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## NEW AND OLD SPECIES OF GLYPHIPTERIGIDAE AND A NEW SPECIES OF ACROLEPIIDAE FROM JAPAN AND THE FAR EAST (LEPIDOPTERA)

by

**A. DIAKONOFF**

Rijksmuseum van Natuurlijke Historie, Leiden, the Netherlands

and

**Y. ARITA**

Zoological Laboratory, Faculty of Agriculture, Meijo University, Nagoya, Japan

With 37 text-figures

The often so gaudy coloured Palaearctic representatives of the family Glyphipterigidae are receiving renewed attention after a neglect of many years. In the USSR several genera of the Choreutinae have been revised (the late A. S. Danilevsky, 1964; A. S. Danilevsky & V. I. Kuznetsov, 1973) and a survey of the family in Japan has been initiated by revisions and descriptions of species of *Glyphipterix* Hübner, *Brenthia* Clemens, *Tebenna* Billberg, *Choreutis* Hübner, etc. (S. Moriuti & T. Saito, 1964; Y. Arita, 1971, 1971a, 1975, 1976). The first author of the present paper is preparing a revision of the Palaearctic Glyphipterigidae, while J. B. Heppner (University of Florida), is working on the Nearctic fauna of these insects.

Descriptions of four new species of *Hilarographa* Zeller and of seven new species of *Glyphipterix* Hübner from Japan and the Far East, and of a new *Digitivalva* species from Japan are presented below. The greater part of the material at hand has been collected by the second author, who is the specialist of the group in Japan. The first author studied the important Issiki Collection in the Washington Museum, made the descriptions and is responsible for the figures which were made by the artist and amateur entomologist, Mr. A. C. M. van Dijk of The Hague, Netherlands, and a few by himself.

The types will be deposited in the collections of the following institutions, as indicated in the text: Zoological Institute of the Academy of Sciences, Leningrad, USSR (ZIAS); National Museum of Natural History, Smith-

sonian Institution, Washington D.C., USA (NMNH); Zoological Laboratory, Faculty of Agriculture, Meijo University, Nagoya, Japan (ZLMU); Zoological Laboratory, Hokkaido University, Hokkaido, Japan (ZLHU); and Rijksmuseum van Natuurlijke Historie, Leiden, the Netherlands (RMNH).

The spelling of the locality names is copied from the labels and is not always similar.

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#### CHOREUTINAE

##### **Hilarographa machaerophora** spec. nov. (fig. 1)

♀ 13.5 mm. Head dark fuscous-grey, slightly mixed with white on vertex, face dusted with white, collar grey, laterally white. Antenna dark fuscous. Palpus whitish, apical segment pointed, greyish. Thorax fuscous, with a golden gloss, sides brightly glossy orange-golden, tegula becoming pale yellowish, opalescent anteriorly.

Fore wing oblong-truncate, moderately dilated, costa very gently curved, apex rounded, termen hardly convex, almost straight above, rounded below, little oblique. Deep purplish-brown-fuscous, markings brightly orange-red, on costal third deep orange above middle, on dorsal half paler orange-yellowish except against tornus. Costa with three oblique glossy whitish streaks, little narrowed, becoming but slightly less oblique posteriorly, fourth and fifth streaks, being the sides of costal semioval<sup>1</sup>), fourth short, fifth longest, slightly clavate, the tips interconnected by an obscure bluish-metallic line; four thicker streaks of orange-red ground colour alternating with light streaks, broadly edged on both sides with dark purplish-fuscous, each streak pale yellow on extreme costal edge; third streak dilated downwards and with a horizontal appendix to termen below apex, fourth streak lighter orange, suboval; horizontal light orange straight streak from above middle of base to beyond middle of wing, pointed and followed by an inwards oblique mark in disc; base of dorsum suffused with orange; dorsal patch pear-shaped with top curving posterad, the three stripes tolerably equidistant, median slightly narrower; ocelloid spot little narrower than preceding, regularly sinuate, three streaks tolerably equal, crowned by some six unequal spots and followed by three, partly confluent, rather vertical bright orange streaks, posterior

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<sup>1</sup>) Very often in *Hilarographa* the two ultimate light costal streaks are united below, forming the characteristic, slightly outwards-oblique, semioval figure which, for the sake of convenience, we term "costal semioval".

broadest, marginal, containing four partly confluent, dark grey or jet-black roundish dots; a small, slender white streak on termen below apex, with thick dark purplish edges. Cilia (rubbed) dark fuscous at base.

Hind wing dark brown-fuscous-bronze, hardly paler at base. Cilia (rubbed) concolorous.

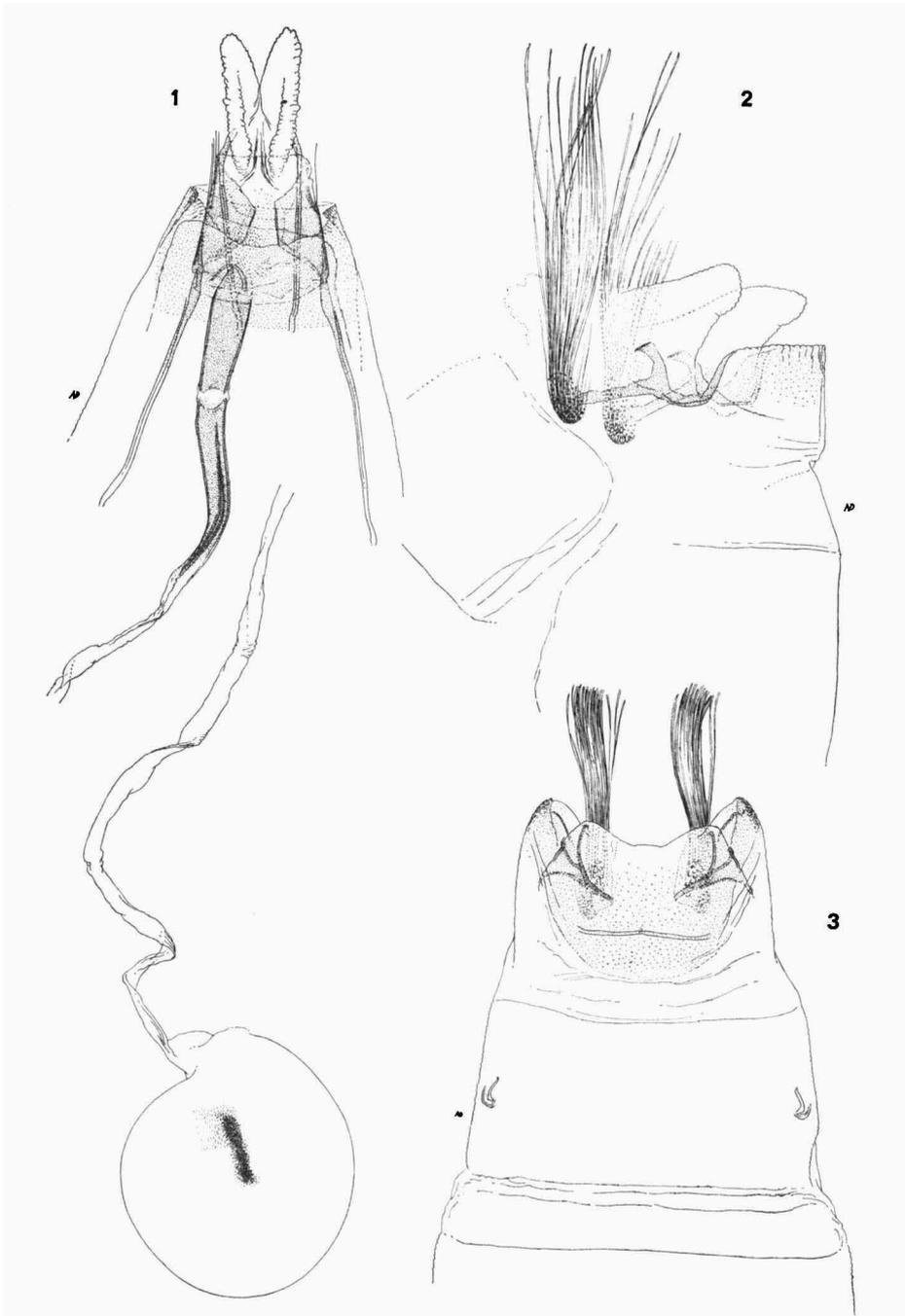
Female genitalia. Ovipositor slender, long, narrowed. Lobus analis narrow, outer edge thickened. Ninth segment sclerotized, side lobes angular. Ostium, a rounded prominence, colliculum large, sclerotized, being a wide, gently downward-narrowed tube, not quite connected with a slightly sinuate and narrowed long tubular cestum with a longitudinal fold. Ductus bursae below this narrow and long. Corpus bursae ovoidal. Signum, a single short central ridge, formed of tetraedic teeth (lamina dentata type of signum).

Japan, Dainichitoge, Ikawa, Shizuoka Prefecture, 27.vii.1975 (Y. Arita), 1 ♀, genit. slide 144 YA, holotype, in ZLMU.

**Hilarographa aurosa** spec. nov. (figs. 3-6)

♂ 10-11.5 mm. Head deep purple with dark grey opalescence, collar laterally tawny-orange, face orangeish. Antenna hardly 1/2, slightly thickened, orangeish, ciliations under 1. Palpus slender and short, little curved, hardly reaching middle of eye, pointed; pale ochreous. Thorax dark bronze with a grey opalescence. Abdomen dark bronze.

Fore wing oblong, suboval, dilated, of slightly variable breadth, costa little curved anteriorly, more so posteriorly, apex rounded, termen strongly rounded, vertical. Deep brown-purple, on upper third posteriorly becoming slightly suffused with deep brownish-crimson. Markings bright orange. Basal area with a slender median horizontal streak from base to 1/4 and another parallel, thicker, slightly curved, above first, from beyond base; costa with three slender and long, whitish-violet streaks, with a silky gloss, along lower third turning crimson, pointed and horizontal, not quite contiguous; these streaks becoming less oblique posteriorly, followed by slender but wide costal semioval, with anterior side slender, whitish-violet, posterior thick, glossy white, wedge-shaped; base of dorsal edge orangeish; dorsal patch slender and long, inwards-oblique and straight, top rounded; outer streaks equal, meeting at top, orange, posterior one slightly sinuate, median streak greyish-orange, more slender, not reaching top; dark band parted by a series of three spots, dorsal suboval, median fasciate and inwards-oblique, upper round, largest, shifted anterad, followed by two horizontal series of variable small dots; ocelloid patch gently outcurved, its three streaks equal, almost parallel, partly interrupted, followed by a small streak on dorsum; termen glossy orange, in tornus obscured by ground colour, on middle of termen including



Figs. 1-3. Genitalia of *Hilarographa* species. 1, *H. machaerophora* sp. n. ♀, holotype; 2, *H. mikadonis* Stringer, ♂ coremata, ventro-lateral aspect; 3, *H. aurosa* sp. n. ♂, coremata, dorsal aspect.

two black dots; subapical terminal mark whitish, triangular, narrowly black-edged. Cilia blackish-fuscous, with a strong purple-violet gloss in certain lights, cilia around apex with a broad white band, narrowed towards termen, with a black basal line.

Hind wing deep bronze-brown, cell, dorsum and a moderate marginal band around apex and along upper half of termen lighter brownish-golden. Cilia light orange, fuscous along dorsum, throughout with a dark fuscous basal band, a suffused spot opposite apex.

♀ 10-14 mm. Similar to the male, but fore wing slightly broader; markings are similar but somewhat broader, especially the two horizontal basal streaks; the four costal streaks are deeper opalescent blue, more conspicuous: termen deeply orange, with a slightly submarginal series of 5-6 or less, somewhat irregular and smaller black dots.

Hind wing similar, but pale parts orange-golden.

Male genitalia. Tegumen moderate, tortricoid. Uncus robust, concave along whole length, base broad, top dilated and truncate. Socius spindle-shaped, acutely pointed, bristled, not exceeding hamus. Hamus strong, flattened laterally, acutely pointed, point slightly curved upwards; exceeding socius, with a peculiar, rising clavate appendix at base. Anellus, a triangular moderate sack. Valva broadly semioval, simple, costa at base with a more hyaline oval lobe. Aedeagus straight, narrowed except coecum penis, vesica denticulate.

Female genitalia. Ovipositor long, lobus analis narrow, pointed, constricted in middle. Ninth segment moderately sclerotized, lateral lobes narrow; lamella postvaginalis shaped as an oval sclerite between these, narrowing towards ostium which is sclerotized, spinulose at base, cup-shaped, with a frontal split, through which protrudes a membranous small bladder. Colliculum, a hyaline wide tube, passing into rather wide, very long ductus bursae. Corpus bursae spherical with a side-sack. Signum, one very dense subbifid flat brush of long radiating spines, upon a finely concentric spot of bursa wall.

Variability. The species is seemingly variable, due to rubbing. Especially the hind wing may be darkly coloured, with distinct orange-golden parts, or become pale, with these parts less perceptible. Darker ground colour usually goes side by side with darker hind wing, and sometimes with broader fore wing. The genitalia, however, and the wing pattern are not varying.

Early stages and biology. Unknown.

Distribution. Japan, Kyusyu etc.

Japan, Kyusyu, Oosumi: Sata, 5.x.1959 (S. Moriuti) 1 ♀, gen. slide 151 YA. — Satamisaki, Kagoshima Pref., 18.vii.1975 (Y. Arita), 1 ♀, gen. slide 143 YA. — Yakushima Id., Miyanoura, 22.ix.1975 (Y. Arita), 5 ♂, 7 ♀,



Figs. 4-6. Genitalia of *Hilarographa aurosa* sp. n. 4, holotype, ♂; 5, allotype, ♀; 6, the same, ductus and corpus bursae.

genit. slides 140 ♂, 149 ♂, 141 ♀, 145 ♀ YA, all paratypes; holotype, ♂, genit. slide 9605, allotype, ♀, genit. slide 9606 AD.

