in the Oriental Region and is also known from Mediterranean and southern Palaearctic Regions.

This subgenus is known by three species, viz., ***M (R.) rubida*** (Gribodo), *M. (R.) azurea* (Christ) and ***M. (R.) fulvifrons*** (Saussure). *M. (R.)* ***fulvifrons*** is the only species known from the state of Sikkim, India.

13. *Megascolia (Regiscolia) fulvifrons* (Saussure)

1855. *Scolia (Discolia) fulvifrons* Saussure, *Mem. Soc. Phys. Hist. nat. Geneve.*, **14** : 43, fig. 11. Female, Indes Orientalis (holotype in Geneva Museum).

1955. *Scolia personate* Smith, *Cat. British Mus. Hym.*, **3** : 91. Male, Silhet (holotype in British Museum).

1864. *Scolia (Discolia) fulvifrons* Saussure : Saussure & Sichel, *Cat. Spec. Gen. Scolia* : 166. Female, Male; Indes Orientalis (synonymised *S. personata* Smith).

1897. *Scolia fulvifrons* Saussure : Bingham, *Fauna British India Hym.*, **1** : 81. Female, Male; Silhet, Assam; Tenassereim ; Singapore.

1928. *Scolia (Triscolia) fulviforns* : Betrem, *Treubia*, **9** (suppl.) : 238-239. Female, Male ; Silhet, Darjeeling, Assam.

1964. *Megascolia (Regiscolia) fulvifrons* (Saussure) : Betrem & Bradley, *Zool, Meded.*, **39** : 444.

Diagnostic characters : This species is a rather unique member of this subgenus in that it has only two marginal cells in the fore wing in both the sexes.

Female : Length 35 mm. Integument black. The following reddish-yellow : front and vertex except ocellar triangle, a pair of large rounded spots on the third tergite. Vestiture black. Wings dark brown with purplish blue reflections.

Male : Length 30-36 mm. Integument black. The following reddish-yellow, a long line on scrobe, extending up to ocellar sinus, a pair of large spots on third tergite, spots almost meeting in the middle. Vestiture black except on the reddish-yellow integument of third tegite, reddish-yellow. Wings dark brown with purplish reflections.

Material examined : India : Sikkim, 11 Males, without dates, A.V. Knyvett (Z.S.I., Calcutta).

Distribution : India : Sikkim; Assam and West Bengal.

Elsewhere : Bangladesh, Myanmar and Singapore.

9. Genus *Scolia* Fabricius

This genus is represented by two subgenera, viz., *Scolia* Betrem (1928) and *Discolia* Saussure (1863) in the Indian subregion. In the state of Sikkim this genus is represented by 14 species and subspecies, under subgenus *Discolia* Saussure.

Subgenus *Discolia* Saussure

1863. *Scolia* subgenus *Discolia* Saussure, *Soc. ent. France, Ann.*, (4) **3** : 18.

Type-species : *Scolia nobilitata* Fabricius. Designated by Betrem and Bradley, 1964.

This genus is widely distributed in most geographical regions of the world. About 40 species/subspecies are known under this subgenus from India. Of these, 14 are recorded from the state of Sikkim. These can be identified by the following key :

Key to the species of the genus *Scolia (Discolia)*

Female

1. Abdominal integument entirely black 2
– Abdominal integument not entirely black; more or less maculated with yellow to reddish ... 7
2. Integument of antennae, head and thorax entirely black ..... 3.
– Integument of antenne and head/or antennal flagellum more or less reddish, rest of integument black ..... 4.
3. Vestiture entirely black, second abdominal tergite finely and densely punctate posteriorly, and with some interspersed large punctures ..... *cyanipennis* Fabricius
– Vestiture white mixed with black, predominantly white on head and lateral thorax; second abdominal tergite not finely and densely punctate posteriorly .....

..... *laeviceps* Smith.

4. Antennal flagellum orange-red, rest of the entirely black metanotum and dorso-median area of propodeum almost entirely smooth, except for a few scattered punctures..... ..... *affinis* Guerin

– Antenna and head, more or less reddish ...5.

5. Clypeus entirely black; mesoscutum with only a V-shaped impunctate area posteriorly in the middle..... *rugifrons* Betrem

– Clypeus not entirely black, half to almost entirely reddish; mesoscutum with a quadrate impunctate area posteriorly in the middle 6

6. Clypeus reddish at its posterior half only; frontal fissure prominent and extending up to anterior ocellus; vestiture yellowish-white and black *carmichaeli* Betrem.

– Clypeus almost entirely reddish except along the anterior margin, black; frontal fissure weak not extending up to anterior ocellus; vestiture predominantly black except for riddish setae on the head .....*felderi* Betrem

7. Head and thorax black, abdomen with reddish spots or bands.....8

– Head, abdomen and/or thorax with yellow or reddish spots or bands..... 10

8. Apical margin of clypeus truncate in the middle; most of the metapleurum covered with coarse. contiguous to subcontiguous punctures; second and third abdominal sternites mostly .... *quadripustulate* Fabricius

– Apical margin of the clypeus broadly and gently rounded in the middle; metapleurum not covered with coarse, contiguous to sub-contiguous punctures, broadly impunctate in the middle; abdominal sternites black 9

9. Front impunctate, erect hair on the occiput entirely white; elsewhere predminantly black; third and fourth tergites with a pair of well-separated, rounded red spots. Body length 14-21 mm..... *binotata binotata* Fabricius

– Front with sparse punctures; erect hair almost entirely white except apical fringes of abdominal tergites mixed with black; only third tergite with a pair of ovoid well separated red spots. Body length 11-12 mm. .... *wagneri* Betrem.

10. Thorax black, except sometimes with a reddish spot on mesopleurum above 11

– Thorax maculated with yellow, particularly the propodeum 13

11. Head with a large rectangular yellow mark on the front, elsewhere black..... *venusta* Smith

– Head with front and vertex almost entirely yellowish to reddish 12

12. Abdomen with a broad yellow to red band on third tergite and sometimes with not a well defined narrow band on fourth tergite also; propodeum with coarse, deep punctures..... ..... *elizabethae* Bingham

– Abdomen with paired yellow spots on third and fourth tergites; propodeum with small, shallow, sparse to scattered punctures..... .....*nobilis nobilis* Saussure.

13. Scutellum and metanotum black; vestiture reddish brown except on fourth to sixth abdominal tergites black .... *sikkimensis* Bingham.

– Scutellum and metanotum almost entirely yellow; vestiture white except posterior margin of abdominal tergites and fifth and sixth sternites black .....*desidiosa* Bingham.

Male

1. Abdomen entirely black.....2

– Abdomen with red or yellow maculations 10

2. Head and antennae, entirely black 3

– Head and/or antennae, more or less yellow to red.....7

3. Anterior ocellus in a deep pit, vertex almost impunctate; mesopleurum impunctate below above towards the base of coxae, elsewhere sparsely punctate ..... *laeviceps* Smith

– Anterior ocellus not in a deep pit, vertex not entirely impunctate, mesopleurum, usually with sparse to close punctures below 4

4. Antennal flagallum long, not clavate towards apex, segments toward tip longer than broad ; metapleurum mostly with subcontiguous punctures except for a narrow impunctate stripe below on upper plate .... *quadripustulata* Fabricius.

– Antennal flagellum short, clavate towards apex, segments towards tip as broad as long; metapleurum usually broadly impunctate in the middle, lower plate not subcontiguously punctate 15

5. Vestiture entirely black .... *cyanipennis* Fabricius.

– Vestiture not entirely black, more or less, mixed with white 6

6. Fore wing membrane beyond cells devoid of setae, posteior half of fore wing and hind wing lighter in shade .... *binotata binotata* Fabricius

– Fore with membrane beyond cells covered with fine setae; posterior half of the fore wing and hind wing not light ..... *wagneri* Betrem

7. Only antennal flagellum orange red, at least beneath, rest of the integument black ; dorso-median area of propodeum with shallow, sparse punctures ..... *affinis* Guerin

– Head and antennae, more or less, reddish; dorso-median area of propodeum with deep, close punctures 8

8. Head and antennae almost entirely reddish-yellow, except apical margin of the clypeus, black; vestiture black except on head, largely yellowish-white ..... *felderi* Betrem

– Head and entennae not almost entirely reddish, antennae or vertex entirely black; vestiture on thorax, and abdomen not entirely black 9

9. Scapus and five to six apical segments of antennae black; vertex entirely reddish-yellow ..... *carmichaeli* Betrem

– Antennal flagellum entirely orange to red; vertex entirely black .... *elizabethae* Bingham

10. Antennae, head and thorax entirely black 11

– Antennae and head, more or less, maculated with yellow thorax black or maculated with yellow 13

11. Antennal flagellum not clavate towards apex; most of metapleurum covered with contiguous to subcontiguous punctures; larger sizes species; body 17-20 mm .... *quadripustulata* Fabricius

– Antennal flagellum clavate towards apex; upper plate of the metapleurum impunctate at its lower half of more 12

12. Abdomen with first five tergites having white erect vestiture excepting apical fringes; third tergite with paired small red spots; fore wing membrane beyond cells extensively clothed with microtrichiae ..... *wagneri* Betrem

– Abdomen with paler vestiture usually on first tergite and on areas having red spots; fore wing membrane beyond cells devoid of microtrichiae, except for a small triangular area adjacent to marginal cell .... *binotata binotata* Fabricius

13. Propodeum entirely black, yellow maculation on thorax restricted to scapulae, or scapulae entirely black 14

– Propodeum extensively maculated with yellow 16

14. Scapulae entirely black; clypeus and front almost entirely yellow; third tergite with a pair of elongated yellow marks .... *elizabethae* Bingham

– Scapulae yellow; clypeus black; front black or with only a transverse yellow mark; third abdominal tergite entirely yellow or with a yellow band, latter interrupted in the middle 15

15. Second to fourth tergites almost entirely yellow; front with a transverse yellow mark .... *venusta* Smith.

- Third tergite only with a yellow interrupted band; front black ..... *nobilis nobilis* Saussure

16. Fore wing with a subapical fuscous mark; all the femora largely yellow; yellow bands on second and third tergites not broadly emarginate in the middle ..... *sikkimensis* Bingham

- Fore with without any subapical mark; third femur black, only first and second femora with yellow marks; yellow bands on second and third tergites broadly emarginate in the middle ..... *desidiosa* Bingham

14. *Scolia (Discolia) sikkimensis* Bingham

1896. *Scolia sikkimensis* Bingham, *J. Linn. Soc. Zool.*, **25** : 423. Female, Male. India : Sikkim (Type in British Museum).

1964. *Scolia (Discolia) sikkimensis* Bingham : Betrem & Bradley, *Zool, Meded,* **40** : 49 (subgeneric assignment).

Material examined : India : Sikkim, 2 Females, 1 Male, v. 1912, Lord Carmichael (Z.S.I., Calcutta and F.R.I., New Delhi).

Distribution : Sikkim, Meghalaya and West Bengal. *Elsewhere* : Bhutan and Nepal.

Remarks : This species is mainly distributed in N-E himalayan region. This species is easily recognised by having reddish-brown legs, wings with golden effulgence and vestiture is general reddish-brown, except black on fourth to sixth tergites.

15. *Scolia (Discolia) rugifrons* Betrem

1928. *Scolia (Scolia) rugifrons* Betrem, *Treubia,* **9** (suppl.) : 273. Female. Myanmar ; India : Khasi Hills ; Ranjeet Valley (types in British Museum).

1964. *Scolia (Discolia) rugifrons* Betrem : Betrem & Bradley, *Zool. Meded.*, **40** : 89-96 (subgeneric assignment).

Distribution : India : Sikkim; Meghalaya.

Remarks : Betrem (1928) reported 1 female from Ranjeet Valley in Sikkim. This species is recognised by having abdomen variously marked; frontal spatium and vertex, red; clypeus entirely black. Median tubercle on first tergite is not developed.

16. *Scolia (Discolia) affinis* Guerin

1838. *Scolia affinis* Guerin, *Voy, Cog.* : 254. Type Male, Female "Senegal" (Paris Museum).

1855. *Scolia (Lacosi) jurinei* Saussure. *Mem. Soc. Phys. Hist. Nat. Geneva,* **14** : 45. Type Male, Female "Indes Orientales" (Geneva Museum).

1864. *Scolia (Discolia) aureipennis* Lepeletier : Saussure & Sichel. *Cat. Spec. Gen. Scolia* : 109 (misidentification of *S. aureipennis* Lepeletire; *S. jurinei* synonymised under here).

1978. *Scolia (Discolia) affinis* Guerin : Krombein. *Smithsonian Contr. Zool.* 283 : 31.

Material examined : India : Sikkim, 9 Males, viii. 1897. G. C. Dudgeon; Melli, 4 Males, 4. vi. 1976, G. Singh & S. Biswas (Z.S.I., Calcutta).

Distribution : Sikkim; Assam, Bihar, Delhi, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Orissa, Punjab, Tamil Nadu, Tripura, Pondicherry, Uttar Pradesh and West Bengal. *Elsewhere* : Myanmar and Nepal.

Remarks : This is one of the most common and widely distributed scoliid. The female can be easily distinguished by having organe-red antennal flagellum and integument and vestiture entirely black.

17. *Scolia (Discolia) wuadripustulate* Fabricius

1782. *Scolia 4-pustulata* Fabricius, *Spec. Ins.*, **1** : 453.

1928. *Scolia (Scolia) obscuropunctate* Betrem. *Treubia,* **9** (suppl.) : 308-309. Type Female (holotype in Leiden Mesuem, paratypes in Artis and Z.S.I., Calcutta). Syn. by Betrem. 1973.

1928. *Scolia (Scolia) kumaoensis* Betrem, *Treubia,* **9** (suppl.) : 309. India (Z.S.I., Calcutta).

1978. *Scolia (Discolia) quadripustulate* Fabricius : *Krombein, Smithsonian Contr. Zool.*, **283** : 38.

Material examined : India : Sikkim : Melli, 2

Males, 4.vi.1976, S. Biswas & G. Singh (Z.S.I., Calcutta).

Distribution : India : Sikkim; Karnataka, Meghalaya, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Sri Lanka.

Remarks : This is a uncommon but widely distributed species. The female is easily distinguished from other mostly black species of *Scolia*, by having red spots on the black abdomen.

18. *Scolia (Discolia) feldrei* Betrem

1897. *Scolia erratica* Smith : Bingham, *Fauna of British India Hym.*, **1** : 77. Female, Male. Myanmar : Tenasserim (misidentified).

1928. *Scolia (Scolia) felderi* Betrem, *Treubia*, **9** (suppl.) : 274-275. Female, Male ; India, Sikkim, Naga Hills.

1964. *Scolia (Discolia) felderi* Betrem : Betrem & Bradley, *Zool. Meded.*, **40** : 93 (new subgeneric assignment).

Material examined : India : Sikkim : Melli, 235m, 1 Female, 4.vi.1976, S. Biswas (Z.S.I., Calcutta).

Distribution : India : Sikkim; Assam, Karnataka, Kerala, Meghalaya, Nagaland and West Bengal. *Elsewhere* : Myanmar.

Remarks : The female of this species is easily recognised by having head and antennae, red, and vestiture black. Head predominantly with reddish-brown hair and wings brown with purplish effulgence.

19. *Scolia (Discolia) laeviceps* Smith

1855. *Scolia laeviceps* Smith, *Cat, Hym. British. Mus.*, **3** : 91. Female, Male ; Hong Kong.

1897. *Scolia laeviceps* Smith : Bingham, *Fauna British India, Hym.*, **1** : 82. Female and Male.

1928. *Scolia (Scolia) laeviceps* Smith : Betrem, *Treubia*, **9** (suppl.) : 265-266. Female, Male ; India : Sikkim ; Myanmar.

1964. *Scolia (Discolia) laeviceps* Smith : Betrem & Bradley, *Zool. Meded*, **40** : 92 (new subgeneric assigment).

Distribution : India : Sikkim. *Elsewhere* : Hongkong and Myanmar.

Remarks : It is one of the Indian species in which integument is entirely black in both the sexes. It can be distinguished from *S. (D.) cyanipennis* Fabricius by having vestiture white mixed with black, predominantly white on head and thorax at sides.

20. *Scolia (Discolia) cyanipennis* Fabricius

1804. *Scolia cyanipennis* Fabricius, *Syst. piez.*, : 244. Female, Tranquabar (type in Copenhagen Museum).

1845. *Scolia caerulans* Lepeletier, *Hist. nat. Ins., Hym.*, **3** : 526. Male ; Indes (type in Spinola coll. Turin).

1928. *Scolia (Scolia) cyanipennis* Fabricius : Betrem, *Treubia*, **9** (suppl.) : 263-264. Females, Male ; India : Calcutta, Sikkim, Kashmir, Abu ; Sri Lanka.

1964. *Scolia (Discolia) caerulans* Lepeletier : Bradley, *Ann. Mus. Civico Stor. Nat. Genova*, **75** : 188 (notes on holotype and synonymy under *S. cyanipennis*).

1964. *Scolia (Discolia) cyanipennis* Fabricius : Betrem & Bradley, *Zool Meded*, **40** : 92 (new subgeneric assignment).

Material examined : India : Sikkim, Ranipur, 1 Female, 23.v.1994, B. C. Das and party (Z.S.I., Calcutta).

Distribution : India : Sikkim; Himachal Pradesh, Jammu & Kashmir, South India and West Bengal. *Elsewhere* : Sri Lanka.

Remarks : The female of this species is easily identified, for it is the only species of *Scolia* with integument of antennae, head and thorax, and vestiture entirely, black.

21. *Scolia (Discolia) venusta* Smith

1855. *Scolia venusta* Smith, *Cat. Hym, British, Mus.*, **3** : 90. Female, Male ; India, holotype in Oxford Museum.

1964. *Scolia (Discolia) venusta* Smith : Betrem and Bradley, *Zool, Meded.*, **40** : (Subgeneric assigment).

Material examined : India : Sikkim, 1 Male v.1912, Lord Carmichael ; 1 Male, without date, E.T. Atkinson (Z.S.I., Calcutta).

Distribution : India : Sikkim, Himachal Pradesh and Uttar Pradesh. *Elsewhere* : Nepal.

22. *Scolia (Discolia) nobilis nobilis* Saussure

1858. *Scolia nobilis* Saussure, *Ann. Soc. Ent. France*, **3** (6) : 214.

Type female (sex not stated). "Les Indes Orientales" (Copenhagen Mesuem).

1964. *Scolia (Discolia) nobilis nobils* Saussure : Betrem and Bradley. *Zool. Meded.*, **40** : 92.

Material examined : India : Sikkim, 1 Female, vii.1912, no further data (Z.S.I., Calcutta).

Distribution : India : Sikkim; West Bengal.

Remarks : This typical and uncommon subspecies is known from hilly areas of Darjiling and Sikkim. This species is mainly recognised by having frontal spatium above, front, ocular sinus, vertex except the ocellar triangle, paired spots on third and fourth tergites, yellow. Scapus and first two antennal segments, frontal laminae, tegulae and legs reddish-brown. Wings yellowish hyaline with purplish reflections.

23. *Scolia (Discolia) elizabethae* Bingham

1897. *Scolia elizabethae* Bingham, *Fauna British India Hym.*, **1** : 78. Type Female, Male. Myanmar, Sikkim (British Musem).

1928. *Scolia (Scolia) elizabethae* var *maculicollis Betrem*, Treubia, **9** (suppl.) ; 303. Type Male, Sikkim (Z.S.I., Calcutta). *Synonymised by Jonathan & Gupta (in press).*

1964. *Scolia (Discolia) elizabethae* Bingham : Betrem & Bradley, Zool. Meded. **40** : 93 (subgeneric assignment).

Material examined : India : Sikkim, 1 Female, 23.iii.1904, F.A. Moller; 2 Males, without data, A. T. Atkinson (Z.S.I. Calcutta).

Distribution : India : Sikkim; West Bengal.

Remarks : The female of this species is easily recognised by having body integument black and abdomen with weak blue reflections. Antennal flagellum, posterior half of frontal spatium front and vertex wholly, a band on third tergite, sometimes a narow band on fourth tergite also, red or reddish-yellow. Vestiture predominantly black, sometimes with white hair on occiput, sides of thorax, legs and sternites. Wings dark brown with purplish reflections.

24. *Scolia (Discolia) carmichaeli* Betrem

1928. *Scolia (Scolia) carmichaeli* Betrem, *Treubia*, **9** (suppl.) : 286-287. Type Male, Female. India : West Bengal and Sikkim (Z.S.I., Calcutta).

1964. *Scolia (Discolia) carmichaeli* Betrem : Betrem & Bradley, *Zool. Meded.*, **40** : 92.

Material examined : India : Sikkim, 1 Male, no further data, F.A. Moller (Copenhagen Museum).

Distribution : India : Sikkim, Arunchal Pradesh and West Bengal.

Remarks : This is an uncommon species and its distribution is restricted to North-East India. It is one of the Indian species of the genus *Scolia* in which head is almost entirely red in both sexes. It can be differentiated from all other such species in having perdominantly white vestiture in both the sexes.

25. *Scolia (Discolia) binotata binotata* Fabricius

1804. *Scolia binotata* Fabricius, *Syst. peiz.*, : 244. Male, Tranquebar (type in Copenhagen Museum).

1897. *Scolia (Discolia) cucullata* Bingham, *Fauna British India, Hym,*. **1** : 82. Female, Sikkim, West Bengal (type in British Museum).

1987. *Scolia (Discolia) binotata* Fabricius : Krombein, *Smithsonian Contr. Zool*, **283** : 41-43. Female, Male ; Sri Lanka.

Material examined : India : Sikkim, 2 Females, 10 Males, vii.1897, G. C. Dudgeon (Z.S.I., Calcutta).

Distribution : India : Sikkim; Arunachal Pradesh, Manipur, Uttar Pradesh and West Bengal. *Elsewhere* : Sri Lanka.

26. *Scolia (Discolia) wagneri* Betrem

1928. *Scolia (Scolia) wagneri* Betrem, *Treubia*, **9** (suppl.) : 312. Female, Male; India : Sikkim, Darjeeling (holotype and paratypes in Hamburg Musuem Stettin Museum and Leiden Museum).

1964. *Scolia (Discolia) wagneri* Betrem : Betrem & Bradley, *Zool. Meded*, **40** : 93 (new subgeneric assignment).

Material examined : India : Sikkim, Melli, 3

Females, 8 Males, 4-8.vi.1976, G. Singh; Manjitar, Ranjeet, 1 Male, 27.v.1976, G. Singh (Z.S.I., Calcutta).

Distribution : India : Sikkim.

Remarks : This species is close to *binotata binotata* Fabricius, but can be distinguished by having erect vestiture almost entirely white and third tergite with a pair of oval well separated, red spots.

27. ***Scolia (Discolia) desidiosa*** (Bingham)

1897. *Scolia desidiosa* Bingham, *J. Linn. Soc. Zool.*, **25** : 424. Type Female. Sikkim (British Museum).

1897. *Scolia desidiosa* Bingham : Bingham, 1897. *Fauna British India Hym*, **1** : 36, Male, Female.

1928. *Scolia (Scolia) decorata desidiosa* : Betrem : *Treubia*, **9** (suppl.) : 321. Male, female (specimens from North India and Myanmar).

1941. *Scolia (Discolia) histrionica desidiosa* : Betrem. *Notes Ent. Chinoise*, **8**(4) : 135.

Distribution : India : Sikkim; Assam, Arunachal Pradesh, Uttar Pradesh and West Bengal. *Elsewhere* : Myanmar.

Remarks : Bingham (1896) reported 1 female from Runjeet Valley in Sikkim and 1 female and 1 Male from Sikkim and Myanmar (Bingham, 1897). This species is close to *sikkimensis* Bingham, but can be distinguished by having scutellum and metanotum almost entirely yellow; vestiture largely white, except posterior margins of tergites and fifth and sixth strenites, black.

SUMMARY

The scoliids are ectoparasitoids of coleopteran larvae, mainly Scarbaeidae, which are pests of forest and agriculture. Many of these may be economically exploited for the biological control of insect pests.

This paper deals with the Scoliidae fauna from the state of Sikkim. Altogether 27 species/ subspecies under 9 genera and two tribes are treated in the text. The keys for the identification of tribes, genera, species and subspecies are provided. Distributional table and illustrations of morpholgical characters are included for ready reference.

ACKNOWLEDGEMENTS

We are grateful to Dr. J.R.B. Alfred, Director, Zoological Survey of India for providing necessary facilities to carry-out this research work. We are thankful to Dr. Arun Kumar, Scientist 'E' Officer-in-charge, Northern Regional Station, Z.S.I., Dehra Dun and Shri Rati Ram, P.P.O. for helping us in various ways.

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Table Showing Distribution of Species/Subspecies of Subfamily Scoliinae (Family : Scoliidae) in Sikkim	
Subfamily SCOLIIDAE	
I. Tribe **Capsomerini**	
1. Genus ***Phalerimeris*** Betrem	
1. *Phalarimeris phalerata phalerata* (Saussure)	*India* : Sikkim; Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Meghalaya, Tripura, Uttrar Pradesh, West Bengal. *Elsewhere* : China, Myanmar, Nepal, Taiwan, Sulawesi.
2. Genus ***Colpacampsomeris*** Betrem	
2.*Colpacampsomeris indica indica* (Saussure)	*India* : Sikkim; Arunachal Pradesh, Himachal Pradesh, Maghalya, Uttar Pradesh, S. India, West Bengal. *Elsewhere* : Mayanmar, Indonesia.
3. Genus ***Sericocampsomeris*** Betrem	
3. *Sericocampsomeris stygia tygia* (Burmeister)	*India* : Sikkim; Arunachal Pradesh.
4. *Sericocampsomeris rubromaculata rubromaulata* (Smith)	*India* : Sikkim; Arunachal Pradesh, Andhra Pradesh, Assam, Bihar, Delhi, gua, Gujarat, Haryana, Himiachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripur, Uttar Pradesh. *Elsewhere* : Benglsdesh, Myanmar, Nepal, Srilanka.
4. Genus ***Campsomeriella*** Betrem	
1. Subgenus ***Campsomeriella*** Betrem	
5. *Campsomeriella (C.) collaris collaris* (Fabricius)	*India* : India : Sikkim, Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Kashmir, Meghalya. *Elsewhere* : Bangladesh, China, Indonesia, Korea, Malaysia Mayanmar, Nepal, Taiwan
2. Subgenus ***Annulimeris*** Betrem	
6. *Campsomeriella (A.) annulata* (Fabricius)	*India* : Sikkim, Himachal Pradesh, Karnataka, Meghallaya, Uttar Pradesh. *Elsewhere* : Bhutan, Nepal.

5. Genus ***Magacampsomeris*** Betrem	
7. ***Megacampsomeris asiatica himalayana*** (Betrem)	*India* : Sikkim, Manipur, Meghalaya, West Bengal. *Elsewhere* : Myanmar, Nepal
8. ***Megacampsomeris shillongensis*** (Betrem)	*India* : Sikkim, Arunachal Pradesh, Himachal Pradesh, Kashmir, Manipur, Meghalaya, Orissa, Uttar Pradesh, West Bengal. *Elsewhere* : China, Honshu, Indonesia, Japan, Lorea, Malaysia, Myanmar, Nepal, Philippines, Taiwan.
9. ***Megacampsomeris prismatica*** (Smith)	*India* : Sikkim, Arunachal Pradesh, Manipur, Tamil Nadu, West Bengal. *Elsewhere* : Indonesia, Malaysia, Myanmar, Hainan Malacca, Nepal.
II. Tribe **Scoliini**	
6. Genus ***Liacos*** Guerin	
10. ***Liacos erythrosoma erythrosoma*** (Burmeister)	*India* : Sikkim, Meghalaya. *Elsewhere* : Myanmar, Nepal
7. Genus ***Carinoscolia*** Betrem	
11. ***Carinoscolia bhamoensis*** (Magretti)	*India* : Sikkim *Elsewhere* : Kalimautan, Myanmar
12. ***Carinoscolia opalina opalina*** (Smith)	*India* : Sikkim, Assam, West Bengal. *Elsewhere* : Bangladesh, Myanmar, Singapur.
8. Genus ***Megascolia*** Betrem & Bradley 3. Subgenus ***Regiscolia*** Betrem	
13. ***Megascolia (Regiscolia) fulvifrons*** (Saussure)	*India* : Sikkim, Meghalaya, West Bengal. *Elsewhere* : Bhutan, Nepal
9. Genus ***Scolia*** Fabricius	
4. Subgenus ***Discolia*** Betrem & Bradle	
14. ***Scolia (Discolia) sikkimensis*** Bingham	14 *India* : Sikkim; Maghalaya.
15. ***Scolia (Discolia) rugifrons*** Betrem.	*India* : Sikkim, Assam, Bihar, Delhi, Himachal Pradesh, Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Orissa, Punjab, Tamil Nadu, Tripura, Pandichery, Uttar Pradesh, West Bengal. *Elsewhere* : Myanmar, Nepal

16. *Scolia (Discolia) affinis* Guerin	*India* : Sikkim, Karnataka, Meghalaya, Tamil Nadu, Uttar Pradesh, West Bengal. *Elsewhere* : Sri Lanka
17. *Scolia (Discolia) quadripustulata* Fabricius	*India* : Sikkim, Assam, Karnataka, Kerala, Meghalaya Negalan, West Bengal. *Elsewhere* : Myanmar.
18. *Scolia (Discolia) felderi* Betrem.	*India* : Sikkim *Elsewhere* : Hongkong, Myanmar
19. *Scolia (Discolia) laeviceps Smith.*	*India* : Sikkim, Himachal Pradesh, Kashmir, S. India, West Bengal. *Elsewhere* : Sri Lanka
20. *Scolia (Discolia) cyanipennis* Fabricius	*India* : Sikkim, Himachal Pradesh, Uttar Pradesh. *Elsewhere* : Nepal
21. *Scolia (Discolia) venusta* Smith	*India* : Sikkim, West Bengal.
22. *Scolia (Discolia) nobilis nobilis* Saussure	*India* : Sikkim, West Bengal
23. *Scolia (Discolia elizabethae* Bingham	*India* : Sikkim, Arunachal Pradesh, West Bengal
24. *Scolia (Discolia) carmichaeli* Betrem	*India* : Sikkim Arunachal Pradesh, Manipur, Uttar Pradesh, West Bengal *Elsewhere* : Sri Lanka
25. *Scolia (Discolia) binotata binotate* Fabricius	*India* : Sikkim.
26. *Scolia (Discolia) wagneri* Betrem	*India* : Sikkim; Assam, Arunachal Pradesh, Uttar Proadesh, West Bengal. *Elsewhere* : Myanmar
27. *Scolia (Discolia) desidiosa* Bingham	

Zool. Surv. India.
State Fauna Series 9, Fauna of Sikkim (Part-4), 417-446, 0.2003

INSECTA : HYMENOPTERA : SPHECIDAE

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INTRODUCTION

The family Sphecidae belongs to superfamily Sphecoidea which includes blue mud-dauber, black and yellow mud-dauber, digger or sand wasps. These sphecid wasps made their presence on earth when the primitive men established their home in forest. These wasps followed men from their forested habitates to mud houses to build mud nests in their houses. These sphecid wasps are mainly beneficial to man and cause no harm to him (Bohart and Menke, 1976).

The member of this family Sphecidae show complexities in their behaviour, and are always being subject of biological studies. Some species are ground nesters, and known as digger wasps; some species nest in pre-existing cavities used by beetle larvae, old insect galls; some construct their own mud cells. The majority of the members of this family are predatory on a great variety of terrestrial insects; but some are cleptoparasitic, that is, their larvae develop on the provision in the nest of other wasps. Because of their predatory and cleptoparasitic habits, it may be possible to exploit them for the control of insect pests.

Our knowledge of Indian Sphecidae is very limited. The only reference manual available in Indian Sphecidae is by Bingham (1897). Besides this, there are several small to large publications on Indian and Oriental Sphecidae by Brothers (1975); Cameron (1899-1905); Carpenter (1945, 1953); Hingston (1925); Krombein (1981-1991); Nurse (1914); Tsuneki (1956-1973); Turner (1911-1929); van der Vecht (1949-1973); Roy and Kundu (1985) and Jonathan *et al.* (2000).

Bohart and Menke (1976) published a generic reclassification of the world species of Sphecidae. The classification proposed by them has been followed here. However, Krombein (1979) has restored the subfamilies recognised by Bohart and Menke, to family rank.

The family Sphecidae characterised by the following characters : Pronotum essentially fixed with the mesothorax; its posterior margin in dorsal view nearly straight and usually separated from the scutum by a constriction that contributes to the formation of a raised collar; pronotal lobe well-separated from the tegula, so that the mesoscutum and mesopleuron are in contact with each other, but in some cases the pronotal lobe is very close to tegula or in narrow contact. Hind leg with a cleaning pecten or brush in a basal depression on the inner side of the basitarsus; this apparatus is opposed by the pectinate inner tibial spur. The setae simple and unbranched. Inner eye margin not notched or emarginate, except for Trypoxylonini and Philanthini. Circi on tenth tergum on male absent in most higher sphecids, but are present in Dolichurini, some Sphecini, most Sceliphronini and Astatinae. The thorax with episternal sulcus on the mesopleuron.

SYSTEMATICS

The family Sphecidae is represented by nine subfamilies. This is a moderately large family,

having more than 1,500 species known from the world, of these 450 species are known to occur in India, which is only a fraction of those awaited discovery.

In the state of Sikkim, this family is represented by seven subfamilies. 60 species/ subspecies under 25 genera have been recorded from the state of Sikkim. Of these, one species marked with double asterisks (**) and 12 species marked with single asterisk (*) in the systematic account, have been recorded here for the first time from India and Sikkim respectively.

MATERIAL AND METHOD

An attempt has been made here to provide a consolidated account of the fauna of Sphecidae of the state of Sikkim, India based on a collection present at Zoological Survey of India. The material was received through various surveys of the state made by scientists of the Z.S.I. The keys to the subfamilies, tribes, genera, subgenera, species and subspecies are provided for the identification of various taxa. Taxonomic terms used in the present work have been explained with the help of illustrations.

TAXONOMIC TERMINOLOGY

The terms of morphological characters used in the text are mainly based on the works of Bingham (1897), Bohart and Menke (1976) and Krombein (1981-1991). The morphological terms are illustrated in figures 1-4.

SYSTEMATIC ACCOUNT

FAMILY SPHECIDAE

1. Subfamily AMPULICINAE

1. Tribe **Dolichurini**

1. Genus ***Dolichurus*** Latreille

1. *taprobanae* Smith, 1869
2. *bipunctatus* Bingham, 1896

2. Tribe **Ampulicini**

2. Genus ***Ampulex*** Jurine

3. *latifrons* Kohl, 1893
4. *sikkimensis* (Kriechbaumer), 1874
5. *crudelis* Bingham, 1897
6. *ruficoxis* Cameron, 1902
7. *compressa* (Fabricius), 1793

2. Subfamily SPHECINAE

3. Tribe **Sceliphronini**

3. Genus ***Chalybion*** Dahlbom

1. Subgenus ***Chalybion*** Dahlbom

8. *bengalense* Dahlbom, 1845
9. *malignum* (Kohl), 1906

4. Genus ***Sceliphron*** Klug

2. Subgenus ***Sceliphron*** Klug

10. *intrudens* (Smith), 1859
11. *madraspatanum* (Fabricius), 1793

3. Subgenus ***Prosceliphron*** van der Vecht

12. *rectum* Kohl, 1918

5. Genus ***Chlorion*** Latreille, 1802-1803

13. *lobatum* (Fabricius), 1775

4. Tribe **Sphecini**

5. Genus ***Sphex*** Linnaeus

4. Subgenus ***Sphex*** Linnaeus

*14. *argentatus* Fabricius, 1793
*15. *sericeus fabricii* Dahlbom, 1843
16. *subtruncatus* Dahlbom, 1843

6. Genus ***Isodontia*** Patton

17. *aurifrons* (Smith), 1859
18. *edax* (Bingham), 1897

7. Genus ***Prionyx*** van der Linden

*19. *viduatus* (Christ), 1791

5. Tribe **Ammophilini**

8. Genus ***Ammophila*** W. Kirby

20. *atripes* Smith, 1852
21. *punctata* Smith, 1856
*22. *basalis* Smith, 1856
*23. *laevigata* Smith, 1856

3. Subfamily LARRINAE

6. Tribe **Larrini**

9. Genus ***Larra*** Fabricius

**24. *polita rufipes* (Smith), 1857

10. Genus ***Liris*** Fabricius

5. Subgenus ***Liris*** Fabricius

25. *anthracina* Kohl, 1892
26. *ducalis* (Smith), 1860
27. *haemorrhoidalis* (Fabricius), 1804
28. *morio* Kohl, 1892
29. *sagax* Kohl, 1892
*30. *subtessellata* (Smith), 1856
*31. *jaculator* (Smith), 1856
*32. *aurulenta* (Smith), 1856

11. Genus ***Dicranorhina*** Shuckard

33. *ruficornis* (Cameron), 1889
34. *varicornis* (Cameron), 1904

12. Genus ***Tachytes*** Panzer

35. *modestus* Smith, 1856

13. Genus ***Tachysphex*** Kohl

36. *bengalensis* Cameron, 1889

7. Tribe **Miscophini**

14. Genus ***Lyroda*** Say

37. *formosa* (Smith), 1859
38. *nigra* (Cameron), 1904
*39. *venusta* Bingham, 1897

8. Tribe **Trypoxylonini**

15. Genus ***Trypoxylon*** Latreille

6. Subgenus ***Trypoxylon*** Latreille

40. *gracilescens* Smith, 1860
41. *intrudens* Smith, 1870
42. *rejector* Smith, 1870
43. *bicolor* Smith, 1856

4. Subfamily CRABRONINAE

9. Tribe **Crabronini**

16. Genus ***Crabro*** Fabricius

44. *funestus* Kohl, 1915

17. Genus ***Hingstoniola*** Turner and Waterston

45. *duplicata* (Turner and Waterston), 1926

18. Genus ***Dasyproctus*** Lepeletier and Brulle

46. *agilis* (Smith), 1858
47. *oppidanus* Leclercq, 1972

19. Genus ***Ectemnius*** Dahlbom

48. *asiaticus* Leclercq, 1950
49. *fulvopilosellus* (Cameron), 1902
50. *violaceipennis* (Cameron), 1907

20. Genus ***Lestica*** Billberg

51. *alacer* (Bingham), 1896

5. Subfamily NYSSONINAE

10. Tribe **Nyssonini**

21. Genus ***Brachystegus*** A. Costa

52. *violaceipennis* (Cameron), 1904

11. Tribe **Gorytini**

22. Genus ***Ammatomus*** A. Costa

53. *alipes* (Bingham), 1897

23. Genus ***Hoplisoides*** Gribodo

54. *pictus* (Smith), 1856

12. Tribe **Stizini**

24. Genus ***Bembecinus*** A. Costa

55. *prismaticus* (Smith), 1858

6. Subfamily PHILANTHINAE

13. Tribe **Cercerini**

25. Genus ***Cerceris*** Latreille

56. *basimaculata* Cameron, 1907
*57. *instabilis* Smith, 1856
58. *pulchra* Cameron, 1890
*59. *tristis* Cameron, 1890
*60. *vigilans* Smith, 1856

SYSTEMATIC ACCOUNT

Key to the Indian Subfamilies of family SPHECIDAE (After Bohart and Menke, 1976)

1. Gaster with cylindrical petiole composed of sternum only, except in *Ammophila* with two sections; jugal lobe of hind wing large, with an anal vein ..... SPHECINAE

– Gaster variable, if petiolate and petiole composed of sternum only, than jugal lobe of hind wing very small 2

2. Middle tibia with two apical spurs or none 3

– Middle tibia with only one apical spur 5

3. Claws with one inner tooth; notauli usually present and very long ..... AMPULICINAE

– Claws simple 4

4. Hind wing with jugal lobe less than half the length of anal area; mandible not notched nor strongly angulate externo-ventrally ..... NYSSONINAE

– Hind wing with jugal lobe usually more than half the length of anal area, but if not, than mandible notched externo-ventrally ..... ASTATINAE*

5. Middle coxae contiguous; jugal lobe of hind wing subequal to the length of anal area, and ocelli normal LAPHYRAGOGINAE*

– Middle coxae variable, but if contiguous, than hind wing with jugal lobe one-half or less as long as anal area, or hind ocelli deformed 6

6. Gaster with petiole composed of sternum only ..... PEMPHREDONINAE (in part)*

– Gaster sessile or with petiole composed of both tergum and sternum. 7

7. Gaster sessile, fore wing with two or few submarginal cells and either (a) stigma as large as single discoidal cell; or (b) stigma nearly equal in area to first discoidal cell, two submarginal cell present; mandible simple; inner eye margin not angulate and median vein in hind wing at or before Cu-a ..... PEMPHREDONINAE (in part)*

– Gaster variable, but if sessile, fore wing with three submarginal cells or if less, then stigma much smaller than first discoidal cell; or not agreeing as above 8

8. Hind ocelli deformed or greatly reduced 9

– Hind ocelli normal 10

9. Jugal lobe of hind wing subequal to length of anal area, rarely two-thirds as long as anal area ..... LARRINAE (Tribe Larrini)

– Jugal lobe of hind wing at most a little more than half the length of anal area .... NYSSONINAE (in part)

10. Scutal carina present, oblique; episternal-scrobal sulcus often present; metapleuron broad below, not tapering .... NYSSONINAE (Tribe Stizini)

– Scutal carina absent 11

11. Antennal sockets above fronto-clypeal suture by at least one-third of a socket diameter, fore wing with three submarginal cells; mandibular socket closed by a forward extension of the hypostoma .... PHILANTHINAE

– Antennal sockets contiguous with fronto-clypeal suture, or if not contiguous, fore wing with fewer than three submarginal cells; mandibular socket usually open. .. 12

12. Middle coxae with a dorso-lateral carina or crest-like elevation. Fore wing usually with three submarginal cells, or with one cell, which is not confluent with first discoidal, or with none ..... LARRINAE

– Middle coxae without a dorso-lateral carina; fore wing with one submarginal cell or this cell is fused with first discoidal cell. .... CRABRONINAE

(* Not reported from Sikkim)

1. Subfamily AMPULICINAE

The member of this subfamily are commonly known as "Cockroach Wasps" They prey upon cockroaches, one of the most primitive insect order. They occur principally in the tropic of old and new World.

