

SPECIES OF THE GENUS *EPIPSESTIS* MATSUMURA, 1921 IN TAIWAN, WITH THE DESCRIPTIONS OF THREE NEW TAXA (LEPIDOPTERA, THYATIRIDAE)

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ABSTRACT - A survey of the Taiwanese *Epipsestis* Matsumura, 1921 species is given, with descriptions of two new species, *Epipsestis meilingchani* sp. n. and *Epipsestis manmiaoyangi* sp. n. and a new subspecies, *Epipsestis dubia chengshinglini* ssp. n..

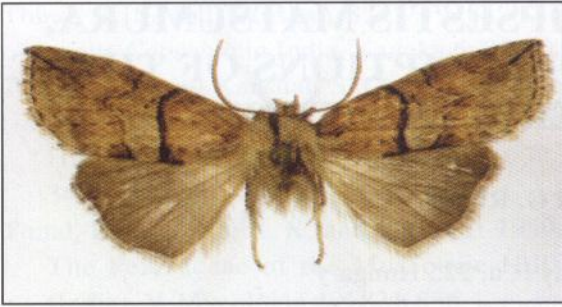
KEY WORDS: Thyatiridae, *Epipsestis*, New species, Taiwan

INTRODUCTION

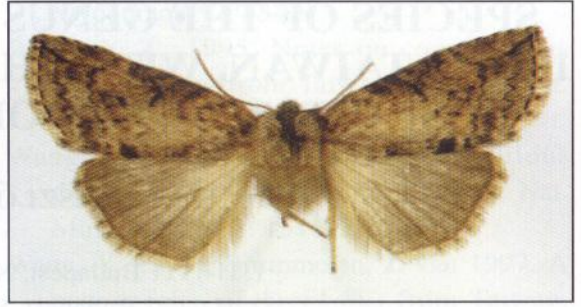
The exploration of the lepidopterous fauna of Taiwan has become more intense during the last two decades, resulting in the discoveries of a large number of new species, being often endemic to this island. This work is carried out, besides the Taiwanese colleagues, mostly by Japanese, American and Hungarian lepidopterists. The Thyatiridae fauna was studied in detail by Yoshimoto who has described several new species and subspecies and published numerous new data of distribution (1983, 1983a, 1983b, 1984, 1984a, 1985, 1987, 1987a, 1987b, 1995). According to the results of the revisional work on certain groups of the Indo-Chinese and Himalayan Thyatiridae fauna, (László & Ronkay, 1999a, b, in press), the further study of the Taiwanese species of the genus *Epipsestis* became necessary.

During the studies on the vast *Epipsestis* material of the Museum Witt, Munich and the HNHM Budapest originating from Pakistan,

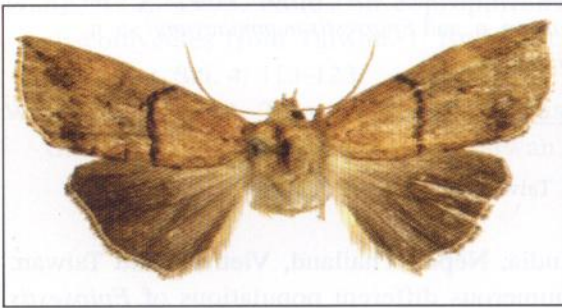
India, Nepal, Thailand, Vietnam and Taiwan, numerous different populations of *Epipsestis dubia* (Warren, 1888) were examined. It was pointed out, that *E. dubia* not only an externally highly variable, widespread species (Yoshimoto 1982, 1984) but is a complex of closely related, partly sympatric sibling species, represented by different populations from place to place. The differences between them are usually rather slight but constant, although in case of one of the Taiwanese species of this complex the male genitalia show easily recognizable apomorphic features. The two parallel lineages can be found together in Central and eastern Nepal, in northern Vietnam and in Taiwan, one of them is *E. dubia* itself, represented by externally often strongly different populations which can be considered as geographic subspecies (the nominotypical population is distributed in Himachal Pradesh and in Kashmir, where *E. dubia* has only been found). The configuration of the male genitalia of *E. dubia* is rather uniform within



Text-figure 1

Epipsestis bilineata pallida Yoshimoto, Taiwan

Text-figure 2

Epipsestis bilineata pallida Yoshimoto, Taiwan

Text-figure 3

Epipsestis bilineata Warren, Nepal

Text-figure 4

Epipsestis bilineata Warren, Nepal

its whole range, displaying no distinctive features while the taxa of the parallel "twin lineage" show stronger geographic diversification.

The Himalayan-Indo-Chinese taxa of the *E. dubia* complex will be discussed in a separate paper, and the two taxa occurring in Taiwan are described below. The first records of this complex were published by Yoshimoto (1984) who had considered the examined specimens as *E. dubia* mentioning this species as the most frequent *Epipsestis* taxon in Taiwan. The studies on some three thousand specimens revealed the fact that the *E. dubia* complex is represented by two sympatric (and syntopic), locally very frequent species in Taiwan, too. The external appearance of the insular, new subspecies of *E. dubia* differs rather strongly from those of the other populations of the species but the genitalia of

both sexes are matching well with those of the other populations of *E. dubia*. The sister species occurring in Taiwan has the male genitalia differing conspicuously from those of *E. dubia* while the female genitalia show undoubtedly its close relationship with *E. dubia*.

The collection of the Witt Museum contains also a short series of an *E. ornata* (Leech, [1889] 1888)-like species, the genitalia of which show good distinctive features compared with those of the Japanese *E. o. ornata* and of *E. ornata obscurata* Tshistjakov, 1987.

Based on the studies mentioned above, the two taxa of the *E. dubia* complex and the Taiwanese sister species of *E. ornata* are described here as *E. meilingchani* sp. n., *E. dubia chengshinglini* ssp. n. and *E. manmiaoyangi* sp. n.

Abbreviations

BMNH - The Natural History Museum, London, formerly British Museum (Natural History)

HNHM - Hungarian Natural History Museum Budapest

LG - slide of Gy. M. László

NMNS - National Museum of Natural Science, Taichung

RL - slide of L. Ronkay

TFRI - Taiwan Forestry Research Institute, Taipei

W - slide collection No. of Museum Witt.

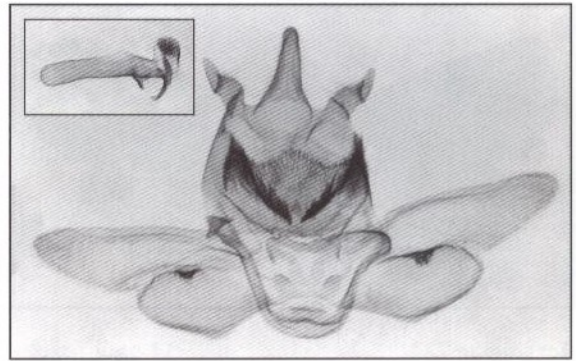
SYSTEMATIC PART

Epipsestis bilineata pallida Yoshimoto, 1984 (Figs 1-2, 5-6)

Material examined: 217 specimens from the following localities: Prov. Nantou: Meimu, 2000 m, 28.X.1996. Prov. Kaohsiung: 3 km E Chiashien, 460 m, 18.X.1996. Prov. Taitung: Hsiangyang, Police station, 2320 m, 25-26.X.1996 and 2.XI.1996; Yakou, 2600 m, 1-3.XI.1996. Prov. Nantou: Tayuling, 2550 m, 7-8.X.1996, leg. Gy. Fábíán & F. Nemes; 3 km E of Tili, 555 m, 12.X.1995, 12° 58' E, 23° 47' N, leg. T. Csóvári & P. Stéger. Prov. Taichung: Anmashan, Hooping, 2000 m, 31.X.1996, leg. Gy. Fábíán (F. Nemes (coll. Museum Witt and HNHM).

