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Author(s)	Kumata, Tosio; Kuroko, Hiroshi; Ermolaev, V. P.
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JAPANESE SPECIES OF THE ACROCERCOPS-GROUP
(LEPIDOPTERA : GRACILLARIIDAE)
PART I

By TOSIO KUMATA, HIROSHI KUROKO
and V.P. ERMOLAEV

Abstract

KUMATA, T., KUROKO, H. and ERMOLAEV, V.P. 1988. Japanese species of the *Acrocercops*-group (Lepidoptera : Gracillariidae), Part I. *Ins. matsum.* n. s. 38, 111 pp., 3 tables, 51 figs. (32 text-figs., 19 pls.).

Forty-three species of the *Acrocercops*-group occurring in Japan are reclassified in 17 genera including 9 new ones with great emphasis on the genital structure and larval chaetotaxy besides the adult external structure. *Acrocercops albofasciella* Yazaki, 1926 described from Japan is excluded from this study because of the absence of the representative.

In Part I 18 species are dealt with and arranged in 8 genera, that is, 1 species in *Callicercops*, 3 in *Cryptolectica*, 2 in *Eteoryctis* (gen. nov.), 1 in *Psydrocercops* (gen. nov.), 7 in *Acrocercops*, 1 in *Artifodina*, 2 in *Dialectica* and 1 in *Deoptilia* (gen. nov.). Eight new species are described: *Callicercops yakusimensis* (host: *Bauhinia*), *Cryptolectica pasaniae* (host: *Pasania*), *C. chrysalis* (host: *Quercus*), *Eteoryctis picrasmae* (host: *Picrasma*), *Acrocercops querci* (host: *Quercus*), *A. distylii* (host: *Distylium*), *A. vallata* (host: *Quercus*) and *Dialectica japonica* (host: *Ehretia*). Two new associations of synonyms are proposed: *Acrocercops delographa* Meyrick, 1939 = *A. mantica* Meyrick, 1908, and *A. lyoniella* Kuroko, 1982 = *A. transecta* Meyrick, 1931. Genitalia are illustrated for both sexes and wing patterns are shown by photographs. The wing venation and larval body chaetotaxy are also illustrated for some species. Diagnostic characters of the *Acrocercops*-group are given with a brief discussion on the taxonomic relationship among the genus-groups of the Gracillariinae. Further, in connection with this study, *Acrocercops milloti* Viette, 1951 (occurring in Madagascar) is transferred to *Callicercops*, *Acrocercops aemula* Meyrick, 1912 (in India) to *Dialectica*, and *Acrocercops syrasta* Meyrick, 1926 (in India) to *Deoptilia*.

Authors' addresses. T. KUMATA: Entomological Institute, Faculty of Agriculture, Hokkaido University, Sapporo, 060 Japan. H. KUROKO: Entomological Laboratory, College of Agriculture, University of Osaka Prefecture, Sakai, Osaka, 591 Japan. V.P. ERMOLAEV: Botanical Garden, Far East Scientific Centre, Academy of Sciences of U.S.S.R., 690038 Vladivostok, U.S.S.R.

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INTRODUCTION

The *Acrocercops*-group is one of the main groups of the subfamily Gracillariinae. It is world-wide in distribution, containing more than 350 described species mostly occurring in the Indo-Australian region. Many species were described as belonging to the genus *Acrocercops* as understood by Meyrick (1912); then some North American, South African and European species were transferred to other genera by Ely (1917), Vári (1961) and Kuznetsov (1979), respectively. However, *Acrocercops* is still heterogenous. We agree with Vári (1961) in his opinion that "some of the species now left in *Acrocercops*, might have to be transferred to other genera, when more species become available and thus more data on relationship become known".

The East Asian as well as Indo-Australian species of the group have largely been left unrevised in spite of the fact that the great part of the group occur in these regions. The main purpose of the present paper is to reclassify the Japanese species of the group.

Kuroko (1982) recorded 19 species of the group from Japan and classified them in 4 genera: 13 species in *Acrocercops*, 2 in *Leucospilapteryx*, 3 in *Spulerina*, and 1 in *Dendrorhycter*. Kumata (1985) added 1 species of *Artifodina*. In the course of the present study we have found 25 other species, of which 17 are new to science, from Japan. Furthermore, we have found that *Acrocercops lyoniella* Kuroko, 1982 is identical with *A. transecta* Meyrick, 1931, a species also described from Japan. In this paper, therefore, 43 species are dealt with in total except for *Acrocercops albofasciella* Yazaki, 1926, which is unknown to us.

In reclassifying the 43 Japanese species, we have placed great emphasis on the genital structure and larval chaetotaxy besides the adult external structure. As a result we have rearranged the species in 17 genera including 7 new ones. Eight of these genera are dealt with in Part I.

In this paper all the genera, whether new or not, are described in detail, because some genera are now narrowly restricted. For every known species the original description is cited, followed by an additional description. Genitalia are illustrated for all the species, and for the type-species of some known genera. The new species based on material from Japan and U.S.S.R. are attributed to Kumata and Ermolaev, and the other new species to Kumata and Kuroko.

MATERIAL AND TYPE-DEPOSITORY

The material used in this paper comprises more than 2600 specimens mostly collected from Japan and partly from U.S.S.R. (the Far East region), Taiwan, India and Nepal. Most of them are collected by Kumata and are reared from larvae mining in the leaves of their food plants. The collectors are mentioned for the specimens other than collected by Kumata. In the enumeration of the specimens examined, numerals within parentheses placed just after the plant names are breeding numbers.

The genital organs used for observations and drawings are stained with acid fuchsin or chlorazol black E and mounted on slides with Canada balsam, Eukitt or Euparal. For the determination of wing venations and larval chaetotactic patterns we used material mounted on slides likewise. The mounting method of genitalia

and larva is the same as in Kumata (1977).

The holotypes of the new species are deposited in the collection of the Entomological Institute, Hokkaidô University, Sapporo, unless otherwise stated. Most specimens used in this paper are also deposited in Hokkaidô University, and some ones will be in the Entomological Laboratory of Kyûsyû University, Hukuoka ; in the Entomological Laboratory of University of Ôsaka Prefecture, Sakai, Ôsaka ; in the Department of Entomology of Academy of Sciences of U.S.S.R., Leningrad ; and in the British Museum (Natural History), London.

ACROCERCOPS-GROUP

We recognize 4 main groups within the subfamily Gracillariinae: *Parornix*-, *Gracillaria*-, *Parectopa*- and *Acrocercops*-groups. The *Parornix*-group was included in the *Gracillaria*-group by Mayrick (1912) and Ely (1917) and in the *Parectopa*-group by Vári (1961). We have a reason for recognizing the *Parornix*-group as will be discussed below.

The *Acrocercops*-group may contain the following known genera: *Acrocercops* Wallengren, 1881, *Eucosmophora* Walsingham, 1897, *Dialectica* Walsingham, 1897 (= *Eutrichocnemis* Spuler, 1910), *Chilocampyla* Busck, 1900, *Leucospilapteryx* Spuler, 1910, *Hypsectopa* Diakonoff, 1955, *Callicercops* Vári, 1961, *Schedocercops* Vári, 1961, *Cryptolectica* Vári, 1961, *Spulerina* Vári, 1961, *Leucocercops* Vári, 1961, *Matacercops* Vári, 1961, *Amblyptila* Vári, 1961, *Sauterina* Kuznetsov, 1975, *Dendrorhycter* Kumata, 1978 and *Artifodina* Kumata, 1985. We have examined merely a few representatives of the genera mentioned above, but they, together with new genera described hereinafter, show the following combination of characters in common with some exceptions.

Head with neckplumes usually appressed, or rarely tufted in *Callicercops*. Legs slender, rather long, smooth-scaled except for hind tibia and 1st tarsal segment with a series of more or less strongly bristly scales above. Fore wing with upper vein of discoidal cell obsolescent at extremely proximal part far basal to a point where the vein R_1 branches off, when the vein R_1 is present, except for *Callicercops* in which the weakened part extends beyond the arising point of the vein R_1 as in *Gracillaria*- and *Parectopa*-groups; vein An short and connected with dorsal margin before middle of wing, usually at basal 1/4-1/5, except for *Dendrorhycter* in which the vein An is long and connected with the dorsal margin beyond middle of the wing as in *Gracillaria*- and *Parectopa*-groups. Hind wing with cell closed in *Callicercops* or opened between M_2 and M_3 in most genera as in *Gracillaria*-group; usually 7-veined, with vein Rs simple and vein R_{2+3} completely absent. In male, intersegmental membrane between 8th abdominal segment and genital organs very long, especially on dorsum, causing a deep insertion of the latter into the former in normal posture; 8th segment weakly sclerotized as usual, with tergum having a single or paired apodemes projecting anteriorly except for *Dendrorhycter*, and sternum deeply concaved or indented in posterior margin except for *Callicercops* in which it is convex caudally, with a pair of deep invaginations anteriorly except for a few genera, the invaginations containing long androconial scales or entirely empty; valva various in shape, with outer surface usually covered with long androconial scales near base, sometimes the scales clustered in a bundle. In female, ostium bursae opened on mem-

braneous ventrum of 8th abdominal segment as in *Gracillaria*-group, with genital plate not developed; ductus bursae usually long and tubular; corpus bursae without signum, or with a signum or signa of various shapes. In body chaetotaxy of last instar larva, lateral group consisting of 2 setae on all segments, seta L2 being absent on mesothorax, metathorax, and 1st to 8th abdominal segments as in *Parectopa*-group, and seta L1 as long as or a little longer than seta L3 on 1st to 8th abdominal segments except for *Dendrorhycter*; seta D1 on 1st to 8th abdominal segments placed anterolateral to or set close with seta D2 except for *Callicercops* in which the seta D1 is anterodorsal to the seta D2 as in *Gracillaria*-group; proprioceptor MV3 absent on 8th and 9th abdominal segments except for *Callicercops*. Ventral prolegs of last instar larva prominent on 3rd to 5th or rarely 3rd to 6th abdominal segments, with crochets unordinal and arranged in a circle and a transverse row in *Callicercops* as seen in *Gracillaria*-group, in a circle alone in most genera examined, or in a transverse row alone in some genera as seen in *Parectopa*-group. In larval stage, many species are leaf-miners throughout the feeding period and make a blister-like blotch-mine on the upper surface of the leaf of food plants, while most species of *Spulerina* and *Dendrorhycter* are stem-miners and the members of *Callicercops* are leaf-miners in early instars and leaf-rollers in late instars.

The most essential characters of this group are summarized as follows: 1) the bristly-scaled hind tibia, 2) the short anal vein of the fore wing, 3) the long intersegmental membrane between the 8th abdominal segment and the genital organs of the male, 4) the male valval androconial scales, and 5) 2 lateral setae on mesothorax and metathorax of the last instar larva.

The genus *Callicercops* is surely an unusual member of the *Acrocercops*-group, having some characters similar to the *Gracillaria*-group as stated above. However, these characters, as well as the closed cell of the hind wing, seem to indicate the primitiveness of the genus. On the other hand, the genus is also provided with characters common to the other genera of the *Acrocercops*-group such as the short anal vein of the fore wing, 2 lateral setae on the prothorax and metathorax of the larva, etc. In this paper we temporarily include it in the *Acrocercops*-group as a primitive form of the group.

The genus *Dendrorhycter* is also unusual in many respects, especially in the long anal vein of the fore wing and in having 1 lateral seta on the mesothorax and metathorax of the larva. Moreover, it is well characterized by the reduction of wing veins in number. These characters may indicate that it is more specialized than the other members. We tentatively treat it as a member of the group on account of the genital structure in which it is similar to the genus *Acrocercops*. The genus *Marmara* is very similar to *Dendrorhycter* in its reduced wing venation in spite of its dissimilar genital structure. We exclude it from the *Acrocercops*-group at present, because its larval characters are unknown.

According to Meyrick (1912) the *Acrocercops*-group was derived from the *Parectopa*-group as one of 2 branches, the other branch being *Lithocolletis* (= *Phyllonorycter*), which is now a member of the subfamily Lithocolletinae. The *Parectopa*-group is more or less similar to the *Gracillaria*-group in the membraneous 7th and 8th abdominal segments of the male, but it should be another main genus-group of the Gracillariinae, being separated from the other groups by the absence of the vein M_3 of the hind wing and by the female ostium bursae opened on the more

or less deformed sternite of the 7th abdominal segment. The shift of the opening position of the ostium bursae from the 8th segment to the 7th is considered a highly specialized state (Mutuura, 1972). Consequently, the *Parectopa*-group may not be the direct ancestral group of the *Acrocercops*-group.

Although we temporarily include the genus *Callicercops* in the *Acrocercops*-group, the genus shows many primitive characters corresponding to those in other primitive genera such as *Callisto* of the *Parornix*-group and *Macarostola* related to the *Gracillaria*-group; these 3 genera are characterized by the closed cell of the hind wing in common. This fact may suggest that the *Acrocercops*-group was derived through a genus related to *Callicercops* from the ancestral stock of the Gracillariinae, from which the *Parornix*- and *Gracillaria*-groups were also independently derived through genera related to *Callisto* and *Macarostola*, respectively.

I. GENUS CALLICERCOPS VÁRI

Callicercops Vári, 1961, Transvaal Mus. Mem. 12: 132.

Type-species: *Acrocercops tricerus* Meyrick, 1926.

♂ ♀. Face and head smooth-scaled, with neckplumes appressed, or moderately tufted and projecting forward; ocelli absent; proboscis moderately developed, naked. Labial palpus moderately long, upturned, pointed apically; 2nd segment rough-scaled or tufted with long scales beneath; apical segment smooth or slightly rough-scaled basally, about as long as 2nd segment. Maxillary palpus porrect or very slightly upturned, smooth or slightly rough-scaled beneath, about 1.2 times as long as apical segment of labial palpus. Antenna filiform, 1.2-1.3 times as long as fore wing, simple in both sexes; scape slightly thickened, without hairy pecten or scaly tuft. Thorax smooth-scaled, without a crest. Legs moderately long, smooth-scaled; hind tibia with a row of short bristly scales above, and with 2 pairs of spurs, the anterior pair situated near base; basal half of 1st hind tarsal segment also with a row of shorter bristly scales above; hind tarsus 1-1.2 times as long as hind tibia.

Fore wing narrowly lanceolate, bluntly pointed apically; discoidal cell slightly dilated, with distal margin oblique and upper vein basally obsolescent far beyond arising point of vein R_1 ; 13-veined; all radial veins well separated at their bases, R_1 arising from cell near base and ending on costal margin of wing at about basal $2/3$, R_2 from apical $1/10$ of cell, R_3 from upper angle, and R_4 and R_5 from distal margin; M_2 from lower angle of cell, shortly separated from or connate with M_3 at base; Cu_{1a} before lower angle; Cu_{1b} from cell a little basal to level of R_2 ; Cu_2 distinct on its apical $1/3$ to $1/2$; An slightly curved, bifurcated at base, and connected with hind margin of wing at about basal $1/3$. Hind wing $1/2$ - $2/3$ as wide as and about $4/5$ as long as fore wing, narrowly lanceolate, acutely pointed apically, with cell closed; 6-veined; An and Cu_2 entirely obsolescent and M_1 and M_2 completely coincident; cilia very long, about 3 times of wing-width.

Male genitalia: Tegumen simple without socii and gnathos, dorsally covered with scales, ventrally with a pair of small patches bearing a few fine setae; tuba analis with a weakly sclerotized, narrow subscaphium. Valva slender, slightly widened towards round apex, covered with fine setae on inner surface densely around apex and along ventral margin as in valva of *Caloptilia*-species; sacculus round

basally; transtilla incomplete, with a pair of acute ventral processes. Diaphragma forming a moderately long, funnel-like tube projecting caudad, well sclerotized dorsally and laterally, membranous ventrally with a few very fine setae; ventromedian ridge narrowly sclerotized. Vinculum rather widened ventrally, with saccus moderately long; a pair of well-developed, bag-shaped protuberances situated on sides of vinculum, the protuberance bearing a large tuft of long, linear androconial scales. Aedeagus slender, tubular, with cornuti. Intersegmental membrane between 8th abdominal segment and genital organs very long. Eighth tergite round caudad, with a pair of small apodemes at median part of cephalic margin; sternite convex caudad, without ventral invaginations or coremata.

Female genitalia: Papilla analis rather long, acutely pointed ventrally, covered with fine setae, with apophysis posterioris rather thick. Eighth abdominal segment weakly sclerotized dorsally, widely membranous ventrally, with apophysis anterioris slender. Ostium bursae opened at cephalic area of 8th sternum, with a lamella antevaginalis and a lamella postvaginalis. Antrum membranous; ductus bursae slender, partly sclerotized; corpus bursae membranous, moderately large, centrally with a large patch bearing many acute spine-like signa.

Body chaetotaxy of last instar larva (Fig. 43: A): Lateral group consisting of 2 setae on all body segments except for 9th and 10th abdominal ones, L3 absent on prothorax, and L2 absent on other segments. On 1st to 9th abdominal segments, D1 situated anterodorsal to D2. Subventral group consisting of 1 seta (SV1) on 1st, 2nd, and 6th to 8th abdominal segments, while 3 setae on ventral prolegs of the 3rd to 4th. Seta L3 on 6th to 8th abdominal segments tending to move forward and situated ventral to spiracle. Ninth abdominal segment with 6 tactile setae and 2 proprioceptors on each side, SD2, L2, L3, SV2 and SV3 being absent.

Arrangement of crochets (Fig. 46: D): Ventral prolegs on 3rd to 5th abdominal segments with uniordinal crochets arranged in a circle and a transverse, posterior row as in most species of *Gracillaria*-group, but the transverse row consisting of only 2 or 3 crochets. Anal proleg with uniordinal crochets arranged in a semicircular row.

Larval habit: So far as represented by 1 Japanese species described below, the larva of this genus is a leaf-miner in the early instars and a leaf-roller in the late instars (Fig. 47: A & B). The mine is started in a linear type occurring on the lower surface of the leaf; shortly later it is changed into a linear, upper-parenchymal type. After leaving the mine, the larva cuts an irregular strip from edge of the leaf as in the late instar larva of *Calybites*, *Ectropina* and *Sphyrophora*. The strip is rolled upward or rarely downward into a slightly spiraled cone. Within this cone, the larva continues to feed on the tissues of the leaf. When fully matured, the larva pupates within a brownish and spindle-shaped cocoon placed inside the cone. *Acrocercops milloti* Viette, 1951, which should be transferred to the present genus, also makes a similar leaf-cone on *Bauhinia* sp. (Viette, 1955, p. 152, f. 12).

Remarks: Vári (1961) stated that "this genus [*Callicercops*] occupies an isolated position as far as the venation of the hind wing is concerned". *Callicercops* is surely an isolated genus among the *Acrocercops*-group. It is easily distinguished from the other genera of the group by the following characters: — The hind wing has a closed cell; the male 8th sternite is caudally convex triangularly; the seta D1 on the

abdominal segments of the last instar larva is situated anterodorsally to the seta D2 ; the crochets on the ventral prolegs are arranged in a circle and a transverse row ; and the larva is a leaf-miner in the early instars and a leaf-roller in the late instars. These characters may indicate that it has an affinity with some primitive genera of the Gracillariidae such as *Macarostola* and *Callisto*. It is, however, essentially different from the latter 2 genera by the unbranched radial sector of the hind wing and by the 2 setae of the lateral group on the mesothorax and metathorax of the last instar larva (seta L2 absent).

On the other hand, *Callicercops* shares the following characters with most genera of the *Acrocercops*-group :— The anal vein of the fore wing is connected with the dorsal margin of the wing around the basal 1/3 ; the intersegmental membrane between the genital organs and the 8th abdominal segment of the male is very long, especially on the dorsum ; a pair of very long and thick tufts of androconial scales are dispatched from the sides of the vinculum or the outer surfaces of the valvae ; and the lateral group of the last instar larva consists of 2 setae on the mesothorax, metathorax, and abdominal segments except for the 9th. These characters are essential to the *Acrocercops*-group, and suggest that *Callicercops* is related to the genera of this group, too.

It appears that *Callicercops* is intermediate between the other members of the *Acrocercops*-group and the primitive genera of the *Gracillaria*-group. We do not think, however, that this implies that the *Acrocercops*-group originated from the *Gracillaria*-group. *Callicercops* may represent a primitive form of the *Acrocercops*-group, thus resembling the primitive forms of other groups.

This genus was erected for the South African *Acrocercops tricerus* Meyrick. *Acrocercops milloti* Viette from Madagascar should be transferred to the genus (see p. 11, footnote). Another species of the genus was found in Japan as given below. So far as known, the genus is associated with *Bauhinia* (Leguminosae).

1. *Callicercops yakusimensis* Kumata et Kuroko, sp. nov.

[Figs. 1, 33(A-B), 39(A), 40(A), 43(A), 46(D) and 47(A-B)]

♂ ♀. Expanse of wings : 9.2-11.8 mm (10.8 mm in holotype, 10.4 mm in average of 20 specimens). Length of fore wing : 4.5-5.8 mm (5.2 mm in holotype, 5.1 mm in average of 20 specimens).

Face and head pale grayish with a ochreous tinge, mixed with brownish-black scales especially thickly in roughened neckplumes behind antennae. Palpi ochreous-gray, usually paler than face ; maxillary palpus with a slender fuscous band on outer surface near apex ; scale-tuft of 2nd segment of labial palpus fuscous, the apical segment with 2 fuscous bands on outer surface. Antenna fuscous except for 2 whitish parts from apical 6/9 to 7/9 and from 8/9 to tip ; all the fuscous segments very narrowly ochreous basally. Thorax blackish-brown, irregularly irrorated with ochreous or grayish scales, which sometimes form a reversedly U-shaped mark on dorsum ; tegulae blackish-gray basally, ochreous-gray apically ; pleural and ventral surfaces ochreous-gray. Fore and middle legs brownish-black ; basal 1/3 of fore coxa ochre-grayish ; tibiae with 2 or 3 ochreous oblique bands ; all tarsal segments very narrowly whitish apically. Hind leg ochreous-gray, femur with 2 blackish-brown spots at apex and base, tibia darkened apically, tarsus

brownish-black, with a whitish, narrow apical ring in each segment.

Fore wing blackish-brown in ground colour, with a distinct yellowish blotch along termen, the blotch becoming wider distad and nearly occupying apical space of wing, with a minute blackish spot at its apex; 4 brilliantly white strigulae divergent from basal half of this yellowish blotch towards costa, rather narrow; 3 similar dorsal strigulae also divergent from base of the blotch towards tornus, the apicalmost strigula usually tinged with a leaden-metallic lustre; 10 to 12 costal and 3 to 5 dorsal strigulae arranged from base of wing to apical yellowish mark at irregular intervals, all grayish-brown or slightly paler than the ground colour, indistinct in margins, but in some specimens including holotype 2 dorsal strigulae at basal 1/5 and 2/5 and some costal ones becoming whitish towards wing-margins; cilia dark gray, with a row of bluish-black or purplish-black irrorations along termen and 2 rows of similar irrorations around apex of wing, the space between these rows tinged with yellow; apical extremity of cilia on apex of wing white, with a blackish hook produced beyond this; basal half of cilia along termen broadly tinged with bluish or purplish iridescence. Hind wing dark gray, with discoidal area a little paler; cilia dark gray.

Male genitalia (Fig. 1: A-D): Tegumen moderate in length, round apically in ventral view, dorsally covered with scales, ventrally with a pair of small patches of about 10 (7-13) fine setae in centre; tuba analis prolonged beyond apical margin of tegumen, with a narrow subscaphium slightly widened basally. Valva about 1.6 times as long as tegumen, rather slender, gradually dilated towards round apex, with fine setae thickly around apex and along ventral margin, and with some androconial scales on outer face near base and on costal area. Vinculum rather long, U-shaped, on each side with a large protuberance bearing many long androconial scales and some short ones; saccus slender, slightly capitate, as long as or slightly shorter than vinculum; vinculum+saccus about half as long as valva. Aedeagus about 7/10 as long as valva, slender, straight, tubular; vesica with 2 long, slender cornuti and many minute spines. Eighth tergite weakly sclerotized medianly, round caudally, with a pair of short apodemes at the cephalic end of median sclerotization; 8th sternite triangularly convex caudally. (Six slides examined.)

Female genitalia (Fig. 1: E-F): Papilla analis prolonged, acuminate ventrally and dorsally, covered with minute spines on almost whole surface, some long setae on cephalic area, and many short, curved setae on caudal area; apophysis posterioris rather long, with basal half widened and apex round. Apophysis anterioris slender, a little shorter than apophysis posterioris, pointed apically, with a short dorsal prong at base. Lamella postvaginalis weakly sclerotized, subcircular in outline; lamella antevaginalis U-shaped, slender. Ductus bursae slender, strongly sclerotized on median part from caudal 1/6 to 3/6, then remaining cephalic part lined with sparse scobinations; ductus seminalis arising from cephalic end of sclerotized part of ductus bursae; corpus bursae comparatively small, ellipsoidal, with many thorn-like signa, which are distributed in median area and arranged specially densely along a short longitudinal line. (Four slides examined.)

Specimens examined: 17♂♂ & 19♀♀. Holotype: ♂, Kuriō, Yaku-sima, Nansei Is., em. 25/x/1973, ex *Bauhinia japonica* (1215), Gen. sl. no. Grc-3029. Paratypes: 16♂♂ & 19♀♀, with same data as holotype except on dates emerged, 16/x-12/xi/1973.

Distribution: Japan (Nansei Is.).

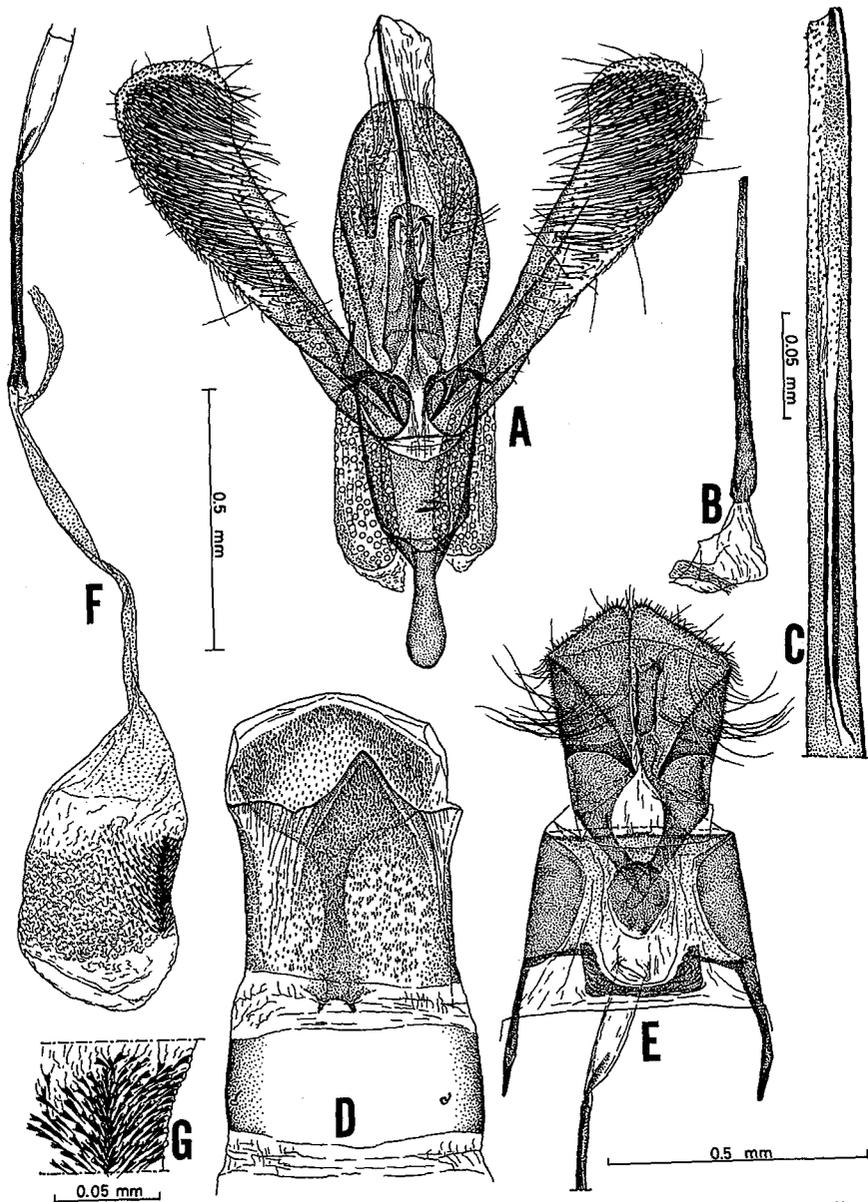


Fig. 1. *Callicercops yakusimensis* Kumata et Kuroko, sp. nov. A: Male genitalia in caudal view, aedeagus omitted [Grc-3029, holotype] — B: Aedeagus [ditto] — C: Apical part of aedeagus enlarged [ditto] — D: Male 7th and 8th abdominal segments in ventral view [Grc-1782, Kuriō, Yaku-sima, Nansei Is., em. 18/x/1973, ex *Bauhinia japonica* (1215)] — E: Female genitalia in ventral view, apical part of bursa copulatrix omitted [Grc-3030, ditto, em. 5/xi/1973] — F: Bursa copulatrix [ditto] — G: Signa enlarged [ditto].

Food plant : *Bauhinia japonica* Maxim. (Leguminosae).

Remarks : *C. yakusimensis* is very similar to the South African *C. triceros* (Meyrick, 1926) and the Malagasy *C. milloti* (Viette, 1951)¹⁾ in the colour-pattern of the fore wing, but is distinguished from them by the fore wing with 4 white costal strigulae above a yellowish terminal blotch and 3 similar dorsal strigulae before the blotch and by the male vinculum with a shorter apical saccus which is about as long as the former. In *C. triceros* and *C. milloti* the fore wing has 3 costal and 1 dorsal white strigulae and the saccus is much longer than the vinculum according to the descriptions and figures.

II. GENUS CRYPTOLECTICA VÁRI

Cryptolectica Vári, 1961, Transvaal Mus. Mem. 12: 177.

Type-species : *Acrocercops monodecta* Meyrick, 1912.

♂ ♀. Face and head smooth-scaled, with neckplumes appressed ; ocelli absent ; proboscis moderately developed, naked. Labial palpus rather long, slender, upturned ; 2nd segment beneath a little loosely scaled towards apex or smooth-scaled entirely ; apical segment smooth-scaled, acutely pointed, 1-1.2 times as long as the 2nd. Maxillary palpus porrect, smooth-scaled or slightly roughened beneath, about half as long as apical segment of labial palpus. Antenna simple, 1.2-1.4 times as long as fore wing ; scape slightly thickened, simple or with a minute projection of scales below apically in *C. pasaniae* sp. nov. Thorax smooth-scaled. Legs rather long, slender, smooth-scaled ; middle tibia slightly thickened apically ; hind tibia above with a row of bristly scales, beneath with 2 pairs of spurs, the anterior pair situated at basal 1/4 to 1/3 ; basal half of 1st hind tarsal segment also with a row of bristly scales above, but the scales being much shorter than those of tibia ; hind tarsus 1.1-1.2 times as long as hind tibia.

Fore wing narrowly lanceolate, rather acutely pointed apically ; discoidal cell long, slender, occupying about basal 5/6 of wing, slightly dilated distally or parallel-sided, with distal margin truncated vertically or obliquely, and upper vein obsolescent on short basal part far basal to a point where the vein R_1 branches off ; 13-veined ; R_1 long, arising from basal 1/3-2/5 of cell and ending on costa at apical 1/3-2/5 of wing ; R_2 - R_4 remote from one another ; R_5 very obsolescent basally, probably arising from distal margin of cell freely in *C. chrysalis* sp. nov., stalked with R_4 in type-species and *C. pasaniae*, or stalked with M_1 in *C. ensiformis* (Decheng) ; M_3 from lower angle of cell ; Cu_{1a} well remote from M_3 , and arising from cell far basal to level of R_2 in all Japanese species, while approximate to M_3 in type-species ;

1)

Callicercops milloti (Viette), comb. nov.

Acrocercops Milloti Viette, 1951, Mém. Inst. sci. Madagascar, A, 5: 339.

Parectopa Milloti : Paulian & Viette, 1955, ditto, E, 6: 152.

Distribution : Madagascar.

Food plant : *Bauhinia* sp. (Leguminosae).

Remarks : The description and figure of the male genitalia given by Viette (1951), and those of the larval leaf-mines and rolls given by Paulian & Viette (1955) indicate that *milloti* is a member of the genus *Callicercops*.

Cu_{1b} obsescent basally and approximate to Cu_{1a}; Cu₂ distinct only on its apical part alone; An nearly straight, connected with dorsal margin of wing at basal 1/5-1/4. Hind wing very narrow, about half as wide as fore wing, long pointed apically, with cell opened between M₂ and M₃; 7-veined; M₁ and M₂ stalked; M₃ stalked with Cu_{1a}; Cu₂ and An invisible.

Male genitalia: Tegumen simple, dorsally not covered with scales, ventrally bearing rather dense, fine setae along lateral areas laterad of subscaphium. Valva variable in shape, usually oblong, simple, without comb or costal process; rather dense, fine setae distributed nearly over inner surface, sometimes partly deformed into truncate thick setae as seen in *C. ensiformis*; a thick tuft of long androconial scales dispatched from outer surface near base; transtilla complete, narrowed medianly, without any process. Vinculum slender, with a small to moderate saccus. Aedeagus slender, tubular, generally with a bundle of needle-shaped cornuti besides other large cornuti or a beak-shaped carina penis. Diaphragma weakly membranous. Intersegmental membrane between genital organs and 8th abdominal segment very long, especially on dorsum. Eighth segment triangularly and deeply notched ventrally; the tergite with a triangular anterior apodeme, of which a median sclerotization straight or divided caudally, not extending onto tergite; sternite with a pair of very narrow, membranous invaginations anteriorly.

Female genitalia: Papilla analis rather short, obliquely transverse in lateral view, blunt ventrally and dorsally, with usual fine setae; apophysis posterioris slender, moderately long. Eighth abdominal segment with tergum narrowly to moderately sclerotized and sternum widely membranous; apophysis anterioris slender, usually as long as apophysis posterioris. Ostium bursae opened on ventrum of 8th segment, small; antrum very short, ring-shaped; corpus bursae long, tubular, partly shagreened; corpus bursae moderately large, more or less ellipsoidal, curved near base in *C. ensiformis*, partly shagreened, with many cone-shaped or needle-shaped signa gathered in a group or a multiple row.

Body chaetotaxy of last instar larva (Fig. 43: B-D): So far as the larvae of *C. pasaniae* and *C. chrysalis* are examined, the chaetotaxy is as follows. Seta D1 situated anterolateral to D2 on 1st to 9th abdominal segments. Lateral group consisting of 2 setae on all body segments except on 10th abdominal segment, L3 being absent on prothorax, while L2 absent on other segments; L1 always longer than L3. One subventral seta (SV1) occurring on 1st and 7th to 9th abdominal segments, while 3 (SV1, SV2 and SV3) on the 2nd to 6th; SV3, if present, always posterior to SV1. Proprioceptor MV3 absent on 8th abdominal segment. Ninth abdominal segment with 6 or 7 tactile setae and 1 proprioceptor on each side, always SD2, L2, SV2, SV3 and MV3 being absent, and L3 also absent in *C. pasaniae*.

Arrangement of crochets: Ventral prolegs on 3rd to 5th abdominal segments with uniordinal crochets arranged in a circle alone. Anal proleg with uniordinal crochets arranged in a transverse or semicircular row.

Larval habit: So far as represented by the Japanese species, the larva of this genus is a leaf-miner throughout its feeding period. The mines of *C. pasaniae* and *C. ensiformis* are found on the lower surface of very young leaves of the food plants, while those of *C. chrysalis* always occur on the upper surface of mature leaves. In any case, the mine starts in a narrow gallery, then widens into a large blister-like blotch, which is nearly transparent and visible from both sides of the leaf in mature

condition, the leaf-tissues of upper or lower layers within the mine being almost consumed by the larva. Leaves with the lower type of mines are often irregularly curled or folded downward. When fully matured, the larva leaves the mine for a pupating site through a semicircular slit; the cocoon in breeding condition is usually situated on a leaf or at a corner of the breeding cage, and is boat-shaped with some small bubbles on the surface. The full-grown larva is reddish in body colour.

Remarks: The redescription given above is largely based on the 3 Japanese species. These species, however, are different in the venation of the fore wing, that is, the vein R_5 is stalked with the vein R_4 in *C. pasaniae*, stalked with the vein M_1 in *C. ensiformis*, and free from both the veins R_4 and M_1 in *C. chrysalis*. Nevertheless, they are characterized in common by the following combination of the characters: — Valva very simple, without any comb on the inner surface or costal process; male 8th abdominal segment with a median sclerotization of dorsocephalic apodeme not extending onto the tergum; female corpus bursae with many needle- or cone-shaped signa which are gathered in a group or arranged in a multiple row; prothorax of last instar larva with seta XD2; and 2nd abdominal segment of larva with 3 subventral setae (SV1, SV2 and SV3). The state of these characters, especially of the larval body chaetotaxy, seems to indicate that they are congeneric and are more primitive than the members of the other genera, in which the larva lacks either the seta XD2 on the prothorax or the seta SV3 on the 2nd abdominal segment. Moreover, the male valva is more complicated in the other genera, with comb(s), probably deformed from normal setae, on the inner surface in *Acrocercops*, *Dialectica*, *Artifodina*, *Spulerina*, *Schedocercops* and *Hypsectopa*, with a costal process in *Amblyptila*, *Sauterina* and *Corethrovalva*, or with a narrowly protruded cucullus in *Leucospilapteryx* and *Lamprolectica*.

The food plants of the genus *Cryptolectica*, though known only for the Japanese species, all belong to Fagaceae. This food plant association is also one of the reasons for the inclusion of the 3 Japanese species in this genus.

Key to the Japanese species of *Cryptolectica*

1. Thorax and tegulae brilliantly silver-whitish; fore wing bright orange-yellow in ground, with markings brilliantly silver-whitish; valva nearly wing-shaped, with setae on central area slightly thicker and denser than those on peripheral areas, not truncate; aedeagus without carina penis; vesica with 3-4 long cornuti besides a bundle of many needle-shaped cornuti; corpus bursae with a short multiple row of needle-like signa near the centre; [larva making an upper leaf-mine on *Quercus mongolica* var. *grosseserrata* and *Q. serrata*].
..... *C. chrysalis* Kumata et Ermolaev, sp. nov.
- Thorax white, with tegulae brownish or fuscous; fore wing ochre-brown or dark fuscous in ground, with markings white; valva oblong or ensiform, with other type of setae on inner surface; aedeagus with a beak-shaped carina penis; vesica with a bundle of many needle-like cornuti alone; [larva making an lower leaf-mine on the other species of Fagaceae].
..... 2
2. Fore wing with a white costal strigula at middle besides dorsal streaks and subapical costal spots; valva ensiform, with distal margin oblique towards costa, with setae on costal area very thicker and denser than those on other areas and truncated apically; outer surface of valva with a bundle of long androconial scales alone; corpus bursae curved near base, with a long multiple row of cone-shaped signa which become larger towards cephalic end; [leaf-miner on *Quercus acuta* and *Q. sessilifolia*]. *C. ensiformis* (Decheng), comb. nov.
- Fore wing with a long white dorsal streak and subapical costal spots, without such a costal

strigula at middle; valva oblong, round apically, with setae nearly equal in size and evenly distributed on inner surface; outer surface of valva bearing dense small scales on apical half besides a bundle of long androconial scales, the basal sockets of the small scales each being surrounded by a circular carina; corpus bursae ellipsoidal, not curved near base, with a patch of about 30 ensiform signa of unequal length; [leaf-miner on *Pasania edulis*].
..... *C. pasaniae* Kumata et Kuroko, sp. nov.

2. *Cryptolectica pasaniae* Kumata et Kurōko, sp. nov.

[Figs. 2, 3(A), 33(C-D), 39(B), 40(B), 43(B) and 47(C)]

♂ ♀. Expanse of wings: 8.0-10.2 mm (8.0 mm in holotype). Length of fore wing: 3.8-5.0 mm (4.0 mm in holotype).

Face and head light grayish, tinged with ochre in some specimens, the head usually becoming ochre-white posteriorly. Palpi white; apical segment of maxillary palpus laterally, 2nd segment of labial palpus dorsally and the apical segment ventrally striped with black narrowly. Antenna brownish-black, without annulations; scape smooth-scaled, whitish ventrally and brownish-black dorsally. Thorax ochre-white dorsally and pure white laterally, with tegulae brownish-black. Legs white, fore and middle femora and tibiae longitudinally striped with brownish-black on dorsal edges rather broadly, hind tibia laterally darkened apically, all tarsi blackish above, with each segment narrowly banded with white apically. Abdomen dorsally dark gray, ventrally whitish with a fuscous band along caudal margin of each segment; anal scales blackish in female, unknown in male.

Fore wing brownish-black with purplish reflections in ground colour; a long streak along dorsal margin from base to apical 1/3 of wing white, slightly mixed with ochreous or brownish scales along extreme dorsal margin, rather broad, nearly occupying a half breadth of wing, with a shallow indentation of ground colour at middle of its upper margin; a semicircular, large, white blotch placed around tornus just beyond dorsal streak, occupying nearly 2/3 breadth of wing at broadest part, with its distal end reaching middle of termen of wing and followed by an indistinct golden brown marks; 2 or 3 minute, white spots on costa opposite to tornal blotch, the apicalmost one obliquely extending towards apex of tornal blotch, sometimes united with the latter, and narrowly margined with black internally and externally; 3 transverse black lines placed near and at apex of wing, the basalmost one widest and running in parallel with outer margin of tornal blotch; interspaces between these black lines suffused with brilliant white scales; cilia around apex and along termen of wing white, with 2 dark dashes dispatched from black lines, and those along dorsal margin pale gray. Hind wing gray, with cilia pale gray.