Diagnostic characters : Inner orbits entire; ocelli normal; antennae inserted low on face, sockets contiguous with fronto-clypeal suture,

male with 13 and female with 12 segments. Clypeus strongly nasiform; mandible without a notch on externo-ventral margin. Pronotal lobe close to or touching tegula. Notauli long and deep. Propodeum moderately long with U-shaped to nearly triangular enclosure. Middle tibia with two spurs. Claws with a single tooth or bifid. Fore wing with two or three submarginal cells and two recurrent veins, first recurrent received by submarginal I or II, second recurrent received by II or III. Gaster sessile or with a short petiole. *Male genitalia* : Volsella with movable digitus and cuspis; aedeagus with teeth on ventral edge; cerci present or absent.

In India this subfamily is represented by two tribes. These can be distinguished by the following key :

Key to the tribes of Ampulicinae

1. Antennal sockets with an over hanging frontal lobe; metasternum Y-shaped. Gastral petiole inserted between and on same level as hind coxae ..... **Ampulicini**
- Antennal sockets not covered or both over laid by a single median plateform-like lobe; metasternum not Y-shaped. Gastral petiole inserted above and somewhat after hind coxae ..... **Dolichurini**

1. Tribe **Dolichurini**

This tribe is represented by a single genus, viz., *Dolichurus* Latreille, 1809 from India, including Sikkim. *Dolichurus* is the most generalised member of the tribe, having large number of species.

1. Genus ***Dolichurus*** Latreille

1809. *Dolichurus* Latreille, *Gen. Crust. et Ins.*, **4** : 387. Type-species : *pompilus corniculus* Spinola, 1808.

1904. *Thyreosphex* Ashmead, *Canad. Ent.*, **36** : 282. Type-species : *Thyreosphex stantoni* Ashmead, 1904. Monotypic.

1976. *Dolichurus* Latreille : Bohart and Menke, *University Calif. press*, : 38, 66.

This is a small genus of mostly small and inconspicuous species, represented in India by five species, viz., *bipunctatus* Bingham, 1896; *clavipes* Cameron, 1897; *gilberti* Turner, 1912; *taprobanae* Smith, 1869 and *reticulatus* Cameron, 1899. Only two species have been reported from the state of Sikkim. These can be distinguished by the following key :

Key to the species of *Dolichurus*

1. Head and thorax entirely black; lateral angles of pronotum slightly produced, but not tuberculate ..... *taprobanae* Smith
- Head and thorax black, apex of tubercle above base of antennae and lateral tubercles on pronotum whitish-yellow ..... *bipunctatus* Bingham

1. ***Dolichurus taprobanae*** Smith

1869. *Dolichurus taprobanae* Smith, *Trans. Ent. Soc.*, : 304. Type : Male in British Museum, London. Loc. Myanmar, Sri Lanka.

1976. *Dolichurus taprobanae* Smith : Bohart and Menke, *University Calif. Press*, : 69.

Distribution : India : Sikkim, Meghalaya. *Elsewhere* : Myanmar, Sri Lanka.

Remarks : This species is readily distinguished by having head and thorax entirely black; pronotum not produced laterally.

2. ***Dolichurus bipunctatus*** Bingham

1896. *Dolichurus bipunctatus* Bingham, *Jour. Proc. Linn. Soc.*, : 439. Type : Male in British Museum, London. Loc. Myanmar.

1899. *Dolichurus reticulatus* Cameron, *Ann. Mag. Nat. Hist.*, (7) **4** : 56. Type : Meghalaya : Khasi Hills.

1976. *Dolichurus bipunctatus* Bingham : Bohart and Menke, *University Calif. Press*, : 69.

Distribution : India : Sikkim, Meghalaya, Himachal Pradesh. *Elsewhere* : Myanmar.

Remarks : This species is recognised by

having head and thorax black except tubercle above the base of antennae and pronotal tubercles, whitish-yellow.

2. Tribe **Ampulicini**

This tribe represents majority of the species in the subfamily. All these species are under genus *Ampulex* Jurine, 1807.

2. Genus ***Ampulex*** Jurine

1807. *Ampulex* Jurine, *Nouv. Meth. Class. Hym. Dipt.*, : 132. Type-species : *Sphex compressus* Fabricius, 1781. Designated by Audouin, 1822.

1809. *Pronoeus* Latreille, *Gen. Crust. Ins.*, **4** : 56. Type-species : *Dryinus aeneus* Fabricius, 1804. Monotypic.

1844. *Rhinopsis* Westwood, *Arcana. Ent.*, **2** : 68. Type species : *Rhinopsis abbottii* Westwood, 1844. Monotypic.

1874. *Waagenia* Kriechbaumer, *Stettin Ent. Ztg.*, **35** : 55. Type-species : *Waagenia sikkimensis* Kriechbaumer, 1874. Monotypic.

1976. *Ampulex* Jurine : Bohart and Menke, *University Calif. Press*, : 38, 74, syn.

This is a moderately large genus comprising most of the species of the subfamily Ampulicinae. In India, this genus is represented by 22 species/subspecies, viz., *aborensis* Nurse, 1914; *aenea* Spinola, 1841; *approximata* Turner, 1912; *assamensis* Cameron, 1903; *carinifrons* Cameron, 1903; *constanceae* (Cameron), 1891; *crudelis* Bingham, 1897; *compressa* (Fabricius), 1793; *formosa* Kohl, 1893; *himalayensis* Cameron, 1903; *hospes cognata* Kohl, 1893; *interstitialis* Cameron, 1903; *khasiana* Cameron, 1903; *latifrons* Kohl, 1893; *longicollis* Cameron, 1902; *montana* Cameron, 1903; *nigricans* Cameron, 1899; *pilosa* Cameron, 1900; *rothneyi* Cameron, 1902; *ruficoxis* Cameron, 1902; *sikkimensis* (Kriechbaumer), 1874 and *sodalicia* Kohl, 1893. In Sikkim, this genus is represented by four species. These species can be distinguished by the following key :

Key to the species of *Ampulex*

1. Wings fuscous or smoky. (*latifrons* may be traced through either half of the couplet) 2
– Wings fusco-violaceous 5
2. Median longitudinal carina on clypeus bifurcated near apical third; metalic blue or green, hind femora red; tarsi black 3
– Median longitudinal carina on clypeus not bifurcated 4
3. Pronotum not raised into a tubercle, above almost flat; claws biifid .... *latifrons* Kohl
– Pronotum raised into a weak cone-shaped elevation; claws unidentate .... *sikkimensis* (Kriechbaumer)
4. Fore wing with two submarginal cells; head, thorax and abdomen almost entirely smooth. Body metalic blue..... *crudelis* Bingham
– Fore wing with three submarginal cells; head, thorax and abdomen more or less with close to sparse punctures. Head and thorax deep metalic green, abdomen metalic blue with bright purple effulgence .... *compressa* (Fabricius)
5. Hind coxa red ..... *ruficoxis* Cameron
– Hind coxa black..... *latifrons* Kohl

3. ***Ampulex latifrons*** Kohl

1893. *Ampulex latifrons* Kohl, *Ann. Naturhist. Hofmus. Wien.* **8** : 461.

1976. *Ampulex latifrons* Kohl : Bohart and Menke, *University Calif. Press*, : 78.

Distribution : India : Sikkim, Meghalaya.

Remarks : This species is distinguished from its closely related species, viz., *khasiana* Cameron in having hind femora entirely red; pronotum not raised, cubical and almost flat.

4. ***Ampulex sikkimensis*** (Kriechbaumer)

1874. *Waagenia sikkimensis* Kriechbaumer, *Stellin ent. Zeit.*, **34** : 55.

1976. *Ampulex sikkimensis* (Kriechbaumer) : Bohart and Menke, *University Calif. Press*, : 78.

Distribution : India : Sikkim, Meghalaya.

5. *Ampulex crudelis* Bingham

1897. *Ampulex crudelis* Bingham, *Fauna British India, Hymenoptera*, **1** : 258.

1976. *Ampulex crudelis* Bingham : Bohart and Menke, *University Calif. Press*, : 77.

Material examined : India : Sikkim, 600 m, 1 ex., x. 1897, coll. Dudgeon (Ind. Mus. Colln.).

Distribution : India : Sikkim, Meghalaya. *Elsewhere* : Pakistan

Remarks : This is a distinct species having thorax and abdomen smooth and shining. Pronotum elevated posteriorly into a blunt tubercle; propodeum with seven longitudinal carinae, area between these carinae with fine transverse ridges.

6. *Ampulex ruficoxis* Cameron

1902. *Ampulex ruficoxis* Cameron, *Ann. Mag. Nat. Hist.*, (7) **10** : 66.

1976. *Ampulex ruficoxis* Cameron : Bohart and Menke, *University Calif. Press*, : 78.

Distribution : India : Sikkim, Meghalaya.

Remarks : This species is easily distinguished by having fusco-violaceous wings; hind coxae and femora red, while legs in general dark blue.

7. *Ampulex compressa* (Fabricius)

1793. *Sphex compressa* Fabricius, *Ent. Syst.*, **2** : 206.

1976. *Ampulex compressa* (Fabricius) : Bohart and Menke, *University Calif. Press*, : 77.

Material examined : India : Sikkim, 600 m, 1ex., x. 1897, coll. Dudgeon (Ind. Mus. Colln.).

Distribution : India : Sikkim, Meghalaya, Assam, Arunachal Pradesh, Orrisa, Bihara, Maharashtra, West Bengal, Andaman and Nicobar Islands and throughout India. *Elsewhere* : Australia, Ethiopia, Myanmar, Sri Lanka, Chagos Archipelago, East Indies, Hawaii, Mauritius, New Caledonia, Seychelles and St. Helena.

Remarks : This species is close to *crudelis* Bingham in having seven longitudinal carinae on propodeum, but readily distinguished by having middle and hind femora red; fore wing with three cubital cells and the characters given in the key.

2. Subfamily SPHECINAE

The members of this subfamily are commonly called as "Sand wasps" They are commonly found in fields, forests and also in human habitats.

Diagnostic characters : Inner orbit entire, converging, diverging, or parallel; ocelli normal. Antennae in male 13 and in female 12-segmented. Mandible without notch or annulations. Pronotal lobe broadly separated from tegula. Middle tibia usually with two apical spurs; middle coxal cavities and coxae usually approximate, middle coxae without dorso-lateral carinae; precoxal lobe present; hind femur simple apically; claws with one to five teeth, or simple; aroleum usually large. Propodeum usually long with or without U-shaped enclosure. Fore wing with three submarginal cells, except *Ammophila in* Gaster with cylindrical petiole composed of sternum only unless it has two sections. Jugal lobe of hind wing large containing an anal vein.

This subfamily is subdivided into three tribes. A key to the tribes is given below (Bohart and Menke, 1976 : 82).

Key to the tribes of Sphecinae

1. Tarsi with plentulae and /or claws of some legs with one basal tooth on inner margin... ..... **Sceliphronini**

– Tarsi without plentulae; claw simple or with one or more basal teeth on inner margin 2

2. Claw with two or more teeth; second recurrent vein usually received by submarginal cell III, but if not then claw

with at least three teeth or apico-ventral setae of hind 5th tarsomere very broad, separated at base by not more than 1.5x of setal widths; tarsi without plentulae..... ..... **Sphecini**

– Claw usually simple or with one tooth, if with two teeth then apico-ventral setae of hind 5th tarsomere narrow, separated by three or more times of setal widths; second recurrent vein usally received by submarginal cell II; tarsi sometimes with plentuale .... **Ammophilini**

3. Tribe **Sceliphronini**

This tribe is represented by three genera in India. They are also found in the state of Sikkim. A key to distinguish these genera is given below.

Key to the genera of Sceliphronini

1. Propodeal dorsum at most with a median longitudinal groove. (Mandibles simple or with a subapical tooth on inner margin; third anal vein of hind wing broadly separated from wing margin; body usually metallic blue or black and yellow) .. ***Chalybion*** Dahlbom
– Propodeum with a U-shaped dorsal enclosure, defined posteriorly by a semicircular sulcus or furrow. 2
2. Both recurrent veins received by second submarginal cell; spiracular groove absent; body usually with yellow areas; female without fore tarsal rake .... ***Sceliphron*** Klug
– Second recurrent vein received by third submarginal cell or interstitial between II and III; spiracular groove present; body often with metallic blue or green. Antennal sockets contiguous with fronto-clypeal suture in female, separated by less than the diameter of socket in male ..... ***Chlorion*** Latreille

3. Genus ***Chalybion*** Dahlbom

1. Subgenus ***Chalybion (Chalybion)*** S. str.

1843. *Chalybion* Dahlbom, *Hym. Europaea*, fasc. 1, **1** : 21.
Type-species : *Chalybion caerulem* (= *Sphex caeruleus* of Linnaeus, 1767 : 941). Designated by Patton, 1881.

1976. *Chalybion chalybion* Dahlbom : Bohart and Menke, *University Calif. Press*, : 38, 98.

The members of this genus make nest in pre-existing cavities, commonly in abandoned nests of muddaubers, but also in holes in wood, bamboo and plant stems, and crevices of walls (Krombein *et al.*, 1979). This genus is divided into two subgenera, viz., *Chalybion* Dahlbom, 1843 and *Hemichalybion* Kohl, 1918. Only the typical subgenus *chalybion* occurs in Indian subregion, and is represented by three species, viz., *malignum* (Kohl), 1906; *bengalense* Dahlbom, 1845 and *spinolae* (Lepeletier), 1845. Of these, former two have been recorded from the state of Sikkim. No description or material of *C.* (*C.*) *malignum* (Kohl), 1906 was available for study. Therefore, a key to the species could not be provided.

8. ***Chalybion (Chalybion) bengalense*** Dahlbom

1845. *Chalybion bengalense* Dahlbom, *Hym. Europaea*, fasc. 3, **1** : 433.

1976. *Chalybion (Chalybion) bengalense* Dahlbom : Bohart and Menke, *University Calif. Press*, : 102.

Material examined : India : Sikkim, 600 m, 5 exs., vii. 1897, coll. Dudgeon; 3 exs., no data given, coll. A.V. Knyvett.

Distribution : India : Sikkim, Andaman and Nicobar Is., Bihar, Goa, Himahal Pradesh, Jammu and Kashmir, Meghalaya, Orissa, Karnataka, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Remarks : This species can be recognised by having body shiny, deep blue with glistering silvery pubescence. Apical segment of antennae, tarsi black. Mesoscutum punctate, petiole abdomen smooth and polished.

9. ***Chalybion (Chalybion) malignum*** (Kohl)

1906. *Sceliphron malignum* Kohl, *Ann. Naturhist. Hofmus. Wien*, **21** : 228-382.

1976. *Chalybion (Chalybion) malignum* (Kohl) : Bohart and Menke, *University Calif. Press*, : 103.

Distribution : India : Sikkim. *Elsewhere* : China, Sri lanka.

4. Genus *Sceliphron* Klug

This genus is found in all of the temperate and tropical continental areas of the world and many islands. The species of this genus are moderately small to large (12-32 mm) in size; usually black in colour and legs conspicuously marked with yellow in most species. The yellow markings, very long petiole and propodeal enclosure readily distinguish the species of this genus from other genera.

The genus has been divided into two subgenera, viz., *Prosceliphron* van der Vecht, 1968 and *Sceliphron* s. str. These two can be distinguished by the presence of cerci and the short hyposternal carina in *Prosceliphron* (Bohart and Menke, 1976).

Key to the subgenera of *Sceliphron*

1. Eighth tergite without cerci in male, hypostomal carina long, ending near the base of mandible ..... ***Sceliphron*** *s. str.*
- Eighth tergite of male with cerci; hypostomal carina evanescent, extending about half way to the base of mandible..... .....***Prosceliphron*** van der Vecht

2. Subgenus *Sceliphron (Sceliphron)* s. str.

1801. *Sceliphron* Klug, *Neue Schrift. Ges. Naturf. Freunde Berlin*, **3** : 561. Type-species : *Sphex spirifex* Linnaeus, 1758. Designated by Bingham, 1897.

1976. *Sceliphron (Sceliphron)* Klug : Bohart and Menke, *University Calif. Press*, : 39, 105.

In India, this subgenus is represented by five species/subspecies, viz., *intrudens* (Smith), 1859; *javanum nalandicum* Strand, 1915; *javanum petiolare* Kohl, 1918; *madraspatanum* (Fabricius), 1793 and *madraspatanum andamanicum* Kohl, 1918. Only two species have been recognised from Sikkim, and these can be distinguished by the following key :

Key to the species of *Sceliphron (Sceliphron)*

1. Hind leg with femur at its extreme apex and apical half of tibia, black. Body 27-30 mm ..... *intrudens* (Smith)
- Hind leg with femur and tibia at its apical two-thirds, black. Body 16-18 mm..... ..... *madraspatanum* (Fabricius)

10. *Sceliphron (Sceliphron) intrudens* (Smith)

1859. *Pelopaeus intrudens* Smith, *Jour. Proc. Linn. Soc*, : 15. Female.

1976. *Sceliphron (Sceliphron) intrudens* (Smith) : Bohart and Menke, *University Calif. Press*, : 105.

Material examined : India : Sikkim, 2 exs., no data, Reg. No. 1608/13, coll. A.V. Knyvett; 1 ex., no other data, coll. L. de Niecevlle; 1 ex., no data given, coll, E.T. Atkinson.

Distribution : India : Sikkim, Meghalaya and throughout India. *Elsewhere* : Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Vietnam.

Remarks : This is one of the common and widely distributed species in India and adjoining countries. This species is readily distinguished by having yellow bands on legs.

11. *Sceliphron (Sceliphron)madraspatanum* (Fabricius)

1793. *Sphex madraspatanus* Fabricius, *Ent. Syst.*, **2** : 204.

1897. *Sceliphron madraspatanum* (Fabricius) : Bingham, *Fauna British India, Hymenoptera*, **1** : 237.

1976. *Sceliphron (Sceliphron) madraspatanum* (Fabricius) : Bohart and Menke, *University Calif. Press*, : 106.

Material examined : India : Sikkim, 2 exs., vii-viii. 1897, coll, Dudgeon; 1 ex., no data, Reg. No. 6072/14.

Distribution : India : Sikkim, Gujarat, Madhya Pradesh, Maharashtra, Orissa, Arunachal Pradesh, Himachal Pradesh, Bihar, Meghalaya, West Bengal, Uttar Pradesh. *Elsewhere* : Myanmar, Sri Lanka, Vietnam, Indonesia, Malaysia, Maldives.

3. Subgenus *Sceliphron (Prosceliphron)* van der Vecht

1968. *Sceliphron (Prosceliphron)* van der Vecht, *Tijdschr. Ent.*, **111** : 192. Type-species : *Sceliphron coromandalicum* (Lepeletier), 1845 (= *Pelopaeus coromandalicus* Lepeletier, 1845). Original designation.

1976. *Sceliphron (Prosceliphron)* van der Vecht : Bohart and Menke, *University Calif. Press*, : 39, 106.

This subgenus is represented by 5 species/ subspecies, viz., *coromandalicum* (Lepeletier), 1845; *curvatum* Smith, 1817; *deforme tibiale* Cameron, 1899; *formosum* Smith, 1856 and *rectum* Kohl, 1918. Only one species has been reported from Sikkim.

12. ***Sceliphron (Prosceliphron) rectum*** Kohl

1918. *Sceliphron rectum* Kohl, *Ann. Naturhist. Hofmus. Wien*, **32** : 1-171.

1976. *Sceliphron (Prosceliphron) rectum* Kohl : Bohart and Menke, *University Calif. Press*, : 106.

Distribution : India : Sikkim.

5. Genus ***Chlorion*** Latreille

1802-1803. *Chlorion* Latreille, *Hist. Nat. Ins.*, **3** (12) : 333. Type-species : *Sphex lobatus* Fabricius, 1775. Monotypic.

1976. *Chlorion* Latreille : Bohart and Menke, *University Calif. Press*, : 38, 88.

In India, this genus is represented by two species viz., *lobatum* (Fabricius), 1775 and *splendidum* Fabricius, 1804. Of these, only *lobatum* has been reported from the state of Sikkim.

13. ***Chlorion lobatum*** (Fabricius)

1775. *Sphex lobatus* Fabricius, *Syst. Ent.*, : 348.

1898. *Sphex lobatus* Fabricius : Bingham, *Fauna British India, Hymenoptera*, **1** : 242. Male, Female.

1976. *Chlorion lobatum* (Fabricius) : Bohart and Menke, *University Calif. Press*, : 90.

Diagnostic characters : *Female* : Body length 24-32 mm, smooth and shiny; head and thorax with a very few shallow punctures; clypeus transverse, convex in the middle, its anterior margin curved and emarginate; the median segment long and cylindrical; abdomen petiolate, the petiole short; legs long and slender, the tibiae and tarsi spinose; wings hyaline; body blue-green in colour, but the antennae, the tibiae below and the tarsi dark black. Clypeus with silvery pile.

Male : Body length 15-26 mm, slightly smaller in size, but more or less similar with female; clypeus triangular; tagulae purple-blue.

Material examined : India : Sikkim, 1086 m, 1 ex., x. 1897, coll. Dudgeon, Indian Mus. Colln. (Z.S.I.).

Distribution : India : Sikkim, Arunachal Pradesh, Karnataka, Madhya Pradesh, West Bengal. *Elsewhere* : Myanmar, Sri Lanka, China, Malaysia, Africa.

4. Tribe **Sphecini**

This tribe is represented by three genera, viz., *Sphex* Linnaeus, 1758; *Isodontia* Patton, 1881 and *Prionyx* van der Linden, 1827 from India and also from Sikkim.

Key to genera of tribe Sphecini

1. Length of basal veinlet of submarginal cell II greater than anterior veinlet; spiracular groove absent. (Hind tarsal claw with two to five teeth on inner margin) ..... ***Prionyx*** van der Linden

– Length of basal veinlet of submarginal cell II equal to or (more often) shorter than anterior veinlet; spiracular groove present or absent..... 2

2. Female mandible long, broadest at middle, usually strongly arcuate; propodeal side with complete spiracular groove; length of petiole along dorsum less than combined length of hind tarsomeres II-IV ..... ***Sphex*** Linnaeus

– Female mandible short, broadest at or near apex; propodeal side without spiracular groove or groove indicated near hind coxa; length of petiole along dorsum more than combined length of hind tarsomeres II-IV ..... ***Isodontia*** Patton

6. Genus ***Sphex*** Linnaeus

This genus has been divided into two subgenera, *Sphex* s. str. and *Fernaldina* Bohart and Menke, 1963. *Sphex (Fernaldina)* has been reported from Holarctic region. Indian species/ subspecies fall under subgenus *Sphex (Sphex)*.

4. Subgenus ***Sphex (Sphex)*** s. str.

1758. *Sphex* Linnaeus, *Syst. Nat.*, (10th ed.), **1** : 569. Type-species : *Sphex flavipennis* Fabricius, 1793. Designated by Internatl. Com. Zool. Namencl., Op. 180, 1946.

1820. ***Ammobia*** Billberg, *Enum. Ins.*, : 105. Type-species : ***Pepsis argentata*** Fabricius. Designated by Rohwer. 1911.

1905. ***Proterosphex*** Fernald.. *Ent. News*. **16** : 165. Type-species : ***Sphex maxillosus*** Fabricius, 1793. Original designation.

1979. ***Sphex (Sphex)*** Linnaeus : Krombein *et al.*, *Cat. Hym. Amer. North of Mexico*, **2** : 1579.

Five species/subspecies, viz., *argentatus* Fabricius, 1793; *diabolicus* Smith, 1858; *sericeus fabricii* Dahlbom, 1843; *subtruncatus* Dahlbom, 1843 and *predator melanopoda* Strand, 1915 are referable to this subgenus from India. Sikkim is represented by three species. These can be distinguished by the following key :

Key to the species/subspecies of *Sphex (Sphex)*

1. Postscutellum not longitudinally notched; wings fulvo-hyaline. (Pubescence on head and median segment black; legs black; fore and middle femora and tibiae, red.) .... *subtruncatus* Dahlbom

– Postscutellum longitudinally notched; wings clear hyaline. 2

2. Face at sides and clypeus with dense silvery pubescence. Pubescence on thorax and petiole thin soft and hoary white. Body largely black ..... *argentatus* Fabricius

– Head and thorax covered with dense ferrugenious-red pubescence. Body largely red with black areas. .... *sericeus fabricii* Dahlbom

14. *Sphex (Sphex) argentatus* Fabricius

1793. *Sphex argentatus* Fabricius, *Ent. Syst.*, **2** : 200.

1793. *Sphex unicolor* Fabricius, *Ent. Syst.*, **2** : 200.

1897. *Sphex umbrosus* Christ : Bingham, *Fauna British India, Hymenoptera*, **1** : 250, syn.

1976. *Sphex (Sphex) argentatus* Fabricius : Bohart and Menke, *University Calif. Press*, : 114.

Material examined : India : Sikkim., 600 m, 5 exs., vii. 1897, coll. Dudgeon (Ind. Mus. Colln.); 1 ex., no data given, coll. A.V. Knyvett.

Distribution : India : Sikkim, Assam, Bihar, Orissa, Kerala, Uttar Pradesh, Meghalaya and throughout India (Bingham 1897 : 250). *Elsewhere* : African middle east, Australian and Eastern Palaearctic regions, China, Japan, Malaysia, Sri Lanka, Myanmar, Pakistan, Bangladesh.

Remarks : This species is readily distinguished by having postscutellum bituberculate, body largely black with silvery white hairs. This is the first record of this species from the state of Sikkim.

15. *Sphex (Sphex) sericeus fabricii* Dahlbom

1843. *Sphex fabricii* Dahlbom, *Hymn. Eur.*, fasc. 1, **1** : 27. Female.

1976. *Sphex (Sphex) sericeus fabricii* Dahlbom : Bohart and Menke, *University Calif. Press*, : 116.

Material examined : India : Sikkim, 600 m, 9 exs., vii-ix. 1897, coll. Dudgeon; 1 ex., no data given, coll. A.V. Knyvett.

Distribution : India : Sikkim, Meghalaya, West Bengal, Orissa, Karnataka. *Elsewhere* : Sri Lanka, Pakistan, Myanmar, China, Australia, Malaysia.

Remarks : This is the first record of this subspecies from the state of Sikkim.

16. *Sphex (Sphex) subtruncatus* Dahlbom

1843. *Sphex subtruncatus* Dahlbom, *Hymn. Eur.*, **1** : 28. Female.

1897. *Sphex nigripes* Smith : Bingham, *Fauna British India, Hymenoptera*, **1** : 248.

1976. *Sphex (Sphex) subtruncatus* Dahlbom : Bohart and Menke, *University Calif. Press*, : 116.

Material examined : India : Sikkim, 600 m, 1 ex., vii. 1897, coll. Dudgeon (Ind. Mus. Colln.); 1 ex., no data given, coll. A. V. Knyvett; 1 ex., vi. 1912, coll. Nil.

Distribution : India : Sikkim, West Bengal, Meghalaya, Tripura, Uttar Pradesh, Kerala and Western Ghats. *Elsewhere* : Indonesia, China, Africa, Myanmar, Sri Lanka.

6. Genus *Isodontia* Patton

1881. *Isodontia* Patton, *Proc. Boston Soc. Nat. Hist.*, **20** : 380.

1976. *Isodontia* Patton : Bohart and Menke, *University Calif. Press*, : 39, 119.

In India, this genus is represented by five species, viz., *apicata* (Bingham), 1897; *aurifrons* (Smith), 1859; *diodon* (Kohl), 1890; *edax* (Bingham), 1897 and *ochroptera* (Kohl), 1890. Only two species have been reported from the state of Sikkim. These can be distinguished by the following key :

Key to the species of *Isodontia*

1. Wings fulvo-hyaline; pubescence on front and thorax golden ..... *aurifrons* (Smith)
- Wings fusco-hyaline with purple effulgence; pubescence largely greyish or silvery .... *edax* (Bingham)

17. *Isodontia aurifrons* (Smith)

1859. *Sphex aurifrons* Smith, *Jour. Proc. Linn. Soc.*, : 157.

1976. *Isodontia aurifrons* (Smith) : Bohart and Menke, *University Calif. Press*, : 123.

Distribution : India : Sikkim. *Elsewhere* : Indonesia, New Guinea.

18. *Isodontia edax* (Bingham)

1897. *Sphex edax* Bingham, *Fauna British India, Hymenoptera.*, **1** : 251.

1976. *Isodontia edax* (Bingham) : Bohart and Menke, *University Calif. Press*, : 123.

Material examined : India : Sikkim, 1ex., vii. 1897, coll. Dudgeon (Ind. Mus. Colln.).

Distribution : India : Sikkim. *Elsewhere* : Myanmar, North Vietnam and Sri Lanka.

7. Genus *Prionyx* van der Linden

1827. *Prionyx* van der Linden, *Nouv. Mem. Acad. R. Sci. Belle-Lettres, Bruxelles*, **4** : 362.

1976. *Prionyx* van der Linden : Bohart and Menke, *University Calif. Press*, : 39, 128.

This genus is known by four species, viz., *fragilis* (Nurse), 1903; *nigropectinatus* (Taschenberg), 1869; *subfuscatus* (Dahlbom), 1845 and *viduatus* (Christ), 1791 from India. Of these, only one species has been reported from the state of Sikkim, which is detailed below

19. *Prionyx viduatus* (Christ)

1791. *Sphex viduatus* Christ, *Naturg. Ins.*, : 305.

1976. *Prionyx viduatus* (Christ) : Bohart and Menke, *University Calif. Press*, : 128.

Diagnostic characters : Head, thorax, petiole and legs largely black; abdomen red; pubescence on the head and thorax silvery; wings hyaline.

Head and thorax densely punctate and pubescent; scutellum longitudinally notched; propodeum finely transstriate, with a broad shallow longitudinal groove; abdomen smooth and shiny.

Material examined : India : Sikkim, 1 ex., vii. 1897, coll Dudgeon (Ind. Mus. Colln.).

Distribution : India : Sikkim, Rajasthan and widely distributed in India. *Elsewhere* : Africa, China, Pakistan, East Mediterranean, Soudi Arabia, Egypt, Gambia, Sierra Leone, Guinea, Socotra Is., Taiwan, Ryukyus.

Remarks : This is the first time of the species from the state of Sikkim.

5. Tribe **Ammophilini**

This tribe is represented by three genera, viz., *Ammophila* Kirby, 1798; *Parapsammophila* Taschenberg, 1869 and *Podolonia* Fernald, 1927. Only *Ammophila* has been reported from Sikkim.

8. Genus *Ammophila* Kirby

1798. *Ammophila* Kirby, *Trans. Linn. Soc. London*, **4** : 199. Type-species : *Sphex sabulosa* Linnaeus, 1758. Designated by *Internatl. Comm. Zool. Nomencl.* Op. 180, 1946.

1807. *Miscus* Jurine, *Nouv. Meth. Class. Hym. Dipt.*, : 130 Type-species : *Ammophila campestris* Latreille, 1809. Designated by Shuckard, 1837.

1845. ***Coloptera*** Lepeletier, *Hist. Nat. Ins., Hym.*, **3** : 387. Type-species : *Coloptera barbata* Lepeletier, 1845. Monotypic.

1928. ***Argyrammophila*** Gussakovskij, *Bull. Leningrad Inst. Zool. Appl. Phytopath.*, **4** : 7. Type-species : *Ammophila induta* Kohl,1901. Original designation.

1961. ***Apycnemia*** Leclercq, *EOS*, **37** : 211. Type-species : *Ammophila fallax* Kohl, 1884. Original designation.

1876. ***Ammophila*** Kirby : Bohart and Menke, *Uriversity Calif. Press*, : 40, 147.

In India, this genus is represented by eight species/subspecies, viz., *atripes* Smith, 1852; *basalis* Smith, 1856; *laevigata* Smith, 1856; *punctata* Smith, 1856; *tyrannica* Cameron, 1890; *brevipennis* Bingham, 1897; *philomela* Nurse, 1903 and *smithii* Smith, 1856. Only four species have been reported from the state of Sikkim. These can be distinguished by the following key :

Key to the species of *Ammophila*

1. Pronotum, mesonotum and propodeum striate; propodeum dorsally along the middle line sometimes reticulate 2

– Pronotum and mesonotum punctate, propodeum striate at sides, punctate along the middle line 3

2. Propodeum dorsally and laterally transversely striate. Abdomen largely bluish-black. Body large, female 18-30 mm; male 23-27 mm.. ..... *atripes* Smith

– Propodeum dorsally reticulate and striate along the sides. Abdomen largely red. Body short, female 20-22 mm, male 16-18 mm.. ..... *basalis* Smith

3. Legs red in female, except coxae, trochanters and femora above, tibiae at apex and tarsi of hind legs, black. Length 20 mm..... ..... *laevigata* Smith

– Legs black. Length 17-18 mm. .... *punctata* Smith

20. *Ammophila atripes* Smith

1852. *Ammophila atripes* Smith, *Ann. Mag. Nat. Hist.*, (2) **9** : 46.

1856. *Ammophila simillima* Smith, *Cat. Hym. British Mus.*, **4** : 217.

1856. *Ammophila pulchella* Smith, *Cat. Hym. British Mus.*, **4** : 218.

1867. *Ammophila humbertiana* Saussure, *Novara Reise, Hym.*, **2** : 23.

1867. *Ammophila longiventris* Saussure, *Novara Reise, Hym.*, **2** : 24.

1873. *Ammophila spinosa* Smith, *Ann. Mag. Nat. Hist.*, (4) **12** : 259.

1889. *Ammophila buddha* Cameron, *Mem. Manch. Lit. Phil. Soc.*, (4) **2** : 93 & 94.

1976. *Ammophila atripes* Smith : Bohart and Menke, *University Calif. Press*, : 151.

Distribution : India : Sikkim, Assam, Madhya Pradesh, Meghalaya, Tripura, Himachal Pradesh, Karnataka, Uttar Pradesh, Orissa, West Bengal. *Elsewhere* : China, Myanmar, Sri Lanka.

Remarks : This is a distinct species by having pronotum and mesoscutum largely striated; legs in general red in female and black in male.

21. *Ammophila punctata* Smith

1856. *Ammophila punctata* Smith, *Cat. Hym. British Mus.*, **4** : 218.

1976. *Ammophila punctata* Smith : Bohart and Menke, *University Calif. Press*, : 153.

Distribution : India : Sikkim and North India, Himachal Pradesh, Punjab and Uttar Pradesh. *Elsewhere* : Sri Lanka.

Remarks : This species is readily distinguished by having pronotum and mesoscutum punctate, abdomen largely black, with apex of first and following two segments, red.

22. *Ammophila basalis* Smith

1856. *Ammophila basalis* Smith, *Cat. Hym. British Mus.*, **4** : 214. Type : Female.

1897. *Ammophila nigripes* Smith : Bingham, *Fauna British India, Hymenoptera,* **1** : 231. Type : Male.

1976. *Ammophila basalis* Smith : Bohart and Menke, *University Calif. Press,* : 151.

Material examined : India : Sikkim, 3 exs., no data, coll. L. de Niecevlle.

Distribution : India : Sikkim, Assam, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Karnataka, Tamil Nadu, Punjab, Uttar Pradesh and West Bengal. *Elsewhere* : Pakistan.

Remarks : This is the first record of this species from the state of Sikkim.

23. *Ammophila laevigata* Smith

1856. *Ammophila Laevigata* Smith, *Cat. Hym, British Mus.,* **4** : 215. Female.

1897. *Ammophila laevigata* Smith : Bingham, *Fauna British India, Hymenoptera,* **1** : 231.

1976 *Ammophila laevigata* Smith : Bohart and Menke, *University Calif. Press,* : 152.

Material examined : India : Sikkim, 300 m, 1 ex., 600 m, 2 exs., vii.-viii. 1897, coll. Dudgeon.

Distribution : India : Sikkim, Arunachal Pradesh, Bihar, Gujarat, Himachal Pradesh Karnataka, Tamil Nadu, West Bengal, Meghalaya, Orissa and Uttar Pradesh. *Elsewhere* : Sri Lanka, Thailand, Vietnam.

Remarks : This is the first record of this species from Sikkim.

3. Subfamily LARRINAE

The members of this subfamily are often dark in colour ranging from 2-30 mm. in length. Most species are fossorial and commonly term as "digger wasps" They prey upon the adults of spiders, Orthoptera, Hemiptera, Diptera, Coleop-tera, Hymenoptera and also larvae of Lepidoptera.

Diagnostic characters : Inner orbits usually converging above, parallel, rarely converging below; posterior ocelli usually normal. Antennae inserted low on face except near middle in some genera, sockets contiguous with fronto-clypeal suture or separated. Female with 12 and male with 13-segmented antennae. Clypeus transverse except about as high as broad in some genera. Palpal formula 6-4, except 5-3 in some *Tachytes*. Pronotal lobe separated from tegula. Mesopleuron usually with an episternal sulcus. Metapleuron consisting only of upper area, definitive pleuron tapering ventrad. Middle tibia with one apical spur; middle coxae usually separated, each with a dorso-lateral carina or crest like elevation; claws simple except toothed in some females of Larrini. Propodeum short to long, dorsal enclosure present or absent. Fore wing usually with 3 submarginal cells but sometimes none. Hind wing with jugal lobe varying from as long as anal area to very small or absent. Gaster usually sessile, but sometimes pedunculate or petiolate; tergum I and occassionally II with lateral carina; male with 7 visible terga; pygidial plate present or absent. Volsella in male simple without digitus, rarely absent; cerci absent.

This subfamily is represented by four tribes, *viz.*, Larrini, Palarini, Miscophini and Trypoxylonini in India. Only three tribes are represented in the state of Sikkim. These tribes can be distinguished by the following key (Bohart and Menke, 1976).

Key to the tribes of Larrinae

1. Hind ocelli reduced to flat, opaque scars of various shapes; jugal lobe of hind wing large. nearly as long as anal area.....**Larrini**
- Hind ocelli with a convex or somewhat flattened, complete transparent lens; jugal lobe of hind wing small or absent, never more than one-half the length of anal area.....2
2. Inner orbits emarginate..... **Trypoxylonini**
- Inner orbits straight, bowed or sinuate but not emarginate.....3
3. Clypeus divided into three parts by two

vertical suture-like lines; antennal sockets separated from fronto-clypeal suture by one-third or more of a socket diameter; hind ocelli usually flattened and elliptical..... **Palarini***

– Clypeus not divided into three parts; antennal sockets essentially contiguous with fronto-clypeal suture; hind ocelli round and convex; (hind femoral apex simple, femur thickest near middle, gradually tapering towards apex; inner orbits parallel or converging above) ..... **Miscophini**

(* Not recorded from Sikkim)

6. Tribe **Larrini**

This tribe is represented by nine genera, viz., *Larra* Fabricius, 1793; *Liris* Fabricius, 1804; *Paraliris* Kohl, 1884; *Dicranorhina* Shuckard, 1840; *Tachytes* Panzer, 1806; *Parapiagetia* Kohl, 1896; *Tachysphex* Kohl, 1883; *Holotachysphex* Beaumont, 1940 and *Prosopigastra* A. Costa, 1867 in India. Only five genera have been reported from Sikkim. A key to the genera is given below :

Key to the genera of tribe Larrini

1. Gaster pedunculate, first segment longer than broad in dorsal view; ocelli on a nearly flat surface ..... ***Dicranorhina*** Shuckard

– Gaster not pedunculate, first segment about as broad as long in dorsal view; middle ocellus usually in a depression and area between ocelli often raised 2

2. Frons below median ocellus with a transverse swelling extending between the eyes and joining a linear swelling along inner orbit to form a M or inverted U-shaped swelling 3

– Frons variable and without swelling as above 4

3. Female : last tarsomere evenly arcuate in lateral view, sides diverging most of way to apex, ventral surface without hairmat; claws without an inner tooth; pronotal collar flat or slightly arcuate in front view; pygidial plate glabrous and shiny, no transverse row of setae apically. Male : propodeum densely punctate; apical half of outer surface of fore tibia usually with one or more erect bristles ..... ***Larra*** Fabricius

– Female : last tarsomere angled in lateral view, sides parallel on apical half; ventral surface usally with dense hair; claw prehensile, sometimes with an inner tooth; pronotal collar wedged-shaped in front view; pygidial plate extensively setose and usually with a transverse row of apical setae. Male : Propodeum dull and impunctate or if shiny, then at most with sparse minute punctures; outer surface of fore tibia without bristles ..... ***Liris*** Fabricius

4. Ocellar scars very long, distance between middle ocellus and of tail less than the length of scar; pygideal plate covered with dense setae which obscure integument ..... ***Tachytes*** Panzer

– Ocellar scars oval or oblong; distance between middle ocellus and lower end of scar equal to or greater than length of scar; pygidial plate bare in female, absent in male. Gastral tergum II without a lateral carina, male fore femur with a baso-lateral notch or depression ..... ***Tachysphex*** Kohl

9. Genus ***Larra*** Fabricius

1793. *Larra* Fabricius, *Ent. System.*, **2** : 220. Type-species : *Larra ichneumoniformis* Fabricius, 1793. Designated by Latreille, 1810.