Slide Nos: RL6463, LG489 (W5176), LG541 (W5178) (males); RL6511, LG540 (W5177) (females)

Remarks: The species was described from Darjeeling (Warren, 1915), and the ssp. *pallida* is considered are endemic to Taiwan. The type series of Yoshimoto was rather short, only 5 specimens, containing the pale, patternless form only. These specimens are regularly paler, smaller than those of the typical population of the southern Himalayas (Figs 3-4), the genitalia of the two subspecies, on the other hand, show no distinctive features



Text-figure 5

Epipsestis bilineata pallida Yoshimoto, male genitalia



Text-figure 6

Epipsestis bilineata pallida Yoshimoto, female genitalia

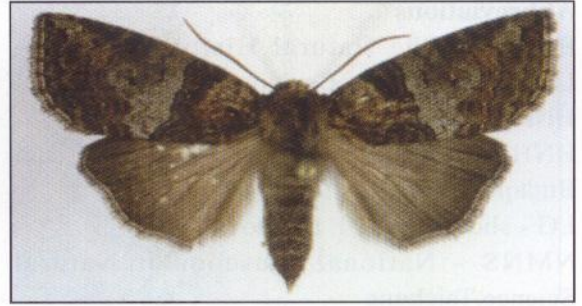
(Figs 5-6). The material preserved in the Witt Museum, consisting of about two hundred specimens, contains also the well-marked form of *E. b. pallida*, although this form appears in Taiwan as more rare than in the typical subspecies. Comparing the larger series of the two subspecies, the differences in the external appearance between them became much smaller but recognizable, thus, the subspecific status of the Taiwanese populations is confirmed here. The Taiwanese subspecies of *E. bilineata* is rather infrequent, inhabiting mostly the higher forest zones.

Epipsestis cortigera Yoshimoto, 1995 (Figs 7-8, 9-10)

Material examined: Prov. Taoyuan: 9 males, 2



Text-figure 7

Epipsestis cortigera Yoshimoto, male

Text-figure 8

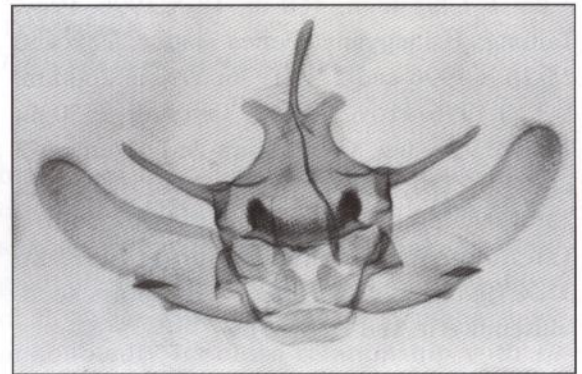
Epipsestis cortigera Yoshimoto, female

females, Ming Chyr Forest Recreation Area, 1160 m, 10-11.XII.1997, leg. Gy. Fábíán; 1 female, same locality, but 11.XII.1998, leg. Gy. Fábíán & Z. Korsós. Prov. Taichung: 1 male, Anmashan, Hooping, 2000 m, 31.X.1996, leg. Gy. Fábíán & F. Nemes; 1 male, same locality, but 2.XII.1997, leg. Gy. Fábíán. Prov. Miaoli: 3 males, 1 female, 35 km E of Tungshih, 120° 50E, 24° 19N, 2020 m, 19.XII.1997. Prov. Nantou: 1 female, 3 km SW of Tsuifeng, 121° 10E, 24° 06N, 2100m, 18.XII.1997, leg. S. Simonyi & A. Szabó (coll. Museum Witt and HNHM).

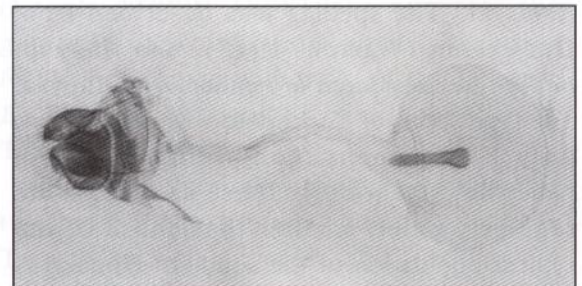
Slide Nos: RL6454 (W5182), RL6455, LG487, LG535, LG619 (W5180) (males), RL6473 (W5179), LG618 (W5181) (females).

Remarks: The species was described on the basis of its unique holotype, the genitalia of the opposite sex is described below. A rare species, known as endemic to Taiwan. The species is rather remote within the genus, having no close relatives. In spite of this fact, it is often hardly separable from *E. nikkoensis* (Matsumura, 1921) by its external features, although the basal area of *E. cortigera* is regularly broader, with more intense ochreous-brownish irroration and the antemedial crossline is stronger, more arcuate than in *E. nikkoensis*. It is worth to mention that *E. cortigera* is very homogeneous in its external appearance, the unusual, relatively

small, dark "*cortigera*" specimens proved exclusively identical with *E. nikkoensis*. The differences in the male genitalia between of the two species are surprisingly large, and the configuration of the tegumen and its appendices of *E. cortigera* are unique within the whole genus. The female genitalia of *E.*



Text-figure 9

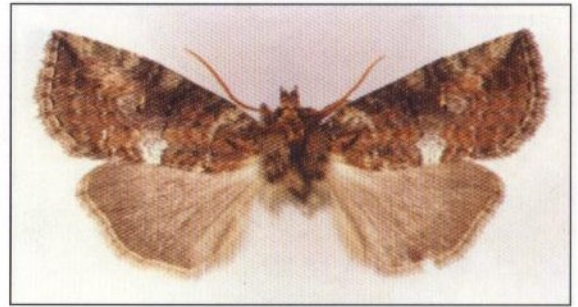
Epipsestis cortigera Yoshimoto, male genitalia

Text-figure 10

Epipsestis cortigera Yoshimoto, female genitalia



Text-figure 11

Epipsestis nikkoensis Matsumura, male

Text-figure 12

Epipsestis nikkoensis Matsumura, female

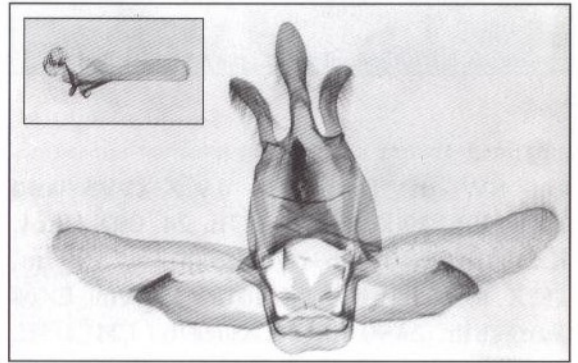
cortigera differ from those of *E. nikkoensis* by their much larger, longer signum, the presence of a small sclerotized plate close to appendix bursae and by the stronger sclerotization of the ovipositor.