Male genitalia (Fig. 2): Tegumen rather slender, nearly parallel-sided, truncated apically, sparsely covered with spinules on dorsal surface and on ventral surface near base, with 30-40 (38 in holotype) fine marginal setae on each side, the apicalmost seta longest; tuba analis very slightly produced beyond tegumen, with a small, elongate-elliptical subscaphium. Valva about twice as long as tegumen, nearly elliptical in outline, round apically, with dense, short setae on almost whole inner surface, with moderate to long androconial scales on discal area of outer surface, the scales near apex of valva being surrounded by circular imbrications and those near base being longer and gathered in a bundle. Vinculum slender, with saccus short and capitate. Aedeagus about 0.8 times as long as valva, tubular, nearly straight,

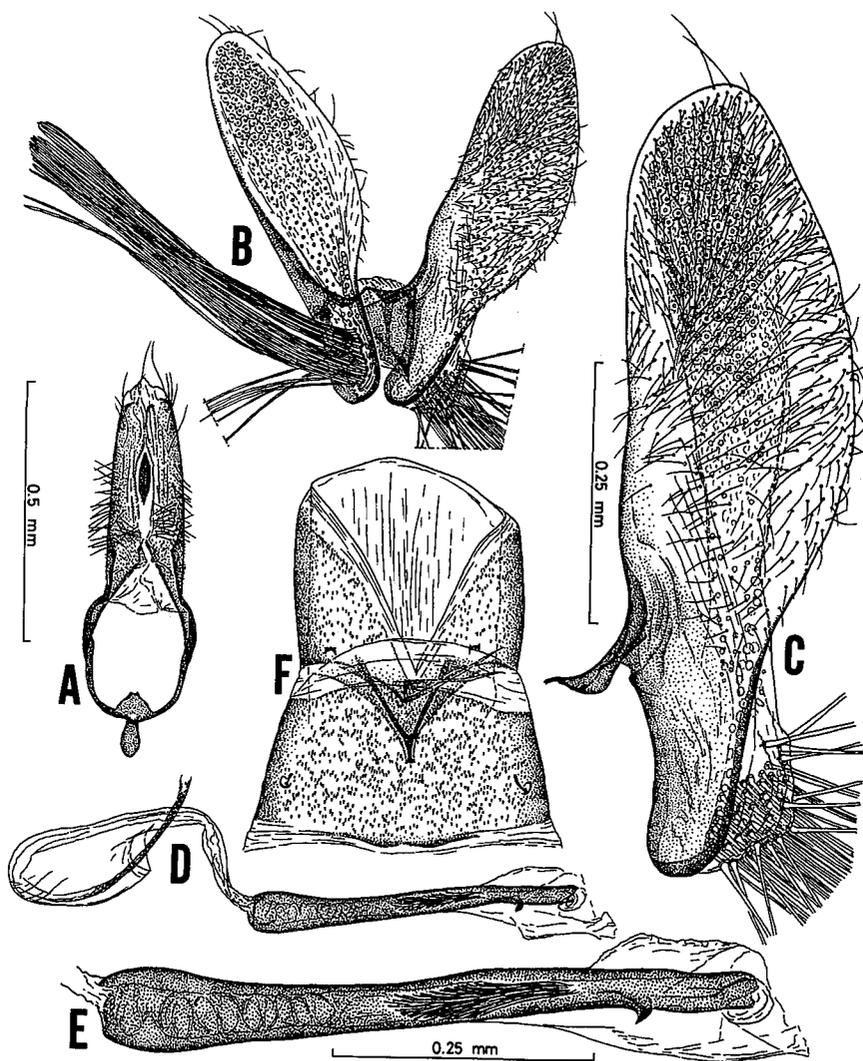


Fig. 2. *Cryptolectica pasaniae* Kumata et Kuroko, sp. nov. A: Male genitalia in caudal view, valvae and aedeagus omitted [Grc-1774, holotype] — B: Valvae [ditto] — C: Right valva enlarged [ditto] — D: Aedeagus [ditto] — E: Aedeagus enlarged [ditto] — F: Male 7th and 8th abdominal segments [ditto].

with a minute beak-shaped carina penis near apex; vesica with a bundle of many needle-shaped cornuti of moderate length. Eighth abdominal segment deeply notched ventrally; dorsocephalic apodeme triangular, with a Y- or V-shaped sclerotization; a pair of ventral invaginations very slender, about 1.2 times as long as dorsal apodeme, acute apically. (Three slides examined.)

Female genitalia (Fig. 3: A): Papilla analis rather short, blunt dorsally and ventrally, covered with dense spinules and usual setae; apophysis posterioris slender, moderately long. Eighth abdominal segment nearly as long as papilla analis; apophysis anterioris slender, about as long as apophysis posterioris. Ostium bursae

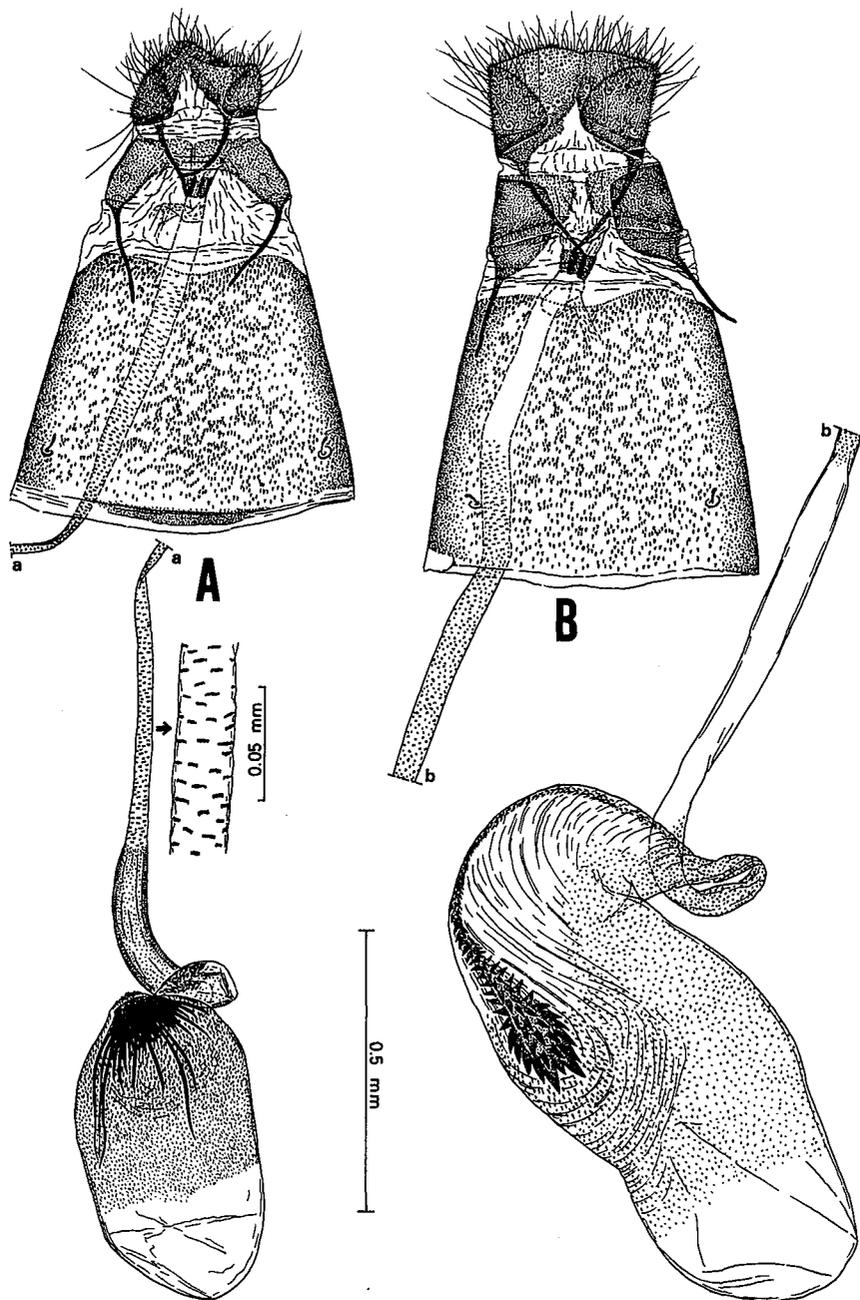


Fig. 3. A : *Cryptolectica pasaniae* Kumata et Kuroko, sp. nov., female genitalia in ventral view [Grc-1775, Mugiō, Yaku-sima, Nansei Is., em. 1/xi/1973, ex *Pasania edulis* (1178)].
 B : *Cryptolectica ensiformis* (Decheng), female genitalia in ventral view [Grc-2019, Omogokei, Ehime-ken, 27/viii/1957, M. Okada leg.].

rather small, a little less than 1/4 width of caudal margin of 7th abdominal segment ; antrum shortly sclerotized ; ductus bursae slender, membranous except for shortly sclerotized area near cephalic end, lined with spinules except for a short caudal area and a sclerotized cephalic area, at cephalic end with about 20 thorn-like, large spines which are arranged in a short V-line ; corpus bursae ellipsoidal in form, membranous, densely lined with spinules except on cephalic area, with a patch of about 30 ensiform signa of unequal length. (Two slides examined.)

Specimens examined : 3♂♂ & 3♀♀. Holotype : ♂, Mugiô, Yaku-sima, Nansei Is., em. 6/xi/1973, ex *Pasania edulis* (1178), Gen. sl. no. Grc-1774. Paratypes : NANSEI IS. — 3♀♀, with same data as holotype except on dates emerged, 1-13/xi/1973 ; 1♂, Anbô, Yaku-sima, em. 30/xi/1959, ex *P. edulis*, H. Kuroko leg. ; 1♂, Kuriô, Yaku-sima, 4/xi/1976, F. Komai leg.

Distribution : Japan (Nansei Is.).

Food plant : *Pasania edulis* Makino (Fagaceae).

Remarks : *Cryptolectica pasaniae* is at once distinguished from the South African *C. monodecta* (Meyrick, 1912) and *C. capnodecta* Vári, 1961 by the presence of a large, semicircular, white blotch at tornus of the fore wing and by the presence of a bundle of cornuti of the aedeagus. In the colour-pattern of the fore wing, it is rather similar to "*Gracilaria gemoniella* Stainton, 1863, "*Acrocercops*" *syngamma* Meyrick, 1914, and "*Acrocercops*" *deversa* Meyrica, 1922, all from India, but it is separated from them by the white costal strigula extending towards the apex of the white tornal blotch (in the Indian species the white costal strigula extends towards the base of the white tornal blotch).

3. *Cryptolectica ensiformis* (Decheng), comb. nov.

[Figs. 3(B), 4, 33(E-F) and 40(C)]

Acrocercops ensiformis Decheng, 1986, Entomotaxonomia 8 : 63, figs. 2 & 3 [China (Hainan Is.)].

Original description : "Length of forewing: 4.0-5.0 mm. Legs white, ringed with brown. Forewings ochre-brown in ground, with a white longitudinal streak on basal 6/7 of dorsum ; the streak with a V-shaped brown spot near its basal 5/7 of inner margin, round widened from basal 5/7 towards apex of wing ; the apical 2/7 part of forewing gradually darkened, with 2 white spots of different size ; cilia around apex of wing white with dark line, and those along dorsal margin gray."

"Male genitalia : Tegumen with fine setae on the underside. Valva knife-shaped, with thick hairs longitudinally situated near middle of inner surface besides usual marginal hairs. Vinculum with a pair of membranous area at sides near base, the membranous area bearing tuft of hairy scales. Aedoeagus about 1.4 times as long as valva, curved near apex, with many minute, corniform cornuti closely clustered on median area and 1 short, hook-shaped cornutus near apex."

"Female genitalia : Ductus bursae very slender and long, fine shagreened near corpus bursae. Corpus bursae ovoid, caudad curved, with a long sunflower-shaped signum."

Additional description : ♂♀. Expanse of wings : 9.2-11.0 mm (10.3 mm in average of 12 specimens). Length of fore wing : 4.6-5.5 mm (5.1 mm in average of 13 specimens).

Face and head gray-whitish, leaden-metallic on vertex ; crown on patagia and thorax dorsally ochreous-whitish or pure white, with tegulae grayish-brown ; pleural and ventral surfaces of thorax whitish. Palpi white ; 2nd segment of labial palpus slightly thickened below apically, with a dark stripe on outer surface, the apical segment with a blackish streak on lower side throughout. Antenna dark brown, without distinct annulations ; scape whitish below basally. Fore and middle legs

whitish; coxae broadly grayish basally and narrowly blackish apically; femora darkened on upper surfaces, with a longitudinal blackish-brown stripe on lower surfaces; tibiae with 2 or 3 blackish rings; tarsi with 1st segments medianly and the others basally blackish. Hind leg whitish; femur with a blackish spot near base on outer surface; tibia darkened apically on outer surface except at apical extremity, with bristly scales pale ochreous-gray; tarsus blackish except for apex of each segment.

Fore wing ochreous-brown with slightly metallic iridescences in ground colour, with markings white and lustered with silver or silk in some light; a costal strigula at basal $1/4$ of wing, moderately wide, oblique outwardly, with its apex reaching nearly wing-fold; 3 small spots scattered nearly equidistantly on costa from basal $1/3$ to $2/3$, irregular in size and sometimes reduced into a mark of 2 to 5 white scales, the last spot usually surrounded by black scales rather widely; a narrow costal strigula at apical $1/4$, oblique outwardly as in 1st strigula, most brilliantly lustered among white marks, surrounded by black scales narrowly on its apical half and broadly on its basal half; 2 rather broad fasciae at apex of wing, with a narrow interspace between them, inner margin of 1st fascia broadly and outer margin of 2nd fascia narrowly black, the inner margin of 1st fascia oblique outwardly, while the outer margin of 2nd fascia slightly oblique inwardly; a narrow dorsal streak running from base to tornus of wing, usually interrupted by ground colour at basal $1/3$ broadly and at $2/3$ scarcely, the median fragment confluent with 1st costal strigula at its base, and the apical fragment expanded semicircularly or triangularly, and margined with black on its upper margin basally, the black margin being confluent with inner black margin of last costal spot to form a curved line; cilia of apical extremity of wing white, those along termen grayish-brown with 2 rather broad white dashes, and those along dorsal margin dark gray, mixed with short white and ochreous hairs. Hind wing and its cilia dark gray.

Male genitalia (Fig. 4): Tegumen long, nearly parallel-sided and truncated apically in ventral view, covered with fine setae on almost whole ventral surface except on a weakly sclerotized median subscaphium, the setae denser on basal area than on other areas; tuba analis short, with subscaphium elongate-elliptical. Valvae tightly joined with one another on basal $1/4$ of ventral margins, about as long as tegumen, with thicker setae on median area near costal margin being truncated apically; outer surface with long linear androconial scales near base sparsely. Vinculum short; saccus short, wide basally and round apically. Aedeagus tubular, with a beak-shaped carina penis near apex; vesica with a bundle of many needle-shaped cornuti of moderate length. Eighth abdominal segment deeply incised ventrally; dorsocephalic apodeme narrowly triangular, truncated apically; a pair of very slender ventral invaginations nearly as long as dorsal apodeme. (Six slides examined.)

Female genitalia (Fig. 3: B): Papilla analis moderate in length, obtuse ventrally, covered with microspines on almost whole surface, with usual setae along margins rather sparsely; apophysis posterioris slender, slightly widened basally. Eighth abdominal segment short; apophysis anterioris slender, about $3/4$ as long as apophysis posterioris. Ostium bursae small, without sclerous genital plate; antrum shortly sclerotized; ductus bursae shagreened with granules on median and cephalic areas, the cephalic granules distinctly larger than the median ones; corpus bursae

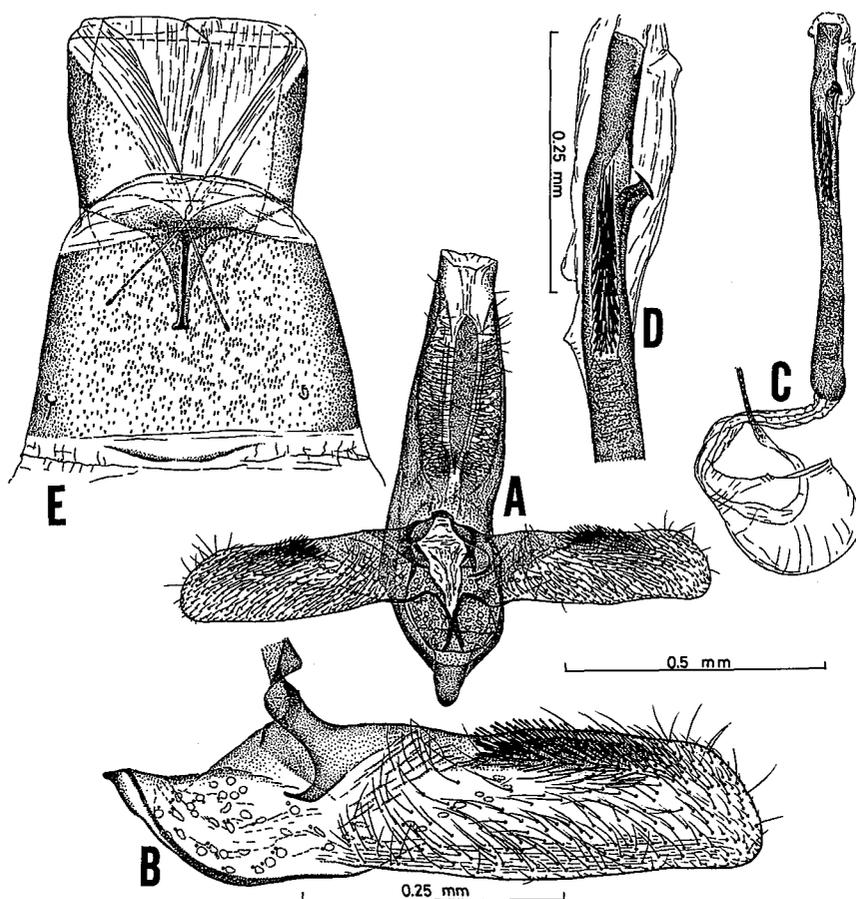


Fig. 4. *Cryptolectica ensiformis* (Decheng). A: Male genitalia in caudal view, aedeagus omitted [Grc-3015, Izuhara, Tusima, 15/x/1979, K. Yasuda leg.] — B: Right valva enlarged [Grc-1622, Kosugidani, Yaku-sima, Nansei Is., 1/vii/1965, ex *Quercus sessilifolia* (649)] — C: Aedeagus [Grc-3015] — D: Apical part of aedeagus enlarged [Grc-1622] — E: Male 7th and 8th abdominal segments in ventral view [Grc-3015].

large, always bent near caudal end, shagreened with microspines around median area, with many lanceolate signa, which are arranged in a fourfold or fivefold row extending from caudal end to the centre of corpus bursae and become larger towards the cephalic end of the row. (Four slides examined.)

Variation: The additional description given above is based on the specimens collected from Honsyū, Sikoku, Kyūsyū and Nansei Is. The 3 specimens from Tusima are different in colour-pattern alone as follows: — crown of patagia and dorsal surface of thorax much darker, being dark grayish-brown as in tegulae; fore wing slightly intermixed with blackish-brown scales on the ochre-brown ground, and completely lacking whitish dorsal streaks (Fig. 33: F). These specimens seem to represent a geographic variation specific to Tusima Island.

Specimens examined: 9♂♂ & 4♀♀. HONSYŪ — 1♂, Gozaisyo-yama, Mie-ken, 25/vii/1957, T. Yasuda leg. SIKOKU — 1♀, Omogokei, Ehime-ken, 27/viii/1957, M. Okada leg. KYŪSYŪ —

1♂, Hikosan, Buzen, em. 17/vii/1954, ex *Quercus acuta* (212), H. Kuroko leg. TUSIMA — 2♂♂ & 1♀, Ariake-yama, Izuhara, 14-15/x/1978, K. Yasuda leg. NANSEI IS. — 5♂♂ & 2♀♀, Kosugidani, Yaku-sima, em. 1-2/vii/1965, ex *Q. sessilifolia* (649).

Distribution: Japan (Honsyū; Sikoku; Kyūsyū; Tusima; Nansei Is.); and China (Hainan I.).

Food plants: *Quercus acuta* Thunb. and *Q. sessilifolia* Blume (Fagaceae) in Japan.

Remarks: The Japanese specimens examined are slightly different from the original description based on Chinese material in colour-pattern, especially in having the white costal strigulae at the basal 1/4 and apical 1/4 of the fore wing, but they quite agree with the latter in the genitalia of both sexes. The specimens collected from Tusima I. are also different from those collected from the main islands of Japan only in the colour-pattern of the fore wing without the dorsal streak as mentioned above. It is the opinion here adopted that this species is variable in colour-pattern, and that the Japanese form is not distinct from the Chinese one.

The wing venation of *C. ensiformis* is different from that of the type-species of the genus *Cryptolectica* in having the shortly stalked veins R_5 and M_1 of the fore wing as seen in the members of the genus *Dialectica*. But the male 8th abdominal segment with a pair of narrow ventral invaginations and the valva without any comb on the inner surface indicate that the species does not belong to the genus *Dialectica* but to the present genus.

C. ensiformis is characteristic in the dense and truncated setae on the valva and the arrangement of signa on the corpus bursae.

4. *Cryptolectica chrysalis* Kumata et Ermolaev, sp. nov.

[Figs. 5, 33(G-H), 40(D) and 43(C-D)]

♂♀. Expanse of wings: 9.0-11.0 mm (9.2 mm in holotype, 9.77 mm in average of 10 specimens). Length of fore wing: 4.2-5.4 mm (4.6 mm in holotype, 4.74 mm in average of 11 specimens).

Face and head silvery-gray with a weakly golden lustre in some light, face whitish anteriorly. Palpi brilliantly white; apical segment of labial palpus dark gray on lower side throughout. Antenna gray, slightly darkened apically, without distinct annulations. Thorax silvery-whitish, usually darkened anteriorly, with a golden or greenish lustre in some light. Legs silvery-whitish; tibiae ochreous apically, with a dark gray subapical blotch and a white apical ring; raised scales on hind tibia ochreous-yellowish; 1st tarsal segments with 2 dark gray spots on upper sides and the other segments with a single similar spot in each.

Fore wing dark grayish on basal half and orange-yellow on apical half in ground, with the boundary slightly oblique or arched outwardly, in some light the basal half of wing lustered with bright golden colour with a greenish tinge and sometimes with further purplish iridescence on costal area; 3 dorsal blotches, 2 costal strigulae and 3 costal spots brilliantly silvery-whitish; the 1st dorsal blotch occupying basal 1/7 of wing below wing-fold, the 2nd one quadrangular, expanding from basal 2/7 to boundary between 2 ground colours, occupying about half breadth of wing, and the 3rd one before tornus, elongate-triangular, distinctly margined with black scales above, and containing a small orange-yellow triangular spot in its centre; the 1st

costal strigula opposite to 2nd dorsal blotch, oblique, short, and the 2nd costal one at apical 1/3 of wing, narrow, wholly margined with black scales, running in parallel with outer margin of 3rd dorsal blotch, but not reaching wing-terminen ; all the costal spots placed on apical area of wing, wedge-shaped or semicircular, surrounded by black scales narrowly, the last spot occupying nearly apical space of wing, with its outer black margin forming an incurved line crossing wing-apex ; apical cilia beyond this line white ; cilia along termen orange-yellow on their basal 2/3, with a distinct

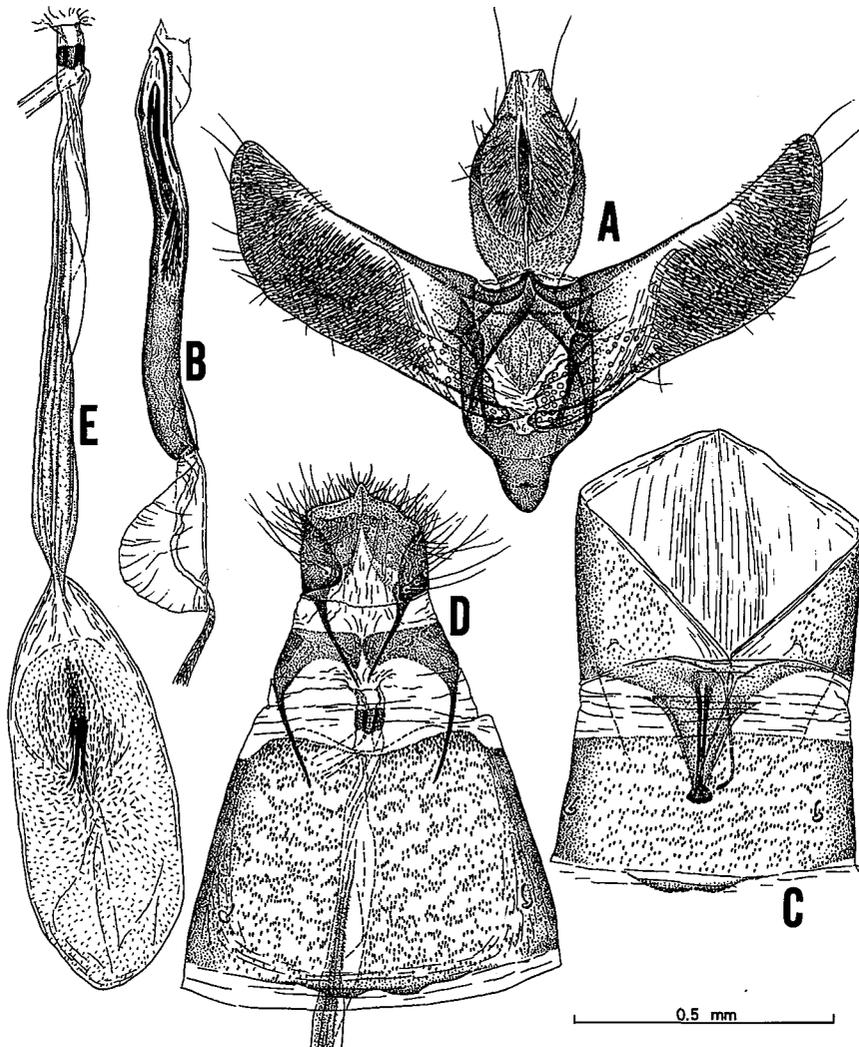


Fig. 5. *Cryptolectica chrysalis* Kumata et Ermolaev, sp. nov. A : Male genitalia in caudal view, aedeagus omitted [Grc-1772, holotype] — B : Aedeagus [ditto] — C : Male 7th and 8th abdominal segments in ventral view [ditto] — D : Female genitalia in ventral view, apical part of bursa copulatrix omitted [Grc-1773, Apoi, Hidaka, Hokkaidō, em. 18/vii/1973, ex *Quercus mongolica* var. *grosseserrata* (1152)] — E : Bursa copulatrix [ditto].

black blotch and a narrow white dash, the remaining apical 1/3 dark gray ; dorsal margin of wing stretching dark gray cilia. Hind wing and its cilia dark gray.

Male genitalia (Fig. 5 : A-C) : Tegumen moderate in length, slightly constricted near base with major part apical to constriction elliptical in ventral view, densely covered with microspines on dorsal face and basal area of ventral face, dorsally with a pair of long apical seta and ventrally with a large elliptical area bearing dense setae, which are arranged in 3 or 4 rows along each side of median subscaphium ; tuba analis shortly protruded beyond tegumen, with subscaphium narrow and tapering apically and basally. Valva somewhat wing-shaped, slightly upturned, bluntly pointed apically, with dense, fine setae on inner surface except on costal and basal areas, the setae on central area a little thicker and denser than those on peripheral areas. Vinculum short, with saccus short, wide basally and round apically. Aedeagus about as long as valva, straight or slightly sinuate, tubular ; vesica with 3-4 long cornuti and a bundle of many short, needle-shaped cornuti. Eighth abdominal segment deeply notched ventrally, with a dorsocephalic apodeme triangular and knobbed apically, and with a pair of very slender invaginations on ventral corner, the invaginations nearly as long as dorsal apodeme. (Three slides examined.)

Female genitalia (Fig. 5 : D-E) : Papilla analis moderate in length, acuminate dorsally, with many fine setae as usual, but 2 or 3 setae near dorsoapical area slightly thickened ; apophysis posterioris slender, slightly widened basally, moderate in length. Eighth abdominal segment short ; apophysis anterioris slender, nearly as long as apophysis posterioris. Ostium bursae very small, without sclerous genital plate ; antrum shortly sclerotized ; ductus bursae membraneous, sparsely lined with microspines on its cephalic area ; corpus bursae elongate-ellipsoidal in form, membraneous, moderately densely lined with microspines, the spines becoming slightly larger around needle-like signa, which are arranged densely in a multiple row near the centre of the corpus and diminish caudally. (Two slides examined.)

Specimens examined : 9♂♂ & 4♀♀. Holotype : ♂, Apoi-dake, Hidaka, Hokkaidō, em. 17/vii/1973, ex *Quercus mongolica* var. *grosseserrata* (1152), Gen. sl. no. Grc-1772. Paratypes : HOKKAIDŌ — 3♂♂ & 3♀♀, with same data as holotype except on dates emerged, 17-23/vii/1973 ; 1♀, Apoi, Hidaka, em. 24/vii/1963, ex *Q. m.* var. *grosseserrata* ; 1♂, ditto, em. 17/vii/1967, ex *Q. m.* var. *grosseserrata* (874). HONSYŪ — 1♂, Ueno, Azusagawa, Nagano-ken, 4/vii/1980, N. Hirano leg. ; 1♂, Hohukuzi, Siga-mura, Nagano-ken, em. 3/vii/1986, ex *Q. serrata* (342), N. Hirano leg. U.S.S.R. — 2♂♂, Kedrovaja Pad, Zapovednik, Primorye Territory, em. 17-20/vii/1975, ex *Q. mongolica*, V.P. Ermolaev leg.

Distribution : Japan (Hokkaidō ; Honsyū) ; and U.S.S.R. (Far East).

Food plants : *Quercus mongolica* Fischer var. *grosseserrata* Rehd. et Wils. and *Q. serrata* Thunb. (Fagaceae) in Japan. *Q. mongolica* Fischer in U.S.S.R.

Remarks : This new species is somewhat similar to the Indian "*Acrocercops*" *chrysargyra* Meyrick, 1908, in brilliantly golden ground colour over all the surface, but is distinct in the markings of the fore wing.

III. GENUS ETEORYCTIS KUMATA ET KUROKO NOV.

Type-species : *Acrocercops deversa* Meyrick, 1922.

Etymology : Eteoryctis (G.) = eteos (true) + oryctis (digger, miner) ; feminine.

♂♀. Face and head smooth-scaled, with neckplumes appressed ; ocelli absent ;

proboscis moderately developed, faintly scaled at base. Labial palpus moderately long, slightly upturned, long-pointed apically, smooth-scaled entirely, with apical segment about as long as the 2nd. Maxillary palpus porrect, smooth-scaled, about 2/3 as long as apical segment of labial palpus. Antenna simple, as long as or a little shorter than fore wing; scape slightly thickened, simple, without a pecten or tuft. Thorax smooth-scaled. Legs rather long, slender, smooth-scaled; middle tibia slightly thickened apically; hind tibia and basal half of hind 1st tarsal segment with a row of strong, bristly scales above; anterior pair of spurs of hind tibia placed at basal 1/3; hind tarsus a little longer than hind tibia.

Fore wing narrowly lanceolate, moderately pointed apically; discoidal cell long, occupying about basal 3/4 of wing, nearly parallel-sided, truncated distally, with upper vein obsolescent on basal part before a point where the vein R_1 branches off; 13-veined; R_1 weakened, very short, arising from basal 2/5 of cell and ending on costa before middle of wing; R_2 slightly before upper angle of cell; R_3 from upper angle; R_5 very obsolescent basally, probably stalked with R_4 ; M_1 obsolescent basally, from middle of distal margin of cell; M_2 weakened basally, short-stalked with M_3 which arises from the lower angle of the cell; Cu_{1a} remote from M_3 , far basal to level of R_2 ; Cu_{1b} strongly obsolescent basally, probably approximate to Cu_{1a} ; Cu_2 distinct only on its apical part; An very weakened, nearly straight, connected with dorsal margin of wing at basal 1/5-1/4. Hind wing very narrow, about half as wide as and about 11/13 as long as fore wing, long-pointed apically, with cell opened between M_2 and M_3 ; 7-veined; Rs simple, not divided into 2 branches; M_1 and M_2 stalked; M_3 stalked with Cu_{1a} , with their common stem arising from middle of Cu_{1b} ; Cu_2 and An invisible; cilia long, about 4 times as wide as wing.

Male genitalia; Tegumen moderately long, simple, not squamose dorsally, with a pair of oblong patches bearing dense setae ventrally; tuba analis well developed, with a short, narrow subscaphium near base. Valva nearly shell-shaped, widely round apically, covered with dense, fine setae around apical and ventral margins, without a comb and costal process; a bundle of long androconial scales occurring on base of outer surface; transtilla incomplete, without any projection. Vinculum more or less V-shaped, lengthened ventrally, with a small saccus. Diaphragma weakly membraneous, simple. Aedeagus moderately long, tubular; vesica with or without cornuti; ductus ejaculatorius very long, about 2 times as long as aedeagus. Eighth abdominal segment widely and deeply notched ventrally, the tergite with a slender, long anterior apodeme of which a median sclerotization does not extend onto tergite, the sternite with a pair of membraneous, slender invaginations anteriorly, the invaginations being nearly as long as dorsal apodeme.

Female genitalia: Papilla analis rather small, obliquely transverse in lateral view, blunt ventrally and dorsally, setose as usual, with apophysis posterioris slender and moderate in length. Eighth abdominal segment short, weakly sclerotized dorsally, widely membraneous ventrally, with apophysis anterioris slender and nearly as long as apophysis posterioris. Ostium bursae opened on ventrum of 8th segment, rather small, with a weakly sclerotized, indistinct antevaginalis; antrum short, ring-shaped; ductus bursae rather long, tubular, membraneous, partly shagreened near base, with well-sclerotized valve-shaped projections at a joint of corpus bursae, which is large, elongate-ovoid, shagreened on caudal half, with or without signa.

Body chaetotaxy of last instar larva (Fig. 44 : A-B) : Very similar to the preceding genus *Cryptolectica*, but different from the latter by the following points. Second abdominal segment with 2 subventral setae (SV1 and SV2). Seta V1 absent on 8th abdominal segment. Ninth abdominal segment with 5 tactile setae alone, the proprioceptors MD1 and MV3 and tactile setae SD2, L2, L3, SV2, SV3 and V1 being absent.

Arrangement of crochets : Ventral prolegs on 3rd to 5th abdominal segments with uniordinal crochets arranged in a circle ; anal proleg with uniordinal crochets in a semicircular row rather transverse to the body axis.

Larval habit ; The larva of this genus is a leaf-miner throughout its feeding period. The mine, usually occurring on the upper or rarely lower surface of the leaflet, is started in a narrow gallery, sometimes epidermal, then broadened into a large, blister-like blotch, usually whitish on the mining part ; the leaf epidermis of mining part is sometimes contorted by threads to form a tentiform mine in *E. picrasmae* sp. nov. When fully fed on the parenchymal tissue of the mining part, the larva leaves the mine for a pupating site through a semicircular slit. The cocoon is usually found on a leaflet neighbouring the mine, boat-shaped, with a few bubbles on the surface. The full-grown larva is reddish in body colour.

Remarks ; The new genus *Eteoryctis* is similar to the preceding *Cryptolectica* in the adult characters such as colour-pattern, antennal scape, legs and male genitalia, but it is distinguished from the latter by the fore wing with veins M_2 and M_3 stalked at their bases, by the female bursa copulatrix having a pair of valve-shaped projections between corpus and ductus bursae, and, above all, by the larval body chaetotaxy, which seems to be essential in separating *Eteoryctis* from *Cryptolectica*.

Eteoryctis is also similar to the genus *Corethrovalva* Vári, 1961, in the venation of the fore wing, but is more easily distinguished from the latter by the presence of the vein Cu_{1b} of the fore wing, by the absence of a costal ampulla and discal long spines of the male valva, and by the weakly membraneous 8th sternum of the female abdomen. In *Corethrovalva*, according to the original description and figures, the vein Cu_{1b} is completely coincident with Cu_{1a} , the male valva has a short and acute ampulla at the costa and about 6 strong spines on the disc, and the female 8th abdominal sternite is well sclerotized at least on anterior and posterior edges to encircle the ostium bursae.

Two Japanese species belong to this genus, one feeding on Anacardiaceae and the other on Simaroubaceae. Although these food plants are quite different, classified into different orders, the miners are very closely related to each other and are distinguished by the genitalia alone as mentioned in the key. The Indian "*Acrocercops*" *syngamma* Meyrick, 1914, and "*Gracilaria*" *gemoniella* Stainton, 1863, seem to be referable to the present genus, both being known to mine in leaves of Anacardiaceae.

Key to the Japanese species of *Eteoryctis*

1. Male aedeagus with 10-30 cornuti of microscopic spines near apex ; female corpus bursae with 20-30 small, round signa arranged in a ring around its middle besides spinules ; leaf-miner on *Rhus* spp. (Anacardiaceae). *E. deversa* (Meyrick), comb. nov.
- Male aedeagus without any cornutus ; female corpus bursae lined with many spinules on

caudal half, but without any distinct signum ; leaf-miner on *Picrasma* spp. (Simaroubaceae).
.....*E. picrasmae* Kumata et Kuroko, sp. nov.

5. *Eteoryctis deversa* (Meyrick), comb. nov.

[Figs. 6, 7(A-B), 34(A-B), 39(C), 40(E), 44(A) and 47(D-E)]

Acrocercops deversa Meyrick, 1922, Exot. Microlep. 2 : 563 [India (Shillong)] ; Fletcher, 1933, Imp. Counc. Agr. Res. India, Sci. Monograph 4 : 48 [India (Shillong) ; host : *Rhus semialata*] ; Kuroko, 1982, Moths Jap. 1 : 187, 2 : pl. 6(12) [Japan (Hokkaidô, Honsyû, Sikoku, Kyûsyû) ; Taiwan ; and India ; host : *Rhus ambigua*, *R. javanica* and *R. trichocarpa*] ; Park, 1983, Ill. Flora & Fauna Korea 27 : 589, pl. 38 (668) [Korea].

Original description : "♀. 8 mm. Head grey, face silvery-white. Palpi slender, white, second joint with grey streak at apex. Thorax ochreous-whitish, patagia bronzy-fuscous. Forewings very narrow, pointed ; shining ochreous-fuscous ; a rather broad shining whitish streak near dorsum from base, extremity turned down to tornus ; an oblique white strigula from costa at 3/4, edged dark fuscous suffusion ; a rather broad shining whitish preapical fascia, rather narrowed upwards, separated by a black mark from a white apical dot : cilia pale gray, round apex white, at apex a black basal mark and postmedian dark grey line, beneath apex a dark grey bar. Hindwings grey ; cilia pale gray."

Additional description : ♂ ♀. Expanse of wings : 6.5-10.0 mm (8.43 mm in average of 20 specimens). Length of fore wing : 3.2-4.9 mm (4.15 mm in average of 20 specimens).

Head and thorax concolorous in most specimens, brilliant white with a tinge of gray or ochre ; tegulae (not patagia) a little darker than ground colour of fore wing. Maxillary palpus with a blackish streak at apex of lateral side ; apical segment of labial palpus dashed with gray at apex of lower side. Antenna nearly as long as fore wing, brownish-black dorsally, narrowly whitish ventrally, hardly annulated with pale colour ; scape smooth, without a pecten or tuft. Legs whitish ; anterior 4 femora and tibiae longitudinally lined with brownish black dorsally, the middle tibia with further brownish subapical ring ; hind tibia darkened at apex of lateral surface ; all tarsi with 5 rather broad, brownish-black rings.

Fore wing with a longitudinal whitish streak running on wing-fold and about half as wide as wing ; a dorsal line of ground colour below this white streak nearly a half as wide as costal area of ground colour ; a brilliant white costal strigula at basal 3/4 of wing extending towards tornus between white streak and white preapical fascia, and reaching nearly half breadth of wing.

Male genitalia (Fig. 6) : Tegumen rather long, dilated on basal half and nearly parallel-sided on apical half in ventral view, with a pair of setose areas of elongate-elliptical shape on ventral surface, the setae being 20-30 on each area ; tuba analis not protruded, with a very narrow subscaphium. Valva about as long as tegumen, somewhat shell-shaped, much dilated apically, with round apical margin ; moderately long, dense setae on inner surface except for weakly sclerotized costal area, and long androconial scales on outer surface near base. Vinculum rather long, with saccus rather short and round apically, the vinculum+saccus about 1/3 as long as valva. Aedeagus about as long as valva, bar-shaped ; vesica with 10-30 cornuti of microscopic spines (Fig. 6 : D) ; ductus ejaculatorius very long, about 2.5 times as long as aedeagus. Eighth abdominal segment deeply notched ventrally, the dorso-caudal margin sinuate ; dorsocephalic apodeme slender, truncated apically, with a

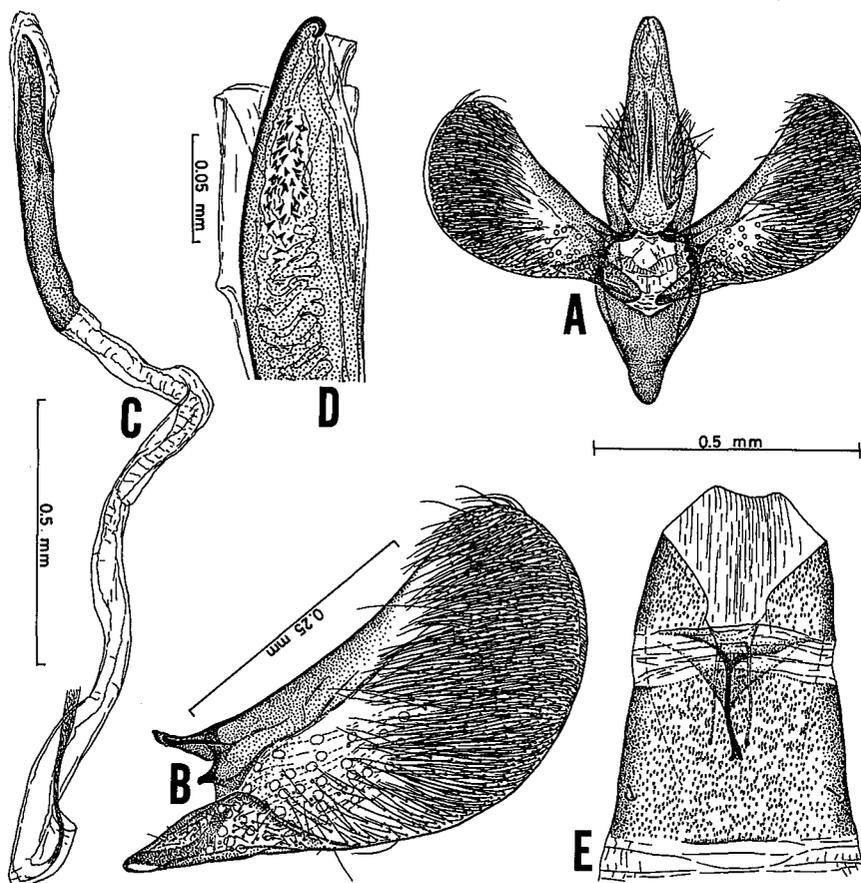


Fig. 6. *Eteoryctis deversa* (Meyrick). A: Male genitalia in caudal view, aedeagus omitted [Grc-1595, Kozagawa, Wakayama-ken, em. 10/vi/1970, ex *Rhus javanica* (1045)] — B: Right valva enlarged [ditto] — C: Aedeagus [ditto] — D: Apical part of aedeagus enlarged [Grc-1947, Hikosan, Hukuoka-ken, em. 20/vi/1957, ex *R. javanica* (205)] — E: Male 7th and 8th abdominal segments in ventral view [Grc-1942, Kozagawa, Wakayama-ken, em. 12/x/1974, ex *R. javanica* (1318)].

