

Notes on the Cuculliine Moths of *Hemiglaea* (Lepidoptera, Noctuidae), with Descriptions of New Species from Taiwan, Nepal and India

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Abstract The monotypic noctuid genus, *Hemiglaea* SUGI, 1980 (type species: *Penicillaria costalis* BUTLER, 1879), has hitherto been known only from Japan. Two new species, *Hemiglaea albolineata* and *Hemiglaea horiei*, are described from Taiwan, a new species, *Hemiglaea himalaya*, from Nepal and East India, and *H. costalis* is recorded for the first time from Taiwan.

The genus *Hemiglaea* was established by SUGI (1980) for a small cuculliine species, *Penicillaria costalis* BUTLER, 1879, endemic to the Japanese main islands. After HAMPSON (1906), the moth had long been placed in *Blepharidia* PÜNGELER, 1900 (nec HÜBNER, 1822), for which a replacement name, *Blepharosis*, was given by BOURSIN (1964).

As was pointed out in the original description of *Hemiglaea* (SUGI, 1980), the male genitalia of Japanese *costalis* are utterly different from those of the Tibet-Himalayan species of *Blepharosis*, so that *Hemiglaea* cannot be related to the latter. Judging from the male genitalic features, *Hemiglaea* may be close to *Rhynchaglaea* HAMPSON, 1906, and *Mesorhynchaglaea* SUGI, 1980, from Japan and Taiwan.

In January of 1992, I had an opportunity to visit Taiwanese mountains for collecting such winter flyers as cuculliine noctuids, ennonine winter geometrids and *Pentateucha*-sphingids. Though it snowed for several days, I was fortunate in collecting some interesting moths in which were included not only *Hemiglaea costalis* but also remarkable new species of *Hemiglaea*. In this paper, I will describe these new species together with Himalayan new species and will give a new record of *H. costalis* from Taiwan.

Before going further, I wish to express my hearty thanks to Ms. Yu-Cheng CHANG and Mr. Yi-Bin FAN, Taiwan Forestry Research Institute, Taipei, Mr. Kiyoshi HORIE and Dr. Hideki KOBAYASHI, Tokyo, and Mr. Katsumi YAZAKI, Hachiôji, for their kind aid in field surveys, to Professor Yau-I CHU and Mr. Chiun-Chen KO, National Taiwan University, Taipei, for their kind arrangement for our expedition made by the

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Hemiglaea albolineata sp. nov.

(Fig. 1)

Male & female. Length of forewing: 17–18 mm.

Antenna ciliate in male, less ciliate in female. Labial palpi black, with short porrect 3rd segment. Head and patagia creamy white, irrorated with ochre; thorax covered with blackish brown scales; abdomen blackish brown, ringed with ochre in each segment, underside and terminal fringe ochre. On the upperside of forewing, ground colour blackish brown, with creamy white streaks; costa narrowly creamy white; subbasal line and basal streak represented by narrow creamy white lines; antemedial line reddish brown, edged narrowly with creamy white in costal 2/3; creamy white oblique line arising from 1/3 of costa to dorsal margin of reniform stigma; reniform stigma represented by narrow creamy white inner line and rather broad creamy white straight line arising from 2/3 of costa to 2/3 of dorsum; postmedial line reddish brown, obscure; subterminal line of a very narrow creamy white line, arising from termen under apex, curved inwardly to CuA₁, turning straightly inwards, then obliquely down to anal angle as rather broad line; cilia blackish brown, with a whitish basal line. Upperside of hindwing greyish brown, veins stained with blackish brown, cilia paler.