Female genitalia (Fig. 10): Ovipositor short, rounded conical, rather strong, papillae anales sclerotized, setose, apically rounded, ventral plate hat-like. Dorsal plate of 8th segment broad, short, quadrangular, ventral plate Y-shaped, granulously sclerotized, anterior apophyses long, slender. Ostium bursae tiny, finely sclerotized, ductus bursae short, tubular, distal part with fine sclerotization. Cervix bursae small, membranous, tubular distal part of corpus bursae long, wrinkled, with small sclerotized plate at middle. Proximal bulb of corpus bursae discoidal, membranous with fine scobination and wrinkles; signum large, elongate, broad, slightly dilated, rounded at proximal end, covered with minute teeth.

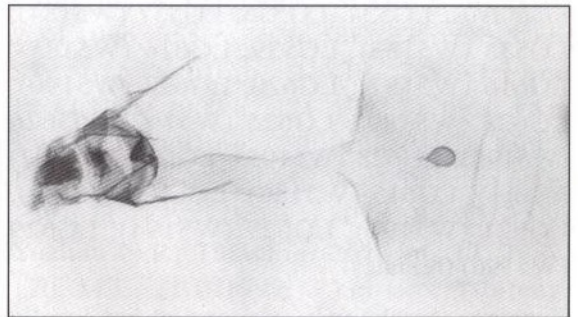
Epipsestis nikkoensis (Matsumura, 1921)
(Figs 11-12, 13-14)

Material examined: 222 specimens of both sexes from the following localities: Prov. Hualien: Kuanyuan, 2380 m, 11-12.X. and 27.X.1996. Prov. Taitung: Hsiangyang, Police station, 2320 m, 25-26.X., 2.XI.1996; 6-7.XII.1997; Yakou, 2600 m, 1-3.XI.1996.

Prov. Taichung: Anmashan, Hooping, 2000 m, 31.X.1996. Prov. Nantou, Tayuling, 2550 m, 7-8.X.1996; 3 km W Yushankou, 2300 m, 8.XII.1997; 3 km E of Tili, 2.XI.1996, 555 m, 120° 58E, 23° 47N; 3 km SW of Tsuifeng, 2100 m, 26-27.X.1995, 121° 10E, 24° 06N; 5

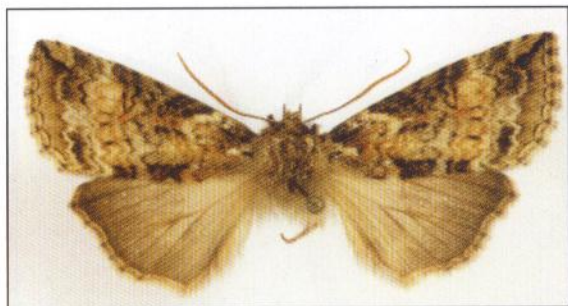


Text-figure 13

Epipsestis nikkoensis Matsumura, male genitalia

Text-figure 14

Epipsestis nikkoensis Matsumura, female genitalia



Text-figure 15

Epipsestis meilingchani sp. n., holotype

Text-figure 16

Epipsestis meilingchani sp. n., paratype male

Text-figure 17

Epipsestis meilingchani sp. n., paratype female

Text-figure 18

Epipsestis meilingchani sp. n., paratype female

km SW of Tayuling, 19.X.1995 and 1.XI.1996, 2900 m, 121° 17E, 24° 09N. Prov. Kaohsiung: 3 km E Chiashien, 460 m, 18.X.1996. Prov. Miaoli: 49 km E of Tungshih, 2490 m, 28.X.1996, 121° 03E, 24° 19N, leg. T. Csöväri, Gy. Fábrián, F. Nemes, P. Stéger and Cs. Szabóky (coll. Museum WITT and HNHM)

Slide Nos: LG534, LG536, LG537 (W5184), LG538 (W5183), LG539, LG614 (W5185), LG616 (W5187), LG620, LG622 (W5190), LG623 (W5189), LG625 (W5192), LG626 (W5193), LG628 (W5195), LG630 (W5197) (males), LG615 (W5186), LG617 (W5188), LG621 (W5191), LG627 (W5194), LG629 (W5196) (females).

Remarks: A relatively widespread but locally distributed species formerly recorded from Japan (the type locality of the species),

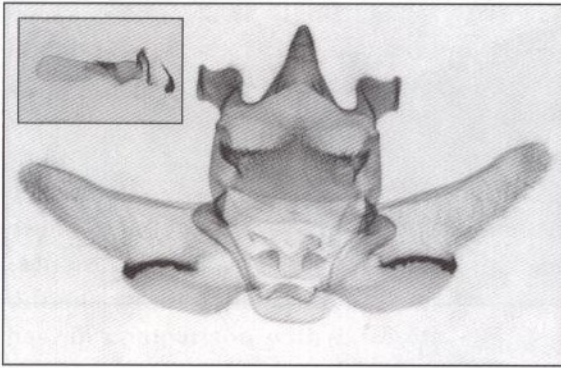
Taiwan and from Nepal (Yoshimoto, 1976, 1982, 1984, 1988); discovered recently in (North and South) Korea and in northern Vietnam. This local and usually rare species is surprisingly frequent in Taiwan, occurring mostly in the higher deciduous forest regions between 2000 - 3000 m a.s.l.

***Epipsestis meilingchani* sp. n.**

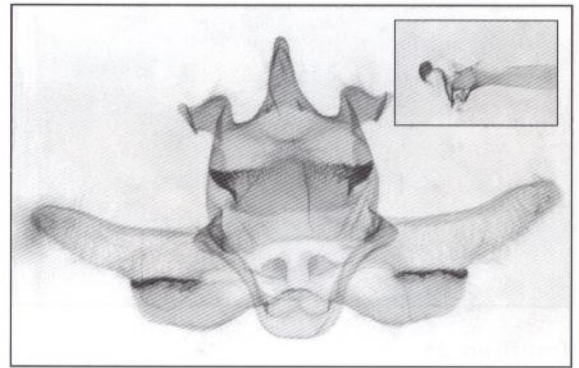
(Figs 15-18, 19-22)

Holotype: male, "TAIWAN, Prov. Nan-Tou, Tayuling, 2750 m, 30.XI.1997, leg. Gy. Fábrián, coll. Museum WITT", slide No. LG516 (W5205) (coll. Museum Witt).