T-shaped sclerotization; a pair of ventral invaginations slender, nearly as long as dorsal apodeme. (Twelve slides examined.)

Female genitalia (Fig. 7; A-B): Papilla analis rather short, obtuse ventrally and dorsally in lateral view, setose as usual and covered with spinules rather sparsely; apophysis posterioris slender, moderate in length. Eighth abdominal segment rather weakly sclerotized, short; apophysis anterioris as narrow as and a littler shorter than apophysis posterioris. Ostium bursae small; lamella antevaginalis weakly sclerotized, trapeziform, finely striated; antrum shortly sclerotized; ductus bursae long, slender, membraneous throughout its length, lined with comb-like spines near caudal area (Fig. 7: B), with 2 large scobinated horns at cephalic end; corpus bursae ovobate in form, membraneous, sparsely lined with spinules on its caudal half, with 20-30 small, round signa arranged in a ring at its middle close to cephalic end of lining of spinules. (Ten slides examined.)

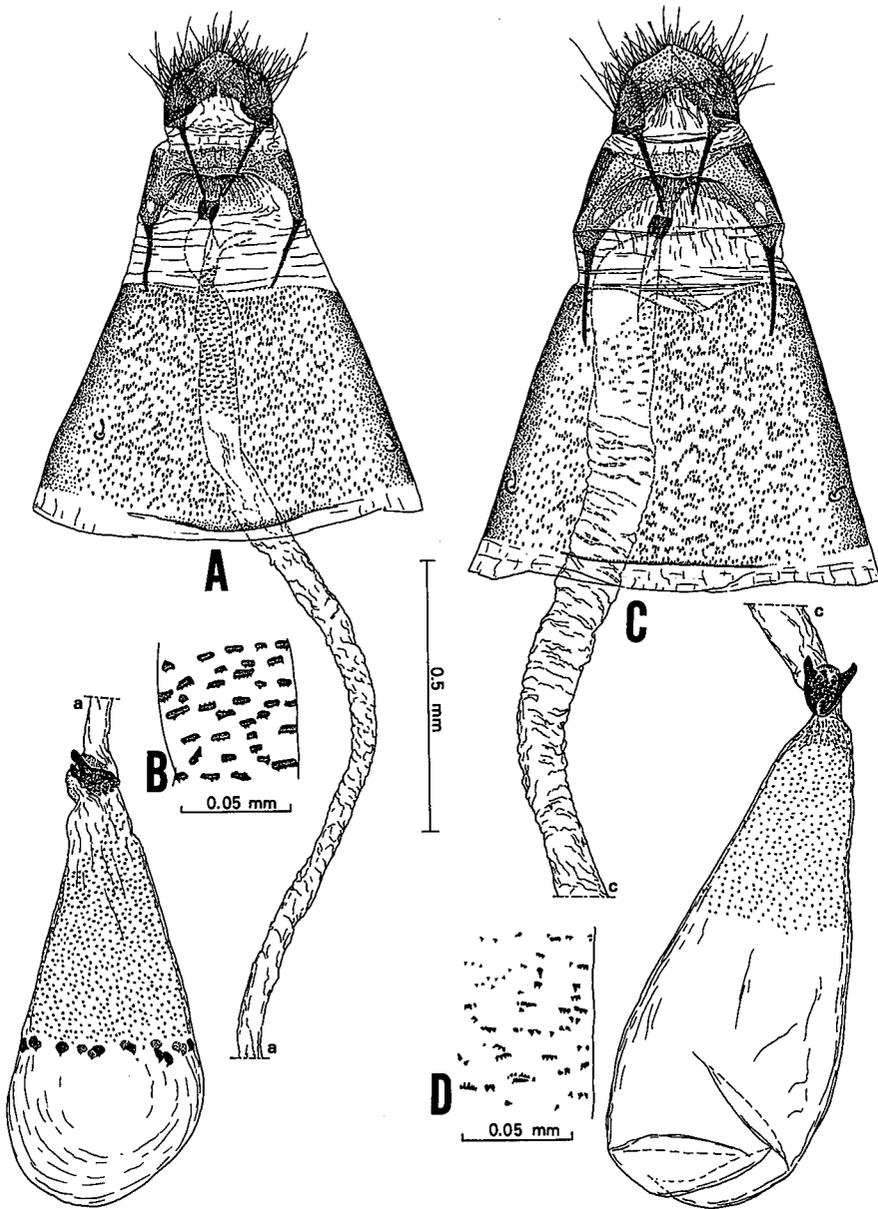


Fig. 7. A-B: *Eteoryctis deversa* (Meyrick). A: Female genitalia in ventral view [Grc-1946, Hikosan, Hukuoka-ken, em. 20/vi/1957, ex *Rhus javanica* (205)] — B: Basal part of ductus bursae enlarged [ditto]. C-D: *Eteoryctis picrasmae* Kumata et Kuroko, sp. nov. C: Female genitalia in ventral view [Grc-1941, Misumai, Sapporo, Hokkaidō, em. 6/vii/1967, ex *Picrasma quassioides* (859)] — D: Basal part of ductus bursae enlarged [ditto].

Specimens examined: 71♂♂ & 70♀♀. HOKKAIDŌ — 1♀, Katurasawa, Sorati, 24/v/1959; 1♂, Nopporo, 2/viii/1963; 1♀, Sapporo, 10/v/1963; 1♂, Moiwa, Sapporo, 21/iv/1975; 4♂♂ & 3♀♀, ditto, em. 7-16/vii/1956, ex *Rhus ambigua* (87); 1♂ & 4♀♀, ditto, em. 21/vii/1958, ex *R. ambigua*; 1♂, Teine, 13/vi/1956. HONSYŪ — 1♀, Nisinasuno, Totigi-ken, em. 21/iv/1976, ex *R. javanica* (1934); 4♂♂ & 2♀♀, Amagi, Sizuoka-ken, em. 31/vii/1971, ex *R. javanica* (1081); 2♂♂ & 4♀♀, Ōtaki, Kiso, Nagano-ken, em. 23-26/vii/1975, ex *R. javanica* (1463); 1♂ and 1♀, Kisohukusima, Nagano-ken, 23/ix/1975; 2♂♂ & 1♀, ditto, em. 15-20/x/1975, ex *R. javanica* (1505); 5♂♂ & 1♀, ditto, em. 21-30/iv/1976, ex *R. javanica* (1505); 32♂♂ 35♀♀, Kozagawa, Wakayama-ken, em. 8-12/vi/1970, ex *R. javanica* (1045); 9♂♂ & 6♀♀, ditto, em. 12-21/x/1974, ex *R. javanica* (1318); 1♂, ditto, em. 9/x/1974, ex *R. sylvestris* (1287). SIKOKU — 1♂ & 1♀, Ino, Kōti-ken, em. 10-11/xi/1980, ex *R. succedanea* (2217); 1♀, ditto, em. 13/xi/1980, ex *R. javanica* (2214); 2♂♂ & 5♀♀, ditto, em. 7-14/xi/1980, ex *R. javanica* (2194). KYŪSYŪ — 1♂ & 1♀, Hikosan, Hukuoka-ken, em. 20/vi/1957, ex *R. javanica* (205). U.S.S.R. — 2♂♂ & 2♀♀, Aleshino, Kounaschir I., Kuril Is., em. 15/viii/1984, ex *Toxicodendron orientale* (= *Rhus ambigua*), V.P. Ermolaev leg.

Distribution: Japan (Hokkaidō; Honsyū; Sikoku; Kyūsyū); Korea; U.S.S.R. (Kuril Is.); Taiwan; and India.

Food plants: *Rhus ambigua* Lavallée, *R. javanica* Linn., *R. sylvestris* Sieb. et Zucc., *R. trichocarpa* Miq., *R. succedanea* Linn. (Anacardiaceae) in Japan; *R. javanica* Linn. (= *R. semialata* Murray) in Taiwan and India; and *R. ambigua* in U.S.S.R.

Remarks: The type of *Acrocercops deversa* and some other specimens determined as *A. deversa* by Meyrick at the British Museum (N.H.) have been examined for the present study. The Japanese specimens examined quite agree with them not only in colour-pattern but also in male genitalia. In colour-pattern *E. deversa* is somewhat similar to "*Gracilaria*" *gemoniella* Stainton, 1863, "*Acrocercops*" *syngamma* Meyrick, 1914, "*A.*" *scandalota* Meyrick, 1914, and "*A.*" *praeclusa* Meyrick, 1914, but it is at once distinguished from any of the latter species by the presence of a narrow dorsal line of ground colour below a whitish longitudinal streak of the fore wing.

6. *Eteoryctis picrasmae* Kumata et Kuroko, sp. nov.

[Figs. 7(C-D), 8, 34(C-D), 40(F) and 44(B)]

♂♀. Expanse of wings: 7.6-10.0 mm (8.0 mm in holotype, 8.55 mm in average of 20 specimens). Length of fore wing: 3.8-4.9 mm (4.0 mm in holotype, 4.20 mm in average of 20 specimens).

Face, head and palpi brilliant white, the head slightly tinged with gray in some specimens (including holotype), middle segment of labial palpus laterally and the apical segment ventrally dashed with dark gray narrowly in a few specimens. Antenna dark brownish-gray, narrowly whitish ventrally, without distinct annulations; scape usually darker than the other segments. Thorax brilliant white, with tegulae bronzy-gray, slightly darker than ground colour of fore wing. Legs brilliant white; anterior 4 femora and tibiae with a narrow brownish-black line on dorsal surface, middle tibia with an additional blackish subapical ring, hind tibia with subapical blackish blotch on outside, anterior 4 tarsi with 5 rather broad blackish rings, and hind tarsus with 6 similar rings. Abdomen dark gray dorsally, whitish ventrally, with an oblique dark gray line at caudal end of each segment on ventrum; anal extremity blackish.

Fore wing brilliantly grayish-ochreous in ground colour; a shining white, longitudinal streak running on wing-fold from base to near tornus of wing, touched dorsal

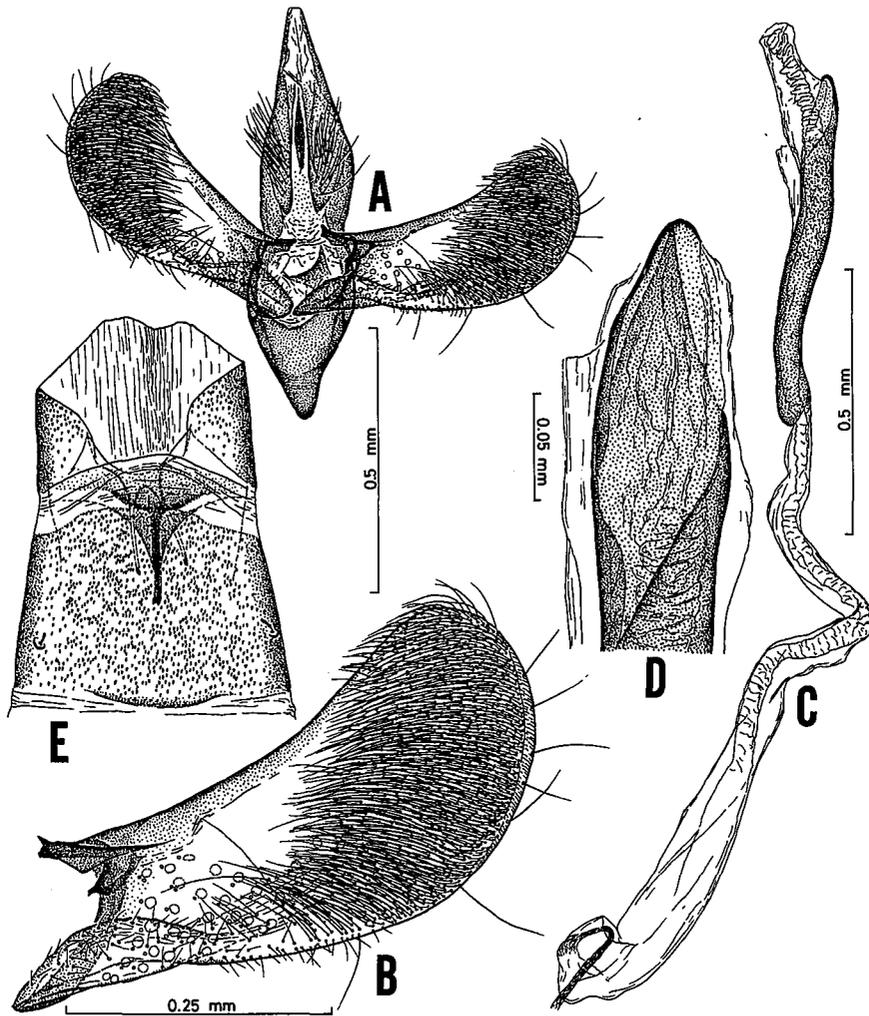


Fig. 8. *Eleoryctis picrasmae* Kumata et Kuroko, sp. nov. A: Male genitalia in caudal view, aedeagus omitted [Grc-1591, holotype] — B: Right valva enlarged [ditto] — C: Aedeagus [ditto] — D: Apical part of aedeagus enlarged [Grc-1939, Apoi, Hidaka, Hokkaidō, em. 10/vii/1967, ex *Picrasma quassioides*] — E: Male 7th and 8th abdominal segments in ventral view [holotype].

margin at its basal and apical extremities, rather broad, about a half as wide as wing; a dorsal line of ground colour below the white streak very narrow, about 1/4 as wide as costal area of ground colour; an oblique, brilliantly white, black-edged costal strigula at basal 2/3 of wing, directed to tornus, but detached from it; a rather broad, white preapical fascia strongly narrowed upwards, indented on its inner margin near costa and sometimes tending to divide into opposite blotches or spots; a white spot at apex of wing, margined with black scales internally and externally, the internal black margin being oblique, rather broad, and occupying almost whole interspace between white preapical fascia and white apical spot, and

the external black margin being narrow, vertical and extending onto cilia ; cilia at apex and along termen of wing white, with a dark gray dash beneath apex of wing, those below tornus brownish-gray, and those along dorsal margin pale gray. Hind wing dark gray ; cilia pale gray.

Genitalia (Figs. 7 : C-D ; and 8) : Both the male and female genitalia are very similar to those of the preceding species, *E. deversa*, but are slightly different in the following points : — In male, valva a little more elongate than that of *E. deversa* ; vesica of aedeagus without any cornutus. In female, lining of microspines near caudal end of ductus bursae sparser than that of *E. deversa*, and the spines themselves being variable in shape from a single thorn to comb-like bundle (see Fig. 7 : D) ; corpus bursae lacking signa in its middle. (Eleven and 8 slides of male and female genitalia examined, respectively.)

Specimens examined : 24♂♂ & 18♀♀. Holotype : ♂, Misumai, Sapporo, Hokkaidō, em. 5/vii/1967, ex *Picrasma quassioides* (859), Gen. sl. no. Grc-1591. Paratypes : HOKKAIÐŌ — 1♂ & 1♀, Apoi, Hidaka, em. 10-11/vii/1967, *P. quassioides* ; 1♂, Yuni, Sorati, 24/v/1961 ; 3♂♂ & 1♀, Sapporo, em. 10-16/vii/1956, ex *P. quassioides* (91) ; 1♀, ditto, em. 9/vii/1977, ex *P. quassioides* (1711) ; 7♂♂ & 6♀♀, with same data as holotype except on dates emerged, 5-10/vii/1967 ; 1♂ & 1♀, Teine, 5/vii/1958 ; 1♀, ditto, em. 19/xii/1958, ex *P. quassioides* ; 5♂♂ & 1♀, ditto, em. 3-6/iv/1959, ex *P. quassioides* (91a) ; 2♂♂, Gamusi, Hiyama, 12/vii/1958. HONSYŪ — 1♀, Niiyama, Iwate-ken, 14/v/1955, M. Okano leg ; 3♂♂ & 1♀, Todai, Ina Nagano-ken, 3/vii/1975 ; 4♀♀, ditto, em. 19-20/iv/1976, ex *P. quassioides* (1594).

Distribution : Japan (Hokkaidō ; Honsyū).

Food plant : *Picrasma quassioides* (D. Don) Benn. (Simaroubaceae).

Remarks : The new species is very closely similar to *E. deversa* (Meyrick, 1922) in colour-pattern and genital structures of both sexes, but is distinguished from the latter in the genital structure as mentioned in the key and description. Moreover, it should be stated that the food plant of the new species is quite different from that of *E. deversa* : the new species is a leaf-miner of the genus *Picrasma* (Simaroubaceae), while *E. deversa* attacks the leaf of the genus *Rhus* (Anacardiaceae).

IV. GENUS PSYDROCERCOPS KUMATA ET KUROKO NOV.

Type-species : *Acrocercops wisteriae* Kuroko, 1982.

Etymology : Psydrocercops (G.) = psydros (false) + kerkos (tail) + ops (eye) ; feminine.

♂♀. Face and head smooth-scaled, with neckplumes appressed ; ocelli absent ; proboscis moderately developed, faintly squamose at base. Labial palpus drooping or porrect, very slightly curved, pointed apically, smooth-scaled entirely ; apical segment about as long as the 2nd. Maxillary palpus porrect, pointed apically, smooth-scaled, about half as long as apical segment of labial palpus. Antenna 1.1-1.3 times as long as fore wing, simple ; scape slightly thickened, with a minute, acute projection of scales beneath apically. Thorax smooth-scaled, without a crest. Legs long, slender, smooth-scaled ; middle tibia slightly thickened apically ; hind tibia and basal half of 1st tarsal segment with a row of bristly scales above, the scales on tarsus being shorter than those on tibia ; basal pair of hind tibial spurs situated at basal 1/3 ; hind tarsus about as long as hind tibia.

Fore wing narrowly lanceolate, rather acutely pointed apically ; discoidal cell long, occupying about basal 3/4 of wing, nearly parallel-sided, obliquely truncate distally, with upper vein obsolescent on proximal part far basal to a point where vein

R₁ arises; 13-veined; R₁ weakened, short, arising from basal 1/3 of cell and ending on costa at middle of wing; R₂ from upper angle of cell; R₃ and R₄ slightly remote at base and arising from distal margin of cell; R₅ very obsolescent basally, probably very slightly remote from or connate with M₁ at base; M₂ slightly remote from M₁; M₃ from lower angle of cell; Cu_{1a} well remote from M₃, far basal to level of R₂; Cu_{1b} weakened basally, approximate to Cu_{1a}; An obsolescent entirely, probably straight and connected with dorsal margin of wing at basal 1/6-1/5. Hind wing nearly linear, about half as wide as and 5/6 as long as fore wing, with cell opened between M₂ and M₃; 7-veined; Rs simple; M₁ and M₂ stalked; M₃ stalked with Cu_{1a}, with their common stem arising from middle of Cu_{1b}; Cu₂ and An invisible; cilia long, 4-5 times of wing-width.

Male genitalia: Tegumen moderately long, simple, more or less spatulate in ventral view, not squamose dorsally, weakly sclerotized on inner surface except for a round or quadrate central area from which tuba analis arises, with fine setae on lateral areas; subscaphium absent. Valva slender, narrowed apically, slightly incurved, hooked at apex, with sacculus round basally; fine and rather dense setae occurring on inner surface; a bundle of moderately long, linear scales occurring on outer surface near base of sacculus; transtilla incomplete, without any process. Vinculum V-shaped, widened ventrally, with lateral arms long; saccus moderately long. Diaphragma weakly sclerotized ventrally, but not forming a particular juxta. Aedeagus moderately long, slender, tubular, with 2 rows of minute projections near apex; vesica with a bundle of needle-shaped cornuti; ductus ejaculatorius long, about 2 times as long as aedeagus. Eighth abdominal segment deeply and triangularly cleft ventrally, anteriorly with a slender and moderately long dorsal apodeme, of which a median sclerotization does not extend onto tergum; ventrocephalic corner of the segment short-pointed, without long invagination. Seventh abdominal segment normal in shape, with a tuft of linear scales along ventrocaudal margin.

Female genitalia: Papilla analis rather long, acute dorsally, blunt ventrally, setose as usual, with apophysis posterioris slender and long. Eighth abdominal segment very short, weakly sclerotized dorsally, membranous ventrally, with a pair of long, slender apophyses anteriores. Ostium bursae opened on ventrum of 8th segment, small, without any sclerotized genital plate; antrum short, ring-shaped; ductus bursae long, slender, tubular, partly shagreened; corpus bursae large ellipsoidal, with a large plate-like signum bearing many horn-shaped projections, each of which has radiated carinulae at the base.

Body chaetotaxy of last instar larva (Fig. 44: C): Prothorax with seta XD2 absent as in larvae of *Acrocercops* and *Artifodina*. Second abdominal segment with 2 subventral setae (SV1 and SV2). Ninth abdominal segment with 6 tactile setae and 1 proprioceptor on each side, the setae SD2, L2, SV2, SV3, V1 and proprioceptor MV3 being absent. The other setal arrangement is not different from that of *Cryptolectica* and *Eteoryctis*.

Arrangement of crochets: Ventral prolegs on 3rd to 5th abdominal segments with uniordinal crochets arranged in a circle; anal proleg with similar crochets in a semicircle.

Larval habit: The larva of this genus is a leaf-miner throughout the feeding period. The mine usually occurs upon the upper surface of the leaf or leaflet. In

early stages the mine is narrow, long, and irregularly curved in a serpentine-type ; in the later stages it is broadened into a large blister-like blotch ; the extremely early mine is usually epidermal, brightly whitish and transparent. When the larva consumes the parenchymal tissue within the blotchy part, it leaves the mine for a pupating site through a semicircular slit. The cocoon is small, boat-shaped, with some bubbles on the surface. The full-grown larva is reddish in body colour.

Remarks: In the present paper this new genus is based on the type-species alone, but there are 2 other species, probably undescribed, which are undoubtedly belong to this genus. One of them is a leaf-miner of *Hibiscus* spp. (Malvaceae) in Ogasawara Is. (Bonin Is.), and the other is a leaf-miner of *Pterocymbium* sp. (Sterculiaceae) in West Malaysia.

The new genus is somewhat related to the preceding *Cryptolectica* and *Eteoryctis* in the fore wing with a similar colour-pattern and a complete venation, but is distinguished from them by the antennal scape with a minute projection of scales beneath apically, by the fore wing with vein R₅ connate with or approximate to the vein M₁ at the base, by the peculiar shape of the male valva, by the 8th abdominal segment of the male without paired, long anterior invaginations, and by the prothorax of the last instar larva without seta XD2. On the other hand, as mentioned in the above description, it is similar to the genera *Acrocercops* and *Artifodina* in the larval chaetotaxy, especially in lacking the seta XD2 on the prothorax, rather than to *Cryptolectica* and *Eteoryctis*, but it is indeed more easily distinguished from *Acrocercops* and *Artifodina* by the absence of the valval comb of the male genitalia. At present we can not decide the taxonomic position of the new genus among those genera, but we tentatively situate it between *Eteoryctis* and *Acrocercops*.

So far as we are aware, the food plants of this genus are not limited to any particular group, but are scattered in Leguminosae, Malvaceae and Sterculiaceae.

7. *Psydrocercops wisteriae* (Kuroko), comb. nov.

[Figs. 9, 34(E-F), 39(D), 42(A), 44(C) and 48(A-C)]

Acrocercops wisteriae Kuroko, 1982, Moths Jap. 1: 187, 2: 450, pl. 6 (13) [Japan (Honsyū, Sikoku, Kyūsyū); host: *Wisteria floribunda*].

Original description: "Expanse, 7-8 mm. Forewing dark fuscous on costal side throughout, the fuscous part occupying more than half width of wing, with a V-shaped prominence reaching dorsum at 2/3 of wing; dorsal side clean-yellowish; a curved white line in disc at 3/4; a blackish oblique fascia at apex of wing; a blackish V-shaped mark in white apical cilia." [Translated from the Japanese text, vol. 1, p. 187.]

"Closely related to *A. scandalota* Meyrick of India, but differs from it in having the obscure dark cloudy shading in whitish patch at 3/4 on dorsum of forewing." [Vol. 2, p. 450.]

Additional description: ♂ ♀. Expanse of wings: 6.0-9.0 mm (7.82 mm in average of 20 specimens). Length of fore wing: 3.0-4.5 mm (3.85 mm in average of 20 specimens).

Face and head white, the latter becoming grayish posteriorly. Palpi whitish to grayish, much darker laterally in maxillary palpus, apically in 2nd segment of labial palpus, and narrowly ventrally in the 3rd segment. Antenna dark fuscous throughout; scape with a narrow, whitish dorsal stripe. Thorax ochre-yellowish to ochre-

grayish dorsally and dark fuscous ventrally, with tegulae dark fuscous. Legs grayish fuscous to dark fuscous; fore coxa and femur and middle femur longitudinally striped with ochre-white along mesal or lower edges rather narrowly; middle tibia with a whitish subapical ring; hind coxa and femur whitish laterally, the former with a longitudinal, fuscous median stripe, the tibia medianly whitish on lateral surface, with upper bristly scales ochre-yellowish; all tarsal segments apically ringed with white narrowly. Abdomen dark fuscous dorsally and whitish ventrally; each segment with a fuscous, oblique lateral stripe; anal extremity blackish.

Fore wing dark fuscous with purplish iridescence in ground; a narrow ochre-whitish to ochre-yellowish streak running along dorsum from base to basal 2/3, occupying nearly 1/3 breadth of wing, but slightly widened near its apex; a semicircular, similar blotch situated at tornus, set close to or narrowly connected with the dorsal streak, far detached from costa of wing, with an irregular dark shade in its centre; 2 or 3 whitish spots on termen beyond the tornal blotch; a white, narrow curved line situated in disc near and along outer margin of the tornal blotch, surrounded by black, sometimes reaching costa of wing; a similar line obliquely crossing wing near apex, widely margined with black on both inner and outer sides; a white spot at apex of wing, extending onto costal cilia, followed by a blackish basal line of apical cilia; cilia gray, basally whitish along termen, dashed with black beneath apex of wing, this dash forming a V-shape together with basal line of apical cilia. Hind wing and its cilia gray.

Male genitalia (Fig. 9: A-E): Tegumen spatulate or elongate-oblong in ventral view, with a weakly sclerotized transverse band crossing centre of ventrum, then a narrow prominence projected from middle of this transverse band towards anus; 3 or 4 irregular rows of fine setae along lateroventral margins caudad of median transverse band. Valva a little longer than tegumen, gradually narrowing towards apex though rather slender on the whole, usually bent near apex, densely covered with fine setae on inner surface from apex to apical 3/5; sacculus well lengthened basally, round at basal extremity, with a tuft of 10-20 long, slender androconial scales on outer surface. Vinculum with very long lateral arms; saccus elongate-triangular, slightly constricted near apex. Aedeagus a little shorter than valva, tubular, pointed apically, with 2 rows of 8-12 serrations near apex; vesica with a bundle of dense, needle-shaped cornuti near base of aedeagus; ductus ejaculatorius about twice as long as aedeagus, J-shaped. Eighth abdominal segment shorter than 7th, deeply notched ventrally, with dorsocephalic apodeme slender and widened basally. (Three slides examined.)

Female genitalia (Fig. 9: F): Papilla analis rather long, acuminate posterodorsally, covered with microspines and usual slender setae, of which 3 or 4 on dorsocaudal margin are little thicker; apophysis posterioris slender, rather long, slightly shorter than apophysis anterioris. Ostium bursae very small; antrum shortly sclerotized, cup-shaped; ductus bursae long, slender, tubular, lined with granules on a short area beyond ductus seminalis and again on a long area from middle to cephalic end; corpus bursae rather large, ovate or ellipsoidal, membranous, with a signum of large plate, which is an aggregation of star-like carinulae radiating from a number of horn-shaped projections and occupies about 2/3 surface of the corpus bursae. (Five slides examined.)

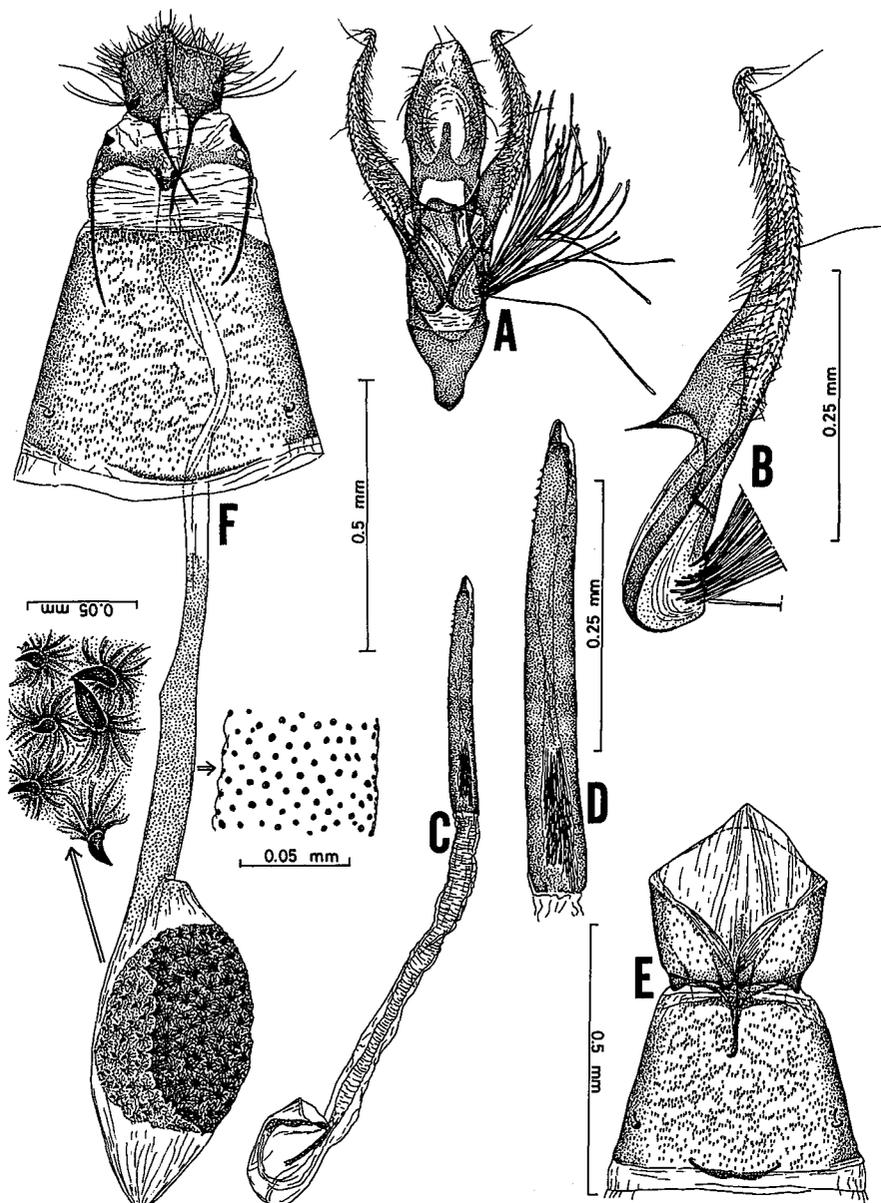


Fig. 9. *Psydrocerops wisteriae* (Kuroko). A: Male genitalia in caudal view, aedeagus omitted [Grc-1896, Kozagawa, Wakayama-ken, em. 9/x/1974, ex *Wisteria floribunda* (1326)] — B: Right valva enlarged [ditto] — C: Aedeagus [ditto] — D: Aedeagus enlarged [ditto] — E: Male 7th and 8th abdominal segments in ventral view [ditto] — F: Female genitalia in ventral view [Grc-1898, Kozagawa, Wakayama-ken, 8/x/1974, ex *W. floribunda* (1326)].

Specimens examined: 45 ♂♂ & 55 ♀♀. HONSYŪ — 11 ♂♂ & 11 ♀♀, Nisinasuno, Totigi-ken, em. 17-25/x/1975, ex *Wisteria floribunda* (1629); 4 ♂♂ & 3 ♀♀, Kisohukusima, Nagano-ken, em. 11-15/x/1975, ex *W. floribunda* (1526); 18 ♂♂ & 26 ♀♀, Todai, Ina, Nagano-ken, em. 13-20/x/1975, ex *W. floribunda* (1584); 10 ♂♂ & 12 ♀♀, Kozagawa, Wakayama-ken, em. 7-15/x/1974, ex *W. floribunda* (1315); 1 ♂, ditto, em. 3/x/1974, *W. floribunda* (1326). KYŪSYŪ — 2 ♀♀, Takakumayama, Kagosima-ken, em. 1/vii/1965, ex *W. floribunda*. U.S.S.R. — 1 ♂, Vladivostok, 25/ix/1974, Ermolaev leg.

Distribution: Japan (Honsyū; Sikoku; Kyūsyū); and U.S.S.R. (Far East).

Food plant: *Wisteria floribunda* DC. (Leguminosea).

V. GENUS ACROCERCOPS WALLENGREN

Acrocercops Wallengren, 1881, Ent. Tidschr. 2: 95; Meyrick, 1912, Genera Ins. fasc. 128: 14 (part); Ely, 1917, Proc. Ent. Soc. Washington 19: 40; Vári, 1961, Transvaal Mus. Mem. 12: 146 (part); Kuznetsov, 1979, Rev. Ent. U.R.S.S. (Ent. Oboz.) 58: 851.

Type-species: *Tinea brongniardella* Fabricius, 1798.

♂♀. Face and head smooth-scaled, neckplumes appressed; ocelli absent; proboscis moderately developed, naked. Labial palpus rather long, slender, upturned; 2nd segment with a long to moderate tuft of scales below in most species including type-species or entirely smooth-scaled in a few species belonging to *leucophaea*-complex; apical segment entirely smooth, pointed apically, 1-1.2 times as long as the 2nd. Maxillary palpus porrect, short, about half as long as apical segment of labial palpus, smooth-scaled or slightly roughened. Antenna filiform, simple, 1.2-1.5 times as long as fore wing; scape slightly thickened, simple, without a pecten or tuft. Thorax smooth-scaled, without a crest. Legs long, rather slender; fore and middle tibiae slightly thickened apically; hind tibia and basal half of 1st tarsal segment with a row of bristly scales above, the scales on tarsus being shorter than those on tibia; basal pair of hind tibial spurs placed at basal 1/4-1/3; hind tarsus 1.1-1.2 times as long as hind tibia.

Fore wing narrowly lanceolate, pointed or acuminate apically; discoidal cell long, occupying about basal 3/4 of wing, nearly parallel-sided on most part, bluntly pointed or obliquely truncated distally, with upper vein obsolescent on proximal part far basal to a point where the vein R_1 arises; 13-veined; R_1 distinct, arising from basal 1/3 of cell and ending on costa at middle of wing; R_2 from upper angle of cell; R_3 freely from distal margin of cell; R_4 free or connate with R_5 ; M_1 and M_2 connate with each other at base and arising from apex of cell in most species including type-species, rarely freely from cell or stalked shortly; M_3 near apex of cell or rarely connate with M_2 ; Cu_{1a} apart from M_3 , usually basal to level of R_2 ; Cu_{1b} obsolescent basally, probably apart from Cu_{1a} ; Cu_2 distinct on apical part alone, ending in dorsal margin near Cu_{1b} ; An straight or slightly arched, connected with dorsal margin of wing at basal 1/5. Hind wing very narrow, long-pointed, 2/3-1/2 as wide as and about 5/6 as long as fore wing, with cell opened between M_2 and M_3 ; 7-veined; Rs simple, M_1 and M_2 stalked, M_3 stalked with Cu_{1a} , with their common stem arising from Cu_{1b} , and Cu_2 and An invisible; cilia long, 4-5 times of wing-width.

Male genitalia: Tegumen moderate to long, oblong or spatulate in ventral view, not squamose dorsally, sparsely setose on lateral side apically, the setae being fine or rarely bristly; tuba analis usually with a weakly sclerotized slender subscaphium.

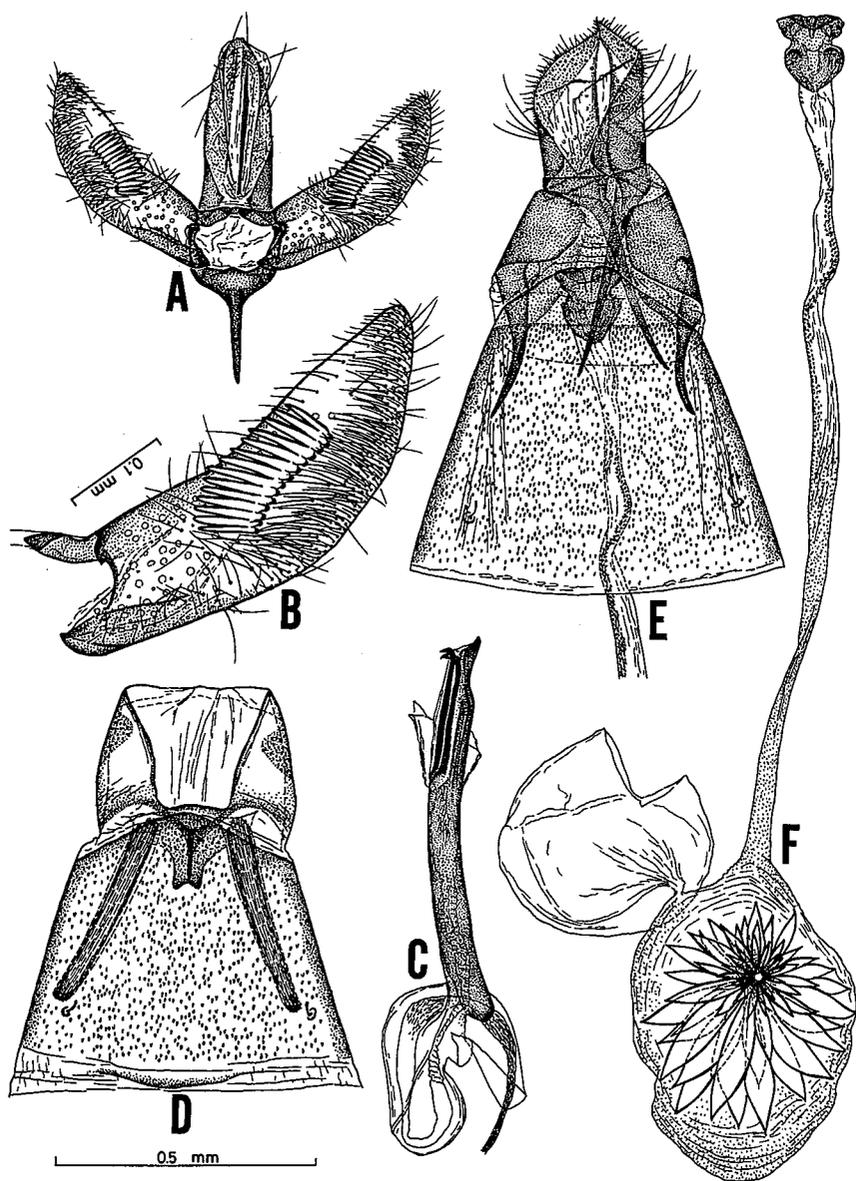


Fig. 10. *Acrocercops brongniardella* (Fabricius). A: Male genitalia in caudal view, aedeagus omitted [Grc-3076, Austria, em. 3/viii/1957, ex *Quercus robur*, J. Klimesch leg.] — B: Right valva enlarged [ditto] — C: Aedeagus [ditto] — D: Male 7th and 8th abdominal segments in ventral view [ditto] — E: Female genitalia in ventral view, apical part of bursa copulatrix omitted [Grc-3075, Berlin, em. 31/vii/1940, ex *Q. robur*, E. Hering leg.] — F: Bursa copulatrix [ditto].

Valva rather narrow, moderate to long, slightly curved, with a long comb on discal area of inner surface, the comb being $1/2$ - $1/3$ as long as valva and bearing apically truncated short teeth; rather dense and fine setae occurring on inner surface mostly along dorsal margin; long and linear androconial scales scattered on outer surface

near base or aggregated in a thick bundle in some species. Vinculum Y-shaped, more or less widened ventrally, with a moderate to long saccus. Diaphragma membranous, without any particular sclerite. Aedeagus long, tubular, rarely with a narrow subapical projection; vesica with cornuti various in shape; ductus ejaculatorius shorter than aedeagus, usually once coiled, round distally. Eighth abdominal segment deeply and widely notched ventrally, dorsally with an anterior apodeme moderate to long, shortly bifucate apically in most species, median sclerotization of the apodeme being caudally T- or Y-shaped and not extending onto tergum; a pair of long invaginations on sternum anteriorly, containing long linear scales (coremata) in some species including type-species or totally empty; in a few species belonging to *leucophaea*-complex, the ventral invaginations absent. Seventh abdominal segment normal as in preceding segments.