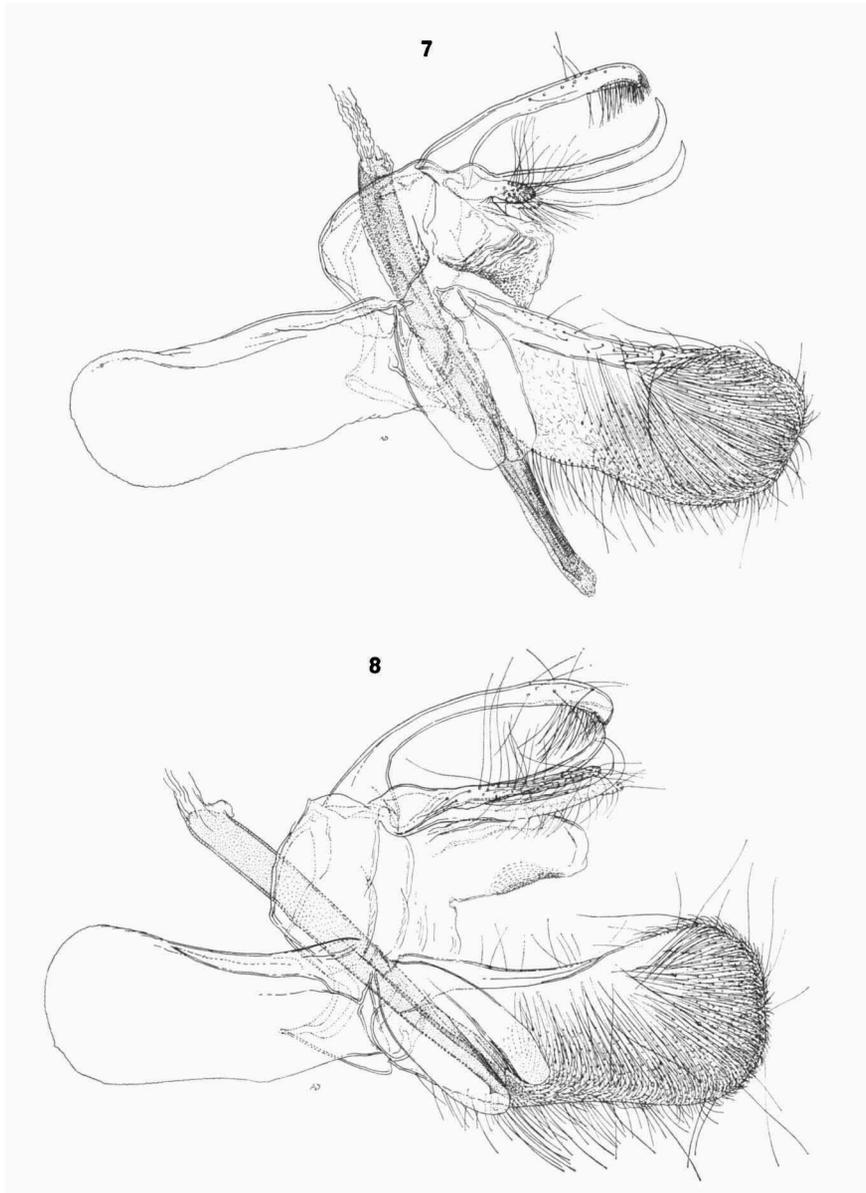
In the Issiki Collection there is the following material, all paratypes: Japan, Kyûsyû, Satamisaki, 9.v.1952 (S. Issiki), 1 ♂; the same, 5.x.1959 (T. Kodama), 1 ♂; 21.x.1952 (S. Issiki), 2 ♀ (NMNH).

Holo- and allotype in ZIMU, paratypes in RMNH and ZLMU.

**Hilarographa eremnotorna** spec. nov. (fig. 8)

♂ 12.5-14 mm. Head and thorax glossy fuscous, face narrowly edged with white, collar behind eyes white. Antenna fuscous, ciliations under 2. Palpus moderately curved, flattened dorso-ventrally, subascending, tip reaching base of antenna, median segment slightly dilated towards apex, terminal segment obtusely pointed, shorter than median; whitish, median segment above touched with pale fuscous except apex. Proboscis short. Abdomen glossy fuscous, venter paler.

Fore wing oblong-triangular, costa almost straight, hardly sinuate, curved towards apex, apex rounded, termen moderately convex, slightly impressed and concave at  $2/5$ , oblique. Deep reddish-orange, glossy, partly infuscated. Basal patch to  $1/3$ , margin straight or gently convex, formed by a slender light-fuscous band, more or less obscured by fuscous suffusion, except on costa, slightly outwards-oblique, on both sides edged with a darker suffused fuscous line, lower third of anterior line sometimes blue-metallic; costal edge infuscated throughout, basal patch with anterior  $2/3$  including two oblong-triangular, pale tawny-whitish spots, suffusedly edged with fuscous, upper costal, divided from lower subplical, by a streak of ground colour; both with acute points to base of costa and base of wing, respectively, their posterior edges straight, parallel to margin of basal patch; posterior two thirds of costa with five pale transverse marks; first broader, greyish-creamy, being the costal end of edge of basal patch; first to third equidistant, inwards-oblique, creamy, small, indistinctly continued by paler fuscous-grey streaks; fourth streak close to third, outwards-oblique, becoming a slender metallic blue line, crossing to convexity of termen; fifth streak subapical, white, converging but not touching fourth line, tip blue-metallic, dorsum beyond middle with two approximated slender sorded creamy vertical lines to fold, followed by a jet-black irregularly oblong-oval patch extending to middle of termen and including two irregular rows of some 4 violet-metallic points each, upper row of points more distant; in tornus and along lower third of termen black patch including 3-4 large black dots broadly edged by bright orange-golden, upper edge of patch formed by a creamy line and crowned by a semi-elliptic creamy-fuscous field, extending to upper edge of cell,



Figs. 7-8. Male genitalia of *Hilarographa* species. 7, *H. decoris* sp. n.; 8, *H. eremnotorna* sp. n.

rather well-defined and streaked by longitudinal, more or less parallel, slightly curved and suffused darker fuscous lines. Cilia fuscous, with a dark fuscous basal third, cilia above terminal concavity darker.

Hind wing rather trapezoidal-semioval, bright golden-bronze, posteriorly becoming infuscated with darker bronze-fuscous, tornus with ferruginous-crimson sheen in certain lights. Cilia paler fuscous with a dark bronze-fuscous basal fourth.

Male genitalia. Tegumen corrugated, triangular. Vinculum small, sub-triangular. Uncus long, porrect, slightly curved, base broad, triangular, top gently thickened, extreme end pointed and hooked down. Hamus with a broad base, thence rather narrow, straight, apical fifth abruptly curved upwards and acute. Socius narrow, straight, sparsely bristled, narrowed almost to a point, reaching curvature of hamus (= 4/5 length of hamus). Tuba analis moderate, a wide subconical tube. Valva oblong-subrectangular, slightly dilated and truncate, angles rounded; costa with a narrowed thickening along 2/3 and a basal sclerite. Anellus inverted-subcardiform, flattened dorso-ventrally, base with a rounded excision, top bifid, tips rounded. Aedeagus long and slender, apical half with a central sclerotized rod, a small subapical tooth at the right side.

Female unknown.

Japan, Mt. Hira-san, Shiga Prefecture, larva 18.vi.1972 (Y. Arita) feeding in cambium of the trunk of *Pinus densiflora* von Siebold & Zuccerini, moth emerged 30.vi.1972, ♂ holotype, genit. slide 150YA; the same, 18.vi.1972, 1 ♂, paratype, emerged 3.vii.1972; Siga, Hirasan (T. Kodama), bred 21.v.1958, GLWV 9 ♂, paratypes; Japan, Hoshiy, Ise, Mt. Gozaisyo, 25.vii.1957 (T. Yasuda), genit. slide 9607AD, 1 ♂, paratype.

Holotype in ZLMU, paratypes in NMNH, RMNH, ZLHU and ZIAS.

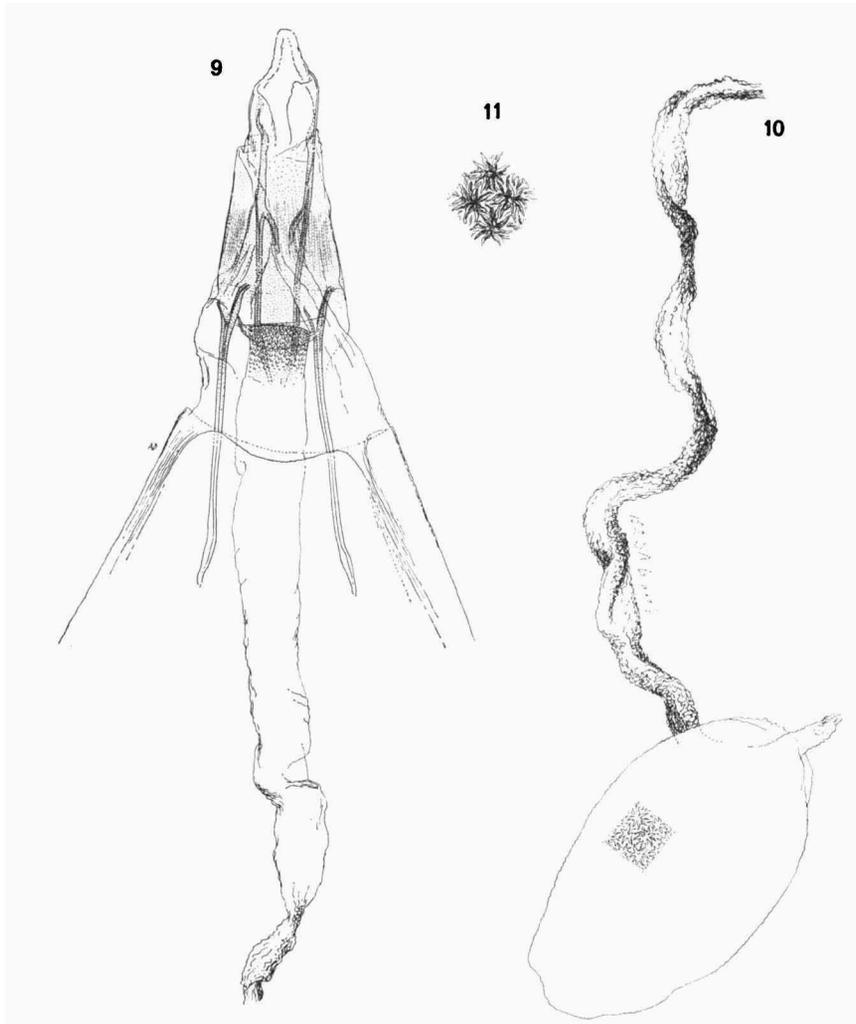
### **Hilarographa mikadonis** Stringer (figs. 2, 9-12)

*Hilarographa mikadonis* Stringer, 1930, Ann. Mag. Nat. Hist. (10) 6: 418.

♂ 15 mm. Head light yellowish-olive-tawny, collar beyond eyes white, turning light tawny towards vertex. Antenna ochreous-fuscous, ciliations 2. Palpus curved, ascending, terminal segment pointed, exceeding base of antenna, longer than median; pale ochreous, tip suffused with grey, with a strong snow-white opalescence along front of lower half of apical segment. Thorax and abdomen pale ochreous-fuscous with a strong violet gloss, a lateral yellow stripe not reaching scutellum. Under side of body, anterior and median legs, snow-white mixed with golden-ochreous.

Fore wing oblong-triangular, broad, strongly dilated, costa gently curved

and prominent beyond base, faintly concave in middle, more rounded towards apex, apex rounded, termen concave below apex, rounded below. Costal third bright yellow towards apex, elsewhere strongly suffused with ferruginous-fuscous, especially edges to white streaks; five pale streaks, first oblique, at  $1/4$ , wedge-shaped; second beyond  $1/3$ , shorter and less oblique; third beyond middle, small, yellow; fourth before  $1/4$ , short, silvery-white, less oblique, streaks 2-4 continued below by grey streaks richly edged with



Figs. 9-11. Female genitalia of *Hilarographa mikadonis* Stringer, metalotype. 9, posterior part; 10, ductus and corpus bursae; 11, fragment of the structure of the wall of corpus bursae, more magnified.

brown suffusion and moderately converging, merging into a longitudinal suffusion at  $1/3$  of wing breadth; fifth costal streak subapical, little oblique, wedge-shaped; a leaden-grey oblique streak originating not from fourth costal streak, but below costa beyond that streak, curved, its end converging with that of fifth streak; apical area bright yellow beyond fourth costal streak and above brown suffused streak; first dorsal patch rather beyond  $1/3$ , strongly excurved, narrower and longer than in *H. decoris* sp. n., formed of three white slender lines, convergent above  $2/3$  of disc, posterior of these furcate along lower third; second dorsal patch shorter than first, on dorsum before tornus, less outcurved; termen with a white notch-like slender spot at  $1/3$ , below this with four black dots. Cilia fuscous (imperfect).

Hind wing broadly semioval, broader than in *H. decoris* sp. n., deep fuscous-purple, only slightly paler towards base. Cilia light fuscous with a purple gloss.

Male genitalia. Tegumen semispheroidal, with a deep median dorsal impression. Vinculum small, triangular. Uncus long and slender, narrowed gradually, straight, broad base curved  $90^\circ$ . Socius rather narrow, long-lanceolate, gently concave below, top rounded. Hamus long and slender, moderate at base, dilated before middle, narrowed abruptly thence to  $1/2$  width, top gently curved down, more than top of socius. Gnathos ill-defined, indicated as a slender rectangular bent rod. Valva broadly oval, finely short-haired all over, except a broad sclerotized streak along basal  $3/4$  of costa. Aedeagus shorter than valva, broad, its base obliquely truncate, coecum penis small, top truncate. Anellus simple below, above densely beset on inner side with fine spiculae.

Material studied. Japan, Honsyû, Ize, Mt. Gozaisyo, 25.vii.1957 (T. Yasuda), 1 ♂, genit-slide 9341ad (ZLMU).

The following material is present in the Issiki Collection (NMNH). Honsyû, Tokyo, 30.vi.1918 (S. Issiki), 1 ♀; Tohoku, Hatimandai, 14.vii.1939 (S. Issiki), 2 ♂; Seibu, Hôki, Daisen, 11.vii.1950 (S. Issiki), 2 ♂; Kaga, Hatonoyu, 28.vii.1961 (T. Yasuda), 1 ♂.

♀ 16 mm. Head (greasy) fuscous, face paler, ochreous, dusted with fuscous. Sides beyond eyes white. Antenna light tawny (partly broken). Palpus rather long, curved, subascending, exceeding base of antenna, median segment orangeish, woolly by fine and short, loose, white hair-scales along lower edge and apex, terminal segment shorter than median, grey, with similar short white hair-scales at base and at front and back, except towards tip. Ocellus large. Thorax (greasy) light tawny, tegula dark fuscous, base, outer edge and tip light tawny.