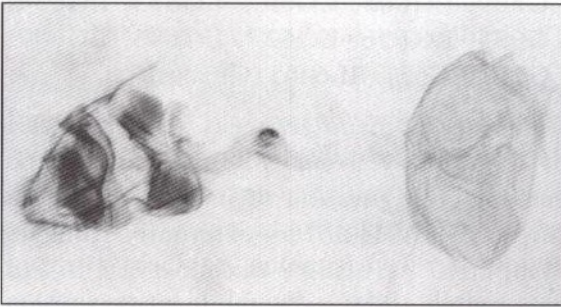
Paratypes: 1650 specimens of both sexes from the following localities: Prov. Taoyuan: Ming Chyr Forest Recreation Area, 24° 39,21N, 121° 28,19E, 1160m, 27-28.XI.1998; same locality, 11.XII.1998; Ming Chyr F.R.A., 1160



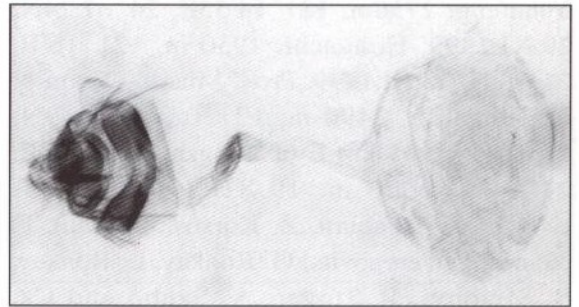
Text-figure 19
Epipsestis meilingchani sp. n., male genitalia,
holotype



Text-figure 20
Epipsestis meilingchani sp. n., male genitalia,
paratype



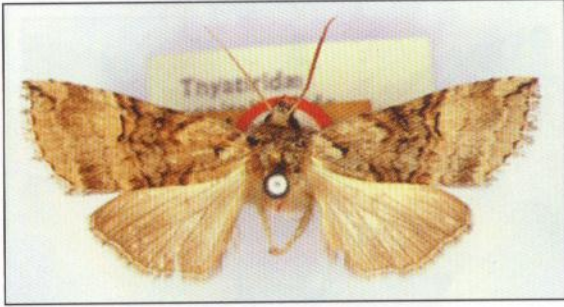
Text-figure 21
Epipsestis meilingchani sp. n., female genitalia,
paratype



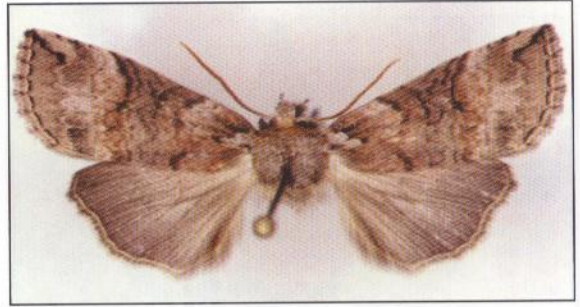
Text-figure 22
Epipsestis meilingchani sp. n., female genitalia,
paratype

m, 10-11.XII.1997. Prov. Taichung: An-ma-Shan, Hooping, 24°14,7N, 120°58,4E, 2000 m, 1.XII.1998; Anmashan, Hooping, 2000 m, 31.10.1996; Anmashan, Hooping, 2000 m, 2.XII.1997. Prov. Hualien: Taroko NP, sacred Pilu tree, 2000 m, 24°14,7N, 121°24,14E, 3-5.XII.1998; same locality, 9.XII.1998; Kuanyuan, 2380 m, 11-12. and 27.X.1996. Prov. Taitung: Yakou, 23°14,45N, 120°58,9E, 2600m, 6.XII.1998; Hsiangyang, Police station, 2320m, 19-20.X., 25-26.X., 2.XI.1996, 3-4.XII., 6-7.XII.1997, 17.II.1999; Yakou, 2600 m, 1-3.XI.1996; 3 km W of Hungyeh village, 350m, 5.XI. and 14.XI.1996, 120°52E, 22°28N. Prov. Kaohsiung: 3 km E Chiashien, 460 m, 18.X.1996; 26 km SE of Taoyuan, 1370 m,

4.XI.1996 and 11.XII.1997, 120°52E, 23°17N; 16 km SE of Taying, 1370 m, 23.X.1995, 120°52E, 23°17N. Prov. Nantou: Tayuling, 2550 m, 7-8.X.1996; Tayuling, 2750 m, 30.XI.1997; 3 km W Yushankou, 2300 m, 8.XII.1997; 3 km E of Tili, 2.XI.1996, 555 m, 120°58E, 23°47N; 5 km SW of Tayuling, 1.XI., 7-8.XI. and 18.XI.1996, 2900 m, 121°17E, 24°09N; 5 km SW of Tayuling, 2900 m, 19.X.1995, 121°17E, 24°09N; 1 km W of Tatachia peak, 2520 m, 13.X.1995, 120°53E, 23°33N; Yushan N.P., Tatachia, 2610 m, 23°29'N, 120°54'E, 21.II.1999; 3 km E of Tsuifeng, 2100 m, 26-27.X.1995, 121°10E, 24°06N; 3 km SW of Tsuifeng, 121°10E, 24°06N, 2100 m, 12.XII. and 18.XII.1997; Hohuanshan,



Text-figure 23

Epipsestis dubia Warren, holotype

Text-figure 24

Epipsestis dubia Warren, male, Pakistan

Yuanfeng, 2750m, 121° 14'55E, 24° 07'24N, 29.XI.1999, Hohuachi, 1950 m, 121° 16'E, 24° 13'N, 28.XI.1999. Prov. Miaoli: 49 km N of Tungshih, 2490 m, 121° 03E, 24° 19N, 11.XI.1996; 35 km E of Tungshih, 120° 50E, 24° 19N, 2020 m, 19.XII.1997, leg. T. Csóvári, Gy. Fábíán, Z. Korsós., A. Kun, F. Nemes, L. Peregovits, G. Ronkay, L. Ronkay, S. Simonyi, P. Stéger, A. Szabó and Cs. Szabóky (coll. Museum WITT, BMNH, HNHM and G. Ronkay).

244 specimens with the following data: Prov. Nantou: Meifeng, 1-3.XII.1988, 13-14.XI.1990, 17.XII.1990, light trap, leg. C.S. Lin; Hsini, Tungpu, 31.I.1985, leg. B.S. Chang. Prov. Chiayi: Tatchia-Anpu, 15.XII.1990; Dongpuu, 17.XI.1990, leg L.P. Shyu; Shyrshan, 9.XII.1990, leg. H.-R. Tzuoo (coll. NMNS, Taichung). 38 specimens, Prov. Nantou: Piluchi, 29.XI.1986, 27.XI.1987, 13.XII.1990, leg. Y.C. Chang (coll. TFRI, Taipei). 10 specimens, Prov. Taichung: Anmashan, 2100 m, 11.XI.1996, 7.XII.1996, 4.I.1997. 5 specimens, Prov. Chiayi: Paiyun Vilia, 3528 m, 8.XI.1993. 6 specimens, Tatchia saddle, 2800 m, 14.XII.1991, leg. H.-R. Tzuoo (coll. H.-R. Tzuoo).

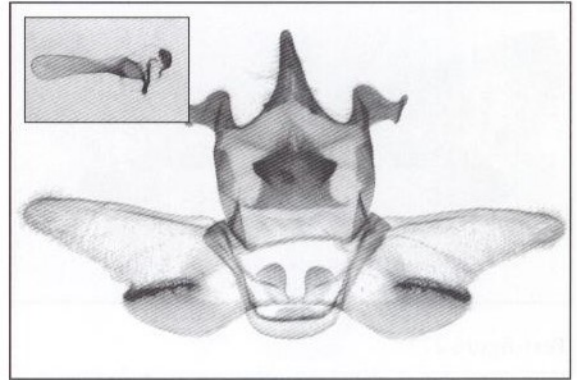
Slide Nos: LG458, LG459, LG 510, LG515, LG524 (W5210), LG525 (W5209), LG526 (W5207), LG598, LG599 (W5208), LG600, LG606, LG638 (males), LG463 (W5211),

LG509, LG605, LG607, LG633, LG634, LG635, LG636, LG637, LG643, LG647, LG650, LG651, RL6465 (females).

