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of Japan (Lepidoptera : Pyralidae) : 1.
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Systematic Study of the Subfamily Pyraustinae of Japan (Lepidoptera : Pyralidae)

1. Descriptions of a New Species and 2 Unrecorded Species*

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Description of a new species, *Hedylepta okinawaensis* from Ishigaki-jima, the Ryukyus, and descriptions of 2 unrecorded species from Japan, *Herpetogramma cynaralis* (Walker) and *Omphisa anastomosalis* Guenée, are given.

Hedylepta okinawaensis sp. nov.

(Fig. 1, male genitalia; Fig. 2, female genitalia; Fig. 7 A, adult female, upperside; Fig. 7 B, ditto, underside)

External characters: Head fulvous, with frons rounded. Labial palpus wide, upturned, brown above, white below ; in *Hedylepta indicata* labial palpus pale orange, gently becoming yellowish to lower part. Maxillary palpus yellowish white, with brown scales at apex of 3rd segment. Proboscis with whitish scales in basal portion. Antenna filiform and fulvous. Thorax above pale ochreous, beneath white; in *indicata* thorax above pale orange, beneath yellowish. Abdomen above pale ochreous, with white band on posterior margin of each segment, in male with a small triangular spot on apical 1/2 of 8th segment, and abdomen beneath whitish. Legs whitish; in *indicata* pale orange or yellowish. Dorsal surface of apical 1/2 of foretibia brown, midtibia brownish posteriorly.

Forewing apex more sharply pointed than in *indicata*. Ground colour above light fuscous; in *indicata* fuscous and suffused with pale orange, especially on costa and inner edge of antemedial line. Markings dark brown to blackish brown. Antemedial line oblique from darker costal portion to posterior margin of discoidal cell, then angled and ending at 2/5 of posterior margin. Small brown spot in discoidal cell beyond antemedial line; discocellular lunule narrower and more proximal than in *indicata*, the lunule usually nearer to antemedial line than to postmedial. Postmedial line curved weakly to vein Cu_{1a}, then retracted to lower angle of discoidal cell and ending beyond middle of posterior margin. A series of brown marginal spots from cell R₄ to cell Cu₁. Ciliae fuscous. Forewing beneath uniformly pale ochreous ; in *indicata* fuscous, with pale orange costal border. Antemedial line absent. Postmedial line brown and spot-like ; in *indicata*

* Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 3, No. 26).