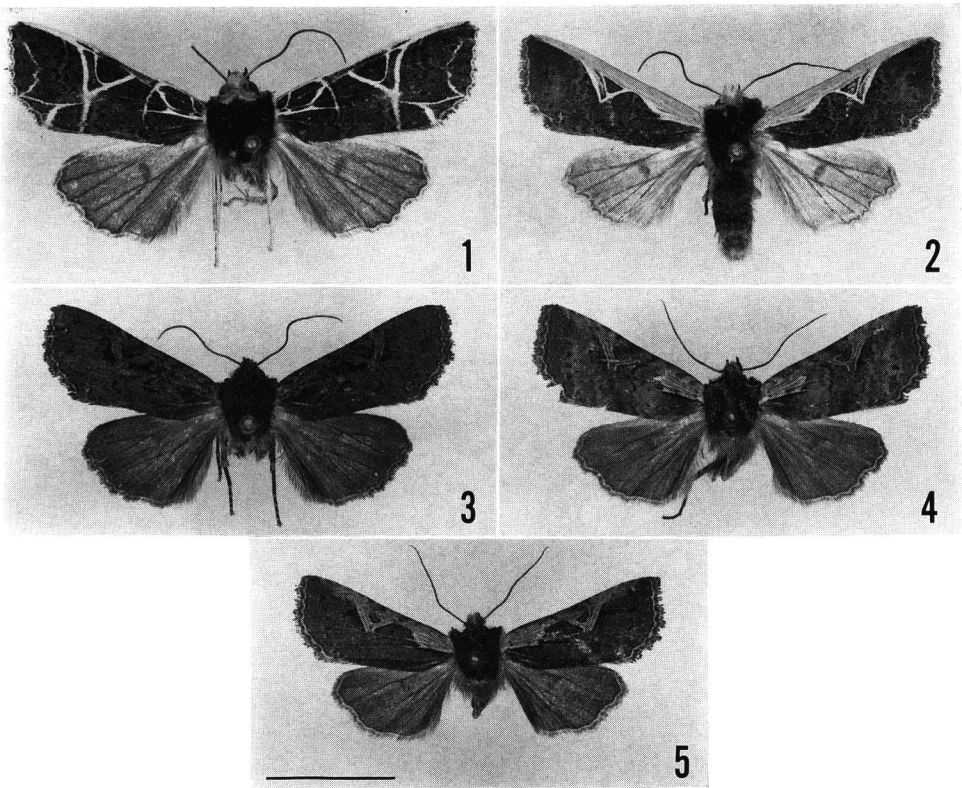
Male genitalia (Fig. 6). Uncus rather short, curved, with pointed apex. Valva markedly constricted at middle; costa curved; cucullus developed, coronal spines vestigial; harpe slender, rather short; sacculus well developed, with a long broad basal process. Juxta large, pear-shaped. Aedeagus long, curved, vesica with a large hooked cornutus.

Female genitalia (Fig. 10). Similar to those of *costalis*. Invaginated sterigma longer; ductus bursae slenderer, curved, folded once in basal portion; left shoulder of corpus bursae with a small sclerotized plate from which ductus seminalis arises; two long and two short signa present.

Type series. Holotype, male, Taiwan, Taoyuan, Fuhsing, Suleng (1,200 m), 25. I. 1992, M. OWADA leg., genit. slide no. NSMT 2216 ♂, preserved in National Science Museum, Tokyo. Paratype: same data as holotype, 1 ♂; Taiwan, Taoyuan, Fuhsing, Lalashan (1,500 m), 1 ♂, 20–22. I. 1992, M. OWADA leg.; Taiwan, Taichung, Tashueshan Mts., Anmashan (2,000–2,300 m), 1 ♂ 1 ♀, 11–14. I. 1992, K. HORIE leg., genit. slide no. NSMT 2255 ♀.

Distribution. Taiwan.

Notes. This species is related to but larger than *Hemiglaea costalis*. The basic wing pattern is similar to that of *H. costalis* (Fig. 2), but the costal white band of fore-



Figs. 1–5. *Hemiglaea* spp. — 1. *H. albolineata* sp. nov., ♂, holotype. — 2. *H. costalis* (BUTLER), ♂, Taiwan, Taoyuan, Suleng. — 3. *H. horiei* sp. nov., ♂, holotype. — 4. *H. himalaya* sp. nov., ♂, holotype. — 5. *H. himalaya* sp. nov., ♂, paratype, Nepal. Scale: ca. 10 mm.

wing is much slenderer. In the male genitalia, this species is characterized by the large cucullus with degenerated coronal spines and the hooked stout cornutus.

