

THE LEPIDOPTEROUS FAUNA OF THE ANDAMAN ISLANDS : FAMILY CTENUCHIDAE

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(With 5 Text figures)

I. INTRODUCTION

The present study is based on some 60 specimens, representing three genera and five species, collected by various survey parties of Zoological Survey of India during the last one decade or so, from North, Middle and South Andaman Islands. Two of these species, *Amata (A.) cingulata* (Weber) and *Ceryx imaon* (Cramer), are reported from these islands for the first time (Arora, 1976). Zerny (1912) and Fletcher (1925) listed five species in all, excluding the above-mentioned species, from these islands. One species, *Amata (A.) pectoralis* (Walker), was not collected in the present surveys and the description is based on earlier published literature. It has also been briefly reported (Arora, 1976), that while *A. (A.) cingulata* (Weber) is a first specific report from India, particularly from the Andaman Islands, the other species, *Ceryx imaon*, is well known from the Indian mainland and the present record from the Andaman Islands constitutes the first record, thus bringing the total to seven species so far recorded from these islands.

II. SYSTEMATIC ACCOUNT

Family CTENUCHIDAE

Proboscis well developed or aborted. Labial palpi present, short and porrect, long and down-curved or upturned. Frons simple, rounded. Antennae variable, being either simple or with short branches in males, or simple in both the sexes. Tibiae with the spurs short. Fore wing with vein 3A forming a fork with 2A ; 1A absent ; M_2 from near the lower angle of cell ; R_5 stalked with R_3+R_4 . Hind wing small ; Sc absent, rarely rudimentary from base and not reaching costa, or forming a fork with R_s ; frenulum present, retinaculum bar-shaped ; 3A often absent.

Key to the identification of Andaman genera

1. Hind wing with the veins R_s-M_1 coincident ; M_2 and Cu_{1b} present. Fore wing with the veins R_1-R_5 stalked. Antennae normal 2.

- Hind wing with the veins Rs-M₁ not coincident; M₂ and Cu_{1b} absent. Fore wing with the veins R₁ free, R₂-R₅ stalked. Antennae with the medial part of shaft dilated *Euchromia* Hübner (1 species)
2. Hind wing with the veins M₃ and Cu_{1a} absent *Ceryx* Wallengren (1 species)
- Hind wing with the veins M₃ absent, Cu_{1a} present 3.
3. Hind and mid tibia with two pairs and one pair of spurs, respectively *Amata* Fabr. (3 species)
- Hind and mid tibia each with one pair of minute spurs *Eressa* Walker (2 species)

Genus *Euchromia* Hübner

1820. *Euchromia* Hübner, *Verz. bek. Schmett.* : 121.

Type : *Zygaena guineensis* Fabr., 1775.

Diagnosis.—Labial palpi upturned, not reaching vertex of head. Antennae slightly dilated at the middle, bipectinate, with moderate branches. Legs with the tibial spurs short. Fore wing with vein R₁ free; R₂-R₅ stalked; M₁ from upper angle of cell; M₂, M₃ and Cu_{1a} from lower angle of cell or Cu_{1a} from near angle. Hind wing with the cell moderate; Rs-M₁ stalked or connate; M₂ and Cu_{1b} absent; M₃ and Cu_{1a} stalked or from angle of cell.

Distribution.—African, Oriental, Malaysian and Australian regions.

Remarks.—One species, *E. polymena* (Linn.), is known to occur in Andaman Islands.

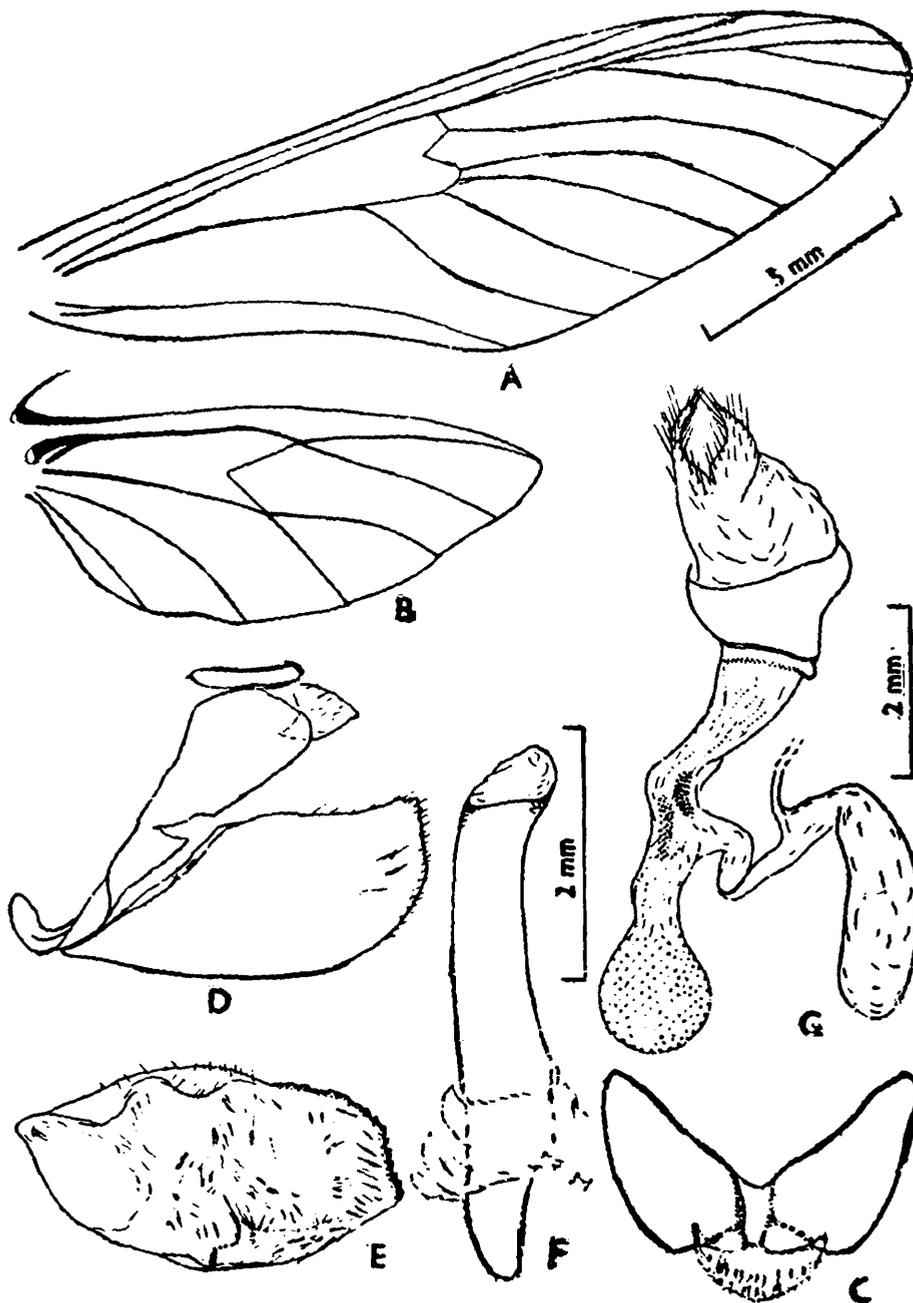
1. *Euchromia polymena* (Linn.)