1840. *Monomatium* Shuckard, In Swainson and Shuckard, *Cabinet Cyclopedia of Lardner*, **129** : 181. Type-species : *Larraxena princeps* Smith, 1851. Designated by Pate, 1935. First included species.

1843. *Tachytes* Dahlbom, *Hym. Europaea, fasc.* 1, **1** : 132. Type-species : *Tachytes pagana* Dahlbom, 1843. Monotypic.

1851. *Larraxena* Smith, *Ann. Mag. Nat. Hist.*, (2) **7** : 30. Type-species : *Larraxena princeps* Smith, 1851. Monotypic.

1856. *Larrada* Smith, *Cat. Hym. British. Mus.*, **4** : 337. Type-species : *Sphex anathema* Rossi, 1790. Original designated.

1976. *Larra* Fabricius : Bohart and Menke, *University Calif. Press*, : 42, 233.

In India, this genus is represented by seven species, viz., *apicepennis* Cameron, 1904; *bicolorata* Cameron, 1904; *femorata* (Cameron), 1900; *fuscinerva* Cameron, 1900; *polita rufipes* (Smith), 1859; *pygidialis* Cameron, 1904 and *simillima* (Smith), 1856. Only one subspecies has been reported from the state of Sikkim, which is detailed below :

24. *Larra polita rufipes* (Smith)

1857. *Larrada rufipes* Smith, *Jour. Proc. Linn. Soc.*, : 17.

1976. *Larra polita rufipes* (Smith) : Bohart and Menke, *University Calif. Press*, : 238.

Diagnostic characters : Body largely black, except head and clypeus in front, posterior margin of pronotum, first to fifth abdominal segments with apical bands, bright silvery; legs except the coxae and trochanters, red.

Body minutely punctate, pruinose; clypeus broader than long; propodeum finely transstriate, at sides smooth; tarsal claws long and stender.

Material examined : India : Sikkim, 600 m, 1 ex., vii. 1897, coll. Dudgeon.

Distribution : India : Sikkim. *Elsewhere* : Indonesia (Java) and Kalimantan.

Remarks : This is the first record of this subspecies from India, including Sikkim.

10. Genus *Liris* Fabricius

5. Subgenus *Liris (Liris)* S. str.

1804. *Liris* Fabricius, *Syst. Piez.*, : 227. Type-species : *Sphex auratus* Fabricius, 1787 (= *Sphex aurulentus* Fabricius, 1787, designated by Patton, 1881).

1976. *Liris (Liris)* Fabricius : Bohart and Menke, *University Calif. Press*, : 43, 243.

Liris is a large cosmopolitan genus with about 260 species in the world fauna. This genus is subdivided into three subgenera. *Liris (Liris)* is the only subgenus reported from the state of Sikkim. There are more than 47 species known from India. Only eight species, viz., *anthracina* Kohl, 1892; *aurulenta* (Smith), 1856; *ducalis* (Smith), 1860; *haemorrhoidalis* (Fabricius), 1804; *jaculator* (Smith), 1856; *morio* Kohl, 1892; *sagax* Kohl, 1892 and *subtessellata* (Smith), 1856 have been reported from the state of Sikkim. However, the occurrence of *anthracina, morio* and *sagax* in the state of Sikkim is not well confirmed. The material and description of these species was also not available to the authors, therefore, could not be included in the key :

Key to the species of *Liris (Liris)*

1. Silky pile on head and thorax silvery 2
– Silky pile on head and thorax golden-yellow 3
2. Legs more or less, red; wings subhyaline, iridescent ..... *subtessellata* (Smith)
– Legs entirely black ..... *jaculator* (Smith)
3. Wings dark fuscous, with purple effulgence ..... *ducalis* (Smith)
– Wings flavo-hyaline or fusco-hyaline 4
4. Wings flavo-hyaline, apex fuscous ..... *haemorrhoidalis* (Fabricius)
– Wings fusco-hyaline, fore wing much darker than hind wing ..... *aurulenta* (Fabricius)

25. *Liris (Liris) anthracina* Kohl

1892. *Liris anthracina* Kohl, *Ann. Naturhist. Hofmus. Wien*, 7 : 224

1976. *Liris (Liris) anthracina* Kohl : Bohart and Menke, *University Calif. Press*, : 244.

Distribution : India : ? Sikkim.

26. *Liris (Liris) ducalis* (Smith)

1860. *Larrada ducalis* Smith, *Jour. Proc. Linn. Soc.*, : 84. Female.

1976. *Liris (Liris) ducalis* (Smith) : Bohart and Menke, *University Calif. Press,*: 245.

Material examined : India : Sikkim, 600 m, 6 exs., vii. 1897 and 1000 m, 3 exs., vii. 1897, coll. Dudgeon.

Distribution : India : Sikkim. *Elsewhere* : Myanmar, Sri Lanka, Indonesia (Celebes Is.) and Sulawesi.

27. *Liris (Liris) haemorrhoidalis* (Fabricius)

1804. *Pompilus haemorrhoidalis* Fabricius, *Syst. Piez.*, : 198.

1976. *Liris (Liris) haemorrhoidalis* (Fabricius) : Bohart and Menke, *University Calif. Press,* : 245.

Distribution : India : Sikkim; Gujarat, W. India, Punjab. *Elsewhere* : Africa, Mediterranean region, Middle East, Sri Lanka.

28. *Liris (Liris) morio* Kohl

1892. *Liris morio* Kohl, *Ann. Naturhist. Hofmus. Wien,* 7 : 225.

1976. *Liris (Liris) morio* Kohl : Bohart and Menke, *University Calif. Press,* : 246.

Distribution : India : ? Sikkim.

29. *Liris (Liris) sagax* Kohl

1892. *Liris sagax* Kohl, *Ann. Naturhist. Hofmus. Wien,* 7 : 225.

1976. *Liris (Liris) sagax* Kohl : Bohart and Menke, *University Calif. Press,* : 247.

Distribution : India : ? Sikkim.

30. *Liris (Liris) subtessellata* (Smith)

1856. *Larrada subtessellata* Smith, *Cat. Hym. British Mus.*, 4 : 277. Female.

1976. *Liris (Liris) subtessellata* (Smith) : Bohart and Menke, *University Calif. Press,* : 248.

Material examined : India : Sikkim, 600 m, 10 exs., vii-ix. 1897, coll. Dudgeon; 1 ex., no data given, coll. A. V. Knyvett; Manul, 1491 m, 1 ex., 5 viii. 1959, coll. A.G.K. Menon.

Distribution : India : Sikkim; West Bengal, Assam, Karnataka, Orissa, Tamil Nadu. *Elsewhere* : Mediterranean region, Oriental region, Ryukyus, S-W Asia.

Remarks : This species is recorded here for the first time from Sikkim.

31. *Liris (Liris) jaculator* (Smith)

1856. *Larrada jaculator* Smith, *Cat. Hym. British Mus.*, 4 : 279. Female.

1976. *Liris (Liris) jaculator* (Smith) : Bohart and Menke, *University Calif. Press,* : 246.

Material examined : India : Sikkim, 1 ex., v. 1912, no further data; 600 m, 3 exs., viii-xi. 1897, coll. Dudgeon.

Distribution : India : Sikkim, Himachal Pradesh, Maharashtra, Uttar Pradesh, Tamil Nadu and West Bengal. *Elsewhere* : Myanmar.

Remarks : This is the first record from the state of Sikkim.

32. *Liris (Liris) aurulenta* (Smith)

1856. *Larrada aurulenta* : Smith, *Cat. Hym. British Mus.*, 4 : 276.

1976. *Liris (Liris) aurulenta* (Smith) Bohart and Menke, *University Calif. Press,* : 244.

Material examined : India : Sikkim, 600 m, 6 exs., vii-viii. 1897, coll. Dudgeon.

Distribution : India : Sikkim, Assam, Bihar, Karnataka, Rajasthan, Tamil Nadu, West Bengal. *Elsewhere* : Myanmar, Sri Lanka, China, Japan, Indonesia, South and West Africa.

Remarks : This is the first record of this species from Sikkim.

11. Genus *Dicranorhina* Shuckard

1840. *Dicranorhina* Shuckard, *Cabinet Cyclopedia of D. Lardner,* 129 : 181. London. Type-species : *Piagetia intaminata* Turner, 1910, designated by Pate, 1937.

1976. *Dicranorhina* Shuckard : Bohart and Menke, *University Calif. Press,* : 43, 251.

This is a small genus of old world tropics. Three species viz., *fasciatiipennis* (Cameron),

1889; *ruficornis* (Cameron), 1889 and *varicornis* (Cameron), 1904 are referable to this genus from India. Of these, only two species are reported to occur in the state of Sikkim. Due to lack of details, a key to species could not be provided.

33. *Dicranorhina ruficornis* (Cameron)

1889. *Piagetia ruficornis* Cameron, *Mem. March. Lit. Phil. Soc.*, **2** (4) : 133. Female.

1976. *Dicranorhina ruficornis* (Cameron) : Bohart and Menke, *University Calif. Press*, : 252.

Material examined : India : Sikkim, 3 exs., vii-ix. 1897, coll. Dudgeon.

Distribution : India : Sikkim, Maharashtra, West Bengal. *Elsewhere* : Thailand.

34. *Dicranorhina varicornis* (Cameron)

1904. *Piagetia varicornis* Cameron, *Trans. Amer. Ent. Soc.*, **30** : 251-267.

1976. *Dicranorhina varicornis* (Cameron) : Bohart and Menke, *University Calif. Press*, : 252.

Distribution : India : Sikkim.

12. Genus *Tachytes* Panzer

1806. *Tachytes* Panzer, *Krit. Rev. Insektenf. Deutschlands*, **2** : 129. Type-species : *Sphex tricolor* Fabricius, 1798. Monotypic.

1976. *Tachytes* Panzer : Bohart and Menke, *University Calif. Press*, : 43, 260.

This is moderately a large genus, having about 24 species/subspecies in Indian region. They are black or black and red in colour, densely covered with golden or silvery pubescence. They nest in ground and store orthopteran larvae in their nests. The following species are refer-able to this genus from India : *assamensis* Cameron, 1904; *argyreus* (Smith), 1856; *astutus* Nurse, 1909; *brevipennis* Cameron, 1900; *celsissimus* Turner, 1917; *dichrous hospes* Bingham, 1898; *fervidus* Smith, 1856; *flagellatus* Nurse, 1903; *fulvopilosus* Cameron, 1904; *indicus* Dalla-Torre, 1897; *modestus* Smith, 1856; *monetarius* Smith, 1856; *nitidulus* (Fabricius), 1793; *pygmacus* Kohl, 1888; *repandus* (Fabricius), 1787; *rufipalpis* Cameron, 1904; *saundersii* Bingham, 1897; *sinensis* Smith, 1856; *tabrobane* Cameron, 1900; *tarsalis* (Dalla-Torre), 1897; *vestitus* (Smith), 1873; *vicinus* Cameron, 1889; *vischnu* Cameron, 1889 and *xenoferus* Rohwer, 1911. Only one species of this genus is known from Sikkim.

35. *Tachytes modestus* Smith

1856. *Tachytes modestus* Smith, *Cat. Hym. British Mus.*, **4** : 299. Female.

1976. *Tachytes modestus* Smith : Bohart and Menke, *University Calif. Press*, : 266.

Diagnostic characters : *Female* and *Male* : Body in general densely pubescent; pile on abdomen silvery and head and thorax pale golden; stiff hairs on pygidium silvery, apical half of femora, tibiae and tarsi testaceous red. Wings yellowish hyaline. Body length 11-15 mm.

Distribution : India : Sikkim, Kerala, Meghalaya, Orissa, Uttar Pradesh, West Bengal. *Elsewhere* : China, Myanmar.

13. Genus *Tachysphex* Kohl

1883. *Tachysphex* Kohl, *Deut. Ent. Zeitschr.*, **27** : 166. Type-species: *Tachysphex filicornis* Kohl, 1883. Designated by Bingham, 1897.

1922. *Schitosphex* Arnold, *Ann. Trans. Mus.*, **9** : 137. Type-species : *Schistosphex breijeri* Arnold, 1922. Original designation.

1923. *Atelosphex* Arnold, *Ann. Trans. Mus.*, **9** : 177. Type-species : *Atelosphex miscophoides* Arnold, 1923. Original designation.

1976. *Tachysphex* Kohl : Bohart and Menke, *University Calif. Press*, : 44, 267.

This is a moderately a large genus, represented in India by 20 species/subspecies, viz., *albocinctus* (Lucas), 1848; *albocinctus peculator* Nurse, 1909; *auriceps* Cameron, 1889; *bengalensis* Cameron, 1889; *bituberculatus* Cameron, 1905; *conclusus* Nurse, 1903;

erythrophorus Dalla-Torre, 1897; *erythropus* (Spinola), 1838; *fulvicornis* Turner, 1918; ***gujaraticus*** Nurse, 1909; *instructus* Nurse, 1909; *minutus* Nurse, 1909; *novarae* (Saussure), 1867; *panzeri pulverosus* (Radoszkowski), 1886; *plicosus* (A. Costa), 1867; *pompiliformis* (Panzer), 1804; *puncticeps* Cameron, 1903; *schmiedeknechti* Kohl, 1883; ***selectus*** Nurse, 1909 and *tinctipennis* Cameron, 1904. Only one species has been reported from the state of Sikkim.

36. *Tachysphex bengalensis* Cameron

1889. *Tachysphex bengalensis* Cameron, *Mem. Manch. Lit. Phl. Soc.*, **2** (4) : 144. Female.

1976. *Tachysphex bengalensis* Cameron : Bohart and Menke, *University Calif. Press,*: 272.

Diagnostic characters : *Female* : Body 8-10 mm long. Head and thorax closely punctate, abdomen smooth; front, clypeus and cheeks densely pilose; a Λ-shaped groove behind the ocelli; first to fifth abdominal segments with broad apical silky pile. Body black, pubescence white. Wings clear hyaline.

Distribution : India : Sikkim, Uttar Pradesh. *Elsewhere* : Myanmar.

7. Tribe **Miscophini**

This tribe is represented by four genera, viz., *Lyroda* Say, 1837; *Paranysson* Guérin-Meneville, 1844; *Nitela* Latreille, 1809 and *Miscophus* Turine, 1807, in India. Only one genus has been reported from the state of Sikkim.

14. Genus *Lyroda* Say

1837. *Lyrops* (*Lyroda*) Say, *Boston Jour. Nat. Hist.*, **1** : 372. Type-species: *Lyrops* (*Lyroda*) *subita* Say, 1837. Designated by Patton, 1881.

1856. *Morphota* Smith, *Cat. Hym. British Mus.*, **4** : 293. Type-species : *Morphota fasciata* Smith, 1856. Designated by Pate, 1937.

1900. *Odontolarra* Cameron, *Ann. Mag. Nat. Hist.*, (7) **5** : 35. Type-species : *Odontolarra rufiventris* Cameron, 1900. Monotypic.

1979. *Lyroda* Say : Krombein *et al.*, *Cat. Hym. America North of Maxico, Washington*, **2** : 1633.

This genus is represented by five species in India, viz., *argenteofacialis* (Cameron), 1889; *formosa* (Smith), 1859; *nigra* (Cameron), 1904; *salai* Giner Mari, 1945 and *venusta* Bingham, 1897. Three species have been reported from the state of Sikkim. These can be distinguished by the following key :

Key to the species of *Lyroda*

1. Median segment finely rugose; basal two abdominal segments, red .... *formosa* (Smith)

– Median segment somewhat coarsely reticulate; abdomen entirely black..... ..... *venusta* Bingham

(*nigra* could not be included in the key.)

37. *Lyroda formosa* (Smith)

1859. *Morphota formosa* Smith, *Jour. Proc. Linn. Soc.*, : 17. Type : Female.

1976. *Lyroda formosa* (Smith) : Bohart and Menke, *University Calif. Press*, : 299.

Distribution : India : Sikkim, Meghalaya and West Bengal. *Elsewhere* : Myanmar, Philippines, Sulawesi and Solomon Is.

Remarks : This species is readily distinguished by having dense velvety pruinose on body and basal two abdominal segments, red.

38. *Lyroda nigra* (Cameron)

1904. *Odontolarra nigra* Cameron, *Trans. Amer. Ent. Soc.*, **30** : 251-267.

1976. *Lyroda nigra* (Cameron) : Bohart and Menke, *University Calif. Press*, : 299.

Distribution : India : Sikkim.

39. *Lyroda venusta* Bingham

1897. *Lyroda venusta* Bingham, *Fauna British India, Hymenoptera*, **1** : 210.

1976. *Lyroda venusta* Bingham : Bohart and Menke, *University Calif. Press*, : 299.

Material Examined : India : Sikkim, 600 m, 1.ix.1897, coll. Dudgeon (Ind. Mus. Colln.).

Distribution : India : Sikkim. *Elsewhere* : Myanmar, Philippines, Kalimantan.

Remarks : This species is recorded here for the first time from the state of Sikkim.

8. Tribe **Trypoxylonini**

This tribe is represented by two genera, viz., *Pison* Jurine, 1808 and *Trypoxylon* Latreille, 1796. Of these, only *Trypoxylon* subgenus *Trypoxylon* has been reported from the state of Sikkim. However, a key to both the Indian genera is given below for ready reference.

Key to the genera of tribe Trypoxylonini

1. Fore wing with one submarginal cell; antennal sockets not contiguous with fronto-clypeal suture ..... ***Trypoxylon*** Latreille
- Fore wing with two or three submarginal cells; antennal sockets contiguous with fronto-clypeal suture ..... ***Pison*** Jurine*

(* not reported from Sikkim)

15. Genus ***Trypoxylon*** Latreille

6. Subgenus ***Trypoxylon (Trypoxylon)*** S. str.

1796. *Trypoxylon* Latreille, *Precis Caract. Gen. Ins.*, : 121. Type-species : *Sphex figulus* Linnaeus, 1758. Designated by Latreille, 1802-1803.

1976. *Trypoxylon (Trypoxylon)* Latreille : Bohart and Menke, *University Calif. Press*, : 45, 339, 345.

This is a moderately large subgenus, represented in India by 22 species, viz., *accumulatus* Smith, 1875; *bicolor* Smith, 1856; *buddha* Cameron, 1889; *canaliculatus* Cameron, 1889; *fletcheri* Turner, 1918; *fulvocollare* Cameron, 1904; *geniculatus* Cameron, 1902; *gracilescens* Smith, 1860; *indicum* Menke, 1976; *intrudens*, Smith, 1870, *khasiae* Cameron, 1904; *mandibulatum* Richards, 1933; *montanum* Schulz, 1906; *nodosicorne* Turner, 1917; *orientale* Cameron, 1904; *pileatum* Smith, 1856; *pygmaeum* Cameron, 1900; *rejector* Smith, 1870; *responsum* Nurse, 1903; *testaceicorne* Cameron, 1907; *tinctipenne* Cameron, 1889 and *trochanteratum* Cameron, 1902. In Sikkim this subgenus is represented by three species and these can be distinguished by the following key :

Key to the species of *Trypoxylon (Trypoxylon)*

1. Median segment with a medial longitudinal furrow, and two lateral convergent furrows enclosing a triangular space at base; triangular space weakly transversely striate ..... *intrudens* Smith
- Median segment with only medial furrow, but no lateral furrow and triangular space 2
2. Legs wholly black; fourth and following abdominal segments also black ..... *rejector* Smith
- Legs black with reddish-brown markings 3
3. Abdomen red, petiole only black ..... *gracilescens* Smith
- Abdomen black; second and third abdominal segments, red ..... *bicolor* Smith

40. ***Trypoxylon (Trypoxylon) gracilescens*** Smith

1860. *Trypoxylon gracilescens* Smith, *Jour. Proc. Linn. Soc.*, : 85. Female.

1976. *Trypoxylon (Trypoxylon) gracilescens* Smith : Bohart and Menke, *University Calif. Press*, : 346.

Distribution : India : Sikkim, Himachal Pradesh. *Elsewhere* : Sri Lanka, Sulawesi and Taiwan.

Remarks : This species is readily distinguished by having second to last abdominal segments red and legs black with reddish-brown markings.

41. ***Trypoxylon (Trypoxylon) intrudens*** Smith

1870. *Trypoxylon intrudens* Smith, *Trans. Zool. Soc.*, **7** : 188. Female.

1976. *Trypoxylon (Trypoxylon) intrudens* Smith : Bohart and Menke, *University Calif. Press*, : 346.

Distribution : India : Sikkim, Bihar. ***Elsewhere*** : Myanmar and Sri Lanka.

Remarks : This species is readily distinguished by having two lateral convergent furrows, in addition to a median furrow on median segment, forming a weakly transversely striated triangular area.

42. *Trypoxylon (Trypoxylon) rejector* Smith

1870. *Trypoxylon rejector* Smith, *Trans. Zool. Soc.*, 7 : 189. Female.

1976. *Trypoxylon (Trypoxylon) rejector* Smith : Bohart and Menke, *University Calif. Press*, : 347.

Distribution : India : Sikkim, Manipur. ***Elsewhere*** : Sri Lanka.

Remarks : This species is recognised by having legs black with reddish-brown markings and abdomen (except first segment) wholly red.

43. *Trypoxylon (Trypoxylon) bicolor* Smith

1856. *Trypoxylon bicolor* Smith, *Cat. Hym. British Mus.*, 4 : 377. Female.

1976. *Trypoxylon (Trypoxylon) bicolor* Smith : Bohart and Menke, *University Calif. Press*, : 345.

Distribution : India : Sikkim, Himachal Pradesh. *Elsewhere :* Malaysia, Java, Hawaii, Myanmar, Singapore.

4. Subfamily CRABRONINAE

This subfamily includes a great variety of forms. They are commonly known as silver-moth or mustache-wasps, due to the presence of a transverse silvery clypeus which together with the vertical pale stripes on the scapes, forms an inverted pi-mark ɹɾ They prey most orders of insects, but dipterans are favourite.

Diagnostic characters : Eyes moderately separated, converging below, ocelli normal. Antennal sockets close to fronto-clypeal suture; male with 11-13 and female with 12-segmented antenna. Mandible with externo-ventral notch. Pronotal lobe and tegula separated. Notauli short and indistinct. Middle tibia with one spur, sometimes none in male, rarely none in female; middle coxae slightly to broadly separated, without dorso-lateral carina; hind femoral apex sometimes thickened and truncate; claws simple; fore tarsus with or without a rake. Propodeum short, dorsal enclosure sometimes present; no propodeal sternite. Fore wing with one submarginal cell or this may be fused with first discoidal cell, third discoidal cell absent. Jugal lobe of hind wing small, shorter to longer than submedian cell, media diverging beyond cu-a; second anal vein and subcosta absent. Gaster sessile or pedunculate, tergite I with lateral carina; male with 7 visible tergites; pygidial plate always present in female and in some males. Volsella simple and cerci absent.

In India, this subfamily is represented by 13 genera under two tribes *viz.*, Oxybelini and Crabronini. The following genera are referable to this subfamily : *Oxybelus* Latreille, 1796; *Encopognathus* Kohl, 1896; *Entomognathus*, Dahlbom, 1844; *Lindenius* Lepeletier and Brulle, 1834; *Rhopalum* Stephens, 1829; *Isorhopalum* Leclercq, 1963; *Crossocerus* Lepeletier and Brulle, 1834; *Crabro* Fabricius, 1775; *Vechtia* Pate, 1944; *Hingstoniola* Turner and Waterston, 1926; *Dasyproctus* Lepeletier and Brulle, 1834; *Ectemnius* Dahlbom, 1845 and *Lestica* Billberg, 1820.

Key to the tribes of Crabroninae

1. Submarginal and discoidal cells fused .... **Oxybelini**

   Submarginal and discoidal cells separate, not fused ..... **Crabronini**

The state of Sikkim is represented by tribe Crabronini only.

9. Tribe **Crabronini**

This tribe is represented by 12 genera in India, as already listed above. Only five genera, viz., *Crabro* Fabricius, *Hingstoniola* Turner and Waterston, *Ectemnius* Dahlbom, *Dasyproctus* Lepeletier and Brulle and *Lestica*

Billberg have been reported from the state of Sikkim. These genera can be distinguished by the following key :

Key to the genera of tribe Crabronini

1. Scapal basin with lateral carinae, which may be continuous dorsally ..... ***Hingstoniola*** Turner and Waterston
- Scapal basin carinate laterally 2
2. Gaster with a slender peduncle, which is nodose toward the apex. Body Mostly dull ..... ***Dasyproctus*** Lepeletier and Brulle
- Gaster sessile or pedunculate, but not nodose toward the apex 3
3. Female pygidial plate always flat; absent in male; verticulus absent but sometimes replaced by an angle or sharp tooth; (mandible usually bidentate apically) ..... ***Crabro*** Fabricius
- Female pygidial plate more commonly gutter like 4
4. Orbital foveae absent or shallow; male antennae with 12 or rarely with 13 segments ..... ***Ectemnius*** Dahlbom
- Orbital foveae distinct; male antennae always with 12 segments ..... ***Lestica*** Billberg

16. Genus *Crabro* Fabricius

1775. *Crabro* Fabricius, *Syst. Ent.*, : 373. Type-species : *Vespa cribraria* Linnaeus, 1758, designated by *Internat. Comm. Zool. Nomencl.*, Opinion 144, 1943 : 91.

1976. *Crabro* Fabricius : Bohart and Menke, *University Calif. Press*, : 48, 406.

This is a small genus known by four species viz., *comberi* Leclercq, 1950; *flavoniger* Dutt, 1921; *funestus* Kohl, 1915 and *gulmargensis* Nurse, 1903. This genus is mainly known from India and Tibet. Only one species is known from Sikkim, which is detailed below :

44. *Crabro funestus* Kohl

1915. *Crabro funestus* Kohl, *Ann. Naturhist Hofmus. Wien*, **57** : 167-169.

1976. *Crabro funestus* Kohl : Bohart and Menke, *University Calif. Press*, : 408.

Distribution : India : Sikkim, Hills of North India. *Elsewhere* : Tibet.

17. Genus *Hingstoniola* Turner and Waterston

1926. *Hingstoniola* Turner and Waterston, *Ann. Mag. Nat. Hist.*, (9) **17** : 189.

1976. *Hingstoniola* Turner and Waterston : Bohart and Menke, *University Calif. Press*, : 417.

This is a small genus represented by a single species viz., *duplicata* (Turner and Waterston), 1926 from Sikkim, in India, which is detailed below :

45. *Hingstoniola duplicata* (Turner and Waterston)

1926. *Crabro duplicata* Turner and Waterston, *Ann. Mag. Nat. Hist.*, (9) **17** : 190.

1976. *Hingstoniola duplicata* (Turner and Waterston) : Bohart and Menke, *University Calif. Press*, : 417.

Distribution : India : Sikkim.

18. Genus *Dasyproctus* Lepeletier and Brulle

1834. *Dasyproctus* Lepeletier and Brulle. *Ann. Soc. Ent. France*, **3** : 801. Type-species : *Dasyproctus bipunctatus* Lepeletier and Brulle, 1834, Monotypic.

1976. *Dasyproctus* : Bohart and Menke, *University Calif Press*, : 49, 419.

This is a small genus, known by four species, viz., *agilis* (Smith), 1858; *buddha* (Cameron), 1889; *oppidanus* Leclercq, 1972 and *pulveris* (Nurse), 1902 from India. Two species have been reported from Sikkim, which are detailed below. A key to species could not be provided.

46. *Dasyproctus agilis* (Smith)

1858. *Crabro agilis* Smith, J. *Proc. Linn. Soc. London Zool.*, **2** : 42-130

1890. *Crabro orientalis* Cameron, *Mem. Manch. Lit. Phil. Soc.*, **3** (4) : 272.

1976. *Dasyproctus agilis* (Smith) : Bohart and Menke, *University Calif. Press*, : 420.

Distribution : India : Sikkim, Himachal Pradesh, Meghalaya, Maharashtra, West Bengal. *Elsewhere* : Myanmar.

47. ***Dasyproctus oppidanus*** Leclercq

1972. *Dasyproctus oppidanus* Leclercq, *Bull. Soc. Roy. Sci. Liege*, **41** : 101-122.

1976. *Dasyproctus oppidanus* Leclercq : Bohart and Menke, *University Calif. Press*, : 421.

Distribution : India : Sikkim.

19. Genus ***Ectemnius*** Dahlbom

1845. *Crabro (Ectemnius)* Dahlbom. *Hym. Europaea, fasc.* 1, **1** : 389. Type-species : *Crabro guttatus* of Dahlbom. Designated by Ashmead, 1899.

1892. *Crabro (Mesocrabro)* Verhoeff, *Ent. Nachr.*, **18** : 70. Type-species : *Crabro guttatus* van der Linden, 1829. Designated by Pate, 1937.

1976. *Ectemnius* Dahlbom : Bohart and Menke. *University Calif. Press*, : 49, 424.

This is a widely distributed genus. About 160 species in the world and 16 species have been described from India. Most of the species of *Crabro* from India belong to this genus (Bingham, 1897 : 321).

The following species are referable to this genus from India : *agycus* (Cameron), 1904; *ammanitus* Leclercq, 1958; *asiaticus* Leclercq, 1950; *bogorensis* Leclercq, 1958; *chrysites* (Kohl), 1892; *corvidus* Laclercq, 1961; *fulvopilosellus* (Cameron), 1902; *fuscipennis* (Lepeletier and Brulle), 1834; *insignis* (Smith), 1856; *lysias* (Cameron), 1905; *melanotarsis* (Cameron), 1902; *menyllus* (Cameron), 1905; *palitans* (Bingham), 1896; *sodalis* (Bingham), 1897; *trichiosomus* (Cameron), 1904 and *violaceipennis* (Cameron), 1907. Only three species have been reported so far from the state of Sikkim. A key to species could not be provided.

48. ***Ectemnius asiaticus*** Leclercq

1950. *Ectemnius asiaticus* Leclercq, *Rev. Franciase Ent.*, **17** : 200-211.

1976. *Ectemnius asiaticus* Leclercq : Bohart and Menke, *University Calif. Press*, : 424.

Distribution : India : Sikkim.

49. ***Ectemnius fulvopilosellus*** (Cameron)

1902. *Crabro fulvopilosellus* Cameron, *Ann. Mag. Nat. Hist.*, (7) **10** : 54. Type : Female.

1976. *Ectemnius fulvopilosellus* (Cameron) : Bohart and Menke, *University Calif. Press*, : 426.

Distribution : India : Sikkim, Meghalaya.

Remarks : This species is readily distinguished by having golden yellow pubescence on the body.

50. ***Ectemnius violaceipennis*** (Cameron)

1907. *Crabro violaceipennis* Cameron, *Ann. Mag. Nat. Hist.*, (7) **20** : 88.

1976. *Ectemnius violaceipennis* (Cameron) : Bohart and Menke, *University Calif. Press*, : 428.

Distribution : India : Sikkim.

20. Genus ***Lestica*** Billberg

1820. *Lestica* Billberg, *Enumeratio Insectorum*, **2** : 138. Type-species : *Crabro subterraneus* Fabricius, 1775.

1976. *Lestica* Billberg : Bohart and Menke, *University Calif. Press*, : 50, 429.

This is a small genus of Oriental region. In India, this genus is represented by two species viz., *alacer* (Bingham), 1896 and *quadriceps* (Bingham), 1897. Only one species is known from the state of Sikkim, which is detailed below :

51. ***Lestica alacer*** (Bingham)

1896. *Crabro alacer* Bingham, *Jour. Proc. Linn. Soc.*, **25** : 443.

1976. *Lestica alacer* (Bingham) : Bohart and Menke, *University Calif. Press*, : 430.

Distribution : India : Sikkim. *Elsewhere* : Sumatra and Taiwan.

5. Subfamily NYSSONINAE

The members of this subfamily is commonly known as "sand wasps" Most species nest in the ground and prefer sandy habitats. They prey

up-on variety of other insects, from grasshoppers to flies. This is fairly a large subfamily, there are more than 1400 known species (Bohart and Menke, 1976) under this family.

Diagnostic characters : Eyes parallel or converging below, rarely converging above. Mandible not notched nor toothed. Scutellum without complete notauli. Middle tibia with two apical spurs; claws simple. Propodeal sternite absent. Fore wing with two or three submarginal cells of which II usually receives at least one recurrent vein; three discoidal cells present. Jugal lobe in hind wing usually small, rarely absent, at most half as long as anal area. Gaster usually sessile, when pedunculate, made up of both tergite and sternite. Male genitalia usually with volsella differentiated into cuspis and digitus.

In India, this subfamily is represented by 14 genera under five tribes, *viz.*, Alyssonini, Nyssonini, Gorytini, Stizini and Bembicini. The following genera are referable to this subfamily : *Alysson* Panzen, 1806; *Nursea* Cameron, 1902; *Nysson* Latreille,1802-1803; *Synnevrus* A. Costa, 1859; *Brachystegus* A. Costa, 1859; *Dienoplus* W. Fox, 1893; *Gorytus* Latreille, 1804; *Lestiphorus* Lepeletier, 1832; *Ammatomus* A. Costa, 1859; *Hoplisoides* Gribodo, 1884; *Stizus* Latreille, 1802-1803; *Stizoides* Guérin-Meneville, 1844; *Bembecinus* A Costa, 1859 and *Bembix* Fabricius, 1775. The State of Sikkim is represented by 3 tribes, these can be distinguished by the following key (Bohart and Menke, 1976 : 445).

Key to the tribes of Nyssoninae

1. Sternum I with two ridges diverging posteriorly. (Median groove of scutum strong; body sculpture rather coarse; pronotal collar ridge like) ..... **Nyssonini**
- Sternum I with a single ridge basally.....2
2. Prestigmal length of submarginal cell I more than twice the height of cell, omaulus absent, propodeal enclosure extending far onto vertical slope, scutellum with lamelliform edge overlapping metanotum..... **Stizini**
- Without above combination of characters... .....**Gorytini**

10. Tribe **Nyssonini**

This tribe is represented by 4 genera, viz., *Nursea* Cameron, 1902; *Nysson* Latreille, 1802-1803; *Synnevrus* A. Costa, 1859 and *Brachystegus* A. Costa, 1859. Of these only one genus, viz., *Brachystegus* has been reorded from the state of Sikkim.

21. Genus ***Brachystegus*** A. Costa

1859. *Brachystegus* A. Costa, *Fauna del regno di napoli. Specidea*, : 24. Type-species : *Nysson dufourii* Lepeletier, 1845 (= *Nysson scalaris* Illiger, 1807).

1976. *Brachystegus* A. Costa : Bohart and Menke, *University Calif. Press*, : 51, 470.

This is a small genus, known to have 2 species viz., *decoratus* Turner, 1914 and *violaceipennis* (Cameron), 1904 from India. Only one species is reported from the State of Sikkim, which is discussed below :

52. ***Brachystegus violaceipennis*** (Cameron)

1904. *Nysson violaceipennis* Cameron, *Trans. Amer. Ent. Soc.*, **30** : 260.

1976. *Brachystegus violaceipennis* (Cameron) : Bohart and Menke, *University Calif. Press*, : 473.

Distribution : India : Sikkim.

11. Tribe **Gorytini**

This tribe is represented by 5 genera, viz., *Dienoplus* W. Fox, 1893; *Gorytes* Latreille, 1804; *Lestiphorus* Lepeletier, 1832; *Ammatomus* A. Costa, 1859 and *Hoplisoides* Gribodo, 1884 in India. Of these, only two genera have been recorded from Sikkim. A key to these genera is as follows :

Key to the genera of tribe Gorytini

1. Mesopleuron with no trace of sternaulus; inner eye margins strongly converging below ..... ***Ammatomus*** A. Costa

– Mesopleuron with distinct sternaulus; inner eye margins often nearly parallel and widely separated ..... ***Hoplisoides*** Gribodo

22. Genus ***Ammatomus*** A. Costa

1859. *Ammatomus* A. Costa, *Fauna del Regno di Napoli. Sphecidea*, : 36. Type-species : *Gorytes coarctatus* Spinola, 1808. Monotypic.

1976. *Ammatomus* A. Costa : Bohart and Menke, *University Calif. Press*, : 53, 512.

This genus is known to have two species, viz., *alipes* (Bingham), 1897 and *lenis* (Nurse), 1903. Of these, only *alipes* has been reported from Sikkim, which is discussed below :

53. ***Ammatomus alipes*** (Bingham)

1897. *Gorytes alipes* Bingham, *Fauna British India, Hymenoptera*, **1** : 273. Type : Female, male, des. India : Maharashtra : Mumbai. Myanmar.

1976. *Ammatomus alipes* (Bingham) : Bohart and Menke, *University Calif. Press*, : 513.

Diagnostic characters : *Female* and *Male* : Body length 9-13 mm, obscurely covered with fine hairs. Clypeus triangular, its anterior margin transverse; frons with a vertical impressed groove; propodeum with a triangular area at the base, smooth and shiny. Abdomen with a stout petiole.

Black. The following yellow : clypeus, scape, a line on the pronotum posteriorly, a line on mesoscutum on the antero-lateral margin, post-scutellum, fore and middle femora, tibiae and tarsi, and also hind tibiae and tarsi, apical margins of basal four segments of abdomen. Middle femora and hind tibiae black above, transverse band on basal segment emarginate in the middle, and bands on the remainig segments very wide laterally. Clypeus covered with dense silvery pile. Wings hyaline, nerves testaceous.

Distribution : India : Sikkim, Maharashtra, Meghalaya. *Elsewhere* : Myanmar.

23. Genus ***Hoplisoides*** Gribodo

1884. *Hoplisoides* Gribodo, *Boll. Soc. Ent. Italiana*, **16** : 276. Type-species : *Hoplisoides intricans*, Gribodo, 1884. Monotypic.

1976. *Hoplisoides* Gribodo : Bohart and Menke, *University Calif. Press*, : 53, 517.

This genus is represented by six species, viz., *bandraensis* (Giner Mari), 1954; *confusus* (Dutt), 1922; *homonymus* (Schulz), 1906; *orientalis* (Handlirsch), 1888; *pictus* (Smith), 1856 and *remotus* (Turner), 1921 in India. Only one species has been reported from the state of Sikkim, which is detailed below :

54. ***Hoplisoides pictus*** (Smith)

1856. *Gorytes pictus* Smith, *Cat. Hym. British Mus.*, **4** : 365. Female.

1976. *Hoplisoides pictus* (Smith) : Bohart and Menke, *University Calif. Press*, : 521.

Diagnostic charaters : *Female* : 7-9 mm long. Head, thorax and abdomen smooth, with a few shallow scattered punctures. Head as wide as thorax; face and front weakly convex; clypeus transverse; triangular area at the base of median segment longitudinally striate. Black, except thorax and abdomen reddish. The following are yellow : base of mandible, upper two-thirds of clypeus, inner orbits, a spot on scape, a line on pronotum, tubercles, stripe on scutellum, an interrupted band on the posterior margin of basal abdominal segment. Legs and antennae reddish-yellow. Wings hyaline with a fuscous apical mark on fore wing.

Distribution : India : Sikkim, Tamil Nadu and West Bengal.

12. Tribe **Stizini**

This tribe is represented by three genera viz., *Stizus* Latreille, 1802-1804. *Stizoides* Guérin-Meneville, 1844 and *Bembecinus* A. Costa, 1859 in India. Only one genus is reported from the state of Sikkim, which is detailed below :

24. Genus *Bembecinus* A. Costa

1859. *Bembecinus* A. Costa, *Fauna Regn. Nap.*, : 4. Type-species : *Bembecinus meridionalis* A. Costa, 1859. Monotypic.

1976. *Bembecinus* A. Costa : Bohart and Menke, *University Calif. Press*, : 53, 529.

This genus is represented by four species viz., *lateralis* (Bingham), 1897; *prismaticus* (Smith), 1858; *proximus* (Handlirsch), 1892 and *veniperdus* (Lohrmann), 1942 in India, Only one speices is known from the state of Sikkim, which is discussed below :

55. *Bembecinus prismaticus* (Smith)

1858. *Larra prismaticus* Smith, *Jour. Proc. Linn. Soc.*, : 103. Male, female.

1976. *Bembecinus prismaticus* (Smith) : Bohart and Menke, *University Calif. Press*, : 531.

Diagnostic characters : *Female and Male* : Head, thorax and abdomen shiny, closely punctate, punctures bearing short hairs; median segment deeply excavated. Body black with a bright tint of purple and blue in certain reflection. The following are yellow : clypeus, a triangular above it, inner orbit of eyes, posterior margin of pronotum, tubercles, outer margin of tagula, two spots on scutellum, a transverse line on postscutellum and elongate spot on either side of median segment, apical margins of 2nd to 4th segments, 5th segment with a spot on each side. Legs variegated with yellow; wings irridescent, hyaline.

Material examined : India : Sikkim, 600 m, 11 exs., viii. 1897, coll. Dudgeon.

Distribution : India : Sikkim. *Elsewhere* : Myanmar, Kalimantan, New Guinea, Sri Lanka.

6. Subfamily PHILANTHINAE

This subfamily is considered to be one of the largest subfamilies of Sphecidae. There are about 1100 described species in the world fauna under this subfamily. Almost all the speices are ground nesting, and the provisions are Hymenoptera or Coleoptera (Bohart and Menke, 1976).