Hemiglaea costalis BUTLER

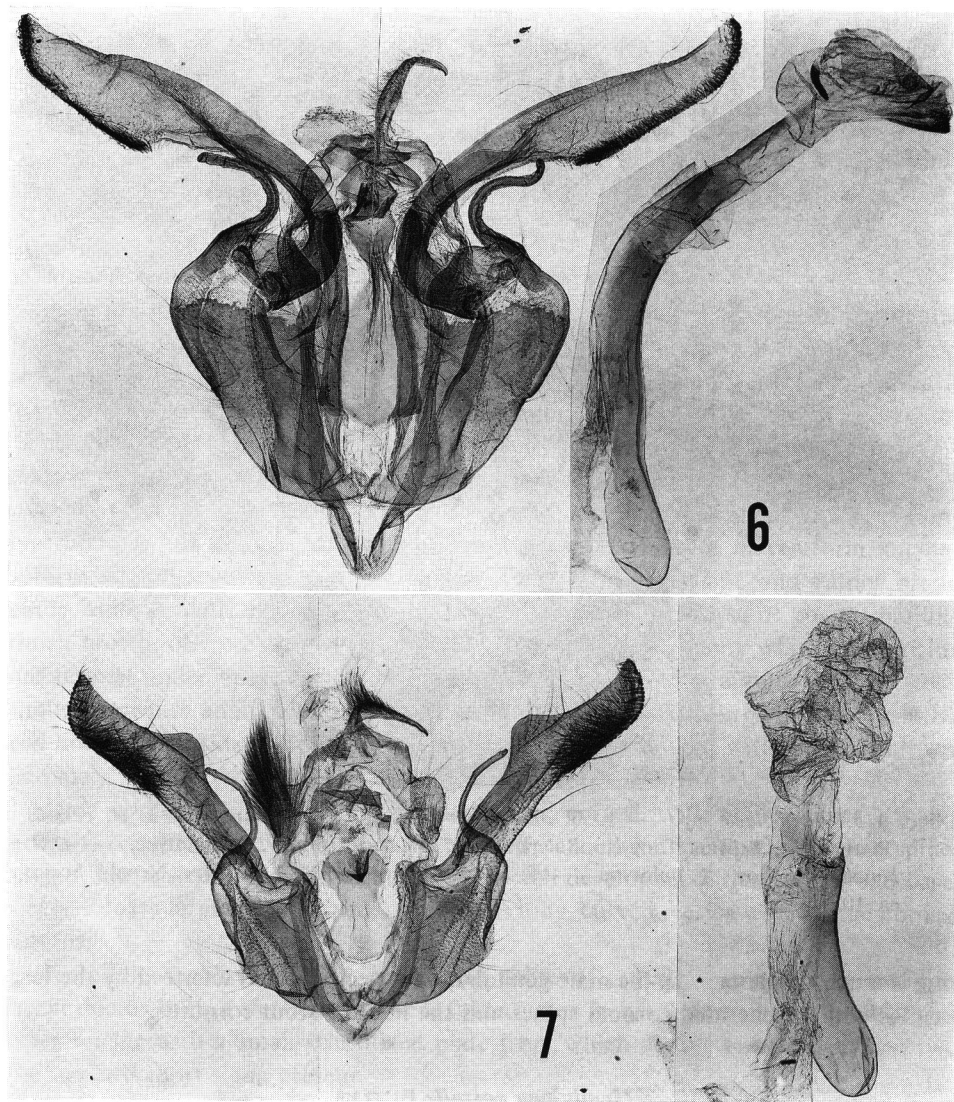
(Fig. 2)

Penicillaria costalis BUTLER, 1879, Ann. Mag. nat. Hist., (5), **5**: 367.

Blepharidia costalis: HAMPSON, 1906, Cat. Lepid. Phalaenae Colln. Br. Mus., **6**: 396–397, pl. 105, fig. 15.

Hemiglaea costalis: SUGI, 1980, Tyô to Ga, **30**: 200, fig. 14.