Fore wing oblong-triangular, broad, costa curved at extreme base, slightly sinuate beyond, posterior fourth more curved, apex rounded, termen moder-

ately rounded, long, little oblique. Basal patch and costal third of wing except extreme apex, golden-yellow, dorsal  $\frac{2}{3}$  of wing from first dorsal spot to termen and a band in apex and along upper third of termen bright golden-orange. Basal patch to  $\frac{1}{3}$ , edge strongly angulate at  $\frac{1}{3}$ , with two clavate diverging dark fuscous streaks from base, below costa and below upper edge of cell, respectively, lower shorter, both broadly edged with yellow ground colour, tops rounded; remainder of patch deep brownish-orange, edges suffused with dark fuscous, outer edge concave below angulation; costal third with four pale streaks, oblique and parallel, except posterior one; all edged with dark fuscous suffusion; first streak from  $\frac{2}{5}$ , wedge-shaped, broadest, white, almost to  $\frac{1}{3}$  of disc, followed by an oblique strongly suffused patch of deep ferruginous-brown suffusion, containing second costal streak, small, yellowish and below and beyond this, a fasciate oblique streak of yellow ground colour, crossing wing to subapical "notch"; third streak short, white, continued as an oblique leaden-metallic-grey streak parallel to preceding and connected with top of fourth streak; this subapical, parallel to edge of wing, white, dark-edged; third and fourth streaks so forming together with leaden streak the costal semioval; first dorsal patch from beyond  $\frac{1}{4}$  to middle of dorsum, anterior edge moderately convex, posterior stronger

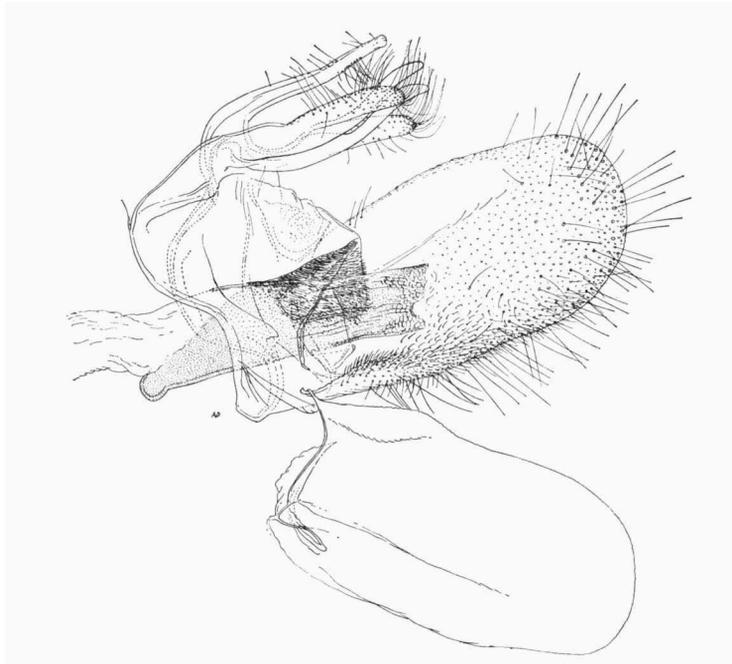


Fig. 12. Male genitalia of *Hilarographa mikadonis* Stringer, slide no. 9341.

concave; this patch white, parted by a pair of blackish irregular lines, posterior of these furcate along its lower third; second dorsal patch (ocelloid spot) on end of dorsum, parallel to first, but smaller than preceding, creamy-white, parted by two thick dark rather irregular streaks, dilated downwards, separating patch in three equal, partly interrupted light lines; space between patches deep brownish orange, with a few roundish lighter orange dots above and a median series of spots below, all these edged with fuscous; termen golden-orange with violet gloss, cut at upper 1/3 by a white marginal notch-like mark, below this with a series of four jet-black round spots, increasing downwards in size. Cilia dark grey-fuscous with a strong prismatic gloss, base white at the "notch", cilia towards apex white with a black basal line.

Hind wing broadly semioval, basal half rather dull yellowish-grey-fuscous, marginal half suffused with deep fuscous-purple, extreme edge in apex and along upper half of termen suffused with bright golden-orange. Cilia glossy whitish-fuscous with a blackish basal band, becoming fuscous towards dorsum.

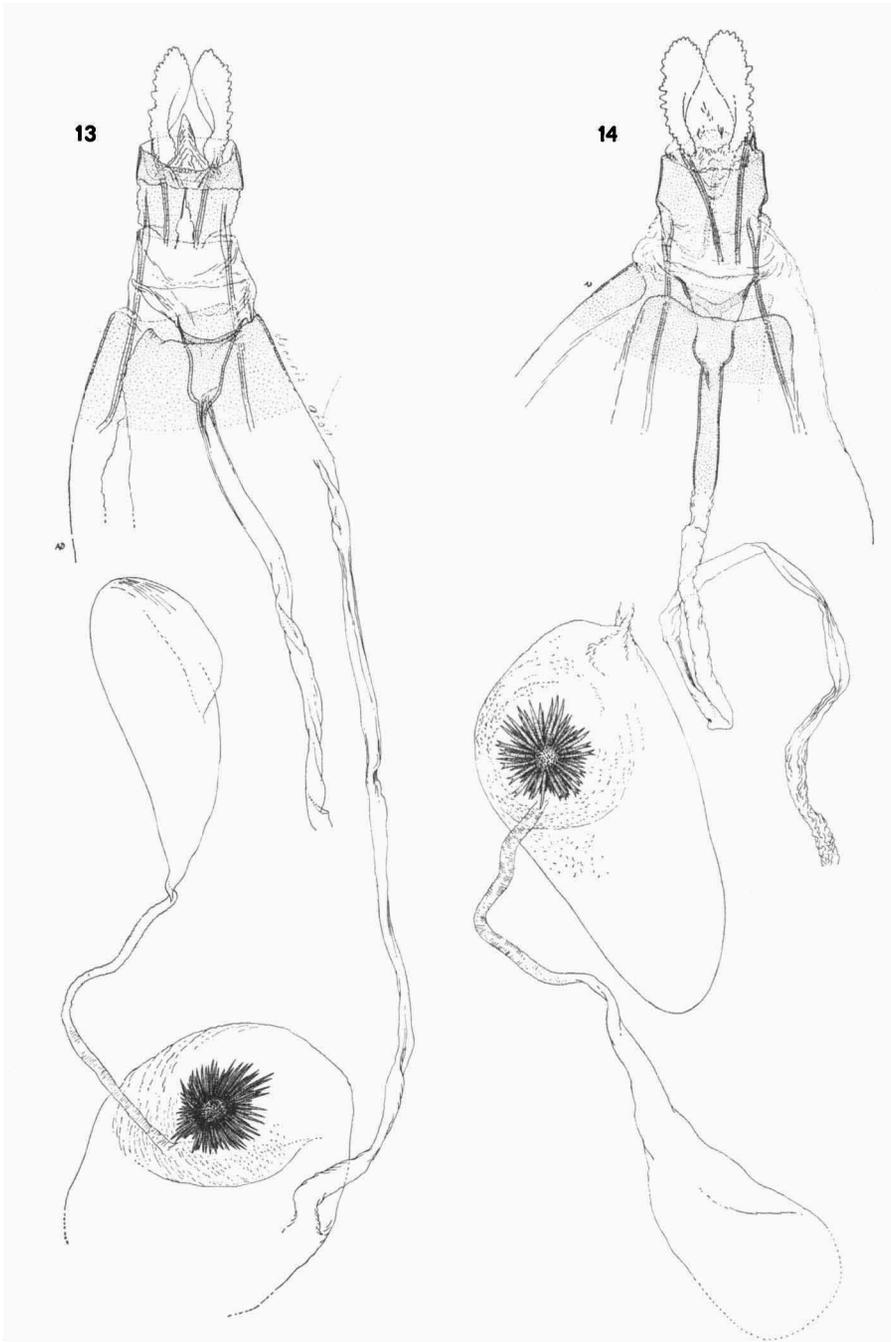
Female genitalia. Ovipositor elongate, lobi anales jointed, top narrowed. Postapophysis slender, rather long, a rostrad furcation above middle. Eighth segment sclerotized, elongate. Anapophysis longer, strong and short-furcate at top, long and slender. Ostium wide, between 7th and 8th segment, edge partly sclerotized. Colliculum, a wide cylindre, coarsely granulate above. Ductus bursae simple, very long. Corpus bursae ovoidal, wall entirely beset with asteroidal spines.

Japan, Setagaya (Tokyo), 8.vi.1963 (A. Kawabe), 1 ♀, metalotype, genit. slide 152 YA. In ZLMU.

**Hilarographa decoris** spec. nov. (figs. 7, 13, 14)

♂ 15-17 mm. Head fuscous-grey, face whitish. Antenna rather strongly thickened, dark fuscous, ciliations over 2. Palpus rather long, curved and obliquely ascending, flattened dorso-ventrally, tip obtuse in that aspect, pointed in lateral aspect, terminal segment almost as long as median; whitish, white above, laterally basal and median segments pale brownish-fuscous, terminal segment with a subapical brownish spot in front. Thorax enlarged, deep fuscous, with a golden gloss, edged along sides with yellowish, a yellowish postmedian suffused band, tip of tegulae glossy golden. Abdomen deep bronze, venter grey with posterior edges of segments silvery-grey.

Fore wing oblong-triangular, rather broad, costa almost straight, very faintly sinuate, slightly curved towards apex, apex subobtuse, termen gently curved, scarcely impressed and concave at 1/3, rounded beneath. Yellowish-orange, rather suffused with fuscous-ferruginous. Basal patch slightly over 1/3, edge straight, hardly convex and inwards-oblique, formed by a pale



Figs. 13-14. Female genitalia of *Hilarographa decoris* sp. n. 13, slide no. 9609, paratype; 14, genit. slide 8192, allotype.

blue-metallic streak becoming pale grey above upper edge of cell, white on costal edge; this streak edged on both sides with ferruginous; more than basal  $2/3$  of patch on costa with a greyish-blue submetallic triangular spot, broadly edged with ferruginous suffusion, by a yellow streak along base of fold separated from a reddish-ferruginous suffusion filling out dorsum below fold to  $1/3$  and centred with some pale greyish-blue suffusion; suffused ferruginous convex edge to these two marks running from  $1/4$  of costa to  $1/3$  of dorsum; posterior  $2/3$  of costa infuscated, with three pale transverse marks, first at  $3/5$ , whitish, small, second slightly closer to first than to third, small and creamy on costa, thence pale blue, sinuate, running to concavity of termen, but interrupted by vein 6, tip rounded; third costal pale mark white, slender, curved before apex, becoming a narrow-bluish line along termen to small wedge-shaped blue mark on terminal "notch"; all costal streaks broadly edged with ferruginous, apex suffused with blackish; centre of disc with a quadrate ferruginous suffusion emitting these edges; middle of dorsum with two inwards-oblique pale grey lines, preceded by a broader orange streak, all crossing to fold and ferruginous-edged; posterior half of dorsum, tornus and less than lower half of termen with an oblong-oval jet-black patch, including some ten inequal and rather irregular silvery dots, and anteriorly strewn with a few pale grey or ochreous small marks; edges of patch irregularly serrate; a rounded-triangular area above the black spot, pale yellowish becoming glossy orange before apex; posterior edge of cell and veins 9-4 narrowly streaked with fuscous-ferruginous, except across costal pale streaks, a lower part of termen and tornus whitish-yellowish, containing a marginal row of 3-4 oblong and partly interconnected, dark grey dots. Cilia (rubbed) whitish with a subbasal dark grey band.

Hind wing rather broad, semioval, apex rather pointed, deep purple-fuscous, apical half becoming darker purple with violet reflections. Cilia fuscous (rubbed) with a dark fuscous subbasal band and a pale basal line.

♀ 15-17 mm. Similar to the male, but first costal pale mark very small, marginal, third costal mark complete, reaching the "notch" of termen. Dark dots along lower part of termen and tornus grey, reduced. Cilia dark fuscous becoming white towards lower third of termen, throughout with a dark fuscous basal band.

Hind wing paler fuscous, with apical half as dark as in male and therefore stronger contrasting.

Male genitalia. Resembling those of *H. micadonis* but with tegumen less broad and not angulated, vinculum larger. Uncus shorter, not dilated beyond base, top with a short tooth below, more bristled underneath. Hamus similar, but less dilated at base, slightly longer than uncus. Socius very characteristic:

slender and short,  $1/3$  length of hamus. Tuba analis subcylindrical, lower surface granulate. Valva more dilated, cucullus gently rounded, sacculus thickened along almost its entire length. Anellus similar but longer, top simply emarginate. Aedeagus long, but more robust, a small subapical tooth at ventro-lateral side.

Female genitalia. Lobus analis tortricoid, attenuated downwards. Apophyses slender and long. Ostium large, calyx-shaped, rim with a slender dark band, sides, small dark ridges. Colliculum tubular, moderately wide, about  $1\frac{1}{2}$   $\times$  as long as ostium is high. Ductus bursae simple, very long, moderately wide. Corpus bursae transversely ovoidal, origin of ductus seminalis close to end of ductus bursae; an additional pear-shaped sack on a long stalk (tube), originating from corpus bursae opposite signum. Signum asteroidal, with a small centre and long spines, many of those bi- or polycuspidate.

Two females (9291 and 9609) slightly different: colliculum gently sinuate, signum with a larger centre and only unicuspidate spines.

Far East, USSR, environs of Vladivostok, Chernaya rechka, 3.vii.1930 (Dek. Moltrekht), 1 ♀, allotype, genit. slide 8142 AD (ZIAS).

Southern Kuril Islands, Kunashir Id., environs of Sernovodsk, mixed wood, 2.viii.1967 (V. Kuznetsov), 1 ♂, holotype, genit. slide 9608 AD. (ZIAS).

Japan, Honshu, Sukayou, Hakkodasan, 31.vii.1970 (T. Oku), paratype, ♂, genit. slide 9290 AD. — Honshu, Mt. Hayachine, 23.vii.1967 (T. Oku), 1 ♀, paratype, genit. slide 9609 AD. — Hokkaido, Nopporo, near Sapporo, 30.vi.1956 (T. Oku), 1 ♀, paratype, genit. slide 9291.

The following material is in the Issiki Collection (NMNH), paratypes: USSR, Sakhalin Id., Ohdomari, 24.vii.1919 (S. Issiki), 1 ♂. Japan, Honsyu, Kawatei, Iwawakisan, 10.v.1953 (T. Yasuda), 1 ♀; Kinki, Osaka, Iwawakisan, 1.vi.1954 (T. Kodama), 1 ♀.