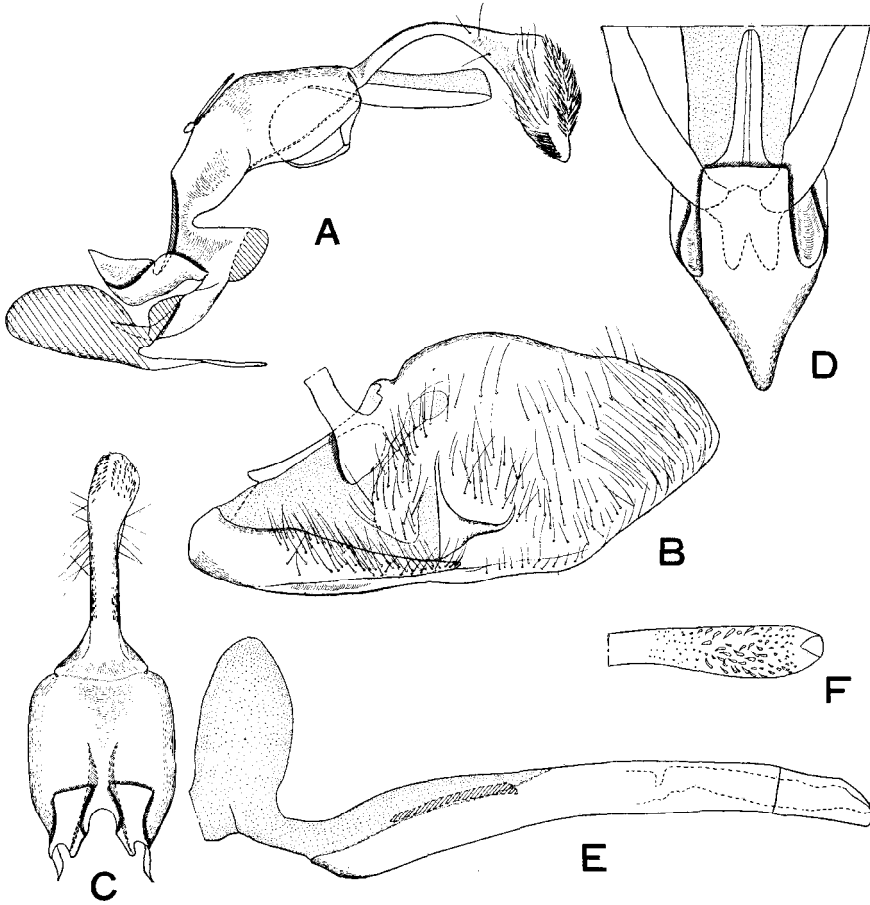


Fig. 1. Male genitalia of *Hedylepta okinawaensis* sp. nov. A. ring; B. right valva, inner aspect; C. dorsum, dorsal aspect; D. ventral aspect of anterior portion; E. aedeagus, lateral aspect; F. ditto, cornutus.

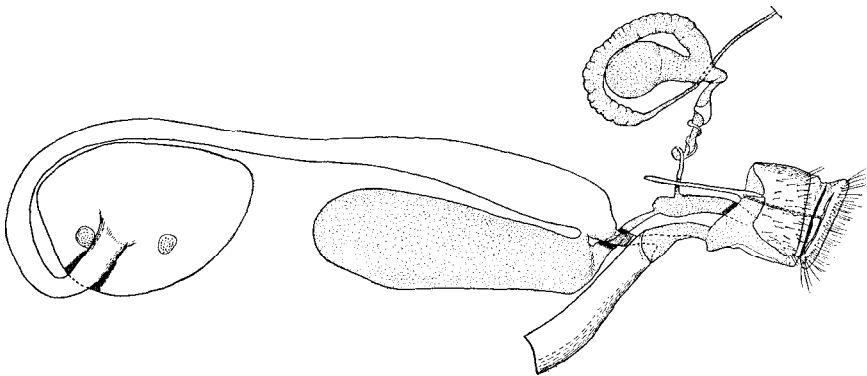


Fig. 2. Female genitalia of *Hedylepta okinawaensis* sp. nov., lateral aspect.