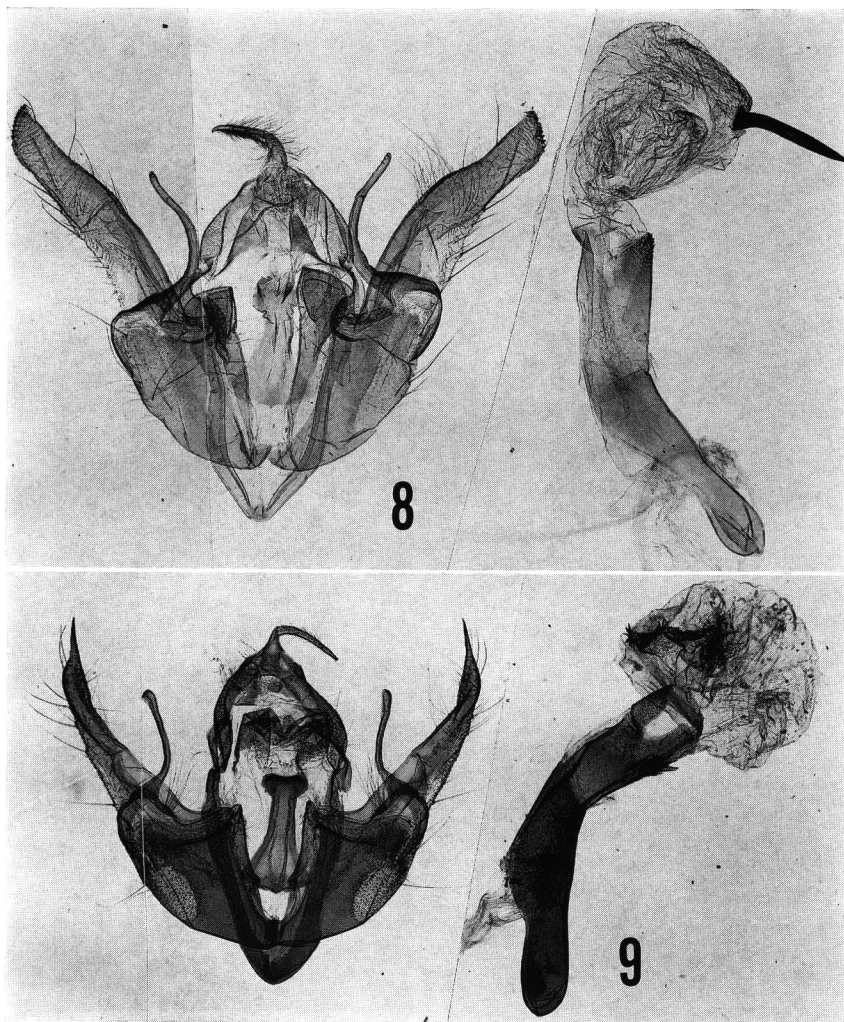
Material examined. Taiwan: Taoyuan, Lalashan (1,500 m), 1 ♀, 20–22. I. 1992, M. OWADA leg.; Taoyuan, Fuhsing, Hsitsun (1,050 m), M. OWADA leg.; Taoyuan, Fuhsing, Suleng (1,000 m), 2 ♂, 23. I. 1992, M. OWADA leg., same locality (1,200 m),



Figs. 6–7. Male genitalia of *Hemiglaea*. — 6. *H. albolineata* sp. nov., holotype. — 7. *H. costalis* (BUTLER), Taiwan, Taoyuan, Suleng.

5 ♂, 25. I. 1992, M. OWADA leg.; Taichung, Tashueshan Mts., Anmashan (2,000–2,300 m), 1 ♂ 1 ♀, 11–14. I. 1992, M. OWADA & H. KOBAYASHI leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu), Taiwan (new record).



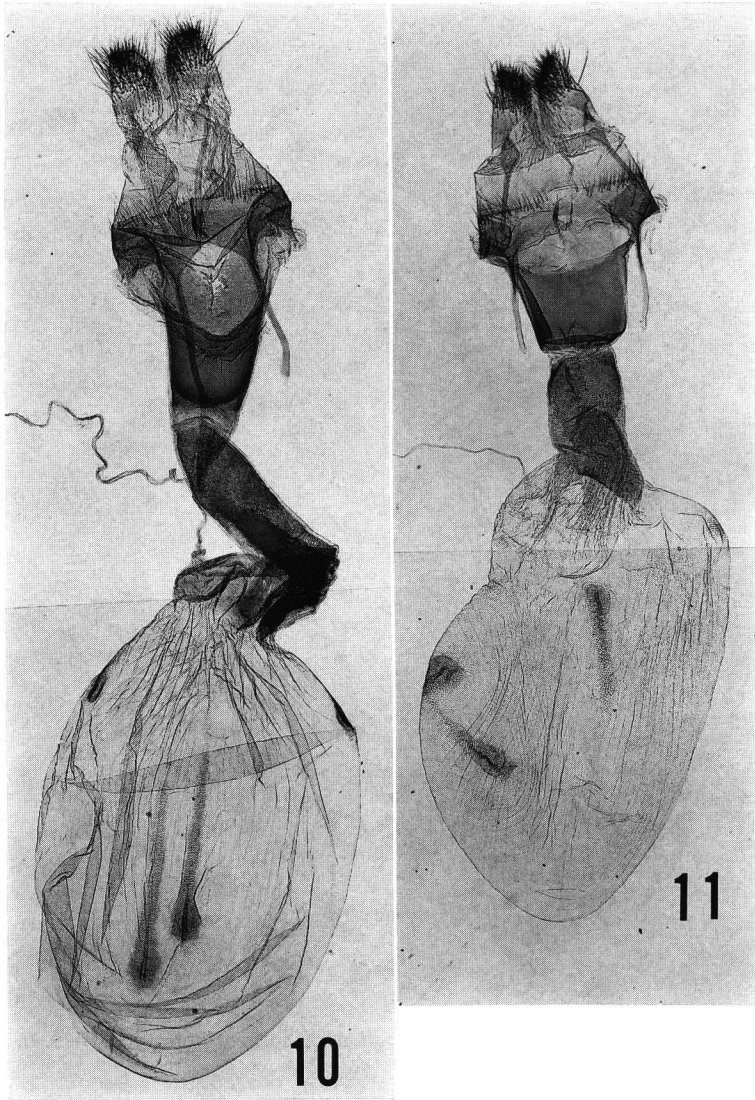
Figs. 8-9. Male genitalia of *Hemiglaea*. — 8. *H. horiei* sp. nov., holotype. — 9. *H. himalaya* sp. nov., holotype.