(Text-fig. 1A-G)

1758. *Sphinx polymena* Linn., *Syst. Nat.*, Ed. X : 494 (*Type loc.*—Asia).

Black brown. Head with the frons white; tegulae crimson; patagia with a white patch at its base; white patches also present laterally on thorax and on coxae. Abdomen generally with crimson band on 1st, 4th & 5th segment, sometimes one or all the bands become yellowish; 2nd and 3rd segment with bluish lustre, becoming whitish on sides. Wings with the ground colour same as of the body; patches yellowish; blue lustre present at the base and along discocell,

ular ; an elongate wedge-shaped spot present in the cell, continued below the median vein up to the inner vein into an equally large quadrate spot ; a spot also present at the base between median and inner vein ; four spots present beyond the cell between veins R_5 and Cu_{1a} . Hind wing with the patches of the same colour as on the fore wing ; three wedge-shaped spots from base to one-third of the cell and a row of four large spots beyond the cell between R_s and Cu_{1a} .



Text-fig. 1.—*Euchromia polymena* (Linnaeus) : A & B—Fore and hind wing venation respectively, C—Uncus with tegumen, in dorsal view, D—♂ genitalia, in lateral view, E—Clasper, inner view, F—Aedeagus, G—♀ genitalia. (A & B of the same magnification and C-E same magnification as F).

Head with the frons smooth. Antennae bipectinate from basal 5th or 6th segment onwards, nearly up to a few segments from the

tip, which is simple ; shaft slightly dilated at the middle, with the branches longest in the middle, about the length of three segments. Labial palpi nearly porrect or with the 3rd segment slightly upturned. Legs with a single pair of spurs on mid tibia and two pairs on hind tibia ; tarsi with minute spines, tarsal claws with arolium.

Venation (Text-fig. 1, A-B).—Fore wing with vein R_1 arising free from before the cell angle ; R_2 - R_5 stalked, R_2 arising between R_5 and cell angle, rather nearer to R_5 than to the angle ; M_1 from just below the angle ; M_2 - M_3 above the lower angle ; Cu_{1a} from lower angle, Cu_{1b} from behind. Hind wing with the veins R_s present and not coincident with M_1 ; M_2 - Cu_{1b} absent ; M_3 - Cu_{1a} from near the lower angle of cell.

Genitalia.—Male (Text-fig. 1, C-F) : Uncus simple, short, dome shaped. Tegumen long, about twice as broad apically as its base ; vinculum U shaped, with very short, blunt and upturned obsolete saccus. Claspers short and broad ; the apical margin denticulate. Aedeagus simple, long and narrow ; the base blunt, with the ductus ejaculatorius entering on one side ; cornuti wanting. Female (Text-fig. 1, G) : Ostium bursae well protected by a broad, highly sclerotised plate ; ductus bursae long and broad, membranous for the most part, with a few sclerotised patches, the surface of which is ornamented with very minute spines ; corpus bursae heavily granulate and sclerotised, pea-shaped ; receptaculum seminalis large, broadly bean-shaped, membranous ; papillae anales well developed, short and broad.

Material examined.—INDIA : West Bengal, Calcutta, 5 ♂♂, 9 ♀♀ ; Assam, Cachar, 2 ♀♀, Sibsagar, 1 ♂, (no other data) ; South Andaman, Chiriatapu, 1 ♀, 19. iii. 1975 (G. K. Srivastava coll.). SRILANKA : Peradeniya, 1 ♀, - xi. 05. BURMA : Rangoon, 1 ♀, -xii. 1886.

Expanse.—Male, 42-49 mm ; Female, 44-52 mm.

Distribution.—India : Maharashtra (Bombay) ; Tamil Nadu (Nilgiris, Coimbatore) ; Kerala (Travancore) ; Nagaland ; Andamans. Also Bangladesh (Dacca) ; Sri Lanka ; Philippines ; Burma ; and Indonesia.

Remarks.—*Euchromia polymena* (Linn.) is reported (Fletcher 1925, Seitz, 1933) to occur in the Andaman Islands, besides on the Indian mainland. Presently, the species is represented from these areas by a single female example.

Genus *Ceryx* Wallengren

1863. *Ceryx* Wallengren, *Wien. Ent. Mon.*, 7 : 140.

Type : *Naclia anthraciformis* Wallengren (1860).

Diagnosis.—Labial palpi porrect, not extending beyond the frons. Fore wing with vein R_1 - R_5 stalked; M_1 from or from below the upper angle of cell. Hind wing with Rs coincident with M_1 ; M_2 present; M_3 and Cu_{1a} absent; Cu_{1b} from behind the angle of cell. Mid and hind tibia each with a minute terminal pair of spurs, hind tibia rarely with two pairs.

Distribution.—Mainly Indo-Australian regions. Also in part of African region.

Remarks.—Fletcher (1925) recorded eight species of *Ceryx* from the Indian region, including one from Burma but none from the Andaman Islands. The present record of the *Ceryx imaon* extends the known distribution of the genus (Hampson, 1898) from the Indian mainland to the Andaman Islands.

2. *Ceryx imaon* (Cramer)

(Text-fig. 2, A-F)

1780. *Sphinx imaon* Cramer, *Papil. Exot.*, 3 : 94, pl. 248, fig. E.