Female genitalia: Papilla analis moderate to long, dorsally acute in some species including type-species or blunt, ventrally blunt in most species, setose as usual; apophysis posterioris short to long, usually widened basally. Eighth abdominal segment short to moderate, sclerotized dorsally, membranous ventrally, with apophysis anterioris as long as or a little shorter than apophysis posterioris. Ostium bursae opened on ventrum of 8th abdominal segment, small to moderate in opening size; antrum usually weakly sclerotized, various in shape; ductus bursae long, narrow, tubular, membranous or partly sclerotized, shagreened on most part; corpus bursae ellipsoidal, globular or elongate-pyriform, membranous, faintly shagreened on most part in most species, with a globular accessory sac in a few species including type-species; signa usually paired, minute and surrounded by many lanceolate sclerites of various lengths in most species, or elongatedly bar-like and bearing many strong thorns in *A. distylii* sp. nov.

Body chaetotaxy of last instar larva (Figs. 44: D; and 45): Second abdominal segment with 3 subventral setae; 9th abdominal segment with 6 or rarely 5 tactile setae and 1 proprioceptor, the setae SD2, L2, L3, SV2, SV3 and rarely V1, and proprioceptor MV3 being absent. The other setal pattern is very similar to that of the preceding genus *Psydrocercops*.

Arrangement of crochets (Fig. 46: E): As in the preceding genus *Psydrocercops*.

Larval habit: All the species belonging to this genus are leaf-miners in the larval stage, the mine being found on the upper surface of the leaf in most species including the type-species (on the lower surface in *A. querci* sp. nov.). The mine is similar to that of *Eteoryctis* and *Psydrocercops* in shape, started in a narrow, irregularly curved epidermal gallery, then suddenly broadened into a large, blister-like blotch. It is usually transparent or whitish, sometimes irregularly discoloured into brown by the frass deposited in the mine-cavity. The leaf-epidermis of the mining part is sometimes contorted by threads to form a tentiform mine, especially strongly in *A. querci*. When full-grown, the larva leaves the mine for a pupating site through a semicircular slit made on either side of the weakened leaf-epidermis. The cocoon is found on leaves neighbouring the mined leaf, boat-shaped, with a few, usually 2, minute bubbles on the surface. The full-grown larva is reddish in body colour.

Remarks: The genus *Acrocercops* is here understood according to Kuznetsov (1979). It is well characterized by the combination of the following characters, with a few exceptions: — Labial palpus with 2nd segment tufted below with moderate to

long scales; antennal scape simple, without any pecten or tuft; veins R_5 , M_1 and M_2 of fore wing connate or approximate basally and arising from apex of more or less lanceolate discoidal cell; valva of male genitalia with a long comb on disc of inner surface; corpus bursae of female genitalia with a pair of signa surrounded by many lanceolate sclerites; prothorax of last instar larva with seta XD2 absent; and 2nd abdominal segment of larva with 3 subventral setae. Among these characters the long valval comb and the signa with radiating lanceolate sclerites are the most remarkable.

Besides the type-species and the 7 Japanese species described below, *A. strophiaula* Meyrick, 1935, *A. cornicina* Meyrick, 1908, *A. leucophaea* Meyrick, 1919, *A. defigurata* Meyrick, 1928, *A. amurensis* Kuznetzov, 1960, and *A. cocciferella* (Chretien, 1911) are undoubtedly members of the genus *Acrocercops* as here understood. Although many other species were described under the genus *Acrocercops*, most of them seem to be referred to other genera; for example, Vári (1961) enumerated 17 South African species under *Acrocercops*, but all of these species should be transferred to *Dialectica* and others.

So far as known, the species of *Acrocercops* are mostly associated with Fagaceae and exceptionally with Theaceae (*A. strophiaula*), Hamamelidaceae (*A. distylii* sp. nov.), Ericaceae (*A. transecta* and *A. leucophaea*) and Juglandaceae (*A. transecta*, *A. leucophaea* and *A. defigurata*).

Key to the Japanese species of *Acrocercops*

1. Second segment of labial palpus smooth-scaled, without a scale-tuft below; aedeagus with an apically acute and basally bifurcated apical projection, and with a pair of hook shaped and 1 to 4 pairs of corniform cornuti placed near apex (Fig. 23); female antrum large pitcher-shaped (Fig. 25: G-H); leaf-miner on Ericaceae (*Lyonia*) and Juglandaceae (*Juglans*, *Carya*, *Platycarya* and *Pterocarya*). *A. transecta* Myrick
- Second segment of labial palpus tufted with scales below; aedeagus with other type of apical projections and cornuti; female antrum small cup-shaped, short tubular or large cask-shaped. 2
2. Fore wing with 3 tufts of raised and black-tipped scales on dorsal margin, the ground colour ochre-yellow or ochre-brown, with ill-defined, narrow, outwardly oblique white-ochreous fasciae in middle and at apical 1/4; male valva near base with a long eversible pocket containing a bundle of long linear androconial scales; aedeagus apically hook-shaped, with a long apical projection and 2 long and 3 short curved cornuti placed near apex (Fig. 19: A-B); female antrum large cask-shaped (Fig. 19: D); leaf-miner on Fagaceae (*Quercus*). *A. unistriata* Decheng
- Fore wing at most with a single tuft of raised scales near base of dorsal margin, and with other colour-pattern; male valva without any pocket near base; aedeagus with other type of cornuti and without apical projection; female antrum short tubular or cup-shaped. 3
3. Fore wing ochreous with a grayish tinge in ground colour, with 3 white costal strigulae and 3 blackish costal marks, 1st blackish blotch elongated along costa at base, 2nd blackish patch in middle and 3rd blackish spot at apical 1/5; aedeagus bifurcated on apical 1/3, one prong a little longer than another and slightly capitate; minute cornuti arranged in a short double row (Fig. 14: D); female signa long bar-shaped and spiniferous on whole length (Fig. 15: A); leaf-miner on Hamamelidaceae (*Distylium*). *A. distylii* Kumata et Kuroko, sp. nov.
- Fore wing with other markings; aedeagus narrowed towards acute apex, not bifurcated; female signa small circular, surrounded by many lanceolate sclerites. 4
4. Fore wing brilliant ochre-yellowish or ochre-brownish, with 2 large discal or dorsal blotches placed before and beyond middle, a small or sometimes large discal spot in centre, a small white costal spot or streak at basal 1/3, and a very oblique white costal line near

- apex, the last white line being sandwiched between upper and lower conspicuous black lines; male tegumen with 4-7 pairs of very strong, bristly lateral setae near apex; valva elongated and shell-shaped, on outer surface with a group of fine scales, of which the basal sockets are each surrounded by a circular carina; female antrum very weakly sclerotized and moderately long tubular; ductus bursae partly knobbed near caudal end, shagreened except for knobbed area; leaf-miner on Fagaceae (*Castanopsis*). . . . *A. mantica* Meyrick
- Fore wing with other markings; male tegumen with slender lateral setae near apex; valva slender, on outer surface with normal basal sockets of androconial scales; female antrum well-sclerotized and short cup-shaped or weakly sclerotized and tubular, in the latter case the ductus bursae shagreened on whole length. 5
5. Fore wing pale yellow-ochreous suffusedly irrorated with brownish or fuscous scales in ground, with a costal spot near base, a transverse fascia at basal 1/5, 2 costal strigulae at basal 1/3 and 2/3, a dorsal strigula in middle, and 2 to 4 spots around apex, all white and distinctly margined with black; male valva on outer surface with a semiglobular protuberance bearing long androconial scales densely; aedeagus with a small finger-like projection at apical 1/3 (Fig. 13: D); female antrum cup-shaped (Fig. 12: B); leaf-miner on Fagaceae (*Quercus*). *A. querci* Kumata et Kuroko, sp. nov.
- Fore wing at first sight whitish in ground colour; male valva without any protuberance on outer surface; aedeagus without finger-like projection; female antrum tubular or well-sclerotized and cup-shaped. 6
6. Fore wing white in ground, with 3 ochre-brownish blotches placed at base, before middle and at apex, and also with 2 blackish costal strigulae or spots beyond middle and at apex; male valva with long comb extending from basal 1/4 to 3/4 of valva; aedeagus with a pair of double rows of spines near apex besides a group of needle-shaped cornuti (Fig. 16: D); female antrum weakly sclerotized and tubular (Fig. 15: C); ductus bursae with a pair of sclerotized lobes near caudal area; leaf-miner on Fagaceae (*Quercus*). *A. vallata* Kumata et Kuroko, sp. nov.
- Fore wing pale orange-yellow on costal side and whitish on dorsal side in ground, with a white costal spot placed near base, 3 white costal strigulae or fasciae at basal 1/4, in middle and at basal 3/4, and also with 3 blackish costal spots at subbase, beyond middle and at subapex; male valva with a rather short comb placed on apical 1/3 of valva; aedeagus with a bundle of many long cornuti which are basally confluent with each other to form a short tube (Fig. 11: D); female antrum well-sclerotized and short cup-shaped; ductus bursae long, tubular, without any lobe (Fig. 12: A); leaf-miner on Fagaceae (*Castanopsis*). *A. melanoplecta* Meyrick

8. *Acrocercops melanoplecta* Meyrick

[Figs. 11, 12(A), 34(G-H), 41(B), 44(D) and 49(A-B)]

Acrocercops melanoplecta Meyrick, 1908, Journ. Bomb. Nat. Hist. Soc. 18: 823 [India (Khasi Hills)].

Original description: "♂ ♀. 9-10 mm. Head yellow-whitish. Palpi white, second joint with upper edge blackish, and beneath with rather long projecting scales towards apex mixed with blackish. Antennae whitish spotted with gray. Thorax pale whitish-yellowish. Abdomen whitish-ochreous tinged with grey, beneath white with lateral series of oblique grey lines. Legs white, banded with pale ochreous and indistinctly ringed with blackish, apex of anterior and middle tibiae banded with black. Forewings very narrowly elongate-lanceolate, apex long-pointed, acute; yellowish-white, with scattered yellow-ochreous scales and transverse strigulae; an elongate black spot along costa about 1/4; a very oblique triangular yellow-ochreous spot from costa about 2/3, sometimes marked with a black dot; an elongate yellow-ochreous spot along apical portion of costa, marked anteriorly with a black dot: cilia yellow-whitish, at apex with two or three dark grey hooks. Hindwings and cilia grey or pale grey."

Additional description: ♂ ♀. Expanse of wings: 7.0-10.8 mm (8.7 mm in average of 21 specimens). Length of fore wing: 3.4-5.3 mm (4.3 mm in average of 21

specimens).

Face white, grayish at lateral margins; head whitish, posteriorly tinged with yellow. Maxillary palpus rather rough-scaled, fuscous. Labial palpus whitish; 2nd segment grayish to fuscous laterally, beneath with a moderately long tuft of fuscous scales. Antenna about 1.5 times as long as fore wing, grayish, faintly annulated with pale colour; scape and following 1 or 2 segments whitish, the former smooth-scaled and ringed with black at apex. Thorex pale yellowish anteriorly and whitish posteriorly, irrorated with ochreous scales which form a transverse band in most specimens; pleural surfaces silvery-white, with 1 or 2 oblique fuscous stripes. Legs as described originally; fore and middle tibiae apically ringed with blackish spreading scales. Abdomen dark grayish dorsally, whitish ventrally, with a series of oblique fuscous bands; posterior segment wholly dark grayish.

Fore wing with a tuft of raised scales near base of dorsal margin; ground colour pale orange-yellowish, more or less whitish towards dorsal margin, with white fasciae or strigulae which are conspicuous on costal half and hinted their presence only by their brownish marginal lines on dorsal half in most specimens; a white spot on costa near base; a white fascia oblique inwardly from basal 1/4 of costa, becoming wider towards dorsal margin; interspace between these white marks distinctly blackish along costa of wing; a white fascia strongly oblique outwardly from middle of costa, sometimes bent outwardly in disc of wing and extending along dorsal and terminal margins towards apex of wing; a white narrow strigula oblique outwardly from basal 3/4 of costa, usually confluent with white apical area of wing, and distinctly margined with black irrorations on its inner and outer margins; a small round black spot placed in centre of elongate costal patch of ground colour near apex of wing; cilia around apex of wing white, with 2 oblique, blackish hooks, those along termen gray-brownish basally and pale grayish apically, with a subapical blackish line perpendicular to wing-apex, and those along dorsal margin gray, mixed with short whitish hairy scales. Hind wing dark gray, with cilia gray.

Male genitalia (Fig. 11): Tegumen rather slender, spatulate in ventral view, slightly narrowed around premedian area, emarginate at apex, sclerotized laterally, with 8-15 pairs of long, slender setae arranged along lateral margins from apex to apical 1/5; tuba analis with a slender subscaphium. Valva a little longer than tegumen, rather slender, slightly widened basally, round apically, on inner surface with a straight comb of 35-49 short teeth arranged obliquely in disc of apical 1/3 of valva and with fine setae scattered on apical and ventral areas; outer surface with rather dense, moderately long androconial scales on basal 4/5 of valva. Vinculum Y-shaped, with saccus slender and as long as or a little longer than valval comb. Aedeagus about 1.2 times as long as valva, tubular, acutely pointed apically; vesica with a bundle of many long cornuti which are confluent basally to form a tube; ductus ejaculatorius rather short and curved. Eighth abdominal segment a little shorter than the 7th, deeply notched ventrally; dorsocephalic apodeme about 3/4 as long as 7th segment, capitate apically, widened basally, with its narrow median sclerotization bifurcated caudally to form a Y-shape; a pair of ventral invaginations containing a large tuft of long scent scales (coremata), which are 1.2 to 1.7 times as long as 7th abdominal segment. (Six slides examined.)

Female genitalia (Fig. 12: A): Papilla analis rather small, covered with fine setae and microspines only on its caudal area; apophysis posterioris slender, rather

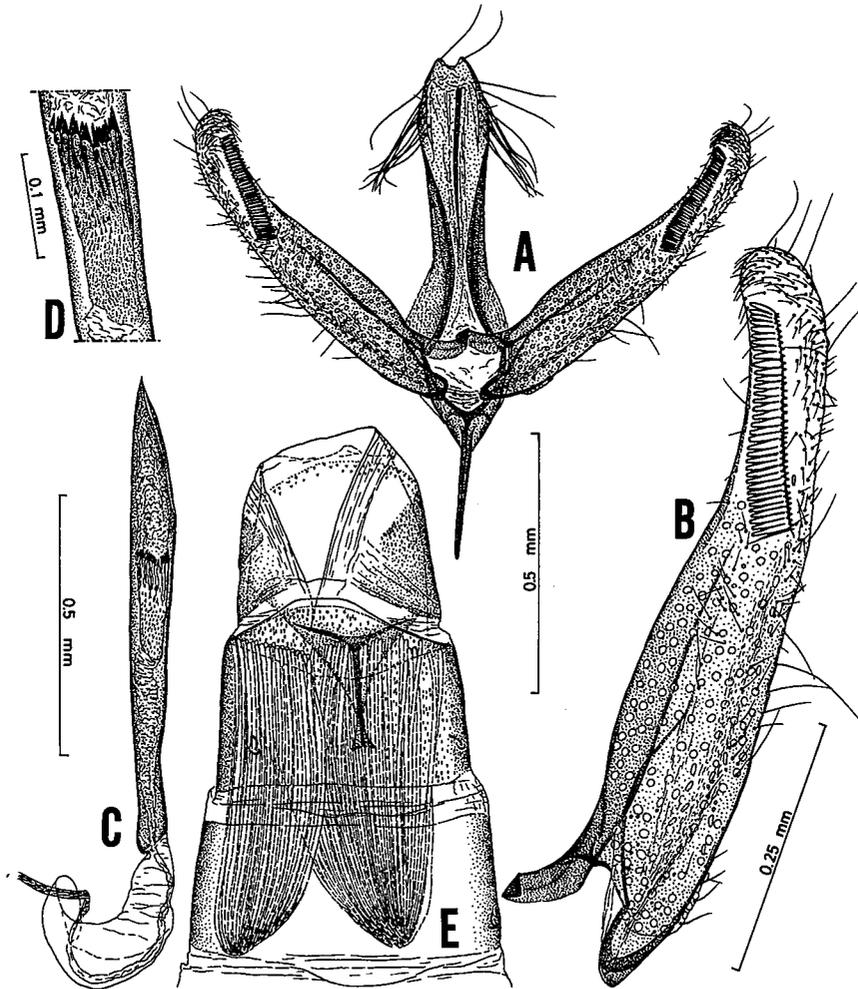


Fig. 11. *Acrocerops melanoplecta* Meyrick. A: Male genitalia in caudal view, aedeagus omitted [Grc-1605, Kozagawa, Wakayama-ken, em. 6/vi/1964, ex *Castanopsis cuspidata* (655)] — B: Right valva enlarged [ditto] — C: Aedeagus [ditto] — D: Cornuti enlarged [ditto] — E: Male 6th to 8th abdominal segments in ventral view [ditto].

short, about as long as apophysis anterioris. Ostium bursae small in opening size; antrum very short, tubular or cup-shaped; ductus bursae long, slender, membranous, shagreened throughout except on a short caudal area; corpus bursae globular or pyriform, with a pair of signa surrounded by many lanceolate sclerites of various sizes. (Five slides examined.)

Specimens examined: 22♂♂ & 26♀♀. HONSHU — 2♀♀, Amagi, Sizuoka-ken, em. 28/vii/1971, ex *Castanopsis cuspidata* (1098); 6♂♂ & 4♀♀, Kozagawa, Wakayama-ken, em. 3-9/vi/1964, ex *C. cuspidata* (655); 6♀♀, ditto, em. 8-17/vi/1970, ex *C. cuspidata* (1035); 1♀, ditto, em. 14/x/1974, ex *C. cuspidata* (1285); 1♀, ditto, 23/ix/1974. TUSIMA — 5♂♂ & 5♀♀, Tatura-yama, Izuhara, em. 6-13/xi/1979, ex *C. cuspidata* (2031); 3♂♂ & 2♀♀, Ōbosi-yama, Mine, em. 10-14/xi/

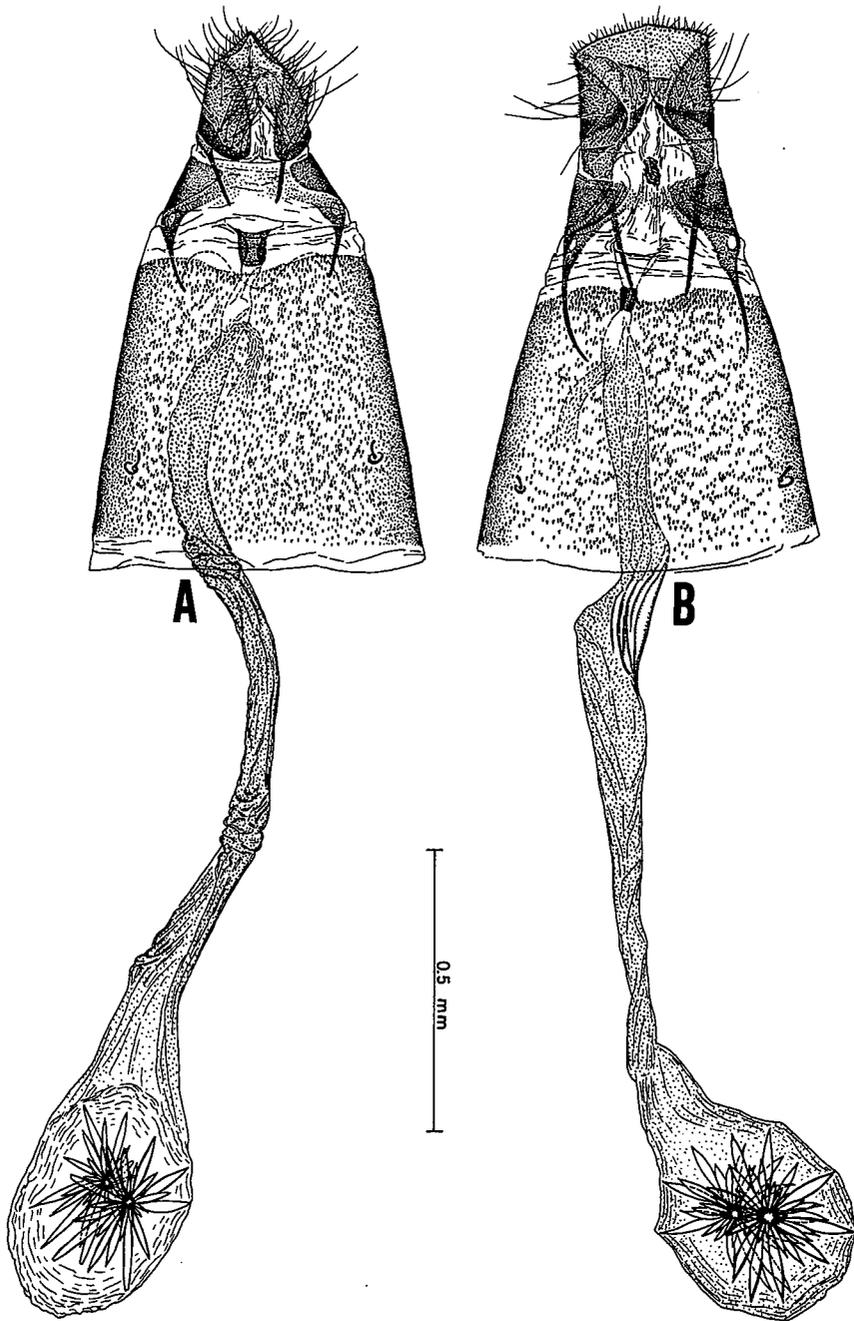


Fig. 12. A: *Acrocercops melanoplecta* Meyrick, female genitalia in ventral view [Grc-1606, Kozagawa, Wakayama-ken, em. 10/vi/1970, ex *Castanopsis cuspidata* (1035)].
B: *Acrocercops querci* Kumata et Kuroko, sp. nov., female genitalia in ventral view [Grc-1959, Kozagawa, Wakayama-ken, em. 8/x/1974, ex *Quercus glauca* (1298)].

1979, ex *C. cuspidata* (2089); 1♂, Toyo, Kamitusima, 17/x/1979, K. Yasuda leg. NANSEI IS. — 3♂♂, Mugiō, Yaku-sima, em. 13/x/1973, ex *C. cuspidata* (1184). TAIWAN — 1♂ & 2♀♀, Jihyuetan (alt. 900 m), Nantou, em. 5-10/vii/1979, ex *C. hystrix* (1825). NEPAL — 2♂♂ & 1♀, Godawari (alt. 1500-2000 m), Bagmati, em. 25/vii, 28/ix, and 13/x, 1983, ex *C. tribuloides* (Npl-176, 557, and 661); 1♂ & 2♀♀, Mulkharka (alt. 2000 m), Bagmati, em. 2-5/x/1983, ex *C. tribuloides* (Npl-682).

Distribution: Japan (Honsyū; Tusima; Nansei Is.); Taiwan (new record); India (Khasi Hills); and Nepal (new record).

Food plants: *Castanopsis cuspidata* Schottky in Japan; *C. hystrix* DC. in Taiwan; and *C. tribuloides* DC. in Nepal; all belonging to Fagaceae.

Remarks: The present identification is based on a comparison with the type in external characters. This species is characterized by the pale orange-yellow fore wing with 3 blackish costal spots at subbase, beyond middle and at preapex besides white strigulae or fasciae. It may be distinguished from any other species of the genus *Acrocercops* by the short comb situated on apical 1/3 of the valva and by the aedeagus with many long cornuti which are confluent basally to form a short tube.

9. *Acrocercops querci* Kumata et Kuroko, sp. nov.

[Figs. 12(B), 13, 35(A-B) and 41(C)]

♂♀. Expanse of wings: 7.0-9.8 mm (9.8 mm in holotype, 8.6 mm in average of 14 specimens). Length of fore wing: 3.4-4.8 mm (4.8 mm in holotype, 4.2 mm in average of 15 specimens).

Face and head whitish, the latter posteriorly gray-ochreous. Maxillary palpus more or less rough-scaled, grayish or fuscous. Labial palpus whitish; 2nd segment laterally grayish or fuscous, with moderately long fuscous scales projecting below; apical segment beneath with a narrow fuscous stripe. Antenna 1.5-1.7 times as long as fore wing, ochre-grayish throughout; scape smooth-scaled, whitish, with a fuscous apical ring. Thorax ochre-brownish, mixed with dark fuscous scales rather densely and whitish ones sparsely, while in a few specimens the median area is widely whitish; pleural surface white, with 2 oblique fuscous stripes. Legs whitish; fore coxa with 2 fuscous spots in middle and near apex; anterior 4 femora and tibiae almost wholly fuscous, with 1 or 2 ill-defined whitish bands; hind coxa with a narrow, oblique fuscous band near apex, the femur with a fuscous blotch in centre, and the tibia rather widely fuscous near apex and base, with its upper bristly scales grayish; all tarsi with 5 rather narrow blackish rings, which are sometimes discoloured into pale brown in hind tarsus. Abdomen dorsally dark gray, and ventrally silk-white with 4 oblique fuscous bands; anal extremity pale grayish in male and ochre-brownish in female.

Fore wing with a small tuft of raised scales near base of dorsal margin, the tuft being variable in colour, whitish, brownish or blackish (blackish in holotype); ground colour pale yellow-ochreous, usually irrorated or darkened by brownish or fuscous colour except on narrow area bordering on white markings, which are distinctly margined with black; a minute white spot near base of costa, always preceded and followed by ill-defined costal blotches of fuscous irrorations; a white fascia at basal 1/5, usually much widened towards dorsum, large triangular in most specimens, while in holotype and some others it is constricted or interrupted at the wing-fold; a white costal strigula oblique outwardly from basal 1/3 of wing, with its

acute apex bent outwardly and followed by an indistinct blackish spot placed in middle of wing near costa ; a narrower white costal strigula at basal 2/3, oblique outwardly ; a wide white dorsal strigula oblique outwardly from middle of wing, and shortly bent outwardly in disc ; 2 to 4 white spots scattered along termen between tornus and subapex of wing ; a small, round white spot in disc near apex of wing, below bordered with a lunar, black apical mark ; cilia around apex of wing grayish basally and whitish apically, with 2 short blackish hooks, those along termen pale grayish, mixed with short, whitish hairy scales, with 2 curved, darker apical and subapical lines, and those along dorsal margin ochre-grayish. Hind wing dark gray, with cilia ochre-grayish.

Male genitalia (Fig. 13) : Tegumen elongate-spatulate in ventral view, nearly parallel-sided, well sclerotized laterally, with 7-10 pairs of slender setae arranged along lateral margins near apex ; tuba analis covered with dense microspines on ventral surface anterior to subscaphium, which is rather short and narrow. Valva a little longer than tegumen, slenderer towards blunt apex, very slightly curved ; inner surface with a long comb of 45-55 short teeth placed on apical 2/5 of valva in parallel with ventral margin, and with fine setae around apex and ventral area ; outer surface with a large, more or less semiglobular protuberance in central area, the protuberance densely bearing long androconial scales, which are also scattered on basal area of valva. Vinculum Y-shaped, with saccus slender and a little longer than valval comb. Aedeagus about 1.5 times as long as valva, slightly curved, tubular, narrowed towards acute apex, with a small, finger-shaped projection at apical 1/3 ; vesica with a bundle of 10-15 moderately large needle-shaped cornuti and a series of many microspinous cornuti ; ductus ejaculatorius short, coiled. Eighth abdominal segment short, about 1/2 as long as the 7th, widely cleft on ventrum ; dorsocephalic apodeme nearly as long as 8th segment, capitate apically, widened basally, with its median sclerotization T-shaped ; a pair of ventral invaginations containing long coremata, which is about 3 times as long as 7th abdominal segment. (Three slides examined.)

Female genitalia (Fig 12 : B) : Papilla analis rather elongate, much longer than 8th abdominal segment, covered with microspines densely and usual fine setae sparsely ; apophysis posterioris long, slender, a little longer than apophysis anterioris. Ostium bursae moderate in opening size, without genital plate ; antrum short, tubular or cup-shaped ; ductus bursae long, tubular, more or less knobbed at caudal 2/5, shagreened throughout except on knobbed part and caudal area ; corpus bursae globular or pyriform, shagreened, with a pair of signa surrounded by many lanceolate sclerites of various sizes. (Four slides examined.)

Specimens examined : 8♂♂ & 8♀♀. Holotype : ♂, Kozagawa, Wakayama-ken, Honsyū, em. 5/x/1974, ex *Quercus glauca* (1298), Gen. sl. no. Grc-1957. Paratypes : HONSYŪ — 1♂, Nati, Wakayama-ken, 27/v/1964 ; 5♂♂ & 6♀♀, Kozagawa, Wakayama-ken, em. 5-15/x/1974, ex *Q. glauca* (1298) ; 1♂ & 2♀♀, ditto, em. 11/x/1974, ex *Quercus* sp. (1321).

Distribution : Japan (Honsyū).

Food plants : *Quercus* spp. including *Q. glauca* Thunb. (Fagaceae).

Remarks : This new species is somewhat similar to *A. melanoplecta* Meyrick especially in female genitalia, but it can easily be distinguished from the latter by the longer apophyses and by the presence of the non-shagreened and knobbed area of the ductus bursae in female as well as by the quite different colour-pattern and male

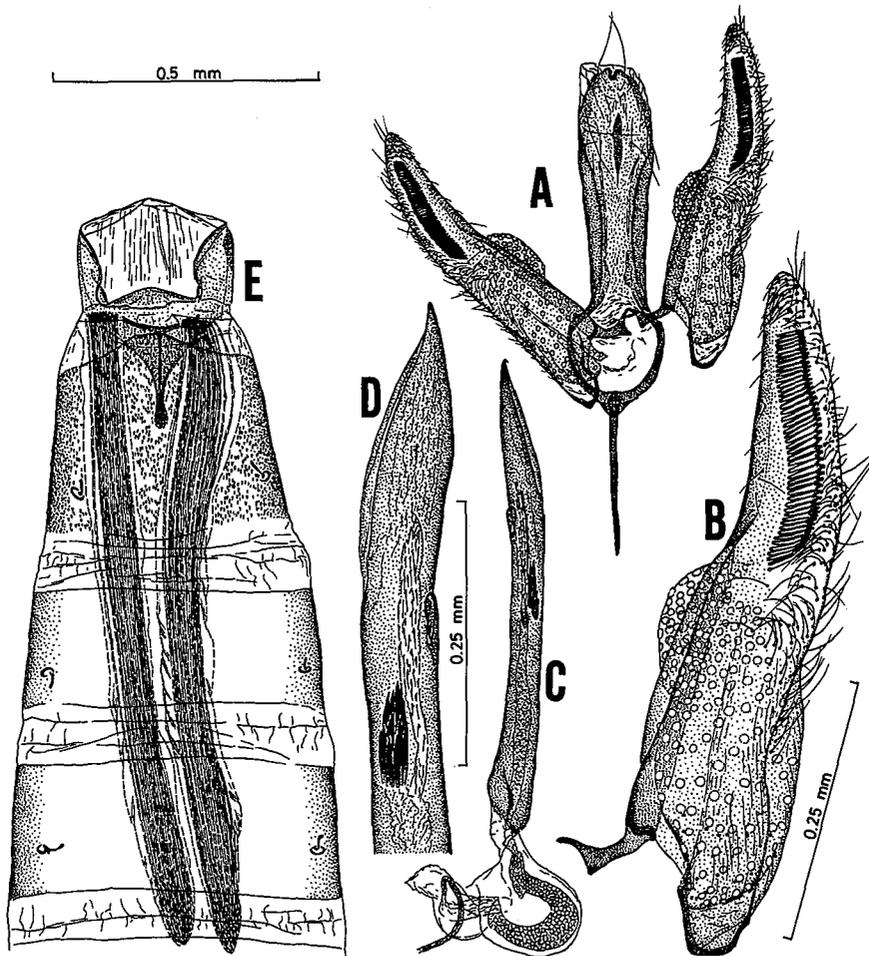


Fig. 13. *Acrocercops querci* Kumata et Kuroko, sp. nov. A: Male genitalia in caudal view, aedeagus omitted [Grc-1957, holotype] — B: Right valva enlarged [ditto] — C: Aedeagus [ditto] — D: Apical part of aedeagus enlarged [Grc-1958, Kozagawa, Wakayama-ken, em. 5/x/1974, ex *Quercus glauca* (1298)] — E: Male 5th to 8th abdominal segments in ventral view [ditto].

genitalia.

10. *Acrocercops distyllii* Kumata et Kuroko, sp. nov.

[Figs. 14, 15(A-B), 35(C-D), 39(E), 41(D), 45(B), 46(E) and 48(D-E)]

♂ ♀. Expanse of wings: 8.5–11.0 mm (10.2 mm in holotype, 9.7 mm in average of 21 specimens). Length of fore wing: 4.2–5.5 mm (5.0 mm in holotype, 4.8 mm in average of 21 specimens).

Face white; head gray-ochreous. Maxillary palpus rough-scaled, fuscous basally and whitish apically. Labial palpus white; 2nd segment fuscous laterally, beneath with a moderately long tuft of blackish scales; apical segment slender,

upcurved, beneath with a narrow fuscous stripe on apical half. Antenna 1.5 to 1.8 times as long as fore wing, dark fuscous, faintly annulated with pale colour; scape smooth, brownish above, white below, with a blackish apical ring. Thorax gray-brownish, usually darker than head; tegulae dark fuscous anteriorly; pleural surface white, with 2 blackish stripes. Fore and middle legs dark fuscous; fore coxa with 3 wide white bands at base, middle and apex; tibiae with a white median rings; tarsi with 3 rather short white rings near base, in middle and near apex. Hind leg white; coxa with a fuscous subapical spot; femur fuscous on its apical half; tibia with 2 fuscous bands at subbase and apex; and tarsi ochre-brownish except for white apex of each segment, with 2 fuscous rings at bases of 2nd and 4th segments. Abdomen dorsally dark gray, ventrally white, with 4 triangular grayish bands on pleural surface; anal extremity dark grayish in male and brownish in female.

Fore wing creamy-ochreous on costal half and pale gray-brownish on dorsal half in ground colour, with blackish and whitish costal marks, the white marks being margined with fuscous irrorations narrowly; a black blotch elongated on costa from base to basal $1/5$, occupying nearly costal half above wing-fold, with its outer edge oblique inwardly and adjoining 1st whitish costal strigula, which is moderately wide and truncated at wing-fold; 2nd white costal strigula placed just beyond the 1st, widest among whitish strigulae, oblique outwardly, truncated at costal $1/4$ across wing in most specimens, but sometimes reaching wing-fold; 3rd whitish costal strigula very oblique outwardly from basal $2/3$, narrowed apically; a black patch placed on interspace between 2nd and 3rd strigulae along costa, about $1/4$ as large as basal black blotch; a black spot placed on costa at apical $1/5$ in a ground-coloured subapical mark; a white streak extending along termen and reaching costa round apex of wing, sometimes intervened by 1 or 2 longitudinal narrow lines of ground colour on apical area, and always edged with a short black line below; dorsal part of wing irregularly scattered with a series of narrow strigulae of fuscous scales, or indefinitely darkened around basal, premedian and postmedian areas in some specimens; cilia around apex whitish, with a blackish dash dispatched from wing-apex, those along termen and dorsal margin grayish, usually whitish basally. Hind wing dark gray, with cilia grayish.

Male genitalia (Fig. 14): Tegumen linguiform in ventral view, nearly parallel-sided, with 15-20 pairs of fine setae arranged along lateral margins near apex, about 10 of them slightly longer; tuba analis with a slender subscaphium covered with microspines. Valva a little longer than tegumen, slender, with costal margin slightly elevated near base; inner surface with a long comb of 55-65 teeth arranged on apical half near costa and with fine setae scattered around apex and ventral margin; outer surface with long androconial scales rather sparsely. Vinculum elongate-triangular, with saccus slightly widened basally and about 1.3 times as long as valval comb. Aedeagus about 1.5 times as long as valva, tubular on basal $2/3$, then bifurcated on remaining apical $1/3$ into 2 slender prongs, one prong being acute apically and a little shorter than the other; vesica with microspinous cornuti gathered in 2 short series; ductus ejaculatorius short, coiled. Eighth abdominal segment short, about $1/2$ as long as the 7th, widely cleft ventrally; dorsocephalic apodeme a little longer than 8th segment, truncated apically, with its median sclerotization T-shaped; a pair of ventral invaginations containing very long scent scales (coremata), which are about 3 times as long as 7th segment. (Eight slides

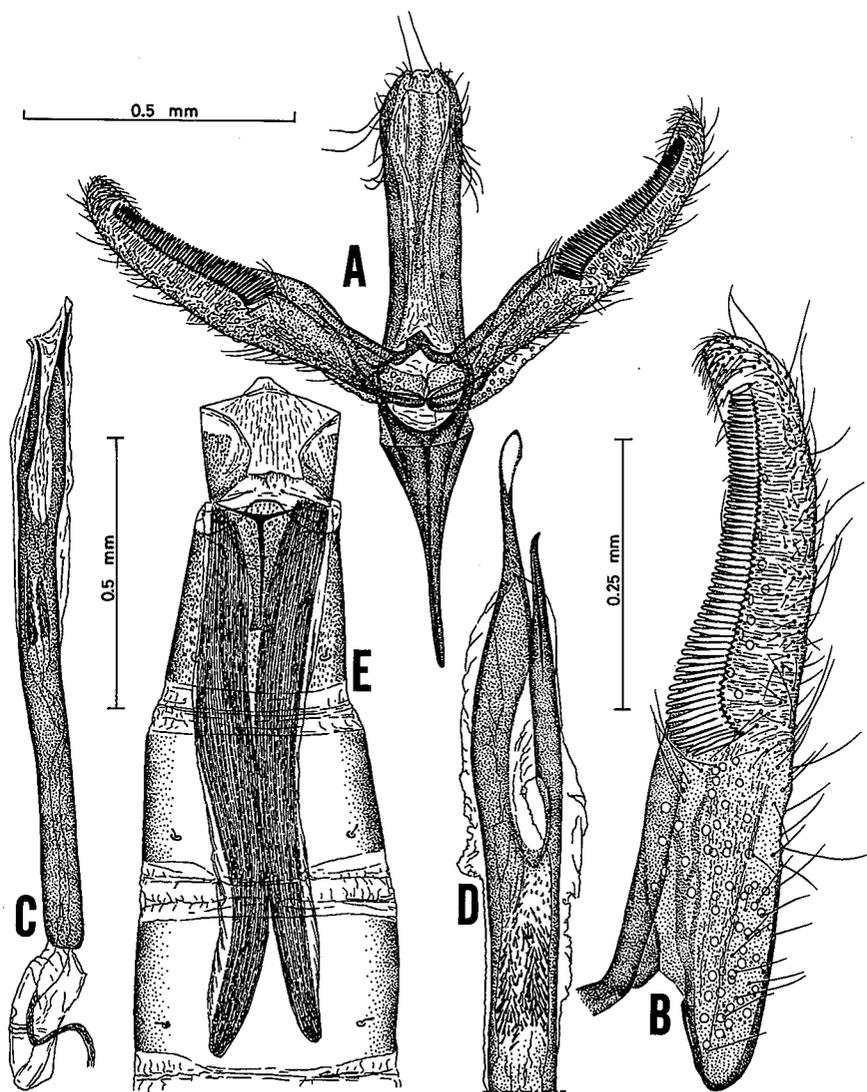


Fig. 14. *Acrocercops distylii* Kumata et Kuroko, sp. nov. A: Male genitalia in caudal view, aedeagus omitted [Grc-1608, holotype] — B: Right valva enlarged [Grc-1769, Mugiō, Yaku-sima, Nansei Is., em. 9/xi/1973, ex *Distylium racemosum* (1184)] — C: Aedeagus [holotype] — D: Apical part of aedeagus enlarged [Grc-1769] — E: Male 5th to 8th abdominal segments in ventral view [ditto].

examined.)

Female genitalia (Fig. 15: A-B): Papilla analis rather short, nearly as long as 8th abdominal segment, covered with microspines only around caudal margin, and usual fine setae on caudal half; apophysis posterioris slender, moderate in length, about as long as apophysis anterioris. Ostium bursae moderate in opening size; antrum long tubular, occupying about caudal 1/7 of bursa copulatrix, and very weakly sclerotized; ductus bursae partly knobbed and shagreened at the caudal end

just cephalic to antrum, with a well-sclerotized, rather long tube projection from this knobbed part; the remaining ductus bursae membranous, and gradually widened towards membranous corpus bursae without a distinct boundary between them, with 2 very long, bar-shaped, spiniferous signa, one being a little shorter than the other. (Five slides examined.)

A variation in colour: Six specimens examined are very different in colour-pattern from the above description which is based on most of the specimens available including the holotype. They emerged from the same plant species (*Distylium racemosum*), sometimes from the same breeding series, and agree well with the typical specimens in genital structure. The differences in colour are as follows (see also Fig. 35: C & D).

♂ ♀. Head and thorax white as well as face. Fore wing with 1st and 2nd strigulae reaching dorsal margin of wing to form complete fasciae, and sometimes narrowly and shortly expanding outward along dorsal margin; a wide-triangular, ochre-brownish interspace between these fasciae rather widely and irregularly margined with white, thus the ochre-brownish area being detached from blackish marginal lines of the fasciae; black costal patch on interspace between 2nd and 3rd white marks being very enlarged and obliquely extending outward to apical 1/5 of wing in disc; a white streak along termen margined conspicuously with blackish irrorations on its basal half of upper edge.

Specimens examined: 22♂♂ & 24♀♀. Holotype: ♂, Nati, Wakayama-ken, Honsyū, em. 14/xi/1966, ex *Distylium racemosum* (819), Gen. sl. no. Grc-1608. Paratypes: HONSYŪ — 2♀♀, with same data as holotype except on date emerged, 12/xi/1966; 1♀, ditto, 19/xi/1966; 1♂, ditto, em. 20/v/1957, ex *Camellia japonica*, T. Kodama leg.; 1♂ & 1♀, Kii-Ōsima, Wakayama-ken, em. 14-18/x/1974, ex *D. racemosum* (1338). SIKOKU — 3♂♂ & 5♀♀, Asizuri-misaki, Kōti-ken, em. 10-20/xi/1980, ex *D. racemosum* (2247). KYŪSYŪ — 1♀, Kirisima, Miyazaki-ken, em. 21/x/1959, ex *D. racemosum*, T. Kodama leg.; 1♂, Kagoshima-si, em. 15/xi/1973, ex *D. racemosum* (1249). TUSIMA — 7♂♂ & 12♀♀, Tatura-yama, Izuhara, em. 7-13/xi/1979, ex *D. racemosum* (2034). NANSEI IS. — 3♂♂, Mugiō, Yaku-sima, em. 8-11/xi/1973, ex *D. racemosum* (1184); 1♂, Kuriō, Yaku-sima, 4/xi/1976, F. Komai leg. Other specimens (colour variation: light form): HONSYŪ — 2♂♂, Nati, em. 18-20/v/1957, ex *C. japonica*, T. Kodama leg.; 1♀, Kii-Ōsima, em. 18/x/1974, ex *D. racemosum* (1338); 1♂ & 1♀, ditto, em. 23/viii/1959, ex *D. racemosum*, T. Yasuda leg. TUSIMA — 1♂, Ariake-yama, Izuhara, 20/x/1979, K. Yasuda leg.