A very similar specimen, 15 mm, alas without abdomen, may be conspecific, but is rather lighter coloured throughout, from: Japan, Unzen, 27.vii.1937 (H. Höne). In Bonn Museum.

Holo- and allotype in ZIAS, paratypes in RMNH and ZLMU.

#### GLYPHIPTERIGINAE

##### **Glyphipterix gemmula** spec. nov. (figs. 18, 21-22)

♂ 7.5 mm. Head dark greyish-bronze, face paler grey, white-edged, vertex with pink reflections. Antenna dark grey-bronze. Palpus long, slender, smooth, gently dilated towards base, terminal segment longer than median, pointed; white, lower edge and front with a black line. Thorax dark grey



Figs. 15-16. Female genitalia of *Glyphipterix* species. 15, *G. euleucotoma* sp. n.; 16, *G. melania* sp. n., with ovipositor fully extended.

with some bronze gloss. Abdomen dark grey with a silvery gloss, venter glossy silvery-white.

Fore wing oblong-suboval, rather dilated, costa gently curved, more so at base, apex obtusely pointed, termen very gently sinuate above, moderately rounded, oblique. Deep blackish-bronze, base almost black. A pale yellow subcrescentic direct transverse band at  $1/6$ , gradually narrowed towards extremities, not quite reaching wing margins, top pointed, base truncate, anterior edge gently concave, posterior rounded; costa with six light streaks, three anterior longer, more oblique, tolerably parallel and slightly excurved, not reaching middle of disc; three posterior thicker, slightly converging; first streak at  $1/3$ , third well beyond middle, similar: gently dilated downwards, leaden-violet, brilliant metallic, extreme end on costa white; second streak similar to fourth, in middle and before  $3/4$ , respectively, shorter than preceding, more suffused, white along upper half, golden-orangeish-yellow on lower; fifth and sixth streaks white, wedge-shaped, less oblique, last subapical; about third fourth of the lower half of wing with a complex pattern: leaden-violet metallic markings in outwards-oblique pair below top of first costal streak, a small horizontal bar below top of second costal streak, an inwards-oblique large bar from below tops of third and fourth costal streaks, reaching halfway towards dorsum, and a short less inwards-oblique bar on dorsum before its end; several irregular small yellow marks scattered between these metallic markings; a large brilliant violet-leaden, erect subcrescentic straight spot in tornus, reaching middle of disc; a small similar spot on termen below apex. Cilia (imperfect) light leaden-grey, lower half black.

Hind wing  $1/2$ , oblong-semioval, costa rather straight, termen strongly rounded; fuscous-brown, with a faint bronze gloss, tips of scales darker. Cilia dark blackish-fuscous.

♀ 7 mm. Similar to the male, but subbasal band slightly broader and yellow markings on the third fourth of the lower half of wing rather extended, forming three fine irregular lines: one above middle of wing, longitudinal, another anterior, strongly curved, and a third, inwards-oblique, resting on dorsum at  $3/4$ ; subapical terminal metallic mark larger; orangeish suffusion of the second and fourth costal streaks rather extended. Otherwise as male.

Male genitalia. Tegumen moderate, slender, narrowed, top pointed. Tuba analis long. Vinculum moderate, almost as high as broad, sides very gently sinuate, being slightly concave below middle, lower angles distinct, just more than rectangular (being gently produced), saccus longer than vinculum, straight, not thickened. Valva rather broad, suboval, costa rounded-prominent beyond middle, top rounded, sacculus little curved; sclerotized; disc of valva with basal half (except margins) punctulate, with thin hairs, remainder of

valva normally bristled, bristles thin. Transtilla strong, depressed-triangular, slightly hooded, below produced in strong points (processus basales). Aedeagus moderate, thick, broadest before middle, top clavate, with dense, recurved spines; cornutus, a tube over  $1/3$  length of aedeagus. Anellus weak, unspined, cylindrical.

Female genitalia. Ovipositor short and moderately broad, conical, lobus analis concave, hardly haired outwardly. Apophyses thin, anapophysis sinuate, postapophysis straight. Eighth segment with a pair of lateral lobes, adjacent

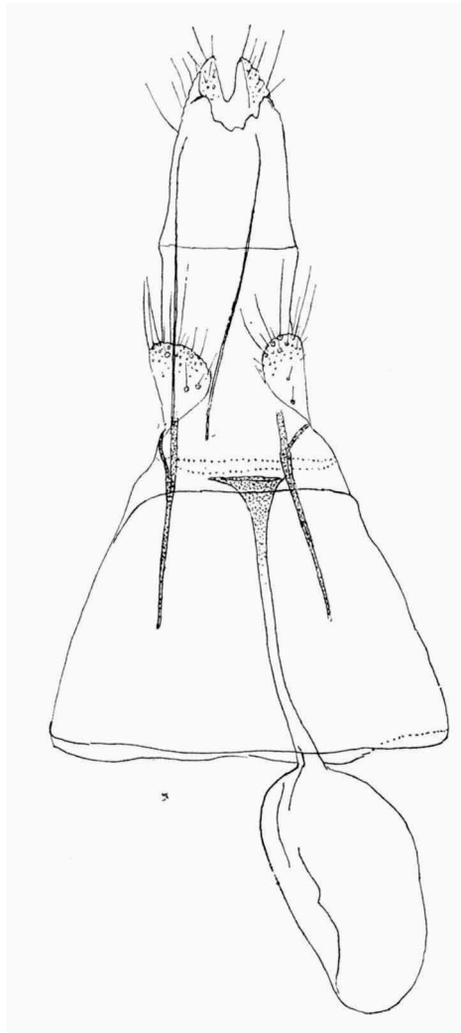


Fig. 17. Female genitalia of *Glyphipterix regula* sp. n., allotype.

to a pair of ventro-lateral lobes, short-haired, bristly along edge, obtusely pointed. Ostium intersegmental, a regular fleshy funnel, rather narrow below. Ductus bursae narrow above, gradually becoming wide, simple, straight and rather short. Corpus bursae ovoidal, signum indicated as a patch of fine granulation at the right side only. Receptaculum seminis, a voluminous sac (in fig. 4 omitted, in fig. 5, where it is thrust inside the ninth segment, indicated by a broken line: this position is artificial, caused during mounting, by pulling out of the retracted ovipositor). Ductus seminalis originating apparently next to the base of ductus bursae.

Holotype, ♂, Japan, Okuyoshino, Nara Prefecture, 22.vii.1971 (Y. Arita leg.), genit. slide 9407AD. Paratypes, 3 ♂, 2 ♀, the same locality and date, genit. slide ♀ 9408AD (allotype). Holo-, allotype, and paratypes in ZLMU, paratypes in RMNH.

The following material, all paratypes, is in the Issiki Collection (NMNH): Japan, Kyûsyû, Hikosan, 18.vii.1937 (S. Issiki), 1 ♂; Higo, Naidaizin-kei, 23.v.1952 (S. Issiki), 1 ♂. Sikoku, Asizuri-misaki, 10.v.1951 (S. Issiki), 1 ♂.

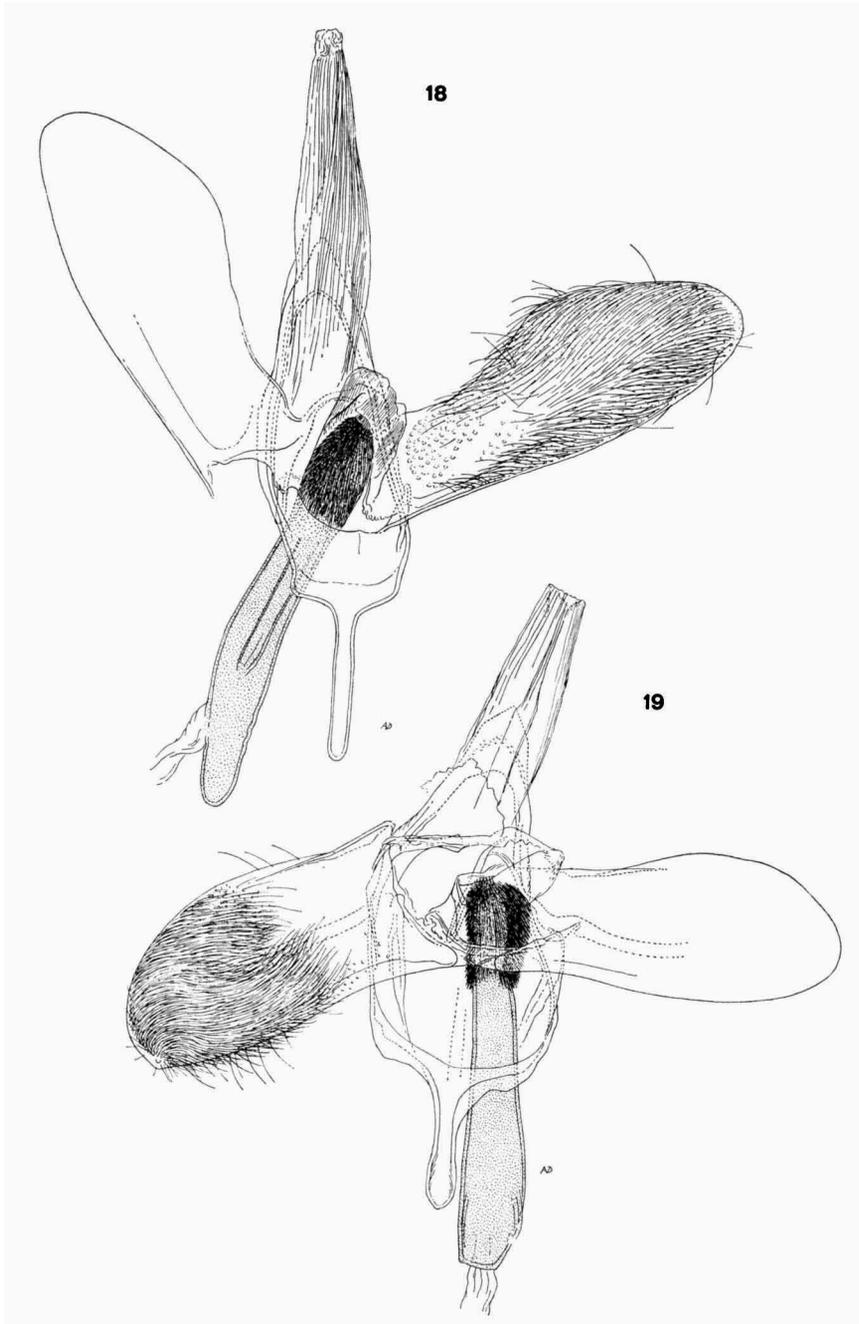
Taiwan, Kansirei, 18.x.1934 (S. Issiki), 1 ♂ 1 ♀; Sikikun, 8.viii.1934 (A. Mutuura), 1 ♀; Tipon, 28.iii.1944 (S. Issiki), 2 ♂; E. X. 1936 (S. Issiki), 1 ♂. Kirisato, 1.vi.1943 (S. Issiki), 1 ♀.

This gaudy coloured small species shows considerable similarity to the following species (which is much larger), except for the absence of any signa.

#### ***Glyphipterix gaudialis* spec. nov. (figs. 19-20)**

♂ 12-14 mm. Head deep purplish-bronze, face narrowly white-edged, forehead and vertex with a broader somewhat suffused pale yellowish edge; collar broad, purple-bronze. Palpus white, slightly compressed dorso-ventrally, rather long, moderately curved, ascending, median segment short, with purplish transverse bands, terminal segment twice as long, pointed, in front with a parting purple-black line. Antenna thickened in male, subserrulate, minutely ciliate, fuscous-bronze. Thorax deep purplish-bronze with some olive hue, base of tegula edged with yellow, outer edge suffused with paler yellowish. Legs purplish-black, white-ringed. Abdomen blackish-brown, venter white on anterior half, anterior edges of segments with blackish bands, anal tuft black, white inside.

Fore wing rather broad, subtriangular, broadest at  $3/4$ , costa rather straight anteriorly, gently curved posteriorly, apex rounded, termen indented below apex, rounded below, moderately oblique. Deep purple, appearing blackish, with a purple-bronze gloss. An inwards-oblique, light yellow transverse band, from  $1/6$  of costa to dorsum beyond base, with anterior edge tolerably straight, posterior produced, forming an obtuse angle in fold, thence gently concave;



Figs. 18-19. Male genitalia of *Glyphipterix* species, holotypes. 18, *G. gemmula* sp. n.;  
19, *G. gaudialis* sp. n.

fascia on costal edge rather narrowed and preceded by two vertical light yellow striae; posterior half of wing from middle to well before apex and from below costal edge to middle of disc, with a deep orange glossy patch; posterior part of costa, from just before  $2/3$  to well before apex, with six light yellow streaks, becoming white on costal edge, continued by brilliant metallic silvery-violet below, except second stria; first stria with metallic end, to  $1/3$  of disc, third longest, almost to middle of disc; other costal marks with short metallic ends, that of fourth streak shortest; a bright yellow transverse and subclavate patch on  $3/4$  of dorsum, top gently dilated and deeply emarginate, more or less interrupted by ground colour; this patch preceded by an inwards-oblique thick metallic bar to fold, followed by a similar, shorter bar, both separated from patch by narrow lines of ground colour; two round metallic dots in disc just above middle, between second costal mark and first dorsal bar, and a third dot just above middle of fold; other metallic marks as follows: a strongly inwards-oblique subclavate streak, rising from excavation of top of yellow spot, above not reaching end of third costal streak; a larger triangular metallic spot on end of termen, slenderly erected towards end of fifth costal streak; a blotch opposite incision of termen, preceded by a small point in disc; apex deep purple. Cilia fuscous-grey, glossy, basal half deep purple.