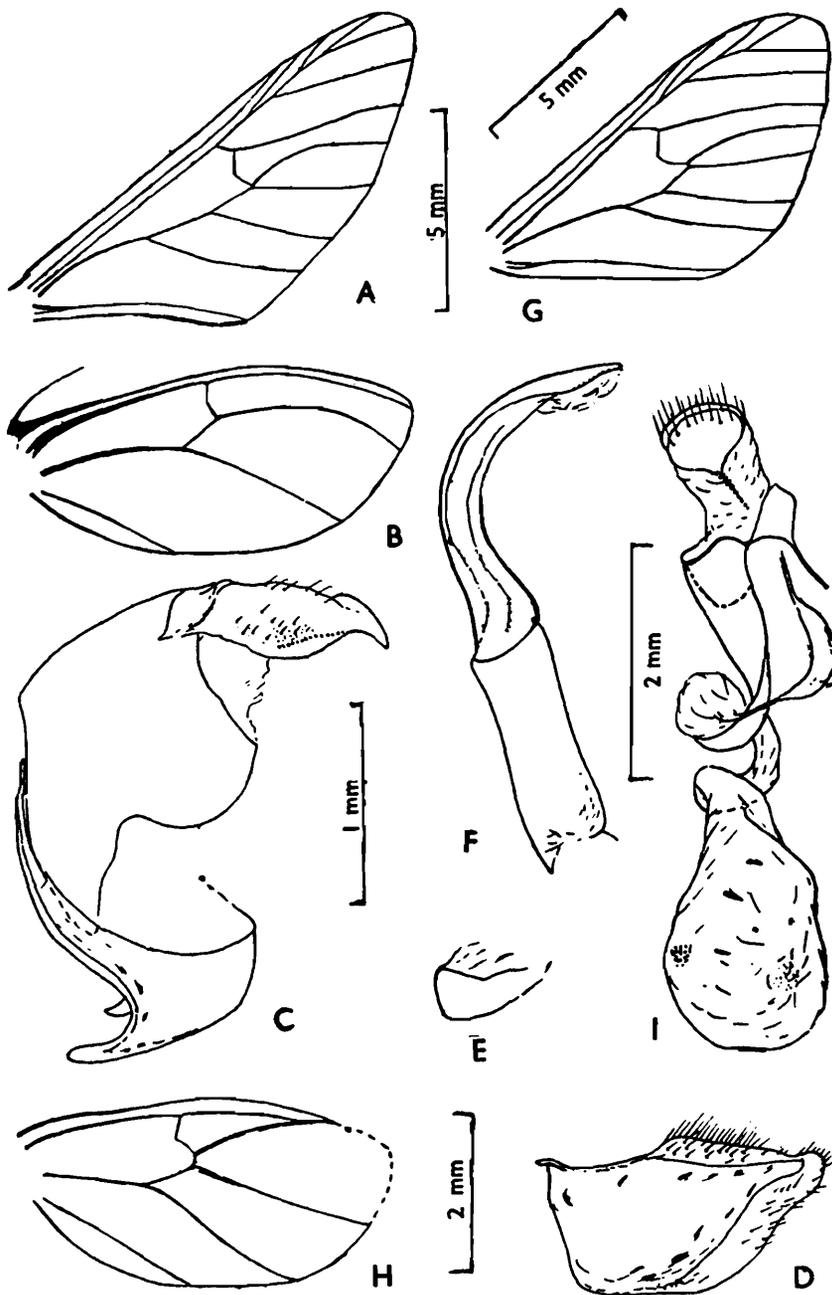
Head with the frons whitish; labial palpi black. Antennae black throughout except at some apical segments which are whitish; collar orange. Thorax black; orange spots present on the underside. Abdomen black, with two orange bands. Fore wing black; a large wedge shaped hyaline patch present in end of cell; an elongate spot below cell and vein Cu_{1b} , and a short spot above Cu_{1b} present; two conjoined spots between M_3 and Cu_{1a} and a large wedge-shaped spot above vein R_5 with an extremely small one above it. Hind wing with three large conjoined spots, covering the space below the cell, in the cell and a little beyond it. Legs with whitish scaling on tarsal segments.

Frons smooth. Labial palpi short and porrect. Antennae simple. Legs with a single pair of minute tibial spurs on mid and hind tibiae.

Venation (Text-fig. 2, A-B).—Fore wing with the veins R_1 - R_5 stalked, R_1 arising a little before the origin of vein R_5 , R_2 equidistant between R_3 and R_5 . Hind wing venation as given for the genus.

Genitalia.—Male (Text-fig. 2, C-F) : Uncus short, sclerotised lightly and beset with some hairs on the upper side; the base broader than the tip which is sharply bent downwards and pointed; the basal part raised mid dorsally into a ridge. Tegumen broader throughout except at its ventral part which is narrowed and continued into narrow vinculum, the latter produced inwardly into short prolongations, instead of a single saccus. Claspers simple, the mid-dorsal margin sclerotised and beset with some setae; the apex narrowed; juxta simple, slightly sclerotised, forming almost a cup-shape under the

aedeagus ; the latter with a well developed base, the apical part about twice the length of basal part, smoothly curved in the middle giving it a 'sickle shape', the tip narrow and without any cornutal spine. Female. Not known.



Text-fig. 2.—*Ceryx imacon* (Cramer) : A & B—Fore and hind wing venation, respectively, C—♂ genitalia in lateral view, D—Clasper in inner view, E—Juxta, F—Aedeagus ; *Amata phoenicozona* (Hampson) : G & H—Fore and part of the hind wing venation, respectively, I—♀ genitalia. (B of same magnification as H and D—F same as C).

Material examined.—North Andaman ; Mayabunder, 1♂, 26.iii. 1969, (T. D. Soota coll.).

Expanse.—26 mm.

Distribution.—India : Assam (Khasi Hills, Cachar) ; Meghalaya (Shillong) ; Sikkim ; West Bengal ; Kashmir ; Himachal Pradesh ; Maharashtra (Bombay) ; and Tamil Nadu (Nilgiris). Also Indonesia ; Sri Lanka ; and Burma.

Remarks.—*Ceryx imaon* (Cramer) was known previously from the Indian mainland, Hongkong, Sri Lanka and Burma. The present report is a new record for the Andaman Islands, and is of zoogeographical interest.