Diagnosis: *E. meilingchani* is a sister species of *E. dubia* (Warren, 1888), in spite of the curious configuration of its male genitalia (Figs 23-26). It differs externally from its sympatric sibling taxon, *E. dubia chengshinglini* by its generally darker, more brownish colouration of the forewing, even the palest specimens have a brownish shade. The satisfactory separation requires the study of the genitalia, the differences in the males are surprisingly large, much less conspicuous in case of the females. The male genitalia of *E. meilingchani* resemble mostly not any races of *E. dubia* but those of *E. longipennis* Yoshimoto, 1982 (see Yoshimoto, 1982: fig. 36) by its much broader, shorter, crown-like fultura superior and the narrower, more elongate valvae with shorter, weaker sacculus, while the configuration of the socius is more dubia-like. *E. longipennis* has, however, even shorter, more angular sacculus with much shorter saccular crest, situated close to ventral margin while that of *E. meilingchani* is significantly longer, rounded and the saccular crest is also longer, about twice as long as in *E. longipennis*; the two species are externally rather dissimilar. The male genitalia of *E. dubia*, comparing with those of *E.*

meilingchani, have significantly narrower, longer, characteristically mushroom-shaped fultura superior and less elongate, broader valva. The female genitalia of the new species show its close relationship with *E. dubia* by the lack of the signum which is present in all other *Epipsestis* species (even *E. renalis* (Moore, 1888) has a small signum), and the differences are rather slight. *E. meilingchani* has, in comparison with *E. dubia*, broader, shorter sclerotized dorsal plate on the 8th segment, the ventral, scobinate lamina of the papillae anales forming a broader triangle with less distinct lateral margins and the proximal sac of the corpus bursae is somewhat more flattened and more elliptical.

Description: Wingspan 32-37 mm, length of forewing 14-18 mm. Sexes similar. Head and frons dark grey mixed with brown and dark grey hairs, collar and tegulae marked with white, dark brown and blackish hairs. Palpi laterally blackish, antenna dark red-brown, antenna of male thicker, slightly darker than that of female. Abdomen paler brownish grey, dorsal crest represented by small dark brown tufts. Forewing elongate, relatively broad, with apex pointed, outer margin evenly arcuate. Ground colour brownish grey with ochreous shining irrorated variably strongly with ochreous brown and dark fumous grey scales, scaling finely reticulate. Basal dash very short, black in large white patch, basal area rather narrow. Crosslines rather diffuse but clearly visible, blackish grey or blackish brown, filled with whitish grey, basal and antemedial lines double, strongly sinuous. Median area wide, postmedial line double, slightly sinuous, defined by a few blackish spots on veins, median fascia diffuse or obsolescent, inner half of median area with indistinct, shadow-like lines. Orbicular and reniform stigmata present, variably strong, most often fine, straight or finely lunulate blackish commas, defined usually by a few orange-yellow scales. Praeterminal line rather



Text-figure 25

Epipsestis dubia Warren, male genitalia

Text-figure 26

Epipsestis dubia Warren, female genitalia

sharply defined, double, sinuous, blackish grey followed by whitish stripe, subterminal line continuous, sinuous, greyish white, marked with darker grey patches on both sides, fused often into dark grey fasciae. Apical streak short, strong, oblique, dark grey or blackish, terminal line fine, consisting of small blackish grey arches, cilia whitish, chequered with dark grey. Hindwing brownish grey, transverse line usually hardly visible, marginal suffusion broad, somewhat darker than ground colour. Cilia ochreous-whitish, with brown medial line and a few dark spots. Underside of wings pale whitish grey, forewing and marginal area of hindwing suffused strongly with brownish grey, traces of transverse lines present but diffuse.



Text-figure 27

Epipsestis dubia chengshinglini ssp. n., holotype



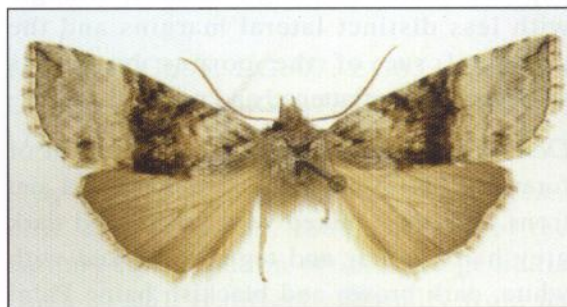
Text-figure 28

Epipsestis dubia chengshinglini ssp. n., paratype male



Text-figure 29

Epipsestis dubia chengshinglini ssp. n., paratype female



Text-figure 30

Epipsestis dubia chengshinglini ssp. n., paratype female

Male genitalia (Figs 19-20): Uncus short, thick, robust, dorsally humped, strongly bent ventrally, apex obtuse. Tegumen narrow, low, socii strong, short, flattened, dorsal margin highly raised at base then slightly descended ventrally, forming rounded dorsal lobe, distal end with partly folded, terminally rounded lobe. Fultura superior broad, rather short, sclerotized, crown-like, lateral arms and dorsal margin broadly covered with long spiculi; fultura inferior small, calyculate with pointed tips; vinculum short, broadly U-shaped. Valva elongate, narrow, strongly tapering towards apex, its tip finely rounded; ventral surface densely setose. Sacculus short, rounded, smoothly sclerotized, with fine wrinkles, saccular crest long, with strong, acute teeth; claviform lobes small, rounded

quadratic, finely setose. Aedeagus medium-long, tubular, carina with short, broad, apically rounded ventral process fused with long, rather broad sclerotized bar projecting into basal part of vesica. Vesica membranous, hyaline, short, everted dorsally, bent ventrolaterally. Cornuti field of vesica long, narrow, armed with fine, acute, chevron-like cornuti.

Female genitalia (Figs 21-22): Ovipositor shortly conical, papillae anales medium-long, apically rounded, densely setose. Ventral plate of last segment finely scobinate, broadly triangular with rather indistinct lateral margins. Dorsal plate of 8th segment broad, rather short (low), deltoidal with rounded posterior angle narrow, sclerotized, half-ring-like. Ostium bursae very small, membranous, with small, cup-shaped sclerotized plate,

lamella antevaginalis large, spinulate. Ductus bursae very short, tubular, membranous, with fine wrinkles. Appendix bursae small, subconical, with swollen, scobinate portion oppositely. Tubular distal part of corpus bursae long, membranous, twisted, weakly scobinate and wrinkled. Proximal part of corpus bursae large, elliptical-ovoid, finely ribbed, without signum.

Bionomics and distribution: *E. meilingchani* and *E. dubia chengshinglini* inhabit the same deciduous forest regions, occurring practically everywhere in the mountainous areas; *E. meilingchani* is the most frequent *Epipsestis* species in Taiwan. The flight period is unusually long, extending from the first part of October to the end of February.

Etymology: This species is dedicated to Miss Mei-Ling Chan, assistant curator, collection manager of Entomology Division of Collection and Research in National Museum of Natural Science, Taichung.

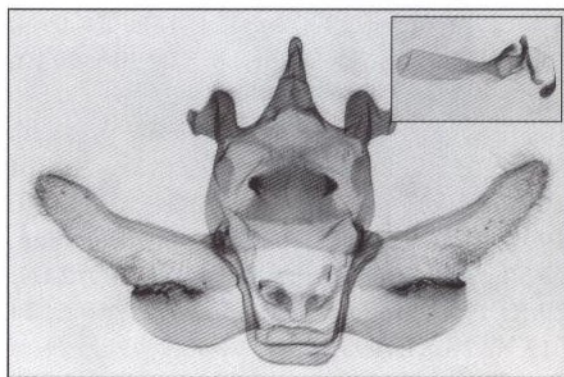
Remarks: Yoshimoto (1984) illustrated a female specimen as *E. dubia* in the photoplate No. 4.