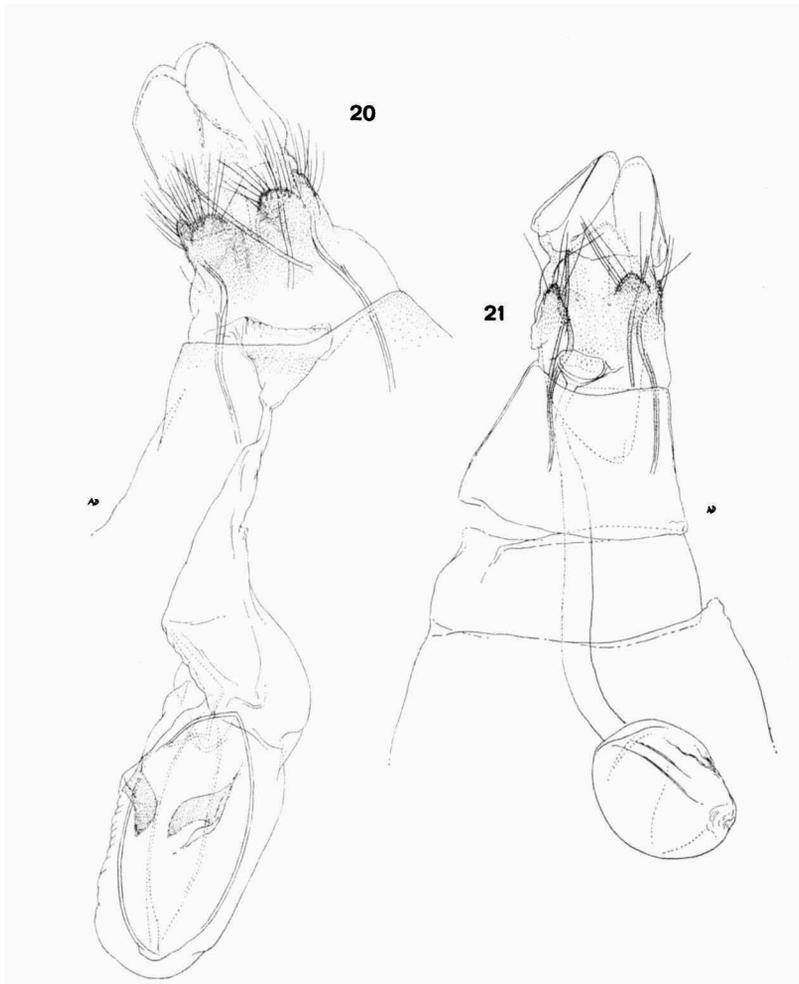
Hind wing oblong-subtrapezoidal, dorsum at base distinctly angulate, tornus broadly rounded; deep fuscous-bronze, becoming slightly paler towards base. Cilia dark grey-fuscous, around apex and along termen lower half darker, blackish-fuscous.

♀ 11 mm. Palpus snow-white, with a purple parting line in front; more curved than in male, subperfect. Head slightly paler, more olive-tinged. Fore wing with transverse band broader, less oblique, with posterior edge gradually convex, preceded by a single costal mark; costal light marks broader, tinged orange, dorsal yellow patch rather reduced in size. Otherwise as male.

Hind wing as in male, but cilia paler greyish.

Male genitalia. Tegumen, short, narrowed. Tuba analis as long as tegumen. Vinculum large and broad, subquadrate. Saccus shorter than vinculum is high. Valva short and broad, semioval, with truncate base, finely haired over apical half, basal half with pit-like scars of slender, bristle-like hair-scales of outer surface, with a median longitudinal ridge along basal  $3/4$ . Transtilla strong, rather sclerotized, semiannular and depressed-triangular, laterally forming long processus basales, soldered to those of valva. Aedeagus rather straight, robust, spindle-shaped, top dilated and possibly split, with very dense, appressed spines and several apical crochets. Cornutus, a moderate tube.

Female genitalia. Ovipositor short, tortricoid. Lobi anales flat, semioval. Apophyses slender and short. Ninth segment modified, strongly aciculate,



Figs. 20-21. Female genitalia of *Glyphipterix* species, allotypes. 20, *G. gaudialis* sp. n.; 21, *G. gemmula* sp. n.; receptaculum seminis (broken line) thrust into the 9th segment.

with a pair of rounded lateral and a pair of ventrolateral lobes. Ostium, a wide membraneous, apparently expansible funnel with a plicate edge. Colliculum absent. Ductus bursae, a short moderate tube. Corpus bursae long, erected-pearshaped, almost tubular. Signa, two flat hooks opposite one another, at upper 2/3. Ductus seminalis long and slender, originating well below top of corpus bursae; receptaculum seminis, a voluminous sac.

Holotype, ♂, Japan, Hodokaonsen, Kamitakamura, Gifu Prefecture, 3.viii. 1967 (Y. Arita leg.), genit. slide 9409AD. Paratypes, 1 ♀, the same data, genit. slide 9410AD (allotype); 10 ♂, the same. --- Honshu, Mt. Hakusan (Ichi-

nose), 30.vii.1973, genit. slide 9276AD; 1 ♂, Honshu, Tsunaoi, Iwate, 18.vi.1967; the same, 1 ♀, genit. slide 9277AD. All collected by T. Oku.

The following paratypes are in the Issiki Collection (NMNH). Japan, Honsyû, Nagano, Karuisawa, 6.vii.1952 (A. Mutuura), 1 ♀; Tyûbu, Sinano, Kuzu, 21.vii.1919 (K. Takeuchi), 1 ♂.

Holotype and paratype in ZLMU, allotype and paratypes in RMNH, paratypes in NMNH.

**Glyphipterix regula** spec. nov. (figs. 17, 23-24)

♂ 13.5 mm. Head deep glossy grey-fuscous, sides narrowly edged with paler. Antenna in male subserrulate, short-ciliate, deep glossy fuscous, cilia white. Palpus sordid white on the inside, light grey on the outside, moderately dilated throughout, tip pointed, terminal segment as long as median, both slightly rough along the lower edge. Thorax bronze-black. Abdomen black, posterior edges of segments silvery-grey.

Fore wing rather broad, oblong-oval, costa curved at ends, rather straight in middle, apex rounded, termen rounded. Blackish-bronze, more black at base, slightly brighter bronze posteriorly. Markings silvery-white on costa, pure white on dorsum, pale metallic blue along termen and in disc. Costa with five tolerably equidistant slender marks, first from rather before  $1/4$ , first to third oblique and parallel, clavate by metallic scales, third longest, slightly more distant, to middle of disc, fourth and fifth shorter, slender and excurved, less oblique, metallic, with dentoid white bases; three equidistant dorsal moderately oblique marks, first and second parallel, erected-triangular, straight, second more pointed, median, third more slender, excurved, metallic above base, on end of dorsum; an oval, longitudinal small spot in centre of disc just beyond middle of wing length, a vertical metallic bar above tornus crowned with a small dot, two larger dots along termen, upper with top separated, a metallic round dot just before apex. Cilia deep bronze, less than apical fourth white, a short and slender marginal strigula around apex.

Hind wing rather dark grey-bronze. Cilia concolorous, around apex posterior third paler.

The paratype with metallic top of third costal streak separated, so that there is a subhorizontal row of three discal largish metallic dots.

Male genitalia. Rather spherical. Tegumen rather short and moderately broad, top truncate. Tuba analis short, not exceeding tegumen. Vinculum about  $1\frac{1}{2}$  as broad as high, gently narrowed, lower angles with small prominent knobs. Saccus about  $1/4$  exceeding height of vinculum, subclavate. Valva short and broad, haired over posterior  $2/3$ , cucullus round. Anellus, a large hairy cone, as long as valva. Processus basales slender and straight,

connection between anellus and valva constricted. Aedeagus  $\frac{1}{3}$  longer than anellus, moderate, twice gently sinuate, coecum penis moderate, narrower; top spiny but little dilated, cornutus tube rather wide, gently curved,  $\frac{1}{3}$  length of aedeagus from tip of coecum.

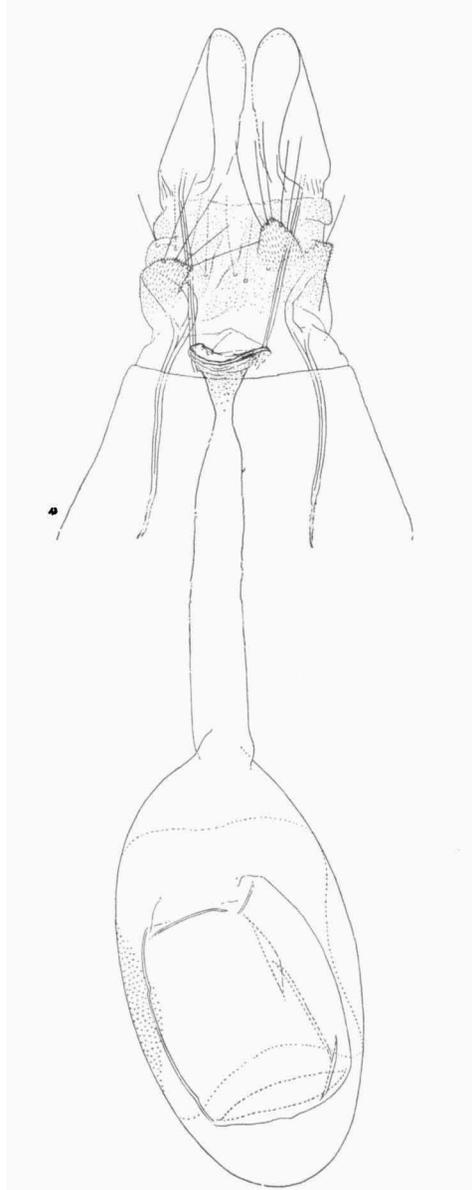
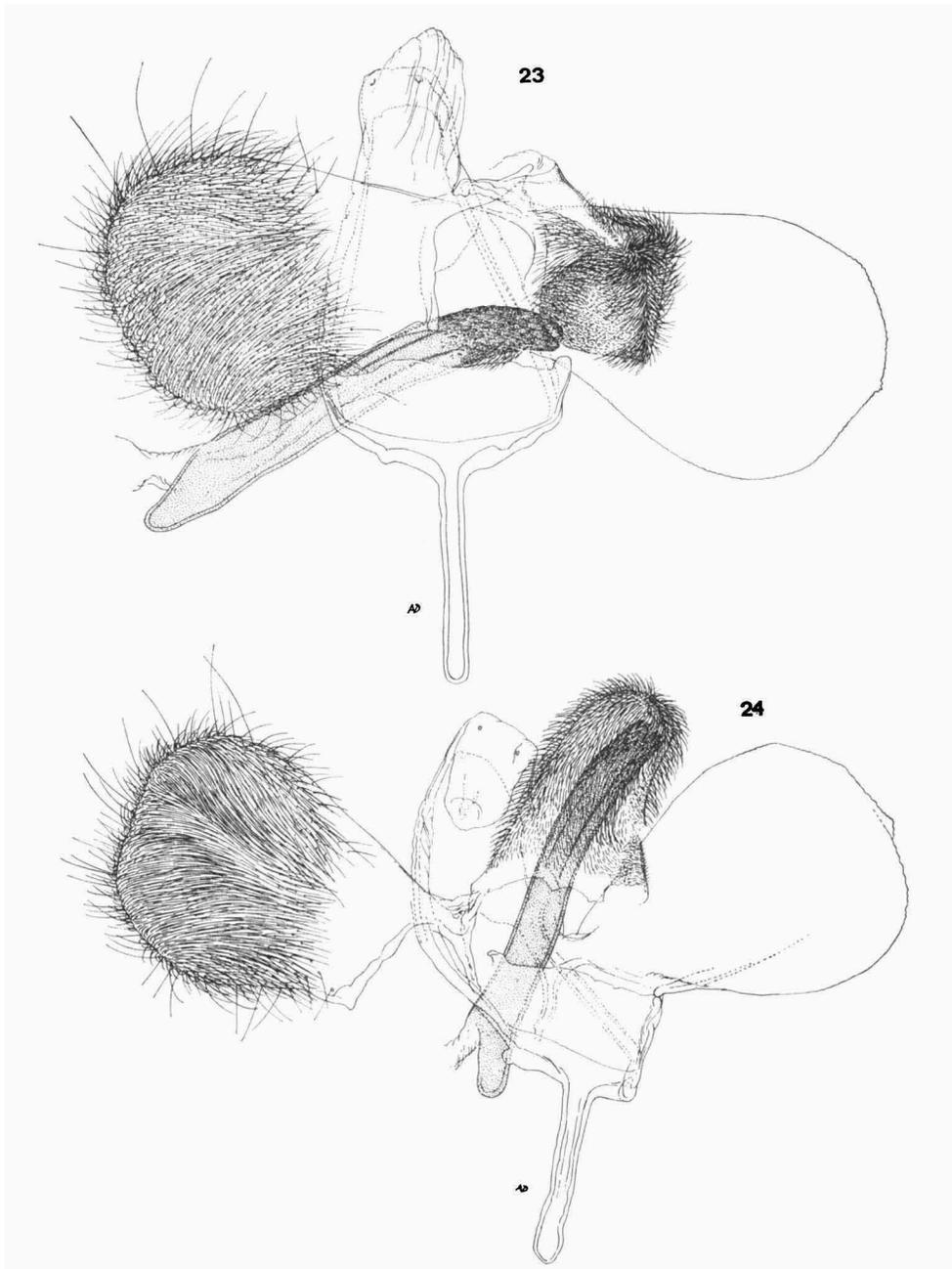


Fig. 22. Female genitalia of *Glyphipterix gemmula* sp. n., paratype, genit. slide 9459.



Figs. 23-24. Male genitalia of *Glyphipterix regula* sp. n. 23, holotype; 24, paratype, genit. slide 9346.

The collecting localities are a garden overgrown with mixed forest (holotype) and *Picea*-deciduous forest; July.

♀ 8-10 mm. Similar to the male, but fore wing slightly more dilated, markings more contrasting. Second costal and second dorsal spots interconnected by a pale blue metallic stria, gently inwards-convex, second costal being more posterior than second dorsal; third costal spot larger, almost wedge-shaped; pale area above black tornal more distinctly streaked with two upper thicker, two lower slender longitudinal streaks; brilliant blue stria connecting the ultimate pair of costal streaks, U-shaped, with base touching white wedge-shaped "notch" on cilia, this shifted far below the apex, close to posterior end of black tornal patch (in ♂ notch not conspicuous, appearing continuation of posterior transverse streak). Otherwise similar to the male, above differences possibly owing chiefly to the holotype being slightly rubbed.

Female genitalia. Ovipositor with two small but fleshy dorsal lobes, ventral edge scalloped. Postapophysis very thin and long; anapophysis moderate, straight, gently thickened at furcation, side branch almost at right angle, rather straight. Posterior edge of seventh ventrite straight. Ostium, a simple, rather wide funnel. Ductus bursae not exceeding edge of ventrite, simple. Corpus bursae oblong-ovoidal, moderate. Signa absent.

A characteristic, darkly coloured species with broad fore wings and regular costal streaks, reaching  $1/3$  across wing or more and starting well before  $1/4$  of costa. The dark cilia are not notched.