Distribution: Japan (Honsyū; Sikoku; Kyūsyū; Tusima; Nansei Is.).

Food plants: *Distylium racemosum* Sieb. et Zucc. (Hamamelidaceae) and ? *Camellia japonica* Linn. (Theaceae).

Remarks: Though the light form of this species is very different from the typical form in colour as described above, it seems to be neither a seasonal form nor a local variation, because it was collected together with the typical form. Moreover, there are no intermediate form between them in the material at hand. Abundant material and experimental studies are necessary to get a definite conclusion on these forms.

This new species is unusual for the genus *Acrocercops* in having the long bar-shaped and densely spiniferous female signa. However, it surely belongs to the genus in having a long comb on the male valva, a pair of long invaginated coremata on the ventrum between 8th and 7th abdominal segments in male, and the fore wing venation in which the veins R₄, R₅, M₁, M₂, and M₃ are concentrated around the apex of the lanceolate discoidal cell. It is somewhat similar to *A. melanoplecta* Meyrick in the colour-pattern of the typical form and also to *A. vallata* sp. nov. in the

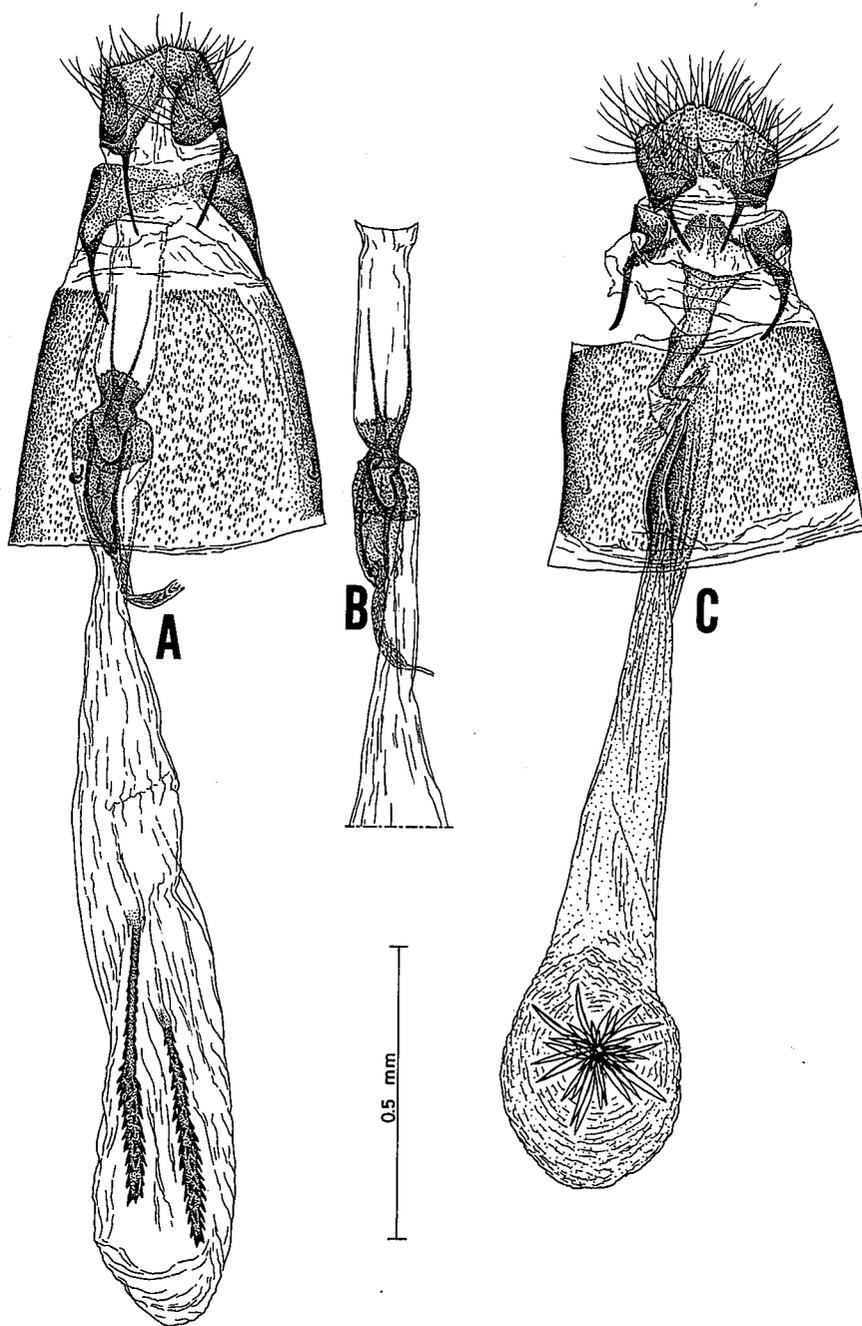


Fig. 15. A-B: *Acrocercops distylii* Kumata et Kuroko, sp. nov. A: Female genitalia in ventral view [Grc-1670, Nati, Wakayama-ken, em. 12/xi/1966, *Distylium racemosum* (819)] — B: Basal part of bursa copulatrix [Grc-1609, ditto].
 C: *Acrocercops vallata* Kumata et Kuroko, sp. nov., female genitalia in ventral view [Grc-2015, Hikosan, Hukuoka-ken, em. 16/viii/1954, ex *Quercus acuta* (250), H. Kuroko leg.].

markings of the light form, but it is at once distinguished from them by the blackish basal blotch extending along the costa from the base to the basal 1/5 of the fore wing without any interruption of white spot as well as by the differences of the female signa, the male aedeagus, the food plant, etc.

11. *Acrocercops vallata* Kumata et Kuroko, sp. nov.

[Figs. 15(C), 16, 35(E-F), 41(E) and 50(A)]

♂ ♀. Expanse of wings: 7.5-8.0 mm (8.0 mm in holotype). Length of fore wing: 3.7-4.0 mm (4.0 mm in holotype).

Face and head white, the former becoming metallic gray laterally and the latter having a narrow ochreous or grayish band between eyes. Maxillary palpus silvery-gray, whitish at apex. Labial palpus whitish; 2nd segment blackish laterally, with a short tuft of blackish scales beneath. Antenna about 1.5 times as long as fore wing, dark brownish, faintly annulated with paler colour, beneath whitish; scape smooth, white, with a fuscous apical ring. Thorax ochreous, mixed with fuscous scales anteriorly and whitish scales posteriorly; pleural surface brilliantly whitish. Legs white; fore coxa with 2 fuscous lateral spots near base and near apex, the femur with 2 longitudinal fuscous stripes on apical area, the tibia fuscous, with 2 white rings at base and in middle, and the tarsus with 6 fuscous rings; middle tibia slightly thickened with blackish rough scales apically, and the tarsus with 6 fuscous rings; hind coxa with a short, oblique, brownish apical band, the femur with a fuscous median spot, the tibia with an oblique, brownish preapical stripe and a blackish apical ring, and its apical spurs roughened with blackish scales above; 1st segment of hind tarsus with 2 oblique, brownish stripes, the and with a similar preapical stripe and a blackish apical ring, the 3rd and 4th almost wholly brownish, and the 5th with a blackish apical ring.

Fore wing white in ground colour, with basal, premedian and apical blotches ochre-brown and postmedian costal strigula blackish, each blotch and strigula being surrounded by blackish lines with narrow intervals; the basal blotch occupying about 1/10 length of wing, intermixed with blackish scales on costal area, enclosing a minute white spot at basal extremity; the premedian blotch placed in disc, orbicular or elliptical, expanding to wing-margins; the postmedian costal strigula short, oblique outwardly, irregularly encircled with a narrow black line; the apical blotch elongate-oblong, basally detached from wing margins, usually interrupted by a blackish costal spot near apex, with its basal margin oblique inwardly from costa; 1 or 2 indistinct blackish spots or minute stripes situated on costa between postmedian strigula and apical blotch; cilia on costa fuscous, those on wing-apex whitish with a straight blackish apical hook, those on termen brownish basally and whitish apically, with a blackish subapical hook which is perpendicular to the wing-apex, and those along dorsal margin pale gray. Hind wing and its cilia gray.

Male genitalia (Fig. 16): Tegumen somewhat spatular in ventral view, with 17 to 20 pairs of slender setae on apical half of lateral margins, 3 or 4 of them (including apicalmost pair) a little thicker and longer than others; tuba analis with a subsca-phium covered by minute spines. Valva a little longer than tegumen, rather slender, widened towards base; inner surface with a long and sinuate comb of 38-43 short teeth on median half of disc, and with fine setae scattered around apex and ventral

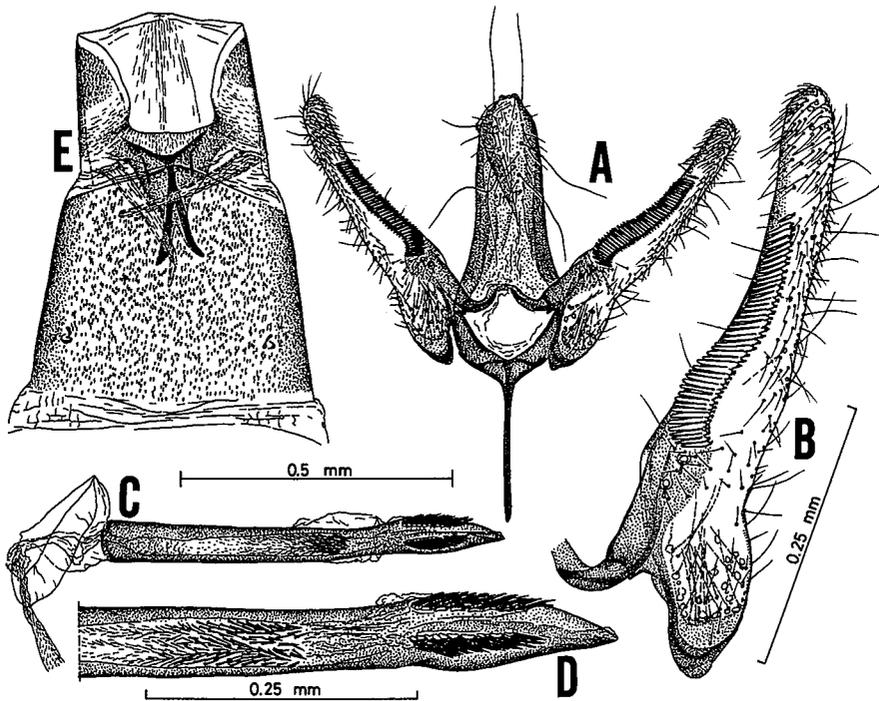


Fig. 16. *Acrocercops vallata* Kumata et Kuroko, sp. nov. A: Male genitalia in caudal view, aedeagus omitted [Grc-2014, holotype] — B: Right lalva enlarged [ditto] — C: Aedeagus [ditto] — D: Apical part of aedeagus enlarged [ditto] — E: Male 7th and 8th abdominal segments in ventral view [ditto].

area; sacculus round basally, with about 20 very long androconial scales on outer surface; 2 to 4 large scale-sockets seen on outer surface basal to comb. Vinculum Y-shaped, with saccus slender and about a half as long as valva. Aedeagus about 1.3 times as long as valva, tubular, pointed apically, with a pair of double rows of 14–20 acute spines placed near apex; vesica with a number of needle-shaped cornuti clustered in a group; ductus ejaculatorius short and coiled. Eighth abdominal segment about a half as long as 7th segment, widely notched ventrally; dorsocephalic apodeme about as long as 8th segment, deeply divided apically; a pair of membraneous ventral invaginations a little longer than dorsal apodeme, not containing androconial scales. (Three slides examined.)

Female genitalia (Fig. 15: C): Papilla analis moderate in size, covered with microspines and usual slender setae; apophysis posterioris slender, short, about as long as apophysis anterioris. Ostium bursae moderate in opening size, without genital plate; antrum rather long, tubular, weakly sclerotized; ductus bursae tubular, long, shagreened on whole length, with a pair of partly sclerotized lobes near caudal area; corpus bursae pyriform, shagreened, with a pair of signa surrounded by many lanceolate sclerites of various lengths. (Two slides examined.)

Specimens examined: 3♂♂ & 2♀♀. Holotype: ♂, Hikosan, Buzen, Kyūsyū, em. 10/xi/1956, ex *Quercus salicina*, H. Kuroko leg., Gen. sl. no. Grc-2014, will be preserved in the

Entomological Laboratory, Kyūsyū University. Paratypes: HONSYŪ — 1 ♀, Kozagawa, Wakayama-ken, em. 14/x/1974, ex *Q. glauca* (1297). SIKOKU — 2 ♂♂, Ino, Kōti-ken, em. 28/vi/1957, ex *Q. glauca* (253). KYŪSYŪ — 1 ♀, Hikosan, Buzen, em. 16/viii/1954, ex *Q. acuta* (250), H. Kuroko leg.

Distribution: Japan (Honsyū; Sikoku; Kyūsyū).

Food plants: *Quercus acuta* Thunb., *Q. glauca* Thunb. and *Q. salicina* Blume (Fagaceae).

Remarks: This new species is somewhat similar to *A. melanoplecta* Meyrick and the light form of *A. distylii* sp. nov. in the colour-pattern of the fore wing and in the female genitalia, but is at once distinguished from them by the male genitalia as follows: the ventral invaginations placed between 7th and 8th abdominal segments do not contain any scent scales; the dorsocephalic apodeme of the 8th segment is deeply divided apically; the valval comb is relatively long and extends on the disc of the valva from basal 1/4 to 3/4; and the aedeagus has the paired rows of some acute spines near its apex. It can also be separated from the 2 species by the presence of an ochre-brownish, large circular or elliptical blotch in the centre of the fore wing and by the presence of paired and sclerotized lobes near the caudal end of the ductus bursae of the female genitalia.

12. *Acrocercops mantica* Meyrick

[Figs. 17, 36(A-D), 41(F), 45(C) and 50(B-C)]

Acrocercops mantica Meyrick, 1908, Journ. Bomb. Nat. Hist. Soc. 18: 822 [India (Khasi Hills)]; Kuroko, 1982, Moths Jap. 1: 187, 2: pl. 6(10) [Japan (Honsyū, Kyūsyū); host: *Castanopsis cuspidata*].

Acrocercops delographa Meyrick, 1939, Trans. R. Ent. Soc. Lond. 89: 60 [Indonesia (Java)]. Syn. nov.

Original description of *A. mantica*: "♂. 10 mm. Head yellow-whitish, sides of crown yellowish, face white with a blackish median bar. Palpi white, second joint dark gray except towards base, with tuft of projecting scales beneath. Antennae white, pale greyish above. Thorax white, with yellow-ochreous spot on shoulders and small black posterior spot. (Abdomen broken.) Legs white, banded with ochreous-yellowish and ringed with dark grey. Forewings very narrowly elongate-lanceolate, acute; bright deep ochreous-yellow; costal edge blackish; base of dorsum white; three white discal blotches, first moderate, subtriangular, blackish-edged, before 1/4, second elongate, extending from 1/4 to 3/5, sometimes connected with first, third very elongate, extending from just beyond second to costa near apex; a slender inwardly oblique blackish streak from middle of costa to junction of first two blotches, preceded by a white costal dot; a fine white very oblique strigula from 2/3 of costa running into third blotch near apex, space between this and third blotch black, extended as a blackish streak between second and third blotches; a short white strigula along costa running into apex of third blotch, space between this and preceding strigula black; a white apical mark: cilia whitish-ochreous, towards tornus greyish, basal third yellow-ochreous, at apex with two blackish hooks. Hind wings and cilia grey."

Original description of *A. delographa*: "Male, female, 8-9 mm. Head shining white, tinged yellowish on crown, side-tufts in male rough, yellowish. Labial palpus white, second joint dark fuscous, tufted beneath with long rough scales. Thorax pale golden-ochreous, posteriorly white. Fore-wing narrow, moderately pointed: shining golden-bronze, with variable developed costal and median longitudinal black streaks, strongest and confluent in male: markings shining snow-white, partially black-edged; an oblong dorsal spot before middle, its anterior end connected with costa by a slender bar, a small costal spot opposite its posterior end; a variable subtriangular spot in middle of disc; costal and dorsal marginal streaks from middle confluent on apical area, costal finely attenuated anteriorly and containing two elongate black marks about 3/4: cilia whitish suffused with bronzy at base, becoming greyish on tornal area, with two blackish apical hooks.

Hind-wing dark grey : cilia grey.”

Additional description based mainly on Japanese material : ♂ ♀. Expanse of wings : 7.8-10.2 mm (8.8 mm in average of 20 specimens). Length of fore wing : 3.9-5.0 mm (4.3 mm in average of 20 specimens).

Head as in original description of *mantica* ; face silvery-whitish, becoming dark gray posteriorly and laterally. Maxillary palpus shining blackish ; labial palpus as in original description of *mantica* and *delographa*. Antenna about 1.4 times as long as fore wing, pale ochre-grayish, faintly annulated with darker colour, beneath whitish ; scape slightly thickened, smooth, ochre-brown. Thorax white as in original description of *mantica* in all Nepalese and a few Japanese specimens, and anteriorly golden-ochereous as in that of *delographa* in most Japanese specimens, but always spotted with black at posterior corner ; pleural surface wholly shining white. Legs white ; fore coxa with a blackish spot near base laterally and an ochrous one near apex ; fore and middle femora tinged with ochre-yellow laterally, with a longitudinal blackish streak, tibiae ochre-yellow outside, ringed with black at middle and apex, and tarsi pale yellowish, with 5 blackish rings at regular intervals ; hind coxa with a oblique blackish streak near apex, the femur with a similar streak at middle, the tibia laterally brownish beyond middle and blackish at apical extremity, with apical spurs blackish on upper edge, and the tarsus pale yellow-brownish laterally, 1st segment with 2 fuscous oblique stripes at base and apex, 2nd segment with a similar median stripe and a blackish apical ring, 3rd segment apically and 4th and 5th segments wholly blackish.

Fore wing shining ochre-yellow to ochre-brown in ground colour, with costal margin narrowly blackish except on white marks, extreme base of dorsal margin whitish ; white marks partly black-edged and varying in shape from *mantica*-type to *delographa*-type even in Japanese specimens examined ; 1st discal blotch situated before basal 1/4 of wing, variable in shape from subtriangle to subrectangle, widely touched with dorsum in most Japanese and all Nepalese specimens as in original description of *delographa*, while completely detached from dorsum in a few specimens ; 2nd discal blotch placed in centre of wing, variable in shape from spot to streak, basally confluent with 1st blotch into an upturned and elongate mark in a few Japanese and all Nepalese specimens ; 3rd discal blotch very elongate, upcurved apically and reaching costa near wing-apex, basally connected with dorsum in middle of wing in most specimens, while completely detached from dorsum in a few Japanese specimens as in description of *mantica*, sometimes interrupted by ground colour in its middle ; a small costal spot or streak at basal 1/3 of wing ; a very narrow white line strongly oblique outwardly from basal 2/5 of costa, apically confluent with 3rd discal blotch, sandwiched between upper and lower black lines, the lower blackish line being divided basally into 2 branches ; apical space of wing beyond 3rd white discal blotch blackish and containing a short white streak along termen ; cilia as in description of *mantica* and *delographa*. Hind wing dark gray, with cilia gray.

Male genitalia (Fig. 17 : A-E) : Tegumen more or less cask-shaped in ventral view, with 1 to 3 (mostly 1) pairs of slender setae at apex and 4-7 (mostly 5-6) pairs of very strong setae arranged along lateral margins near apex, basalmost one of them being strongest and 2 to 3 times as thick as the others ; ventral surface with a V-shaped border between weakly sclerotized basal part and membranous tuba

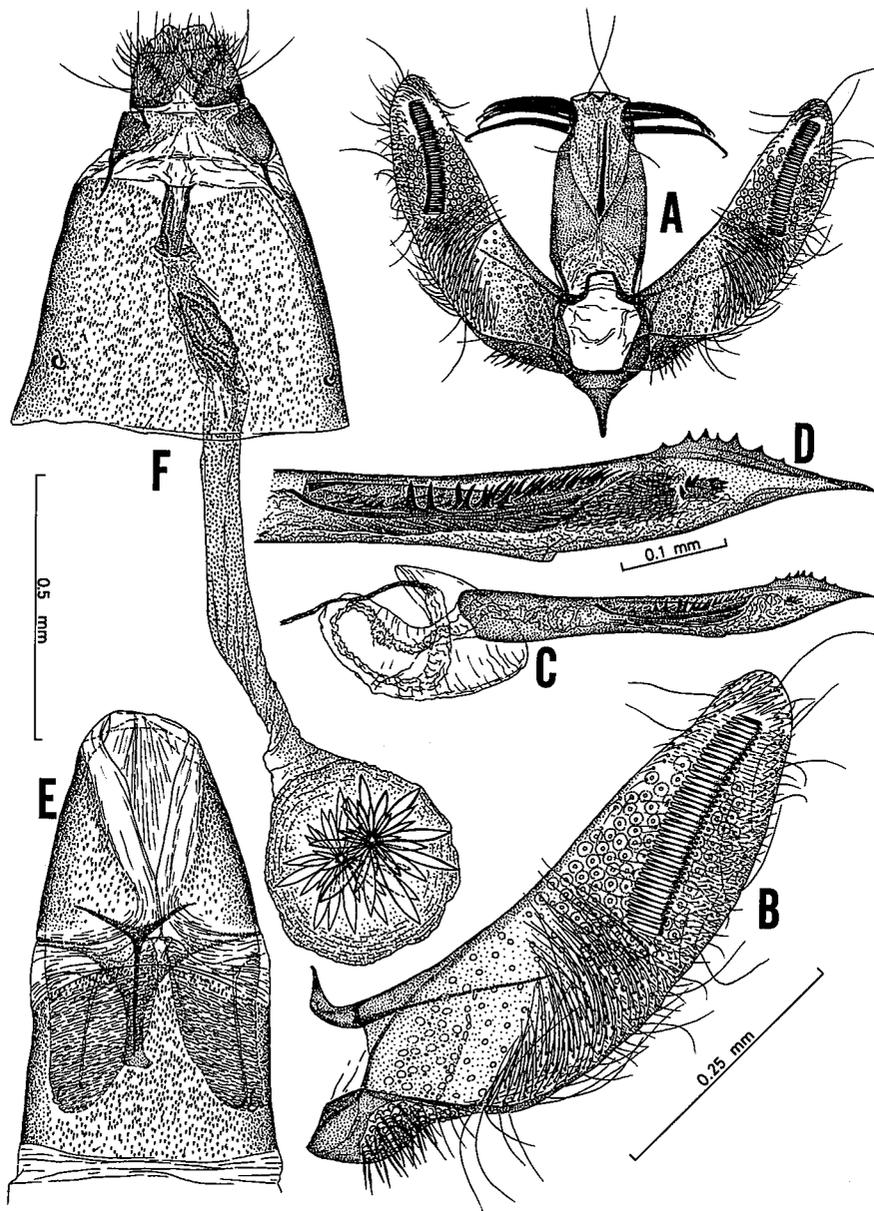


Fig. 17. *Acrocercops mantica* Meyrick. A: Male genitalia in caudal view, aedeagus omitted [Grc-1650, Kozagawa, Wakayama-ken, em. 11/vi/1970, ex *Castanopsis cuspidata* (1034)] — B: Right valva enlarged [ditto] — C: Aedeagus [ditto] — D: Apical part of aedeagus enlarged [ditto] — E: Male 7th and 8th abdominal segments in ventral view [ditto] — F: Female genitalia in ventral view [Grc-1652, ditto].

analis, which has a narrow subscaphium. Valva oblong-oval, slightly upturned; inner surface with a long, nearly straight comb of 35-43 short teeth in disc beyond middle of valva and many fine setae especially thickly on ventral area; outer surface with many fine scales distributed on apical half of valva, each basal socket of the scales being surrounded by a circular carina; a number of long androconial scales dispatched from basal area. Vinculum slender, with an acute saccus about half as long as valval comb. Aedeagus a little longer than valva, very acutely pointed apically, with a serrulate carina near apex; vesica with a number of cornuti which are gathered in 2 groups, one consisting of 20-25 long thorn-like and many needle-like spines, and the other of 5-10 minute thorn-like spines; ductus ejaculatorius short and coiled. Eighth abdominal segment about as long as the 7th, deeply notched ventrally, with a dorsocephalic apodeme about 2/3 as long as 7th segment, capitated apically and widened basally; a median sclerotization of this apodeme divided caudally to form a Y-shape; a pair of membraneous ventral invaginations a little longer than dorsal apodeme, slender, not containing androconial scales. (Five slides examined.)

Female genitalia (Fig. 17: F): Papilla analis rather small, about as long as 8th abdominal segment, covered with microspines sparsely and usual setae; apophysis posterioris very slender, short, about as long as apophysis anterioris. Ostium bursae moderate in opening; antrum short, tubular, membraneous, longitudinally carinated; ductus bursae tubular but slightly swollen and carinated near caudal end, long, membraneous, lined with thorn-like microspines throughout, especially densely on swollen caudal area and on median area; corpus bursae globular, with a pair of signa surrounded by many lanceolate sclerites of various lengths. (Eight slides examined.)

Specimens examined: 47♂♂ & 46♀♀. HONSYŪ — 2♂♂ & 1♀, Katura, Wakayama-ken, em. 22/v/1957, ex *Castanopsis cuspidata*, T. Kodama leg.; 1♀, Nati, Wakayama-ken, 27/v/1964; 13♂♂ & 8♀♀, Kozagawa, Wakayama-ken, em. 9-11/vi/1970, ex *C. cuspidata* (1034); 5♂♂ & 8♀♀, ditto, em. 7-15/x/1974, ex *C. cuspidata* (1285); 3♂♂, Kii-Ōsima, Wakayama-ken, 21-24/v/1964. SIKOKU — 1♂, Tosasimizu, Kōti-ken, em. 14/xi/1980, ex *C. cuspidata* (2265); 9♂♂ & 5♀♀, Asizuri, Kōti-ken, em. 8-14/xi/1980, ex *C. cuspidata* (2250). KYŪSYŪ — 1♀, Hetuka, Sata-tyō, Kagosima-ken, 21/xi/1979, I. Kanazawa leg. TUSIMA — 2♀♀, Izuhara, 15/x/1979, K. Yasuda leg.; 1♂ & 6♀♀, ditto, em. 2-9/xi/1979, ex *C. cuspidata* (2032); 9♂♂ & 6♀♀, Mine, em. 7-17/xi/1979, ex *C. cuspidata* (2090); 1♀, Kamitusima, 19/x/1979, K. Yasuda leg.; 1♂, ditto, 19/x/1979, I. Kanazawa leg. NANSEI IS. — 1♀, Mugiō, Yaku-sima, em. 11/xi/1973, ex *C. cuspidata* (1184); 2♀♀, Kuriō, Yaku-sima, 4/xi/1976, F. Komai leg. RYŪKYŪ IS. — 2♀♀, Iriomote, 18/vi/1962, G. Kuno leg. NEPAL — 3♂♂ & 3♀♀, Gongar-Chetchet (alt. 1400 m), Janakpur, em. 7-9/ix/1983, ex *C. tribuloides* (Np1-391).

Distribution: Japan (Honsyū; Sikoku; Kyūsyū; Tusima; Nansei Is.; Ryūkyū Is.); Indonesia (Java); India (Khasi Hills); and Nepal (new record).

Food plants: *Castanopsis cuspidata* Schottky in Japan, and *Castanopsis tribuloides* DC. in Nepal, both belonging to Fagaceae.

Remarks: This species is very variable in the colour-pattern of the fore wing as redescribed above and as shown in photographs (Fig. 36: A-D). The type specimens of *A. mantica* (♂ lectotype and 1♂ paralectotype, both missing abdomen, labelled "Khasi Hills, Assam, 11. 1906, *Acrocercops mantica* Meyr., E. Meyrick det., in Meyrick Coll.") and those of *A. delographa* (♀ lectotype, labelled "Boitenzorg, Java, LGK, 5-30, *Acrocercops delographa* Meyr., ♂", and 1♂ paralectotype, "Tapos, Java, LGK, 4.35, *Acrocercops delographa* Meyr., Gen. sl. no. BM-16927"), all deposited

in the British Museum (N.H.), have been examined. It is the opinion here adopted that the 2 supposed species are in reality variations of the same species. Moreover, the present specimens from Japan and Nepal are identical with one paralectotype of *A. delographa* in the details of the male genitalic structures. The genitalia of the type specimens of *A. mantica* are no longer available.

A. mantica is very characteristic in having the unusually strongly bristly setae on the tegumen and the double-circled basal sockets of the scent scales occurring on the apical half of the valva, by which it can be distinguished from any other species of the genus *Acrocercops*.

13. *Acrocercops unistriata* Decheng [Figs. 18, 19, 35(G-H), 45(A) and 49(C-F)]

Acrocercops unistriata Decheng, 1986, Entomotaxonomia 8 : 64 & 66, fig. 1 [China (Guangdong Prov.)].

Original description in English [p. 66]: "Length of forewing: 3.0 mm. Legs white, banded with brown. Forewings pale yellow-brown in ground, with 2 indistinct narrow white fasciae at middle and basal 3/4, the latter fascia extending along dorsum to apex of wing; cilia around apex of wing yellow-brown, mixed with black, those along dorsal margin dark-gray."

"Male genitalia: Tegumen long tongue-shaped, weakly sclerotized along lateral margins; subsclaphium slender. Valva elliptically protruded outwardly along basal 1/3 of ventral margin, with apical 2/3 gradually narrowed towards an angulated apex of valva; a long comb of teeth extending along apical half of costal margin. Aedoeagus about as long as valva, tip extended into a sclerotized hook-like projection, and with 6 cornuti, of them 3 long curved, 3 short corniform, on apical area."

Additional description based mainly on Japanese specimens: ♂ ♀. Expanse of wings: 6.5-9.4 mm (8.5 mm in average of 20 specimens). Length of fore wing 3.2-4.6 mm (4.2 mm in average of 20 specimens).

Face, head and palpi gray-ochrous; maxillary palpus rather roughly scaled; labial palpus whitish, the 2nd segment dark brownish laterally, with tuft of black-tipped scales beneath. Antenna about 1.5 times as long as fore wing, yellow-ochreous, faintly annulated with darker colour; scape smooth, ringed with black apically. Thorax yellow-ochreous, irrorated with dark brown; pleural surface with 2 oblique whitish stripes. Legs ochre-yellowish; fore coxa whitish broadly at base and narrowly in middle and at apex; fore and middle tibiae broadly ringed with spreading black scales at apex; hind coxa whitish broadly in median area and narrowly at apex; all the tarsi whitish, with 5 dark brown rings nearly equidistantly. Abdomen grayish-black dorsally and whitish ventrally, on lateral surfaces with 3 or 4 oblique blackish bands, anterior 2 of them being very broad, and on ventrum with 3 or 4 blackish short bands.

Fore wing yellow-ochreous in ground colour, irregularly freckled with brown, with 3 tufts of raised, black-tipped, whitish scales on dorsal margin at base, in middle and before tornus, 1 or 2 of them being indistinct or obscure in ill-conditioned specimens; basal 1/4 of wing pale ochreous in most specimens, with 2 or 3 irregular lines of dark brown irrorations; 2 ill-defined fasciae situated in middle and at apical 1/4 of wing as described originally, but usually whitish-ochreous in colour, moderately oblique outwardly and margined with dark brown irrorations on both inner and outer margins, the 2nd fascia becoming white along termen of wing; cilia around

apex of wing brownish, with a whitish, oblique apical band, those along termen yellowish-brown, dashed with white below wing-apex, with 2 lines of blackish irrorations, and those along dorsal margin gray. Hind wing dark gray, with cilia gray.

Male genitalia (Fig. 18 & 19: A-C): Tegumen as in original description, with 15-20 (mostly 16-18) pairs of fine setae arranged along lateral margins near apex; tuba analis covered with microspines on lower surface near base rather densely. Valva a little longer than tegumen, rather slender; inner surface with a long comb of 60-80 short teeth and with fine setae around apex and ventral area; outer surface with 40-50 fine scales having large basal sockets; sacculus widened, round basally, with a long eversible pocket containing a bundle of long, linear androconial scales. Vinculum small, triangular, with narrow, long lateral arms, and with a short,

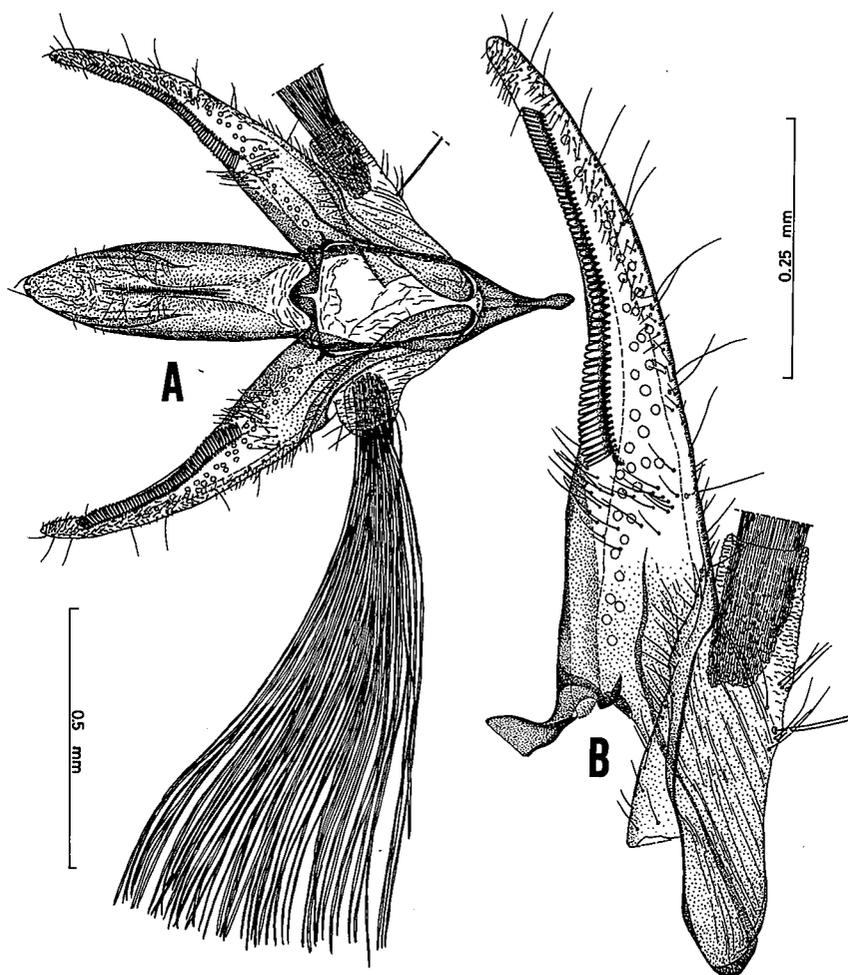


Fig. 18. *Acrocercops unistriata* Decheng. A: Male genitalia in caudal view, aedeagus omitted [Grc-1884, Kozagawa, Wakayama-ken, em. 11/x/1974, ex *Quercus serrata* (1323)] — B: Right valva enlarged [ditto].

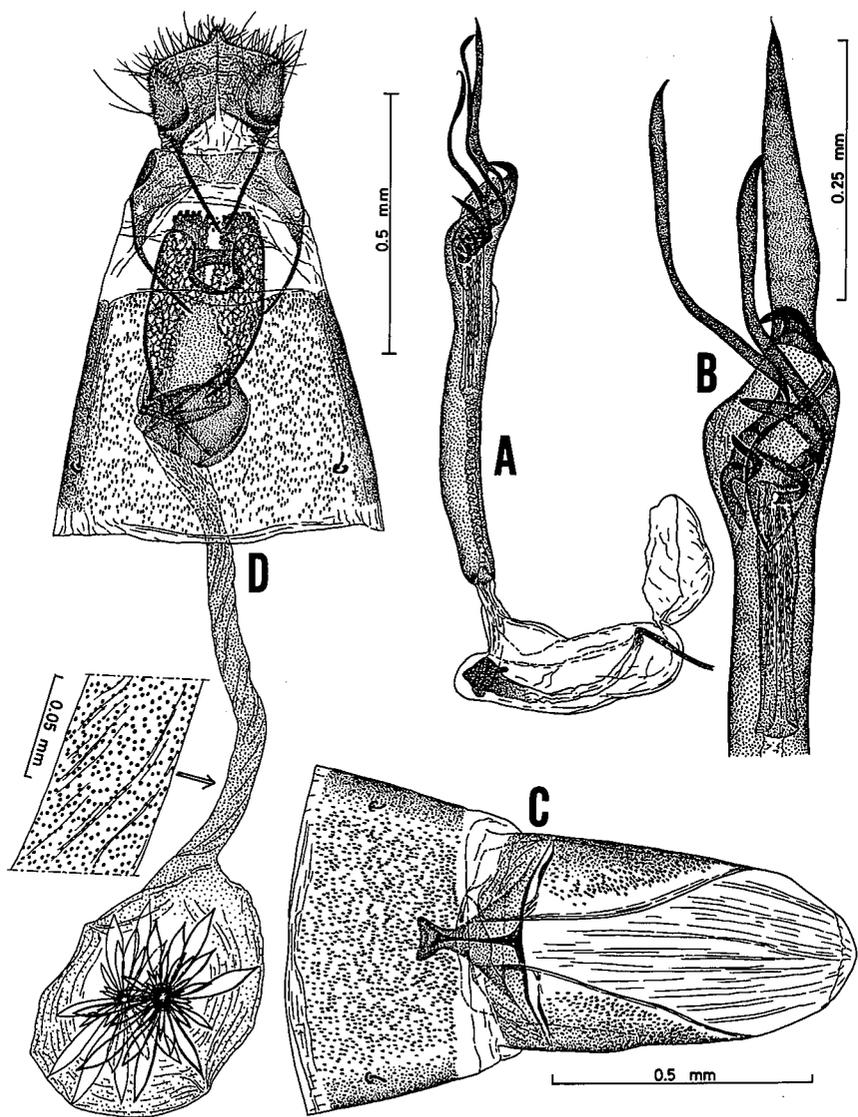


Fig. 19. *Acrocercops unistriata* Decheng. A: Aedeagus [Grc-1884] — B: Apical part of aedeagus enlarged [Grc-1918, Onoaida, Yaku-sima, Nansei Is., em. 2/xi/1973, ex *Quercus phillyraeoides* (1199)] — C: Male 7th and 8th abdominal segments in ventral view [Grc-1954, Kozagawa, Wakayama-ken, em. 8/x/1974, ex *Quercus* sp. (1320)] — D: Female genitalia in ventral view [Grc-1919, Kozagawa, em. 11/x/1974, ex *Q. serrata* (1323)].

capitated apical saccus. Aedeagus as described originally; ductus ejaculatorius short, coiled, with a small sclerite having a minute projection. Eighth abdominal segment about 2 times as long as the 7th, deeply notched ventrally; dorsocephalic apodeme short, about half as long as 7th abdominal segment, triangular, with apex a little widened and truncated; a pair of membranous ventral invaginations slen-

der, shorter than dorsal apodeme, and not containing androconial scales. (Twelve slides examined.)

Female genitalia (Fig. 19: D): Papilla analis moderately elongate, shortly acuminate dorsoapically in ventral view, covered with microspines densely and usual setae sparsely, the apicalmost seta being thickened; apophysis posterioris moderately long, slender, about as long as apophysis anterioris. Ostium bursae small in opening size, surrounded by a sclerotized ring; anturm large cask-shaped, followed by a sclerotized, large semiglobular part of ductus bursae, of which the remaining part is slender, membraneous and shagreened; corpus bursae ellipsoidal, shagreened, with a pair of signa surrounded by many lanceolate sclerites of various lengths. (Ten slides examined.)

Specimens examined: 65♂♂ & 60♀♀. HONSYŪ — 2♂♂ & 2♀♀, Kyôto, em. 4-7/x/1966, ex *Quercus acutissima*; 1♂, Kozagawa, Wakayama-ken, em. 8/vi/1970, ex *Q. glauca* (1051); 3♂♂ & 1♀, ditto em. 11-12/x/1974, ex *Q. serrata* (1323); 5♂♂, & 5♀♀ ditto, em. 7-11/x/1974, ex *Q. sessilifolia* (1288); 1♀, ditto, 4/x/1974. SIKOKU — 1♀, Ino, Kôti-ken, em. 29/vi/1957, ex *Quercus* sp. (245); 3♀♀, ditto, em. 6-7/xi/1980, ex *Q. serrata* (2204); 1♀, ditto, em. 6/xi/1980, ex *Q. glauca* (2201); 6♂♂ & 6♀♀, Tosasimizu, Kôti-ken, em. 6-11/xi/1980, ex *Q. phillyraeoides* (2228). TUSIMA — 10♂♂ & 10♀♀, Tatura-yama, Izuhara, em. 30/x-7/xi/1977, ex *Q. acuta* (2037); 1♀, ditto, em. 31/x/1977, ex *Q. glauca* (2046); 1♂, Ôbosi-yama, Mine, em. 8/xi/1977, ex *Q. glauca* (2109). NANSEI IS. — 31♂♂ & 18♀♀, Onoaida, Yaku-sima, em. 29/x-14/xi/1973, ex *Q. phillyraeoides* (1199). TAIWAN — 2♂♂ & 1♀, Lienhauchih (alt. 750 m), Nantou, em. 12-13/vii/1979, ex *Q. pachyloma* (1921). NEPAL — 1♀, Biratanti (alt. 1150 m), No. 4 West, 13/v/1968; 1♂ & 2♀♀ Godawari (alt. 1500-2000 m), Bagmati, em. 26-28/ix/1983, ex *Castanopsis indica* (Npl-540); 3♂♂ & 5♀♀, Balaju-Jamachok (alt. 1400-2000 m), Bagmati, em. 6-20/x/1983, ex *Q. lanata* (Npl-666); 1♀, Mulkharka (alt. 2000 m), Bagmati, em. 22/ix/1983, ex *C. indica* (Npl-519).