Diagnostic characters : Eyes rather widely separated, inner orbit emarginate or entire, converging above. Antennal sockets separated from fronto-clypeal suture; male with 13 and female with 12-segmented antennae. Mandible without externo-ventral notch. Mesoscutum with notauli usually distinct; omaulus, sternaulus and acitabular carina absent. Middle tibia with one spur; claws simple. Propodeum short to moderately long dorsal enclosure present, without propodeal sternite. Fore wing with 3 submarginal cells, II and III each usually receiving one recurrent vein; jugal lobe small to large; media in highwing diverging before, at or after cu-a; second anal vein and subcosta absent. Gaster sessile, pedunculate, or occasionally petiolae, petiole clearly composed of tergite and sternite; male with 7 exposed terga; pygidial plate usually present. Volsella simple or with digitus and cuspis; cerci usually absent.

In India this subfamily is represented by 2 tribes, *viz.*, Philanthini and Cercerini. The tribe Philanthini contains only one genus *Philanthus* Fabricius from India. 11 species have been reported under genus *Philanthus*, but none belongs to the state of Sikkim. The tribe Cercerini is represented by 2 genera, viz., *Cerceris* Latreille, 1802-1803 and *Eucerceris* Cresson, 1865 in world fauna. The genus *Cerceris* contains a huge number of species in relation to other genera, and is the only genus known to occur in Sikkim. There are about 46 species (Bohart and Menke, 1976 : 576-589) under the genus *Cerceris* from India.

13. Tribe **Cercerini**

25. Genus *Cerceris* Latreille

1802-03. *Cerceris* Latreille, *Hist. Nat. Crust. Ins.*, **3** : 367. Type-species : *Philanthus ornatus* Fabricius, 1790. Designated by Latreille, 1810 (= *Spex rybyensis* Linnaeus,1771).

1838. *Nectanebus* Spinola, *Ann. Soc. Ent. France*, **7** : 489. Type-species : *Nectanebus fischeri* Spinola, 1838. Original designation.

1844. *Diamma* Dahlbom, *Hym. Europaea, fasc.* 2, **1** : 225. Preoccupied. Type-species : *Diamma spinolae* Dahlbom, 1844. Monotypic (= *Cerceris binodis* Spinola, 1841).

1845. *Didesmus* Dahlbom, *Hym. Europaea, fasc.* 3, **1** : 502. New name.

1913. *Paracerceris* Bréthes, *Ann. Mus. Nac. Hist. Nat. Buenos Aires,* **24** : 127. Type-species : *Paracerceris tridentifera* Brethes, 1913. Monotypic.

1923. *Apiraptrix* Shestakov, *Sbornik Yaroslav Gosudarst. Universitet,* : 101. Type-species : *Sphex rybyensis* Linnaeus, 1771. Original designation.

1934. *Bucerceris* Minkiewicz, *Polski Pismo Ent.*, **12** : 253. Type-species : *Cerceris bupresticida* Dufour., 1841. Monotypic.

1976. *Cerceris* Latreille : Bohart and Menke, *University Calif. Press.* : 55, 575.

The following species are referable to this genus from Sikkim, viz., *basimaculata* Cameron, 1907; *instabilis* Smith, 1856; *pulchra* Cameron, 1890; *tristis* Cameron, 1890 and *vigilans* Smith, 1856. These can be distinguished by the following key :

Key to the species of *Cerceris*

1. Enclosed triangular or cardate space at the base of median segment striate; (median segment posteriorly red, marked with yellow; enclosed space black). Female..... ..... *instabilis* Smith

– Enclosed triangular or cordate space at the base of median segment punctate. 2

2. Abdomen with basal segment black .... *tristis* Cameron

– Abdomen with basal segment red.....3

3. Clypeus arched anteriorly .... *vigilans* Smith

– Clypeus emarginate anteriorly 4

4. Apical margin of clypeus with two teeth. (Male)..... *instabilis* Smith

– Apical margin of clypeus not dentate ....*pulchra* Cameron

(Note : *C. basimaculata* Cameron, 1907 could not be included in the key)

56. *Cerceris basimaculata* Cameron

1907. *Cerceris basimaculata* Cameron, *Ann. Mag. Nat. Hist.*, (7) **20** : 87.

1976. *Cerceris basimaculata* Cameron : Bohart and Menke, *University Calif. Press,* : 577.

Distribution : India : Sikkim.

57. *Cerceris instabilis* Smith

1856. *Cerceris instabilis* Smith, *Cat. Hym. British Mus.*, **4** : 452. Type : Female.

1875. *Cerceris velox* Smith, *Trans. Ent. Soc. London,* : 41. Type : Male.

1976. *Cerceris instabilis* Smith : Bohart and Menke, *University calif. Press,* : 582.

Material examined : India : Sikkim, 2 exs., ix-x. 1897, coll. Dudgeon.

Distribution : India : Sikkim, Goa, Karnataka, Maharashtra, Meghalaya, Tripura, Tamil Nadu, West Bengal. *Elsewhere* : Myanmar, Sri Lanka.

Ramarks : This species is readily distinguished by having propodeum posteriorly red and marked with yellow; enclosed area black and longitudinally striate.

This is new record of this species from Sikkim.

58. *Cerceris pulchra* Cameron

1890. *Cerceris pulchra* Cameron, *Mem. Manch. Lit. Phil. Soc.*, **3** (4) : 250, 253.

1976. *Cerceris pulchra* Cameron : Bohart and Menke, *University Calif. Press,* : 585.

Distribution : India : Sikkim, Maharashtra and West Bengal.

59. *Cerceris tristis* Cameron

1890. *Cerceris tristis* Cameron, *Mem. Manch.* Lit. *Phil. Soc.*, **3** (4) : 250, 255.

1976. *Cerceris tristis* Cameron : Bohart and Menke, *University Calif. Press,* : 588.

Material examined : India : Sikkim, 600 m, 2 exs., ii. 1897, coll. Dudgeon.

Distribution : India : Sikkim and West Bengal.

Remarks : This is the first record of this species from the state of Sikkim.

60. ***Cerceris vigilans*** Smith

1856. *Cerceris vigilans* Smith, *Cat. Hym. British Mus.*, **4** : 454. Male.

1976. *Cerceris vigilans* Smith : Bohart and Menke, *University Calif Press*, : 589.

Material examined : India : Sikkim, 600 m, 6 exs., vii-viii. 1897, coll. Dudgeon.

Distribution : India : Sikkim, Maharashtra, Orissa, Tamil Nadu and West Bengal. *Elsewhere* : Myanmar.

Remarks : This species is recorded here for the first time from Sikkim.

SUMMARY

The family Sphecidae includes blue mud-dauber, black and yellow mud-dauber, digger or sand wasps. The sphecid wasps are mainly beneficial to man and cause no harm to him. The majority of the members of this family are predatory on a great variety of terrestrial insects; but some are cleptoparasitic. It may be possible to exploit some of them for the control of insect pests.

The present paper deals with the fauna of the state Sikkim, India. In Sikkim, the family Sphecidae is represented by 60 species/ subspecies under 25 genera and 6 subfamilies. Of these, one species marked with double asterisk (**) and 12 species marked with single astrisk (*) in the systematic account, have been recorded here for the first time from India and Sikkim respectively.

The keys to the subfamilies, tribes, genera, subgenera, species and subspecies are provided for the identification of various taxa. Taxonomic terms used in the present work have been explained with the help of illustrations.

ACKNOWLEDGEMENT

We are grateful to Dr. J.R.B. Alfred, Director, Zoological Survey of India for providing necessary facilities to carry out this research work. We are also thankful to Shri Rati Ram, P.P.O., Z.S.I. for helping us in various ways.

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INSECTA : HYMENOPTERA : ICHNEUMONIDAE

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INTRODUCTION

The family Ichneumonidae of the Order Hymenoptera is one of the largest of all animal groups. They are parasitic in cocoons, usually of Lepidoptera, but also of Symphyta, Braconidae, Ichneumonidae, Neuroptera, Diptera and spiders.

Nearly 60,000 species and subspecies are known from the world and are classified under 26 subfamilies. In India, about 1200 species and subspecies under 23 subfamilies represented the family.

The present paper records 204 species and subspecies under 103 genera and 16 subfamilies from the state of Sikkim. Jonathan (1999, 2000), has already provided information on subfamilies, genera, subgenera, species and subspecies in his publications on the fauna of the states of West Bengal, Meghalaya and Tripura, Therefore, diagnostic characters of various taxa, their detailed synonymy, keys, illustrations of morphological characters of taxonomic importance have not been repeated in this paper.

A list of various taxa known from the state of Sikkim, along with their junior synonym(s) and

Family ICHNEUMONIDAE

Taxa	Distribution
1. Subfamily PIMPLINAE	
1. Genus ***Leptopimpla*** Townes *in* Townes et al., 1961	
1. ***L. longiventris*** (Cameron) = *Ephialtis longiventris* Cameron, 1908	India : Sikkim; West Bengal. *Elsewhere* : Myanmar, Malaysia, Indonesia, Nepal, Taiwan & Vietnam.
2. Genus ***Dolichomitus*** Smith, 1877	
2. ***D. malanomerus tinctipennis*** (Cameron) = *Ephialtis tinctipennis* Cameron, 1899	India : Sikkim; Meghalaya, Karnataka, Tamil Nadu, Uttar Pradesh. *Elsewhere* : Srilanka, Taiwan.
3. Genus ***Flavopimpla*** Betrem, 1932	
3. ***F. nigromaculata nigromaculata***(Cameron) = *Ephialtis nigromaculatus* Cameron, 1899	India : Sikkim, Meghalaya *Elsewhere* : Taiwan.

4. Genus ***Afrephialtis*** Benoit, 1953	
4. ***A. latisulcatus latisulcatus*** (Cameron) = *Pimpla latisulcatus* Cameron, 1908	India : Sikkim; Assam. *Elsewhere* : Taiwan.
5. ***A. latiannulata*** (Cameron) = *Ephialtis latiannulatus* Cameron, 1907	India : Sikkim, Himachal Pradesh, Uttar Pradesh *Elsewhere* : Sri Lanka.
5. Genus ***Iseropus*** Foerster, 1956	
6. ***I. (Gregopimpla) himalayensis*** (Camaron) = *Pimpla himalayensis* Cameron, 1899	India : Sikkim,; Assam, Himachal Pradesh, Meghalaya, West Bengal, Jammu & Kashmir. *Elsewhere* : China, Korea, Japan.
6. Genus ***Scambus*** Hartig, 1838	
7. ***S. (Scambus) lucidus*** Gupta & Tikar, 1968	India : Sikkim, West Bengal.
7. Genus ***Acropimpla*** Townes, 1960	
8. ***A. flavoscutis*** (Cameron) = *Charitopimpla flavoscutis* Cameron, 1907	India : Sikkim.
9. ***A. leucostoma*** (Cameron) = *Charitopimpla leucostoma* Cameron, 1907	India : Sikkim; Assam, Meghalaya, Bihar, Karnataka, Uttar Pradesh, Tamil Nadu. *Elsewhere* : Indonesia, Laos, Myanmar, Sri Lanka, Vietnam.
10. ***A. nigroscutis*** (Cameron) = *Charitopimpla nigroscutis* Cameron, 1907	India : Sikkim
11. ***A. uchidai*** (Cushman) = *Charitopimpla uchidai* Cushman, 1933	India : Sikkim; Meghalaya, Uttar Pradesh, West Bengal. *Elsewhere* : Nepal, Myanmar, Taiwan.
8. Genus ***Sericopimpla*** Kriechbaumer, 1895	
12. ***S. albicincta*** (Morley) = *Exeristes albicincta* Morley, 1913	India : Sikkim; Punjab, Uttar Pradesh. *Elsewhere* : China, Nepal Thailand.
13. ***S. sagrae sagrae*** (Vollenhoven) = *Pimpla sagae* Vollenhoven, 1879	India : Sikkim. *Elsewhere* : Indonesia, Malaysia, Philippines.
9. Genus ***Camptotypus*** Kriechbaumer, 1989	
14. ***C. arianus arianus*** (Cameron) = *Pimpla arianus arianus* Cameron, 1899 = *Erythropimpla himalayensis* Schulz, 1906	India : Sikkim; Assam, Kerala, Meghalaya. *Elsewhere* : Myanmar, Laos, Vietnam.
15. ***C. testaceus*** (Cameron) = *Erythropimpla testaceus* Cameron, 1907	India : Sikkim, Assam. *Elsewhere* : Myanmar.
10. Genus ***Itoplectis*** Foerster, 1869	
16. *I. himalayensis* Gupta, 1988	India : Sikkim, Himachal Pradesh, Jammu & Kashmir, Uttar Pradesh, Meghalaya. *Elsewhere* : China.

11. Genus ***Coccygomimus*** Saussure, 1892	
17. ***C. bilineatus*** (Cameron) = *Habropimpla bileanata* Cameron. 1900	India : Sikkim; Himachal Pradesh, Uttar Pradesh, West Bengal, Meghalaya. *Elsewhere* : Myanmar, Nepal, China.
18. ***C. cameroni*** (Dalla-Torre) = *Pimpla vidua* Cameron, 1899 = *P. cameroni* Dalla Torre, 1901 = *Itoplectis orientalis* Morley, 1913	India : Sikkim, Himachal Pradesh, Uttar Pradesh, West Bengal, Meghalaya, Karnataka, Tamil Nadu. *Elsewhere* : Nepal, Myanmar, Indonesia, Taiwan.
19. ***C. carinifrons*** (Cameron) = *Pimpla carinifrons* Cameron, 1899 = *Ephialtes formosana* Cushman, 1922	India : Sikkim, Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, West Bengal, Meghalaya. *Elsewhere* : Nepal, Myanmar, Taiwan.
20. ***C. cynator*** (Morley) = *Pimpla cyanea* Morley, 1913 = *P. cynator* Morley, 1914	India : Sikkim, Jammu & Kashmir, Himachal Pradesh, Tamil Nadu. *Elsewhere* : Kalimantan.
21. ***C. flavipalpis*** (Cameron) = *Pimpla flavipalpis* Cameron, 1899 = *Phytodiaetoides megaera* Morley, 1913	India : Sikkim, Uttar Pradesh, West Bengal, Meghalaya, Tamil Nadu. *Elsewhere* : Nepal, Myanmar, Taiwan.
22. ***C. indra*** (Cameron) = *Pimpla indra* Cameron, 1899	India : Sikkim, Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, West Bengal, Meghalaya. *Elsewhere* : China.
23. ***C. leucogonia*** (Cushman) = *Ephialtes leucogonia* Cushman, 1933	India : Sikkim, Himachal Pradesh, West Bengal, Jammu & Kashmir. *Elsewhere* : Myanmar, Taiwan.
12. Genus ***Lissopimpla*** Kreichbaumer,1889	
24. ***L. albopicta albopicta*** (Walker) = *Pimpla albopicta* Tennent, 1859 = *Lissopimpla rufipes* Cameron, 1905	India : Sikkim, Meghalaya, Tamil Nadu. *Elsewhere* : Srilanka.
13. Genus ***Xanthopimpla*** Saussure,1892	
25. ***X. appendicularis appendicularis*** Cameron) = *Pimpla appendicularis* Cameron, 1899	India: Sikkim, Uttar Pradesh, West Bengal, Meghalaya.
26. ***X. bifida*** Townes & Chiu, 1970.	India : Sikkim, Meghalaya.
27. ***X. brachyparea*** Krieger, 1914	India : Skikkim. *Elsewhere* : Thailand, Taiwan.
28. ***X. calva sexcincta*** Townes & Chiu	India : Sikkim, Tamil Nadu. *Elsewhere* : Myanmar, Malaysia.
29. ***X. curvimaculata curvimaculata*** (Cameron) = *Pimpla curvimaculata* Cameron, 1899	India : Sikkim, Meghalaya. *Elsewhere* : Thailand.
30. ***X. eleganas apicipennis*** (Cameron) = *Pimpla apicipennis* Cameron, 1899	India : Sikkim, Uttar Pradesh, West Bengal, Assam, Meghalahya, Nagaland, Karnataka,Tamil Nadu, Nicobar Islands.

	Elsewhere : Nepal, Myanmar, Thailand.
31. ***X. fastigiata evittipes*** Townes & Chiu, 1970	India : Sikkim, Assam. *Elsewhere* : Thailand.
32. ***X. lepcha*** (Cameron) = *Pimpla lepcha* Cameron, 1899 = *P. indubia* Cameron, 1899 = *P. khasiana* Cameron, 1899 = *X. soleata* Krieger, 1899 = X. *pardalis* Krieger, 1899 = *X. predator* Morley, 1913 = *X. commixta* Krieger, 1914 = *X. giochiensis* Uchida, 1928	India : Sikkim, Meghalaya, Uttar Pradesh, Bihar, Assam, Orissa, Maharashtra,Tamil Nadu. *Elsewhere*: China, Indonesia, Taiwan, Myanmar, Singapore, Hong Kong, Malaysia, Papua, New Guinea, Bismark Archipalago, Seloman Islands.
33. ***X. pedator*** (Fabricius) = *Ichneumon pedator* Fabricius, 1775 = *I maltipunctor* Thunberg, 1822 = *X. scutata* Krieger, 1899 = *X. punctatrix* Schulz, 1906	India : Sikkim, Uttar Pradesh, Bihar, Meghalaya, Assam, Orissa, Tamil Nadu, West Bengal, Maharashtra. *Elsewhnere* : Myanmar, Singapore, Hong Kong, Chusu Islands, Malaysia, Indonesia.
34. ***X. polyspila*** Cameron, 1907 = *X. lissonota* Cameron, 1907	India : Sikkim, Uttar Pradesh, Tamil Nadu. *Elsewhere* : Malaysia, Indonesia.
35. ***X. punctata*** (Fabricius) = *Ichneumon punctatus* Fabricius, 1781 = *Pimpla transversalis* Vollenhoven, 1879 = *P. cylonica* Cameron, 1899 = *X. ruficornis* Krieger, 1899 = *X. brunneciornis* Cameron, 1903 = *X. kandyensis* Cameron, 1905 = *X. maculiceps* Cameron, 1905 = *X. lissonota* Cameron, 1906 = *Neopimpla punctata* Kuroiwa, 1908 = *X. kriegeri* Szepligati, 1908 = *Neopimploides syleptae* Viereck, 1912 = *X. tibialis* Morley, 1903 = *X. punctata szepligetii* Krieger, 1914	India : Sikkim, Tamil Nadu, Bihar, Karnataka, West Bengal, Madhya Pradesh, South Andaman Islands, Assam, Uttar Pradesh. *Elsewhere* : China, Malaysia, Indoneshia, Moluccas, Mauritius, Srilanka, Japan, Taiwan, Philippines, Ryukyus.
36. ***X. regina*** Morley, 1913 = *X. macrura* Krieger, 1914	India : Sikkim, Bihar, Assam, West Bengal. *Elsewhere* : Nepal, Myanmar, Thailand, Laos, Indonesia, North Vietnam, Taiwan, Malaysia, Singapore.
37. ***X. sikkimensis*** Cameron, 1907	India : Sikkim, Uttar Pradesh, West Bengal. *Elsewhere* : Myanmar, North Vietnam.
38. ***X. stemmator*** (Thunberg) = *Ichneumon stemmator* Thunberg, 1822 = *Pimpla integrata* Smith, 1860	India : Sikkim, Maharashtra, Uttar Pradesh, Bihar, West Bengal, Tamil Nadu, Assam, Karnataka, Delhi, Gujarat, Meghalaya, Kerala.

= *Xanthopimpla thoracalis* Krieger, 1899 = *X. maculifrons* Cameron, 1903 = *X. bimaculata* Cameron, 1906 = *X. nersei* Cameron, 1907 = *X. maculifrons* Cameron, 1907 = *X. facialis* Szepligeti, 1908 = *X. doleschali* Krieger, 1914 = *X. transfuga* Krieger, 1914 = *Habropimpla sesamiae* Rao, 1953	*Elsewhere* : Hong Kong, Nepal, Philippines, Indonesia, Malaysia, Taiwan, Srilanka, Bangladesh.
39. ***X. tricapus impressa*** Townes & Chiu, 1970	India: Sikkim, Bihar, Kerala. *Elsewhere* : Myanmar, Thailand, Indonesia, Malaysia.
40. ***X. varimaculata*** Cameron, 1907	India : Sikkim. *Elsewhere* : China.
14. Genus ***Theronia*** Holmgren, 1859	
41. ***T. maskeliyae maskeliyae*** Cameron, 1905	India : Sikkim, Karnakata, Assam, Bihar, Madhya Pradesh, Uttar Pradesh, Himachal Pradesh, Maharashtra, Tamil Nadu, Kerala. *Elsewhere* : Myanmar, Srilanka.
42. ***T. zebra iridipennis*** Cameron, 1907	India : Sikkim, Bihar, Uttar Pradesh, West Bengal, Himachal Pradesh, Assam. *Elsewhere* : Myanmar, Thailand, Vietnam, Hong Kong, Taiwan.
15. Genus ***Prema*** Gupta, 1962	
43. ***P. nigrobalteata nigrobalteata*** (Cameron) = *Theronia nigrobalteata* Cameron, 1899 = *T. gracilis* Cameron, 1899 = *T. Zebra* var *continentalis* Krieger, 1906	India : Skikkim, Meghalaya, West Bengal, Karnataka, Assam, Uttar Pradesh. *Elsewhere* : Vietnam, Myanmar, Thailand.
16. Genus ***Nemosphecia*** Gupta, 1962	
44. ***N. zebroides indicus*** (Gupta) = *Theronia (Nomosphecia) zebroides* Gupta,	India : Sikkim, West Bengal. *Elsewhere* : Taiwan.
17. Genus ***Augerella*** Gupta, 1962	
45. ***A. orientalis himalayensis*** (Gupta) = *Theronia (Augerella) orientalis himalayensis* Gupta, 1962	India : Sikkim.
18. Genus ***Eugalta*** Cameron, 1899	
46. ***E. albitarsis albitarsis*** Cameron, 1899	India : Sikkim, Meghalaya. *Elsewhere* : Myanmar.
47. ***E. linearis linearis*** Morley, 1913	India : Sklikkim, West Bengal, Meghalaya. *Elsewhere* : Myanmar.

48. ***E. longipes*** (Cameron) = *Bathymeris longipes* Cameron, 1906 = *Xorides indicus* Szepligeti, 1914	India : Sikkim, West Bengal. *Elsewhere* : Myanmar, Thailand.
19. Genus ***Achorocephalus*** Kreichbaumer, 1899	
49. ***A. nigricollis nigricollis*** (Cameron) = *Eugalta nigricollis* Cameron, 1899 = *Pseudoeugalta aspasia* Turner, 1919	India : Sikkim, Assam, Meghalaya *Elsewhere* : Bengaladesh, Myanmar, Laos.
50. ***A. punctulatus punctulatus*** (Cameron) = *Eugalta puntulata* Cameron, 1899 = *Baliena leptopus* Cameron, 1900	India : Sikkim, Meghalaya. *Elsewhere* : Bangladesh, Myanmar.
51. ***A. spinosus*** (Cameron) = *Eugalta spinosus* Cameron, 1899	India : Sikkim, West Bengal, Meghalaya. *Elsewhere* : Myanmar.
20. Genus ***Triancyra*** Baltazar, 1961	
52. ***T. maculicornis*** (Cameron) = *Epirhyssa maculicornis* Cameron, 1899 = *E. transversa* Cushman, 1933	India : Sikkim, Meghalaya. *Elsewhere* : Myanmar, Indonesia.
53. ***T. sarojinae*** Kamath & Gupta, 1972	India : Sikkim, Meghalaya.
21. Genus ***Sychnostigma*** Baltazar, 1961	
54. ***S. binghami*** Kamath & Gupta, 1972	India: Sikkim.
55. ***S. flavobalteatum*** (Cameron) = *Ephirhyssa flavobalteatum* Cameron, 1899 = *E. longibasis* Cushman, 1933	India: Sikkim, Assam, Meghalaya. *Elsewhere* : China, Taiwan.
56. ***E. validum*** Kamath & Gupta, 1972	India: Sikkim, Uttar Pradesh.
2. Subfamily TRYPHONINAE	
22. Genus ***Netelia*** Gray, 1860	
57. ***N. (Apatagium) tristrigata*** (Enderlin) = *Apatagium tristrigatum* Enderlin, 1912	India : Sikkim, Assam, West Bengal. *Elsewhere* : Indonesia.
58. ***N. (Bessobates) virgata*** (Fourcroy) = *Ichneumon virgatus* Fourcroy, 1785	India: Sikkim, Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, West Bengal, Arunachal Pradesh. *Elsewhere* : China, USSR, Tibet, Japan, Korea.
59. ***N. (Longiterebates) grandis*** Kaur & Jonathan, 1970	India: Sikkim, West Bengal.
60. ***N. (Prosthodocis) japonica*** (Uchida) = *Parabatus cristatus* var. *japonicus* Uchida,	India: Sikkim, West Bengal. *Elsewhere* : Taiwan, Japan.
61. ***N. (Toxochiloides) latro latro*** (Holmgren) = *Paniscus latro* Holmgren, 1868 = *P. ferrugineus* Cameron, 1899	India: Sikkim, West Bengal, Meghalaya, Karnataka, Bihar, Assam, Maharshtra, Orissa, Andaman Is., Himachal Pradesh, Uttar Pradesh, Tamil Nadu, Kerala.

= *P. cameroni* Enderlein, 1912 = *P. samoanus* Kohl, 1908 = *P. javanus* Szepligeti, 1908 = *P. ocellaris* Morley, 1913 = *N. (Netalia) multicolor* Nikam & Rao,1972 = *N. (Netalia) rugosa* Nikam & Rao, 1972 = *N. (Netalia) carinata* Nikam & Rao, 1972 = *N. (Netalia) cameroni* Nikam, 1973	*Elsewhere* : Taiwan, Koria, Macronesia, Samoa, Indonesia, Bangladesh.
62. ***N. (Netelia) facialis*** Kaur & Jonathan, 1979	India: Sikkim, Himachal Pradesh.
63. ***N. (N.) fuscicornis*** (Holmgren) = *Panisus fuscicornis* Holmgren, 1856	India : Sikkim, Himachal Pradesh, Meghalaya, Assam, Uttar Pradesh, Jammu & Kashmir. *Elsewhere* : Sweden, China, Pakistan, Myanmar, Europe, Nepal.
64. ***N. (N.) kashmirensis*** (Cameron) = *Paniscus montanus* Cameron, 1906 = *P. kashmirensis* Cameron, 1906	India: Sikkim, Jammu & Kashmir, Himachal Pradesh, Delhi, Uttar Pradesh, Bihar, West Bengal, Arunachal Pradesh, Karnataka.
65. ***N. (N.) laevis*** (Cameron) = *Paniscus laevis* Cameron, 1905 = *Amebachia baibarana* Uchida, 1928	India: Sikkim, Bihar, Meghalaya, Kerala, Tamil Nadu, West Bengal. *Elsewhere* : Malaysia, Sri Lanka, Taiwan.
66. ***N. (N.) orientalis*** (Cameron) = *Paniscus orientalis* Cameron, 1905	India: Sikkim, Maharashtra, Karnataka, Kerala, Tamil Nadu, Bihar, Uttar Pradesh, Orissa, Meghalaya, West Bengal. *Elsewhere* : China, Japan, Myanmar, Sri Lanka, Taiwan, Ryukyus.
67. ***N. (Paropheltes) guptai*** Kaur & Jonathan, 1979	India: Sikkim, Himachal Pradesh, Uttar Pradesh, West Bengal.
68. ***N. (P.) sikkimensis*** Kaur & Jonathan, 1979	India: Sikkim, West Bengal.
3. Subfamily XORIDINAE	
23. Genus ***Xorides*** Latreille, 1809	
69. ***X. (Epixorides) elezabethae*** (Bingham) = *Xylonomus elezabethae* Bingham, 1898 = *Epirhyssa annulicornis* Cameron, 1899 = *Xylonomus blanditor* Tosquinet, 1903 = *Cyanoxorides albolineatus* Cameron,1912 = *C. javanus* Szepligeti, 1914	India: Sikkim, Meghalya, Nagaland. *Elsewhere* : Myanmar, Thailand, Vietnam, Malaysia, Indonesia.
4. Subfamily BANCHINAE	
24. Genus ***Apophua*** Morley, 1913	
70. ***A. tricarinata*** Cameron, 1908 = *Glypta tricarinata* Cameron, 1908 = *A. metopiiformis* Morley, 1913	India: Sikkim.

25. Genus ***Glypta*** Gravenhorst, 1829	
71. ***G. nursei*** (Cameron, 1902)	India : Sikkim, Himachal Pradesh, West Bengal. *Elsewhere* : Pakistan.
26. Genus ***Lissonota*** Gravenhorst, 1829	
72. ***L. cracentis*** Chandra & Gupta, 1977	India : Sikkim, West Bengal. *Elsewhere* : Myanmar, Nepal.
27. Genus ***Stictolissonota*** Cameron, 1907	
73. ***S. foveata*** Cameron, 1907	India : Sikkim, Himachal Pradesh, Bihar, Assam, Karnataka, Kerala Tamil Nadu, Nicobar Is. *Elsewhere* : Malaysia, Indonesia.
28. Genus ***Leptobatopsis*** Ashmead, 1900	
74. ***L. lepida*** (Cameron)	India : Sikkim. *Elsewhere* : Thailand, Japan, Taiwan.
75. ***L. spilopus*** (Cameron) = *Lissonota spilopus* Cameron, 1908	India: Sikkim.
76. ***L. v-maculata*** (Cameron) = *Lissonota v-maculata* Cameron, 1907 = *L. binghami* Cameron, 1907 = *Leptobatopsis grandicolor* Rao, 1953	India : Sikkim, Bihar, Maharashtra, Karnataka, Kerala, Tamil Nadu, Uttar Pradesh. *Elsewhere* : Myanmar, Malaysia, Indonesia, Japan, Thailand, Philippines, Taiwan.
29. Genus ***Banchopsis*** Rudow, 1886	
77. ***B. ruficornis*** (Cameron) = *Ephonites ruficornis* Cameron, 1905	India : Sikkim, Jammu Kashmir, Bihar, Haryana, Uttar Pradesh, West Bengal. *Elsewhere* : Pakistan.
30. Genus ***Exetastes*** Gravenhorst, 1829	
78. ***E. longipes*** (Smith) = *Campoplex longipes* Smith, 1878 = *Icyona rufipes* Cameron, 1903 = *Tegona rufipes* Morley, 1913 = *Exetastis cameroni*, Townes et al., 1961	India : Sikkim, Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh. *Elsewhere* : Myanmar.
79. ***E. tisiphone*** Morley, 1913	India : Sikkim.
5. Subfamily PORIZONTINAE	
31. Genus ***Campoplex*** Gravenhorst, 1829	
80. ***C. indicus*** Gupta & Maheshwary, 1977	India : Sikkim, Himachal Pradesh, Tamil Nadu, Uttar Pradesh, West Bengal.
81. ***C. maximalus*** Gupta & Maheshwary, 1977	India : Sikkim, Himachal Pradesh, Meghalaya, Uttar Pradesh, West Bengal. *Elsewhere* : Taiwan.

82. ***C. septentrionalis septentrionalis*** Gupta & Mahashwary, 1977	India : Sikkim, Himachal Pradesh, Meghalaya, Mahashwary, 1977 West bengal. *Elsewhere* : Pakistan, Taiwan.
32. Genus ***Casinaria*** Holmgren, 1859	
83. ***C. ashimae*** Gupta & Maheshwary, 1977	India : Sikkim, Uttar Pradesh, West Bengal. *Elsewhere* : Taiwan.
84. ***C. formosana bharata*** Maheshwary & Gupta, 1977	India : Sikkim, Himachal Pradesh, Delhi, & Uttar Pradesh, Maharashtra, Tamil Nadu, Karnataka.
33. Genus ***Delopia*** Cameron, 1903	
85. ***D. definis*** (Gupta & Gupta) = *Dusona definis* Gupta & Gupta, 1978	India : Sikkim, Uttar Pradesh. *Elsewhere* : Nepal.
86. ***D. femoralis*** (Gupta & Gupta) = *Dusona femoralis* Gupta & Gupta, 1978	India : Sikkim, Meghalaya. *Elsewhere* : Nepal.
87. ***D. orientalis*** (Gupta & Gupta) = *Dusona orientalis* Gupta & Gupta,1978	India : Sikkim, Himachal Pradesh, Uttar Pradesh. *Elsewhere* : Nepal, Taiwan.
88. ***D. prytanes*** (Cameron) = *Campoplex prytanes* Cameron, 1903	India : Sikkim, Uttar Pradesh, Meghalaya, Karnataka, Tamil Nadu, West Bengal.
89. ***D. simlaensis*** (Cameron) = *Campoplex simlaensis* Cameron, 1905	India : Sikkim, Uttar Pradesh, Himachal Pradesh, Bihar, Meghalaya, West Bengal. *Elsewhere*: Nepal.
90. ***D. townesi*** (Gupta & Gupta) = *Dusona townesi* Gupta & Gupta, 1978	India : Sikkim, West Bengal. *Elsewhere* : Myanmar.
91. ***D. virgulata*** (Gupta & Gupta) = *Dusona virgulata* Gupta & Gupta, 1978	India : Sikkim, Himachal Praedesh, Uttar Pradesh.
34. Genus ***Campolete***s Holmgren, 1869	
92. ***C. chlorideae*** Uchida, 1957	India : Sikkim, Rajasthan, Himachal Pradesh, Delhi, Karnataka, Haryana, Bihar, Madhya Pradesh, Andhra Pradesh, Assam, Meghalaya, Maharashtra, Gujarat, Tamil Nadu, Uttar Pradesh, West Bengal. *Elsewhere* : China, Japan, Taiwan.
35. Genus ***Xanthocampoplex*** Morley, 1913	
93. ***X. nigromaculatus*** (Cameron) = *Zachresta nigromaculata* Cameron, 1907 = *Xanthocampoplex orientalis* Morley, 1913	India : Sikkim, Delhi, Bihar, Orissa
94. ***X. similis*** Gupta & Gupta, 1971	India : Sikkim, Orissa, Karnataka, Tamil Nadu, Kerala. *Elsewhere* : Srilanka.

6. Subfamily : CREMASTINAE	
36. Genus ***Pristomerus*** Curtis, 1836	
95. ***P. marginicollis*** (Cameron) = *Pristomeridia marginicollis* Cameron, 1907	India : Sikkim, Uttar Pradesh, West Benghal, Assam, Meghalaya, Rajasthan, Maharashtra. *Elsewhere* : Myanmar, Sri Lanka
7. Subfamily : OPHIONINAE	
37. Genus ***Ophion*** Fabricius, 1798	
96. ***O. bicarinatus*** Cameron, 1905	India : Sikkim, Arunachal Pradesh, Bihar, Himachal Pradesh, Jammu & Kashmir, Tamil Nadu, Uttar Pradesh, West Bengal. *Elsewhere* : Sri Lanka, Nepal, Myanmar, China, Malaysia, Taiwan, Philippines.
97. ***O. caudatus*** (Cushman) = *Potophion caudatus* Cushman, 1947	India : Sikkim, Uttar Pradesh. *Elsewhere* : Nepal, China
98. ***O. facetious*** Gauld & Mitchell, 1981	India : Sikkim, Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, West Bengal. *Elsewhere* : Nepal, Sri Lanka, Malaysia, Indonesia.
38. Genus ***Sclerophion*** Gauld, 1979	
99. ***S. longicornis*** (Uchida) = *Pleuroneurophion longicornis* Uchida,1928	India : Sikkim. *Elsewshere* : Bhutan, Nepal , Taiwan.
39. Genus ***Leptophion*** Cameron, 1901	
100. ***L. radiatus*** (Uchida) = *Spilophion radiatus* Uchida, 1956	India : Sikkim, Meghalaya, Uttar Pradesh. *Elsewhere* : Nepal, Malaysia, Taiwan.
40. Genus ***Dicamptus*** Szepligeti, 1905	
101.***D. reticulatus*** (Cameron) = *Enicospilus reticulatus* Cameron, 1899	India : Sikkim, Meghalaya. *Elsewhere* : Bangladesh, Myanmar, China, Taiwan, Sri Lanka.
41. Genus ***Enicospilus*** Stephens, 1829	
102. ***E. abdominalis*** (Szepligeti) = *Henicospilus abdominalis* Szepligeti, 1906 = *Ophion semiopacus* Matsumura, 1912	India : Sikkim, Karnataka, Kerala, Tamil Nadu. *Elsewhere* : Sri Lanka, Myanmar, Malaysia, Papua New Guinea, Taiwan.
103. ***E. cerialis*** Gauld & Mitchell, 1981	India : Sikkim.
104. ***E. concentralis*** Cushman, 1937	India : Sikkim. *Elsewhere* : Myanmar, Brunei, Indonesia, Taiwan, Paua New Guinea, Philippines.
105. ***E. dasychirae*** Cameron, 1905 = *Henicospilus borneensis* Szepligeti, 1906 = *Enicospilus nigrimarginalis* Cushman, 1937	India : Sikkim, Assam, Bihar, Karnataka, Himachal Pradesh, Kerala, Madhaya Pradesh, Maharshtra, Tamil Nadu, Uttar Pradesh, West Bengal.

	Elsewhere : Kalimantan, China, Malaysia, Taiwan, Ryukyus, Sri Lanka.
106. ***E. flavocephalus*** (Kirby) = *Ophion flavocephalus* Kirby, 1900 = *Henicocephalus lunulatus* Szepligeti, 1906 = *H. albicaput* Morley, 1912 = *H. similis* Matsumura & Uchida, 1926	India : Sikkim, Bihar, Kerala. *Elsewhere* : Australia, Bismark Archipelago, China, Chrismas Is., Indonesia, Malaysia, Ryukyus, Singapore, Taiwan.
107. ***E. heinrichi*** Gauld & Mitchell, 1981	India : Sikkim. *Elsewhere* : Myanmar, Laos.
108. ***E. kanshirensis*** (Uchida) = *Henicospilus kanshiensis* Uchida, 1928 = *Enicospilus sauteri* Cushman, 1937 = *E. cushmani* Chiu, 1954	India : Sikkim, Tamil Nadu. *Elsewhere* : China, Indonesia, Myanmar, Taiwan.
109. ***E. laqueatus*** (Enderlein) = *Henicospilus laqueatus* Enderlein, 1921 = *Enicospilus leetoni* Chiu, 1954	India : Sikkim, Bihar, Delhi, Himachal Pradesh, Kerala, Karnataka, Orissa, Tamil Nadu, Uttar Pradesh, West Bengal. *Elsewhere* : Maldiv Is., Nepal, Philippines, Taiwan.
110. ***E. nigropectus*** Cameron, 1905 = *Henocospilus hariolus* Morley, 1912 = *Amesospilus nigrostemmaticus* Enderlein, 1912 = *Henicospilus fuscomaculatus* Uchida, 1928	India : Sikkim; Andhra Pradesh, Karnataka, Himachal Pradesh, Tamil Nadu, Uttar Pradesh. *Elsewhere* : Japan, Indonesia, Malaysia, New Britain, Papua New Guinea, Philippines, Ryukyus, Sri Lanka, Taiwan, Thailand.
111. ***E. pseudoconspersae*** (Sonan) = *Henicospilus pseudoconspersae* Sonan, 1927 = *H. mushanus* Uchida, 1928	India : Sikkim; Himachal Pradesh, Arunachal Pradesh. *Elsewhere* : China, Nepal, Philippines, Ryukus.
112. ***E. pudibundae*** (Uchida) = *Henicospilus pudibundae* Uchida, 1928	India : Sikkim. *Elsewhere* : Brunei, China, Japan, Korea, Laos, Vietnam, Sri Lanka.
113. ***E. vestigator*** (Smith) = *Ophion vestigator* Smith, 1858 = *Henicospilus xanthusi* Szepligeti, 1906 = *Enicospilus receptor* Chiu, 1954 = *E. glabrifacies* Chiu, 1954 = *E. (Polycorniata) carinatus* Rao & Nikam, 1971	India : Sikkim; Andhra Pradesh, Karnataka, Maharshtra, Tamil Nadu. *Elsewhere* : Brunei, Indonesia, Malaysia, Micronesia, Taiwan, Sri Lanka, Vietnam.
114. ***E. yonezawanus*** (Uchida) = *Henicospilus yonezawanus* Uchida, 1928 = *Enicospilus microstriatellus* Uchida, 1956	India : Sikkim; Karnataka, Himachal Pradesh, Uttar Pradesh. *Elsewhere* : Japan, Myanmar, China, Indonesia, Malaysia, Papua New Guinea, Philippines, Ryukyus, Taiwan.