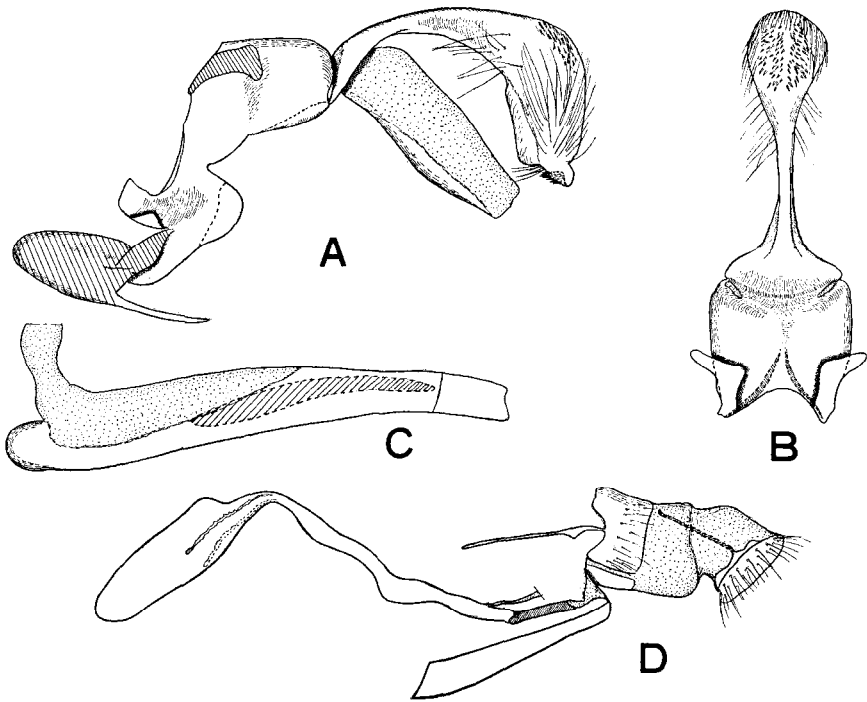


Fig. 3. Male and female genitalia of *Hedylepta indicata* (Fabricius). A. male genitalia, ring; B. dorsum, dorsal aspect; C. aedeagus, lateral aspect; D. female genitalia, lateral aspect.

with obscure antemedial and postmedial line, not spot-like.

Hindwing slightly incurved below apex. Ground colour same as in forewing. Discocellular lunule brown, shorter and narrower than in *indicata*. Postmedial line narrow and brown, weakly curved from vein R_s to cell Cu_{1a} , then retracted proximally to lower angle of discoidal cell, and angled to cell 1A. Marginal line brown, weakly separated into dots on anterior 1/2 of termen. Ciliae fuscous, with very fine blackish basal line; in *indicata* whitish, with broader blackish basal line. Hindwing beneath same colour as forewing beneath. Postmedial line brown, from costa to vein Cu_a more distad than above.

Male genitalia: Much resembling those of *indicata*, but differing as follows. Tegumen narrower, united with uncus, more weakly constricted dorsally near base of uncus, a pair of anterior roof-like processes more dorsal; fenestrula very narrow. Vinculum short, wide in dorsal portion, with rounded anterior projection in ventral portion; saccus well developed, slightly compressed laterally, with a flat oblong posterior process. Uncus conspicuously clavate and strongly arched, with basal 1/2 broader than in *indicata*; clavate apical 1/3 with many prominent setae dorsally, long hair-like setae ventrally, and a group of setae at tip; gnathos very slender. Aedeagus long, coecum penis undeveloped, and with a group of spinulate dorsal cornuti in addition to a proximal cornutus which is

shorter than in *indicata*; juxta longer and narrower. Valva shorter and oval in shape; costa narrow; sacculus wide at base; harpe extending along sacculus, without process; ampulla with a sickle-like process; cuculus occupying apical 1/3 of valva, with hair-like setae on apical portion.

Female genitalia: Ductus bursae short, membranous, except at anterior semi-circular plate; bursa copulatrix very long, its neck long and slender, gently narrowing to anterior part, apical part oval, with 2 small circular signa; cervix bursae developed, about 1.8 times as long as 7th sternum; ductus seminalis short, its base broad; 8th tergum with apophysis anterioris longer than apophysis posterioris, and entirely with short setae; 8th sternum sclerotized weakly. In *indicata* ductus bursae with long semicircular plate in ventral surface; bursa copulatrix narrower and shorter than in the new species, apical part elliptic, with a pair of long, slender signa; bulla seminalis undeveloped.

Length of forewing: Male, 10.0-10.8 mm; female, 9.4-10.4 mm.

Distribution: Japan (Ishigaki-jima, the Ryukyus).

Holotype: Female (Type No. 2041, Kyushu Univ.), Mt. Banna, Ishigaki-jima, the Ryukyus, 27. v. 1973 (K. Ueda).

Paratopotypes: 1 ♀, 15. v.; 1 ♀, 17. v.; 1 ♂ 6 ♀♀, 26. v.; 1 ♀, 27. v.; 1 ♂ 1 ♀, 28. v.; 1 ♂, 30. v.; 1 ♂ 1 ♀, 31. v, same data as holotype.