Distribution: Japan (Honsyû; Sikoku; Tusima; Nansei Is.); Taiwan (new record); China (Guangdong Prov.); and Nepal (new record).

Food plants: *Quercus acuta* Thunb., *Q. acutissima* Carruth., *Q. glauca* Thunb., *Q. phillyraeoides* A. Gray, *Q. serrata* Thunb. and *Q. sessilifolia* Blume in Japan; *Q. pachyloma* O. Seem. in Taiwan; and *Castanopsis indica* DC. and *Q. lanata* Smith in Nepal. All belong to Fagaceae.

Remarks: *A. unistriata* has recently been described from China, and is now known to be widely distributed in Asia from Central Himalaya to Japan through China in association with oak forests.

It is distinguished from any other known species of the genus *Acrocercops* by the superficially uniform-brownish fore wing with 3 tufts of raised scales on the dorsal margin, by the male valva with an eversible pocket containing a bundle of long androconial scales, by the unusually long cornuti of the aedeagus, and by the large cask-shaped antrum of the female bursa copulatrix. These characters except for the colour-pattern show a close relationship to *A. transecta*, though the colour-pattern and food plants are very different between the 2 species. *A. unistriata* feeds on Fagaceae, while *A. transecta* on Ericaceae and Juglandaceae.

14. *Acrocercops transecta* Meyrick

[Figs. 20, 21, 23(A-D), 24, 25(G-H), 37(A-F), 41(G), 45(D) and 50(D-E)]

Acrocercops transecta Meyrick, 1931, Exot. Microlep. 5: 169 [Japan (Honsyû)]; Inoue, 1954, Check List Lep. Jap. 1: 27; Issiki, 1957, Icones Heteroc. Jap. Col. Nat. 1: 28, pl. 4 (104) [Japan (Honsyû, Sikoku, Kyûsyû)]; host: *Juglans ailanthifolia*, *Pterocarya rhoifolia*, *Platycarya strobilacea*,

Lyonia ovalifolia] ; Kuroko, 1982, Moths Jap. 1 : 186, 2 : pl. 6 (8) [Japan (Honsyū, Sikoku, Kyūsyū) ; host : *J. ailanthifolia*, *P. rhoifolia*, *P. strobilacea*] ; Park, 1983, Ill. Flora & Fauna Korea 27 : 588, pl. 38 (667) [Korea].

Acrocercops lyoniella Kuroko, 1982, Moths Jap. 1 : 186, 2 : 450, pl. 6(9) [Japan (Honsyū, Sikoku, Kyūsyū) ; host : *L. ovalifolia*]. Syn. nov.

Original description of *A. transecta* : “♀. 10 mm. Head pale metallic-brassy-grey. Palpi slender, grey. Thorax pale iridescent-grey. Forewings very narrow ; subiridescent grey-whitish, suffusedly and irregularly irrorated dark fuscous except towards costa between fasciae ; a narrow rather oblique dark fuscous fascia before middle, one beyond bordered with slight suffusion and parallel striae, and one at 4/5 only distinct on costa ; minute white dots at and beneath apex : cilia grey. Hindwings and cilia grey.”

Original description of *A. lyoniella* [vol. 2, p. 450] : “Closely related to *transecta*, but differs from it in darker markings of forewing. Difficult to distinguish from *transecta* in male genitalia, but in female the ductus bursae is longer (1.3-1.4 mm) than that (1.0 mm) of *transecta*.”

Additional description : ♂ ♀. Expanse of wings : 7.4-9.6 mm (8.53 mm in average of 15 specimens). Length of fore wing : 3.6-4.8 mm (4.19 mm in average of 34 specimens).

Face and head variable in colour from brilliant-whitish to iridescent-brownish-gray, usually darkened in specimens emerged in late autumn from mid September to November. Maxillary palpus slightly rough-scaled, pale ochre-yellowish, darkened apically. Labial palpus whitish to pale ochre-yellowish ; 2nd segment laterally grayish, smooth-scaled ; apical segment with a narrow fuscous stripe beneath. Antenna dark brownish-gray, faintly annulated with paler colour, beneath narrowly paler ; scape concolorous, smooth-scaled. Thorax dorsally variable in colour from pale ochre-grayish to dark brownish-gray, darkened like head in specimens emerged in late autumn ; ventral surface brilliant-whitish with a grayish tinge in all specimens. Legs brilliant-whitish, very slightly tinged with gray ; fore femur narrowly dark grayish on upper edge ; fore and middle tibiae dark grayish above, with a rather broad blackish apical ring ; fore and middle tarsi with 5 blackish rings alternated with white ones nearly equivalently ; hind tibia and each segment of hind tarsus with a narrow blackish apical ring. Abdomen dorsally dark grayish, ventrally brilliant-whitish, with lateral stripes absent.

Fore wing with dorsal margin smooth, without any tuft of raised scales ; ground colour ochre-yellowish to ochre-brownish, more or less suffused with fuscous except for basal area of wing and narrow areas bordering on white marks, which are distinctly edged with fuscous irrorations ; in some specimens emerged in late autumn the ground colour fully dark fuscous without pale borderlines of white marks ; a white dorsal strigula oblique inwardly from basal 1/4 of dorsal margin, usually slightly detached from costa, stretching a narrow stripe towards wing-base along dorsal margin, sometimes wholly discoloured into ochre-yellow or ochre-brown and indicated its presence only by marginal fuscous irrorations in some specimens ; a white fascia at middle, nearly parallel to dorsal strigula, stretching a narrow dorsal lobe outwardly, constricted or rarely interrupted at wing-fold, the dorsal part being discoloured into ochre-brownish in some specimens and very rarely the costal part also discoloured likewise ; a white costal strigula at apical 1/4, oblique outwardly, extending nearly half across wing ; 1 apical, 1 or 2 costal and 2 to 4 dorsal white spots irregularly scattered on margins at and near wing-apex ; cilia around wing-apex dark fuscous, with an oblique white apical band, and those along

termen and dorsal margin dark gray, with narrow ochre-whitish dashes dispatched from white marks. Hind wing and its cilia dark gray.

Male genitalia (Figs. 20, 21 & 23: A-D): Tegumen more or less linguiform in ventral view, nearly parallel-sided, shortly truncated, much sclerotized laterally,

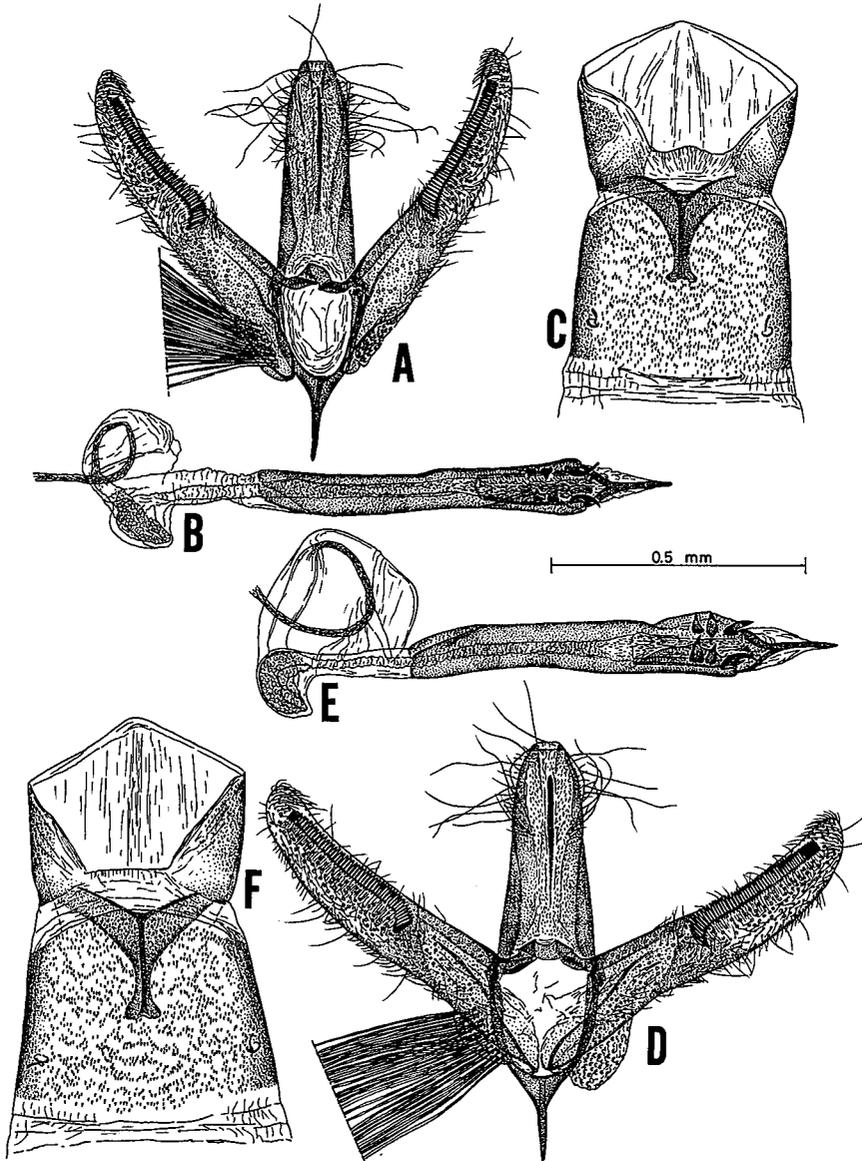


Fig. 20. *Acrocercops transecta* Meyrick. A: Male genitalia in caudal view, aedeagus omitted [Grc-1614, Moiwa, Sapporo, Hokkaido, em. 30/x/1969, ex *Juglans ailanthifolia*] — B: Aedeagus [ditto] — C: Male 7th and 8th abdominal segments in ventral view [Grc-1615, ditto] — D: Male genitalia in caudal view, aedeagus omitted [Grc-1618, Hukuoka, Kyusyu, em. 23/vi/1957, ex *Lyonia ovalifolia* (235)] — E: Aedeagus [ditto] — F: Male 7th and 8th abdominal segments in ventral view [Grc-1935, ditto].

with 20-30 pairs of slender setae on apical 2/5 of lateral margins; tuba analis covered with dense microspines, with subscaphium slender. Valva a little longer than tegumen, rather slender, very slightly upturned, with costal margin nearly straight; inner surface with fine setae scattered on apical and ventral areas, and with a long and basally curved comb of 50-80 short teeth arranged on apical half of valva near costa, 5 to 8 basal teeth of comb lanceolate and remaining ones truncated; outer surface with short linear scales scattered throughout, and with a tuft of very long androconial scales on base of sacculus, the tuft about as long as valva. Vinculum Y-shaped, with saccus slender and about 1/2 as long as valval comb. Aedeagus about as long as valva, tubular, with an apically acute and basally bifurcated apical projection, and with a pair of small lobes near apex; 2 to 5 pairs of large cornuti placed inside the paired lobes, the apicalmost pair hook-shaped and remaining pairs corniform; a number of minute needle-shaped cornuti gathered in a group at apical area of aedeagus; ductus ejaculatorius moderately long, coiled, with a small sclerite of vesica at coiled part. Eighth abdominal segment a little shorter than the 7th, widely cleft ventrally; dorsocephalic apodeme about 1/2 as long as 7th abdominal segment, bilobed apically and widened basally; ventral invagination invisible. (Thirty-nine slides examined.)

Female genitalia (Figs. 24 & 25; G-H): Papilla analis moderate in length, covered with microspines densely and fine setae as usual; apophysis posterioris slender, rather long, about as long as apophysis anterioris. Ostium bursae very large in opening size; antrum large, about 1/2 as long as 7th abdominal segment, pitcher-shaped, constricted at its caudal 2/5 to 1/5, with a pair of valve-like lobes at cephalic end; ductus bursae long tubular, membranous, and shagreened throughout its length; corpus bursae globular or ellipsoidal, with a pair of signa surrounded by many lanceolate sclerites of various lengths. (Forty-seven slides examined.)

Specimens examined: 101 ♂♂ & 98 ♀♀. HOKKAIDŌ — 4 ♂♂ & 4 ♀♀, Kōsyunai, Bibai, em. 28/ix/1967, ex *Juglans regia* (895); 1 ♂ & 1 ♀, ditto, em. 28/ix/1967, ex *J. Hybrid*a (896); 3 ♀♀, ditto, em. 4-7/ix/1961, ex *J. ailanthifolia*, K. Kamijo leg.; 3 ♂♂ & 1 ♀, Sapporo, em. 28/ix/1957, ex *Pterocarya rhoifolia*; 3 ♂♂ & 1 ♀, Moiwa, Sapporo, em. 30/x/1969, ex *J. ailanthifolia*; 7 ♂♂ & 3 ♀♀, ditto, em. 4-8/ix/1972, ex *J. ailanthifolia*; 9 ♂♂ & 7 ♀♀, Misumai, Sapporo, em. 11-13/ix/1967, ex *J. ailanthifolia* (890); 1 ♂ & 1 ♀, Zyōzankei, em. 1-3/ix/1966, ex *J. ailanthifolia*; 8 ♂♂ & 8 ♀♀, Asari, Otaru, em. 12-15/ix/1978, ex *J. ailanthifolia*, S. Matsuda leg.; 7 ♂♂ & 4 ♀♀, Tomakomai, em. 30/viii/1957, ex *J. ailanthifolia* (326). HONSHŪ — 1 ♂ & 1 ♀, Kitahukuoka, Iwate-ken, em. 12-15/viii/1958, ex *J. ailanthifolia*, T. Oku leg.; 1 ♂ & 2 ♀♀, Nippara, Okutama, Tōkyō, em. 27/vii/1981, ex *P. rhoifolia* (2345); 2 ♂♂, Kanoo, Nagano-ken, em. 29/vi/1956, ex *Juglans* sp., T. Yasuda leg.; 1 ♀, Todai, Ina, Nagano-ken, em. 14/vii/1975, ex *J. ailanthifolia* (1414); 1 ♂ & 6 ♀♀, Ōtaki, Kiso, Nagano-ken, em. 19-22/vii/1975, ex *Lyonia ovalifolia* (1456); 1 ♂, Chugu Spa, Hakusan, Isikawa-ken, em. 24/vii/1976, ex *J. ailanthifolia* I. Togashi leg.; 2 ♂♂ & 1 ♀, Sasayama, Hyōgo-ken, em. 8/vii/1965, ex *L. ovalifolia*; 2 ♂♂, Katuura, Wakayama-ken, em. 18/v/1957, ex *L. ovalifolia*, T. Kodama leg.; 1 ♂, Nati, Wakayama-ken, 27/v/1964; 1 ♂ & 1 ♀, Kozagawa, Wakayama-ken, em. 5/vi/1970, ex *L. ovalifolia* (1030); 2 ♂♂, ditto, 14-20/v/1964. SIKOKU — 1 ♂ & 4 ♀♀, Ino, Kōti-ken, em. 23/vi/1957, ex *L. ovalifolia* (235). KYŪSYŪ — 23 ♂♂ & 24 ♀♀, Hukuoka-si, em. 20-29/vi/1957, ex *L. ovalifolia* (235); 2 ♂♂ & 2 ♀♀, Mt. Wakasugi, Hukuoka-si, em. vi/1957, ex *P. rhoifolia*, T. Saigusa leg. TUSIMA — 1 ♂ & 9 ♀♀, Toyo, Kamitusima, em. 8-12/xi/1979, ex *Platycarya strobilacea* (2121 & 2124); 3 ♂♂ & 1 ♀, Ōbosi-yama, Mine, em. 5-10/xi/1979, ex *P. strobilacea* (2083); 2 ♂♂, ditto, 17/x/1979, K. Yasuda leg.; 1 ♂, Kamisaka, Izuhara, 31/v/1979, I. Kanazawa leg. U.S.S.R. — 1 ♂, Botanical Garden, Vladivostok, em. 1/x/1984, ex *Carya ovata*; 1 ♀, ditto, em. 1/x/1984, ex *C. aquatica*; 1 ♀, ditto, em. 29/ix/1984, *Juglans regia*; 1 ♀, ditto, em. 30/ix/1984, ex *J. nigra*; 1 ♀, ditto, em. 2/x/1984, *J. cordiformis*; 1 ♀, ditto, em. 1/x/1984, ex *J. hindsii*; 1 ♀, ditto, em. 30/ix/1984, ex *J. mandshurica*; 1 ♂, ditto, em. 30/ix/1984, ex *J. illinoensis*;

1♂, ditto, em. 2/x/1984, *J. ailanthifolia*; 1♂, ditto, em. 30/ix/1984, ex *J. sieboldiana*; 1♀, ditto, em. 29/ix/1984, ex *J. cinerea*; 1♂, ditto, em. 1/x/1984, *C. myrticiformis*: all collected by V.P. Ermolaev. TAIWAN — 7♂♂ & 6♀♀, Tsuifeng (alt. 2300 m), Nantou, em. 4-10/vii/1979, ex *L. ovalifolia* (1845).

Distribution: Japan (Hokkaidō; Honsyū; Sikoku; Kyūsyū; Tusima); Korea; U.S.S.R. (Far East) (new record); and Taiwan (new record).

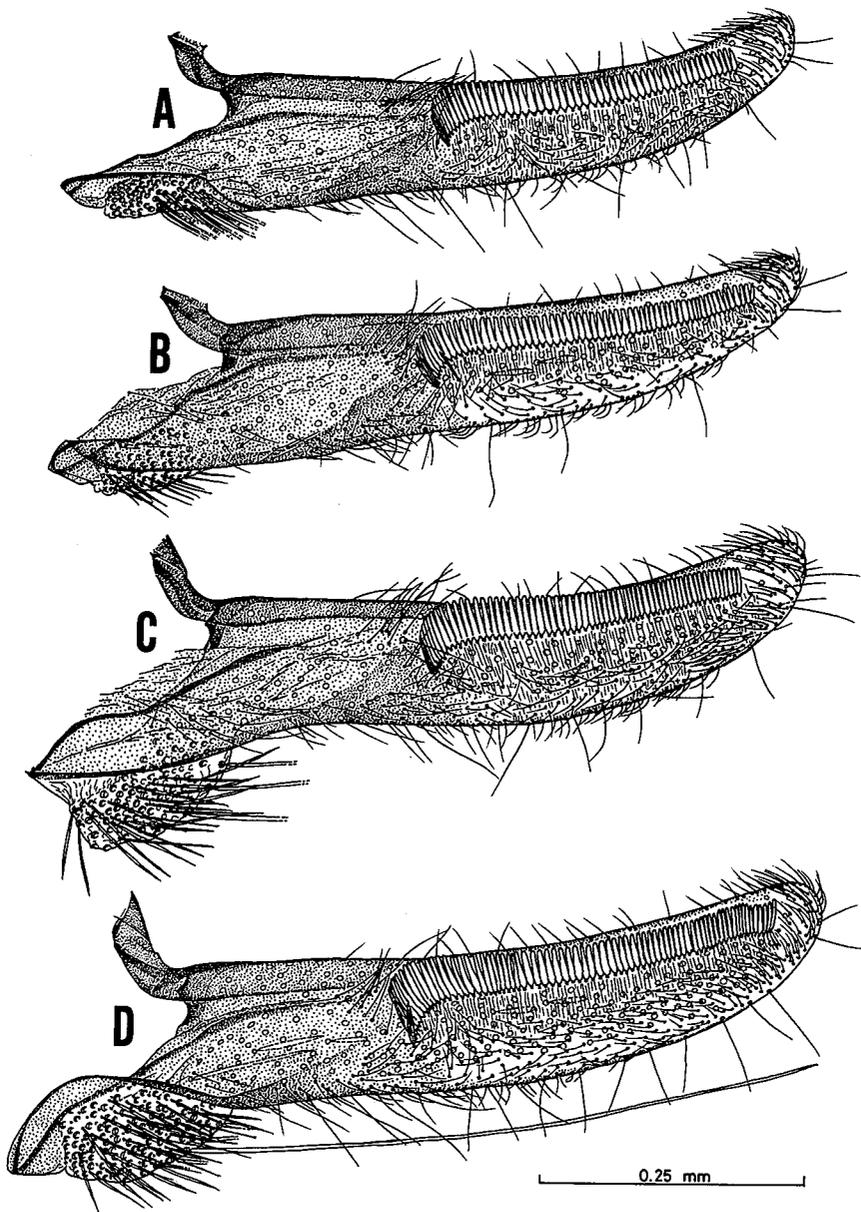


Fig. 21. *Acrocercops transecta* Meyrick. A: Right valva [Grc-1614, ex *Juglans ailanthifolia*] — B: Ditto [Grc-1615, ditto] — C: Ditto [Grc-1618, ex *Lyonia ovalifolia*] — D: Ditto [Grc-1619, Hukuoka, Kyūsyū, em. 20/vi/1957, ex *L. ovalifolia* (235)].

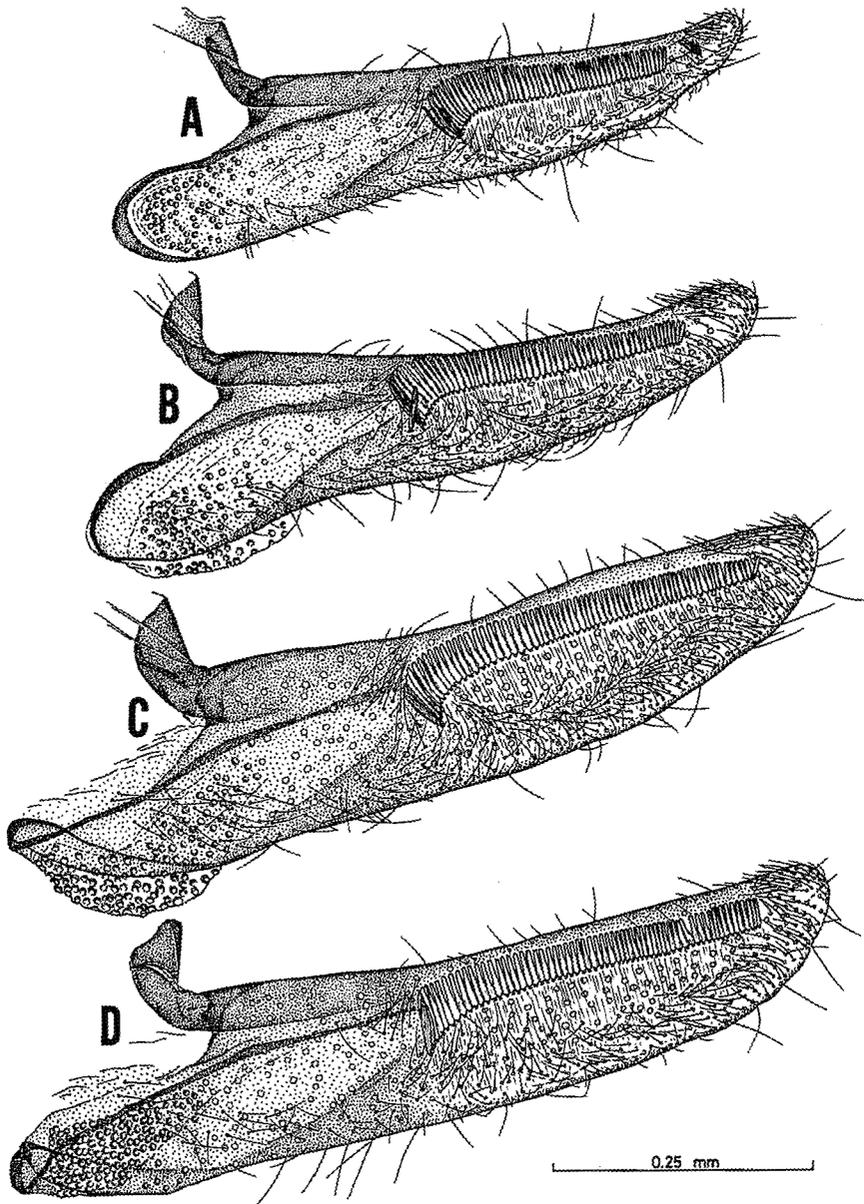


Fig. 22. A-B: *Acrocercops defigurata* Meyrick. A: Right valva [Grc-3867, Malipu-Suri Dhoban, Janakpur, Nepal, em. 2/ix/1983, ex *Juglans* sp. (Npl-301)] — B: Ditto [Grc-3881, Godawari, Bagmati, Nepal, em. 8/viii/1983, ex *Juglans* sp. (Npl-271)]. C-D: *Acrocercops leucophaea* Meyrick. C: Right valva [Grc-3879, Gongar-Chetchet, Janakpur, Nepal, em. 1/ix/1983, ex *Engelhardtia spicata* (Npl-327)] — D: Ditto [Grc-3870, Godawari, Bagmati, Nepal, em. 26/ix/1983, ex *Lyonia ovalifolia* (Npl-486)].

Table 1. Relative length of female bursa copulatrix to fore wing in
A. leucophaea complex.

	Gen. slide no. Grc-	Food plant	Locality	A ¹⁾	B ²⁾	A/B	
<i>A. transecta</i>	3889	<i>Lyonia</i>	Honsyû	3.87	2.00	1.94	
	3890	"	"	4.00	2.17	1.84	
	3910	"	"	3.67	1.78	2.06	
	3891	"	Sikoku	4.07	2.12	1.92	
	3911	"	"	3.60	2.02	1.78	
	3892	"	Kyûsyû	4.47	2.22	2.01	
	3912	"	"	4.53	2.40	1.88	
	3909	"	"	4.00	2.13	1.88	
	3904	"	Taiwan	4.33	2.15	2.01	
	3905	"	"	4.20	2.12	1.98	
	3906	"	"	4.40	2.15	2.05	
		Mean			4.10	2.11	1.94
	3913	<i>Juglans</i>	Hokkaidô	3.73	1.95	1.91	
	3915	"	"	4.47	2.28	1.96	
	3897	"	"	4.47	2.25	1.99	
	3900	"	Honsyû	4.27	2.28	1.87	
	3899	<i>Pterocarya</i>	"	4.13	2.22	1.86	
	3914	<i>Platycarya</i>	Tusima	3.73	1.95	1.91	
	3898	"	"	4.07	2.12	1.92	
		Mean			4.12	2.15	1.92
<i>A. leucophaea</i>	3873	<i>Lyonia</i>	Nepal	3.80	1.95	1.95	
	3875	"	"	4.00	1.90	2.10	
	3874	"	"	4.13	2.20	1.88	
	3876	"	"	3.73	1.98	1.88	
		Mean			3.92	2.00	1.96
	3877	<i>Juglans</i>	Nepal	3.73	1.90	1.96	
	1470	"	"	4.13	2.00	2.06	
3235	<i>Engelhardtia</i>	"	3.80	1.95	1.95		
	Mean			3.89	1.95	1.99	
<i>A. defigurata</i>	3868	<i>Juglans</i>	Nepal	4.40	2.30	1.91	
	3863	"	"	4.07	2.18	1.87	
	3864	"	"	4.40	2.15	2.05	
	3883	"	"	4.20	2.13	1.97	
	3099	"	"	4.07	2.15	1.89	
	Mean			4.23	2.18	1.94	

¹⁾ A : Length of fore wing (mm).

²⁾ B : Length of bursa copulatrix (mm).

Table 2. Measurements of male genitalia and relative length of valva to fore wing in *A. leucophaea* complex.

Gen. slide no. Grc-	Food plant	Locality	A ¹⁾	B ²⁾	A/B	C ³⁾	B/C	R ⁴⁾	L ⁴⁾	CR+CL ⁵⁾
3885	<i>Lyonia</i>	Honsyū	4.40	0.637	6.91	0.094	6.64	63	61	4+2
3886	"	"	3.67	0.596	6.15	0.108	5.52	56	64	3+2
3887	"	Kyūsyū	3.80	0.590	6.44	0.104	5.67	70	70	4+4
3888	"	"	4.33	0.616	7.03	0.097	6.55	63	65	2+3
2573	"	Taiwan	4.67	0.677	6.90	0.104	6.51	76	76	5+3
3901	"	"	4.47	0.643	6.95	0.104	6.18	61	59	4+3
3902	"	"	4.53	0.663	6.83	0.104	6.38	67	67	3+3
3903	"	"	4.27	0.670	6.37	0.108	6.20	73	74	4+4
Mean			4.27	0.636	6.70	0.102	6.24	66.7		
3893	<i>Juglans</i>	Hokkaidō	4.80	0.579	8.33	0.097	5.94	63	61	5+5
3895	"	"	4.27	0.509	8.39	0.094	5.41	51	52	4+5
3063	"	"	4.40	0.523	8.41	0.083	6.30	61	62	5+4
1614	"	"	4.53	0.576	7.86	0.076	7.58	49	59	3+3
1615	"	"	4.33	0.590	7.34	0.073	8.08	60	64	4+3
3896	<i>Pterocarya</i>	Honsyū	3.80	0.556	6.83	0.090	6.18	67	64	3+5
3894	<i>Platycarya</i>	Tusima	3.60	0.529	6.80	0.104	5.08	56	53	4+4
Mean			4.25	0.551	7.71	0.088	6.26	58.7		

A. transecta (Meyrick)

¹⁾ A : Length of fore wing (mm).

²⁾ B : Length of right valva (mm).

³⁾ C : Width of right valva at apical tooth of comb (mm).

⁴⁾ Numbers of teeth of comb on right valva (R) and left valva (L).

⁵⁾ Numbers of cornuti along right side (CR) and left side (CL).

Table 3. Measurements of male genitalia and relative length of valva to fore wing in *A. leucophaea* complex.
(continued from Table 2)

Gen. slide no. Grc-	Food plant	Locality	A*	B*	A/B	C*	B/C	R*	L*	CR+CL*	
<i>A. leucophaea</i> (Meyrick)	3236	<i>Lyonia</i>	Nepal	3.87	0.616	6.28	0.107	5.76	77	69	4+5
	3869	"	"	4.13	0.630	6.56	0.124	5.08	69	64	4+3
	3870	"	"	4.07	0.650	6.26	0.125	5.20	72	69	5+2
	3871	"	"	3.80	0.610	6.23	0.115	5.30	61	56	3+3
	3872	"	"	3.67	0.630	6.83	0.115	5.47	69	71	3+4
	Mean			3.91	0.627	6.23	0.117	5.36	67.7		
	3865	<i>Engelhardtia</i>	Nepal	4.27	0.650	6.57	0.115	5.65	66	68	2+4
	3866	"	"	4.07	0.643	6.33	0.111	5.79	64	59	3+2
	3878	"	"	4.07	0.637	6.39	0.104	6.13	70	67	4+2
	3879	"	"	4.13	0.643	6.42	0.115	5.59	73	76	4+3
3234	"	"	4.00	0.616	6.49	0.107	5.76	58	63	4+4	
Mean			4.11	0.638	6.44	0.110	5.80	66.4			
<i>A. defigurata</i> (Meyrick)	3867	<i>Juglans</i>	Nepal	4.00	0.509	7.86	0.059	8.63	57	55	5+5
	3861	"	"	3.73	0.549	6.79	0.076	7.22	66	60	4+3
	3881	"	"	3.67	0.536	6.85	0.080	6.70	56	55	3+2
	3882	"	"	3.53	0.432	8.17	0.173	5.91	62	66	4+3
	3233	"	"	4.27	0.603	7.08	0.076	7.93	76	75	3+3
	Mean			3.84	0.526	7.35	0.073	7.21	62.8		

* Abbreviations, see Table 2.

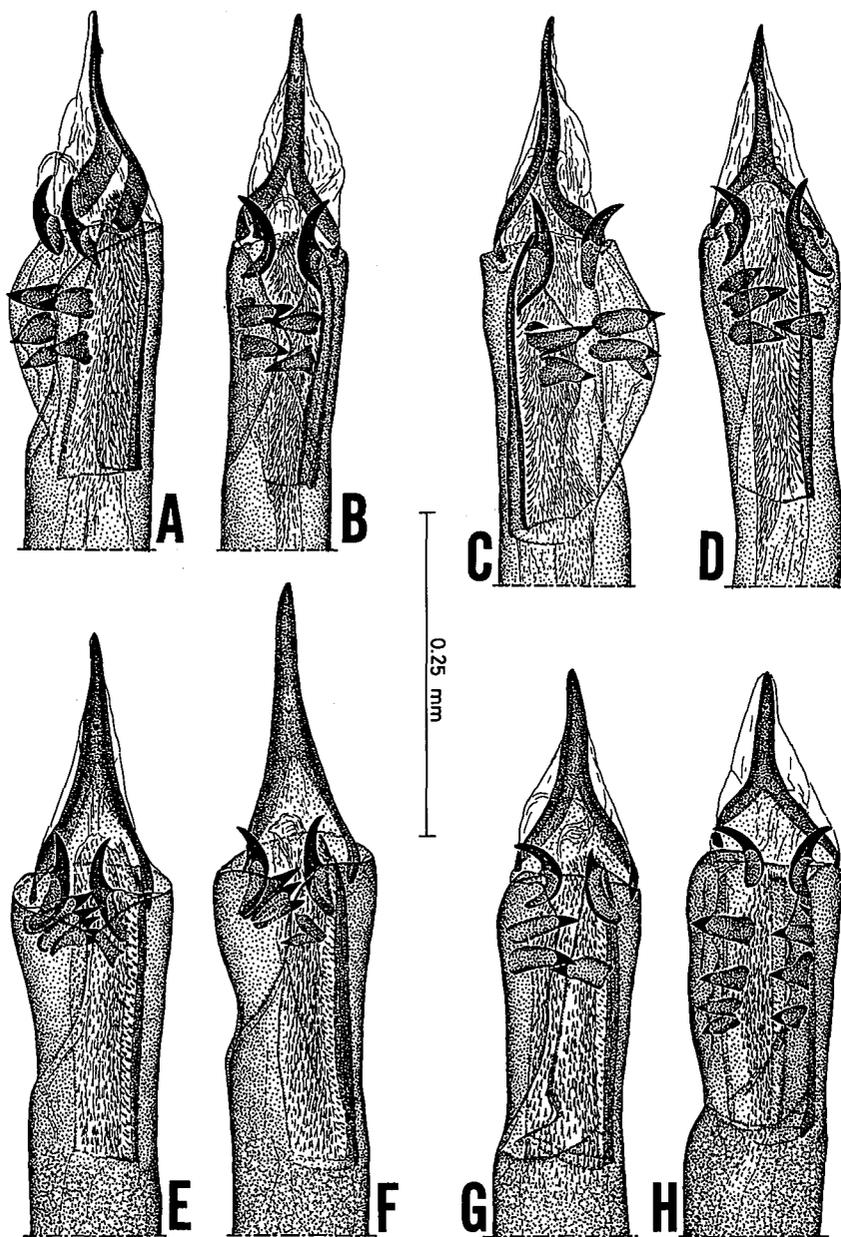


Fig. 23. A-D: *Acrocercops transecta* Meyrick. A: Apical part of aedeagus [Grc-1615, Moiwa, Sapporo, Hokkaidō, em. 30/x/1969, ex *Juglans ailanthifolia*] — B: Ditto [Grc-1926, Wakasugi-yama, Hukuoka, Kyūsyū, em. 19/v/1957, ex *Pterocarya rhoifolia*] — C: Ditto [Grc-1935, Hukuoka, Kyūsyū, em. 20/vi/1957, ex *Lyonia ovalifolia* (235)] — D: Ditto [Grc-1932, Kozagawa, Wakayama-ken, em. 5/vi/1970, ex *Lyonia ovalifolia* (1030)].
 E-F: *Acrocercops leucophaea* Meyrick. E: Apical part of aedeagus [Grc-3876, Godawari, Bagmati, Nepal, em. 26/ix/1983, ex *Lyonia ovalifolia* (Npl-486)] — F: Ditto [Grc-3879, Gongar-Chetchet, Janakpur, Nepal, ex *Engelhardtia spicata* (Npl-327)].
 G-H: *Acrocercops defigurata* Meyrick. G: Apical part of aedeagus [Grc-3881, Nepal, ex *Juglans* sp. (Npl-271)] — H: Ditto [Grc-3867, Nepal, ex *Juglans* sp. (Npl-301)].

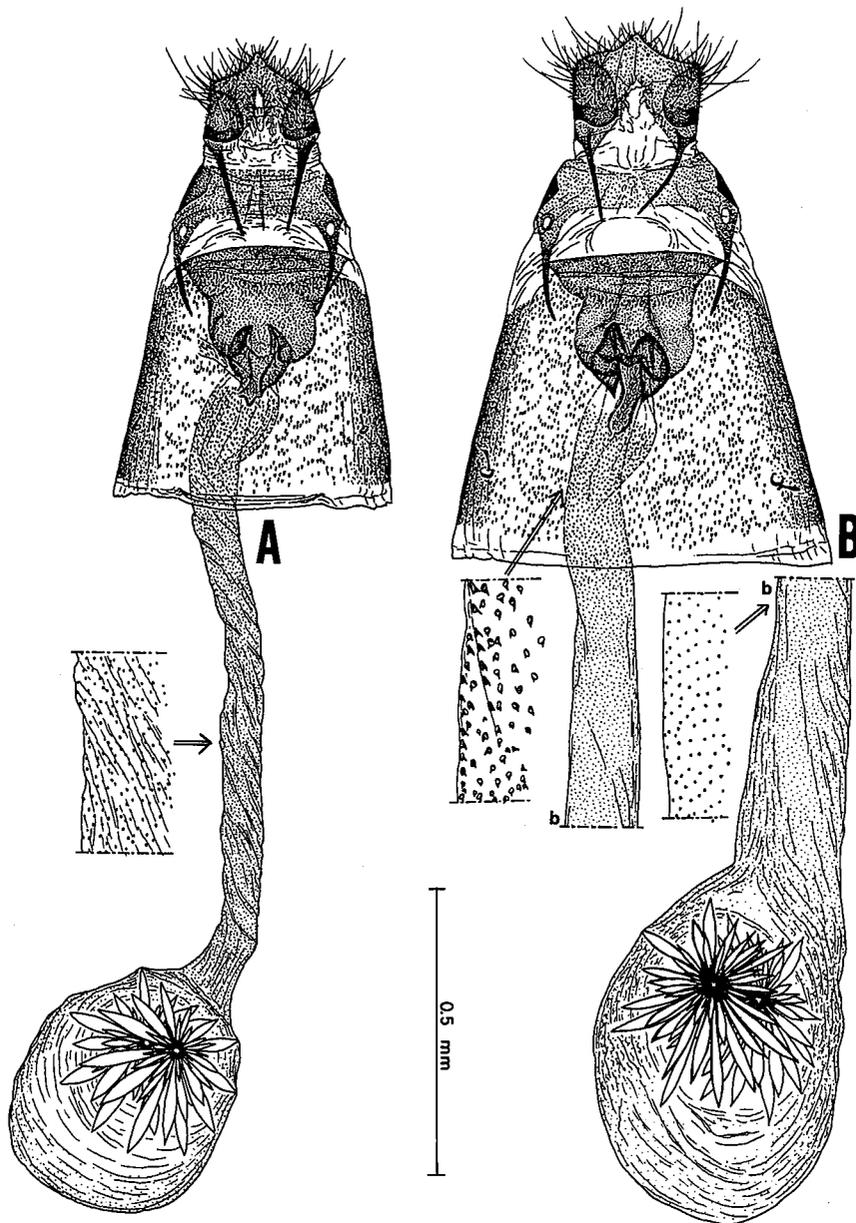


Fig. 24. *Acrocercops transecta* Meyrick. A: Female genitalia in ventral view [Grc-1924, Kōsyunai, Bibai, Hokkaidō, em. 28/ix/1967, ex *Juglans regia* (895)] — B: Ditto [Grc-1621, Hukuoka, Kyūsyū, em. 23/vi/1957, ex *Lyonia ovalifolia* (235)].

Food plants: *Lyonia ovalifolia* Drude (Ericaceae); *Juglans ailanthifolia* Carr., *J. regia* Linn., *Platycarya strobilacea* Sieb. et Zucc. and *Pterocarya rhoifolia* Sieb. et Zucc. (Juglandaceae) in Japan. *Carya aquatica* Nutt., *C. myrticiformis* Nutt., *C. ovata* K. Koch, *Juglans ailanthifolia* Carr., *J. cinerea* Linn., *J. cordiformis* Maxim., *J. hindsii* Jeeps, *J. illinoensis* K. Koch, *J. mandschurica* Maxim., *J. nigra* Linn., *J. regia* Linn., *J. sieboldiana* Maxim. (Juglandaceae) in U.S.S.R. *Lyonia ovalifolia* Drude (Ericaceae) in Taiwan.