8. Subfamily MESOCHORINAE	
42. Genus ***Mesochorus*** Gravenhorst, 1829	
115. ***M. pilicornis*** Cameron, 1907	India : Sikkim.
9. Subfamily METOPINAE	
43. Genus ***Metopius*** Panzer, 1806	
116. ***M. (Ceratopius) areolatus*** (Cameron) = *Cultarius areolatus* Cameron, 1907	India : Sikkim.
117. ***M. (Ceratopius) dissectorius lar*** Morley = *Metopius lar* Morley, 1912	India : Sikkim; West Bengal. *Elsewhere* : Nepal.
44. Genus ***Seticornuta*** Cameron, 1907	
118. ***S. albopilosa*** (Cameron) = *Megatrema albopilosa* Cameron, 1907 = *Seticornuta albicalcar* Morley, 1912	India : Sikkim. *Elsewhere* : Myanmar, Sri Lanka
45. Genus ***Macromalon*** Townes, 1959	
119. ***M. orientale*** Kerrich, 1968	India : Sikkim; Meghalaya, West Bengal.
10. Subfamily GRAVENHORSTINAE	
46. Genus ***Heteropelma*** Wesmael, 1849	
120. ***H. fulvitarse*** Cameron, 1899 = *H. reticulatum* Cameron, 1899 = *Anomalon binghami* Cameron, 1907	India : Sikkim; Assam, Meghalaya, Himachal Pradesh. *Elsewhere* : China, Germany, Myanmar, Taiwan, Tibet.
11. Subfamily ACAENITINAE	
47. Genus ***Ishigakia*** Uchida, 1928	
121. ***I. alecto*** (Morley) = *Acaenitus alecto* Morley, 1913 = *Sphimedia alecto* Cushman, 1933	India : Sikkim. *Elsewhere* : China.
48. Genus ***Boloderma*** Morley, 1913	
122. ***B. cadmus*** Morley, 1913	India : Sikkim.
49. Genus ***Yezoceryx*** Uchida, 1928	
123. ***Y. biumbratus*** (Morley) = *Acaenitus biumbratus* Morley, 1913	India : Sikkim.
124. ***Y. xanthorius*** (Morley) = *Acaenitus xanthorius* Morley, 1913	India : Sikkim.
12. Subfamily HELICTINAE	
50. Genus ***Hyperacmus*** Holmgren, 1856	
125. ***H. quintanus*** (Morley) = *Lampronota quintanus* Morley, 1913	India : Sikkim.

13. Subfamily DIPLAZONTINAE	
51. Genus ***Diplazon*** Viereck, 1914	
126. ***D. guptai*** Diller, 1977	India : Sikkim; Himachal Pradesh, West Bengal.
14. Subfamily PHYGADEUONTINAE	
52. Genus ***Dichrogaster*** Doumerc, 1855	
127. ***D. liostylus*** (Thomson) = *Hemiteles liostylus* Thomson, 1855 = *H. schaffneri* Schmiedeknecht, 1897	India : Sikkim; Himachal Pradesh. *Elsewhere* : Japan, Ryukyus, Taiwan.
53. Genus ***Mansa*** Tosquinet, 1896	
128. ***M. fulvipennis*** (Cameron) = *Colganta fulvipennis* Cameron, 1902	India : Sikkim; Himachal Pradesh, Meghalaya, Uttar Pradesh, West Bengal.
129. ***M. tarsalis*** (Cameron) = *Colganta tarsalis* Cameron, 1902 = *C. latiscutis* Cameron, 1907	India : Sikkim; Meghalaya, Uttar Pradesh. *Elsewhere* : China, Hainan Is.
15. Subfamily MESOSTENINAE	
54. Genus ***Apocryptus*** Uchida, 1932	
130. ***A. biserratus*** Gupta & Gupta, 1983	India : Sikkim; Meghalaya, West Bengal.
131. ***A. buddha*** Gupta & Gupta, 1983	India : Sikkim.
132. ***A. erugatus*** Gupta & Gupta, 1983	India : Sikkim; Uttar Pradesh, West Bengal.
133. ***A. fuscinervis*** (Cameron) = *Etha fuscinervis* Cameron, 1903	India : Sikkim; Meghalaya.
134. ***A. laevifrons*** (Cameron) = *Etha laevifrons* Cameron, 1903	India : Sikkim; Meghalaya.
55. Genus ***Xoridesopus*** Cameron, 1907	
135. ***X. flavispeculum*** Gupta & Gupta, 1983	India : Sikkim; Meghalaya, Uttar Pradesh, West Bengal.
136. ***X. kamathi*** Gupta & Gupta, 1983	India : Sikkim; Assam, Meghalaya, Uttar Pradesh.
56. Genus ***Hadrocryptus*** Cameron, 1903	
137. ***H. ditissimus*** (Tosquinet) = *Echthrus ditissimus* Tosquinet, 1903	India : Sikkim; Arunachal Pradesh, Meghalaya. *Elsewhere* : Bhutan, Indonesia, Malaysia.
57. Genus ***Arhytis*** Townes, 1970	
138. ***A. maculiscutis*** (Cameron) = *Echthrus maculiscutis* Cameron, 1907	India : Sikkim; Assam, Bihar, Himachal Pradesh, Karnataka, Marashtra, Meghalaya, Tamil Nadu, Uttar Pradesh. *Elsewhere* : Myanmar, Philippines.

58. Genus ***Torbda*** Cameron, 1902	
139. ***T. geniculata*** cameron, 1902	India : Sikkim; Assam, Meghalaya. *Elsewhere* : China, Laos.
140. ***T. maculipennis*** Cameron, 1902	India : Sikkim; Meghalaya. *Elsewhere* : Myanmar.
141. ***T. nigromaculata*** (Cameron) = *Miophatnus nigromaculatus* Cameron, 1907	India : Sikkim; Assam, Meghalaya, Kerala. *Elsewhere* : Myanmar.
59. Genus ***Etha*** Cameron, 1903	
142. ***E. striatifrons*** Cameron, 1903	India : Sikkim; Assam, Himachal Pradesh, Meghalaya, Uttar Pradesh, West Bengal. *Elsewhere* : Java.
60. Genus ***Hedycryptus*** Cameron, 1903	
143. ***H. orientalis*** Cameron, 1897 = *Cryptus orientalis* Cameron, 1897	India : Sikkim, Assam, Himachal Pradesh, Meghalaya Uttar Pradesh. *Elsewhere* : Pakistan, Taiwan.
61. Genus ***Buysmania*** Cheesman, 1941	
144. ***B. oxymora annulitarsis*** (Cameron) = *Cratocryptus annulitarsis* Cameron, 1907	India : Sikkim.
62. Genus ***Gotra*** Cameron, 1902	
145. ***G. marginata*** (Brulle) = *Mesostenus marginata* Brulle, 1846 = *M. himalayensis* Cameron, 1897 = *Mesostenoides octozonatus* Ashmead,1904 = *Mesostenus clarinervis* Cameron, 1904 = *Stenaraeus rufipes* Szepligeti, 1916	India : Sikkim, Assam, Bihar, Delhi, Himachal Pradesh, Kerala, Maharashtra, Meghalaya, Tamil Nadu, Rajasthan, Uttar Pradesh, West Bengal. *Elsewhere* : Hong Kong, Philippines, Taiwan.
63 Genus ***Anupama*** Jonathan, 1982	
146. ***A. himalayensis*** Jonathan, 1982	India : Sikkim, West Bengal. *Elsewhere* : Myanmar, Nepal.
64. Genus ***Necolio*** Cheesman, 1936	
147. ***N. rugifrons*** (Cameron) = *Buodias rugifrons* Cameron, 1907	India : Sikkim.
65. Genus ***Friona*** Cameron, 1902	
148. ***F. rufescens*** Morley = *F. curvicarinata* var *rufescens* Morley,1914	India : Sikkim; Assam. *Elsewhere* : Myanmar.
66. Genus ***Listrognathus*** Tscheck, 1870	
149. ***L. (Stivadens) annulipes*** (Cameron) = *Suvalta annulipes* Cameron, 1904	India : Sikkim, Bihar, Meghalaya, Maharashtra, Karnataka, Tamil Nadu. *Elsewhere* : China, Myanmar.

67. Genus ***Goryphus*** Holmgren, 1868	
150. ***G. albomaculatus*** (Cameron) = *Fenenias albomaculatus* Cameron, 1902	India : Sikkim; Meghalaya.
151. ***G. interceptus*** (Cameron) = *Mesostenus interceptus* Cameron, 1907	India : Sikkim.
152. ***G. salutator*** (Cameron) = *Mesostenus salutator* Cameron, 1904	India : Sikkim, Meghalaya, West Bengal.
153. ***G. sikkimensis*** Jonathan & Gupta, 1973	India : Sikkim; Uttar Pradesh, West Bengal. *Elsewhere* : Myanmar.
68. Genus ***Skeatia*** Cameron, 1901	
154. ***S. cariniscuta*** (Cameron) = *Mesostenoides cariniscuta* Cameron, 1907	India : Sikkim; Assam, Meghalaya.
69. Genus ***Formostenus*** Uchida, 1931	
155. ***F. (Formostenus) flavofasciatus*** Jonathan, 1980	India : Sikkim; Uttar Pradesh, West Bengal. *Elsewhere* : Myanmar.
70. Genus ***Melcha*** Cameron, 1902	
156. ***M. annulitarsis*** (Cameron) = *Buodias annulitarsis* Cameron, 1907	India : Sikkim; Assam.
71 Genus ***Euchalinus*** Townes, 1961	
157. ***E. pugnatus*** Cameron, 1907	India : Sikkim.
72. Genus ***Lepoprion*** Townes, 1970	
158. ***L. rufo-ornatus*** (Cameron) = *Buodias rufo-ornatus* Cameron, 1907	India : Sikkim.
73. Genus ***Nematopodias*** Gravenhorst, 1829	
159. ***N. (Diapetus) nigromaculatus*** (Cameron) = *Earrana nigromaculatus* Cameron, 1907	India : Sikkim.
74. Genus ***Acroricnus*** Ratzeburg, 1852	
160. ***A. peronatus*** (Cameron) = *Osprynchotus peronatus* Cameron, 1902	India : Sikkim; Assam, Meghalaya, Himachal Pradesh, Uttar Pradesh. *Elsewhere* : Malaya, Thailand.
16. Subfamily ICHNEUMONINAE	
75. Genus ***Eccoptosage*** Kriechbaumer, 1898	
161. ***E. schizoaspis schizoaspis*** (Cameron) = *Acanthojoppa schizoaspis* Cameron, 1902 = *A. flavo-orbitalis Cameron,* 1907	India : Sikkim; Meghalaya, Uttar Pradesh. *Elsewhere* : Myanmar.
162. ***E. waagenii*** Kriechbaumer, 1898 = *Acanthojoppa indica* cameron, 1903	India : Sikkim; Meghalaya, West Bengal. *Elsewhere* : China.

= A. *tinctipennis* Cameron, 1903 = *A. apicilineata* Cameron, 1903 = *A. curtispina* Cameron, 1903	
163. ***E. xanthopsis xanthopsis*** (Cameron) = *Acanthojoppa xanthopsis* Cameron, 1903 = *A. varicornis* Cameron, 1903 = *A. tricolor* Cameron, 1907	India : Sikkim; Assam, Meghalaya. *Elsewhere* : Myanmar.
76. Genus ***Chiaglas*** Cameron, 1902	
164. ***C. longicornis*** Cameron, 1903	India : Sikkim; Meghalaya. *Elsewhere* : Myanmar, Thailand.
165. ***C. nigripes*** Cameron, 1902 = *C. varipes* Cameron, 1903 = *C. longiventris* Cameron, 1903 = *Bolbomyschus albpictus* Tosquinet, 1903	India : Sikkim; Meghalaya, Tamil Nadu. *Elsewhere* : Indonesia, Myanmar.
166. ***C. nobilitator*** Heinrich, 1934	India : Sikkim. *Elsewhere* : Indonesia.
77. Genus ***Achaius*** Cameron, 1903	
167. ***A. flavobalteatus*** Cameron, 1903 = *Haliphera maculipes* Cameron, 1903 = *H. flavomaculata* Cameron, 1904 = *H. latibalteata* Cameron, 1907	India : Sikkim; Himachal Pradesh, Meghalaya West Bengal. *Elsewhere* : Myanmar.
78. Genus ***Setanta*** Cameron, 1901	
168. ***S. himalayensis*** (Cameron) = *Myermo himalayensis* Cameron, 1905 = *M. iridipennis* Cameron, 1905 = *M. femorata* Cameron, 1905 = *M. robusta* Cameron, 1905	India : Sikkim; West Bengal. *Elsewhere* : Myanmar.
79. Genus ***Losgna*** Cameron, 1903	
169. ***L. simulator*** Townes et al., 1961 = *Joppomorpha cariniscutis* Cameron, 1907	India : Sikkim. *Elsewhere* : Myanmar.
80. Genus ***Mesophadnus*** Cameron, 1907	
170. ***M. spilopterus*** Cameron, 1907	India : Sikkim. *Elsewhere* : Myanmar.
81. Genus ***Cratichneumon*** Thomson, 1893	
171. ***C. flavomaculatus*** (Cameron) = *Leptothecus flavomaculatus* Cameron,1905	India : Sikkim.
82. Genus ***Stirexephanes*** Cameron, 1912	
172. ***S. signatus zonatus*** (Cameron) = *Darymna zonata* Cameron, 1905	India : Sikkim.

83. Genus ***Darymna*** Cameron, 1904	
173. ***D. forticarinata*** (Cameron) = *Platylabus forticarinatus* Cameron, 1907	India : Sikkim.
84. Genus ***Lissosculpta*** Heinrich, 1934	
174. ***L. alecto*** (Morley) = *Aglaojoppa alecto* Morley, 1915	India : Sikkim; Bihar.
175. ***L. javanica*** (Cameron) = *Melanichneumon (?) javanicus* Cameron, 1905 = *Aglaojoppa sathanas* Morley, 1915 = *A. okinawana* Uchida, 1925 = *Melanichneumon (Lissosculpta) effigies* Heinrich, 1834	India : Sikkim; Bihar, Karanataka.
85. Genus ***Barichneumon*** Thomson, 1893	
176. ***B. rufofemoratus*** (Cameron) = *Cratichneumon rufofemoratus* Cameron 1905	India : Sikkim.
177. ***B. varibalteatus*** (Cameron) = *Eristicus varibalteata* Cameron, 1907	India : Sikkim.
86. Genus ***Protichneumon*** Thomson, 1893	
178. ***P. binghami*** (Cameron) = *Amblyjoppa binghami* Cameron, 1907	India : Sikkim.
87. Genus ***Ichneumon*** Linnaeus, 1758	
179. ***I. (Ichneumon) albopilosella*** (Cameron) = *Coelichneumon bilineatus* Cameron, 1905	India : Sikkim
180. ***I. (Ichneumon) flavolineatus*** (Cameron) = *Aglaojoppa flavolineata* Cameron, 1903 = *A. latemaculata* Cameron, 1903 = *A. maculiceps* Cameron, 1905	India : Sikkim, Meghalaya. *Elsewhere* : Myanmar.
181. ***I. (Ichneumon) fulvipes*** (Cameron) = *Shalisha fulvipes* Cameron, 1904	India : Sikkim.
182. ***I. (Ichneumon) iridipennis*** (Cameron) = *Aglaojoppa iridipennis* Cameron, 1905	India : Sikkim; Uttar Pradesh, West Bengal. *Elsewhere* : Australia.
183. ***I. (Ichneumon) rufofemoratus*** (Cameron) = *Cynojoppa rufofemoratus* Cameron, 1903 = *C. caeruleicaudis* Cameron, 1903 = *C. nigro-coerulea* Cameron, 1903	India : Sikkim; Himachal Pradesh, Meghalaya, Uttar Pradesh, West Bengal. *Elsewhere* : Myanmar.
184. ***I. (Ichneumon) taihorinus*** (Uchida) = *Coelichneumon taihorinus* Uchida, 1932	India : Sikkim; Himachal Pradesh, Uttar Pradesh, West Bengal.

= *Spilojoppa fulvipes* Cameron, 1904	*Elsewhere* : China, Myanmar, Indonesia, Taiwan.
88. Genus ***Aglaojoppa*** Cameron, 1901	
185. ***A. caeruleodorsata caeruleodorsata*** Cameron, 1903	India : Sikkim; Meghalaya. *Elsewhere* : Myanmar.
186. ***A. rufofemorata rufofemorata*** Cameron, 1903	India : Sikkim; Meghalaya.
89. Genus ***Amblyjoppa*** Cameron, 1902	
187. ***A. aelvanus*** (Cameron) = *Ichneumon aelvanus* Cameron, 1897 = *Amblyjoppa violaceipennis* Cameron,1903 = *A. varicornis* Cameron, 1905 = *A. melanoptera* Cameron, 1905 = *A. iridipennis* Cameron, 1907	India : Sikkim; Meghalaya.
188. ***A. forticornis forticornis*** (Cameron) = *Hadrojoppa forticornis* Cameron, 1903	India : Sikkim; Meghalaya, West Bengal.
90. Genus ***Cnemojoppa*** Heinrich, 1937	
189. ***Cnemojoppa rufipes*** (Cameron) = *Amblyjoppa rufipes* Cameron, 1903	India : Sikkim; Meghalaya, Uttar Pradesh. *Elsewhere* : Myanmar.
91. Genus ***Naenaria*** Cameron, 1903	
190. ***N. nigrocoerulea*** (Cameron) = *Aglaojoppa nigro-coerulea* Cameron, 1905	India : Sikkim; Meghalaya, West Bengal.
92. Genus ***Cratojoppa*** Cameron, 1907	
191. ***C. maculata*** Cameron, 1907	India : Sikkim; Assam. *Elsewhere* : Burma, China, Hainan Is., Hong Kong.
192. ***C. robusta*** Cameron, 1901 = *C. cingulata* Cameron, 1907	India : Sikkim; Meghalaya, West Bengal. *Elsewhere* : Bhutan, Myanmar.
93. Genus ***Ileanta*** Cameron, 1899	
193. ***I. fulvipes*** Cameron, 1903	India : Sikkim; Meghalaya. *Elsewhere* : Myanmar.
94. Genus ***Lachmetha*** Cameron, 1903	
194. ***L. spinitarsis*** Cameron, 1903	India : Sikkim; Meghalaya. *Elsewhere* : Indonesia, Myanmar, Taiwan.
95. Genus ***Legnatia*** Cameron, 1907	
195. ***L. maculiscutis*** (Cameron) = *Lagarista maculiscutis* Cameron, 1907	India : Sikkim.
96. Genus ***Listrodromus*** Wesmael, 1835	

196. ***L. crassipes*** (Cameron) = *Sogna crassipes* Cameron, 1907	India : Sikkim; *Elsewhere* : Taiwan.
97. Genus ***Ischnojoppa*** Kriechbaumer, 1898	
197. ***I. luteator*** (Fabricius) = *Ichneumon luteator* Fabricius, 1798 = *Joppa lutea* Fabricius, 1804 West Bengal. = *Ichneumon adspersor* Thunberg, 1822 = *Joppa nifa* Brulle, 1846 = *Ichneumon agraensis* Cameron, 1897 = *Bodargus rufa* Cameron, 1902 = *Ischnojoppa luteatrix* Schulz, 1906 = *Exephanes akonis* Matsumura, 1912	India : Sikkim; Bihar, Karnataka, Meghalaya, Maharashtra,Tamil Nadu, Uttar Pradesh., West Bengal. *Elsewhere* : Austria, Bhutan, Bangladesh, China, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Singapore, Taiwan.
98. Genus ***Pagarenes*** Cameron, 1903	
198. ***P. erythropus*** Cameron, 1903	India : Sikkim. *Elsewhere* : Myanmar.
99. Genus ***Goedratia*** Boie, 1841	
199. ***G. cyanea*** Heinrich, 1931	India : Sikkim. *Elsewhere* : China, Myanmar.
100. Genus ***Maraces*** Cameron, 1902	
200. ***M. flavobalteata fulvipes*** (Cameron) = *Felargia fulvipes* Cameron, 1907	India : Sikkim. *Elsewhere* : Myanmar.
201. ***M. pectinata*** Cameron, 1902	India : Sikkim; Meghalaya.
101. Genus ***Charitojoppa*** Cameron, 1901	
202. ***C. coerulea coerulea*** Cameron, 1901 = *Charitojoppa varicolor* Cameron, 1903	India : Sikkim; Meghalaya. *Elsewhere* : Myanmar.
102. Genus ***Xenojoppa*** Cameron, 1901	
203. ***Xenojoppa crassispina*** (Cameron) = *Magrettia crassispina* Cameron, 1901	India : Sikkim; Meghalaya. *Elsewhere* : Myanmar.
103. Genus ***Holcojoppa*** Cameron, 1902	
204. ***H. coelopyga*** (Morley) = *Dinotomus coelopyga* Morley, 1915	India : Sikkim.

SUMMARY

The present paper deals Ichneumonidae fauna of the state of Sikkim, India. Altogether 204 species/subspecies under 103 genera, belonging to 16 subfamilies have recorded from this state.

ACKNOWLEDGEMENTS

I am grateful to Dr. J. R.B. Alfred, Director, Zoological Survey of India, for providing necessary facilities to carry out this work. I am also thankful to Shri Rati Ram, Publication Production Officer for helping one in various ways.

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INSECTA : HYMENOPTERA : FORMICIDAE

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INTRODUCTION

Ants do not need to be introduced because of its cosmopolitan distribution and abundance in our environment. Its social behaviour is highly developed and certain inborn instinct, keeps this creature in colonial form, exhibiting highest degree of distribution of labour, specialised caste oriented nature of work and cohesiveness amongst the said colony. Inspite of that, this tiny creature has remained totally neglected by the biologists.

Present work is in persuation of our Annual Programme (1997-'98) to work out the ant fauna of Sikkim. Bingham (1903) recorded 69 species of ants from Sikkim in his "Fauna of British India, including Ceylon and Burma" Then Sikkim was a separate independent country under British Raj. Subsequently, Chapman and Capco (1951) also included another 15 species from Sikkim in their "Check List of Ants Asia" Since then no work has been done except Datta and Raychaudhuri (1983) on ants from this region.

Successive workers like Jerdon (1851, 54a, 'b), Rothneyi (1889), Forel (1900a, 'b, 'c), Mukherjee (1925, '30), Karawajew (1926, '28), Wheeler (1927, '28), Negi *et al.* (1930), Menozzi (1935), Donisthorpe (1942, 43), Smith (1948), Wilson (1964), Taylor (1966, '68), Bolton (1977), Baroni Urbani (1977a, 'b), Tiwari *et al.* (1977a, 'b, 'c, 1986a, 'b, 1994, 1996, 1999, 2000), Mathew (1980, 2000), Datta and Raychaudhuri (1983) and Imai *et al.* (1984) have made valuable contributions to the ant fauna of India, but no one has exclusively studied the ant fauna of Sikkim. There have been some records of ants from various parts of Sikkim in scattered form. This is the first attempt by the present authors to consolidate the ant fauna of Sikkim.

This taxonomic work of Ants of Sikkim is based on collection of ants made by the authors (1996) and other collections brought by the various survey parties of the department. Besides this, the specimens lying in the National Zoological Collection of this department, have also been incorporated. The entire material studied under this project, have been deposited in the collection of Zoological Survey of India, Calcutta.

Altogether 114 species, including previously reported species, under 39 genera and 7 subfamilies have been reported in this paper from the state of Sikkim, India. Out of these, 17 species marked with single asterisk (*) in the 'List of the Taxa' in Systematic Account, are new records from the state of Sikkim.

Key to the subfamilies, genera and species have been incorporated in this paper, but key to the species include only those species which were studied by the authors, other species so far recorded could not be incorporated in the key to the species, because of insufficient literatures.

TOPOGRAPHY

Sikkim is a small but beautiful state of India. It is situated in the Eastern Himalayas and is spread below the Mount Kanchendzanga (8534 m.), the third highest mountain in the world. It is comprised of 4 districts—(1) the North Sikkim, (2) the South Sikkim, (3) the West Sikkim and (4) the East Sikkim. It shares her borders with Tibet in the north, Bhutan in the east, Nepal in the west and state of West Bengal in the south.

Amidst the grandeur of mountain peaks, lush valleys, fast flowing rivers, terraced hills, Sikkim has got its unique topography. It occupies an area of 7,300 sq.km. and measures approximately 100 km. from north to south and 60 km. from east to west. The elevation ranges from 244 meters to over 8540 meteres above the sea level.

Sikkim, a paradise of nature's lovers, has a fascinating blend of breath taking scenic view with hot spring and alpine environment. Yumthong is a place situated at an altitude of 4,000 m. (approx.). Shingba Sanctuary, enroute to Yumthong in north district, is famous for accommodating 24 species of Rhododendron plants and in the month of May-June, this sanctuary errupts into a riot of colours with Rhododendron ablaze, in fiery-red hues of pink, yellow, purple and white colours and attracts domestic and foreign tourists both. Besides this, the south and west districts are covered with teak and sal forests and terraced hill slopes are unique places of terraced cultivation. Its economy is based mainly on tourism, agriculture and forests.

MATERIAL AND METHOD

The specimens of ants were collected from the field by sweeping and picking up by hand with the help of brush and forceps. At the same time, bait in the form of sugar and jaggery were used to attract the ants. The specimens were preserved in 90% alcohol and brought to Head-quarter for study. The specimens were set, pinned and labelled and kept in insects boxes for proper study. Smaller forms were preserved in alcohol and were studied directly in wet form. During study, mandibles and mouth parts were dissected for specific identification.

SYSTEMATIC ACCOUNT

Formicidae, to which ants belong, is one of the largest family of order Hymenoptera under class Insecta and is widely distributed throughout the world, because of its cosmopoliton nature. 9538 species of ants under 16 subfamilies, 59 tribes and 296 genera have been reported till date from the world (Hölldobler and Wilson, 1990). Of these, altogether 2479 species have been reported from the Classical Oriental regions, which includes Oriental and Indo-Australian regions. The splited species 770 are present in Oriental region and 1709 in Indo-Australian region (Bolton, 1995a).

Prior to this, Bingham (1903) reported 69 species under 30 genera from Sikkim. Subsequently Chapman and Capco (1951) recorded 15 species under 12 genera from this region. Datta and Raychaudhuri (1983) also reported 20 species under 16 genera and 4 subfamilies from the state of Sikkim, all aphid attending ants. Present work deals with 114 species, including those species reported by previous workers, under 39 genera spread over 7 subfamilies from the state of Sikkim.

Abbreviation : The abbreviations used in the text are M = Male, F = Female, W = Worker and S = Soldier.

LIST OF THE TAXA INCORPORATED IN THE TEXT

Family FORMICIDAE

I. Subfamily DORYLINAE Forel

1. Genus ***Dorylus*** Fabricius

A. Subgenus ***Typhlopone*** Westwood

1. *Dorylus (Typhlopone) labiatus* Shuckard

B. Subgenus ***Alaopone*** Emery

2. *Dorylus (Alaopone) orientalis* Westwood

2. Genus ***Aenictus*** Shuckard

3. *Aenictus ambiguus* Shuckard
4. *Aenictus clavatus* Forel
5. *Aenictus fergusoni* Forel

II. Subfamily PONERINAE Lepeletier

3. Genus ***Anochetus*** Mayr

6. *Anochetus graeffei* Mayr

4. Genus ***Odontomachus*** Latreille

7. *Odontomachus haematodus* (Linnaeus)
8. *Odontomachus monticola* Emery

5. Genus ***Harpegnathos*** Jerdon

9. *Harpegnathos venator* (Smith)

6. Genus ***Leptogenys*** Roger

*10. *Leptogenys hodgsoni* Forel
11. *Leptogenys kitteli* (Mayr)
12. *Leptogenys lucidula* (Emery)
13. *Leptogenys moelleri* (Bingham)
14. *Leptogenys punctiventris* (Mayr)

7. Genus ***Diacamma*** Mayr

*15. *Diacamma assamense* Forel
16. *Diacamma rugosum* (Le Guillou)
17. *Diacamma rugosum sculptum* (Jerdon)
18. *Diacamma rugosum sikkimensis* Forel
19. *Diacamma scalpratum* (Smith)

8. Genus ***Pachycondyla*** Smith

*20. *Pachycondyla astuta* Smith
*21. *Pachycondyla leeuwenhoeki* Forel
*22. *Pachycondyla javana* (Mayr)
23. *Pachycondyla rufipes* (Jerdon)
24. *Pachycondyla nigrita* (Emery)
25. *Pachycondyla amblyops* (Emery)

9. Genus ***Hypoponera*** Santschi

*26. *Hypoponera truncata* (Smith)

10. Genus ***Odontoponera*** Mayr

27. *Odontoponera transversa* (Smith)

11. Genus ***Myopopone*** Roger

28. *Myopopone castanea* (Smith)

12. Genus ***Amblyopone*** Erichson

29. *Amblyopone rothneyi* Forel

III. Subfamily CERAPACHYINAE Forel

13. Genus ***Cerapachys*** Smith

30. *Cerapachys sulcinodis* Emery

IV. Subfamily PSEUDOMYRMECINAE Emery

14. Genus ***Tetraponera*** Smith

31. *Tetraponera birmana* (Forel)
32. *Tetraponera nigra* (Jerdon)

V. Subfamily MYRMICINAE Lepeletier

15. Genus ***Aphaenogaster*** Mayr

*33. *Aphaenogaster cristata* Forel
34. *Aphaenogaster rothneyi* Forel
*35. *Aphaenogaster smythiesii* Forel

16. Genus ***Pheidole*** Westwood

36. *Pheidole bhavanae* Bingham
37. *Pheidole grayi* Forel
38. *Pheidole indica himalayana* Forel
39. *Pheidole jucunda* Forel
40. *Pheidole jucunda fossulata* Forel
41. *Pheidole malinsii* Forel
42. *Pheidole pronotalis* Forel
43. *Pheidole noda stella* Forel
44. *Pheidole roberti* Forel
45. *Pheidole smythiesii* Forel

17. Genus ***Myrmica*** Latreille

46. *Myrmica rugosa* Mayr
*47. *Myrmica ritae* Emery
*48. *Myrmica smythiesii* Forel
49. *Myrmica smythiesii rupestris* Forel

18. Genus ***Pheidologeton*** Mayr

50. *Pheidologeton diversus* (Jerdon)

19. Genus ***Crematogaster*** Lund

51. *Crematogaster binghamii* Forel
52. *Crematogaster biroi* Mayr
53. *Crematogaster buddhae* Forel
54. *Crematogaster ebenina* (Forel)
55. *Crematogaster ebenina corax* Forel
56. *Crematogaster rogenhoferi flava* Forel
57. *Crematogaster ransonneti* Mayr
58. *Crematogaster rogenhoferi* Mayr
59. *Crematogaster rothneyi* Mayr
60. *Crematogaster walshi* Forel
61. *Crematogaster sagei* Forel
62. *Crematogaster politula* Forel
63. *Crematogaster* sp.

20. Genus ***Lophomyrmex*** Emery

64. *Lophomyrmex bedoti* Emery
65. *Lophomyrmex quadrispinosus* (Jerdon)
66. *Lophomyrmex burmanus* Emery

21. Genus ***Rhoptromyrmex*** Mayr

67. *Rhoptromyrmex wroughtoni* Forel

22. Genus ***Tetramorium*** Mayr

68. *Tetramorium bicarinatum* (Nylander)
69. *Tetramorium christiei* Forel
70. *Tetramorium pacificum* Mayr
*71. *Tetramorium tortuosum* Roger

23. Genus ***Triglyphothrix*** Forel

72. *Triglyphothrix striatidens* (Emery)

24. Genus ***Solenopsis*** Westwood

73. *Solenopsis geminata* (Fabricius)

25. Genus ***Leptothorax*** Mayr

74. *Leptothorax rothneyi* Forel

26. Genus ***Cardiocondyla*** Emery

75. *Cardiocondyla nuda* (Mayr)

VI. Subfamily DOLICHODERINAE Forel

27. Genus ***Dolichoderus*** Lund

76. *Dolichoderus affinis* Emery
77. *Dolichoderus affinis glabripes* Forel
78. *Dolichoderus thoracicus* (Smith)
79. *Dolichoderus feae* Emery
80. *Dolichoderus moggridgei* Forel
81. *Dolichoderus moggridgei bicolor* Santschi
82. *Dolichoderus* sp.

28. Genus ***Technomyrmex*** Mayr

*83. *Technomyrmex albipes* (Smith)
84. *Technomyrmex albipes brunneus* Forel

29. Genus ***Bothriomyrmex*** Emery

85. *Bothriomyrmex myops* Forel
86. *Bothriomyrmex walshi* Forel

30. Genus ***Iridomyrmex*** Mayr

87. *Iridomyrmex anceps sikkimensis* Forel

VII. Subfamily FORMICINAE Lepeletier

31. Genus ***Oecophylla*** Smith

88. *Oecophylla smaragdina* (Fabricius)

32. Genus ***Plagiolepis*** Mayr

89. *Plagiolepis dichroa* Forel
90. *Plagiolepis moelleri* Bingham

33. Genus ***Anoplolepis*** Santschi

91. *Anoplolepis longipes* (Jerdon)

34. Genus ***Formica*** Linnaeus

92. *Formica fusca* Linnaeus
93. *Formica rufibarbis* Fabricius

35. Genus ***Cataglyphis*** Föerster

*94. *Cataglyphis setipes* (Forel)

36. Genus ***Pseudolasius*** Emery

95. *Pseudolasius familiaris* (Smith)

37. Genus ***Polyrhachis*** Smith

96. *Polyrhachis dives* Smith
97. *Polyrhachis illaudata* Walker
98. *Polyrhachis striata* Mayr
*99. *Polyrhachis thompsoni* Bingham
100. *Polyrhachis* sp.

38. genus ***Camponotus*** Mayr

101. *Camponotus compressus* (Fabricius)
*102. *Camponotus thoracicus* (Fabricius)
*103. *Camponotus arrogans* (Smith)
104. *Camponotus dolendus* Forel
*105. *Camponotus invidus* Forel
*106. *Camponotus mitis* (Smith)
107. *Camponotus lamarcki* Forel
108. *Camponotus camelinus* (Smith)
109. *Camponotus oblongus* (Smith)
110. *Camponotus sericeus peguensis* Emery
111. *Camponotus singularis* (Smith)
112. *Camponotus barbatus taylori* Forel
113. *Camponotus wasmanni* Emery

39. Genus ***Paratrechina*** Motschoulsky

114. *Paratrechina aseta* (Forel)

Key to the Subfamilies of FORMICIDAE

1. Pedicel of abdomen with one node 2
– Pedicel of abdomen with two nodes 6
2. A more or less marked constriction between basal two segments of abdomen 3
– No constriction between basal two segments of abdomen 4
3. Elongate, slender; scape usually short and stout, antennal fossa more or less encircled by a lateral carina on the cheek (rarely obsolete); posterior surface of head usually with distinct carina running ventrally from each dorso-lateral corner; dorsal surface of thorax with sutures indistinct or absent; pygidium margined laterally and posteriorly with a row of large or small (always distinct) spines ..... CERAPACHYINAE
– Without these combinations of characters .... PONERINAE
4. Opening at posterior end of gaster (acidopore) terminal, circular and usually surrounded by a fringe of hairs ..... FORMICINAE
– Opening at posterior end of gaster (acidopore) transverse, slit-like 5
5. Eyes never present, blind ..... DORYLINAE
– Eyes always present ..... DOLICHODERINAE
6. Elongate, often very slender; eyes very large and elongate; clypeus with a rounded upper margin, not prolonged between frontal carinae; frontal carinae usually narrow and not expanded laterally to cover the antennal insertions; antennae short ..... PSEUDOMYRMECINAE
– Without these combinations of characters; frontal carinae usually large, nearly always covering the antennal insertions ..... MYRMICINAE

I. Subfamily DORYLINAE Forel

Key to the genera of Dorylinae

(Workers)

1. Pedicel one-segmented; pro-mesonotal suture distinct, meso-metanotal suture obsolete ..... ***Dorylus***
– Pedicel two-segmented; pro-mesonotal suture obsolete, meso-metanotal suture distinct ..... ***Aenictus***

(Males)

1. Of comparatively large size, length over 18 mm; node of pedical convex ..... ***Dorylus***

– Smaller in size, length under 13 mm; node of pedicel concave, sometimes merely longitudinally grooved or bilobed, never convex ..... ***Aenictus***

1. Genus *Dorylus* Fabricius

1793. *Dorylus* Fabricius, *Ent. Syst.*, **2** : 365, M.

Type-species : *Vespa helvola* Linnaeus, 1764.

Key to the species of Dorylus
(Workers)

1. Antennae of W-maj. 11-segmented and W-min. 10-segmented ..... *labiatus*
– Antennae of W-maj. and W-min. 9-segmented ..... *orientalis*

A. Subgenus *Typhlopone* Westwood

1840. *Typholopne* Westwood, *Introd. Classif. Ins.*, **2** : 219, W.

1. *Dorylus (Typhlopone) labiatus* Shuckard

1840. *Dorylus labiatus* Shuckard, *Ann. Mag. Nat. Hist.*, **5** : 319, M.

2000. *Dorylus (Typhlopone) labiatus*, Tiwari *et al.*, *State Fauna Series* 3 : *Fauna of West Bengal*, 8 : 232.

Material examined : India : Sikkim : South Sikkim, Namchi, 1 W-maj., April, 1996, coll. R. N. Tiwari and party.

Distribution : India : Sikkim and whole continent of India, particularly from West Bengal, Uttar Pradesh, Manipur, Orissa, Himachal Pradesh, Maharashtra, Gujarat and Delhi.

B. Subgenus *Alaopone* Emery

1881. *Alaopone* Emery, *Ann. Mus. Stor. Nat. Genova*, **16** : 274.

2. *Dorylus (Alaopone) orientalis* Westwood

1835. *Dorylus orientalis Westwood, J. Proc. Zool. Soc. Lond.*, **3** : 72, M.

1999. *Dorylus (Alaopone) orientalis*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 16, syns.

Material examined : India : Sikkim : West Sikkim, Rabangla, Deorali, 1 W-maj., 28. ii. 1989, coll. D.K. Mondal and party; West Sikkim, Rabangla, Alay (7000 ft.), 1 W-min., 26.ii.1989, coll. D.K. Mondal and party, ex. under stone.

Distribution : India : Sikkim, West Bengal, Orissa, Uttar Pradesh, Maharashtra, Kerala, Meghalaya. *Elsewhere* : Myanmar, China, Nepal, Sri Lanka, Malayan Peninsula, Indonesia.

2. Genus *Aenictus* Shuckard

1840. *Aenictus* Shuckard, *Ann. Mag. Nat. Hist.*, **5** : 266, M.

Type-species : *A. ambiguus* Shuckard, 1840.

Key to the species of *Aenictus*

1. Scape of antennae cylindrical; posterior border of hypopygium entire ..... *ambiguus*
– Scape of antennae more or less compressed, flat; posterior border of hypopygium broadly emarginate ..... *clavatus*

Note : Due to non-availability of detailed description of male of *A. fergusoni*, this species could not be included in the key.

3. *Aenictus ambiguus* Shuckard

1840. *Aenictus ambiguus* Shuckard, *Ann. Mag. Nat. Hist.*, **5** : 268, M.

1951. *Aenictus ambiguus*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 14.

1964. *Aenictus ambiguus*, Wilson, *Pacific Insects*, **6** (3) : 444.

Distribution : India : Sikkim, Gujarat, Maharashtra, Uttar Pradesh.

Remarks : Bingham (1903) reported the species and mentioned its localities as "Sikkim, Gujarat and Poona"

4. *Aenictus clavatus* Forel

1900. *Aenictus clavatus* Forel, *J. Bombay Nat. Hist. Soc.* **13** : 467 & 471, M.

1951. *Aenictus clavatus*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 14.

1999. *Aenictus clavatus*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 18.

Distribution : India : Sikkim, Gujarat, Karnataka, Maharashtra.

Remarks : Bingham (1903) recorded this species from Sikkim.

5. *Aenictus fergusoni* Forel

1900 *Aenictus fergusoni* Forel, *J. Bombay Nat. Hist. Soc.*, **13** : 473, W.

1951. *Aenictus (Typhlatta) fergusoni*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 12.

1999. *Aenictus fergusoni*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 17.

Distribution : India : Sikkim, Meghalaya, Maharashtra, Kerala, Gujarat, West Bengal, Assam, Andaman and Nicobar Islands. *Elsewhere* : Myanmar, China, Java, Sumatra.

Remarks : Bingham (1903) recorded this species and mentioned "Sikkim" as one of its localities. Subsequently, Wilson (1964 : 462) also reported this species alongwith some new synonyms.

II. Subfamily PONERINAE Lepeletier

Key to the genera of Ponerinae

1. Pedicel not free; a strong constriction, but no flexible joint between pedicel and abdomen 2
– Pedicel free; a flexible joint between it and abdomen 3
2. Mandibles with distinct apical margin ..... ***Myopopone***
– Mandibles without any distinct apical margin ..... ***Amblyopone***
3. Mandibles articulated close together in middle of front margin of head 4
– Mandibles articulated wide apart at lateral angles of front margin of head 5
4. Antennal hollows confluent posteriorly..... ***Odontomachus***
– Antennal hollows not confluent posteriorly..... ***Anochetus***
5. Mandibles long; curved upwards, one strong tooth at base of masticatory margin, then denticulate at apex ..... ***Harpegnathos***
– Mandibles differently formed 6
6. Claws pectinate ..... ***Leptogenys***
– Claws not pectinate 7
7. Pronotum with teeth or spines ..... ***Odontoponera***
– Pronotum without teeth or spines 8
8. Node of pedicel bispinous posteriorly ..... ***Diacamma***
– Node of pedicel not bispinous, sometimes denticulate posteriorly 9
9. Episternum of mesothorax separated from sternum by a suture ..... ***Pachycondyla***
– Episternum of mesothorax not separated from sternum ..... ***Hypoponera***

3. Genus *Anochetus* Mayr

1861. *Anochetus* Mayr, *Europ. Formicid.*, : 53, W.

Type-species : *Odontomachus ghilianii* Spinola, 1851.

6. *Anochetus graeffei* Mayr

1870. *Anochetus graeffei* Mayr, *Verh. zool.-bot. Ges. Wien*, **20** : 961, W.

1995. *Anochetus graeffei*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 64.

Diagnostic characters : W. TL 3.5 mm. Ferruginous; abdomen darker, mandibles and legs lighter in colour. Head somewhat irregularly rectangular, convex in front; closely and regularly punctured; mandibles with three apical teeth, more finely punctured, pre-apical inner margin minutely serrate. Thorax densely punctured, obliquely truncated posteriorly; apical face of metanotum margined at the sides. Node of pedicel ovate, rounded above, smooth; abdomen stout, basal segment densely punctate in front.