Type depository: All the types are deposited in the collection of the Entomological Laboratory, Faculty of Agriculture, Kyushu University.

Remarks: This species closely resembles *Hedylepta indicata* (Fabricius, 1775), but may be distinguished from the latter by the wing marking especially in different ground colour (absence of the pale orange costal area of the forewing and presence of the spot-like postmedial line on the undersides of wings), slightly different male genitalia and distinct different female genitalia as mentioned above.

Herpetogramma cynaralis (Walker, 1859)

(Fig. 4, male genitalia; Fig. 5, female genitalia; Fig. 7E, adult female)

Botys cynaralis Walker, 1859, Cat. Lep. Het. Brit. Mus., 18: 672.

External characters: Head fuscous; frons somewhat prominent; labial palpus weakly upturned, brown above, white below; maxillary palpus whitish distally, brown at apex; proboscis with yellowish white scales distally. Thorax above yellow, beneath white. Abdomen above yellow, with a pair of brown dots on base of 3rd segment. Abdomen beneath white. Legs whitish, with dorsal surface of apical 1/2 of foretibia brown.

Forewing generalized in shape. Ground colour yellow, with the basal 2/3 of costa fuscous, especially at base. Antemedial line brown, oblique outwards to posterior margin of discoidal cell, then angled inwards to vein 1A, and again angled to 1/3 of posterior margin. A brown spot in discoidal cell slightly distad antemedial line; discocellular lunule brown, distinct. Postmedial line brown, spot-like, oblique from costa to vein R_s, and incurved to vein M., then retracted proximally, and angled to 2/5 of posterior margin. Submarginal band fuscous, broad, especially

at apex and tornus. Marginal line with a series of brown spots. Ciliae yellow.

Hindwing also yellow, with a brown discocellular lunule. Postmedial line oblique to R_5 , then incurved to vein M_2 as in forewing, dentate from cell M_2 to cell Cu_{1a} , and retracted to the middle of wing, then angled to $1/4$ of vein $2A$.