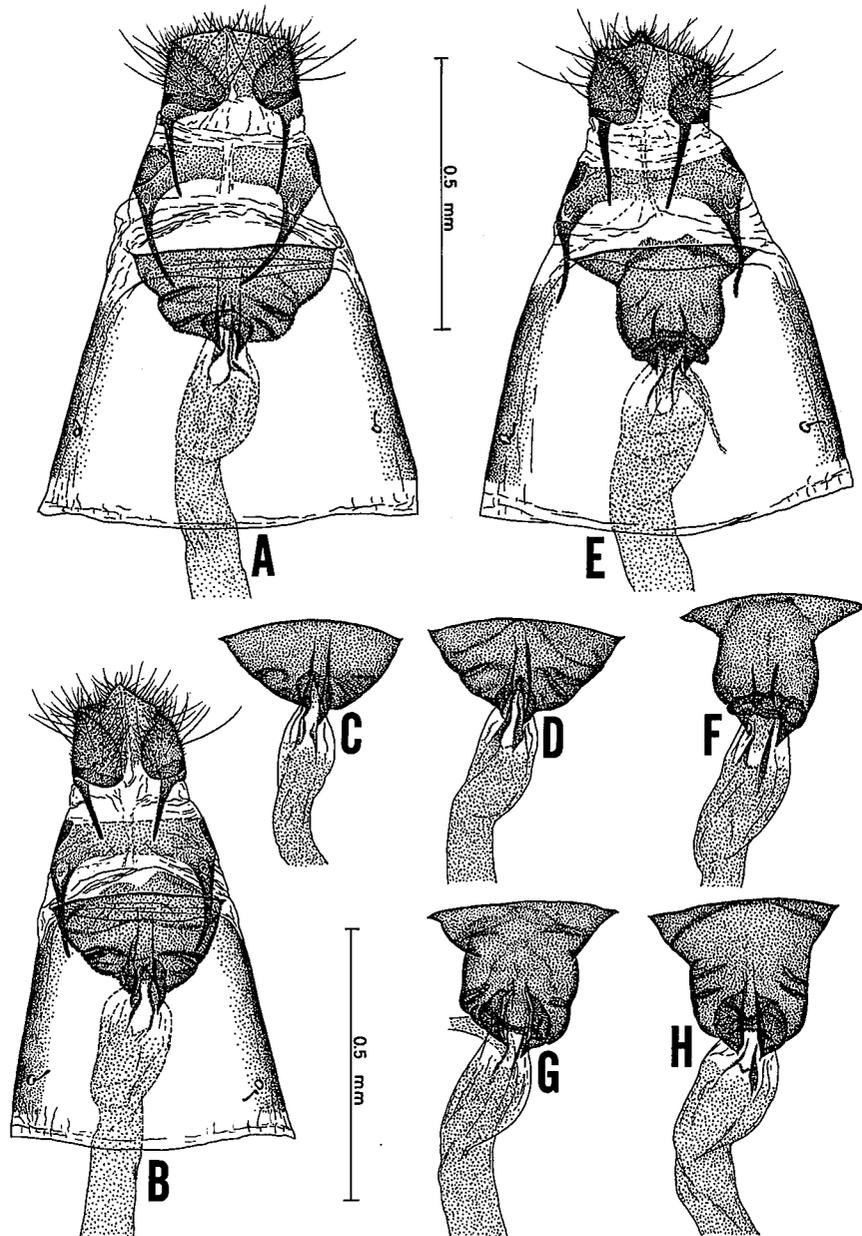
Remarks: In 1982, one of us, Kuroko, restricted *A. transecta* to the form feeding on Juglandaceae and, at the same time, described a new species for the form mining in leaves of *Lyonia ovalifolia* (Ericaceae) under the name *A. lyoniella*. After careful examinations of further specimens reared from Ericaceae and Juglandaceae, however, we have come to conclude that the 2 forms are not clearly separated from each other by the colour-pattern and male and female genitalia, and that *A. lyoniella* should provisionally be treated as a junior synonym of *A. transecta*.

According to the original description, *A. lyoniella* is distinguished from *A. transecta* not only by the difference of the food plant but also by the darker markings of the fore wing and the longer female ductus bursae. In the present specimens examined, the darker colour-pattern tends to occur on the specimens emerged in the late autumn in both forms. Moreover, the length of the bursa copulatrix (antrum + ductus bursae + corpus bursae) and its relative length to the fore wing are not sufficiently different between the forms feeding on Juglandaceae and Ericaceae as shown in the Table 1. On the other hand, the male valva of the Ericaceae-form is slightly longer and wider than that of the Juglandaceae-form, while the relative length of the valva to its width is not obviously different between them (see Table 2). The 2 forms are also very similar to each other in the other characters of the adult stage, and we failed to discriminate between them by the female antrum and signa, the arrangement of the cornuti of the aedeagus, etc.

A. transecta is very closely related to *A. leucophaea* Meyrick, 1919, recorded from Kumaon and Assam of India, and *A. defigurata* Meyrick, 1928, also described from Assam, in the basic colour-pattern of the fore wing, the smooth labial palpus, the shape of the male valva, the structure of the aedeagus, the male 8th abdominal segment which lacks the paired ventral invaginations, the basic structure of the female bursa copulatrix, etc. Moreover, in Nepal, one of us, Kumata, reared *A. leucophaea* from ericaceous (*Lyonia ovalifolia*) and juglandaceous plants (*Juglans* sp.

Fig. 25. A-D: *Acrocercops leucophaea* Meyrick. A: Female genitalia in ventral view, apical part of bursa copulatrix omitted [Grc-3875, Dhunche, No.1 West, Nepal, em. 15/vi/1968, ex *Lyonia ovalifolia*] — B: Ditto [Grc-3877, Balaju, Nepal, em. 18/viii/1968, ex *Juglans* sp. (Npl-106)] — C: Basal part of bursa copulatrix [Grc-3235, Malipu-Suri Dhoban, Janakpur, Nepal, em. 2/ix/1983, ex *Engelhardtia spicata* (Npl-301)] — D: Ditto [Grc-3876, Godawari, Nepal, em. 26/ix/1983, ex *Lyonia ovalifolia* (Npl-486)].
 E-F: *Acrocercops defigurata* Meyrick. E: Female genitalia in ventral view [Grc-3883, Suri Dhoban-Gongar, Janakpur, Nepal, em. 29/viii/1983, ex *Juglans* sp. (Npl-322)] — F: Basal part of bursa copulatrix [Grc-3863, Godawari, Nepal, em. 10/viii/1983, ex *Juglans* sp. (Npl-271)].
 G-H: *Acrocercops transecta* Meyrick. G: Basal part of bursa copulatrix [Grc-3040, Nippara, Tôkyô, em. 27/vii/1981, ex *Pterocarya rhoifolia* (2345)] — H: Ditto [Grc-3912, Hukuoka, Kyûsyû, em. 23/vi/1957, ex *Lyonia ovalifolia* (235)].

and *Engelhardtia spicata*), and *A. defigurata* from *Juglans* sp. *A. transecta* may form a species-group, the *leucophaea*-complex, together with *A. leucophaea* and *A. defigurata* within the genus *Acrocercops*.



The species of the *leucophaea*-complex are distinguished from each other by the following key : —

1. Ground colour of fore wing ochre-yellow or ochre-brown, more or less irrorated with fuscous except for areas bordering on white strigulae and fasciae. 2
- Ground colour of fore wing evenly dark fuscous, with white spots, strigulae or fasciae. 3
2. At first sight, ground colour of fore wing ochreous, with paler borderlines with white marks wide; male valva nearly parallel-sided, round apically, with its width at apical tooth of comb 1/5.4-1/5.8 length of valva in average (see Table 3, and Fig. 22: C-D); female antrum semicircular, sometimes very slightly constricted in middle (see Fig. 25: A-D); distribution: North India and Nepal (new record); food plant: *Lyonia*, *Juglans* and *Engelhardtia*.
..... *A. leucophaea* Meyrick, 1919
- At first sight, ground colour of fore wing fuscous, with paler borderlines very narrow; male valva very slightly narrowed apically, with its width at apical tooth of comb 1/6.2-1/6.3 length of valva in average (see Table 2, and Fig. 21); female antrum pitcher-shaped, usually well-constricted at caudal 2/5 to 1/5 (see Fig. 25: G-H). *A. transecta* Meyrick, 1931 (part)
3. White marks of fore wing complete as described above, if discoloured into ground colour, then indicated their presence by darker marginal irrorations; male valva slightly narrowed apically, with its width at apical tooth of comb 1/6.2-1/6.3 length of valva in average; female antrum pitcher-shaped, with a pair of longitudinal valve-like lobes at its cephalic end (see Fig. 25: G-H). *A. transecta* Meyrick, 1931 (part)
- White marks of fore wing not margined with dark irrorations, always reduced into marginal spots or short strigula: a strigula in middle of costa, a spot at basal 3/4 of costa, a spot at basal 1/4 of dorsum, a streak at basal 2/3 of dorsum and some spots on margins near apex of wing, sometimes these spots and strigula completely absent in a few specimens; male valva rather strongly narrowed apically, with its width at apical tooth of comb 1/7.2 length of valva in average (see Table 3, and Fig. 22: A-B); female antrum pitcher-shaped, with transverse ridges or furrows at truncated cephalic end; distribution: North India and Nepal (new record); food plant: *Juglans*. *A. defigurata* Meyrick, 1928

VI. GENUS ARTIFODINA KUMATA

Artifodina Kumata, 1985, Ins. matsum. n.s. 32: 110.

Type-species: *Artifodina japonica* Kumata, 1985.

♂ ♀. Face and head smooth-scaled, with neckplumes appressed; ocelli absent; proboscis developed, faintly scaled at base. Labial palpus rather long, drooping or porrect, slightly upturned, smooth-scaled entirely, with apical segment about as long as 2nd segment. Maxillary palpus minute, porrect or drooping, slightly rough-scaled, 1/2-2/3 as long as apical segment of labial palpus. Antenna filiform, simple, 1.1-1.2 times as long as fore wing; scape slightly thickened, simple, without any pecten or tuft. Thorax smooth-scaled, without a crest. Legs slender, rather long; middle tibia very slightly thickened apically; hind tibia with a row of short, bristly scales above and 2 pairs of spurs below, the proximal pair at about basal 1/5; hind tarsus about 1.3 times as long as hind tibia, the 1st segment roughened above with indistinct bristly scales.

Fore wing narrowly lanceolate, blunt apically; discoidal cell occupying about basal 3/4 of wing, slightly dilated and obliquely truncated distally, with upper vein obsolescent on proximal part far basal to a point where the vein R_1 branches off; 12- or 13-veined; Cu_{1b} absent in type-species, or obsolescent basally in other species; all veins well separated basally, or rarely R_2 and R_3 connate; R_1 rather long, running from basal 2/5 of cell to basal 3/5 of costa; R_2 and R_3 arising around upper angle of cell; R_5 from middle of distal margin of cell; M_1 , M_2 , M_3 and Cu_{1a} originated

around lower angle of cell; Cu_2 prominent on its apical part alone; An simple, nearly straight, connected with dorsal margin at about basal $1/6$ of wing. Hind wing slender, about half as wide as and about $4/5$ as long as fore wing, long-pointed, with cell opened between M_2 and M_3 ; usually 7-veined; Rs simple, or abnormally branched off into 2 veins in 1 specimen examined; M_1 and M_2 stalked; M_3 and Cu_{1a} long-stalked, with their common stem stalked with Cu_{1b} ; Cu_2 and An rudimentary, not visible; cilia long, 4-5 times of wing-width.

Male genitalia: Tegumen moderately long, rather simple, without socius or gnathos; dorsal surface not squamose; ventral surface very sparsely setose laterally and rather strongly sclerotized on basal $2/3$ laterally, the sclerotizations sometimes forming paired lobes at middle of tegumen; subscaphium of tuba analis strongly sclerotized, sometimes forming an acute hook at base. Valva elongate, somewhat wing-shaped, with a short comb on disc as in *Acrocercops*, the comb being straight or curved and shorter than $1/4$ length of valva; fine setae densely occurring around apex and ventral area on inner surface; very long androconial scales scattered on outer surface. Vinculum Y-shaped, with a long, narrow saccus, and with a group of short and club-shaped setae on cephalic side. Aedeagus tubular, straight, usually longer than valva, with or without cornuti. Eighth abdominal segment with a wide rectangular cleft on ventrum, the tergum with an anterior apodeme triangular basally and bar-shaped apically, and the sternum with a pair of long anterior invaginations containing a bundle of linear androconial scales (coremata). Seventh abdominal segment normal in form as in the preceding ones.

Female genitalia: Papilla analis moderately long, blunt dorsally and round ventrally in lateral view, setose as usual; apophysis posterioris moderately long, narrow apically and widened basally. Eighth abdominal segment rather short, weakly sclerotized dorsally, membranous ventrally; apophysis anterioris similar to apophysis posterioris in shape and length. Ostium bursae opened on ventrum of 8th abdominal segment, rather large in opening; a sclerous lamella postvaginalis absent in type-species or present in other species; lamella antevaginalis also distinct in a species. Antrum membranous or partly sclerotized; ductus bursae long, slender, tubular, usually shagreened caudad; corpus bursae large pyriform or ellipsoidal, membranous, without any signum.

Body chaetotaxy of last instar larva (Fig. 46: A): Prothorax with XD2 absent and XD1 directly dorsal to D2. Second abdominal segment with 2 subventral setae, the seta SV3 being absent. The other chaetotactic pattern is very similar to that of *Acrocercops*.

Arrangement of crochets: Ventral prolegs on 3rd to 6th abdominal segments with vestigial or normally developed crochets arranged in a transverse row; anal proleg with no trace of crochets.

Larval habit: The larva of this genus is a leaf-miner throughout its feeding period. In early stage, the mine is linear, interparenchymal, and runs across the leaf from one side to the other twice or thrice, thus the leaf part apical to crossed mines is discoloured into yellowish-green or pale green; then the mine enters into the apical part of the main leaf-vein or runs along the main vein; sometimes it irregularly runs in the space between the edge and main vein. In late stages, the mine is broadened into a large blotch of the full-depth type within the discoloured area of the leaf; finally, a large, semitransparent, blotchy mine is seen on the discoloured area.

When full grown, the larva becomes ochre-yellowish with a crimson-reddish, broad transverse band on each segment, and then leaves the mine for a pupating site through a semicircular slit on the upper surface of the leaf. The cocoon is usually found on the leaf neighbouring the mine, boat-shaped, with a few minute bubbles on the surface.

Remarks: *Artifodina* is closely related to *Acrocercops* in many respects, but is distinguished from the latter by the following characters:— Vein R_5 of fore wing arising from middle of distal margin of cell and well separated from vein M_1 ; 2nd segment of labial palpus smooth-scaled, without scaly tuft below; vinculum of male genitalia with a group of deformed setae on cephalic side; corpus bursae of female genitalia without any signum; last instar larva with 4 pairs of ventral prolegs each located on 3rd to 6th abdominal segments besides anal prolegs; crochets of ventral prolegs arranged in a transverse row and those of anal proleg absent; and 2nd abdominal segment of larva with seta SV3 absent. Especially, the presence of 5 pairs of larval prolegs is peculiar to the present genus among the Gracillariidae.

Three species of this genus have so far been known from Asia, and they are associated all with Myrsinaceae in the larval stage (Kumata, 1985). Only the following species is distributed in Japan.

15. *Artifodina japonica* Kumata

[Figs. 26, 27, 37(G-H), 39(F), 42(B-C), 46(A) and 51(A-B)]

Artifodina japonica Kumata, 1985, Ins. matsum. n.s. 32: 114 [Japan (Honsyū, Sikoku); host: *Myrsine seguinii*].

Original description: “♂ ♀. Expanse of wings: 7.5-11.0 mm (9.2 mm in holotype, 9.7 mm in average of 20 specimens). Length of fore wing: 3.7-5.5 mm (4.6 mm in holotype, 4.8 mm in average of 20 specimens).”

“Colour: Head and face covered with white scales, the latter mixed with dark brown scales anteriorly. Palpi white; maxillary palpus infuscated on outer face except for apex; 2nd segment of labial palpus with a longitudinal, dark brown line on outer face. Antenna pale brownish, broadly annulated with dark brown except for apical 10-12 segments which are whitish; scape whitish below, dark brown above. Thorax covered with white scales, with a dark brown, very narrow, longitudinal median line on dorsum; tegula wholly blackish-brown; a blackish-brown patch continued from tegula is placed on pleuron just below base of fore wing. Fore and mid legs blackish-brown; coxae whitish, with a large, blackish median blotch and a smaller apical blotch on lower face; fore tibia with an antemedian whitish ring, and mid tibia with similar antemedian and postmedian rings; both tarsi with 6 whitish rings. Hind leg dark gray; coxa whitish basally and apically; femur broadly whitish medianly; tibia becoming paler basally, with spurs white except for their subapical area; tarsus brownish-black, with 6 whitish rings at nearly equal intervals. Abdomen dark brownish-gray dorsally, whitish ventrally, with a series of grayish streaks oblique on lateral faces, the streaks from both sides being connected at ventrum; ♂ with a pair of coremata of fine, long, silky-white hairs, which are sometimes spread out well beyond apex of abdomen.”

“Fore wing brownish-black, tinged with purplish reflections, with white markings; a longitudinal stripe extending along dorsal margin throughout, occupying about 1/4 breadth of wing on basal 3/5, then abruptly widened and occupying about half breadth of wing on its apical 2/5, usually interrupted by ochre-brown or ochre-gray at tornus and centre of termen; 6 narrow strigulae arranged on costa from basal 1/3 to 7/8 of wing, the 1st being strongly oblique outwardly, reaching about 1/3 across wing and somewhat obscure in its margins, the 2nd to 4th nearly parallel to each other, less oblique and shorter than the 1st, but reaching nearly half across wing, the 5th and 6th

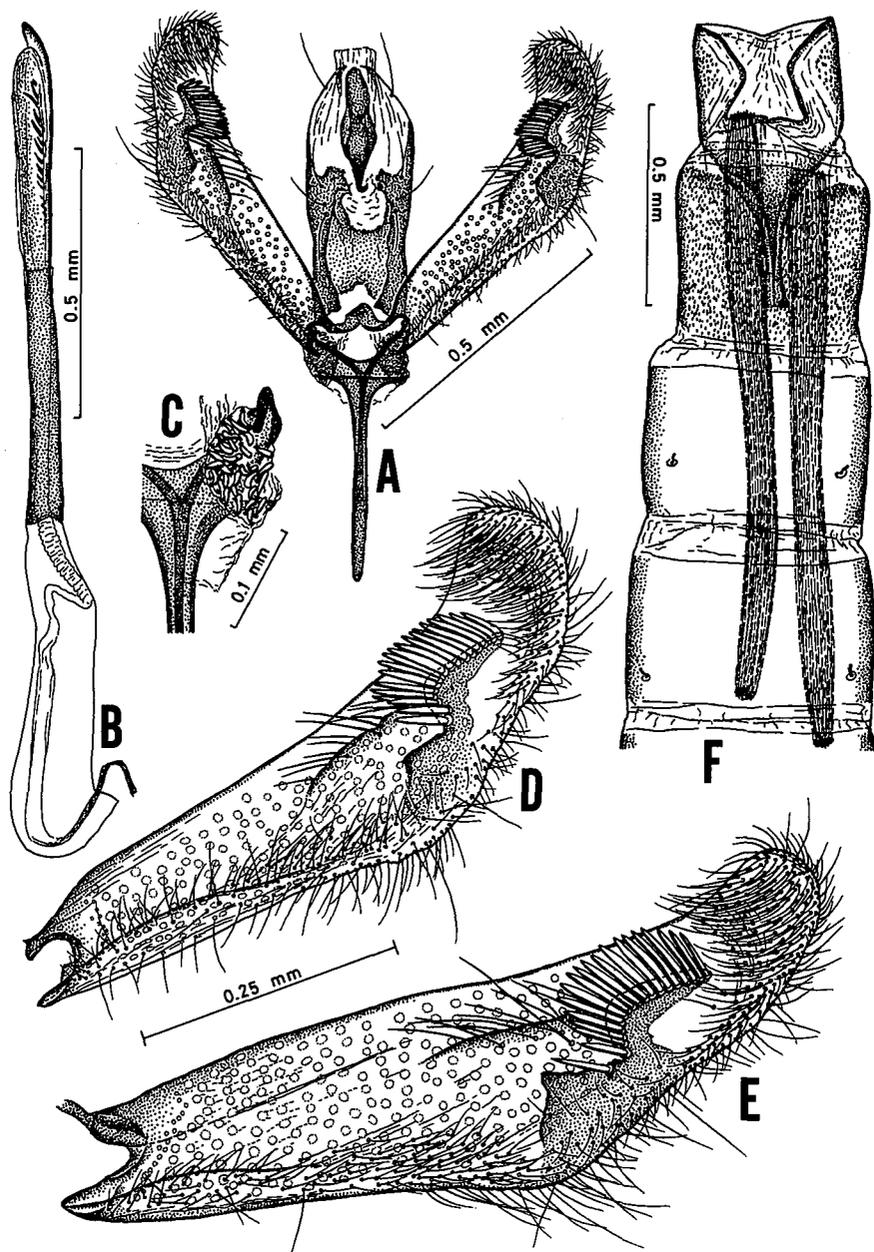


Fig. 26. *Artifodina japonica* Kumata. A: Male genitalia in caudal view, aedeagus omitted [Grc-1642, holotype] — B: Aedeagus [ditto] — C: A part of vinculum [ditto] — D: Right valva enlarged [ditto] — E: Ditto [Grc-3031, Asizuri-misaki, Kōti-ken, em. 13/xii/1980, ex *Myrine seguinii* (2255)] — F: Male 5th to 8th abdominal segments in ventral view [holotype].

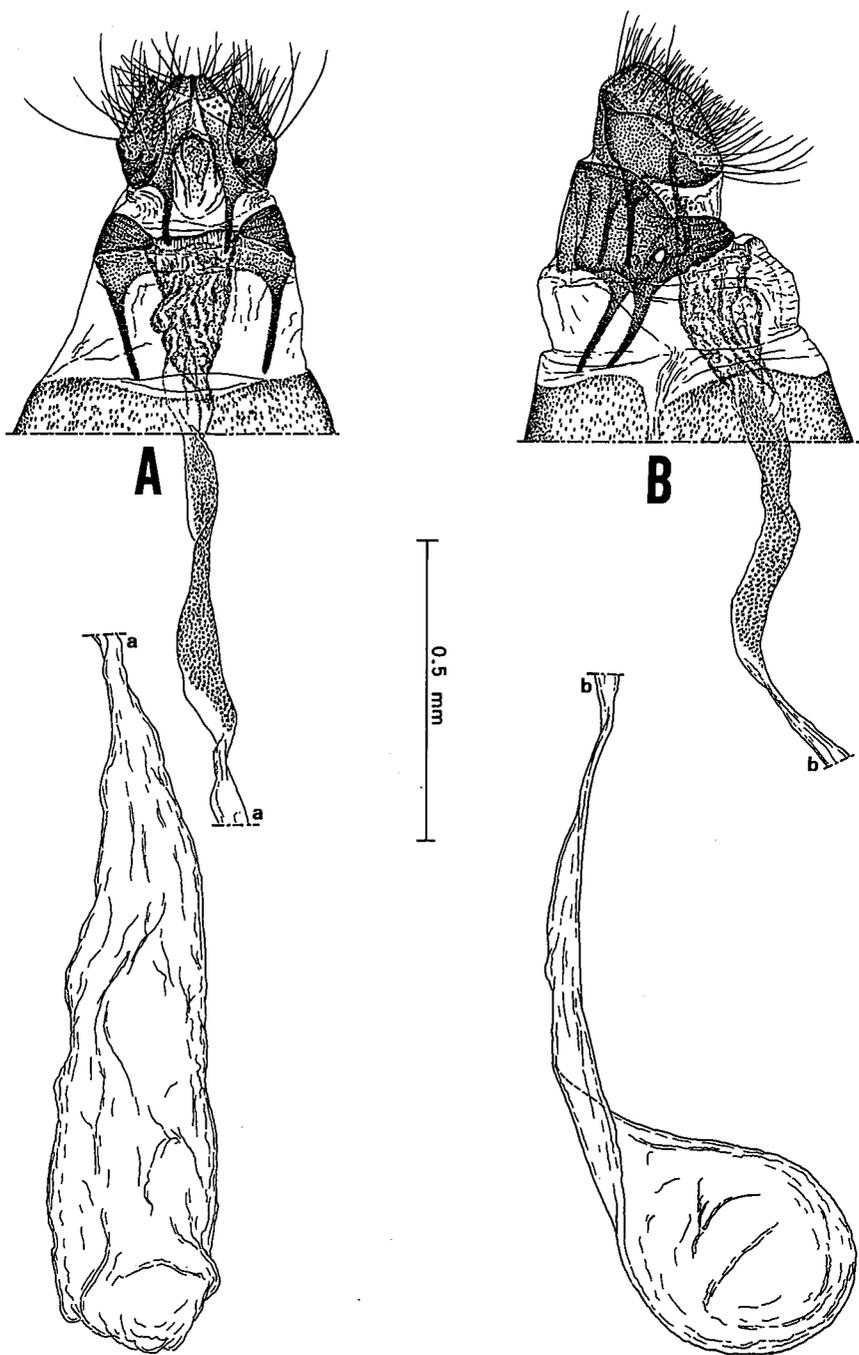


Fig. 27. *Artifodina japonica* Kumata. A: Female genitalia in ventral view [Grc-1112, Kii-Ōsima, Wakayama-ken, em. 27/vi/1964, ex *Myrsine seguinii* (681)] — B: Ditto in lateral view [Grc-1645, ditto, em. 25/vi/1964].

very short ; a narrow transverse fascia placed near apex of wing, separated from the last costal strigula by a narrow line of ground colour, arched inwardly, followed by a pyriform apical space of ground colour ; an apical spot minute and crescent-shaped ; cilia around apex of wing blackish-brown with a white rather broad median band, those along termen and dorsal margin dark ochreous-brown, and mixed with short white hairs. Hind wing blackish-brown, somewhat paler basally ; cilia dark ochreous-brown or dark grayish-brown."

"Male genitalia : Tegumen rather long, widely rounded apically in ventral view, with a pair of subapical setae ; lateral faces moderately sclerotized on basal 3/5, with a few short, oblique wrinkles, and with 2 or 3 fine setae ; subscaphium strongly sclerotized, widened in middle, then narrowed basally into an acute hook. Valva about 1.2 times as long as tegumen, somewhat wing-shaped, slightly bent upwardly at apical 2/5, widest in middle, rounded apically ; comb with 18-21 teeth which are arranged in a curved line from basal 3/5 to 4/5 of valva ; fine setae occurring rather densely around apex and ventral area of inner face ; very long androconial scales scattered on basal 3/5 of outer face ; transtilla complete, narrow. Vinculum with 30-35 minute, comma-shaped setae on cephalic side ; saccus slender, about 3/5 as long as valva. Aedoeagus tubular, straight, about 1.3 times as long as valva, pointed apically, with 18-22 minute cornuti arranged in a row from apical 3/5 to apex ; ductus ejaculatorius about 2/3 as long as aedoeagus. Eighth abdominal segment with a rectangular concavity on ventrum, the concavity being widened cephalad ; a dorsomedian apodeme reaching cephalic margin of 7th abdominal segment, truncated apically. A pair of coremata of long hairs about as long as 5th to 7th abdominal segments combined."

"Female genitalia : Papilla analis moderate in length, subtriangular in lateral view ; apophysis posterioris slender, straight, widened at base into a rectangle. Eighth abdominal segment rather short, its sclerotized part narrowed ventrally, widely interrupted on ventrum, and transversely wrinkled or carinated ; apophysis anterioris about as long as apophysis posterioris, widened basally. Ventrocaudal margin of ostium bursae straight ; lamella postvaginalis absent. Antrum widened towards ostium bursae, irregularly and densely wrinkled ; ductus bursae slender, slightly widened caudally, lined with dense microscopic scobinations from cephalic end of antrum to middle of ductus bursae ; corpus bursae weakly membranous, elongate-pyriform or ellipsoidal, without signa."

Specimens examined : 65♂♂ & 52♀♀. Holotype : ♂, Kii-Ôsima, Wakayama-ken, Honsyû, em. 25/vi/1964, ex *Myrsine seguinii* (681), Gen. sl. no. Grc-1642. Paratypes : HONSYÛ — 18♂♂ & 10♀♀, with same data as holotype except for dates emerged, 8-30/vi/1964 ; 33♂♂ & 31♀♀, Kii-Ôsima, Wakayama-ken, em. 2-28/xi/1974, ex *M. seguinii* (1337). SIKOKU — 13♂♂ & 11♀♀, Asizuri-misaki, Kôti-ken, em. 6-19/xii/1980, ex *M. seguinii* (2255).

Distribution : Japan (Honsyû ; Sikoku).

Food plant : *Myrsine seguinii* Lév. (Myrsinaceae).

Remarks : *A. japonica* can be separated from *A. himalaica* Kumata, 1985 and *A. strigulata* Kumata, 1985 by the shape of the male valva and by the female ostium bursae without distinct genital plates.

VII. GENUS DIALECTICA WALSINGHAM

Dialectica Walsingham, 1897, Proc. zool. Soc. Lond. 1897 : 150 ; Vári, 1961, Transvaal Mus. Mem. 12 : 139 ; Kuznetzov, 1979, Rev. Ent. U.R.S.S. (Ent. Oboz.) 58 : 852.

Type-species : *Gracilaria* (!) *scalariella* Zeller, 1850.

Eutrichocnemis Spuler, 1910, Schmett. Eur. 2 : 409.

Type-species : *Gracilaria* (!) *scalariella* Zeller, 1850.

♂♀. Face and head smooth-scaled, with neckplumes appressed ; ocelli absent ; proboscis moderately developed, faintly squamose at base. Labial palpus rather long, drooping, slightly recurved, smooth-scaled ; 2nd segment very slightly thickened with scales below apically ; apical segment slender, pointed apically, about as long as 2nd segment. Maxillary palpus minute, about 1/2 as long as apical segment

of labial palpus, smooth or roughened medianly, pointed apically. Antenna 1.0-1.1 times as long as fore wing, filiform, simple; scape slightly flattened, with a minute to moderate flap of scales below, the flap being acutely projected beyond scape in some species. Thorax smooth-scaled, without a crest. Fore leg slender, smooth entirely; middle leg smooth, femur expanded with scales beyond middle, and tibia slightly thickened apically; hind leg slender, long, tibia with a row of bristly scales above and 2 pairs of spurs below, the basal pair of spurs at about basal 1/4, and tarsus about as long as tibia, with a row of fine bristly scales on basal half of 1st segment.

Fore wing narrowly lanceolate, rather acutely pointed apically; discoidal cell long, occupying about basal 4/5 of wing, obliquely truncate or slightly angulated distally, with upper vein obsolescent on proximal part far basal to a point where the vein R_1 branches off; 13-veined; R_1 moderately long, running from basal 1/3-2/5 of cell to about basal 4/7 of costa; R_2 from upper angle of cell or a little before; R_3 and R_4 separated basally; R_5 long-stalked with M_1 ; M_2 connate with common stem of R_5 and M_1 or separated from the latter; M_3 from lower angle of cell; Cu_{1a} well remote from M_3 , far basal to level of R_2 in most species; Cu_{1b} distinct only on apical part, probably remote from Cu_{1a} ; An obsolescent entirely, probably connected with dorsal margin at about basal 1/5 of wing. Hind wing very narrow, about half as wide as and about 6/7 as long as fore wing, long-pointed apically, with cell opened between M_2 and M_3 ; 7-veined; M_1 and M_2 , and M_3 and Cu_{1a} stalked, respectively; Cu_2 and An invisible; cilia long, 4-5 times of wing-width.

Male genitalia: Tegumen moderate to long, spatulate or oblong in ventral view, sparsely setose laterally, without socii or gnathos; inner surface well sclerotized laterally and basally, sometimes forming a basal bridge of various shape. Valva moderate to long, widened basally, with 2 short to moderate combs occurring on apical area of inner surface; fine setae scattered along apical and ventral margins of valva; long linear androconial scales occurring on outer surface of valva, especially densely near base; transtilla complete, without any process. Vinculum U-shaped, rather widened laterally, with moderately long saccus. Diaphragma membranous, without particular sclerites. Aedeagus tubular, slender, simple; vesica with cornuti various in type; ductus ejaculatorius moderate in length, coiled. Eighth abdominal segment widely and deeply notched ventrally, with a dorsocephalic apodeme wide and bilobed or bifurcated apically; paired ventrocephalic invaginations not visible, probably absent. Seventh abdominal segment with sternite well sclerotized on caudal area, sometimes convex caudad and usually bilobed or rarely having paired processes.

Female genitalia: Papilla analis rather short, round dorsally and ventrally in lateral view, setose as usual; apophysis posterioris slender, moderate to long, slightly widened at base. Eighth abdominal segment short, weakly sclerotized dorsally, widely membranous ventrally; apophysis anterioris similar to apophysis posterioris in shape and length. Ostium bursae opened on cephalic area of 8th sternum, small in opening size, without any genital plate; antrum shortly sclerotized, usually ring-shaped; ductus bursae long, tubular, partly shagreened or weakly sclerotized, with a pair of valve-shaped sclerites or protuberances in most species. Corpus bursae elongate-ellipsoidal, pyriform or globular, with sharp-pointed signa in most species.

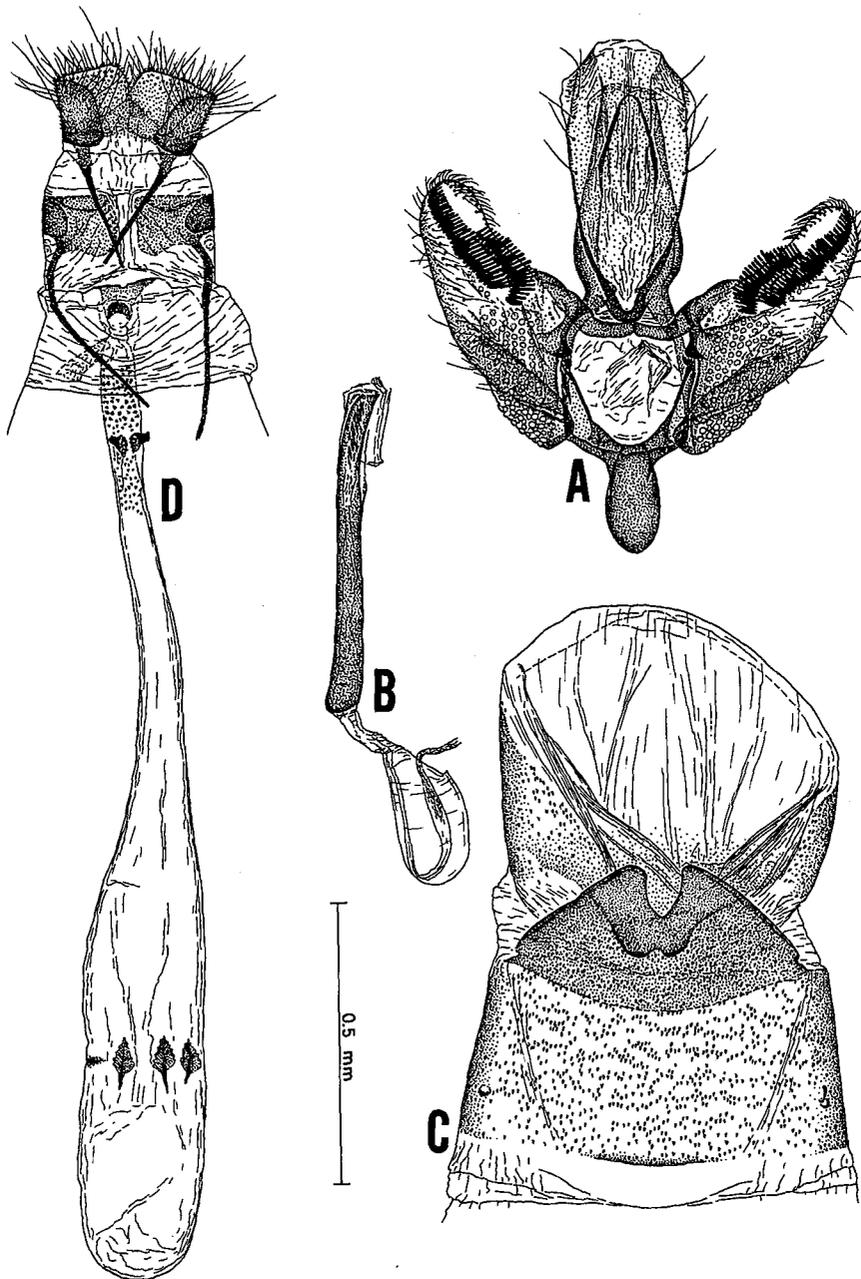


Fig. 28. *Dialectica scalariella* (Zeller). A: Male genitalia in caudal view, aedeagus omitted [Grc-3077, Toscana, Monti dell Vuellina, Italia, 13/vi/1977, ex *Echium italicum*, Triberti leg.] — B: Aedeagus [ditto] — C: Male 7th and 8th abdominal segments in ventral view [ditto] — D: Female genitalia in ventral view [Grc-3078, ditto].

Body chaetotaxy of last instar larva (Fig. 46 : B) : So far as represented by *Dialectica aemula* (Meyrick, 1912)¹⁾, the chaetotactic pattern of the larva is very similar to that of *Eteoryctis* in all respects except for the presence of the seta V1 on the 8th and 9th abdominal segments. From *Acrocercops*, *Dialectica* can be separated by the presence of the seta XD2 on the prothorax, and by the absence of seta SV3 on the 2nd abdominal segment and of the proprioceptor MD1 on the 9th.

Arrangement of crochets : Not obviously different from that of *Cryptolectica*, *Eteoryctis* and *Acrocercops*.

Larval habit : So far as known, the larva of this genus is a leaf-miner throughout the feeding stages, the mine being usually found on the upper surface of leaves. The mine is epidermal, starting in a linear gallery, whitish with a central dark brown line of frass ; then it is suddenly broadened into a large blotch, somewhat blister-like, usually brownish with a whitish margin. The upper epidermis of the mining part is sometimes contorted with threads, with many fine irregular folds ; rarely this contortion of the epidermis causes the mine to form a tentiform type. When full grown, the larva changes the body colour to crimson-red, then pupates within a boat-shaped cocoon usually placed inside the mine-cavity.

Remarks : This old genus has been confused with *Acrocercops* by many workers, but it is clearly distinguished from the latter by the scaly flap of the antennal scape, by the long-stalked veins R₅ and M₁ of the fore wing, by the 2 combs of the valva of the male genitalia, by the well-sclerotized caudal margin of the male 7th abdominal sternite, and by the different pattern of the signa of the female genitalia, besides the different larval chaetotaxy as mentioned in the above description.

The larval chaetotaxy with the seta XD2 present on the prothorax indicates that *Dialectica* is more related to *Cryptolectica* or *Eteoryctis* than to *Psydrocercops*, *Acrocercops* or *Artifodina*. On the other hand, genital characters, especially the presence of the valval combs, suggest that it is more related to *Acrocercops* or *Artifodina* than to *Cryptolectica* or *Eteoryctis*. In this paper it is provisionally situated near *Acrocercops* mainly on the basis of the genital characters and wing venation.

Vári (1961) recorded 5 species under the present genus from South Africa. At the same time, he included some species related to *Dialectica* in *Acrocercops*, but he

1)

Dialectica aemula (Meyrick), comb. nov.

Acrocercops aemula Meyrick, 1912, Exot. Microlep. 1 : 628 [India (Bengal) ; host *Cynoglossum* sp.] ; Fletcher, 1920, Mem. Dept. Agr. India, Ent. Ser. 6 : 150 ; Ibid., 1933, Imp. Counc. Agr. Res., Sci. Monograph 4 : 46 [India (Bengal) ; host : *Cynoglossum lanceolatum*, *Trichodesma indicum*].

Specimens examined : NEPAL — 2♂♂ & 1♀, Adhabar, Terai, em. 8/vii/1968, ex *Cynoglossum lanceolatum* (Npl-85) ; 2♂♂, Balaju, Bagmati, em. 18/vii/1968, ex *Cynoglossum* sp. ; 9♂♂ & 11♀♀, Malipu-Dolakha (alt. 1000-1700 m), Janakpur, em. 7-11/ix/1983, ex *Cynoglossum* sp. (Npl-427).

Distribution : India (Bengal) ; and Nepal (new record).

Food plants : *Cynoglossum lanceolatum* Forskal and *Trichodesma indicum* R.Br. (Boraginaceae) in India ; and *Cynoglossum* spp. including *lanceolatum* in Nepal.

Remarks : Having examined the genitalia of the specimens collected from Nepal, we have concluded that this species is surely a member of the genus *Dialectica*.

also mentioned that "it is quite well possible, that some species now described in *Acrocercops*, will have to be removed and placed in *Dialectica*". Judging from the genital characters described and figured by him, the following species should be transferred from *Acrocercops* to *Dialectica*: *A. pavonicola* Vári, 1961, *A. columellina* Vári, 1961, *A. odontosema* Vári, 1961, *A. trigonidota* Vári, 1961 and *A. ehretiae* Vári, 1961. Kuznetsov (1979) enumerated 4 European species under *Dialectica*: *D. scalariella* (Zeller, 1850), *D. imperialella* (Zeller, 1847), *D. soffneri* (Gregor et Povolný, 1965) and *D. hedemanni* (Rebel, 1896). The last species, though similar to *Dialectica* in the fore wing venation, seems to be referable to *Cryptolectica* or a related genus, because it is quite different from the other members of *Dialectica* in the genital characters. Among the known Indian species of the Gracillariidae, *Acrocercops aemula* Meyrick, 1912 and *A. geometra* Meyrick, 1916 undoubtedly belong to *Dialectica* as treated in this paper. In the course of the present study, 2 species of *Dialectica* have been found from Japan; one is identified as *D. geometra* and the other is described as a new species.

So far as known, most species mentioned above as members of *Dialectica* are associated with Boraginaceae and some are with Malvaceae.

Key to the Japanese species of *Dialectica*

1. Ground colour of fore wing dull brownish or fuscous; border between white apical spot and white cilia of fore wing more or less wide and brownish; male tegumen with a pair of small projections on ventral surface near base; male valva rather short, widened near apex, round apically, with a group of long scent scales in disc of outer surface near base; female corpus bursae with numerous signa of various sized spines arranged in a large circle; host: *Ehretia microphylla* in Japan. *D. geometra* (Meyrick), comb. nov.
- Ground colour of fore wing clear ochre-brown; border between white apical spot and white cilia of fore wing narrow and blackish; male tegumen very long, simple, without such projections on ventral surface; male valva rather slender, long, obtusely pointed apically, without such scent scales on outer surface near base; female corpus bursae with 2 signa of oblong plates having a median keel; host: *Ehretia ovalifolia* in Japan. *D. japonica* Kumata et Kuroko, sp. nov.

16. *Dialectica geometra* (Meyrick), comb. nov.

[Figs. 29, 30(A-B), 38(A-B), 39(G) and 42(E)]

Acrocercops geometra Meyrick, 1916, Exot. Microlep. 1: 626 [India (Bengal, Tamil Nadu); host: *Cordia myxa*]; Fletcher, 1920, Mem. Dept. Agr. India, Ent. Ser. 6: 152.

Original description: "♂♀. 7-8 mm. Head and thorax whitish-ochreous, face whitish. Palpi whitish, second and terminal joints greyish on apical half. Abdomen grey, beneath whitish, triangularly barred on sides with dark fuscous. Forewings narrowly elongate-lanceolate; brownish or fuscous, varying in depth; markings white edged with blackish scales; two dorsal blotches more or less suffused with light brownish-ochreous except towards upper margins, first large, triangular, extending on dorsum from near base to 2/5 of wing, its apex reaching costa, second smaller, triangular or trapezoidal, beyond middle, narrowly connected with first on dorsum, its apex connected with costa by a short very fine white strigula; two very fine somewhat oblique transverse lines between this and apex, their terminal extremities somewhat enlarged; a white apical spot: cilia whitish-grey, round apex whitish, with a pale brownish patch beneath apex, and grey median line. Hindwings grey; cilia pale grayish."