Genus *Amata* Fabricius

1807. *Amata* Fabricius, *Illiger's Mag.*, 6 : 289.

Type : *Zygaena passalis* Fabr., 1775.

Diagnosis.—Head with the frons mostly smooth. Antennae in male either pectinate or simple, slightly broadened beyond middle. Labial palpi short, down-curved and hairy ; 3rd segment extremely reduced. Fore wing long and rather narrow ; veins R_1 - R_5 stalked ; M_1 from near upper angle of cell ; M_2 - M_3 from lower angle or stalked. Hind wing with the vein Rs coincident with M_1 ; M_3 absent ; M_2 and Cu_{1a} from angle or stalked, rarely M_2 slightly above the angle. Hind tibia with two pairs of spurs.

Distribution.—Europe, the whole of African, Oriental and Australian regions.

Remarks.—Fletcher (1925) recorded as many as forty species from India, including three from Andaman Islands : *A. pectoralis* (Walker), *A. phoenicozona* (Hampson) and *A. wimberleyi* (Swinhoe). Another species, *A. cingulata* (Weber), is here added to the Andaman fauna. The present study of the wing venation has shown that in *A. phoenicozona* veins M_2 - Cu_{1a} in hind wing are quite separate at base as in the genus *Eressa* Walker but the species can be differentiated from that genus in having two pairs of spurs on the hind tibia. In *Eressa* there is only a single terminal spur.

Obraztsov (1966), revising the palaearctic species of the genus *Amata* Fabr., divided it into two subgenera, *Amata* Fabr. and *Syntomis* Ochseneimer, on the basis of male genitalic characters, about as follows :

- Basal process of both claspers undeveloped, or simple and fused together with the membranes of aedeagus above through the tip Subgenus *Amata* Fabr.
- Basal process of at least one of the claspers well developed, with the end free, fused together with the aedeagus above only at basal part Subgenus *Syntomis* Ochseneimer.

Key to Andaman species based on external characters

- | | | | | | |
|---|-----|-----|-----|----------------------------------|---|
| 1. Antennae bipectinate in male, serrate in female. Abdomen with the markings crimson. Hind wing with the patches hyaline, the veins and margin black | ... | ... | ... | ... | 2 |
| — Antennae simple in both sexes. Abdomen with the markings yellow or orange | ... | ... | ... | ... | 3 |
| 2. Frons whitish | ... | ... | ... | <i>A. pectoralis</i> (Walker) | |
| — Frons black | ... | ... | ... | <i>A. phoenicozona</i> (Hampson) | |
| 3. Wings with the markings orange. Frons orange. Abdomen with orange marking on each segment | ... | ... | ... | <i>A. wimberleyi</i> (Swinhoe) | |
| — Wings with the markings hyaline. Frons black. Abdomen with orange marking on 1st and 5th segment only | ... | ... | ... | <i>A. cingulata</i> (Weber) | |

3. *Amata pectoralis* (Walker)

1854. *Syntomis pectoralis* Walker, *List Lep. Het. Brit. Mus.*, 1 : 133 (Type loc.-Moulmein).

“♀ : Black, shot with metallic blue green, frons, patagia and tips of antennae white ; thorax with crimson patches behind the mid legs ; metathorax and first two segments of abdomen crimson. Fore wing with wedge-shaped milky hyaline patch in cell ; an elongate patch below cell and vein 2 ; a spot above origin of vein 2 ; patches between veins 3 and 5 extending almost to margin ; an elongate patch above vein 6 and spot above vein 7. Hind wing hyaline, the veins and margins narrowly black.

“*Ab.*—1. Forewing with no spot above vein 2.—Andamans

“*Hab.*—Moulmein (*Clerk*), type ; Tenasserim, Dawnat Hills (*de Niceville*) ; Cambodia (*Mouhot*). Type *basirufa* in Mus. Oxon.

“*Exp.*—26-32 millim” (Hampson, 1898)

Distribution.—India : Andamans. Also Burma and Cambodia.

Remarks.—Material of this species was not available for study and the description and nomenclature are taken from Hampson (1898) and Fletcher (1925), respectively. Accordingly, the species could be distinguished only on the basis of external characters.

4. *Amata* (Subgenus ?) *phoenicozona* (Hampson)
(Text-fig. 2, G-I).

1897. *Syntomis phoenicozona* Hampson, *J. Bombay nat. Hist. Soc.*, 11 : 284
(Type loc.—Andamans).

Head with the frons and labial palpi black. Antennae black except near the tip where the segments are whitish. Thorax black above; with crimson patch below; metathorax and the 1st abdominal segment crimson. Wings black; fore wing with almost wedge-shaped hyaline patch in the cell, a quadrate patch below the cell, a spot above M_1 and two spots between M_2 - Cu_{1a} . Hind wing with a spot below the cell and another between M_2 - Cu_{1b} .

Antennae bipectinate in male, the branches rather short and dilated distally (Hampson, 1898); minutely serrate in female. Legs with the spurs as given for the genus.

Venation.—(Text-fig. 2G-H) : Fore wing venation mainly as in the genus, with R_1 arising just before the origin of vein R_5 .

Genitalia.—Female (Text-fig. 2, I) : Ostium bursae simple, partly membranous, shaped like a pouch, with its inner wall highly sclerotised; ductus bursae very long, flattened and sclerotised, leading through partly membranous part at its base into the sac like membranous corpus bursae; two short, sclerotised patches, one on each side on corpus bursae; papillae anales weakly sclerotised.

Material examined.—South Andaman : Mannerghat, Mt. Harriet Range, 1 ♀, 3. iv. 1964 (*B. S. Lamba* coll.)

Expanse.—Male, 20 mm (*vide* Hampson, 1898); Female, 22 mm.

Distribution.—India : Andamans.

Remarks.—Hampson (*loc. cit.*) gave the description of the male. The present specimen is a female, slightly larger than the male, and is described above for the first time.

5. *Amata* (*Syntomis*) *wimberleyi* (Swinhoe)
(Text-fig. 3, A-I)

1889. *Syntomis wimberleyi* Swinhoe, *Proc. zool. Soc. Lond.* : 400, pl. 43, fig. 11 (Type loc.—Andamans).