Distribution : India : Sikkim, West Bengal, Southern and Western India. *Elsewhere* : Indo-China, Samoa.

Remarks : Bingham (1903) reported *Anochetus punctiventris* Mayr, 1878 from Sikkim which was later on synonymised with *A. graeffei* Mayr, 1870 by Wilson (1959).

4. Genus ***Odontomachus*** Latreille

1805. *Odntomachus* Latreille, *Hist. Nat. Crust. Ins.*, **13** : 257.

Type-species : *Formica haematoda0* Linnaea, 1758.

Key to the species of *Odontomachus*

1. The whole head very finely and delicately striate and having a beautiful silky gloss..... ..... *haematodus*

– The upper part of the head smooth or punctate, not striate, no silky gloss ..... *monticola*

7. ***Odontomachus haematodus*** (Linnaeus)

1758. *Formica haematoda* Linnaeus, *Syst. Nat.*, ed. 10, **1** : 582, W.

1900. *Odontomachus haematodes*, Forel, *J. Bombay. Nat. Hist. Soc.*, **13** : 57, W.

1951. *Odontomachus haematoda*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 43.

1995. *Odontomachus haematodus*, Bolton, *A New Genl. Cat. Ants. World, Harvard Univ. Press*, : 295.

1999. *Odontomachus haematodes*, Tiwari, *Memoirs Zool. Surv. India.* **18** (4) : 21.

Distribution : India : Sikkim, Assam, Meghalaya, Kerala, Andaman and Nicobar Is., Tamil Nadu. *Elsewhere* : Africa, America, Australia, Borneo, China, Fiji, Java, New Guinea, Philippines, Singapore, Sri Lanka.

Remarks : Bingham (1903) recorded this species and mentioned its distribution as Sikkim alongwith other localities.

8. ***Odontomachus monticola*** Emery

1891. *Odontomachus monticola* Emery, *Ann. Soc. Ent. Fr.*, **60** : 560, W.

1900. *Odontomachus monticola, race punctulatus* Forel, *J. Bombay Nat. Hist. Soc.*, **13** : 58, W.

1995. *Odontomachus monticola*, Bolton. *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 296.

Distribution : India : Sikkim, Assam, Meghalaya, Andaman and Nicobar Is., West Bengal. *Elsewhere* : Myanmar, China, Siam.

Remarks : Bingham (1903 : 48, 49) reported *O. punctulatus* from Sikkim and Assam. Subsequently, Brown (1976) synonymised *O. punctulatus* under the species, *O. monticola.*

5. Genus ***Harpegnathos*** Jerdon

1851. *Harpegnathos* Jerdon, *Madras, J. Lit. Sci.*, **17** : 116, W.

Type-species : *H. saltator* Jerdon, 1851.

9. ***Harpegnathos venator*** (Smith)

1858. *Drepanognathus venator* Smith, *Cat. Hym. Brit. Mus.* **6** : 82, W.

1902. *Harpegnathus venator*, Forel, *J. Bombay Nat. Hist. Soc.*, **13** : 63 & 64, W, M, F.

1999. *Harpegnathus venator*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 22.

Diagnostic characters : W. TL 16-18 mm. Black; mandibles, clypeus, legs brownish yellow; head and thorax closely coarsely punctate; few short, erect pale hairs; minute pubescence plentiful. Head rectangular, emarginate posteriorly; sickle-shaped mandibles articulated at the sides of the head, more than half as long as head, curved upwards, serrated on inner margin, saw-like serrations terminates in a large triangular laminate tooth; clypeus triangular; antennae 12-segmented, filiform; eyes remarkably large, lower orbits almost reaching base of mandibles. Thorax elongate; pro-mesonotal suture remarkably broad and shallow; meso-metanotal suture obsolete; posterior face of metanotum truncate; legs long, slender. pedicel cylindrical, narrowed anteriorly, vertically truncate posteriorly; abdomen cylindrical, constriction between basal two segments very distinct; powerful sting exerted.

Distribution : India : Sikkim, Assam, Tamil Nadu, Meghalaya, Uttar Pradesh and Northern

India. *Elsewhere* : Myanmar, China.

Remarks : Bingham (1903) reported this species under the genus *Drepanognathus* and mentioned its habitat Sikkim and others.

6. Genus *Leptogenys* Roger

1861. *Leptogenys* Roger, *Berl. ent. Zeitschr.*, **5** : 41.

Type-species : *L. falcigera* Roger, 1861.

Key to the species of *Leptogenys*

1. Head more or less striate 2
- Head either punctured or smooth and shining, never striate 3
2. Clypeus not carinate ..... *kitteli*
- Clypeus more or less distinctly carinate or subcarinate ..... *hodgsoni*
3. Basal abdominal segment punctured ..... *punctiventris*
- Basal abdominal segment no punctured, smooth 4
4. Head smooth, shining, not punctured ..... *lucidula*
- Head punctured, opaque, with a blue metallic tint in certain lights ..... *moelleri*

10. *Leptogenys hodgsoni* Forel

1900. *Leptogenys (Lobopelta) diminuta*, race *hodgsoni* Forel, *J. Bombay Nat. Hist. Soc.*, **13** : 308.

1903. *Lobopelta hodgsoni*, Bingham, *Fauna Brit. India, Hym.*, **2** : 62, W.

1995. *Leptogenys hodgsoni*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 231.

Material examined : India : Sikkim : East Sikkim, Tadong, 1 W, March, 1996, coll. R. N. Tiwari and party.

Distribution : India : Sikkim and West Bengal. *Elsewhere* : Myanmar, Singapore.

Remarks : This is the first record of this species from the state of Sikkim.

11. *Leptogenys kitteli* (Mayr)

1870. *Lobopelta kitteli* Mayr., *Verh. zool.-bot. Ges. Wien*, **20** : 966, W.

1995. *Leptogenys kitteli*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 232.

2000. *Leptogenys (Lobopelta) kitteli*, Mathew and Tiwari, *State Fauna Series* 4 : *Fauna of Meghalaya*, Part 7 : 279.

Distribution : India : Sikkim, Meghalaya, Assam, Himachal Pradesh, Uttar Pradesh, West Bengal. *Elsewhere* : Myanmar, China.

Remarks : Bingham (1903) reported its habitat as "along the foot-hills of the Himalayas from Simla to Sikkim"

12. *Leptogenys lucidula* Emery

1894. *Leptogenys lucidula* Emery, *Ann. Mus. Civ. Stor. Nat. Genova*, **34** : 462, W.

1903. *Lobopelta lucidula*, Bingham, *Fauna Brit. India, Hym.*, **2** : 66, W.

1951. *Leptogenys (Lobopelta) lucidula*, Chapman and Capco, *Monogr. Inst. Sci. Tech, Manila* (Chick List Ants Asia), **1** : 37.

1995. *Leptogenys lucidula*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 232.

Distribution : India : Sikkim. *Elsewhere* : Myanmar.

Remarks : Bingham (1903) mentioned its habitat 'Sikkim, 4000 ft'

13. *Leptogenys moelleri* (Bingham)

1903. *Lobopelta moelleri* Bingham, *Fauna Brit. India, Hym.*, **2** : 67, W.

1951. *Leptogenys (Lobopelta) moelleri*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 37.

1995. *Leptogenys moelleri*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 232.

Distribution : India : Sikkim.

Remarks : Bingham (1903) described this species under the genus *Lobopelta* and mentioned its habitat as 'Sikkim at 4000 ft.

14. *Leptogenys punctiventris* (Mayr)

1878. *Lobopelta punctiventris* Mayr, *Verh. zool.-bot. Ges. Wien*, **28** : 666, W.

1995. *Leptogenys punctiventris*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 233.

2000. *Leptogenys (Lobopelta) punctiventris*, Mathew and Tiwari, *State Fauna Series* 4 : *Fauna of Meghalaya*, Part **7** : 281.

Distribution : India : Sikkim, Meghalaya, West Bengal. *Elsewhere* : Philippines.

Remarks : Sikkim alongwith other places were mentioned as the habitat of this species by Bingham (1903).

7. Genus *Diacamma* Mayr

1862. *Diacamma* Mayr. *Verh. zool.-bot. Ges. Wien*, **12** : 718, W.

Type-species : *Ponera rugosa* Le Guillou, 1841.

Key to the species of *Diacamma*

1. First abdominal segment not striate .... *scalpratum*
– First abdominal segment striate 2
2. Pronotum longitudinally striate.....*assamense*
– Pronotum with transversely arched striae, which are more or less concentric anteriorly .... *rugosum*

15. *Diacamma assamense* Forel

1897. *Diacamma tritschleri* Forel, race *assamensis* Forel, in Emery, *Rend. Accad. Sci. Bologna* (N.S.), **1** : 151.

1900. *Diacamma assamense* Forel, *J. Bombay Nat. Hist. Soc.*, **13** : 318, 319.

1995. *Diacamma assamense*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 169

Material examined : India : Sikkim : East Sikkim, Lossing (Christian Tar, 5000 ft.), 1 W, 19.v. 1994, coll. S. Chattopadhyay and S.N. Ghosh; South Sikkim, Melli Bazar, 1 W., 23. v. 1994, coll. S. Chattopadhyay and S.N. Ghosh.

Distribution : India : Sikkim and Assam. *Elsewhere* : Myanmar.

Remarks : This species is recorded here for the first time from the state of Sikkim.

16. *Diacamma rugosum* (Le Guillou)

1841. *Ponera rugosa* Le Guillou, *Ann. Soc. Ent. Fr.*, **10** : 318.

1900. *Diacamma rugosum*, Forel, *J. Bombay Nat. Hist. Soc.*, **13** : 318, W.

1995. *Diacamma rugosum*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 170.

Material examined : India : Sikkim : South Sikkim, Melli Bazar, 4 W, 23.v. 1994, coll. S. Chattopadhyay and S.N. Ghosh; North Sikkim, Mangan, 2 W, 31. iii. 1996, coll. R.N. Tiwari and party; South Sikkim, Namchi, 1, W, April, 1996, coll. R.N. Tiwari and party.

Distribution : India : Sikkim, Meghalaya, Orissa, Maharashtra, Assam, West Bengal, Tamil Nadu, Karnataka, Andaman and Nicobar Islands. *Elsehere* : Nepal, Myanmar, Sri Lanka, Malaysia, Singapore, Philippines, Vietnam, Indo-China, Java, Borneo, New Guinea, Taiwan, Batchian is. (Pacific).

Remarks : Tiwari (1999) recorded *Diacamma vagans* (Smith, 1860) as a species which was later on considered as a mistake. However, going through Bolton's Catalogue (1995b), the mistake has been rectified and the said species is henceforth treated as a junior synonym of *Diacamma rugosum* (Le Guillou, 1841).

Key to the subspecies of *D. rugosum*

1. Pronotum with one or two longitudinal striae in the centre surrounded by concentric arched striae from back to front.....*sculpum*
– Pronotum with one or two transverse striae in the middle surrounded by concentric striae arched towards the front..... *sikkimensis*

17. *Diacamma rugosum sculptum* (Jerdon)

1851. *Ponera sculpta* Jerdon, *Madras J. Lit. Sci.*, **17** : 117, W.

1995. *Diacamma rugosum sculptum*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 170.

Distribution : India : Sikkim, Karnataka, Maharashtra, Tamil Nadu, Kerala, Andaman and Nicobar Islands, West Bengal. *Elsewhere* : Philippines, Sri Lanka, Borneo, Singapore, Taiwan.

Remarks : Bingham (1903) reported this as a species under the genus *Diacamma* and mentioned 'Sikkim' as one of its habitats.

18. ***Diacamma rugosum sikkimensis*** Forel

1903. *Diacamma sikkimensie* Forel, *Rev. Suisse Zool.*, **2** : 401, W.

1951. *Diacamma rugosum* var. *sikkimensis*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 56.

1995. *Diacamma rugosum sikkimense*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 170.

Distribution : India : Sikkim. *Elsewhere* : Saigon.

Remarks : Chapman and Capco (1951) reported this subspecies as a variety from Sikkim.

19. ***Diacamma scalpratum*** (Smith)

1858. *Ponera scalprata* Smith, *Cat. Hym. Brit. Mus.*, **6** : 84, W, pls., fig.

1995. *Diacamma scalpratum*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 170.

Distribution : India : Sikkim, Assam, Meghalaya, West Bengal. *Elsewhere* : Myanmar.

Remarks : Bingham (1903) reported this species under the genus *Diacamma* and mentioned its locality as 'Sikkim'

8. Genus ***Pachycondyla*** Smith

1858. *Pachycondyla* Smith, *Cat. Hym. Brit. Mus.*, **6** : 105. Type-species : *Formica crassinoda* Latreille, 1802.

Key to the species of *Pachycondyla*

1. Episternum of mesothorax separated from sternum by a suture 2
– Episternum of mesothorax not separated from sternum 4
2. Node of pedicel convex in front, upper portion of the posterior face bevelled off towards front 3
– Node of pedicel not bevelled, flat and truncate anteriorly and posteriorly ..... *Leeuwenhoeki*
3. Abdomen finely and closely punctured, opaque, not shining ..... *astuta*
– Abdomen smooth, highly polished and shining ..... *javana*
4. Middle of front margin of clypeus produced, truncate at apex ..... *amblyops*
– Middle of front margin of clypeus not produced 5
5. Meso-metanotal suture obsolete ..... *rufipes*
– Meso-metanotal suture well-marked ..... *nigrita*

20. ***Pachycondyla astuta*** Smith

1858. *Pachychondyla astuta* Smith, *Cat. Hym. Brit. Mus.*, **6** : 107, W.

1903. *Ectomomyrmex astutus*, Bingham, *Fauna Brit. India, Hym.*, **2** : 86.

1995. *Pachycondyla astuta*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 303.

Material examined : India : Sikkim : East Sikkim, Lossing (5000 ft.), 1W, 19. v. 1994. coll. S. Chattopadhyay and S. N. Ghosh.

Distribution : India : Sikkim, Meghalaya, Assam. *Elsewhere* : Myanmar, China, Malaya, Java, Sumatra.

Remarks : This is the first record of this species from Sikkim.

21. ***Pachycondyla leeuwenhoeki*** (Forel)

1886. *Ponera leeuwenhoeki* Forel, *J. Asiat. Soc. Bengal*, **55** : 244, W.

1900. *Ectomomyrmex leeuwenhoeki*, Forel, J. *Bombay Nat. Hist. Soc.*, **13** : 321, W.

1995. *Pachycondyla leeuwenhoeki*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 306.

Material examined : India : Sikkim : East Sikkim, Dickling (5000 ft.), 1 W, 20. v. 1994, coll. S. Chattopadhyay and S. N. Ghosh, at Night.

Distribution : India : Sikkim, Meghalaya, Assam, Kerala. *Elsewhere* : Myanmar, Singapore.

Remarks : This species is recorded here for the first time from Sikkim.

22. ***Pachycondyla javana*** (Mayr)

1867. *Ectomomyrmex javanus* Mayr, *Tijds. v. Ent.*, **10** : 84.

1903. *Ectomomyrmex javanus*, Bingham, *Fauna Brit. India, Hym.*, **2** : 86.

1995. *Pachycondyla javana*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*,: 306.

Material examined : India : Sikkim, East Sikkim, Dickling (5000 ft.), 2 W, 20. v. 1994, coll. S. Chattopadhyay and S.N. Ghosh; South Sikkim, Ketham, 22 km. south of Melli Bazar, 6 W, 24. v. 1994, coll. S. Chattopadhyay and S. N. Ghosh.

Distribution : India : Sikkim, Assam, West Bengal. *Elsewhere* : Myanmar, China, Java, Malayan subregion, Sumatra.

Remarks : This is the first record of this species from the state of Sikkim.

23. ***Pachycondyla rufipes*** (Jerdon)

1851. *Ponera rufipes* Jerdon, *Madras J. Lit. Sci.*, **17** : 119, W.

1903. *Bothroponera rufipes*, Bingham, *Fauna Brit. India, Hym.*, **2** : 96, W.

1995. *Pachycondyla rufipes*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 309.

1999. *Bothroponera rufipes*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 28, syns.

Material examined : India : Sikkim : East Sikkim, Dickling (5000 ft.), 2 W, 21.v. 1994, coll. S. Chattopadhyay and S.N. Ghosh; South Sikkim, Ketham, 22 km. south of Melli Bazar, 2 W, 22.v. 1994, coll. S. Chattopadhyay and S.N. Ghosh; South Sikkim, Melli Bazar, 1 W, 23.v. 1994, coll. S. Chattopadhyay and S.N. Ghosh.

Distribution : India : Sikkim, Meghalaya, Karnataka, Kerala, Western India, Himalayas from Siwaliks to Assam, West Bengal, Orissa, Andaman and Nicobar Islands. *Elsewhere* : Myanmar, Sri Lanka.

24. ***Pachycondyla nigrita*** (Emery)

1894. *Ponera nigrita* Emery, *Ann. Mus. Civ. Stor. Nat. Genova*, **34** : 459, W.

1903. *Brachyponera nigrita*, Bingham, *Fauna Brit. India, Hym.*, **2** : 102.

1951. *Euponera (Brachyponera) nigrita*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 64.

1995. *Pachycondyla nigrita*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press* : 307.

Distribution : India : Sikkim, Meghalaya. *Elsewhere* : Myanmar, Sumatra.

Remarks : Bingham (1903) mentioned 'Sikkim' as the only habitat of this species from India.

25. ***Pachycondyla amblyops*** (Emery)

1887. *Ponera amblyops* Emery, *Ann. Mus. Civ. Stor. Nat. Genova*, **25** : 434, W.

1900. *Pachycondyla (Pseudoponera) amblyops*, Emery, *Ann. Soc. Ent. Belg.*, **45** : 42.

1903. *Pseudoponera amblyops*, Bingham, *Fauna Brit. India, Hym.*, **2** : 92.

1995. *Pachycondyla amblyops*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 302.

Distribution : India : Sikkim, Meghalaya, Assam. *Elsewhere* : Myanmar, Java, Borneo, Malayan peninsula, Singapore, Sumatra.

Remarks : Sikkim was mentioned as one of the habitats of this species by Bingham (1903).

9. Genus ***Hypoponera*** Santschi

1938. *Ponera (Hypoponera)* Santschi, *Bull. Soc. Ent. France*, **43** : 79.

1976. *Hypoponera*, Taylor, *Pacific Ins. Monogr.*, **13** : 9.

Type-species : *Ponera abeillei* André, 1881.

26. ***Hypoponera truncata*** (Smith)

1860. *Ponera truncata* Smith, *J. Proc. Linn. Soc. Lond. Zool.*, **4** : 72, W.

1995. *Hypoponera truncata*, Bolton, *A New Genl. Cat. Ants World, Harvard. Univ. Press,* : 216.

Diagnostic characters : W. TL 3-3.5 mm. castaneous brown, mandibles, antennae, legs paler, punctate and pubescent. Head without mandibles broadly oval; mandibles with extremely broad masticatory margin; clypeus carinate. Thorax above distinctly flat and depressed. Node of pedicel flat, much broader than long, distinctly thick and rounded above. Constriction between basal two segments of abdomen well-marked, string exerted.

Material examined : India : Sikkim : West Sikkim, Deorali, 8 km. south of Rabangla F.R.H. (8500 ft.), 2 W, 28.ii. 1989, coll. D.K. Mondal and party; West Sikkim, Rabangla, Alay (7000 ft.), 5 W, 26.ii. 1989, coll. D.K. Mondal and party.

Distribution : India : Sikkim, Tamil Nadu, West Bengal. *Elsewhere* : Myanmar, Celebes, Java, Borneo, Sulawesi, Taiwan.

Remarks : Tiwari (1999) also recorded this species *truncata* under the genus *ponera*. But prior to this, Bolton (1995b) in his catalogue mentioned that the species *Ponera truncata* Smith, 1860 now has been transferred to the genus ***Hypoponera*** Santschi, 1938. The present authors accept Bolton's (1995b) view.

This species is recorded here for the first time from the state of Sikkim.

10. Genus ***Odontoponera*** Mayr

1862. *Odontoponera* Mayr, *Verh. zool.-bot. Ges. Wien,* **12** : 717, W.

Type-species : *Ponera transversa* Smith, 1857.

27. ***Odontoponera transversa*** (Smith)

1857. *Ponera transversa* Smith, *J. Proc. Linn. Soc. Lond. Zool.*, **2** : 68, W.

1903. *Odontoponera transversa*, Bingham, *Fauna Brit. India, Hym.*, **2** : 73, W, F.

1995. *Odontoponera transversa*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 298.

Diagnostic characters : W. TL 9-12 mm. Black; mandibles, antennae, legs castaneous; head almost square, striate, striae outwardly divergent from medial longitudinal line; mandible subtriangular, strongly dentate; clypeus narrow, anteriorly transverse; mandible and clypeus finely longitudinally striate, antennae 12-segmented. Thorax massive, transversely striate; pronotum convex, anterior lateral angles dentate; suture distinct; apical portion of metanotum flat with a denticulate ridge on each side, basal portion with gradual slope. Pedicel cuneiform, transversely striate. Abdomen comparatively short, smooth.

Material examined : India : Sikkim : East Sikkim, Dickling (1500 ft.), 3 W, 20.v. 1994, coll. S. Chattopadhyay and S.N. Ghosh; South Sikkim, Melli Bazar, 1 ex., 23.v. 1994, coll. S. Chattopadhyay and S.N. Ghosh.

Distribution : INDIA : Sikkim, Meghalaya, Anadaman and Nicobar Islands and almost throughout India. *Elsewhere* : Myanmar, China, Java, Borneo, Sumatra, Malayan region, Philippines, Singapore.

11. Genus ***Myopopone*** Roger

1861. *Myopopone Roger, Berl. ent. Zeitschr.*, **5** : 49, W.

Type-species : *Amblyopone castaneus* Smith, 1860 (= *Myopopone maculata* Roger, 1861).

28. ***Myopopone castanea*** (Smith)

1860. *Amblyopone castaneus* Smith, *J. Proc. Linn. Soc. Lond. Zool.*, **5** : 105, W.

1903. *Myopopone castanea*, Bingham, *Fauna Brit. India, Hym.*, **2** : 33.

1995. *Myopopone castanea*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 270.

Diagnostic characters : W. TL 16 mm. Jet-black, shining; legs and apical segment of abdomen

light yellowish brown, pilosity long and fairly dense, more towards apex of abdomen. Head, without mandibles, square; mandibles as broad at apex as at base, the apex and inner margin strongly dentate, puncture run into longitudinal striae; antennae 12-segmented, short, thick; eyes minute. Thorax almost flat above, compressed laterally; pronotum broader than long, transverse posteriorly; mesonotum transverse, highly polished and smooth. Pedicel almost square, anteriorly truncate, posteriorly attached to abdomen by its whole posterior face; abdomen tapering gradually to apex, constriction between basal two segments well-marked; sting long exerted.

Distribution : India : Sikkim, Arunachal Pradesh, Andaman and Nicobar Islands. *Elsewhere* : Myanmar, Indonesia, Malayan subregion.

Remarks : Bingham (1903) described the species *moelleri* under the genus *Myopopone* from Sikkim, which was later on reported as a subspecies of *M. castanea* by Chapman and Capco (1951). But ultimately *M. moelleri* was synonymised as a junior synonym of *M. castanea* (Smith, 1860) by Brown (1960), which was supported by Bolton (1995b).

12. Genus ***Amblyopone*** Erichson

1842. *Amblyopone* Erichson, *Arch. Fur. Nat.*, **8** : 261.

Type-species : *A. australis* Erichson, 1842.

29. ***Amblyopone rothneyi*** Forel

1900. *Amblyopone rothneyi* Forel, *J. Bombay Nat Hist. Socc,* **13** : 55 & 56, W.

1903. *Stigmatomma rothneyi,* Bingham, *Fauna Brit. India, Hym.*, **2** : 37, W.

1995. *Amblyopone rothneyi,* Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 62.

Diagnostic characters : W. TL 8.5-9 mm. Black; mandibles, antennae, legs, apices of abdominal segments ferruginous; body densely punctured and covered with short erect pale hairs. Head rectangular, moderately convex above and on the sides, posterior lateral angles rounded; mandibles elongate, obliquely striate, apex smooth, pointed and slightly curved, armed on inner side with double row of acute teeth; antennae 12-segmented, flagellum long, nearly double as mandibles. Pronotum long, convex above; mesonotum depressed; metanotum rounded above, broadening posteriorly; legs comparatively short. Pedicel almost concave anteriorly, rounded and convex above and the sides; abdomen about as long as thorax, 2nd segment distinctly longer than 1st segment.

Distribution : India : Sikkim and West Bengal. *Elsewhere* : China, Philippines.

Remarks : Bingham (1903) mentioned its habitat as 'Sikkim'

III. Subfamily CERAPACHYINAE Forel

13. Genus ***Cerapachys*** Smith

1857. *Cerapachys* Smith, *J. Proc. Linn. Soc. Lond. Zool.,* **2** : 74, W.

Type-species : *C. antennatus* Smith, 1857.

30. ***Cerapachys sulcinodis*** Emery

1889. *Cerapachys sulcinodis* Emery, *Ann. Mus. Civ. Stor. Nat. Genova,* **27** : 493, W.

1951. *Cerapachys (Cerapachys) sulcinodis,* Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 20.

1995. *Cerapachys sulcinodis,* Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 145.

Diagnostice characters : W. TL 5.5-6.5 mm. Black; mandibles, antennae and legs brownish yellow; abundant fine erect yellowish hairs along the whole body. Head convex in front, posterior lateral angles acute; mandibles triangular, obsoletely dentate; antennae 12-segmented, apical joint of flagellum distincty much longer than preceding three joints, basal joint very short. Thorax strongly rounded and convex above, posterior face of metanotum flat; legs cylindrical, densely pubescent. Node of pedicel longer than broad, convex above, densely punctured and longitudinally coarsely furrowed or wrinkled;

abdomen elongate, constriction between basal two segments broad and well-marked, apex acute.

Distribution : India : Sikkim, Meghalaya. *Elsewhere* : Myanmar, China, Hong-kong, Malayan Peninsula.

Remarks : Bingham (1903) also reported the species *risii* under the genus *Cerapachys* and mentioned its habitat as 'Sikkim' But subsequently, Bolton (1995b) noted in his catalogue that the species *risii* is the junior synonym of the species *C. sulcinodis* Emery, 1889.

IV. Subfamily PSEUDOMYRMECINAE Emery

14. Genus *Tetraponera* Smith

1852. *Tetraponera* Smith, *Ann. Mag. Nat. Hist.*, (2) **9** : 44.

Type-species : *Eciton nigrum* Jerdon, 1851 (= *Tetraponera atrata* Smith, 1852).

Key to the species of *Tetraponera*

1. Head narrower posteriorly than in front; metanotum with a short basal face; nodes of pedicel longer; abdomen proportionately narrower ..... *birmana*
- Head posteriorly as broad as in front, or broader than in front; nodes of pedicel comparatively short; abdomen comparatively broad ... *nigra*

31. *Tetraponera birmana* (Forel)

1902. *Sima birmana* Forel, *Rev. Suisse Zool.*, **10** : 245, W.

1951. *Tetraponera (Tetraponera) birmana,* Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia) **1** : 79.

1995. *Tetraponera birmana,* Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 417.

Distribution : India : Sikkim. *Elsewhere* : Myanmar, Sumatra.

Remarks : Bingham (1903 : 112) mentioned its distribution as Sikkim and Burma.

32. *Tetraponera nigra* (Jerdon)

1851. *Eciton nigrum* Jerdon, *Madras J. Lit. Sci.*, **17** : 112, W.

1999. *Tetraponera (Tetraponera) nigra,* Tiwari, *Memoirs Zool. Surv. India,* **18** (4) : 35, W.

Distribution : India : Sikkim, Maharashtra, Meghalaya, Tamil Nadu, Kerala, Karnataka, Malabar coast, West Bengal. *Elsewhere* : Myanmar, Sri Lanka and extends into the Malayan subregion.

Remarks : Bingham (1903) also recorded this species under the genus *Sima* alongwith some synonyms and mentioned its habitat 'Sikkim' and other places.

V. Subfamily MYRMICINAE Lepeletier

Key to the genera of Myrmicinae

1. Antennae with less than 12 segments 2
- Antennae 12-segmented 6
2. Antennae 10-segmented ..... ***Solenopsis***
- Antennae 11-segmented 3
3. Pedicel attached to dorsal surface of abdomen ..... ***Crematogaster***
- Pedicel attached to middle of front or ventral surface of abdomen 4
4. Pronotum armed with spines or teeth ..... ***Lophomyrmex***
- Pronotum not armed 5
5. Club of antennae formed of apical two joints of flagellum ..... ***Pheidologeton***
- Club of antennae formed of apical three joints of flagellum ..... ***Tetramorium***, pt.
6. Erect hairs on body trifid ..... ***Triglyphothrix***
- Erect hairs on body not trifid, simple 7
7. Flagellum of antennae scarcely thickened towards apex, without distinct club 8
- Flagellum of antennae with distinct club 9
8. Calcaria of posterior pair of legs pectinate ... ***Myrmica***
- Calcaria of posterior pair of legs simple ..... ***Aphaenogaster***

9. Tibiae with simple calcaria 10
- Tibiae without calcaria..... ***Cardiocondyla***
10. Neuters or workers strongly dimorphous ..... ***Pheidole***
- Neuters or workers monomorphous 11
11. Maxillary palpi 4-segmented; erect hairs no body not clavate, antennal furrow generally present 12
- Maxillary palpi 5-segmented; erect hairs on body clavate; no antennal furrow ..... ***Leptothorax***
12. First joint of pedicel with an appendix beneath ..... ***Rhoptromyrmex***
- First joint in pedicel without any appendix beneath ..... ***Tetramorium***, pt.

15. Genus *Aphaenogaster* Mayr.

1853. *Aphaenogaster* Mayr, *Verh. zool.-bot. Ges. Wien*, **3** : 107.

Type-species : *A. sardous* Mayr, 1853.

Key to the species of *Aphaenogaster*

1. Pronotum seen from the front distinctly laterally bituberculate ..... *rothneyi*
- Pronotum not laterally bituberculate 2
2. Antennae very slender; joints 2-7 of flagellum three times as long as broad ..... *cristata*
- Antennae a little more robust joints 2-7 of flagellum only a little longer than broad..... *smythiesi*

33. *Aphaenogaster cristata* Forel

1902. *Stenamma (Aphaenogaster) cristatus* Forel, *Rev. Suisse Zool.*, **10** : 225, W.

1903. *Aphaenogaster cristata*, Bingham, *Fauna Brit. India, Hym.*, **2** : 276.

1951. *Aphaenogaster (Attomyrma) cristatus*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 131.

1995. *Aphaenogaster cristata*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 69.

Material examined : India : Sikkim : North Sikkim, Mangan, 14 W, 31.iii.1997, coll. R.N. Tiwari and party.

Distribution : India : Sikkim, Himachal Pradesh, North-West Himalayas.

Remarks : This is the first record of this species from Sikkim.

34. *Aphaenogaster rothneyi* Forel

1902. *Stenamma (Aphaenogaster) rothneyi* Forel, *Rev. Suisse Zool.*, **10** : 224, W.

1903. *Aphaenogaster rothneyi*, Bingham, *Fauna Brit. India, Hym.*, **2** : 273.

1951. *Aphaenogaster (Attomyrma) rothneyi*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 132.

1999. *Aphaenogaster rothneyi*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 37.

Distribution : India : Sikkim, Meghalaya, Madhya Pradesh, Tamil Nadu, Uttar Pradesh, West Bengal, North-West Himalayas.

Remarks : Bingham (1903) mentioned its distribution 'Sikkim' alongwith other localities.

35. *Aphaenogaster smythiesii* Forel

1902. *Stenamma (Aphaenogaster) smythiesi* Forel, *Rev. Suisse Zool.*, **10** : 222, W, F, M.

1903. *Aphaenogaster smythiesi*, Bingham, *Fauna Brit. India, Hym.*, **2** : 276.

1951. *Aphaenogaster (Attomyrma) smythiesi*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 132.

1995. *Aphaenogaster smythiesii*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 73.

Material examined : India : Sikkim : East Sikkim, Upper Ranipool, 6 W, 18.v.1994, coll. S. Chattopadhyay and S.N. Ghosh.

Distribution : India : Sikkim, Meghalaya, North-West Himalayas.

Remarks : This species is recorded here for the first time from Sikkim.

16. Genus ***Pheidole*** Westwood

1841. *Pheidole* Westwood, *Ann. Mag. Nat. Hist.*, **6** : 87.

Type-species : *Atta providens* Sykes, 1835.

Key to the species/subspecies of *Pheidole*

1. Club of flagellum of antennae formed of apical four joints 2
- Club of flagellum of antennae formed of apical three joints 3
2. Light reddish-brown; head enormous, clypeus not carinate ..... *smythiesii*
- Very dark brown, almost black; head proportionately much smaller, clypeus medially carinate ..... *bhavanae*
3. First joint of pedicel with a projection or appendix beneath 4
- First joint of pedicel with no projection or appendix beneath 5
4. Frontal grooves for reception of scapes of antennae absent ..... *grayi*
- Frontal grooves for reception of scapes of antennae distinct ..... *malinsi*
5. Pro– and mesonotum forming a single convexity; transverse mesonotal furrow obsolete ..... *pronotalis*
- Pro– and mesonotum not forming a single convexity; transverse mesonotal furrow and ridge or carina, or at any rate the latter, always present 6
6. Pronotum convex, lateral tubercles quite or nearly obsolett 7
- Pronotum convex, lateral tubercles sometimes obtuse but always distinct .... *indica himalayana*
7. Base of abdomen finely striate, remaining portion of abdomen smooth and shining..... .....*jucunda fossulata*
- Abdomen entirely smooth and shining..... 8
8. Medial portion of clypeus opaque, longitudinally striate ..... *jucunda*
- Medial portion of clypeus smooth and shining ..... *roberti*

Note : Due to non-availability of detailed description, the species *P. (P) noda stella* Forel could not be included into the key to the species.

36. ***Pheidole bhavanae*** Bingham

1903. *Phidole bhavanae* Bingham, *Fauna Brit. India, Hym.*, **2** : 228, S, W.

1951. *Pheidole bhavanae*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 152.

Distribution : India : Sikkim (8000 ft.) and Meghalaya.

Remarks : Bingham (1903) described this species from Sikkim.

37. ***Pheidole grayi*** Forel

1902. *Pheidole grayi* Forel, *Rev. Suisse Zool.*, **10** : 167 & 187, S. W.

1903. *Phidole grayi*, Bingham, *Fauna Brit. India, Hym.*, **2** : 230.

1951. *Pheidole grayi*, Chapman and Capco, *Monogr. Inst. Sci. Tech. Manila* (Check List Ants Asia), **1** : 142.

Distribution : India : Sikkim, Western India.

Remarks : Bingham (1903) mentioned its distribution as 'so far only from Western India and Sikkim'

38. ***Pheidole indica himalayana*** Forel

1902. *Pheidole indica, race himalayana* Forel, *Rev. Suisse Zool.*, **10** : 185 & 199, S, W-min.

1903. *Phidole himalayana*, Bingham, *Fauna Brit. India, Hym.*, **2** : 265.

1995. *Pheidole indica himalayana*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 322.

Distribution : India : Sikkim, Kashmir.

Remarks : 'The Himalayas from Kashmir to Sikkim' was mentioned as the habitat of this species by Bingham (1903).

39. *Pheidole jucunda* Forel

1885. *Pheidole jucunda* Forel, *J. Asiat. Soc. Bengal*, **54** (2) : 179, S.

2000. *Pheidole (Pheidole) jucunda*, Tiwari *et al.*, *State Fauna Series* 3 : *Fauna of West Bengal*, Part 8 : 264.

Distribution : India : Sikkim, Meghalaya, West Bengal, Western India. *Elsewhere* : Sri Lanka.

Remarks : Bingham (1903) reported this species from Sikkim.

40. *Pheidole jucunda fossulata* Forel

1902. *Pheidole jucunda, race, fossulata* Forel, *Rev. Suisse Zool.*, **10** : 181 & 196, S, W.

1903. *Phidole fossulata*, Bingham, *Fauna Brit. India, Hym.*, **2** : 257.

1951. *Pheidole (Pheidole) jucunda fossulata*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 144.

Distribution : India : Sikkim, Western India.

Remarks : Bingham (1903) mentioned 'this species extends in Sikkim upto 7000 ft.

41. *Pheidole malinsii* Forel

1902. *Pheidole malinsii* Forel, *Rev. Suisse Zool.*, **10** : 167 & 187, S, W.

1903. *Phidole malinsi*, Bingham, *Fauna Brit. India, Hym.*, **2** : 231, S, W.

1951. *Pheidole (Pheidole) malinsii*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 145.

Distribution : India : Sikkim, Tamil Nadu, Meghalaya. *Elsewhere* : Sri Lanka.

Remarks : Bingham (1903) reported Sikkim as its habitat.

42. *Pheidole pronotalis* Forel

1902. *Pheidole pronotalis* Forel, *Rev. Suisse Zool.*, **10** : 173 & 190, S, W, M.

1903. *Phidole pronotalis*, Bingham, *Fauna Brit. India, Hym.*, **2** : 239.

1951. *Pheidole (Pheidole) pronotalis*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), 1 : 148.

Distribution : India : Sikkim, Meghalaya. *Elsewhere* : Sri Lanka.

Remarks : Bingham (1903) reported Sikkim as its only habitat in India.

43. *Pheidole noda stella* Forel

1911. *Pheidole rhombinoda* var. *stella* Forel, *Bull. Soc. Vaud, Sci. Nat.*, **47** : 380, S.

1951. *Pheidole (Pheidole) rhombinoda* var. *stella*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 148.

1995. *Pheidole noda stella*, Bolton, *A New Genl. Cat. Ants* World, *Harvard Univ. Press*, : 330.

Distribution : India : Sikkim.

Remarks : Forel (1911) first described this subspecies as a variety from Sikkim.

44. *Pheidole roberti* Forel

1902. *Pheidole roberti* Forel, *Rev. Suisse Zool.*, **10** : 182 & 198, S, W.

1999. *Pheidole (Pheidole) roberti*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 40.

Distribution : India : Sikkim, Meghalaya, Karnataka, West Bengal.

Remarks : Bingham (1903) mentioned its habitat Sikkim.

45. *Pheidole smythiesii* Forel

1902. *Pheidole (Ceratopheidole) smythiesii* Forel, *Rev. Suisse Zool.*, **10** : 165, 185.

1951. *Ceratopheidole smythiesii*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 135.

1983. *Pheidole smythiesii*, Datta and Raychaudhuri, *AKITU N. Ser.*, **56** : 10.

Distribution : India : Sikkim, Meghalaya, Assam, West Bengal. *Elsewhere* : Singapore.

Remarks : Datta and Raychaudhuri (1983) reported this species as one of the aphidocolous ants of Sikkim.

17. Genus ***Myrmica*** Latreille

1804. *Myrmica* Latreille, *Nouv, Dict. d'Hist. Nat.*, **24** : 179.

Type-species : *Formica rubra* Linnaeus, 1758.

Key to the species of *Myrmica*

1. Medial portion of clypeus produced, angular, the apex obtuse; the scape of antennae not extending beyond the top of head 2
- Medial portion of clypeus not produced, not angular, transverse; the scape of antennae extending beyond top of head ..... *ritae*
2. Length 6 mm.; metanotal spines long, as long as the basal face of metanotum ..... *rugosa*
- Length 3.5-4.5 mm.; metanotal spines short, only about half as long as basal face of metanotum ..... *smythiesii*

46. ***Myrmica rugosa*** Mayr

1865. *Myrmica rugosa* Mayr, *Novara Reise, Zool., Formicid.*, **19**, W.

1983. *Myrmica rugosa*, Datta and Raychaudhuri, *AKITU N. Ser.*, **56** : 8.

Distribution : India : Sikkim and all Himalayan States, North-West India.

Remarks : Datta and Raychaudhuri (1983) reported this species as one of the aphidocolous ants of Sikkim.

47. ***Myrmica ritae*** Emery

1889. *Myrmica ritae* Emery, *Ann. Mus. Civ. Stor. Nat. Genova*, **27** : 501, W.

1903. *Myrmica ritae*, Bingham, *Fauna Brit. India, Hym.*, **2** : 267.

1951. *Myrmica ritae*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants, Asia), **1** : 128.

Material examined : India : Sikkim : East Sikkim, Kyongnosla (26 km. from Gangtok, 10000 ft.), 8 W, 10. v.1994, coll. S. Chattopadhyay and S.N. Ghosh.

Distribution : India : Sikkim. *Elsewhere* : Borneo, Myanmar.

Remarks : This is the first record of this species from the state of Sikkim.

48. ***Myrmica smythiesii*** Forel

1902. *Myrmica smythiesii* Forel, *Rev. Suisse Zool.*, **10** : 226, W.

1903. *Myrmica smythiesi*, Bingham, *Fauna Brit. India, Hym.*, **2** : 269.

1951. *Myrmica smythiesi*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 129.

Material examined : India : Sikkim : East Sikkim, Kyongnosla (26 km. from Gangtok, 10000 ft.) 12 W, 10.v.1994, coll. S. Chattopadhyay and S.N. Ghosh; East Sikkim, Dickling (5000 ft.), 1 W, 20.v. 1994, coll. S. Chattopadhyay and S.N. Ghosh; North Sikkim, Yumthang (9000 ft.), 2 W, 3.iv.1996, coll. R.N. Tiwari and party.

Distribution : India : Sikkim, North-West Himalayas. *Elsewhere* : Siberia, Tibet, Turkistan.