The species is closely allied with *G. okui* spec. nov., but is larger, with broader wings and rather similar but still quite distinct male genitalia.

Holotype, ♂, Southern Kuril Ids., Kunashir Id., Pes'chanoe Lake, garden overgrown with mixed forest, 12.vii.1967 (V. Kuznetsov), genitalia slide 9320AD; the same, environs of Sernovodsk, *Picea*-deciduous forest, 2.vii.1967 (V. Kuznetsov), 1 ♂, paratype, genitalia slide 9321AD. The same, environs of Mendeleevo, forest, 19.vi.1967 (V. Kuznetsov), 1 ♂, genitalia slide 9267AD.

1 ♂, Japan, Honshu, Sinano, Sigakoogen, 15.vii.1959 (S. Moriuti), genit. slide 9411AD; 1 ♂, the same locality and date; 2 ♂, 12-14.vi.1959 the same locality (A. Mutuura); 1 ♂, Japan, Honshu, Sinano, Tokugotoge, 7.vii.1962 (S. Moriuti); 1 ♂, Hokkaido, Apoi, 21.vi.1959 (T. Kumata); 8 ♂, the same locality, 22.vi.1959 (T. Kumata); 1 ♂, 1 ♀, the same locality, 23.vi.1959 (T. Kumata); 6 ♂, Hokkaido, Tomuraushi, 23.vi.1959 (T. Kumata); 2 ♂, Hokkaido, Siretoko, 10-17.vii.1965 (T. Kumata). All paratypes.

In the Issiki Collection (NMNH), there are the following paratypes: Japan, Nagano, Kamikouti, 20.vii.1951 (A. Mutuura), 2 ♂, genit. slide 9785AD. Kumamoto, Kunimidake, 24.ii.1952 (T. Kodama), 1 ♀, genit. slide

9786AD. Tyûbu, Nagano, Sigakogen, 12.vii.1953 (T. Kodama), 1 ♀, allotype, genit. slide 9788AD. Tyubu, Kamikoti, 16.vi.1922 (S. Issiki), 1 ♂; Sinano, Siga-kôgen, 12.vii.1953 (S. Issiki), 1 ♂; Yumoto, Totigi-ken, 21.vi.1932 (S. Issiki), 1 ♂.

Holotype in ZIAS, paratypes in RMNH, ZLMU and ZLHU, allotype and paratypes in NMNH.

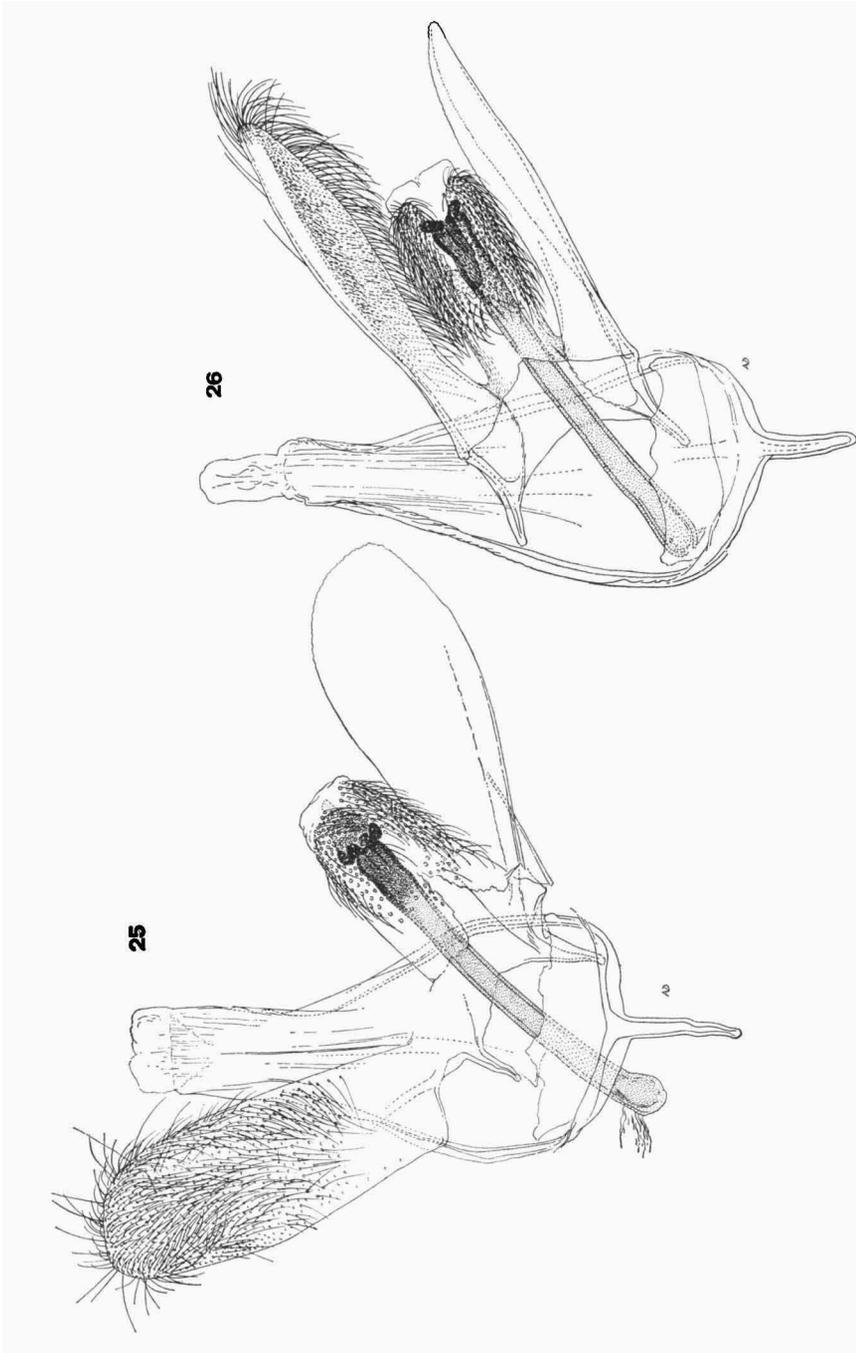
**Glyphipterix okui** spec. nov. (figs. 25-27)

♂ 9-10 mm. Head purplish-black. Antenna dark grey. Palpus moderately long, curved, diverging, flattened dorso-ventrally, apical segment as long as median, pointed; outer side white, median segment with broad purple transverse subbasal and subapical bands, terminal segment with a basal band and apical half purple. Thorax purplish-black. Abdomen bronze-black, anal tuft whitish.

Fore wing moderately broad, dilated, suboval, costa straight anteriorly curved posteriorly, apex rounded, termen gently inbent below apex, thence rounded, moderately oblique. Deep purplish-fuscous, on posterior half except along costa becoming purple. Costa from before  $1/4$  to just before apex with seven slender silvery-white streaks, below costa becoming greenish, then bluish metallic; first streak more distant, second to sixth tolerably equidistant, sixth and seventh more approximated; first and second more oblique and more dilated on costa, reaching  $1/3$  across wing; third and fourth extended by brilliant metallic, pale blue-violet, slightly outwards-concave lines, clavate in middle of disc, parallel; fifth to seventh marks short, with hardly metallic ends, two ultimate outwards-curved and dentoid; dorsum with three curved, inwards-oblique marks, first thickest, pale yellow, at  $1/5$ , not exceeding fold; second just beyond middle, pale yellow, narrow and curved outwards to middle of disc, above base abruptly dilated anteriorly, thence narrowed; posterior half metallic blue-violet; third, a slender erect bar, silvery-white, tip violet, hardly reaching  $1/5$  of disc; termen with an oblique pointed small metallic mark opposite notch and three larger round dots, equidistant and submarginal; a larger transverse-oval violet metallic spot above and beyond third dorsal mark; a hardly traceable discal violet metallic point below last costal mark. Cilia whitish, basal  $2/3$  blackish-bronze, with a white bar opposite notch on termen and white spots opposite two ultimate costal marks, a marginal blackish streak on costal cilia around apex.

Hind wing slightly over  $1/2$ , oblong-subtrapezoidal, dorsal angle rounded, costa straight, termen broadly rounded; dark fuscous-purplish, rather dull, paler towards base. Cilia fuscous-grey.

♀ 12 mm. Similar to the male (slightly rubbed). Third costal line contiguous



Figs. 25-26. Male genitalia of *Glyphipterix okui* sp. n. 25, holotype; 26, paratype, genit. slide 9412.

with large oval discal metallic spot; apex with a velvet-black triangular spot.

Hind wing slightly paler.

Male genitalia. Very characteristic. Tegumen and vinculum together rather depressed and pear-shaped. Tuba analis short and broad. Vinculum over twice as broad as high. Saccus slender and rather short but longer than vinculum is high. Valva oval, rather broad and short, finely hairy over posterior  $2/3$ . Aedeagus sclerotized, slender, and clavate, dilated top rather small, crowned with some 4-5 dark oval crochets arranged in a wreath. Cornutus, a slender tube.

Female genitalia. Ovipositor moderate, lobus analis rather short and broad. Postapophysis long and slender. Ninth sternite narrow, finely aciculate, lateral lobes semioval, little prominent. Anapophysis slender and rather short. Ostium appearing as a weak spherical cup. Ductus and corpus bursae simple, corpus bursae oblong-oval.

Holotype, ♂, Japan, Honshu, Iwate, Mt. Hayachine, 23.viii.1972, genit. slide 9280AD; allotype, ♀, genit. slide 9281AD; 4 ♂, paratypes (T. Oku). 1 ♂, Japan, Honshu, Tokugotoge, Nagano Prefecture, 17.viii.1967 (Y. Arita), genit. slide 9412AD; 5 ♂, the same locality and date; 3 ♂, the same locality, 18.viii.1967 (Y. Arita leg.); 2 ♂, the same locality, 19.viii.1957 (S. Moriuti); 1 ♂, Hokkaido, Soranuma, Sapporo, 9.viii.1963 (T. Kumata).

Holo- and allotype in RMNH, paratypes in ZLMU and ZLHU.

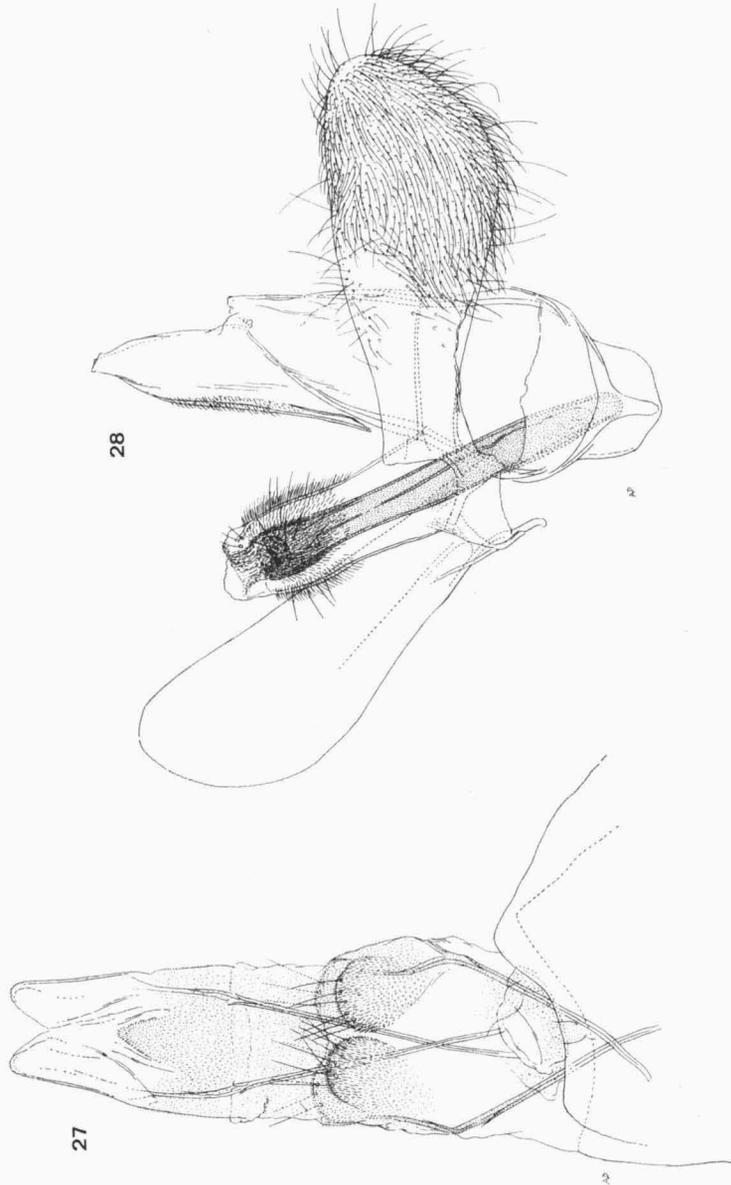
We have the pleasure to dedicate this species to the collector, Dr. Toshio Oku, who kindly sent part of this material for study.

Superficially the species is rather similar to *G. japonicella* Zeller, but it is smaller, with seven, instead of six pale costal marks which are pure silvery-white, instead of light yellow and the conspicuous preapical distal metallic spot of *japonicella* is absent or only indicated by a minute point, in *oku*. The genitalia, especially, are quite different.

#### ***Glyphipterix euleucotoma* spec. nov. (figs. 15, 28)**

♂ 8.5 mm. Head olive-ochreous, touched with grey, with a pale golden gloss, face slightly paler, edged with narrow white lines. Antenna fuscous with a golden gloss, subserrulate, ciliations short, white. Thorax light fuscous-olive, with a golden gloss. Abdomen fuscous-golden, tawny-tinged.

Fore wing sublanceolate, moderately narrow, little dilated, broadest in middle, costa straight, apex rounded, termen convex. Fuscous-golden, tips of scales whitish to diverse degree, forming fine transverse striation of diverse width. A straight, slightly inwards-oblique silvery-whitish transverse streak well beyond  $1/3$ , preceded by another similar but greyish and less distinct, less oblique streak, reaching halfway across wing from well beyond  $1/6$  of costa;



Figs. 27-28. Genitalia of *Glyphipterix* species. 27, *G. okui* sp. n., allotype, ♀; 28, *G. euleucotoma* sp. n., holotype, ♂.

a short silvery-white transverse mark on costa beyond middle; a white costal streak in disc becoming silvery metallic, from  $5/6$  of costa to middle of termen, slightly outwards-oblique and hardly outwards-convex, followed by a parallel, thicker wedge-shaped white streak from costa just before apex, silvery-metallic on lower half; a faint transverse whitish mark on dorsum beyond base, reaching to middle of disc; a jet-black oblong well-defined patch from beyond middle of wing almost to middle of termen, upper edge slightly concave, anterior edge rounded; this patch including 4-5 submarginal bluish and violet thickened metallic round dots, with above them slight scattering of yellow scales; a patch of sordid white dusting above this patch, not reaching costa, formed of larger whitish tips of scales, with some three faint horizontal streaks of darker ground colour, crossing this area and tending to diverge posteriorly; area between two last transverse streaks dusted with yellow. Cilia (imperfect) pale, fuscous-whitish, basal half golden-fuscous, with blackish-suffused tips, with a large white notch crowning the end of penultimate costal streak.