Black brown. Frons, patagia, tegulae and sides of the head, between eyes, orange. Labial palpi black-brown. Antennae black brown throughout except one or two segments apically which are whitish. Metathorax and sides of thorax with orange patches. Legs black

brown throughout except for a white band on the 1st tarsal segment in all the legs. Wings and abdomen black brown; the former with six orange spots, the largest lying between the bases of veins Cu_{1b} and 1A the spot at the end of cell equally large and quadrate, those beyond the cell, above vein M_1 , and between M_2-Cu_{1a} small, with two of them conjoined at the space between M_2-Cu_{1a} . Hind wing with an orange spot below the cell and two spots between veins M_2-Cu_{1a} . Abdomen with seven orange bands in male, six in female, running uninterrupted from dorsal to ventral surface.

Frons simple. Labial palpi short, porrect, hardly reaching frons. Antennae simple in both the sexes. Legs with spurs as given for the genus; the hind tibia dilated slightly from a little before middle and almost as long as, or slightly longer than, all the tarsal segments taken together.

Venation (Text-fig. 3,A-B).—Fore wing with vein R_1-R_5 stalked, R_1 equidistant between angle of cell and R_5 ; M_1 from below the upper angle; M_2-M_3 connate, Cu_{1a-b} from behind the angle. Hind wing venation as given for the genus.

Genitalia.—Male (Text-fig. 3, C-H): Uncus short and broad, smoothly curved towards apex which is narrow and beset with fine setae. Tegumen well developed, short and broad, extending both dorsally and laterally into lobes, abruptly ending at its ventral end; vinculum very long and narrow, broadly U shaped, ending into a short and narrow saccus. Claspers unequal in both length & width, as well as in the length of basal and mid-dorsal costal processes, the left-side clasper being longer and having a longer process, the right-side clasper with the basal process reduced, thick and hardly one third as long as that on the left clasper; juxta well developed. Aedeagus broader at the base than the apex, the latter with cornutal spines on retracted vesica. Female (Text-fig. 3,I): Ostium bursae cupped, with a shallow cavity; ductus bursae sclerotised; corpus bursae large, membranous, with one signum on each side and beset with very minute spines; anterior apodemes reduced, posterior apodemes long, but hardly projecting beyond the anterior; papillae anales well developed.

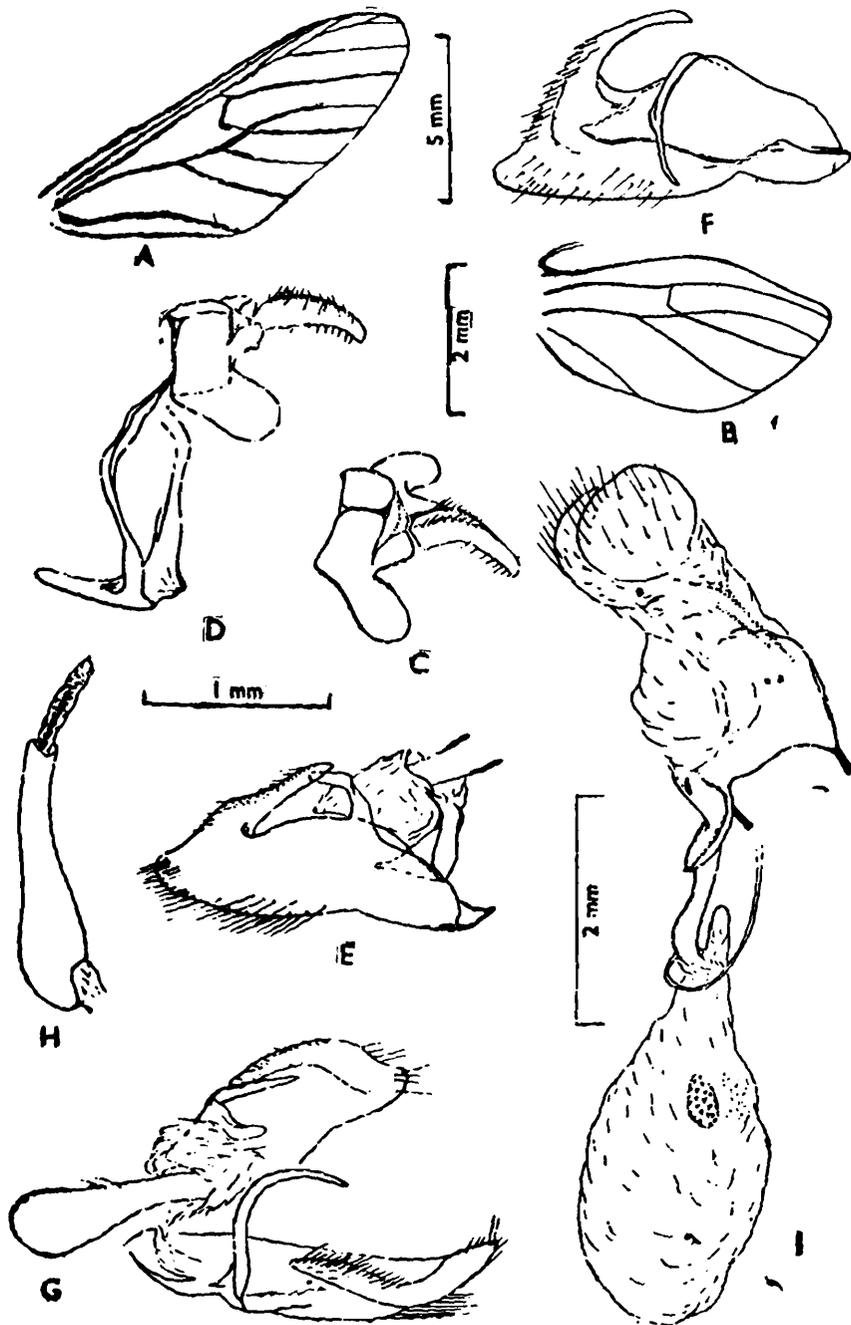
Material examined.—South Andaman: Cha Bagicha, Port Blair, 1 ♂, 29. ii. 1964; Wrafter's Creak, Baratang, 1 ♂, 19. iii. 1964; Burma Nallah 1 ♂, 1 ♀, 18. iv. 1964 (all *B.S. Lamba* coll.); Chiriatapu, 1 ♂, 20. i. 1972 (*B. Dutta* coll). Mid Andaman: Long Island, Forest Rest House., 1 ♀, 16. v. 1971 (*B. K. Tikader* coll.).