Remarks : Bolton (1995b) also recorded the species *smythiesii* under this genus *Myrmica*.

49. ***Myrmica smythiesii rupestris*** Forel

1902. *Myrmica smythiesii* var. *rupestris* Forel, *Rev. Suisse Zool.*, **10** : 227, W.

1995. *Myrmica smythiesii rupestris*, Bolton, A *New Genl. Cat. Ants World, Harvard Univ. Press*, : 282.

Distribution : India : Sikkim.

Remarks : Forel (1902) first reported *rupestris* as a variety of *M. smythiesii* from Sikkim. Chapman and Capco (1951) also listed this one from Sikkim.

18. Genus ***Pheidologeton*** Mayr

1862. *Pheidologeton* Mayr, *Verh. zool.-bot. Ges. Wie*, **12** : 750.

Type-species : *Ocodoma diversa* Jerdon, 1851.

50. *Pheidologeton diversus* (Jerdon)

1851. *Ocodoma diversa* Jerdon, *Madras J. Lit. Sci.*, **17** : 109. S, W.

1999. *Pheidologeton diversus*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 60.

Diagnostic characters : W. TL 2.5-3.5 mm. Dark chestnut brown; mandibles, antennae and legs yellowish brown; body smooth, polished and shining. Head rectangular, sides straight; mandibles strong; clypeus narrow in the middle; antennae 11-segmented, slender; eyes small, round. Anterior portion of thorax convex; meso-metanotal suture distinct, metanotum depressed, two metanotal spines erect and stout; legs slender. Pedicel with two nodes, 2nd is longer than 1st; abdomen broadly oval.

Distribution : India : Sikkim, Karnataka, Kerala, Maharashtra, West Bengal. *Elsewhere* : Myanmar, Malaysia.

Remarks : Bingham (1903) mentioned Sikkim as one of its habitats.

19. Genus *Crematogaster* Lund

1831. *Crematogaster* Lund, *Ann. Sci. Nat.*, **23** : 132. Type-species : *Formica scutellaris* Oliv., 1792.

Key to the species/subspecies of *Crematogaster*

1. Head smooth and shining, at most with a few half obsolete striae anteriorly 2
– Head not smooth, entirely sculptured 10
2. Club of flagellum of antennae 3-segmented. 3
– Club of flagellum of antennae 2-segmented 9
3. Pronotum sculptured ..... *buddhae*
– Pronotum not sculptured, smooth 4
4. Basal level portion of metanotum sculptured 5
– Basal level portion of metanotum not sculptured, smooth 6
5. Pronotum with distinct lateral obtuse tubercles ..... *sagei*
– Pronotum not tuberculate, convex ..... *walshi*
6. Pro-mesonotal suture obsolete or very slight 7
– Pro-mesonotal suture well-marked, distinct... 8
7. Metanotal spines short, much shorter than the length of basal level portion of metanotum .. .. *politula*
– Metanotal spines long, longer than basal level portion of metanotum..... *ransonneti*
8. Dark brown, abdomen chestnut-red; 1st joint of pedicel as broad as long .....*ebenina*
– Darker, almost black, abdomen reddish-brown, 1st joint of pedicel little longer than broad ... .*ebenina corax*
9. Yellowish brown; 2nd joint of pedicel with a broad longitudinal groove above..... .....*Crematogaster* sp.
– Paler yellow; 2nd joint of pedicel with no longitudinal groove above ..... *biroi*
10. Metanotal spines shorter than metanotum .... *rothneyi*
– Metanotal spines distinctly longer than metanotum 11
11. Pronotum reticulate ..... *rogenhoferi*
– Pronotum longitudinally striate..... ..... *rogenhoferi flava*

Note : Due to non-availability of detailed description of *C. binghamii* Forel, it could not be included in the key to the species.

51. *Crematogaster binghamii* Forel

1904. *Crematogaster binghamii* Forel, *Rev. Suisse Zool.*, **12** : 24, W.

1951. *Crematogaster (Orthocrema) binghamii*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants. Asia), **1** : 96.

1995. *Crematogaster binghamii*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 148.

Distribution : India : Sikkim.

Remarks : Forel (1904) reported this species from Sikkim.

52. *Crematogaster biroi* Mayr

1897. *Crematogaster biroi* Mayr, *Term. Fuzetek*, **20** : 428, W.

1903. *Cremastogastor biroi*, Bingham, *Fauna Brit. India, Hym.*, **2** : 138, W, F.

1951. *Crematogaster (Orthocrema) biroi*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 96.

1999. *Crematogaster biroi*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 49.

Distribution : India : Sikkim, Meghalaya, Karnataka, Uttar Pradesh. *Elsewhere* : Sri Lanka.

Remarks : Bingham (1903) reported Sikkim as one of its habitats.

53. *Crematogaster buddhae* Forel

1902. *Crematogaster buddhae* Forel, *Rev. Suisse Zool.*, **10** : 206, W.

1995. *Crematogaster buddhae*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 149.

Distribution : India : Sikkim, Manipur, Andaman and Nicobar Is., West Bengal, North-West Himalayas.

Remarks : Bingham (1903) mentioned one of its habitats as Sikkim.

54. *Crematogaster ebenina* (Forel)

1902. *Cremastogaster ebenina* Forel. *Rev. Suisse Zool.*, **10** : 199, W, F.

1922. *Crematogaster (Oxygyne) ebenina* Emery, *Genera Insecta*, **174B** : 157.

1999. *Crematogaster ebenina*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 48.

Distribution : India : Sikkim, Karnataka, Maharashtra, Western India. *Elsewhere* : Myanmar.

Remarks : Bingham (1903) reported the species from Sikkim. Chapman and Capco (1951) also mentioned its distribution 'Sikkim' in their Check-List.

55. *Crematogaster ebenina corax* Forel

1902. *Crematogaster ebenina* var. *corax* Forel, *Rev. Suisse* Zool : **10** : 199, W.

1951. *Crematogaster (Oxygyne) ebenina* var. *corax*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 100.

1995. *Crematogaster ebenina corax*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 151.

Distribution : India : Sikkim. *Elsewhere* : Myanmar.

Remarks : Forel (1902) and Chapman and Capco (1951) mentioned its distribution as Sikkim.

56. *Crematogaster rogenhoferi flava* Forel

1886. *Crematogaster flava* Forel, *J. Asiat. Soc. Bengal*, **55** : 248

1995. *Crematogaster rogenhoferi flava*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 153.

1999. *Crematogaster flava*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 43.

Distribution : India : Sikkim, Assam, Kerala, Tamil Nadu, Meghalaya, Andaman and Nicobar Islands, Orissa, West Bengal. *Elsewhere* : Nepal.

Remarks : Bingham (1903) reported Sikkim as one of its habitats.

57. *Crematogaster ransonneti* Mayr

1868. *Crematogaster ransonneti* Mayr, *Verh. zool.-bot. Ges. Wien*, **18** : 287, W.

1903. *Cremastogaster ransonneti*, Bingham, *Fauna Brit. India, Hym.*, **2** : 137, W.

1951. *Crematogaster (Acrocoelia) ransonneti*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 93.

Distribution : India : Sikkim, Karnataka. *Elsewhere* : Sri Lanka.

Remarks : Bingham (1903) reported this species from Sikkim.

58. *Crematogaster rogenhoferi* Mayr

1878. *Crematogaster rogenhoferi* Mayr, *Verh. zool.-bot. Ges. Wien*, **28** : 681, W.

1951. *Crematogaster (Acrocoelia) dohrni rogenhoferi* Chapman and Capco, *Monogr. Inst. Sci. Tech. Manila* (Check List Ants Asia), **1** : 90.

1999. *Crematogaster rogenhoferi*, Tiwari, *Memoirs, Zool. Surv. India*, **18** (4) : 43.

Material examined : India : Sikkim : North Sikkim, Mangan, 8 W, 31.iii. 1996, coll. R. N. Tiwari and party.

Distribution : India : Sikkim, Assam, Manipur, Meghalaya, Andaman and Nicobar Islands, West Bengal, Tamil Nadu, Kerala, Maharashtra, Western India. *Elsewhere* : Myanmar, Sri Lanka, Sumatra.

59. *Crematogaster rothneyi* Mayr

1878. *Crematogaster rothneyi* Mayr, *Verh. zool.-bot. Ges. Wien*, **28** : 681 & 685, W.

1999. *Crematogaster rothneyi*, Tiwari, *Memoirs, Zool. Surv. India*, **18** (4) : 46.

Distribution : India : Sikkim, Meghalaya, Gujarat, Maharashtra, Tamil Nadu, West Bengal.

Remarks : Bingham (1903) mentioned one of its habitats as Sikkim.

60. *Crematogaster walshi* Forel

1902. *Crematogaster walshi* Forel, *Rev. Suisse Zool.*, **10** : 205, W.

1903. *Cremastogaster walshi*, Bingham, *Fauna Brit. India, Hym.*, **2** : 136.

1951. *Crematogaster (Orthocrema) walshi*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia) **1** : 99.

1995. *Crematogaster walshi*, Boltton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 165.

Distribution : India : Sikkim, Meghalaya, Orissa, West Bengal.

Remarks : Bingham (1903) recorded this species from Sikkim.

61. *Crematogaster sagei* Forel

1902. *Cremastogaster sagei* Forel, *Rev. Suisse Zool.* **10** : 204, W, F.

1951. *Crematogaster (Acrocoelia) sagei*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 93.

1995. *Crematogaster sagei*, Bolton, *A, New Genl. Cat. Ants World, Harvard Univ. Press*, : 161.

Material examined : India : Sikkim : East Sikkim, Dickling (5000 ft.), 1 W, 18.v. 1994, coll. S. Chattopadhyay and S. N. Ghosh.

Distribution : India : Sikkim, Haryana, the Himalayas (2000-7000 ft.)

62. *Crematogaster politula* Forel

1902. *Crematogaster subnuda* Mayr, race *politula* Forel, *Rev. Suisse Zool.*, **10** : 207, W.

1983. *Crematogaster politula*, Datta and Raychaudhuri, *AKITU N. Ser.*, **56** : 4.

Distribution : India : Sikkim, Meghalaya, Assam.

Remarks : Datta and Raychaudhuri reported this species as one of the aphidocolous ants from Sikkim.

63. *Crematogaster* sp.

Material examined : India : Sikkim : East Sikkim, Dickling (5000 ft.) 1 W, 18.v. 1994, coll. S. Chattopadhyay and S. N. Ghosh.

20. Genus *Lophomyrmex* Emery

1892. *Lophomyrmex* Emery, *Ann. Mus. Civ. Stor. Nat. Genova*, **22** : 114.

Type-species : *Ocodoma quadrispinosa* Jerdon, 1851.

Key to the species of *Lophomyrmex*

1. Pronotum armed with two spines or teeth.... 2

– Pronotum unarmed ..... *bedoti*

2. Pronotal spines comparatively short; nodes of pedicel punctured and opaque .... *quadrispinosus*

– Pronotal spines longer; nodes of pedicel smooth and shining ..... *burmanus*

64. ***Lophomyrmex bedoti*** Emery

1893. *Lophomyrmex bedoti* Emery, *Rev. Suisse Zool.*, **1** : 192, W, F.

1903. *Lophomyrmex bedoti*, Bingham, *Fauna Brit. India, Hym.*, **2** : 196.

1995. *Lophomyrmex bedoti*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 248.

Distribution : India : Sikkim, Meghalaya. *Elsewhere* : Myanmar, Sumatra.

Remarks : Sikkim was the only place in India which was reported by Bingham (1903) as the habitat of this species.

65. ***Lophomyrmex quadrispinosus*** (Jerdon)

1851. *Ocodoma quadrispinosa* Jerdon, *Madras J. Lit. Sci.*, **17** : 111, W.

1999. *Lophomyrmex quadrispinosus*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 59.

Distribution : India : Sikkim, Meghalaya, Tamil Nadu, Kerala, Karnataka, Orissa, Uttar Pradesh, West Bengal. *Elsewhere* : Sri Lanka.

Remarks : Bingham (1903) mentioned Sikkim as one of its habitats.

66. ***Lophomyrmex burmanus*** Emery

1893. *Lophomyrmex burmanus* Emery, *Rev. Suisse Zool.*, **1** : 192.

1995. *Lophomyrmex birmanus* Bolton, *A New Genl. Cat. Ants. World, Harvard Univ. Press*, : 248.

2000. *Lophomyrmex burmanus*, Mathew and Tiwari, *State Fauna Series* 4 : *Fauna of Meghalaya*, Part 7 : 329.

Distribution : India : Sikkim, Meghalaya. *Elsewhere* : Myanmar.

Remarks : Datta and Raychaudhuri (1983) also reported this species as one of the aphidocolous ants from Sikkim.

21. Genus ***Rhoptromyrmex*** Mayr

1901. *Rhoptromyrmex* Mayr, *Annls. Naturh. Mus. Wien*, **16** : 18.

Type-species : *R. globulinodis* Mayr, 1901.

67. ***Rhoptromyrmex wroughtoni*** Forel

1902. *Rhoptromyrmex wroughtoni* Forel, *Rev. Suisse Zool.*, **10** : 231.

1903. *Tetramorium wroughtoni*, Bingham, *Fauna Brit. India, Hym.*, **2** : 177.

1983. *Rhoptromyrmex wroughtoni*, Datta and Raychaudhuri, *AKITU N. Ser.*, **56** : 10.

Diagnostic characters : W. TL 2.5 mm. Brownish yellow, antennae and legs paler; head and thorax lightly longitudinally striate, abdomen smooth and shining. Head without mandibles trapezoidal, much broader posteriorly than in front mandibles triangular, masticatory margin broad; clypeus convex, anterior margin arched; 12-segmented antennae rather long. Thorax broad and convex anteriorly; constricted at mesonotum; anterior margin of metanotum a little raised behind the distinct meso-metanotal suture, two metanotal spines short, stout, acute and divergent. Pedicel short; 1st node rounded above, anteriorly with a short petiole bearing an appendix beneath; 2nd node transverse, broader than 1st; abdomen oval.

Distribution : India : Sikkim, Meghalaya, Karnataka, Tripura. *Elsewhere* : Myanmar.

Remarks : Datta and Raychaudhuri (1983) reported this species as one of the aphidocolous ant species from Sikkim.

22. Genus ***Tetramorium*** Mayr

1855. *Tetramorium* Mayr, *Verh. zool.-bot. Ges. Wien*, **5** : 423.

Type-species : *Formica caespitum* Linnaeus, 1758.

Key to the species of *Tetramorium*

1. Antennae 11-segmented ..... *tortuosum*

– Antennae 12-segmented 2

2. Clypeus carinate; mandibles smooth, not striate 3

– Clypeus not carinate or toothed; mandibles finely longitudinally striate ..... *christiei*

3. The scape of antennae falling short of the top of the head by about one-fourth of its own length; clypeus with three parallel vertical carinae down the middle ..... *pacificum*

– The scape of antennae falling short of the head by about half of its own length; clypeus with two vertical carinae ..... *bicarinatum*

68. *Tetramorium bicarinatum* (Nylander)

1864. *Myrmica bicarinata* Nylander, *Acta Soc. Scient.*, **2** : 1061.

1977. *Tetramorium bicarinatum*, Bolton, *Bull. Br. Mus. Nat. Hist.*, **36** : 94.

1983. *Tetramorium bicarinatum*, Datta and Raychaudhuri, *AKITU N. Ser.*, **56** : 12.

Distribution : India : Sikkim, Meghalaya, Andaman and Nicobar Islands, Assam.

Remarks : Datta and Raychaudhuri (1983) reported this species as one of the aphidocolous ant species from Sikkim.

69. *Tetramorium christiei* Forel

1902. *Tetramorium christiei* Forel, *Rev. Suisse Zool.*, **10** : 232, W.

2000. *Tetramorium christiei*, Mathew and Tiwari, *State Fauna Series* 4 : *Fauna of Meghalaya*, Part **7** : 308.

Distribution : India : Sikkim, West Bengal. *Elsewhere* : Bhutan.

Remarks : Forel (1902) discribed this species from Sikkim and Bingham (1903) also recorded this species from same locality.

70. *Tetramorium pacificum* Mayr

1870. *Tetramorium pacificum* Mayr, *Verh. zool.-bot. Ges. Wien*, **20** : 976, W, F.

1903. *Tetramorium scabrum*, Bingham, *Fauna Brit. India, Hym.*, **2** : 185.

1951. *Tetramorium pacificum scabra*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 176.

1995. *Tetramorium pacificum*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 412.

Distribution : India : Sikkim, Andaman and Nicobar Islands. *Elsewhere* : Myanmar, Sri Lanka, Sunda Islands, Indonesia (Borneo).

Remarks : Bingham (1903) reported *T. scabrum* from Sikkim which is synonymised as *T. pacificum* by Bolton, 1977.

71. *Tetramorium tortuosum* Roger

1863. *Tetramorium tortuosum* Roger, *Berl. ent. Zeitschr.*, **7** : 181, W.

1903. *Tetramorium tortuosum*, Bingham, *Fauna Brit. India, Hym.*, **2** : 188.

1951. *Xiphomyrmex tortuosus*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 180.

Material examined : India : Sikkim : East Sikkim, Lossing (5000 ft.) 1 W, 19.v. 1994, coll. S. Chattopadhyay and S. N. Ghosh.

Distribution : India : Sikkim. *Elsewhere* : Sri Lanka.

Remarks : This is the first record of this species from Sikkim.

23. Genus *Triglyphothrix* Forel

1890. *Triglyphothrix* Forel, *Ann. Soc. Ent. Belg.*, **34** : 106.

Type-species : T. walshi Forel, 1890.

72. *Triglyphothrix striatidens* (Emery)

1889. *Tetramorium obesum*, race *striatidens* Emery, *Ann. Mus. Civ. Stor. Nat. Genova*, **27** : 501.

1903. *Triglyphothrix striatidens*, Bingham, *Fauna Brit. India, Hym.*, **2** : 173.

1951. *Triglyphotrix striatidens*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 179.

Diagnostic characters : W. TL 2.5 mm.

Head, thorax, pedicel orange-brown, abdomen bright brown; body covered with long, soft dense whitish pilosity. Head very convex, broader posteriorly; mandibles triangular, finely regularly rather closely longitudinally striate; clypeus broad; 12- segmented antennae, scape not reaching to top of the head. Thorax broad, rounded in front; metanotal than broad, 2nd node smaller; abdomen broadly oval.

Distribution : India : Sikkim, Gujarat. *Elsewhere* : Myanmar, Sri Lanka, Tunisia.

Remarks : Bingham (1903) reported this species from Sikkim. Subsequently, Bolton (1995b) synonymised this species with *Tetramorium lanuginosum* Mayr, 1870.

24. Genus ***Solenopsis*** Westwood

1841. *Solenopsis* Westwood, *Ann. Mag. Nat. Hist.*, **6** : 86.

Type-species : *Atta geminata* Fabricius, 1804 (=*Solenopsis mandibularis* Westwood, 1841).

73. ***Solenopsis geminata*** (Fabricius)

1804. *Atta geminata* Fabricius, *Syst. Piez.*, : 423.

1841. *Solenopsis geminata*, Westwood, *Ann. Mag. Nat. Hist.*, **6** : 87.

1983. *Solenopsis geminata*, Datta and Raychaudhuri, *AKITU N. Ser.*, **56** : 11.

Diagnostic characters : W. TL 3-4.5 mm. Pale yellow to reddish yellow; abdomen and boarders of mandibles marked with brown; smooth, shining and polished. Head more less square; mandibles short, stout, 4-dentate; clypeus narrow at the sides, in the middle produced back between antennal carinae, apices of each side projected as small teeth beyond the anterior margin; antennae 10- segmented. Thorax narrow, pronotum rounded anteriorly; pro-mesonotal suture obsolete; mesonotum convex; legs long and slender. 1st node of pedicel squaniform; petiolate anteriorly; 2nd node oval, broader; abdomen oval.

Distribution : India : Sikkim, Karnataka, Kerala, Manipur, Meghalaya, Andaman and Nicobar Islands, Orissa, Tamil Nadu, West Bengal. *Elsewhere* : Spread pretty nearly over the tropics of the two hemispheres (Bingham, 1903).

Remarks : One of the aphidocolous ant-species, as reported by Datta and Raychaudhuri (1983) from Sikkim. Tiwari (1999) also reported the species under same genus.

25. Genus ***Leptothorax*** Mayr

1855. *Leptothorax* Mayr, *Verh. zool.-bot. Ges. Wien*, **5** : 431.

Type-species : *Formica acervorum* Fabricius, 1793.

74. ***Leptothorax rothneyi*** Forel

1902. *Leptothorax rothneyi* Forel, *Rev. Suisse Zool.*, **10** : 230.

1903. *Leptothorax rothneyi*, Bingham, *Fauna Brit. India, Hym.*, **2** : 217.

1951. *Leptothorax rothneyi*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 110.

Diagnostic characters : W. TL 3 mm. Head, abdomen brown to dark brown; thorax and pedicel lighter; mandibles, antennae and legs yellow; head and thorax minutely and closely punctured. Head broadly oval, broader and transverse posteriorly; mandibles minutely longitudinally striate at base; clypeus very convex in the middle antennae 12-segmented; eyes rather large. Thorax anteriorly convex and broad, narrowing posteriorly; basal portion of metanotum rectangular with two triangular erect spines at posterior lateral angles. Pedicel thick, 1st node sloping gradually in front; 2nd node broad, transverse; abdomen oval, anteriorly truncate.

Distribution : India : Sikkim, Madhya Pradesh, Uttar Pradesh, North-West Himalayas.

Remarks : Bingham (1903) recorded one of its habitats as Sikkim. Bolton (1995b) also recorded this species under the same genus.

26. Genus ***Cardiocondyla*** Emery

1869. *Cardiocondyla* Emery, *Ann. Acc. Asp. Nat. Naples, Era* 2, **2** : 20.

Type-species : *C. elegans* Emery, 1869.

75. *Cardiocondyla nuda* (Mayr)

1866. *Leptothorax nuda* Mayr, *Sitz. Akad. Wiss. Wien*, **53** : 508, W.

1903. *Cardiocondyla nuda*, Bingham, *Fauna Brit. India. Hym.*, **2** : 287.

1995. *Cardiocondyla nuda*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 33.

Diagnostic characters : W. TL 2.5-3 mm. Head, thorax and pedicel red, abdomen jet-black; head, thorax and pedicel finely granulate; abdomen highly polished and shining. Head nearly as long as thorax, oval, very convex in front, posteriorly rounded; mandibles broad, armed with 5 teeth; clypeus very narrow; elongated antennae 12-segmented. Thorax narrower than head; anterior angles of pronotum rounded; metanotum cubical, basal portion about twice as long as the truncate apical protion. 2-jointed pedicel about half the length of thorax, posterior node much broader than anterior node; abdomen oval.

Distribution : India : Sikkim, Meghalaya, Andaman and Nicobar Islands, West Bengal. *Elsewhere* : Malaysia, Oceania, Sri Lanka.

Remarks : Bingham (1903) reported this species from Sikkim.

VI. Subfamily DOLICHODERINAE Forel

Key to the genera of Dolichoderinae

1. Base of abdomen not gibbous, not overhanging the pedicel 2
- Base of abdomen gibbous, overhanging the pedicel 3
2. Metanotum laterally compressed, cuneiform, with a basal face more or less horizontal and apical face truncate, vertical often concave, the former passing into the latter by a sharp angle ..... ***Dolichoderus***
- Metanotum not laterally compressed, not cuneiform, rounded; its basal face passing into the obliquely truncate sloping apical face by a more or less rounded curve .... ***Iridomyrmex***
3. Anal orifice apical ..... ***Technomyrmex***
- Anal orifice inferior, not apical ..... ***Bothriomyrmex***

27. Genus *Dolichoderus* Lund

1831. *Dolichoderus* Lund, *Ann. Sci. Nat.*, **23** : 130.

Type-species : *Formica attelaboides* Fabricius, 1775.

Key to the species/subspecies of *Dolichoderus*

1. Head, thorax and abdomen with abundant fine silky pubescence, but entirely without erect hairs 2
- Head thorax and abdomen more or less furnished with erect hairs 3
2. Head and abdomen brownish, thorax yellow or reddish yellow; presence of long longitudinally impressed line from vertex to between the eyes ..... *feae*
- Head, thorax and abdomen dark fuscous brown; no longitudinally impressed line from vertex to between the eyes ..... *Dolichoderus* sp.
3. Head densely punctured, opaque and pubescent, thorax very coarsely punctured... ..... *thoracicus*
- Head smooth and shining, slightly pubescent; thorax less coarsely and irregularly punctured 4
4. Basal portion of metanotum distinctly longer than apical truncate portion, length over 3 mm 5
- Basal portion of metanotum distinctly shorter than apical truncate portion, length under 3 mm ..... *moggridgei*
5. Comparatively short; the legs light reddish brown and markedly pilose ..... *affinis*
- Comparatively long; the legs light yellowish red and comparatively smooth, without pilosity ... . *affinis glabripes*

Note : Due to non-availability of detailed

description, the species *D. moggridgei bicolor* could not be included in the key.

76. ***Dolichoderus affinis*** Emery

1889. *Dolichoderus affinis* Emery, *Ann. Mus. Civ. Stor. Nat. Genova,* **27** : 508, pl. 11, fig. 20, W.

1903. *Dolichoderus affinis*, Bingham, *Fauna Brit. India, Hym.*, **2** : 296.

1951. *Dolichoderus* (*Hypoclinea*) *affinis*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 181.

Distribution : India : Sikkim (upto 7000 ft.), Meghalaya, Assam. *Elsewhere* : Myanmar, Siam.

Remarks : Bingham (1903) reported this species from Sikkim.

77. ***Dolichoderus affinis glabripes*** Forel

1895. *Dolichoderus affinis* var. *glabripes* Forel, *J. Bombay Nat. Hist. Soc.*, **9** : 464, W.

1951. *Dolichoderus* (*Hypoclinea*) *affinis* var. *glabripes*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 182.

1995. *Dolichoderus affinis glabripes*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 174.

Distribution : India : Sikkim.

Remarks : Chapman and Capco (1951) reported the distribution of this species as Sikkim.

78. ***Dolichoderus thoracicus*** (Smith)

1860. *Tapinoma thoracicus* Smith, *J. Proc. Linn. Soc. Zool.*, **5** : 69, W.

1862. *Hypoclinea bituberculata* Mayr. *Verh. zool.-bot. Ges. Wien,* **12** : 705, pl., figs, W.

1995. *Dolichoderus thoracicus*, Bolton, *A New Gent. Cat. Ants World, Harvard Univ. Press,* : 177.

Distribution : India : Sikkim, Meghalaya, West Bengal, Western India. *Elsewhere* : Myanmar, Celebes, Philippines, Sulawesi, Java, Malaya.

Remarks : Bingham (1903 : 295) mentioned one of its habitat as Sikkim.

79. ***Dolichoderus feae*** Emery

1889. *Dolichoderus feae* Emery, *Ann. Mus. Civ. Stor. Nat. Genova,* **27** : 509, pl. 11, fig. 21, W.

1903. *Dolichoderus feae*, Bingham, *Fauna Brit. India, Hym.*, **2** : 294.

1951. *Dolichoderus* (*Hypoclinea*) *feae*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 183.

Material examined : India : Sikkim : East Sikkim, Rangpo valley (near Rangpo), 2 W, 21.v. 1994, coll. S. Chattopadhyay and S. N. Ghosh.

Distribution : India : Sikkim. *Elsewhere* : Myanmar.

Remarks : Bingham (1903) also reported this species from Sikkim.

80. ***Dolichoderus moggridgei*** Forel

1886. *Dolichoderus moggridgei* Forel, *J. Asiat. Soc. Bengal,* **55** : 243, W.

1903. *Dolichoderus moggridgei*, Bingham, *Fauna Brit. India, Hym.*, **2** : 297.

1951. *Dolichoderus* (*Hypoclinea*) *moggridgei*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 184.

Distribution : India : Sikkim (4000 ft.), Assam.

Remarks : Bingham (1903) reported this species from Sikkim, though he expressed his doubtfulness whether he had rightly identified the species.

81. ***Dolichoderus moggridgei bicolor*** Santschi

1920. *Dolichoderus* (*Hypoclinea*) *moggridgei* Forel, var. *bicolor* Santschi, *Ann. Soc. Ent. Belg.*, **60** : 169, W.

1951. *Dolichoderus* (*Hypoclinea*) *moggridgei* var. *bicolor*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 184.

1995. *Dolichoderus maggridgei bicolor*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 172.

Distribution : India : Sikkim (4000 ft.)

Remarks : Santschi (1920) described this subspecies and mentioned its habitat as Sikkim.

82. *Dolichoderus* sp.

Material examined : India : Sikkim : East Sikkim, Lossing (5000 ft.), 12 W, 19. v. 1994, coll. S. Chattopadhyay and S. N. Ghosh.

28. Genus *Technomyrmex* Mayr

1872. *Technomyrmex* Mayr, *Ann. Mus. Civ. Stor. Nat. Genova*, **2** : 147, W, F.

Type-species : *T. strenua* Mayr, 1872.

Key to the species/subspecies of *Technomyrmex*

1. Black, tarsi white or brownish white in marked contrast; pubescence sparse; metanotum rounded ..... *albipes*
- Reddish brown, tarsi slightly paler, not in contrast, pubescence more abundant; metanotum more rounded ..... *albipes brunneus*

83. *Technomyrmex albipes* (Smith)

1861. *Tapinoma albipes* Smith, *J. Proc. Linn. Soc. Lond. Zool.*, **6** : 38, W.

1895. *Technomyrmex albipes*, Forel, *J. Bombay Nat. Hist. Soc.*, **9** : 466.

1903. *Technomyrmex albipes*, Bingham, *Fauna Brit. India, Hym.*, **2** : 301, W, F.

1995. *Technomyrmex albipes*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 402.

Material examined : India : Sikkim : South Sikkim, Melli Bazar, 1 W, 24.v.1994, coll. S. Chattopadhyay and S.N. Ghosh.

Distribution : India : Sikkim, throughout our limits. *Elsewhere* : Java, Sulawesi, New Guinea, Oceania.

Remarks : This is new record of this species from the state of Sikkim.

84. *Technomyrmex albipes brunneus* Forel

1895. *Technomyrmex albipes*, race *brunneus* Forel, *J. Bombay Nat. Hist. Soc.*, **9** : 467.

1903. *Technomyrmex brunneus*, Bingham, *Fauna Brit. India, Hym.*, **2** : 302, W.

1951. *Technomyrmex albipes* subsp. *brunneus*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 194.

1995. *Technomyrmex albipes brunneus*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 402.

Distribution : India : Sikkim, Western India. *Elsewhere* : Myanmar.

Remarks : Bingham (1903) recorded Sikkim as one of its habitats.

29. Genus *Bothriomyrmex* Emery

1869. *Bothriomyrmex* Emery, *Ann. Mus. Zool. Univ. Nap.*, **5** : 117.

Type-species : *Tapinoma meridionalis* Roger, 1863.

Key to the species of *Bothriomyrmex*

1. Head, thorax and abdomen brownish black; mandibles armed with 7 teeth; posterior margin of clypeus not clearly defined ..... *walshi*
- Head, thorax and abdomen pale yellow, slightly tinted with brown; mandibles armed with 4-6 teeth; posterior margin of clypeus well-defined ..... *myops*

85. *Bothriomyrmex myops* Forel

1895. *Bothriomyrmex myops* Forel, *J. Bombay Nat. Hist. Soc.*, **9** : 469 & 471, W, F.

1903. *Bothriomyrmex myops*, Bingham, *Fauna Brit. India, Hym.*, **2** : 306.

1995. *Bothriomyrmex myops*, Bolton, *A New Genl. Cat. Ants. World, Harvard Univ. Press*, : 81.

Distribution : India : Sikkim, Meghalaya, Western India.

Remarks : Bingham (1903) mentioned Sikkim as one of its habitats.

86. *Bothriomyrmex walshi* Forel

1895. *Bothriomyrmex walshi* Forel, *J. Bombay Nat. Hist. Soc.*, **9** : 469, W.

1995. *Bothriomyrmex walshi*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 81.

Distribution : India : Sikkim, West Bengal.

Remarks : Bingham (1903) reported this species under the genus *Bothriomyrmex* and mentioned "Sikkim" as one of its habitats.

30. Genus *Iridomyrmex* Mayr

1862. *Iridomyrmex* Mayr, *Verh. zool.-bot. Ges. Wien,* **12** : 702.

Type-species : *Formica purpureus* Smith, 1858, (=*Formica detecta* Smith, 1858).

87. *Iridomyrmex anceps sikkimensis* Forel

1904. *Iridomyrmex anceps* var. *sikkimensis* Forel, *Rev. Suisse Zool.*, **12** : 27, W.

1995. *Iridomyrmex anceps sikkimensis*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 219.

Distribution : India : Sikkim.

Remarks : Forel (1904) described this as a variety of *I. anceps* and mentioned its distribution as Sikkim.

VII. Subfamily FORMICINAE Lepeletier

Key to the genera of Formicinae

1. Antennae 12-segmented 2
– Antennae 11-segmented 8
2. Head more or less cordiform; eyes large, mandibles trigonal in shape, multidentate; antennae long, scape passing much beyond the occiput, last segment of flagellum much shorter than the preceeding one ..... ***Oecophylla***
– Alternate set of characters 3
3. Antennae inserted at a perceptible distance from posterior margin of clypeus 4
– Antennae inserted immediately above posterior margin of clypeus, almost touching it 5
4. Thorax and node of pedicel not dentate nor spinous, nor with the angles markedly produced; basal two abdominal segments equal or subequal in length ..... ***Camponotus***
– Thorax and node of pedicel spinous or dentate, or with the angles markedly produced; basal segment of abdomen much longer than second segment ..... ***Polyrhachis***
5. Antennal and clypeal hollows separate ..... ***Paratrechina***
– Antennal and clypeal hollows confluent 6
6. Ocelli absent ..... ***Pseudolasius***
– Ocelli present 7
7. Node of pedicel rounded; 4th segment of maxillary palpi nearly twice as long as 5th ..... ***Myrmecocystus***
– Node of pedicel flat; 4th segment of maxillary palpi only a litttle longer than 5th ..... ***Formica***
8. Scape of antennae very long, extending beyond the top of the head by more than half its length ..... ***Anoplolepis***
– Scape of antennae comparatively short; extending very little beyond the top of the head ..... ***Plagiolepis***

31. Genus *Oecophylla* Smith

1861. *Oecophylla* Smith, *J. Proc. Linn. Soc. Lond. Zool.*, **5** : 101, W, F.

Type-species : *Formica smaragdina* Fabricius, 1775 (= *Formica virescens* Fabricius, 1775).

88. *Oecophylla smaragdina* (Fabricius)

1775. *Formica smaragdina* Fabricius, *Syst. Ent.*, : 828, W, pl., figs.

1999. *Oecophylla smaragdina*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 66.

Diagnostic characters : W. TL 8-10 mm. Yellowish red. Head quadrangular without mandibles, posteriorly transverse; mandibles long, dentate, apical tooth acute and curved; clypeus strongly convex, antennae 12-segmented, filiform; eyes large. Thorax elongate; pronotum convex, anteriorly narrowed into a collar; mesonotum saddle-shaped; metanotum rounded above, sutures distinct. Pedicel elongate, scarcely nodiform; abdomen short, oval.

Material examined : India : Sikkim : South Sikkim, Jorethang, C.C.B.F. Karfentar, 12 W, 9 xi. 1994, coll. G.C. Sen and party; South Sikkim, Zoom, 6 km. North of Nayabazar F.R.H., 8 W, 9.iii. 1989, coll. D.K. Mondal and party; East Sikkim, Namtheng, 4 W, 21 v. 1994, coll. S. Chattopadhyay and S. N. Ghosh; East Sikkim, Dickling (5000 ft.), 16 W, 20. v. 1994, coll. S. Chattopadhyay and S.N. Ghosh.

Distribution : India : Sikkim, Meghalaya, Manipur, Orissa, Andaman and Nicobar Is., Tamil Nadu, Karnataka, Kerala, West Bengal and mostly the whole India, except desert and treeless areas. *Elsewhere* : Australia, Myanmar, China, Java, New Guinea, Malaya, Sri Lanka.

32. Genus ***Plagiolepis*** Mayr

1861. *Plagiolepis* Mayr, *Europ. Formicid.*, : 42.

Type-species : *Formica pygmaea* Latreille, 1798.

Key to the species of *Plagiolepis*

1. Length under 2 mm.; colour pale dull brownish yellow; clypeus strongly convex, not carinate; basal portion of metanotum much shorter than its oblique apical portion ..... *dichroa*

– Length over 2 mm.; colour deep reddish brown to black; clypeus strongly medially carinate; basal portion of metanotum about the same length as the oblique apical portion .... *moelleri*

89. ***Plagiolepis dichroa*** Forel

1902. *Plagiolepis dichroa* Forel, *Rev. Suisse Zool.*, **10** : 235.

1995. *Plagiolepis dichroa*, Bolton, *A New Gen. Cat. Ants World, Harvard Univ. Press*, : 335.

Distribution : India : Sikkim, Meghalaya, West Bengal.

Remarks : Bingham (1903) mentioned one of its habitats as Sikkim.

90. ***Plagiolepis moelleri*** Bingham

1903 *Plagiolepis moelleri* Bingham, *Fauna Brit. India, Hym.*, 2 321, W.

1951. *Anacantholepis moelleri*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 213.

Distribution : India : Sikkim.

Remarks : This species was first described by Bingham (1903) from Sikkim.

33. Genus ***Anoplolepis*** Santschi

1914. *Plagiolepis*, subg. *Anoplolepis* Santschi, *Voy. Alluand and Jeannel, Afr. or Hym.*, : 123.

1925. *Anoplolepis*, Emery, *Genera Insect.*, **183** : 16.

Type-sepcies : *Formica longipes* Jerdon, 1851.

91. ***Anoplolepis longipes*** (Jerdon)

1851. *Formica longipes* Jerdon, *Madras J. Lit. Sci.*, **17** : 122, W.

1903. *Plagiolepis longipes*, Bingham, *Fauna Brit. India, Hym.*, **2** : 320.

1999. *Anoplolepis longipes*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 82.

Diagnostic characters : W. TL 3.5-4 mm. Pale yellow, abdomen above with a tinge of brown; very minutely and closely reticulate punctate. Head oval, very rounded posteriorly; mandibles narrow, acutely dentate along the masticatory margin, with the apices crossing; eyes very prominent; antennae long; filiform, joints of flagellum much longer than broad. Thorax narrow, elongate, metanotum rounded and gibbous; legs extremely long and slender. Node of pedicel thick, low, conical; abdomen broadly oval.

Material examined : India : Sikkim, South Sikkim, Melli Bazar, 2 W, 23.v. 1994, coll. S. Chattopadhyay and S.N. Ghosh.

Distribution : India : Sikkim, Meghalaya, Kerala, Andaman and Nicobar Islands, West Bengal, throughout India, except the North-West areas. *Elsewhere* : Australia, Myanmar, Dutch New Guinea, Maffin Bay, Sri Lanka.

Remarks : Bolton (1995b) mentioned this species under the genus *Anoplolepis* with few comments. However, as he (*op. cit.*) does not

designate its position properly, the present authors think that it is correct to retain this species under the genus *Anoplolepis*.

34. Genus ***Formica*** Linnaeus

1758. *Formica* Linnaeus, *Syst. Nat., ed.* 10, **1** : 579.

Type-species : *F. rufa* Linnaeus, 1758.

Key to the species of *Formica*

1. Head and thorax clear yellowish red, abdomen light fuscous brown; head comparatively long and narrow; node of pedicel flat or a little convex, both anteriorly and posteriorly .....*rufibarbis*

– Fuscous or brownish red, head darker than rest of body; head comparatively short and broad; node of pedicel convex in front; more or less flat posteriorly ..... *fusca*

92. ***Formica fusca*** Linnaeus

1758. *Formica fusca* Linnaeus, *Syst. Nat., ed.* 10, **1** : 580, W.

1903. *Formica fusca*, Bingham, *Fauna Brit. India, Hym.*, **2** : 336.

1951. *Formica* (*Serviformica*) *fusca*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 198.

1995. *Formica fusca*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 195.

Distribution : India : Sikkim, Madhya Pradesh, Uttar Pradesh. *Elsewhere* : Widely spread throughout Europe, North Africa, North America and Northern Asia.

Remarks : Bingham (1903) mentioned Sikkim as one of its habitats.

93. ***Formica rufibarbis*** Fabricius

1793. *Formica rufibarbis* Fabricius, *Ent. Syst.*, **2** : 355, W.

1903. *Formica rufibarbis*, Bingham, *Fauna Brit. India, Hym.*, **2** : 335.

1951. *Formica* (*Serviformica*) *rufibarbis*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 198.

1995. *Formica rufibarbis*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 202.

Distribution : India : Sikkim, Himachal Pradesh. *Elsewhere* : Europe and North America.

Remarks : Bingham (1903) reported this species from Sikkim.

35. Genus ***Cataglyphis*** Föerster

1850. *Cataglyphis* Föerster, *Verh. Nat. Ver. Preuss. Rheinl. West.*, **7** : 493.

Type-species : *Formica bicolor* Fabricius, 1793 (=*Cataglyphis fairmairei* Föerster, 1850).

94. ***Cataglyphis setipes*** (Forel)

1894. *Myrmecocystus viaticus*, race *setipes* Forel, *J. Bombay Nat. Hist. Soc.* **8** : 401, W.

1922. *Cataglyphis setipes* Wheeler, *Bull. Amer. Mus. Nat. Hist.*, **45** : 945.