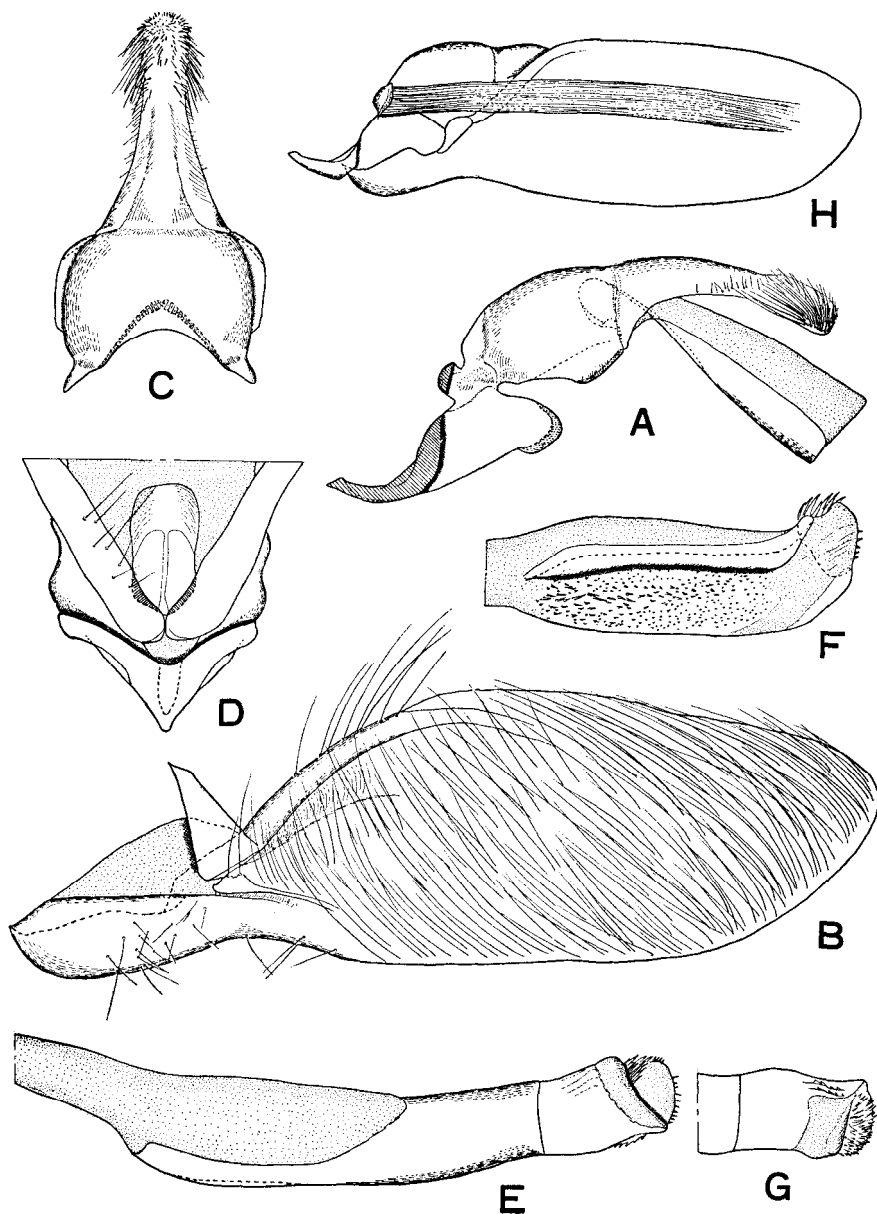


Fig. 4. Male genitalia of *Herpetogramma cynaralis* (Walker). A. ring; B. right valva, inner aspect; C. dorsum, dorsal aspect; D. ventral aspect of anterior portion; E. aedeagus, lateral aspect; F. ditto, cornutus; G. ditto, another side of apical portion.

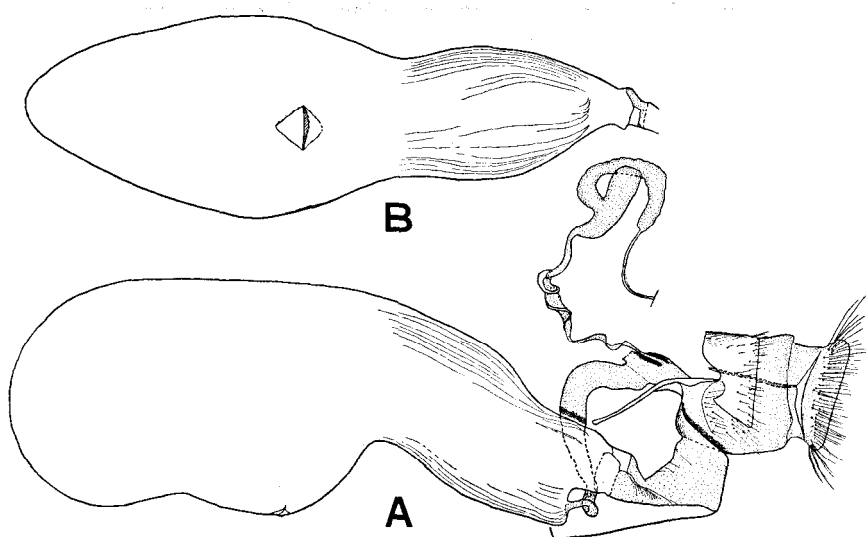


Fig. 5. Female genitalia of *Herpetogramma cynaralis* (Walker). A. lateral aspect; B. bursa copulatrix, ventral aspect.

Submarginal band brown, broad and deep in colour at apex. Marginal line with a series of brown spots. Ciliae yellow.