Expanse.—Male, 23-28 mm; Female, 30 mm.

Distribution.—India: Andamans.

Remarks.—*Amata* (*Syntomis*) *wimberleyi* (Swinhoe) was hitherto placed either under *Amata* or *Syntomis*. Obraztsov's (1966) work on the

palearctic *Amata*, however, helped in assigning the species correctly, especially on the basis of male genitalia. The species can easily be distinguished from *Amata* (*A.*) *cingulata* in the shape of claspers, and their basal as well as costal processes which are unequal. Accordingly, the latter species is placed in the subgenus *Amata* (*Amata*) (*vide infra*).



Text-fig. 3.—*Amata* (*S.*) *wimberleyi* (Swinhoe): A & B—Fore and hind wing, venation, respectively, C—Uncus, as seen laterodorsally, D—♂ genitalia lateral view, E & F—Right clasper in outer and inner view, respectively, G—♂ genitalia, with right and left claspers and part of aedeagus as seen dorsomesally, H—Aedeagus, I—♀ genitalia. (All ♂ genitalia figures of same magnification as of D).

The species is endemic to Andaman Islands and the present account gives additional informations on specific distribution of the species on the these Islands.

6. *Amata (Amata) cingulata* (Weber)
(Text-fig. 4, A-I)

1801. *Zygaena cingulata* Weber, *Obs. Ent.* : 109 (*Type loc.*—China).

Head with the frons, labial palpi antennae and vertex black, except at the apical third of antennae which is whitish; the whitish scaling may, however, be all around or confined to upper surface only. Legs with white scaling on the upper side of the hind tarsal segment; whitish scaling on middle leg confined to the 1st tarsal segment; the fore leg without whitish scaling on tarsi. Thorax black, with yellow spots laterally. Abdomen with a yellow patch each on 1st and 5th segment, sometimes faded or completely absent on the 1st segment. Fore wing black; with a short wedge-shaped spot in the end of cell; small quadrangular spot below the cell and a quadrate spot from below middle of cell along vein Cu_{1b} , reaching nearly up to inner margin; an elongate spot, beyond cell, above vein M_1 and two between M_2 and Cu_{1a} . Hind wing with a hyaline patch below the cell.

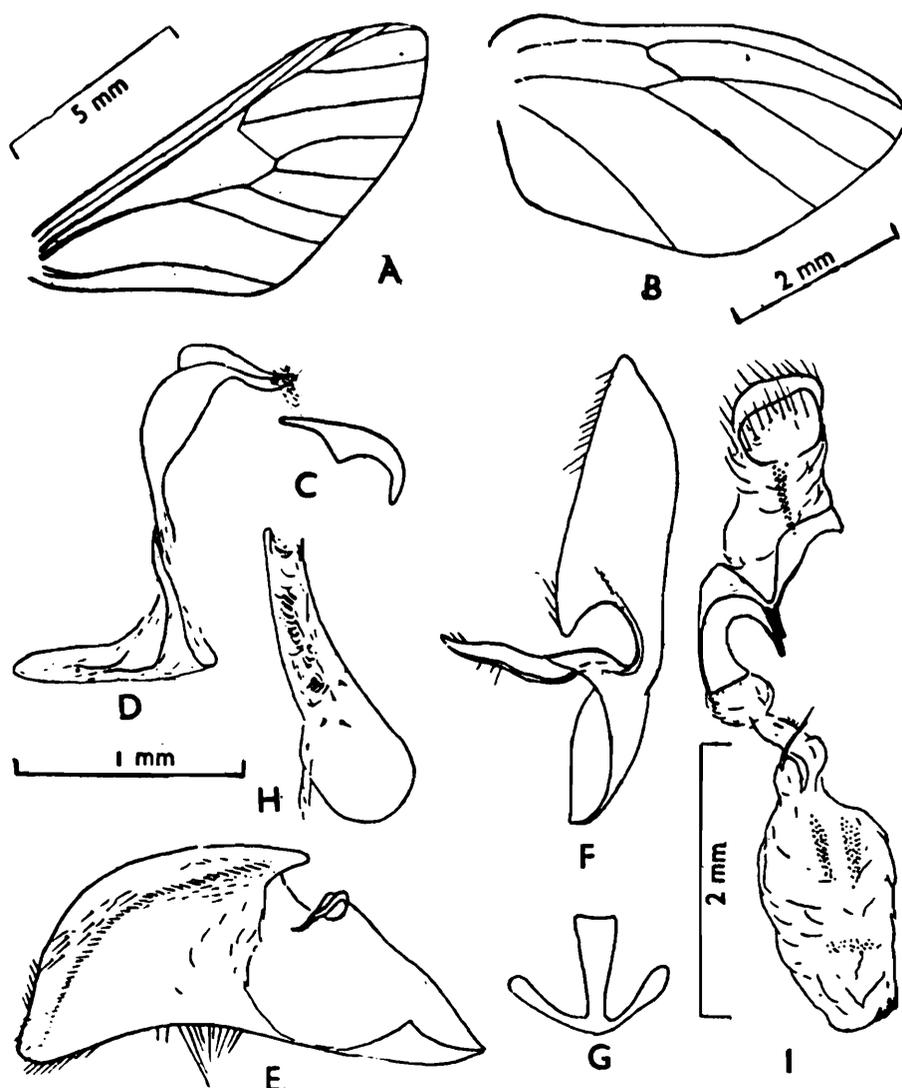
Head with the antennae simple in both the sexes. Legs with spurs as described for the genus; the hind tibia rather long, being slightly less than twice the total length of tarsal segments and dilated beyond middle.

Venation (Text-fig. 4, A-B).—Mainly as given for the genus; vein R_1 arising nearer to the cell angle than to the origin of R_5 .