Hind wing narrowly semioval, acutely pointed, costa straight, termen moderately rounded; golden-fuscous, glossy, with a tawny tinge. Cilia fuscous.

Male genitalia. Tegumen moderate, narrowed. Tuba analis shorter than tegumen. Vinculum characteristic, about  $1/2$  length of tegumen, wide above, with upper edge gently concave on each side, above its middle abruptly constricted, so as to form a widely cylindrical saccus with a broad folded-over edge, except in middle. Valva suboval, narrower at base, costa almost straight, sacculus rounded-prominent posteriorly. Aedeagus moderately thick, straight, shorter than tegumen + vinculum; less than apical  $1/5$  clavate and spiny. Anellus moderately sclerotized, cylindrical, only top slightly rounded.

♀ 11-13.5 mm. Rather similar to the male, but markings slightly different, as follows. The first three costal, marks thicker and shorter, the three dorsal marks also longer and thicker and more oblique. However, in this species the markings vary to some extent in the two sexes; still generally the female has coarser and larger markings.

Female genitalia. Ovipositor long, extensile, postapophyses long and very slender; anapophyses stronger, straight, moderately long. Seventh segment enlarged, sterigma formed by moderately sclerotic posterior edge, straight, dilated at the sides and more so in middle, there including oval ostium. Ductus bursae moderately slender, sclerotic, exceeding height of segment. Corpus bursae long-pearshaped, with produced top, from which branches off ductus seminalis; ductus bursae entering corpus bursae below its top. Signa absent.

Holotype, ♂, Japan, Honsyu, Osaka, Inunakisan, 1.vi.1956 (T. Kodama), genit. slide 9413AD. Paratypes, 3 ♂, Honshu, Kii-Oshima, 21-24.v.1964

(T. Kumata); 4 ♂, Honshu, Kozagawa, Wakayama, 14-20.v.1964 (T. Kumata) (ZLMU).

The following paratypes are in the Issiki Collection (NMNH): Japan, Honsyû, Seibu, Hôki, Daisen, 15.vii.1920 (Takauchi), 1 ♂; Hakone, 4.vii.1932 (S. Issiki), 1 ♀; Kinki, Ise, Osugidani, 10.vi.1952 (S. Issiki), 1 ♀, (allotype), genit. slide 9789AD.

Holotype in ZLMU, allotype in NMNH, paratypes in ZLHU and RMNH.

A small species, conspicuous by the large white subapical streak and by the black tornal spot. The saccus has a unique shape, assigning the species to an isolated position within the *thrasonella* group of species.

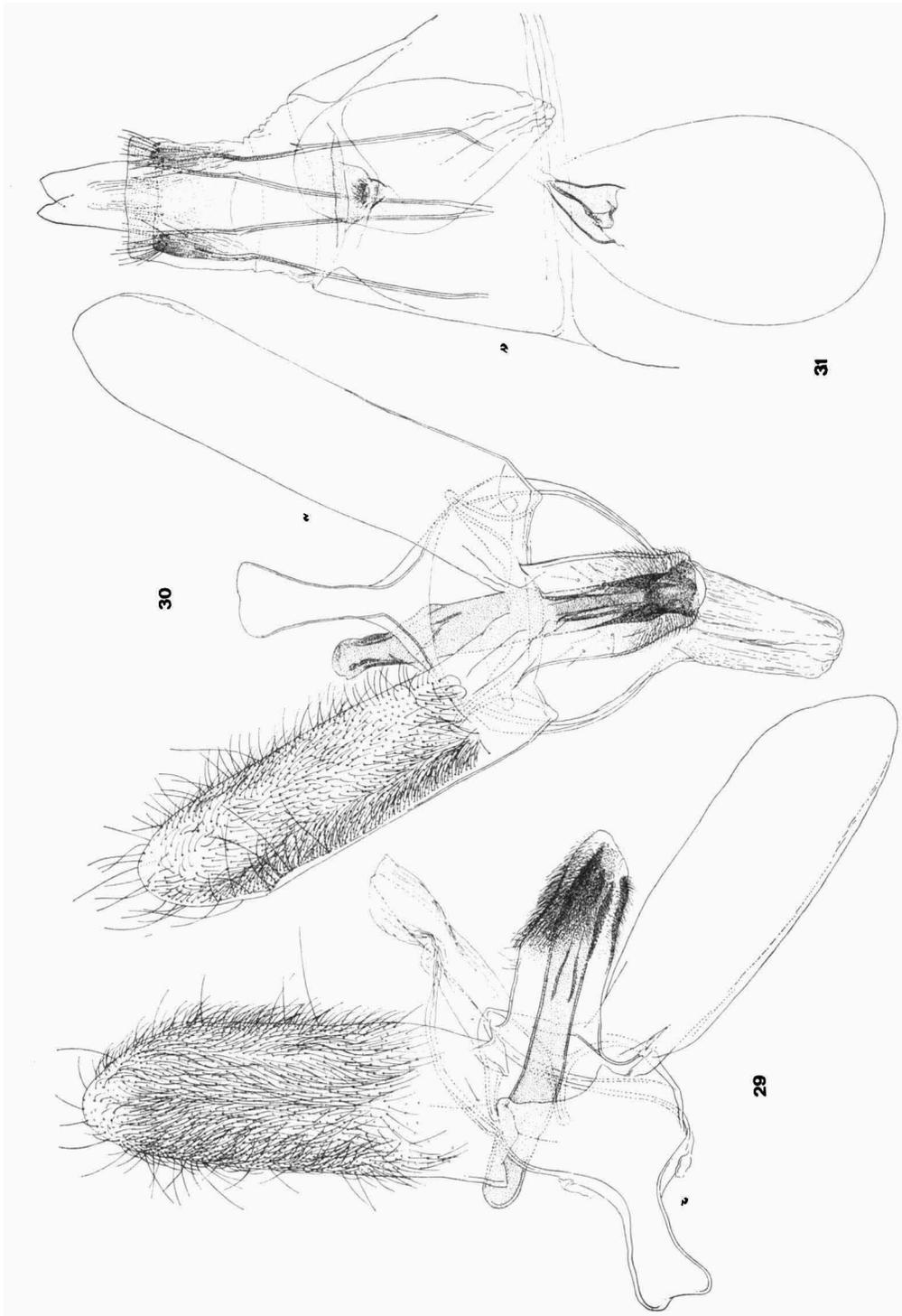
**Glyphipterix funditrix** spec. nov. (figs. 29-31)

♂ 10.5 mm. Head and thorax deep fuscous-bronze. Antenna serrulate, dark fuscous-bronze. Palpus little curved, flattened; white, with four oblique bronze transverse bands, tip dark-parted in front. Abdomen dark bronze.

Fore wing rather broad, little dilated, costa curved anteriorly, almost straight posteriorly, apex obtusely rounded, termen gently sinuate above, little curved, oblique below. Dark glossy fuscous, posterior fifth tinged purplish. Markings white. A vertical transverse band at 1/6, slender, little dilated, from costa to fold, thence rather triangularly dilated; costa from beyond 1/3 to beyond 2/3 with four tolerably parallel, rather short and oblique, gently curved striae, first longest, to upper edge of cell, others gradually becoming slightly shorter; two more striae, approximated, broader, silvery, more vertical and more curved, subapical, reaching not quite halfway termen; tips of second, third, fifth and sixth streaks metallic brilliant-greenish; dorsum at 2/3 with a slender, moderately out-curved and slightly clavate transverse streak, below fold broader and silvery-white, above fold, slender and greenish-metallic, reaching just above middle of disc; a second, more oblique and curved short streak before end of dorsum, with a transversely oval dot above this, both greenish-metallic; two oblong violet dots in a submarginal series in tornus, a large transverse violet blotch, crowning terminal "notch" of cilia; apex suffused fuscous-black. Cilia pale greyish, towards dorsum suffused with darker grey, a black marginal stria above apex, basal half of cilia glossy fuscous-lead, with a blackish upper edge; a small silvery notch-like spot in concavity of termen below apex.

Hind wing rather broad, semioval-subtrapezoidal, apex rather pointed, termen hardly sinuate; dark fuscous-bronze, with a silky gloss. Cilia purplish-grey.

♀ 10.5 mm. Similar to the male, but all pale markings appearing broader,



Figs. 29-31. Genitalia of *Glyptipterix fundatrix* sp. n. 29, holotype, ♂; 30, paratype, ♂; 31, allotype.

probably due to rubbing; subbasal dorsal fascia distinctly broader, gently but gradually dilated downwards.

Hind wing paler, with a brighter violet-purplish hue.

Male genitalia. Tegumen and vinculum together broadly oval, almost circular, robust and sclerotized. Tuba analis slight, half the length of vinculum and tegumen together. Vinculum about 1/2 height of tegumen. Saccus strong, flattened and clavate, top truncate, as long as tegumen. Valva moderately broad, subtrapezoidal, upper and lower edges being parallel, top outwards-oblique; finely and evenly haired throughout, except naked basal 1/5. Anellus sclerotized, conical, narrowed along posterior half and finely bristled, with strong basal processes, joining those of the valvae. Aedeagus moderate, over 3/4 length of valva, moderately wide, apical fourth finely spined but little dilated. Cornutus tubular, dilated at base.

Female genitalia. Ovipositor moderate, lobus analis oblong-oval, rather narrow. Apophyses very slender. Ostium, a moderate funnel, with a dark granulate sclerotization of dorsal wall. Ductus bursae rather wide; cestum, a three-sided pyramid, with inside three partition-like sclerites, at the end of ductus bursae. Corpus bursae large, oblong-oval. Receptaculum seminis, a large hyaline sac within the seventh abdominal segment.

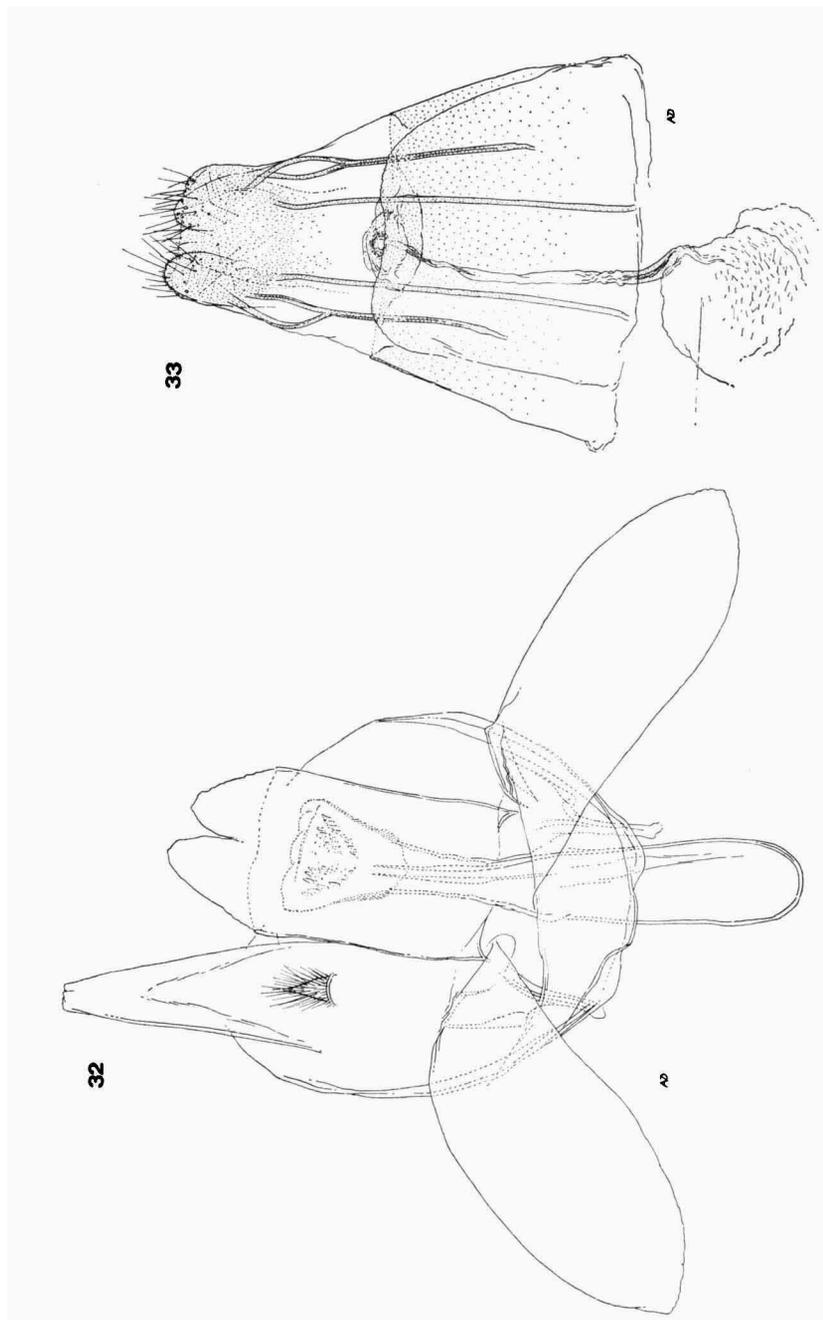
Holotype, ♂, Japan, Hokkaido, Kenebetsu, Nemuro, 3.viii.1962 (T. Kawabe), genit. slide 9557AD. Paratypes, 1 ♂, 1 ♀ (allotype), the same labels, genit. slides ♂ 9457, ♀ 9458AD. In ZLHU.

A novel form, superficially resembling *Glyphipterix regula* spec. nov. and *okui* spec. nov., but with very distinct genitalia in the two sexes, especially those of the male.