1995. *Cataglyphis setipes*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 137.

1999. *Myrmecocystus setipes*, Tiwari, *Memoirs Zool. Surv. India*, **18**(4) : 67.

Diagnostic characters : W. TL 10 mm. Head, thorax, pedicel dark red, abdomen black, legs almost black; densely setose and spinose. Head without mandibles quadrangular, sides straight; mandibles large, strongly dentate, apical tooth remarkably long, curved and acute; clypeus convex; frontal area triangular; antennae 12-segmented filiform; eyes placed well above the middle line of head; ocelli present. Thorax viewed from side constricted, saddle-shaped, sutures well-marked; pronotum convex; mesonotum long, narrow, rounded above; metanotum short gibbous. Node of pedicel rounded; abdomen comparatively short, oval.

Material examined : India : Sikkim : East Sikkim, Upper Ranipool, 1 W, 18.v. 1994. coll. S. Chattopadhyay and S. N. Ghosh.

Distribution : India : Sikkim, Punjab, Tamil Nadu, Meghalaya, West Bengal, Central India. *Elsewhere* : Persia.

Remarks : This is the first record of this species from the state of Sikkim.

36. Genus ***Pseudolasius*** Emery

1886. *Pseudolasius* Emery. *Ann. Mus. Civ. Stor. Nat. Genova,* (2) **4** [24] : 244.

Type-species : *Formica familiaris* Smith, 1860.

95. ***Pseudolasius familiaris*** (Smith)

1860. *Formica familiaris* Smith, *J. Proc. Linn. Soc. Lond. Zool.*, **4** (suppl.) : 68, W.

1903. *Pseudolasius familiaris,* Bingham, *Fauna Brit. India, Hym.*, **2** : 338.

1995. *Pseudolasius familiaris,* Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 378.

Diagnostic characters : W. TL maj. 6-7 mm., min. 3.5 mm. Reddish yellow to creamy buff, abdomen almost reddish brown; very minutely but closely reticulate-punctate; hairs fairly long; erect; pubescence fine; short and silky, dense on abdomen. Head nearly square without mandibles, broader posteriorly; powerful mandibles with four teeth, innermost broad, others acute; clypeus convex in the middle; depressed at the sides; 12-segmented antennae somewhat short, scape stout; eyes small. Thorax short, narrower than head; pronotum rounded, convex; viewed from above mesonotum circular; basal portion of metanotum much shorter than oblique apical portion; sutures distinct. Node of pedicel quadrangular, posteriorly fitted into a hollow in abdomen; abdomen short, broad and convex.

Distribution : India : Sikkim (4000 ft.), Meghalaya. *Elsewhere* : Myanmar, Celebes, Java.

Remarks : Bingham (1903) mentioned Sikkim as one of its habitat.

37. Genus ***Polyrhachis*** Smith

1857. *Polyrhachis* Smith, *J. Proc. Linn. Soc. Lond. Zool.*, **2** : 58.

1862. *Polyrhachis,* Mayr, *Verh. zool.-bot. Ges. Wien,* **12** : 677.

Type-species : *Formica bihamata* Drury, 1773.

Key to the species of *Polyrhachis*

1. Thorax more or less rounded above, the sides not margined along their whole length 2
– Thorax more or less flat above, the sides margined along their whole length 3
2. Pubescence sparse, almost entirely wanting ..... *thompsoni*
– Pubescence dense, silky and recumbent..... ..... *dives*
3. Pronotum with a short spine or tooth, mesonotum unarmed; metanotum with a lamina, spine or tooth on each side ....*Polyrhachis* sp.
– Pronotum with a long spine; mesonotum unarmed; metanotum with a lamina, spine or tooth on each side 4
4. Pubescence very dense..... *mayri*
– Pubescence absent or very sparse..... *striata*

96. ***Polyrhachis dives*** Smith

1857. *Polyrhachis dives* Smith, *J. Proc. Linn. Soc. Lond. Zool.*, **2** : 64, W.

1999. *Polyrhachis dives,* Tiwari, *Memoirs Zool. Surv. India,* **18** (4) : 75.

Distribution : India : Sikkim, Meghalaya, Tamil Nadu and Eastern Himalayas. *Elsewhere* : Myanmar, China, Indonesia, Japan, Malay, New Guinae, Philippines, Singapore, Sri Lanka, Thailand.

Remarks : Tiwari (1999) reported this species and mentioned its distribution as Sikkim.

97. ***Polyrhachis illaudata*** Walker

1859. *Polyrhachis illaudatus* Walker, *Ann. Mag. Nat. Hist.*, (3) **4** : 373, W.

1995. *Polyrhachis (Myrma) illaudata,* Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 350.

Distribution : India : Sikkim, Tamil Nadu, Meghalaya, Assam, Andaman and Nicobar Is., Karnataka, Kerala, West Bengal. *Elsewhere* : Myanmar, China, Java, Philippines, Sri Lanka, Sumatra, Java, Borneo, Nepal, Formosa.

Remarks : Bingham (1903) also reported *P. **mayri*** Roger, 1863 and mentioned Sikkim as one of its habitats, which was synonymised under *P. **illaudata*** by Bolton (1995b).

98. ***Polyrhachis striata*** Mayr

1862. *Polyrhachis striata* Mayr., *Verh. zool.-bot. Ges. Wien,* **12** : 686, pl. 19, fig. 8, W.

1903. *Polyrhachis striata,* Bingham, *Fauna Brit. India, Hym.,* **2** : 405.

1951. *Polyrhachis (Myrma) striata,* Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 278.

1995. *Polyrhachis (Myrma) striata,* Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 357.

Distribution : India : Sikkim, Meghalaya, Assam. *Elsewhere* : Borneo, Myanmar, China, Java, Malacaa, Sumatra, Indo-China.

Remarks : Sikkim was mentioned as one of the habitats of this species also by Bingham (1903).

99. ***Polyrhachis thompsoni*** Bingham

1903. *Polyrhachis thompsoni* Bingham, *Fauna Brti. India, Hym.,* **2** : 391, W.

1951. *Polyrhachis (Myrmhopla) thompsoni,* Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 298.

1995. *Polyrhachis (Myrmhopla) thompsoni,* Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press,* : 358.

Material examined : India : Sikkim : East Sikkim, Mamrin, 6 W, 21, v. 1994, coll. S. Chattopadhyay and S. N. Ghosh.

Distribution : India : Sikkim. *Elsewhere* : Myanmar.

Remarks : This species is recorded here for the first time from Sikkim.

100. ***Polyrhachis*** sp.

Material examined : India : Sikkim : South Sikkim, Jorethang, 1 W, April, 1996, coll. R.N. Tiwari and party.

38. Genus ***Camponotus*** Mayr

1861. *Camponotus* Mayr, *Europ. Formicid,* : 35.

Type-species : *Formica ligniperda* Latreille, 1802.

Key to the species/subspecies of *Camponotus*

1. Thorax viewed from side forming a regular arch 2
– Regular arch of the throax interrupted by metanotum 10
2. Head, throax and abdomen entirely black or pale yellow 3
– Head, throax and abdomen never all black or all yellow 5
3. Body colour entirely pale yellow; tibiae of legs cylindrical ..... *invidus*
– Body colour entirely black; tibiae of legs prismatic 4
4. Tibiae of the legs without spines beneath ..... *lamarcki*
– Tibiae of the legs with spines beneath ..... *compressus*
5. Median lobe of clypeus produced anteriorly 6
– Median lobe of clypeus not produced anteriorly 7
6. Head reddish yellow ..... *dolendus*
– Head and 3rd following segments of abdomen black ..... *thoracicus*
7. Tibiae cylindrical 8
– Tibiae compressed 9
8. Clypeus medially vertically carinate; without spines on tibiae ..... *barbatus taylori*
– Clypeus not carinate, subtectiform; with few spines on apical third of tibiae beneath ..... *oblongus*
9. Head massive, occiput strikingly wider than the thorax; tibiae spined beneath ..... *arrogans*

- Head comparatively short tibiae without spines beneath ..... *mitis*

10. Regular arch of the thorax interrupted by the metanotum forming an angle with the mesonotum; basal portion of metanotum horizontal, flat or slightly concave; apical portion excavate..... *sericeus peguensis*
- Regular arch of the thorax interrupted by the metanotum being raised, rounded above the gibbous 11

11. Anterior lateral angles of pronotum dentate or subdentate ..... *wasmanni*
- Anterior lateral angles of pronotum rounded, not dentate 12

12. Head black ..... *camelinus*
- Head blood-red ..... *singularis*

101. ***Camponotus compressus*** (Fabricius)

1787. *Formica compressa* Fabricius, *Mant. Insect.*, **1** : 307, W.

1903. *Camponotus compressus*, Bingham, *Fauna Brit. India, Hym.*, **2** : 351, W, F, M.

1999. *Camponotus compressus*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 69.

Material examined : India : Sikkim : East Sikkim, Dickling (5000 ft.), 4 W, 20. v. 1994, coll. S. Chattopadhyay and S. N. Ghosh ; South Sikkim, Melli Bazar, 2 W, 23. v. 1994, coll. S. Chattopadhyay and S.N. Ghosh.

Distribution : India : Sikkim, Orissa, Manipur, Meghalaya, Assam, Tamil Nadu, Andaman and Nicobar Islands, West Bengal. *Elsewhere* : Borneo, Sri Lanka, Nepal, Myanmar, Arabia, Africa, U. S. S. R., Malayan subregion, Philippines.

102. ***Camponotus thoracicus*** (Fabricius)

1804. *Formica thoracica* Fabricius, *Syst. Piez.*, : 397.

1897. *Camponotus maculatus* Fabricius, race *dichrous* Forel, *Bull. Soc. Vand. Sci. Nat.*, **16** : 65, W.

1995. *Camponotus (Tanaemyrmex) thoracicus*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 127.

Material examined : India : Sikkim : East Sikkim, Lossing (Christian Tar, 5000 ft.), 1 W-maj., 19. v. 1994. coll. S. Chattopadhyay and S. N. Ghosh.

Distribution : India : Sikkim, Manipur, West Bengal. *Elsewhere* : Algeria.

Remarks : This is new record of this species from the state of Sikkim.

103. ***Componotus arrogans*** (Smith)

1858. *Formica arrogans* Smith, *Cat. Hym. Brit. Mus.*, **6** : 23, W.

1995. *Camponotus (Tanaemyrmex) arrogans*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 86.

Material examined : India : Sikkim : East Sikkim, Dickling (5000 ft.), 4 W, 20. v. 1994, coll. S. Chattopadhyay and S. N. Ghosh, at night.

Distribution : India : Sikkim, Manipur, West Bengal. *Elsewhere* : Myanmar, Malayan Peninsula, Singapore.

Remarks : This species is recorded here for the first time from Sikkim.

104. ***Camponotus dolendus*** Forel

1892. *Camponotus rufoglaucus* (Jerdon), race *dolendus* Forel, *J. Bombay Nat. Hist. Soc.*, **7** : 227 & 238, W.

1999. *Camponotus dolendus*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 70.

Material examined : India : Sikkim : South Sikkim, Namchi, 2 W, April, 1996. coll. R.N. Tiwari and party.

Distribution : India : Sikkim, Tamil Nadu, Andaman and Nicobar Is., West Bengal, North-West Himalayas.

105. ***Camponotus invidus*** Forel

1892. *Camponotus invidus* Forel, *J. Bombay Nat. Hist. Soc.*, **7** : 225 & 234, W.

1995. *Camponotus (Tanaemyrmex) invidus*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 105.

Material examined : India : Sikkim : South Sikkim, Melli Bazar, 1 W-maj., 23. v. 1994, coll. S. Chattopadhyay and S. N. Ghosh.

Distribution : India : Sikkim, Andaman and Nicobar Islands, Orissa, West Bengal.

Remarks : This is recorded here for the first time from Sikkim.

106. ***Camponotus mitis*** (Smith)

1858. *Formica mitis* Smith, *Cat. Hym. Brit. Mus.*, **6** : 20, W.

1892. *Camponotus maculatus* Fabricius, race *mitis*, Forel, *J. Bombay Nat. Hist. Soc.*, **7** : 230.

1903. *Camponotus mitis*, Bingham, *Fauna Brit. India, Hym.*, **2** : 355, W, F.

1951. *Camponotus (Tanaemyrmex) variegatus mitis*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 252.

Material examined : India : Sikkim : East Sikkim, Lossing (Christian Tar, 5000 ft.), 1 W-maj., 19. v. 1994, coll. S. Chattopadhyay and S. N. Ghosh.

Distribution : India : Sikkim, Tamil Nadu, Andaman and Nicobar Islands. *Elsewhere* : China, Java, New Guinea, Sumatra, Sri Lanka, Timor, Celebes.

Remarks : This is the first record of this species from the state of Sikkim.

107. ***Camponotus lamarcki*** Forel

1892. *Camponotus lamarcki* Forel, *J. Bombay Nat. Hist. Soc.*, **7** : 226 & 236, W.

1903. *Camponotus lamarcki*, Bingham, *Fauna Brit. India, Hym.*, **2** : 365.

1951. *Camponotus (Tanaemyrmex) lamarki*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 248.

1995. *Camponotus (Tanaemyrmex) lamarckii*, Bolton, *A New Gent. Cat. Ants World, Harvard Univ. Press*, : 107.

Distribution : India : Sikkim, Northern India.

Remarks : Bingham (1903) reported this species from Sikkim.

108. ***Camponotus camelinus*** (Smith)

1857. *Formica camelina* Smith, *J. Proc. Linn. Soc. Lond. Zool.*, **2** : 57, W.

1903. *Camponotus camelinus*, Bingham, *Fauna Brit. India, Hym.*, **2** : 373.

1951. *Camponotus (Myrmosaulus) camelinus*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 238.

Distribution : India : Sikkim, Meghalaya. *Elsewhere* : Myanmar, Singapore, Sumatra.

Remarks : Bingham (1903) mentioned Sikkim as the only habitat in India of this species.

109. ***Camponotus oblongus*** (Smith)

1858. *Formica oblonga* Smith, *Cat. Hym. Brit. Mus.*, **6** : 21, W.

1903. *Camponotus oblongus*, Bingham, *Fauna Brit. India, Hym.*, **2** : 358.

1995. *Camponotus (Tanaemyrmex) oblongus*, Bolton, *A New Gent. Cat. Ants World, Harvard Univ. Press*, : 114.

Distribution : India : Sikkim, Assam, West Bengal, Manipur, Andaman and Nicobar Islands. *Elsewhere* : Bhutan, Myanmar, Singapore, Sri Lanka.

Remarks : Bingham (1903) mentioned Sikkim as one of its habitats.

110. ***Camponotus sericeus peguensis*** Emery

1894. *Camponotus sericeus* (Fabricius), subsp. *peguensis* Emery, *Ann. Mus. Civ. Stor. Nat. Genova*, **24** : 479, W.

1951. *Camponotus (Orthonotomyrmex) sericeus* subsp. *peguensis*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 242.

1995. *Componotus (Orthonotomyrmex) sericeus peguensis*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 116

Distribution : India : Sikkim, Assam. *Elsewhere* : Myanmar.

Remarks : Chapman and Capco (1951) mentioned its distribution as Sikkim.

111. *Camponotus singularis* (Smith)

1858. *Formica singularis* Smith, *Cat. Hym. Brit. Mus.*, **6** : 27, W.

1903. *Camponotus camelinus* (Smith), *var. singularis*, Bingham, *Fauna Brit. India, Hym.*, **2** : 373.

1951. *Camponotus (Myrmosaulus) singularis*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 238.

1995. *Camponotus (Myrmosaulus) singularis*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 124.

Distribution : India : Sikkim. *Elsewhere* : Borneo, Myanmar, Java, Singapore, Sumatra.

Remarks : Chapman and Capco (1951) reported this species also from Sikkim.

112. *Camponotus barbatus taylori* Forel

1892. *Camponotus maculatus* Fabricius, race *taylori* Forel, *J. Bombay Nat. Hist. Soc.*, **7** : 229 & 241, W.

1903. *Camponotus taylori*, Bingham, *Fauna Brit. India, Hym.* **2** : 353.

1951. *Camponotus (Tanaemyrmex) barbatus* subsp. *taylori*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 243.

1999. *Camponotus taylori*, Tiwari, *Memoirs Zool. Surv. India*, **18** (4) : 71.

Distibution : India : Sikkim, Maharashtra, Orissa, the Nilgiris, North-West Himalayas. *Elsewhere* : Myanmar, China, Sri Lanka.

Remarks : Bingham (1903) recorded this as a species from Sikkim.

113. *Camponotus wasmanni* Emery

1893. *Camponotus wasmanni* Emery, *Rev. Suisse Zool.*, **1** : 224, W, F.

1903. *Camponotus wasmanni*, Bingham, *Fauna Brit. India, Hym.*, **2** : 375.

1951. *Camponotus (Orthonotomyrmex) wasmani*, Chapman and Capco, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 242.

1995. *Camponotus (Orthonotomyrmex) wasmanni*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 129.

Distribution : India : Sikkim, Meghalaya, Assam, Uttar Pradesh. *Elsewhere* : Myanmar.

Remarks : Bingham (1903) mentioned Sikkim as one of its habitats.

39. Genus *Paratrechina* Motschoulsky

1863. *Paratrechina* Motschoulsky, *Bull. Soc. Nat. Moscou.*, **36** : 13.

Type-specis : *Formica longicornis* Latreille, 1802 (= *P. currens* Motschoulsky, 1863).

114. *Paratrechina aseta* (Forel)

1902. *Prenolepis aseta* Forel, *Ann. Soc. Ent. Belg.*, **46** : 292.

1995. *Paratrechina aseta*, Bolton, *A New Genl. Cat. Ants World, Harvard Univ. Press*, : 312.

Diagnostic characters : W. TL 2.5 mm. Head and abdomen brownish yellow, thorax dull reddish yellow, antennae and legs of a lighter shade than thorax; body minutely punctured with fine and short pubescence. Head rectangular, sides straight; mandibles finely sculptured, armed with 6-teeth; clypeus very convex, subcarinate down the middle; 12-segmented antennae long; eyes small. Thorax compressed; sutures distinct, meso-metanotal suture contains two somewhat prominent stigmata; metanotum raised a little. Pedicel short, somewhat quadrangular node inclined forward; abdomen rounded and gibbous.

Distribution : India : Sikkim, West Bengal.

Remarks : Bingham (1903) reported this species under the genus *Prenolepis* and mentioned one of its habitats as Sikkim.

SUMMARY

This paper deals with the ants collected from different districts of Sikkim by the authors in 1996 and other collections by the various survey parties of the department. Prior to this, Bingham (1903) reported 69 species of ants under 30 genera from Sikkim in his "Fauna of British India, including Ceylon and Burma" Subsequently, Chapman and Capco (1951) included another 15 species under 12 genera from the state of Sikkim in their "Check

List of Ants Asia" Dutta and Raychaudhuri (1983) also recorded 20 aphid attending ants under 16 genera from this region. Although several workers have contributed to the knowledge of ants fauna of India, but no one has exclusively studied the ant fauna of Sikkim.

This is the first attempt by the present authors to consolidate the knowledge of ant fauna of Sikkim. Altogether 114 species including previously reported species under 39 genera and 7 subfamilies have been incorporated in this paper from the state of Sikkim. Out of these, 17 species marked with single asterisk (*) in the "List of Taxa" in Systematic Account, are recorded here for the first time from the state of Sikkim.

Key to the subfamilies, genera and species have been incorporated in this paper, but key to the species include only those species which were studied by the authors, other species so far recorded could not be included in the key to the species, because of insufficient literatures.

ACKNOWLEDGEMENTS

The authors are grateful to Dr. J. R. B. Alfred, Director, Zoological Survey of India, Calcutta for providing necessary facilities to undertake the present work. Thanks are due to Dr. G. K. Srivastava, Scientist-SG, Addl. Director (Retd.), Dr. S. K. Mitra, Scientist-SF (Retd.), Divisional-in-Charge and Dr. J. K. Jonathan, Scientist-SG, Addl. Director (Retd.), Zoological Survey of India, Calcutta for their inspiration and keen interest for the completion of this work. The authors are thankful to Dr. D. Raychaudhuri, formerly Head, Deptt. of Zoology, Calcutta University for rendering report of their work (1983). Thanks are also due to Mr. P. N. Roy and Mr. B. Chakraborty, Hymenoptera Section, Zoological Survey of India, Calcutta for properly setting and pinning the material for the purpose of study. Last but not the least, the authors are thankful to Mr. Sandeep Kumar Tiwari, Ex-Sr. Research Fellow, Zoological Survey of India, Calcutta for consulting various literatures on the group and needful assistance in the preparation of this manuscript.

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Zool. Surv. India.
State Fauna Series 9, Fauna of Sikkim Part-4, 507-512, 2003

INSECTA : HYMENOPTERA : ACULEATA

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INTRODUCTION

The families Apide, Anthophoridae, Megachilidae and Xylocopidae belonging to the Superfamily Apoidea, which include the Bees; the families Vespidae and Eumenidae belonging to the Superfamily Vespoidea which include the yellow-wasps, Hornets and Potter wasps and the family Sphecidae, which includes the Sand-wasps or Mud-Daubers, belonging to the Superfamily Sphecoidea, are mainly dealt herewith, for Aculate Hymeoptera. These insects made their nests in forests and river-sites, from primitive days in this planet Earth and gradually approached near human habitations, afterwards. The bees and honey-bees move from flower to flower with humming sound and collect nectar for honey, which is widely used for medical purpose; they also help pollination while moving among flowers. Wasp-larvae are used as bait for fish-angling. Wasp and Sand-wasps being predatory in nature, can be utilised for biological control of insect-pests in agriculture.

The sting of bee or wasp is fierce and painful, when it bites someone. The Carpenter Bees (Xylocopidae) damage trees by making holes in them for their nests.

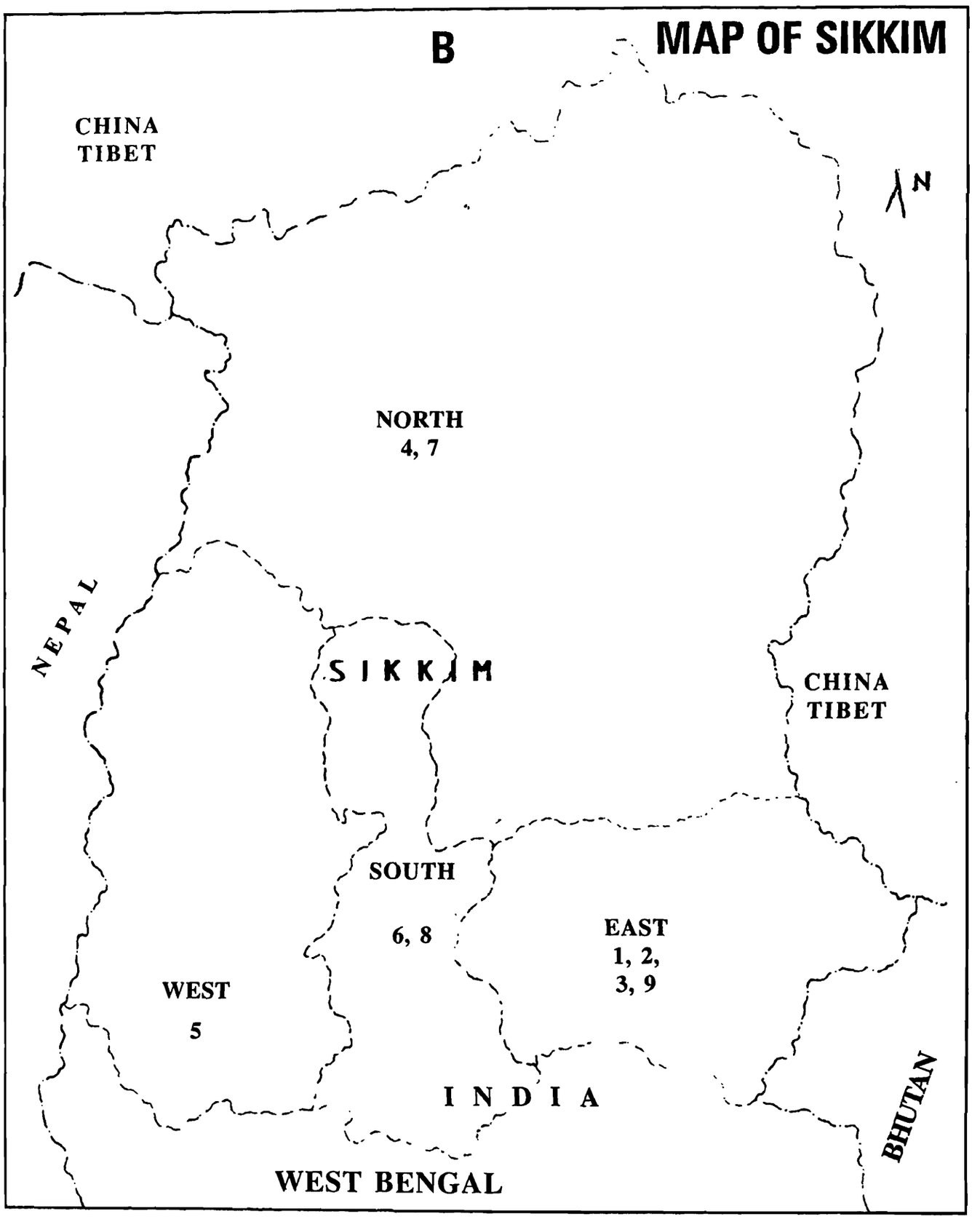
Our knowledge about the Aculeate Hymenoptera of Sikkim for Wasps and Bees is due to Bingham (1897), André (1903), Cameron (1904), Turner (1920), Bluthgen (1927), Richards (1934), Mavromoustakis (1937), Soika (1959, 1972, 1976) and Tkalcu (1968).

The morphological characters of the 'Superfamily Apoidea' for the above cited families are having the followings : Length of the specimens varies from 3-30 mm.; antennae geniculate, stout or filiform, 13-segmented in male, 12-segmented in female eyes small or moderately large in male 'Xylocopa'; thorax globose or subglobose or ovate in shate; forewing with 1-3 cubital cell, hindwing with anal and other closed cells; abdomen 7-segmented in male, 6-segmented in female : thoracic hairs branched or plumose : wings at rest with or without a longitudinal fold : posterior tarsal joint dilated.

The morphological charaters for 'Superfamily Vespoidea' comprising of the above noted families are having the followings : Length of the specimens varies from 11-32 mm.; antenna 13-segmented in male 12-segmented in female, eyes emarginate : forewing with I Discoidal cell elongate and longer than submedian cell : hindwing with anal and other closed cells : legs are of moderate length, without spines, trochanters undivided, mid-tibia with 1 or 2 apical spurs, posterior tarsal joint not dilated, tarsal claws toothed ; thorax and gaster joined by a long slender, short petiole; sting without sheath; male genitalia with spiniform paramere; wings at rest with a longitudinal fold; abdomen 7-segmented in male, 6-sengented in female; thoracic hairs unbranched or plumose.

SYSTEMATICS

There are 250 species known in India of family Apidae, while 5,000 species are recognised from the world; 35 species are recorded from India for family Anthophoridae, while 800 are reported from the world; 55 species are recognised from India, while 1,000 are known from the world for family



1. Distribution of taxa of families Apidae, Anthophoridae, Megachilidae, Xylocopidae, and Eumendae. Number indicates the name of the taxa as treated in the text.

Megachilidae; 33 species are recorded from India, while 4,00 species are known from the world for family Xylocopidae; 100 species are recognised from India, while 350 species are described from the world for family Eumenidae.

MATERIAL AND METHOD

An attempt has been made here to provide a consolidated account of the families Apidae, Anthoporidae, Megachilidae and Xylocopidae (Apoidea) and Eumenidae (Vespoidea) based on the collection of Zoological Survey of India; parties, conducted by Shri D. K. Mandal (1989), Dr. A. K. Hazra (1992), Dr. B. C. Das, Dr. L. K. Ghosh, Shri S. Chattopadhyay and Shri P. H. Roy (1994).

The keys to the families, genera and species for the indentification of various taxa; taxonomic terms alongwith Figures, Distributional Table and Map, are provided for ready reference.

TAXONOMIC TERMINOLOGY

The terms of morphological characters used in the present work are mainly based on the works by Bingham (1897), Bohart and Menke (1976) and Batra (1977); morphological terms are illustrated in figures. A. (1-5).

SYSTEMATIC ACCOUNT

Class INSECTA
Order HYMENOPTERA
Superfamily I APOIDEA

S. No. Name of the species Family

1. *Apis Indica* Fabricius, 1798 APIDAE
2. *Bremus (orientalibombus) orientalis* (Smith), 1853 APIDAE
3. *Crocisa emarginata* Lepel., 1841 APIDAE
4. *Nomia clypeata* Smith, 1875 APIDAE
5. *Anthophora fallax* Smith, 1879 ANTHOPHORIDAE
6. *Megachile amputata* Smith, 1858 MEGACHILIDAE
7. *Xylocopa (Ctenoxylocopa) fenestrata* (Fabricius), 1792 XYLOCOPIDAE
8. *Xylocopa latipes* (Drury), 1770 XYLOCOPIDAE

Superfamily II VESPOIDEA

9. *Eumenes conica* (Fabricius), 1787 EUMENIDAE

Key to the Superfamilies of ACULEATE Hymenoptera

1. Fossorial insects. Lateral angles of pronotum not produced back to the base of wings ..... SPHECOIDEA
– Non-fossorial insects. Lateral angles of pronotum produced back to the base of wings 2
2. Intermediate legs armed with 1/2 tibial calcar ..... VESPOIDEA
– Intermediate legs armed with 1 tibial calcar ..... APOIDEA

Key to the Families of Superfamily APOIDEA

1. Forewing with 2 cubital cells; radial cell broad ..... MEGACHILIDAE
– Forewing with 3 cubital cells; radial cell ovate or elongate 2
2. Maxillary palpi 1-jointed ..... APIDAE
– Maxillary palpi 2/6-jointed 3
3. Thorax ovate ..... ANTHOPHORIDAE
– Thorax globular ..... XYLOCOPIDAE

Superfamily I APOIDEA
Family I APIDAE

Key to the genera of family APIDAE

1. Specimens more hairy and colourful ..... ***Bremus*** Panzer
– Specimens less hairy and colourful 2
2. Ocelli present in a triangle on vertex ..... ***Apis*** Linnaeus
– Ocelli present in a curve on vertex 3
3. Mandibles grooved above, apex with 2 teeth ..... ***Nomia*** Latreille

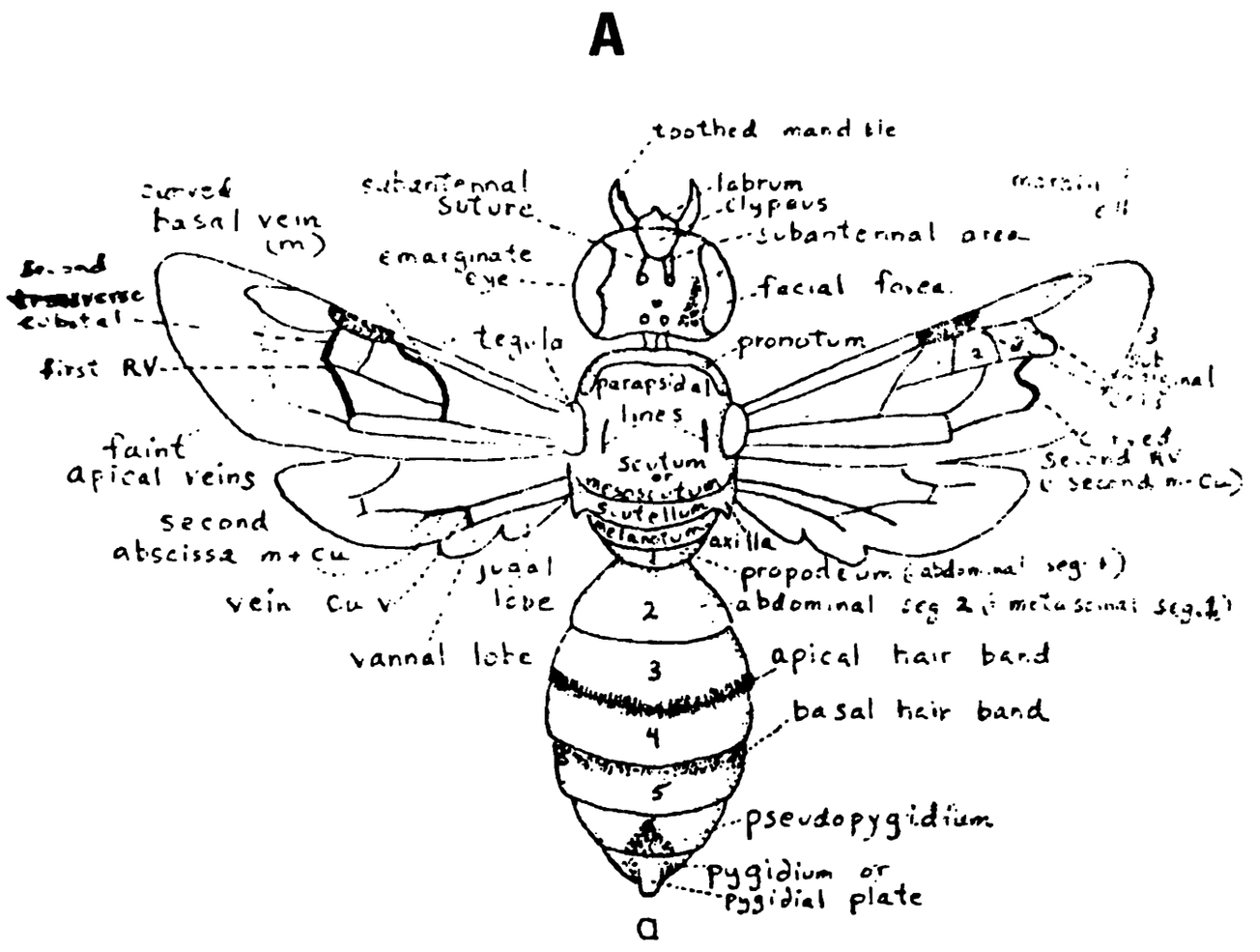


Fig. 1 : Morphological Characters of a Bee.

– Mandibles narrow and simple, acute at apex ..... ***Crocisa*** Jurine

Genus 1. ***Apis*** Linnaeus, 1767

1. ***Apis indica*** Fabricius

1798. *Apis indica* Fabricius, *Ent. Syst.* (suppl.), p. 274.

1985. *Apis indica* Fabricius : Roy and Kundu, *Rec. zool. Surv. India*, **82** (1-4) : 221.

Material examined : India : Sikkim : Singtham (East Sikkim); 2 Workers, Coll. P. H. Roy, 15.iv. 1994.

Diagnostic characters : The species comprises medium-sized honey bees (11-12 mm), they choose hollow trees to build in.

Distribution : India : Sikkim (new record); throughout India. *Elsewhere* : Sri Lanka, Myanmar, Malaysia, Madagascar.

Genus 2. ***Bremus*** Panzer, 1801

2. ***Bremus (Orientalibombus) orientalis*** (Smith)

1854. *Bombus orientalis* Smith, *Cat. Hym. Brit. Mus. London*, **2** : 402.

1935. *Bremus (Orientalibombus) orientalis* (Smith) : Frison, *Rec. Indian Mus.*, **37** : 359.

Material examined : India : Sikkim : Tadong (East Sikkim); 2 Males, 2 Workers, Coll. L. K. Ghosh, 10. iii. 1994.

Diagnostic characters : The specimens of this species look very beautiful for having colourful hairs on body.

Distribution : India : Sikkim; throughout India (commonly found in Sikkim and Darjeeling).

Genus 3. ***Crocisa*** Jurine, 1807

3. ***Crocisa emarginata*** Lepeletier

1841. *Crocisa emarginata* Lepeletier, *Hist. Nat. Ins. Hym.*, 2 : 449.

1985. *Crocisa emarginata* Lepeletier : Roy and Kundu, *Rec. zool. Surv. India*, **82**, (1–4) : 222.

Material examined : India : Sikkim : Ranipool (East Sikkim); 2 Females, Coll. B. C. Das, 26. v. 1994.

Diagnostic characters : Forewing with few hyaline spots; scutellum posteriorly with a shallow second-bracket shaped emargination.

Distribution : India : Sikkim; Arunachal Pradesh; throughout India.

Genus 4. ***Nomia*** Latreille, 1805

4. ***Nomia clypeata*** Smith

1875. *Nomia clypeata* Smith, *Trans. Ent. Soc.*, p.54.

1897. *Nomia clypeata* Smith : Bingham, *Fauna Brit. India* (Hym.), 1 : 456.

Material examined : India : Sikkim : Lachen (North Sikkim); 2 Males, Coll. D. K. Mandal, 28. vii. 1989.

Diagnostic characters : Pubescence present only on abdominal margins; clypeus transverse, produced anteriorly.

Distribution : India : Sikkim (new record) : West Bengal. *Elsewhere* : Myanmar.

Family II ANTHOPHORIDAE

Genus 5. ***Anthophora*** Latreille, 1802

5. ***Anthophora fallax*** Smith

1879. *Anthophora fallax* Smith, *New Sp. Hym. Brit. Mus.*, p. 120.

1897. *Anthophora fallax* Smith : Bingham, *Fauna Brit. India* (Hymenoptera), 1 : 528.

Material examined : India : Sikkim : Nayabazar (West Sikkim); 2 Females, Coll. B. C. Das, 3. vi. 1994.

Diagnostic characters : Abdomen with 1–4 with white transverse pubescence on apical margins, 5–6 with black hairs.

Distribution : India : Sikkim (new record); Western India; Uttar Pradesh. *Elsewhere* : Myanmar, Sri Lanka, South and West Africa.

Family III MEGACHILIDAE

Genus 6. ***Megachile*** Latreille, 1802

6. ***Megachile amputata*** Smith

1858. *Megachile amputata* Smith, *J. Linn. Soc.*, p. 45.

1975. *Megachile amputata* Smith : Chhotani and Ray, *Rec. zool. Surv. India*, **71** : 30.

Material examined : India : Sikkim : Namchi (South Sikkim); 1 Female, Coll. A. K. Hazra, 10. xi. 1992.

Diagnostic characters : Basal 2 abdominal segments and transverse narrow fasciae on segments 3–5 with fulvous-red pubescence.

Distribution : India : Sikkim; Rajasthan. *Elsewhere* : Myanmar, Indonesia.

Family IV XYLOCOPIDAE

Genus 7. ***Xylocopa*** Latreille, 1802

7. ***Xylocopa (Ctenoxylocopa) fenestrata*** (Fabricius)

1798. *Apis fenestrata* Fabricius, *Ent. Syst.* (Supp.) **3** : 273.

1975. *Xylocopa (Ctenoxylocopa) fenestrata* (Fabricius) : Chhotani and Ray, *Rec. zool. Surv. India*, **71** : 33.

Material examined : India : Sikkim : Yathang (North Sikkim); 1 Male, Coll. D. K. Mandal, 28. vii. 1989.

Diagnostic characters : Pubescence of body black; wings dark fuscous with purple and coppery effulgence.

Distribution : India : Sikkim (new record); Rajasthan; throughout India. *Elsewhere* :

Myanmar, Sri Lanka, Pakistan, Nepal, Iran, Mauritius, Madagascar, Brazil.

8. ***Xylocopa latipes*** (Drury)

1770. *Xylocopa latipes* Drury, *Ill. Exot. Ins.*, **2**.

1938. *Xylocopa latipes* Drury : Maa, *Rec. Ind. Mus.*, **40** : 325–327.

Material examined : India : Sikkim : Mellibazar (South Sikkim); 1 Male, Coll. S. Chattopadhyay, 21. v. 1994.

Diagnostic characters : Pubescence of body black or sooty-brown; antennal scape flat and broad at apex.

Distribution : India : Sikkim; West Bengal; Assam; Uttar Pradesh; Madhya Pradesh; Kerala. *Elsewhere* : Myanmar, China, Malaysia.

Superfamily II VESPOIDEA

Key to the families of superfamily Vespoidea

1. Species social. Claws of tarsi simple..... ..... VESPIDAE*

– Species solitary. Claws of tarsi dentate..... ..... EUMENIDAE

Family I EUMENIDAE

Genus 8. ***Eumenes*** Latreille, 1805

9. ***Eumenes conica*** (Fabricius)

1787. *Vespa conica* Fabricius, *Mant. Ins.*, **1** : 293.

1926. *Eumenes conica* (Fabricius) : Hingston, *J. Bombay, Nat. Hist. Soc.*, **31** : 241.

Material examined : India : Sikkim : Rangpo (East Sikkim); 1 Female, Coll. A. K. Hazra, 12. xi. 1992.

Diagnostic Characters : II abdominal segment red at base with a black transverse band.

Distribution : India : Sikkim (new record) : throughout the plains of India. *Elsewhere* : Myanmar, Sri Lanka, China, Malaysia.

SUMMARY

9 species belonging to the families Apidae, Anthophoridae, Megachilidae, Xylocopidae and Eumenidae are recorded and discussed in this paper, for Aculeate Hymenoptera, of which 5 species, are found as new locality records from Sikkim. So, at present the total species-record from this state, for these families stand as 125 species (including the species known in Fauna of British India (1897) and after the publication of this, till 1994).

ACKNOWLEDGEMENT

The author acknowledges his grateful thanks to the Dr. J.R.B. Alfred, Zoological Survey of India, Kolkata, for laboratory facilities; thanks are also due to Shri Rati Ram, P.P.O. for helping in various ways.

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