Genitalia.—Male (Text-fig. 4, C-H): Uncus short, narrow and sharply curved towards the apex into a narrow, pointed tip. Tegumen short and narrow, produced into narrow prolongations, the latter continuing downwards into V shaped vinculum; saccus short and narrow. Clasper broad; the apical half with a dorsal, backwardly directed short process; the process at the dorso-basal area short and equal to that of the otherside-clasper and meeting above juxta, as compared to *A. (S.) wimberleyi* where these are unequal and curve inside. Aedeagus broader basally, with cornutal spines on the vesica. Female (Text-fig. 4, I): Ostium bursae simple, lightly sclerotised but well protected by sclerotisation on the dorsal as well as ventral sides of the opening; ductus bursae short, abruptly entering into a membranous sac-like corpus bursae, the latter with three elongated sclerotised patches on it; a short duct arises from corpus bursae and enters into the oviduct; papillae anales well developed, broad, with the posterior apodemes also short and not extending beyond the 8th segment.

Material examined.—44 ♂♂, 9 ♀♀: South Andaman: Cha Bagicha, 2 ♂♂, 29. ii. 1964; Wright Myo, Mt. Harriet Range, 3 ♂♂, 28. iii. 1964 (all *B. S. Lamba* coll.), 1 ♂, 27. ii. 1970 (*B. K. Tikader* coll.); Chiriatapu, Mandipahar, 2 ♂♂, 27. x. 1972 (*P. T. Cherian* coll.); Chiriatapu, 1 ♀, 20. xii. 1972 (*G. S. Arora* coll.), Forest Rest House campus, 1 ♂, 1 ♀, 12. i. 1976, Manjari, 2 ♂♂, 8. i. 1976 (*P. K.*

Maiti & Party coll.); Caddlegunj, 2 ♂♂, 1 ♀, 16. xii. 1972 (*G. S. Arora* coll.); Manglutan, 2 ♂♂, 1 ♀, 17. xii. 1972 (all *G. S. Arora & D. N. Nandi* coll.); 1 ♂, 1 ♀, 14. iii. 1975 (*G. K. Srivastava* coll.); Bedanabad, 5 ♂♂, 21. xii. 1976; Port Blair, R. G. Temple, 1 ♂, 1. i. 1973 (*G. S. Arora* coll.); Ferrargunj, 2 ♂♂, 15. i. 1973 (*G. S. Arora & D. N. Nandi* coll.); 1 ♂, 15. i. 1973; Anikhet, 3 ♂♂, 16. i. 1973 (All *K. S. Pradhan & G. S. Arora* coll.); Kala Pahar, Rut Island, 1 ♂, 9. i. 1976 (*P. K. Maiti & Party* coll.). Middle Andaman : Pitcher Nallah, roadside bush, 1 ♂, 3. ii. 1972 (*B. Datta* coll.); Shantipur 2 ♂♂, 5. i. 1973 (*G. S. Arora & D. N. Nandi* coll.); 1 ♀, 5. i. 1973 (*K. S. Pradhan & G. S. Arora* coll.); Yereta 1 ♂, 1 ♀, 5. 8. i. 1973; Panchwati, 1 ♂, 6. i. 1973 (all *G. S. Arora* coll.); Rangat, 1 ♂, 4. iii. 1975, 1 ♀, 5. iii. 1975 (*G. K. Srivastava* coll.); Bokultala, 2 ♂♂, 6. iii. 1975 (*G. K. Srivastava* coll.). North Andaman : Mayabunder, Tugapur, Forest Rest House, Stn. 16, 1 ♂, 8. v. 1971, 1 ♂, 1 ♀, 12. v. 1971, Stn. 17, 1 ♂ 11. v. 1971 (all *B. K. Tikader* coll.); Tugapur, 1 ♂, 10. i. 1973 (*G. S. Arora* coll.); Webi, 3 ♂♂, 8. iii. 1975 (*G. K. Srivastava* coll.).



Text-fig. 4.—*Amata (A.) cingulata* (Weber) ; A & B—Fore and hind wing venation, respectively, C—Uncus, D—♂ genitalia, without uncus, in a lateral view, E & F—Left clasper in inner and dorsal view, respectively, G—Juxta, H—Aedeagus, I—♀ genitalia. (All ♂ genitalia figures of same magnification as of D).

Expanse.—Male, 19-24 mm ; Female, 24-26 mm.

Distribution.—India : Andamans. Also China and Hongkong.

Remarks.—Hitherto reported to occur in the Indo-Australian region and the Indian region by Seitz (1913) and Obraztsov (1966), this nevertheless constitutes the first specific report of *A. cingulata* from India, especially from the Andaman Islands. The species is also reported to occur in Central and Eastern China, extending as far as Hong Kong, Swatow, and Foochow (Hampson, 1898, Seitz, 1910). The present report from India fills the distribution gap and is of zoogeographical interest.

A. (A.) cingulata is characterised by the presence of a crimson patch on the 1st as well as the 5th abdominal segment ; sometimes, however, the band on the 1st segment is obsolete or completely absent, but this is not associated with any difference in its genitalia ; patches on both the wings are hyaline as compared to *A. (Syntomis) wimberleyi* where the patches on both the wings as well as abdominal bands, are orange. Because of characters in male genitalia, the two species are placed in two subgenera as *Amata (Amata) cingulata* and *A. (Syntomis) wimberleyi*.

Obraztsov (1966) for the first time placed the name of this species in its present combination *Amata (A.) cingulata* (Weber).

Genus *Eressa* Walker

1854. *Eressa* Walker, *List Lep. Het. Brit. Mus.*, 1 : 149.

Type : *Glaucopis confinis* Walker

Diagnosis.—Proboscis small or well developed. Labial palpi short and porrect. Frons hairy, simple. Mid and hind tibia with a pair each of minute terminal spurs. Fore wing usually broad ; veins R_1 - R_5 stalked ; M_1 from below the upper angle of cell ; M_2 - M_3 from angle ; Cu_{1a} from well before the angle of cell. Hind wing with the vein R_s coincident with M_1 ; M_3 absent ; veins M_2 and Cu_{1a} quite separate at origin, M_2 well above the angle of cell.

Distribution.—Mainly Indo-Australian regions.

Remarks.—Although Zerny (1912) included ten species in this genus, Fletcher (1925) excluded one of its species, *Eressa simplex* Rothschild, as a synonym of *Trichaeta teneiformis* (Walker), thus reducing the number of Indian species to nine. Both, however, cited only *Eressa affinis* Moore from the Andaman Islands, and it has been collected by the survey parties from various localities in southern Andaman.