***Epipsestis dubia chengshinglini* ssp. n.**

(Figs 27-30, 31-32)

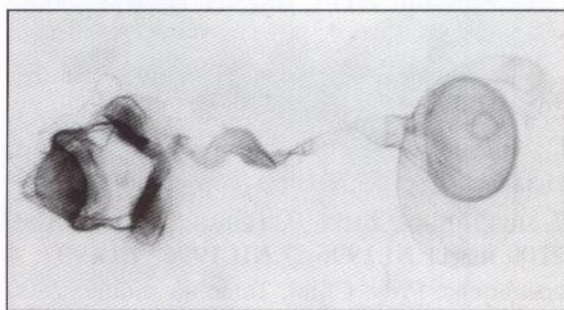
Holotype: male, "TAIWAN, Prov. Taoyuan, Ming Chyr Forest Recreation Area, 1160 m, 10-11. XII.1997, leg. Gy. Fábíán, coll. Museum WITT", slide No. LG521 (W5206) (coll. Museum Witt).

Paratypes: 495 specimens of both sexes from the following localities: Prov. Taoyuan: Ming Chyr Forest Recreation Area, 24°39,21N, 122°8,19E, 1160m, 27-28.XI.1998, 11.XII.1998; Ming Chyr F.R.A., 1180 m, 30.X.1996, 10-11.XII.1997. Prov. Taichung: An-ma-Shan, Hooping, 24°14,7N, 120°58,4E, 2000 m, 1.XII.1998; Anmashan, Hooping, 2000 m, 31.X.1996; Anmashan, Hooping, 2000 m, 2.XII.1997. Prov. Hualien: Taroko NP, sacred



Text-figure 31

Epipsestis dubia chengshinglini ssp. n., male genitalia, holotype



Text-figure 32

Epipsestis dubia chengshinglini ssp. n., female genitalia, paratype

Pilu tree, 2000 m, 24°14,7N, 121°24,14E, 3-5.XII.1998, 9.XII.1998; Kuanyuan, 2380m, 11-12.X.1996; Hsiangyang, Police station, 2320 m, 25-26.X.1996, 2.XI.1996. Prov. Taitung: Yakou, 23°14,45'N, 120°58,9E, 2600 m, 6.XII.1998; Yakou, 2600 m, 1-3.XI.1996; Hsiangyang, Police station, 3-4. and 6-7.XII.1997. Prov. Kaohsiung: 3 km E Chiashien, 460 m, 18.X.1996; 26 km SE of Taoyuan, 1370 m, 4.XI.1996, 120°52E, 23°17N; 16 km SE of Taying, 1370 m, 23.X.1995, 120°52E, 23°17N. Prov. Nantou: Tayuling, 2550 m, 7-8.X.1996; Tayuling, 2750 m, 30.XI.1997; 3 km W Yushankou, 2300 m, 8.XII.1997; 3 km E of Tili, 2.XI.1996, 555 m, 120°58E, 23°47N; 5 km

SW of Tayuling, 2900 m, 121°17'E, 24°09'N, 1.XI.1996, 7-8.XI.1996, 18.XI.1996; 3 km SW of Tsuifeng, 2100 m, 17.XI.1996, 121°10'E, 24°06'N; 5 km SW of Tayuling, 2900 m, 8.X.1995, 121°17'E, 24°09'N; 3 km SW of Tsuifeng, 121°10'E, 24°06'N, 2100 m, 12.XII.1997, 18.XII.1997; Hohuanshan, Yuanfeng, 2750 m, 121°14'55"E, 24°07'24"N, 29.XI.1999, Hohuachi, 1950 m, 121°16'E, 24°13'N, 28.XI.1999. Prov. Miaoli, 49km N of Tungshih, 2490 m, 121°03'E, 24°19'N, 11.XI.1996, leg. T. Csővári, Gy. Fábrián, A. Kun, F. Nemes, L. Peregovits, L. Ronkay, S. Simonyi, P. Stéger, A. Szabó and Cs. Szabóky (coll. Museum WITT, BMNH, HNHM and G. Ronkay).

15 specimens, Prov. Nantou, Piluchi, 29.XI.1986, 27.XI.1987, 13.XII.1990, leg. Y. C. Chang; 1 specimen, Prov. Taichung, Hsiahsueshan, 15.X.1960 (coll. TFRI, Taipei); 7 specimens, Prov. Taichung, Anmashan, 2100 m, 11.XI.1996, 7.XII.1996, 4.I.1997; 4 specimens, Prov. Chiai, Tatachia saddle, 2800 m, 14.XII.1991, leg. Han-Rong Tzuoo (coll. H-R. Tzuoo); 28 specimens, Prov. Taoyuan: Fushing, Ssuleng, 17.X.1982 and 3.I.1983, leg. B. S. Chang. Prov. Ilan: Tatung, Chihtuan, 17.XII.1982 and 22.XI.1982, leg. B.S. Chang. Prov. Chiai: Dongpuu, 17.XI.1990, leg. L.P. Shyu; Tatachia-Anpu, 15.XII.1990, leg. L.P. Shyu. Prov. Peipuwaiping, 30.XI.1986, leg. B.S. Chang. Prov. Nantou: Jenai, Tsuifeng, 29.X.1983, leg. B. S. Chang; 8 specimens, Meifeng, 1-3 XII.1988, 13-14.XI.1990, 17.XII.1990, light trap, leg. C. S. Lin (coll. NMNS, Taichung).

Slide Nos: LG462 (W5199), LG517 (W5204), LG518 (W5202), LG519 (W5198), LG520 (W5200), LG522 (W5203), LG532 (W5201), LG602, LG639, LG640, LG644, LG648, LG649, RL6464, RL6474 (males), LG508, LG523 (W5216), LG601, LG603, LG604, LG608, LG645 (females).

Taxonomic notes: The most widely distributed

species of the genus, occurring practically in the whole area of the Himalayan massif, from the historical Kashmir to northern Vietnam and to Taiwan; the typical population is confined to the north-western part of its range. According to the vast material collected during the recent expeditions in various parts of the Himalayan chain, "*E. dubia*" is a complex of two sibling species, occurring partly sympatrically in the southern Himalayas and *E. dubia* itself is represented by different subspecies within its large area. The revision of the taxa of the *E. dubia* - complex is under preparation.

Diagnosis: The Taiwanese subspecies differs from the other populations of *E. dubia*, occurring from Pakistan throughout the southern Himalayas towards the northern areas of Indochina, by its in average smaller size, less elongate forewing with more obtuse apex and with paler, more ashy grey ground colour, the specimens with darkened median area are relatively rare. The typical populations of *E. dubia* (Figs 23-24) are distributed in the western Himalayan region, are larger in size, the forewings are longer with more pointed tip and the ground colour is significantly darker grey, often with darker median area, strong dark crosslines and more intense brownish irroration; these differences are easily recognizable comparing larger series of specimens from each region. The geographically closest Vietnamese populations are also darker, the forewings are narrower, apically more pointed with rather conspicuous crosslines and with usually intense orange-brownish irroration in basal and in median areas.