***Glyphipterix melania*** spec. nov. (figs. 16, 32-34)

♂ 7-8 mm. Head and thorax smooth, polished, black (possibly slightly greasy), a thin whitish line just behind and between bases of antennae. Antenna subserrulate along posterior part; black, base with paler articulations. Palpus rather long, flattened dorso-ventrally, curved and ascending, tip exceeding base of antenna; black, with four white bands. Thorax black. Abdomen black, venter whitish, sides and anal tuft silvery-white.

Fore wing ovate-lanceolate, costa moderately curved, more so posteriorly, apex broadly rounded, termen gently rounded, strongly oblique, golden-pinkish-orange, glossy. Extreme base of wing whitish, silvery on costa; costal edge narrowly suffused with black, with four large, leaden-whitish glossy transverse streaks, followed by two silvery-white subapical marks; streaks very oblique and pointed, becoming less oblique, more slender and slightly shorter posteriorly, all suffusedly edged with black; first streak at 1/4, to



Figs. 32-33. Genitalia of *Glyphipterix melania* sp. n. 32, holotype; 33, allotype, ♀, ovipositor not extended.

middle of disc, second slightly shorter, touching a round, leaden-silvery dot in middle of disc; subapical marks short, wedge-shaped, approximated, edged only anteriorly with black, tips silvery; a large round leaden-silvery dot in disc between and below fourth and fifth costal marks; apex filled out with sooty black forming a semioval spot; a blackish oblong-oval patch on basal half of dorsum, upper edge convex, from base of costa; this patch including one or two orangeish transverse bands towards base of wing; first dorsal mark fasciate, hardly inwards-oblique, median pale silvery-violet, almost to middle of disc; second dorsal mark similar but smaller, beyond 3/4, slightly more inwards-oblique; a large, inverted-triangular, sooty-black patch beyond this mark, well-defined, filling out dorsum and tornus, its anterior angle almost reaching middle of wing, its upper edge almost horizontal, very outwards-oblique; this black patch cut beyond its middle by a larger, violet-silvery tornal mark, obliquely triangular, anterior angle extended along dorsum basad; a smaller pale violet-silvery dot on termen below apical spot. Cilia whitish, basal half leaden with blackish tips, cut by white below apex, a blackish marginal "Schwänzchen" above apex.

Hind wing black with a bronze gloss. Cilia black.

♀ 8 mm. Similar but somewhat paler. Head and thorax grey-olive with a

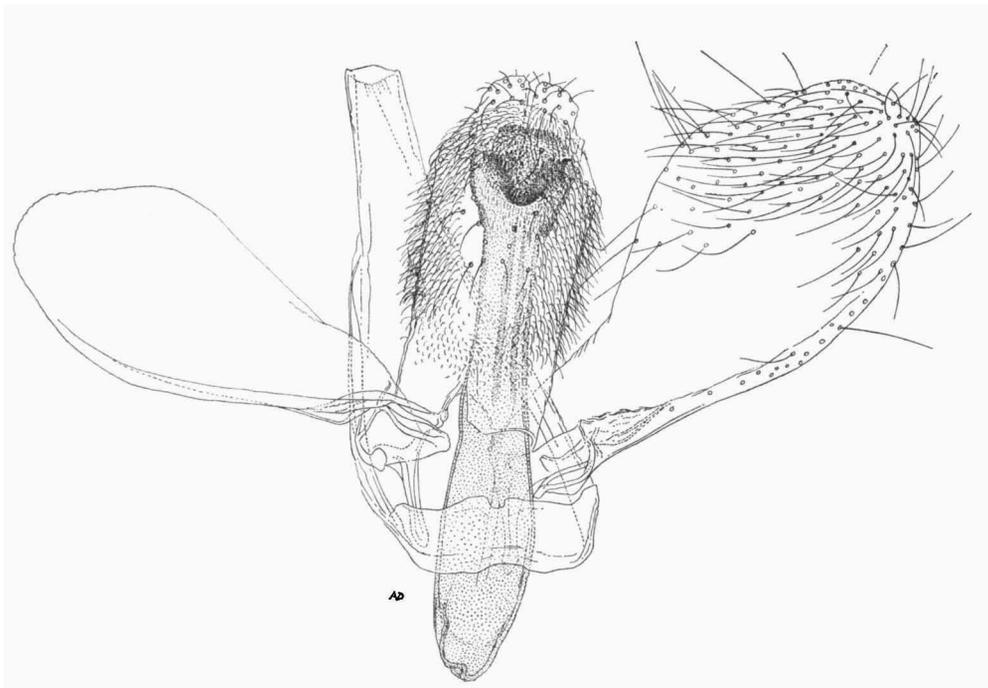


Fig. 34. *Glyphipterix melania* sp. n., paratype, ♂, genit. slide 148 YA.

golden gloss. Palpus with broader white rings. Fore wing slightly narrower and more pointed, apical black spot more rounded, consequently. Hind wing slightly more pointed, lighter, fuscous, evenly irrorated with black. Cilia dark grey.

Male genitalia. Tegumen triangular, top rather membraneous. Tuba analis little shorter than tegumen, slightly narrowed, naked. Vinculum shallow, lower edge truncate, in middle emarginate, without a saccus. Valva broadly oval, concave, thinly haired over posterior half, sacculus ill defined, processus basalis strong, subclavate, moderately long. Aedeagus very large, as long as tegumen + vinculum, basal part spindle-shaped, top strongly clavate, concave, beset with short, dense crochets in cavity.

Female genitalia. Ovipositor slender, rather long, extensile, both pairs of apophyses very slender and long. Seventh segment moderately enlarged. Sterigma formed by ostium only, a moderately sclerotic deep and narrow funnel, sclerotic at bottom. Ductus bursae rather slender, as long as segment is high, at end with the usual small arrowhead-like sclerite. Corpus bursae oblong-oval. Signa absent.

Holotype, ♂, Japan, Kyushu, Yakushima Id, Miyanoura, 22.ix.1972 (Y. Arita leg.), 1 ♂, 1 ♀, paratypes, genit. slide 148YA♂; Fukuoka Prefecture, Hikosan, 17.vii.1975 (Y. Arita leg.), ♀ (allotype), genit. slide 147YA, 1 ♂, paratype, slide 139YA.

These paratypes are in the Issiki Collection (NMNH): Japan, Kyûsyû, Satamisaki, 20.v.1952 (S. Issiki), 1 ♂, 1 ♀.

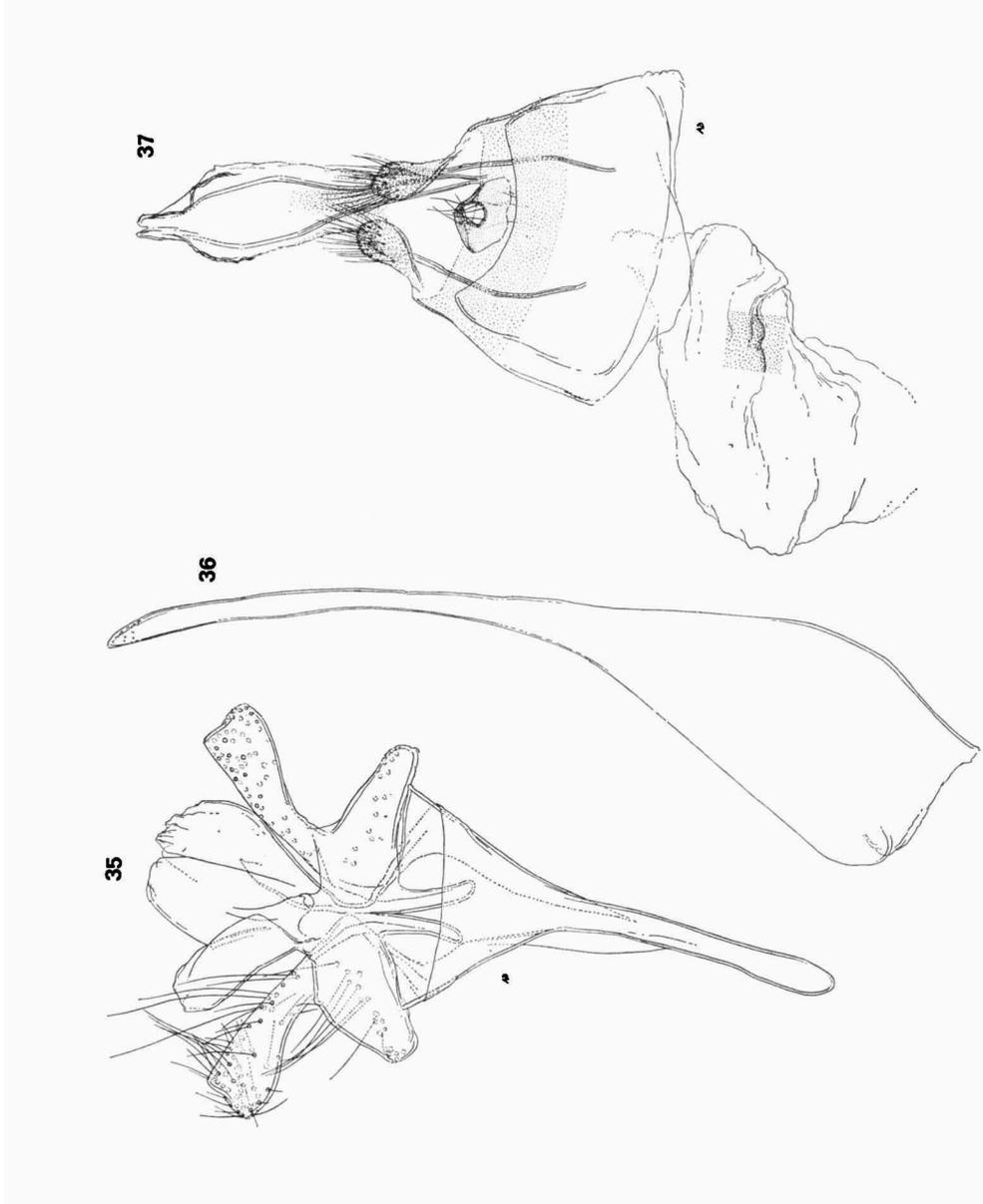
The small, brilliantly marked species is very distinct by its dull sooty-black pretornal spot, including not the usual silver dots, but cut by a single metallic mark — in combination with the extensive costal markings. Types in ZLMU, paratypes in RMNH and ZLHU.

#### ACROLEPIIDAE

##### **Digitivalva (Digitivalva) hemiglypha** spec. nov. (figs. 35-37)

♂ 8 mm. Head white, a dark grey transverse spot on vertex behind bases of antennae, collar posteriorly edged with black. Antenna dark leaden-grey, on basal half becoming suffused with whitish. Palpus white with four broad black, open above bands, apex black. Thorax white, an anterior and a median transverse black band and a median black spot halfway this and apex, tegula with a round black central spot. Abdomen black, posterior edges of segments black, preanal segment entirely black, anal tuft white.

Fore wing broadly lanceolate, dilated, broadest beyond 3/4, costa little curved at base, almost straight in middle, curved towards apex, apex obtusely pointed, termen considerably sinuate below apex, broadly rounded and rather



Figs. 35-37. Genitalia of *Digitalia hemiglypha* sp. n. 35, holotype, ♂ ; 36, the same, aedeagus ; 37, allotype, ♀ .

prominent below, oblique. Anterior  $2/3$  of wing black, strongly marbled with pale yellowish, marbling tending to form transverse striation; a white irregular transverse fascia beyond  $1/3$ , formed by an oblique, subquadrate, black-parted spot on costa and a larger, subtriangular, also black-parted spot beyond  $1/3$  of dorsum, interconnected by a slender, slightly inwards-oblique transverse streak; a larger irregular white spot below costa halfway the basal mark and fascia; wing beyond fascia black, more or less strewn with small whitish marks and a few silvery dots; more than posterior  $1/3$  of wing tawny-golden, partly dusted with black along edges of white markings; costa with five equidistant snow-white transverse marks: first short and slender, second much larger, dentoidal, oblique and curved posterad, third similar to second and moderate, fourth very small, marginal, fifth large, wedge-shaped, vertical, subapical; second costal mark continued across wing by a slender pale blue-metallic line, angulate in middle, to dorsum before tornus (sometimes broken in middle in a series of small spots, without angulation); sometimes a silvery transverse mark on dorsum beyond  $3/4$  and a larger similar irregular spot over this above middle of wing, sometimes these absent; a series of very small, black-edged blue points above lower part of termen diverging with it upwards; small blue-metallic ends to third and fifth costal white marks and a small blue dot in disc before apex; a white "notch" on termen below apex, crowned with another blue dot; all markings thinly edged with black; thin light ochreous marbling, along with other, dark markings, not interrupting these, from above tornus to below  $3/4$  of costa, ill defined, sometimes absent. Cilia dark grey with a paler grey median band, less than basal half black.

Hind wing light grey or slaty-grey, towards apex and dorsum broadly suffused with black. Cilia dark grey.

♀ 7-8 mm. Similar to the male, but darker, the posterior tawny area being much stronger suffused with black, ochreous and tawny colour reduced to small spots and slender irregular striae; metallic markings more pronounced, thicker, preterminal row of dots strongly curved upwards above, towards tip of third costal white dot.

Hind wing darker grey and broader, slightly infuscated in disc, apical third rather suffused with black. Otherwise as male.

Male genitalia. Tegumen weak, short. Tuba analis conical, submembraneous. Vinculum very strong, darkly sclerotized, funnel-shaped, with thick walls and an oval ventral lumen; narrowing downwards and forming a long, slender subclavate saccus. Valva sclerotized, very short, L-shaped, with emarginate disc, costa + cucullus slender, clavate and truncate, top sparsely bristled, sacculus part shorter, moderately narrowed, with a median row of

bristles: processus basalis long, curved, slightly clavate, as long as the sacculus part of valva. Aedeagus very long, basal half broad, cylindrical, apical half a very slender, straight and pointed tube. Anellus forming two oblong-oval lobes, almost reaching top of tuba analis.

Female genitalia. Ovipositor moderate, with abruptly dilated basal half. Apophyses very slender, rather long. Eighth sternite forming oval lobes, bristly along posterior edge. Seventh sternite simple, large. Sterigma with ostium, a large, submarginal rounded mould, with a circular apical opening with thinly bristled edge, lamella postvaginalis sclerotized. Ductus bursae very slender. Corpus bursae with a finely granulate wall, without a signum.

Holotype ♂, Japan, Kyushu, Yakushima Id., Miyanoura, 22.ix.1975 (Y. Arita), genit. slide 138YA; paratype ♀ (allotype), genit. slide 146YA; paratypes, 3 ♂, 2 ♀. Holo- and allotype in ZLMU, paratypes in ZLHU and RMNH.

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