Male genitalia : Tegumen wide and weakly convex dorsally, united with uncus, with a narrow hair tuft from anterolateral portions ; fencsturula absent ; vinculum wide in upper part, then narrowed ventrally; saccus small, angulate at apex. Uncus broad, weakly curved downwards, with some short setae laterally and many setae on apical 1/3; gnathos slightly developed, produced into wide cochlear. Aedeagus large, with several short spinules in perivesical area, with 2 rows of denticulate carina penis, and with a long distinct and many minute cornutus; juxta almost rectangular, with its ventrolateral portions strongly sclerotized. Valva large, oval, costa narrow, with some long setae on its dorsal portion; transtilla well developed, forming a dorsal bridge above aedeagus ; anellus small ; sacculus broad with several setae; harpe undeveloped; ampulla appearing near base of transtilla, with small projections ventrally, each projection bearing a setae; cuculus large, covered with many long scale-like setae on inner surface.

Female genitalia : Genital cavity broad ; ductus bursae short, membranous, except for sclerotized semicircular plate; bursa copulatrix well developed, about 3 times as long as 7th sternum, its basal 1/2 stout, with longitudinal wrinkles, and anterior 1/2 reniform, with rhombate signum; cervix bursae undeveloped ; spermatheca with small pouch; 8th tergum with apophysis anterioris, a little longer than apophysis posterioris; 8th sternum not sclerotized.

Length of forewing: Male, 9.4-10.4 mm ; female, 8.7-9.6 mm.

Distribution : Ceylon, India, Japan (Kyushu ; Amami-Oshima, Amami Is.).

Specimens examined: 2♀♀, Cape Sata, Kagoshima Pref., 11. x. 1971 (M. Takagi, K. Ueda and Y. Yoshiyasu) ; 2♂1♀, Nejime near Cape Sata, 12. x. 1971 (M. Takagi, K. Ueda and Y. Yoshiyasu) ; 1♀, Shinmura, Amami-Oshima, Amami Is., 22. viii.

1973 (Y. Yoshiyasu) ; 1 ♂. Hakozaki, Fukuoka, Fukuoka Pref., 2. x. 1973 (Y. Yoshiyasu).

***Omphisa anastomosalis* Guenée, 1854**

(Fig. 6, male genitalia, Fig. 7F, adult female)

***Omphisa anastomosalis* Guenée, 1854, Spec. Gen. Lep., 8: 373.**

External characters : Head with frons prominent anteriorly, with brown transverse band below antennal sockets; labial palpus porrect, slender, brown above, white below, with long 3rd segment; maxillary palpus narrow, brown, with