Bionomics and distribution: A late autumnal species, inhabiting the broad-leaved forest regions of Taiwan, appearing as much less frequent than its sympatric and syntopic congener, *E. meilingchani*. This subspecies is endemic to Taiwan.

Etymology: The new taxon is dedicated to Dr. Cheng-Shing Lin, curator of Entomology Division of Collection and Research in the National Museum of Natural Science, Taichung.

Remarks: In his paper on the Taiwanese *Epipsestis* species, Yoshimoto (1984) illustrated also this subspecies of *E. dubia* in Figs 7 and 8.

***Epipsestis manmiaoyangi* sp. n.**
(Figs 33-35, 39-41)

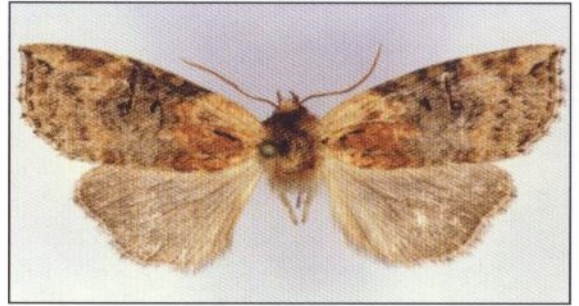
Holotype: male, "TAIWAN, Prov. Nan-Tau, Meimu 2000 m, 28.10.1996, leg. Gy. Fábán & F. Nemes, coll. Museum WITT", slide No LG611 (W5212) (coll. Museum Witt).

Paratypes: 1 male, with the same data as the holotype. Prov. Taitung: 1 female, 2 km S Liyusan, 1760 m, 21.X.1996; 1 female, Hsiangyang 2320 m, 2.XI.1996, leg. Gy. Fábán (F. Nemes. Prov. Hualien: 1 male, Kuanyuan, 2380 m, 27.X.1996, leg. Gy. Fábán & F. Nemes. Prov. Nantou: 1 male, 3 km SW of Tsuifeng, 2100 m, 121°10' E, 24°06'N, 31.X.1996 leg. T. Csővári (Cs. Szaboky (coll. Museum WITT).

Slide Nos: LG612 (W5214), LG613 (W5213) (males), LG544 (W5215) (female).

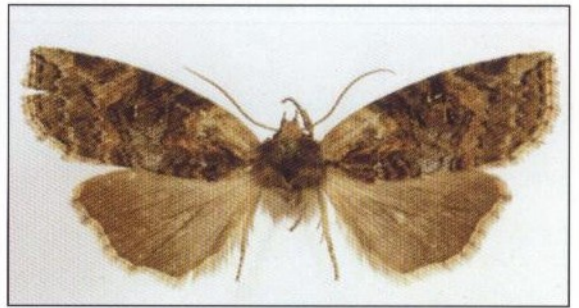
Diagnosis: The new species is the allopatric sister species of *E. ornata* (Leech, (1889(1888), appearing as endemic to Taiwan. It differs externally from the well-marked forms of *E. ornata ornata* (Figs 36-37) by its less conspicuous crosslines and stigmata and the stronger ochreous-brownish irroration of the basal area; from *E. ornata obscurata* Tshistjakov, 1987 (Fig. 38) by its weaker body, narrower forewings and by the darker basal area with less intense ochreous-brownish irroration.

The male genitalia of *E. manmiaoyangi* differ from those of the subspecies of *E. ornata* (Figs 42-43, 45) by its apically



Text-figure 33

Epipsestis manmiaoyangi sp. n., holotype



Text-figure 34

Epipsestis manmiaoyangi sp. n., paratype, female



Text-figure 35

Epipsestis manmiaoyangi sp. n., paratype, female

broadened, ventrally narrower fultura superior with broader, U-shaped dorsal incision and with wider, more parallel spinulose crests (see Figs 36, 42), differently shaped crest of sacculus, having evenly arcuate basal curve, situated more distally than in *E. ornata* and the distal peak of the crest is smaller, more



Text-figure 36

Epipsestis ornata Leech, holotype, Japan

Text-figure 37

Epipsestis ornata Leech, Korea, female

Text-figure 38

Epipsestis ornata obscurata Tshistyakov, Russian Far East, male

triangular. The laminae of the carina are also different, one of them is more rounded, discoidal in the new species, and the cornuti of the cornuti field of *E. manmiaoyangi* are significantly smaller (see Figs 40, 43).

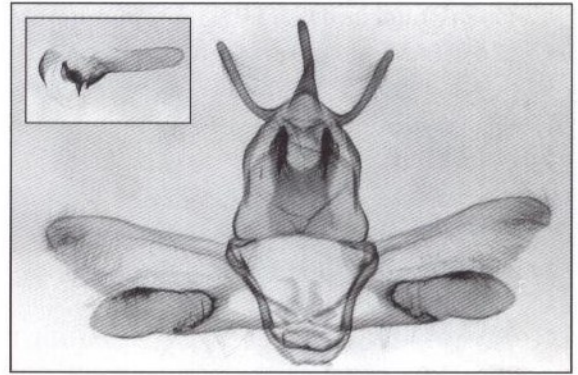
The female genitalia of the two species are very similar (see Figs 41, 44) but the signum of *E. manmiaoyangi* is larger, more dilated terminally, the sclerotized patch of the tubular part of corpus bursae is larger, stronger, the anterior lobe of the dorsal plate of the 8th segment is more triangular, and the papillae anales are narrower, more acute.

Description: Wingspan 33-37 mm, length of forewing 15-18.5 mm. Male. Body slender, head small, eyes large, palpi slender, upturned, third joint rather long, hegyes. Pubescence of head and collar whitish-ochreous, mixed with brownish grey scales, frons with two pairs of small tufts. Palpi whitish, lateral sides darker brown, antenna fine, slender, dark red-brown, axis covered with ochreous scales. Tegulae dark greyish brown, prothoracic tuft ochreous, abdomen paler grey. Forewing long, narrow, with convex costal margin. Apex pointed, outer margin finely concave below apex. Ground colour fumous or graphite-grey with brownish irroration, scaling finely reticulate. Basal area rather narrow, with variably strong, usually less intense ochreous-brownish irroration. Wing pattern less conspicuous except blackish stigmata. Basal part of costa with broad pale ochreous, lightest part of wing; basal dash weak, fine, crosslines fine, sinuous, double, dark grey or blackish. Subbasal, antemedial and postmedial lines present, filled with ground colour, defined with paler ochreous-brownish fasciae between subbasal and antemedial and postmedial and praeterterminal lines. Median fascia diffuse or obsolescent, orbicular and reniform stigmata present, sharply defined, fine black commas, orbicular shorter, reniform longer, sometimes separated into two parts. Subterminal line diffuse, sinuous, greyish white, defined with a few blackish grey scales on both sides. Apical streak short, oblique, dark grey, terminal line interrupted, fine, blackish, cilia whitish, chequered with dark grey dots and paler grey

line. Hindwing unicolorous, suffused with dark greyish brown, basal area slightly paler, veins covered with dark brown. Cilia ochreous or whitish, with brown medial line. Underside of wings brownish grey, traces of pale fasciae of forewing clearly visible, hindwing somewhat paler, with darker, diffuse transverse line and marginal area. Female. As male, larger in size with longer forewing, antenna finer, more slender.