Hemiglaea horiei sp. nov.

(Fig. 3)

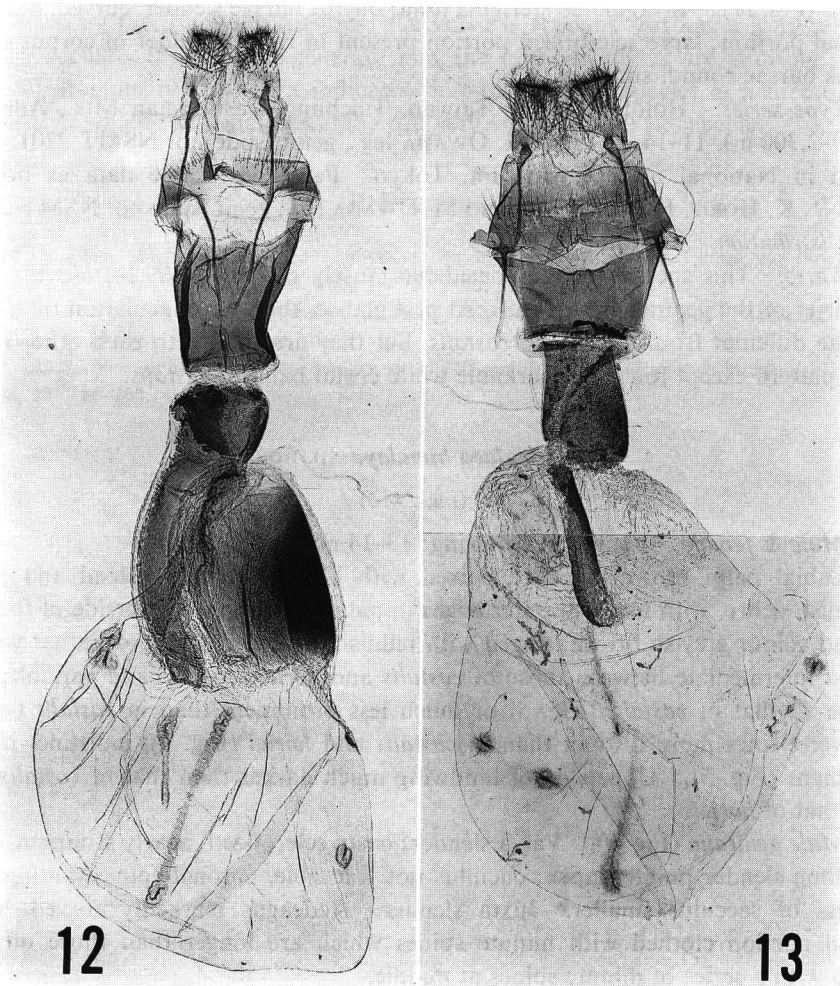
Male & female. Length of forewing: 14-15 mm.

Labial palpi blackish brown. Head and patagia brown, mixed with ochreous scales, with black outer edges in patagia. On the upperside of forewing, ground colour blackish brown, tinged with reddish brown; basal streak black, upper costal area ochreous brown; antemedial line represented by double black lines filled in with red-



Figs. 10–11. Female genitalia of *Hemiglaea*. — 10. *H. albolineata* sp. nov., paratype. — 11. *H. costalis* (BUTLER), Taiwan, Taoyuan, Lalashan.

dish brown; claviform stigma black; orbicular stigma dark brown, large and ovate, edged with black; reniform stigma reddish brown, edged with black, slender, arising from costa; orbicular and reniform stigmata forming an obscure costal triangular mark, which is clearly found in the other species of *Hemiglaea*; postmedial line indistinct; subterminal line represented by a series of triangular dots between veins, indistinct in some specimens; cilia blackish brown, with an ochreous slender basal



Figs. 12-13. Female genitalia of *Hemiglaea*. — 12. *H. horiei* sp. nov., paratype. — 13. *H. himalaya* sp. nov., paratype.

line. Upperside of hindwing dark brown, veins stained with black, cilia dark brown, with a pale basal line.