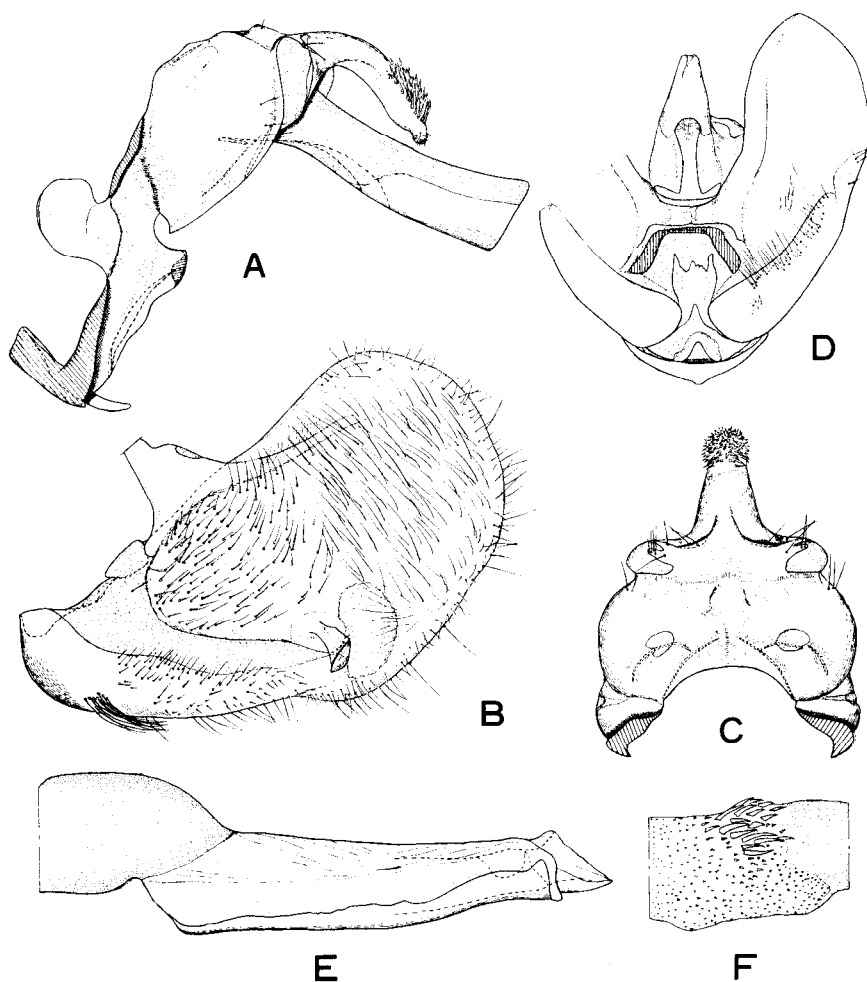


Fig. 6. Male genitalia of ***Omphisa anastomosalis* Guenée.** A. ring; B. right valva, inner aspect; C. dorsum, dorsal aspect; D. ventral aspect; E. aedeagus, lateral aspect; F. ditto, cornutus.

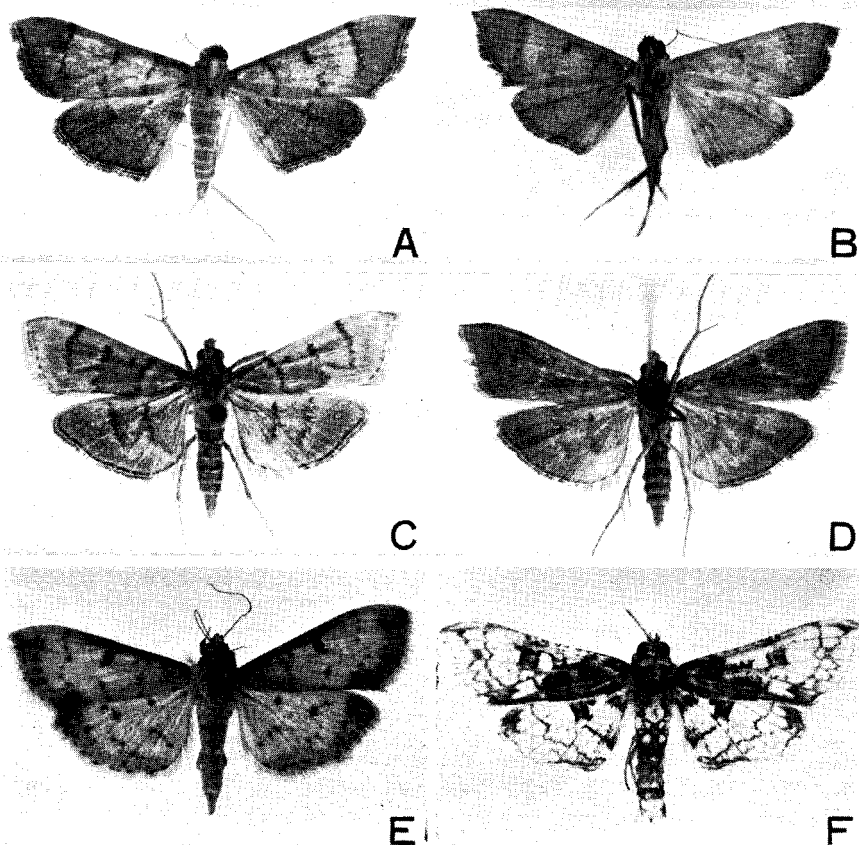


Fig. 7. A. *Hedylepta okinawaensis* sp. nov., Holotype, upperside; B. ditto, underside; C. *Hedylepta indicata* (Fabricius), female, upperside; D. ditto, underside; E. *Herpetogramma cynaralis* (Walker), female; F. *Omphisa anastomosalis* Guenée, female.