The genus *Eressa* is characterised by the presence of only single pair of terminal spurs in the hind tibia, unlike the genus *Amata*, which

has two pairs and to which it is otherwise closely allied because of the absence of vein M_3 and presence of Cu_{1a} on the hind wing. Hampson (1898) differentiated these two genera on the basis of the origin of vein M_3 in hind wing which he described as from lower angle of cell or shortly stalked with Cu_{1a} in the genus *Amata* and from well above angle of cell in *Eressa*. The character seems to be quite variable in the genus *Amata* where the origin of this vein may be from above the lower angle, as in *A. phoenicozona* (Hampson). Hence, it is not a reliable character for differentiating *Eressa* from *Amata*.

7. *Eressa affinis* Moore

(Text-fig. 5, A-E)

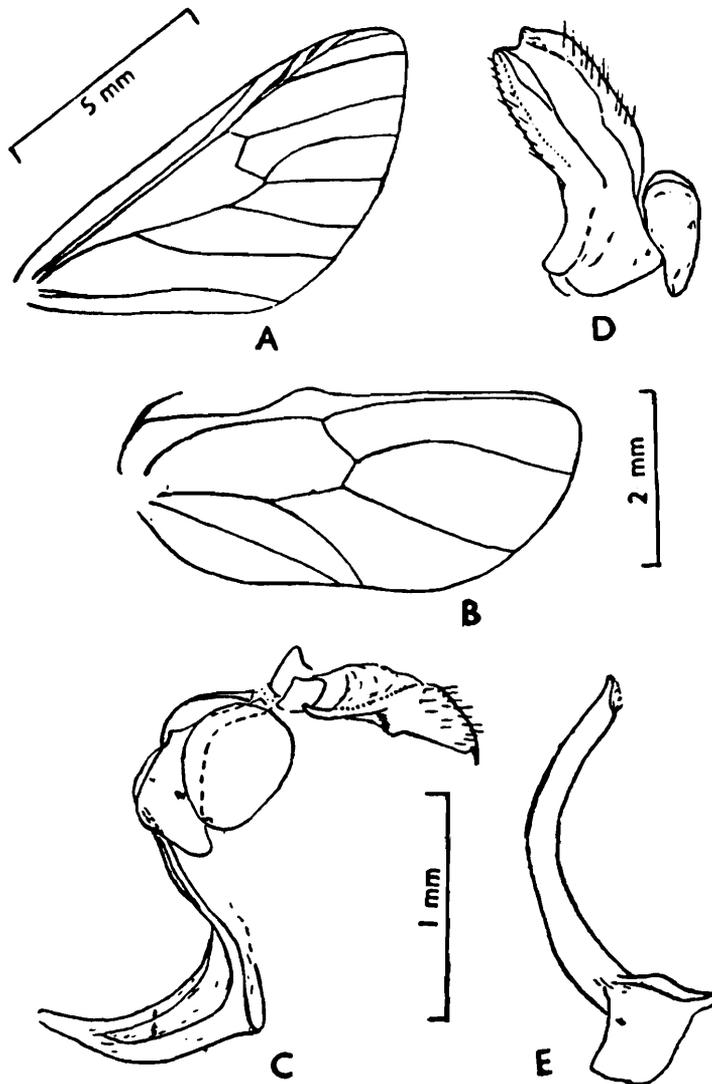
1877. *Eressa affinis* Moore, *Proc. zool. Soc. Lond.* : 596, pl. 59 (Type loc. Andamans).

Head with the frons brownish, hairy ; labial palpi brownish. Antennae brownish to basal three-fourths, the apical part whitish. Thorax with orange patches dorsally on meso, and metothorax ; unspotted ventrally. Abdomen blackish brown, with series of dorsal and lateral spots, more prominent than on ventral side which has prominent spots only beyond a few basal segments. Legs pale brown to brownish. Wings brownish, fore wing with hyaline patches below the middle of vein Cu_{1b} ; a spot above the base of Cu_{1b} , continuing above with a large patch in the end of cell ; four spots present between R_5 and Cu_{1a} the one above vein M_2 very small, sometimes becoming obsolete in female. Hind wing with one hyaline spot between M_2 - Cu_{1a} .

Head with the frons smooth. Antennae bipectinate to the tip in male ; the branches longest in the middle, being about twice the length of one shaft-segment. Mid and hind tibia each with a single pair of spurs ; the hind tibia slightly dilated beyond middle.

Venation (Text-fig. 5, A-B).—Fore wing with the veins R_1 - R_5 stalked, R_1 arising from beyond the cell angle, almost equidistant between the cell angle and R_5 ; M_1 from below the upper angle of cell ; M_2 - M_5 separate, both from angle of cell. Hind wing venation as for the genus.

Genitalia.—Male (Text-fig. 5, C-E) : Uncus narrowed apically, ending in a hooked-tip ; the base broader, with the sides connected through narrow arms to a lobe on each side ; two large side-lobes also present between uncus and tegumen. Tegumen continued into U shaped vinculum ; saccus narrow, triangular. Claspers short and broad, narrowed near the middle, the distal part beset with hairs ; two parallel ridges from near the middle, mesally and protruding beyond the distal end, giving latter a 'notched' appearance ; juxta cup-shaped, occupying the whole area between the bases of claspers. Aedeagus broader in basal half, narrowing distally, smoothly curved throughout giving it a crescent shape.



Text-fig. 5.—*Eressa affinis* Moore ; A & B—Fore and hind wing venation, respectively
C—♂ genitalia in lateral view, D—Clasper with juxta in inner view, E—
Aedeagus (All ♂ genitalia figures of same magnification as of C).

Material examined.—South Andaman : Humphryunge, 1 ♂, 3.iii.1964, 3 ♂♂, 14.iii.1975 (G. K. Srivastava coll.) ; Wright Myo, Mt. Harriet Range, 3 ♂♂, 27.iii.1964 ; Mannerghat, Mt. Harriet Range, 2 ♂♂, 3.iv.1964 (all B. S. Lamba coll.) ; Chiriatapu, Manjari, 2 ♂♂, 8.i.1976 (P. K. Maiti & Party coll.) ; Middle Andaman : Long Island, 1 ♂, —vii.1931 (R. Hodgart coll.) ;

Expanse.—22 mm.

Distribution.—India : Andamans.

Remarks.—Hitherto known only from Andaman Islands, in general, the present report provides the first specific distributional record of the species from various localities, both in S. Andaman and Middle Andaman Islands.