Male genitalia (Fig. 8). Similar to those of *H. costalis* (Fig. 7). Uncus rather short, with pointed apex. Valva nearly straight; costa curved, slightly swollen beyond middle; cucullus and coronal spines same as in *costalis*; harpe slender, longer than in *costalis*; sacculus markedly developed, with a long broad basal process which is much larger than that of *costalis*. Juxta slenderer. Aedeagus slightly curved, ventro-caudal portion clothed with minute spines; vesica with a long stout cornutus.

Female genitalia (Fig. 12). Similar to those of *H. albolineata* (Fig. 10) and

costalis (Fig. 11). Invaginated sterigma long; ductus bursae slender, curved, not folded in basal portion; large sclerotized portion present in right shoulder of corpus bursae; corpus bursae round, smaller.

Type series. Holotype, male, Taiwan, Taichung, Tashueshan Mts., Anmashan (2,000–2,300 m), 11–14. I. 1992, M. OWADA leg., genit. slide no. NSMT 2201 ♂, preserved in National Science Museum, Tokyo. Paratypes: same data as holotype, 2 ♂ 4 ♀, K. HORIE, H. KOBAYASHI and M. OWADA leg., genit. slide no. NSMT 2204 ♀.

Distribution. Taiwan.

Notes. This species can be considered closely related to *H. costalis* in view of similarity of the genitalic structure. At first glance, the wing maculation of *H. horiei* is quite different from that of *H. costalis*, but they are similar to each other in their basic pattern except for the remarkable white costal band of *costalis*.

Hemiglaea himalaya sp. nov.

(Figs. 4, 5)

Male & female. Length of forewing: 13–14 mm.

Labial palpi brownish ochre, mixed with blackish scales. Head and patagia brownish ochre, with blackish outer edges in patagia. On the upperside of forewing, ground colour greyish brown, tinged with reddish brown; maculation rather variable, almost intermediate between those of *costalis* and *horiei*; costal band variable, either similar to that of *costalis* (Fig. 5) or much less prominent than in *costalis* (Fig. 4); transverse lines more distinct than in *costalis* and *horiei* (Fig. 4), indistinct in some specimens (Fig. 5). Upperside of hindwing much darker than that of *costalis*, paler than that of *horiei*.

Male genitalia (Fig. 9). Valva slender; costa sclerotized, nearly straight, ending in a long slender pointed apex; cucullus not traceable, coronal spine wanting; basal process of sacculus smaller. Juxta slender. Aedeagus markedly curved, ventro-caudal portion clothed with minute spines which are longer than those of *horiei*; vesica with a series of minute spines at middle.

Female genitalia (Fig. 13). Similar to those of *costalis*. Invaginated sterigma short, broad; ductus bursae as long as the invaginated sterigma; corpus bursae with a long sclerotized plate in caudal portion.

Type series. Holotype, male, E. Nepal, Bagmati Zone, Sindhu, Dolangsa (2,600 m), 11. XI. 1979, M. OWADA leg., genit. slide no. NSMT 1737 ♂, preserved in National Science Museum, Tokyo. Paratypes: same data as holotype, 1 ♂, genit. slide no. NSMT 1735 ♂; India, West Bengal, Darjeeling Dist., Tonglu (3,040 m), 1 ♂ 1 ♀, 6. XI. 1981, M. OWADA leg., genit. slide no. NSMT 2227 ♀.

Distribution. Nepal and India (Darjeeling District).

Notes. The pattern of wing maculation of this species is basically the same as those of the other species of *Hemiglaea*, though similar pattern is also found in *Rhynchaglaea hemixantha* SUGI, 1980, from Taiwan. In the male genitalia, this species is

characterized by the following features: the valva is straight and has a long pointed apex; the cucullus is almost degenerate and the coronal spines are wanting. The absence of ampulla of the valva indicates that the present species is a member of *Hemiglaea*, in which the female genitalia are very similar to all the species.

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