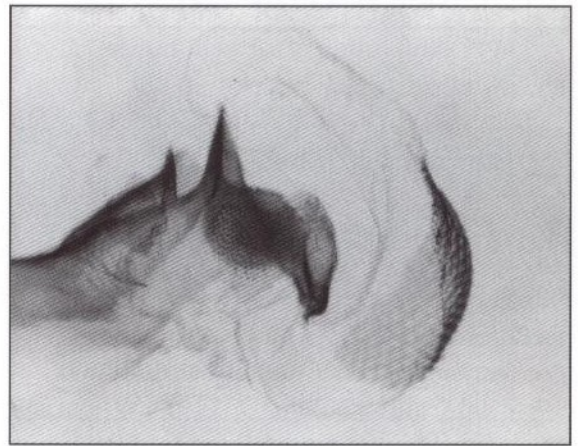
Male genitalia (Figs 39-40): Uncus slender, rather short, basal third triangular, tapering; socii slightly longer, finer, slightly curved at base. Tegumen narrow, short, fultura superior large, sclerotized, long, rather narrow quadrangular, dorsally slightly dilated, with deep, U-shaped dorso-apical incision. Lateral arms broad, with medial crests covered with fine, medium-long spinules. Valva broad, with apex rounded, ventral surface setose. Sacculus smoothly sclerotized, long, its tip extending over ventral margin of valva. Saccular crest strong, its basal curve evenly arcuate, situated rather far from base of valva, distal peak rather short, triangular. Aedeagus medium-long, tubular, carina with broad, short, straight ventral process and with two lateral laminae, one of them discoidal, other one elongate, terminally folded. Vesica narrowly tubular, basal part projecting dorsally, then recurved ventrally. Its walls membranous, cornuti field elongate, narrow, armed with small chevron-like cornuti.

Female genitalia (Fig. 41): Ovipositor conical, papillae anales acute, narrow, rather weak, densely setose, posterior gonapophyses long, slender, stick-like. Ventral plate of 8th segment membranous, covered densely with minute, hair-like spiculi, dorsal plate large, sclerotized, shield-like, with rounded lobe at anterior edge; anterior gonapophyses medium-long, slender. Ostium bursae membranous, ductus bursae short, finely gelatinous. Appendix bursae small, tubular,



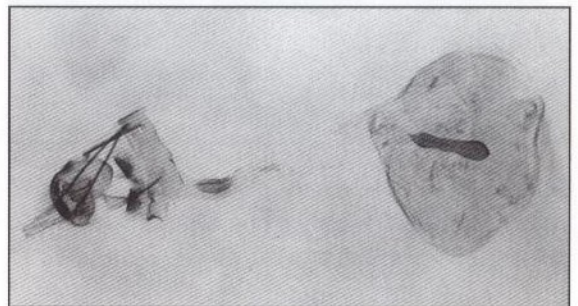
Text-figure 39

Epipsestis manmiaoyangi sp. n., male genitalia, holotype



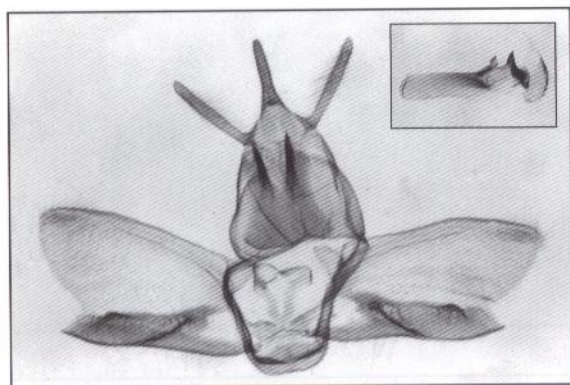
Text-figure 40

Epipsestis manmiaoyangi sp. n., male genitalia, holotype, cornuti field of vesica in larger magnification



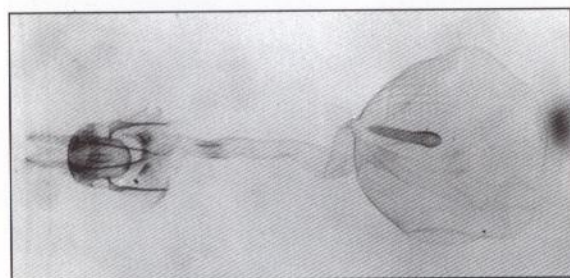
Text-figure 41

Epipsestis manmiaoyangi sp. n., female genitalia, paratype



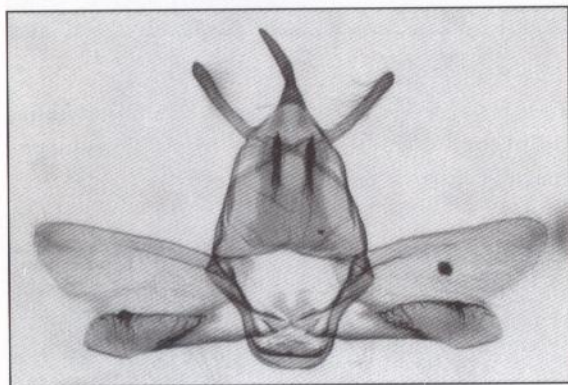
Text-figure 42

Epipsestis ornata Leech, male genitalia, Japan



Text-figure 44

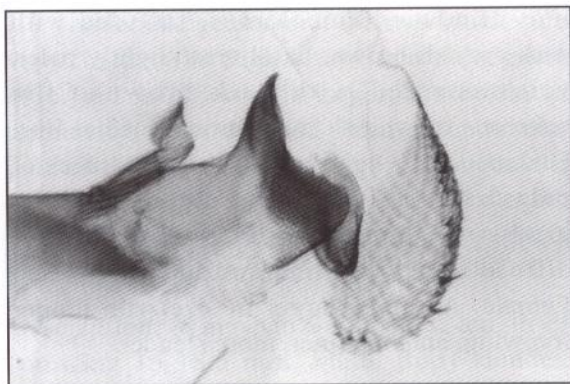
Epipsestis ornata Leech, female genitalia, Korea



Text-figure 45

Epipsestis ornata obscurata Tshistyakov, male genitalia, Russian Far East

with fine scobination, tubular distal part of corpus bursae long, posterior third gelatinous, with lentiform sclerotized plate. Proximal part



Text-figure 43

Epipsestis ornata Leech, male genitalia, Japan, cornuti field of vesica in larger magnification

of corpus bursae large, discoidal-ovoid, finely ribbed and scobinate, signum large, long, rather broad, more or less sponge-cake-shaped, inner surface covered with fine teeth.

Bionomics and distribution: The species is confined, according to the collecting data, to the higher deciduous forest regions of the eastern mountainous regions of Taiwan, and it is presumably endemic to this island. The imagines are on wing at the late autumn, the specimens were collected at light.

Etymology: The new species is dedicated to Dr. Man-Miao Yang, associate curator of Entomology, Division of Zoology in the National Museum of Natural Science, Taichung.

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台灣波紋蛾科之 *Epipsestis* 屬 (鱗翅目)

GY. M. LÁSZLÓ and G. RONKAY

摘要

本文記錄台灣 *Epipsestis* 屬之所有種，並描述二新種，即 *Epipsestis meilingchani* sp. n. 及 *Epipsestis manmiaoyangi* sp. n. 及另一新亞種 *Epipsestis dubia chengshinglini* ssp. n..