apex yellowish. Antenna short, basal portion white, outer surface covered with white scales, inner surface with fuscous scales. Thorax above whitish, mixed with brown, beneath whitish; tegula brown. Abdomen above brown, except for a pair of whitish spots each on 1st and 2nd segments. Abdomen beneath whitish. Legs whitish, with some dark patches.

Forewing with termen slightly excurved in the middle, apex of costa slightly acute. Ground colour whitish, veins brown. Basal 1/3 brown; antemedial line brown, oblique outwards from 1/4 of costa to posterior margin of discoidal cell, then angled to 2/5 of posterior margin. Apical part of discoidal cell translucent. Costal area with small specks sparsely. A brown-edged ochreous spot distad of antemedial line; discocellular lunule wide, brown, especially deep in lateral edges. Postmedial line brown, oblique from costa to vein R_{3+4} , then sinuous innerly in cell M., and reaching to vein Cu_{1b} , diminished there, and again discontinuously appearing from the middle of wing to posterior margin near antemedial line.

Submarginal line brown, fine, waved strongly, and broad at apex and tornus. Marginal line narrow, brown. Ciliae white.

Hindwing with termen excurved in the middle, posterior margin short. Ground colour same as forewing; basal part brown; brown-edged discocellular lunule well developed, oblong. Postmedial line brown, waved to vein Cu_{1+2} , especially sinuate in cell M_1 , interrupted at vein Cu_{1+2} , and again started from below lower angle of discoidal cell to posterior margin. Submarginal line narrow, brown, broad at apex, waved to tornus; marginal line narrow, brown. Ciliae white, with brown band in termen near tornal area.

Male genitalia: Tegumen wide, surface rough, with a pair of small oval membraneous areas on its outer ridge, a thick and large hair tuft from anterolateral margin, covering sides of external genitalia. Vinculum broad, united with tegumen, with a longitudinal ridge; saccus short, slightly upturned, with a posterior process. Uncus short, curved downwards, bearing many short stout setae on apical 1/2, and with several small setae at tip; fenestrula well developed. Anal tube large, its apical 1/2 broadly sclerotized on ventral surface; gnathos weakly developed, separated into 2 parts, basal portions narrow, and close to margin of uncus, apical portion produced into slender cochlear. Aedeagus short, coecum penis undeveloped, upperside of cuticular exterior sclerotized weakly, cornutus with several short spines dorsally and evenly distributed many minute spines; juxta bifurcated in basal part, its dorsal margin rough. Valva short and broad, oval; costa narrow; transtilla broad, united with each other; ampulla with small flat process; sacculus narrow with setae; cuculus occupying apical 1/2 of valva, with many hair-like setae on inner surface.

Length of **forewing**: Male, 12.9 mm; female, 17.0-17.5 mm.

Distribution: Ceylon, India, China, Burma, Java, New Guinea, Japan (Ishigaki-jima, the Ryukyus: Amami-Oshima, Amami Is.).

Specimens examined: 1 ♂, Shinmura, Amami-Oshima, Amami Is., 22. viii. 1973 (Y. Yoshiyasu); 1 ♀, Yuwan, Amami-Oshima, Amami Is., 24. v. 1974 (K. Setoya, K. Ueda and Y. Suzuki); 1 ♀, Mt. Banna, Ishigaki-jima, the Ryukyus, 29. v. 1973 (K. Ueda).

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