Additional description: ♂♀. Expanse of wings: 6.5-8.2 mm (7.0 mm in Japanese specimens, 7.44 mm in average of 10 Indian specimens). Length of fore

wing : 3.0–4.0 mm (3.4 mm in Japanese specimens, 3.52 mm in average of 12 Indian specimens).

Face white ; head and thorax on dorsal surface whitish, very slightly tinged with grayish-ochre ; tegulae and pleural surfaces of thorax brownish. Maxillary palpus whitish, with median part broadly blackish laterally ; middle segment of labial palpus blackish apically, and the apical segment with 2 blackish rings. Antenna dark fuscous, without annulations ; scape with a narrow whitish stripe on dorsal surface. Fore and middle coxae whitish, with a dark grayish apical spot ; femora and tibiae dark fuscous to blackish, but fore tibia whitish basally and middle tibia with 3 whitish bands at base, middle and subapex ; tarsi ochreous-whitish, with 3 dark gray rings. Hind coxa and femur whitish, the former with a fuscous apical blotch and the latter with a longitudinal, narrow, fuscous stripe laterally ; tibia and tarsus ochreous-gray laterally and ochreous-whitish mesally, the former with a blackish apical band and the latter with a whitish ring at base of each segment.

Fore wing with whitish markings as described originally, but 2 triangular dorsal blotches very slightly tinged with ochre in the present specimens examined ; the 1st blotch touched with costa at basal 3/7 of wing, and 2nd blotch detached from costa in most specimens, or connected with costa at basal 4/7 through a short fine blackish or whitish strigula in some specimens ; 2 transverse lines usually convergent at costa and connected with each other along termen through a slender white stripe, the external line sometimes represented by blackish scales alone ; cilia at apex of wing white, with a brownish line between lunar white apical spot of wing and cilia, and

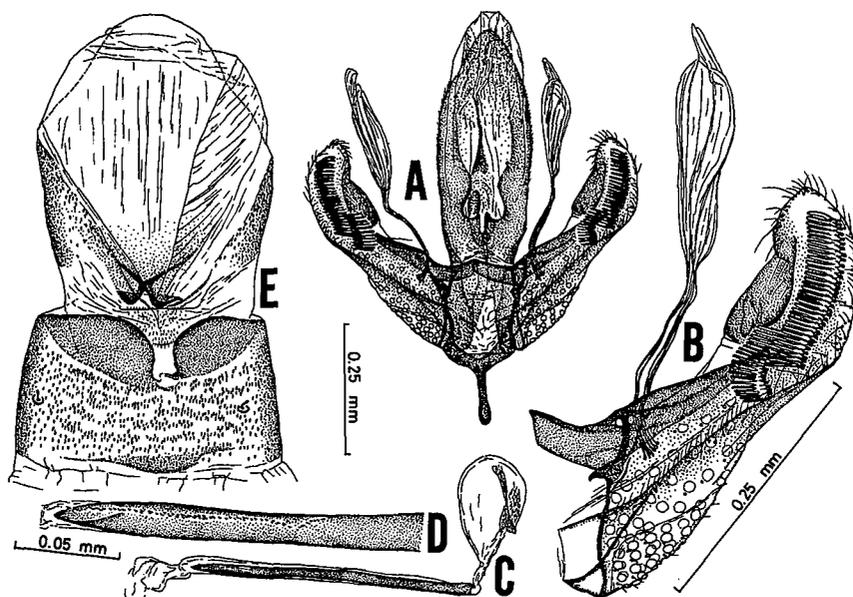


Fig. 29. *Dialectica geometra* (Meyrick). A : Male genitalia in caudal view, aedeagus omitted [Grc-2047, Katetu, Amami-Ōsima, Ryūkyū Is., 23/x/1965, ex *Ehretia microphylla*, H. Kuroko leg.] — B : Right valva enlarged [ditto] — C : Aedeagus [ditto] — D : Apical part of aedeagus enlarged [ditto] — E : Male 7th and 8th abdominal segments in ventral view [ditto].

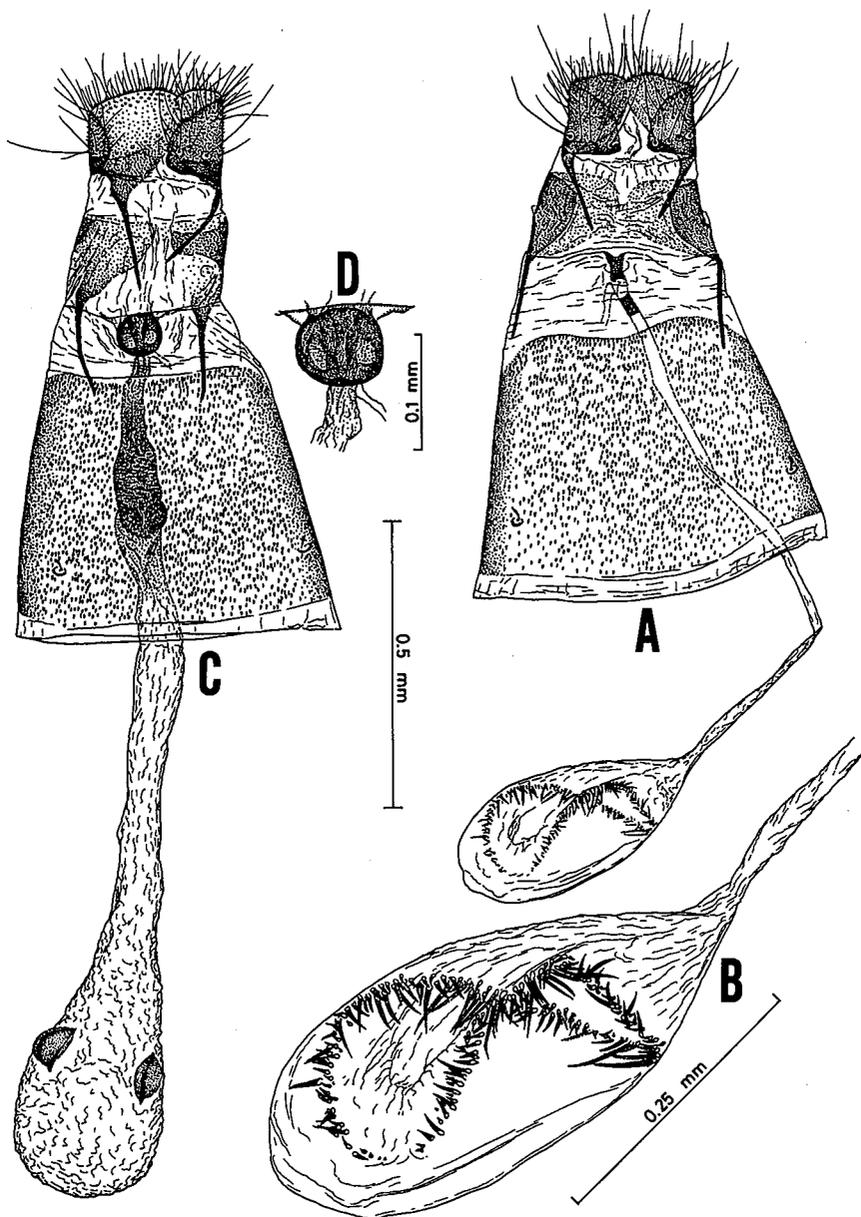


Fig. 30. A-B: *Dialectica geometra* (Meyrick). A: Female genitalia in ventral view [Grc-2049, Katetu, Amami-Ōsima, Ryūkyū Is., 23/x/1965, ex *Ehretia microphylla*, H. Kuroko leg.] — B: Corpus bursae enlarged [ditto].
 C-D: *Dialectica japonica* Kumata et Kuroko, sp. nov. C: Female genitalia in ventral view [Grc-2046, Hikosan, Kyūsyū, 13/ix/1958, ex *Ehretia ovalifolia*, H. Kuroko leg.] — D: Antrum enlarged [ditto].

with a dark gray median fringe line, those along termen widely white and dashed with brown beneath apex of wing, and those along dorsal margin pale grayish.

Male genitalia (Fig. 29): Tegumen elongate-oblong with a round apex in ventral view, finely spinulose laterally, with 6-8 pairs of fine setae arranged on lateroventral edges from apex to subbase; a pair of well-sclerotized small projections near base of ventral surface, with a rather deep and narrow incision between them; tuba analis with weakly sclerotized, fan-shaped subscaphium, and a small carinulate patch just before subscaphium. Valva as long as or a little shorter than tegumen, dilated basally, round apically, with fine setae along ventral margin throughout and costal margin apically; 2 combs in disc, the anterior one placed just beyond middle, usually curved, with 14-20 teeth, the posterior comb about twice as long as the anterior, occupying nearly apical 2/5 of valva, rather close to ventral margin, with 34-44 teeth; costal area above posterior comb well sclerotized, more or less convex, with a short but rather high keel running along ventral margin of this sclerotization; long, slender androconial scales scattered on outer surface of valva near base; 5-8 long scent scales arising from outer surface of valva in disc near base in a group, and those from both valvae connected with each other at back of tegumen to form a reversed V-shape. Vinculum short, narrow, angulated laterally, with saccus moderately long and slender. Aedeagus a little longer than valva, tubular, thin, bluntly pointed apically; vesica with a double or triple row of minute spinules arranged on apical 1/4 of aedeagus; ductus ejaculatorius about 3/5 as long as aedeagus, round apically. Eighth abdominal segment about twice as long as the 7th, deeply notched ventrally, with dorsoccephalic apodeme well sclerotized, very short, bilobed apically; 7th segment with sternite well sclerotized on caudal area, which is divided into round lobes by a narrow and moderately deep incision. (Six slides examined.)

Female genitalia (Fig. 30: A-B): Papilla analis moderate in length, oblong in ventral view, covered with usual setae and rather dense spinules on caudal area; apophysis posterioris slender, about as long as apophysis anterioris. Ostium bursae small; antrum shortly sclerotized into a ring-shape; ductus bursae tubular, very slender on whole length, membranous except for a shortly sclerotized area just before antrum; corpus bursae ellipsoidal, membranous, with many signa of various sized spines, which are arranged in a large, ring-like row surrounding the corpus bursae. (Sex slides examined.)

Specimens examined: 9♂♂ & 7♀♀. RYŪKYŪ Is. — 1♂ & 2♀♀, Katetu, Amami-Ōsima, em. 23/x/1965, ex *Ehretia microphylla*, H. Kuroko leg.; 1♂, Tina, Okinoerabu, em. 25/x/1965, ex *E. microphylla*, H. Kuroko leg. INDIA — 4♂♂ & 3♀♀, Mohand Range, nr. Dehra Dun, Uttar Pradesh, em. 3-14/ii/1978, ex *E. laevis* (Ind-2); 1♂, New Delhi, em. 11/xi/1978, ex *E. laevis* (Ind-113); 2♂♂ & 1♀, Maruthamalai, nr. Coimbatore, Tamil Nadu, em. 17-24/ii/1978, ex an undetermined tree of Boraginaceae (Ind-32); 1♂, Mettupalayam, Nilgiri Hills, Tamil Nadu, em. 17/ii/1978, ex *Ehretia* sp. (nr. *microphylla*) (Ind-17).

Distribution: Japan (Ryūkyū Is.); and India (Uttar Pradesh; Delhi; W. Bengal; Tamil Nadu).

Food plants: *Ehretia microphylla* Lamk. (Boraginaceae) in Japan; *Cordia myxa* Roxb., *Ehretia laevis* Roxb. and *Ehretia* sp. (nr. *microphylla* Lamk.) (Boraginaceae) in India.

Remarks: This species is new to Japan.

17. *Dialectica japonica* Kumata et Kuroko, sp. nov.

[Figs. 30(C-D), 31, 38(C-D), 39(H) and 42(F)]

♂ ♀. Expanse of wings: 7.5-8.6 mm (8.0 mm in holotype). Length of fore wing: 3.7-4.2 mm (3.9 mm in holotype).

Face, head and palpi snow-white; maxillary palpus fuscous at apical extremity; 2nd segment of labial palpus fuscous on apical half laterally, and the apical segment with a fuscous subbasal ring. Antenna dark ochre-brown, without distinct annulations; scape whitish except for brownish apical margin of ventral flap. Thorax snow-white dorsally, with tegulae and anterior areas of pleural surfaces deep ochre-brown. Fore and middle coxae white; femora and tibiae dark fuscous to blackish, with fore tibia whitish basally and middle tibia spotted with white at middle and base; tarsi white, with 3 blackish rings equidistantly. Hind coxa and femur whitish, each with a small ochreous apical spot laterally; tibia pale ochre-gray laterally, with a fine blackish apical ring; tarsus dark fuscous, with 3 whitish rings.

Fore wing clearly ochre-brown in ground colour, with black-margined, white markings similar to those of *D. geometra* in shape and situation; 1st dorsal blotch extending on dorsum from base to middle of wing, with its basal part occupying nearly half breadth of wing and parallel-sided, and its apical part widened to form a triangle and nearly reaching costa at basal 2/7 of wing; 2nd dorsal blotch extending on dorsum from middle to tornus, triangular, slightly detached from costa, and narrowly connected with the 1st one; 1st fascia situated beyond 2nd dorsal blotch in parallel with external margin of the blotch, slightly widened towards dorsum, with a narrow streak extending along termen towards apex of wing; 2nd fascia near apex of wing, more oblique than the 1st, very narrow, and confluent with terminal streak; an apical spot wedge-shaped or triangular, with its internal and external blackish margins convergent below and extending onto cilia; cilia around apex and along termen whitish, and those along dorsal margin pale gray. Hind wing and its cilia pale gray.

Male genitalia (Fig. 31): Tegumen very long, quadrangular in ventral view, more or less truncated apically, with 18-24 pairs of fine setae arranged along lateroventral edges from apex to apical 2/3; ventral surface simple, without such paired projections as seen in *D. geometra*; tuba analis with a short narrow subsca-phium. Valva about 4/5 as long as tegumen, gradually tapering towards blunt apex, costal margin smooth, with fine setae along ventral margin throughout and costal margin around apex; 2 combs in disc near apex of valva, nearly straight, the anterior and posterior combs with 21 to 28 and 28 to 30 teeth, respectively; long, slender androconial scales scattered on outer surface of valva throughout; specialized scent scales absent. Vinculum short, slender, not well angulated laterally, with saccus moderately long and slender, but shorter and thicker than that of *D. geometra*. Aedeagus slightly longer than valva, straight, tubular, gradually narrowing towards acute apex; vesica with many cornuti of needle-shaped spinules from apex to apical 2/5 of aedeagus, the spinules on basal part long and thickly gathered, those on median part very minute and sparse, and those on apical part long and sparse; ductus ejaculatorius about 2/3 as long as valva, well dilated apically. Eighth

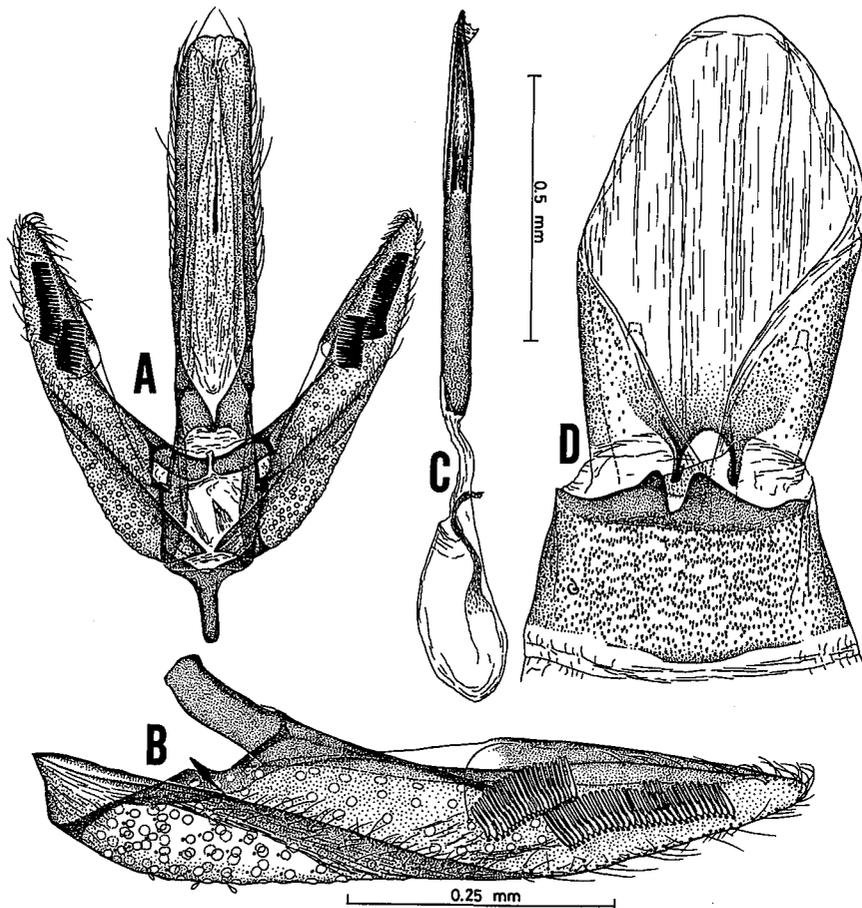


Fig. 31. *Dialectica japonica* Kumata et Kuroko, sp. nov. A: Male genitalia in caudal view, aedeagus omitted [Grc-2043, holotype] — B: Right valva enlarged [ditto] — C: Aedeagus [Grc-2044, Hikosan, Kyūsyū, 30/vi/1955, ex *Ehretia ovalifolia*, H. Kuroko leg.] — D: Male 7th and 8th abdominal segments in ventral view [ditto].

abdominal segment about thrice as long as the 7th, deeply notched ventrally, with a pair of dorsocephalic apodemes short and slender; 7th segment with sternite well sclerotized on caudal area which is divided into protruded lobes by a shallow median incision. (Two slides examined.)

Female genitalia (Fig. 30: C-D): Papilla analis moderate in length, oblong in lateral view, spinulose on almost whole surface and setose as usual; apophysis posterioris widened at base, then slender apically, about as long as apophysis anterioris. Ostium bursae rather small, well sclerotized into a small circular plate; antrum narrower than this circular plate, well sclerotized and cup-shaped; ductus bursae gradually widened cephalad, sclerotized on caudal 1/3, then remaining cephalic 2/3 membranous, the sclerotized part with irregularly transverse carinations; a pair of valve-shaped knobs at caudal 1/3 of ductus bursae, well sclerotized, and scobinated; corpus bursae ellipsoidal, membranous, with 2 signa of oblong

plates, each of which has an anteriorly short-pointed median keel. (Two slides examined.)

Specimens examined : 2♂♂ & 2♀♀. Holotype : ♂, Hikosan, Buzen, Kyûsyû, em. 13/ix/1958, ex *Ehretia ovalifolia*, H. Kuroko leg., Gen. sl. no. Grc-2043, will be deposited in the collection of Entomological Laboratory, Kyûsyû University. Paratype ; KYÛSYÛ — 1♂, Hikosan, Buzen, em. 30/vi/1955, ex *E. ovalifolia*, H. Kuroko leg. ; 2♀♀, with same data as holotype except on dates emerged, 13-15/ix/1958.

Distribution : Japan (Kyûsyû).

Food plant : *Ehretia ovalifolia* Hassk. (Boraginaceae).

Remarks : This new species is at once distinguished from *D. geometra* by the genitalia of both sexes as mentioned in the key and description, in spite of its colour-pattern which is very similar to that of *D. geometra*. It is also distinguished from *D. scariella* and *D. aemula* by the 2 large triangular dorsal blotches of the fore wing, by the long tegumen and valva of the male genitalia and by the 2 signa of the female genitalia.

VIII. GENUS DEOPTILIA KUMATA ET KUROKO NOV.

Type-species : *Acrocercops heptadeta* Meyrick, 1936.

Etymology : Deoptilia (G.)=deo (bind)+ptilia (small wing) ; feminine.

♂♀. Face and head smooth-scaled, with vertex between antennae a little protruded anteriorly and its posterior part above eyes slightly prolonged ; neck-plumes appressed ; ocelli absent ; proboscis developed, naked. Labial palpus moderately long, slender, drooping, or porrect in living condition, slightly upturned ; 2nd segment slightly thickened with scales below apically ; apical segment smooth entirely, pointed apically, a little shorter than the 2nd. Maxillary palpus minute, porrect, slightly roughened, 1/3-1/2 as long as apical segment of labial palpus. Antenna 1.0-1.3 times as long as fore wing, filiform, simple in both sexes ; scape slightly flattened as in *Dialectica*, with a small flap of scales below, the flap being acutely pointed apically beyond scape. Thorax smooth-scaled. Legs smooth, rather long ; middle femur expanded with scales beyond middle ; middle tibia slightly thickened apically ; hind tibia with a row of bristly scales above and 2 pairs of spurs below, the basal pair at basal 1/4-1/3 ; hind tarsus a little longer than tibia, with a row of fine bristly scales on 1st segment like tibia.

Fore wing narrowly lanceolate, bluntly pointed apically ; discoidal cell long, occupying basal 3/4-4/5 of wing, slightly widened towards truncated distal margin, with upper vein obsolescent at proximal part ; 13- or rarely 12-veined, in the latter case Cu_{1b} being absent ; all veins well separated basally or rarely M_1 and M_2 connate basally ; R_1 very short, running from basal 3/5 of cell to basal 3/5 of costa ; R_2 from upper angle of cell ; R_5 obsolescent basally, arising around middle of distal margin of cell ; M_3 from lower angle of cell ; Cu_{1a} apart from M_3 ; Cu_{1b} and Cu_2 distinct on apical part alone ; An very weakened, probably connected with dorsal margin at basal 1/3-2/5 of wing. Hind wing about half as wide as and about 7/8 as long as fore wing, long pointed apically, with cell opened between M_2 and M_3 ; 7-veined, with venation not different from that of preceding *Dialectica* and *Acrocercops* ; cilia long, 3-4 times of wing-width.

Male genitalia : Tegumen moderate in length, weakly sclerotized laterally, with

fine setae scattered on lateral margins near apex; tuba analis with a narrow subscaphium. Valva rather slender, oblong or elongate-elliptical, with a large plate occupying most part of inner surface, the plate being formed by fusion of many expanded setae which are probably homologous with teeth of comb(s) seen in *Acrocercops* or *Dialectica*; fine setae scattered on inner surface near apex and ventral area; a tuft of long androconial scales on outer surface near base, rarely invaginated deeply from base of sacculus; transtilla complete, without any process. Vinculum U-shaped, slender laterally, with a long and slender saccus. Diaphragma membranous, without particular sclerites. Aedeagus slender, tubular, usually longer than valva; vesica with cornuti various in form, usually spiniform; ductus ejaculatorius short, recurved. Eighth abdominal segment widely incised ventrally, dorsally with 2 long cephalic apodemes, and with laterocaudal projections in a few species; paired ventrocephalic invaginations absent. Seventh abdominal segment with sternite bilobed caudally in most species, and with tergite having a group of glandular minute scales along cephalic margin in a few species including type-species.

Female genitalia: Papilla analis rather small, blunt dorsally and ventrally in lateral view, or rarely acutely pointed dorsally, setose as usual; apophysis posterioris long, slender or rarely broad, widened at base. Eighth abdominal segment short, weakly sclerotized dorsally, widely membranous ventrally; apophysis anterioris slender entirely, usually longer than apophysis posterioris. Ostium bursae opened on ventrum of 8th segment, moderate to small in opening, with a lamella antevaginalis in some species; antrum long, well sclerotized or membranous; ductus bursae moderately long, partly sclerotized beyond opening of ductus seminalis in most species, distinctly shagreened on cephalic half; croups bursae elongate-ellipsoidal or globular, finely shagreened, with a long accessory sac projected caudad; a pair of oblong signa bearing many acute spines of various length.

Body chaetotaxy of last instar larva (Fig. 46: C): So far as represented by the type-species, the larval chaetotaxy is similar to that of *Dialectica aemula* (Meyrick) except for the following points: — the seta XD2 absent on prothorax as in *Acrocercops*; D1 and D2 of all abdominal segments set close to each other as in *Spulerina*; seta SV2 absent and seta SV3 present on 6th abdominal segment; seta V1 absent on the 7th to 9th abdominal segments.

Arrangement of crochets (Fig. 46: F): Ventral prolegs on 3rd to 5th abdominal segments with a few crochets arranged in a transverse row as in *Artifodina*; anal proleg with no trace of crochets likewise.

Larval habit: The larva of this genus is a leaf-miner throughout its feeding stages. The mine usually occurs upon the upper surface of the leaf; at first it is an entirely epidermal and linear gallery, whitish with a glassy luster and irregularly curved, sometimes occurring along leaf-veins; soon after it is broadened into a moderate blotch, sometimes elongated along a leaf-vein or situated on a space between 2 veins, whitish and blister-like. In the later stages the larva continues feeding on the leaf-tissue within the blotchy mine; finally it leaves only upper and lower epidermal layers of the leaf. Grains of the frass are scattered in the mine-cavity, usually along the margin. When full grown, the larva changes the body colour into crimson-red, then leaves the mine for a pupating site through a semicircular slit. The cocoon is often found on the leaf-surface, boat-shaped, with a few

minute bubbles on the surface.

Remarks: This new genus is well characterized by the short vein R_1 arising beyond middle of the cell of the fore wing, by the male valva with a large plate (probably a deformed comb), by the female corpus bursae with an accessory sac produced caudad, and by the larval 6th abdominal segment lacking the seta SV2 instead of SV3. It is very similar to *Dialectica* in the antennal scape with a ventral flap and in the structure of the male pregenital segments, but is at once distinguished from the latter by the free veins R_5 and M_1 of the fore wing, by the larval prothorax without seta XD2, and by the larval ventral prolegs with a few crochets arranged in a transverse row, in addition to the characters stated above.

In this paper, the new genus is based on the type-species alone, but it undoubtedly includes *Acrocercops syrستا* Meyrick, 1926, another Indian species feeding on *Mallotus philippinensis*, of which 2 paralectotypes have been available for the present work by the courtesy of Dr. K. Sattler of British Museum (N.H.). There are 5 other species of the genus mining in the leaves of *Macaranga* and *Epiprinus* in West Malaysia. It seems that all the species belonging to this genus are exclusively associated with Euphorbiaceae in their larval stage.

18. *Deoptilia heptadeta* (Meyrick), comb. nov.
[Figs. 32, 38(E-H), 39(I), 42(G), 46(C & F) and 51(C-D)]

Acrocercops heptadeta Meyrick, 1936, Exot. Microlep. 5: 34 [Formosa (=Taiwan); host: *Mallotus japonicus*]; Issiki, 1957, Icones Heteroc. Jap. Col. Nat. 1: 28, pl. 4 (105) [Japan (Honsyū, Sikoku, Kyūsyū), Taiwan; host: *M. japonicus*]; Kuroko, 1982, Moths Jap. 1: 187, 2: pl. 6 (15).

Original description: "♂♀. 7 mm. Head, thorax whitish. Palpi smooth, whitish, terminal joint with greyish basal and median rings. Antennae greyish, scape with dark fuscous flap of short scales beneath. Forewings very narrow, long-pointed; light uniform grey-brown, or ochreous-brownish speckled fuscous; seven fine whitish transverse fasciae edged dark fuscous irroration, oblique and irregular near base, gradually becoming almost direct posteriorly: cilia pale greyish or ochreous-greyish, opposite apex a blackish-grey direct basal bar followed by a narrow white fascia. Hindwings grey; cilia light greyish or ochreous-greyish."

Additional description: ♂♀. Expanse of wings: 6.3-8.3 mm (7.5 mm in average of 22 specimens). Length of fore wing: 3.1-3.9 mm (3.6 mm in average of 22 specimens).

Face whitish, tinged slightly with gray or brown; head not whitish, but gray-ochreous or gray-brownish, with a paler longitudinal median line on posterior elongated area of vertex. Antenna as long as or a little longer than fore wing, ochre-grayish, becoming ochreous towards base; scape ochre-brownish, apically ringed with black narrowly, with a brownish or fuscous flap beneath. Maxillary palpus whitish, with apex blackish; labial palpus as described originally. Thorax dorsally concolorous with head, ventrally brilliant white, with a brownish oblique anterior stripe. Legs white; anterior 4 femora ochre-yellowish apically, the tibiae with 3 fuscous rings, and the tarsi also with 5 narrow fuscous or blackish rings; hind tibia tinged with ochre-yellow, with a minute blackish spot at base, and tarsus tinged with ochre-yellow basally, with 5 fuscous rings, of which the basal 2 are mixed with brownish colour. Abdomen dorsally dark grayish, laterally yellow-ochreous nar-

rowly and ventrally brilliant whitish, without any dark lateral band ; anal extremity ochre-brownish in male and female.

Fore wing variable in ground colour, pale gray-brown, deep ochre-brown or dark brownish, speckled with fuscous to variable extent, but usually densely near base, with 7 very narrow white transverse fasciae nearly equidistantly as described originally, basal 2 of them being generally obscure on costal half, and 5th from base, sometimes 6th too, interrupted by ground colour in disc, the costal fragment or fragments being very oblique outwardly ; in a few specimens (about 5% of the specimens examined) fore wing uniformly suffused with dark fuscous on almost whole the surface, with fasciae distinct only on costal and dorsal margins or completely absent ; cilia around apex ochre-brownish on basal half and whitish on apical half, with border between them blackish and straight ; cilia along termen gray-ochreous on basal half and grayish-whitish on apical half, with 2 or 3 blackish round apical lines, of which the apicalmost one is continued from the black line on the wing-apex ; dorsal cilia pale ochreous-gray. Hind wing as in original description.

Male genitalia (Fig. 32 : A-D) : Tegumen oblong in ventral view, truncated apically, with 5-9 pairs of fine setae, one pair at apex and remaining pairs on median area of lateral margins ; tuba analis with a narrow subscaphium. Valva about 1.3 times as long as tegumen, elongate-rectangular, nearly parallel-sided, with many fine setae around apex and along ventral margin, and with a very large elliptical plate in centre, the plate with 45-55 serrulations arranged on its costal margin which is reversedly turned at the base shortly ; 30-40 linear androconial scales aggregated at the base of outer surface of valva. Vinculum slender, Y-shaped, with saccus slender and about as long as tegumen. Aedeagus slender, tubular, acutely pointed apically ; vesica with a small, sharp cornutus at apex of aedeagus and many microscopic cornuti gathered around centre of aedeagus ; ductus ejaculatorius moderate in length, curled. Eighth abdominal segment about $\frac{2}{3}$ long as the 7th, widely concaved ventrally, with a pair of slender dorsocephalic apodemes slightly diverged apically. Seventh abdominal segment with sternite bilobed apically and tergite with a sclerous transverse band along basal margin, the band being covered with minute obovate scent scales which are gathered irregularly and encircled with many carinae. (Ten slides examined.)

Female genitalia (Fig. 32 : E-F) : Papilla analis slightly lengthened, obtuse at dorsocaudal end in lateral view, covered with microspines on whole surface and usual fine setae along caudal margin ; apophysis posterioris slender, moderately long, but shorter than apophysis anterioris. Ostium bursae opened at depth of concaved caudal margin of 8th abdominal segment, encircled with a sclerotization ; antrum well-sclerotized, somewhat cask-shaped, about $\frac{2}{3}$ as long as 7th abdominal segment, slightly narrowed cephalad, with a short sclerous ring at joint between it and ductus bursae, which is moderate in length, weakly sclerotized around caudal $\frac{1}{3}$, and lined partly with spines on the sclerotized area and densely with conical granules on the cephalic half ; corpus bursae large ellipsoidal, shagreened on whole surface, with a caudal accessory projection about $\frac{2}{5}$ as long as ductus bursae ; a pair of signa bearing many linear sclerites which vary in length from the shortest basalmost one to the longest apicalmost one. (Seven slides examined.)

Specimens examined : 125♂♂ & 134♀♀. HONSYŪ — 1♂, Nati, Wakayama-ken, 19/x/1966 ;

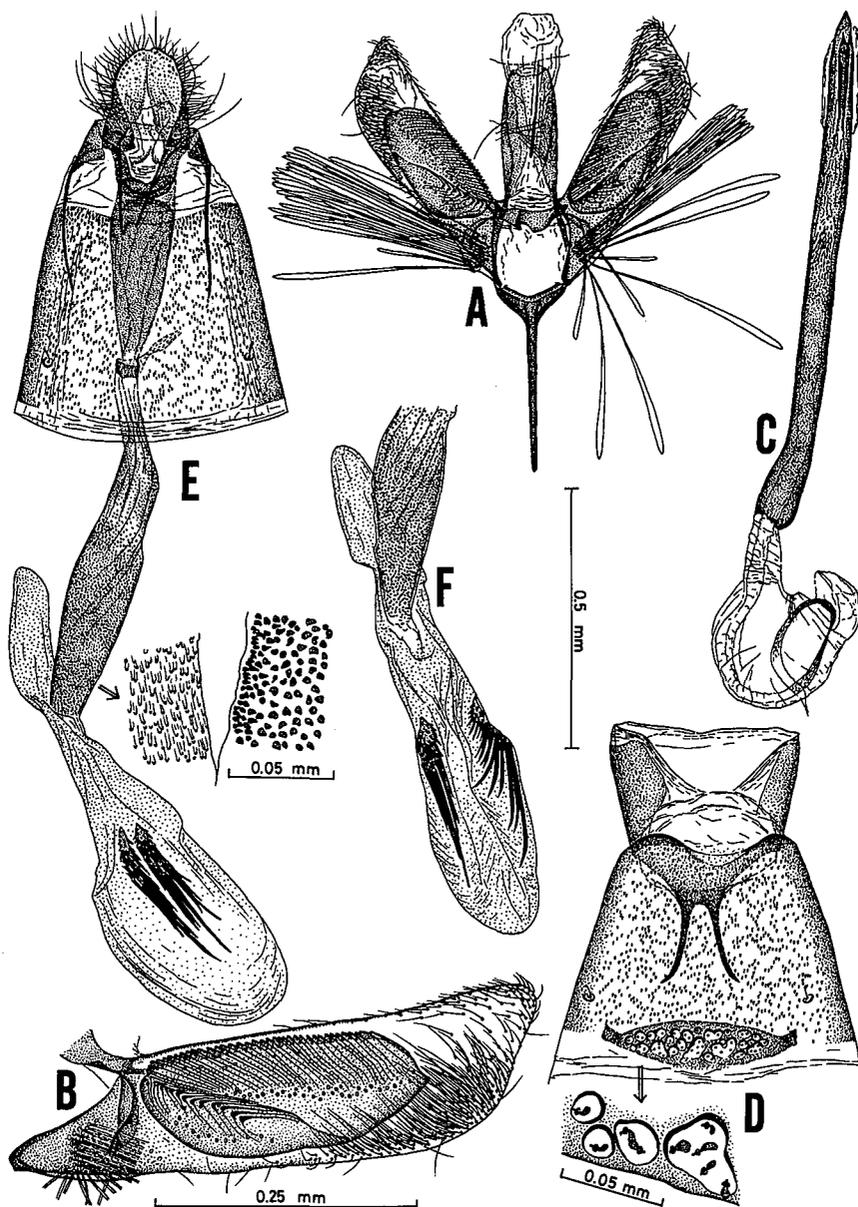


Fig. 32. *Deoptilia heptadeta* (Meyrick). A: Male genitalia in caudal view, aedeagus omitted [Grc-1771, Onoaida, Yaku-sima, Nansei Is., em. 9/xi/1973, ex *Mallotus japonicus* (1203)] — B: Right valva enlarged [ditto] — C: Aedeagus [ditto] — D: Male 7th and 8th abdominal segments in ventral view [ditto] — E: Female genitalia in ventral view [Grc-1613, Kozagawa, Wakayama-ken, em. 10/vi/1970, ex *M. japonicus* (1037)] — F: Apical part of bursa copulatrix [Grc-1612, ditto].

12 ♂♂ & 8 ♀♀, Kozagawa, Wakayama-ken, em. 28/v-6/vi/1964, ex *Mallotus japonicus* (641); 29 ♂♂ & 44 ♀♀, ditto, em. 5-12/vi/1970, ex *M. japonicus* (1037); 25 ♂♂ & 25 ♀♀, ditto, em. 8-22/x/1974, ex *M. japonicus* (1301); 14 ♂♂ & 17 ♀♀, Koza, Wakayama-ken, em. 18-31/x/1974, ex *M. japonicus* (1344); 3 ♀♀, Kii-Ōshima, Wakayama-ken, 21-24/v/1964. SIKOKU — 16 ♂♂ & 10 ♀♀, Ino, Kōti-ken, em. 1-13/xi/1980, ex *M. japonicus* (2212); 5 ♂♂ & 5 ♀♀, Tosasimizu, Kōti-ken, em. 8-17/xi/1980, ex *M. japonicus* (2225); 3 ♂♂ & 2 ♀♀, Asizuri-misaki, Kōti-ken, em. 3/vii/1957, ex *M. japonicus* (282). TUSIMA — 1 ♂, Tatura-yama, Izuhara, em. 31/x/1979, ex *M. japonicus* (2048); 8 ♂♂ & 8 ♀♀, Ōbosi-yama, Mine, em. 5-14/xi/1979, ex *M. japonicus* (2080); 1 ♂, ditto, 17/x/1979, K. Yasuda leg.; 1 ♂ & 3 ♀♀, Hitakatu, Kamitusima, em. 12-19/xi/1979, ex *M. japonicus* (2147). NANSEI IS. — 1 ♂ & 4 ♀♀, Nisinoomote, Tanegasima, em. 1/vii/1965, ex *M. japonicus*; 6 ♂♂ & 4 ♀♀, Onoaida, Yaku-sima, em. 3-13/xi/1973, ex *M. japonicus* (1203). RYŪKYŪ IS. — 1 ♂ & 1 ♀, Banna-dake, Isigaki, em. 22-23/iv/1985, ex *M. japonicus* (2544), M. Takeda leg. TAIWAN — 1 ♂, Jihyuetan (alt. 900 m), Nantou, em. 10/vii/1979, ex *M. japonicus* (1827).

Distribution: Japan (Honsyū; Sikoku; Kyūsyū; Tusima; Nansei Is.; Ryūkyū Is.); and Taiwan.

Food plant: *Mallotus japonicus* Muell. (Euphorbiaceae) in Japan and Taiwan.

Remarks: *D. heptadeta* can easily be distinguished from *D. syrasta* (Meyrick, 1926)¹⁾ by the lighter ground colour of the fore wing, by the serrulated costal margin of the large discal plate of the valva, by the male 7th abdominal segment with a ventral sclerous band covered by minute scent scales, by the obtuse dorsocaudal end of the papilla analis, and by the large cask-shaped antrum of the female bursa copulatrix. In *D. syrasta*, the ground colour of the fore wing is uniformly fuscous with a slight purple tinge; the large discal plate of the valva has deep dentations along the costal margin; the male 7th abdominal segment has a small triangular area covered by a few minute scent scales; the papilla analis is very elongated and acutely pointed at the dorsocaudal end in lateral view; and the female bursa copulatrix lacks a sclerotized large antrum.

1)

Deoptilia syrasta (Meyrick), comb. nov.

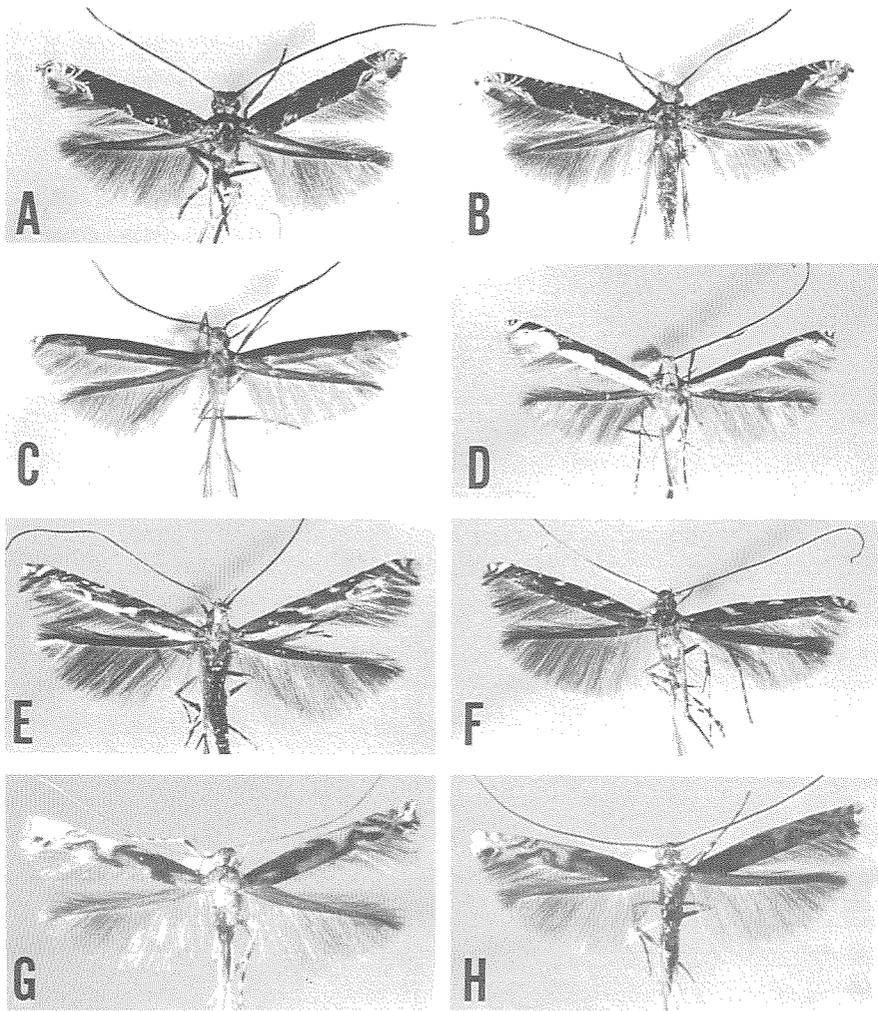
Acrocercops syrasta Meyrick, 1926, Exot. Microlep. 3: 293 [India (Bombay); host: *Mallotus philippinensis*]; Fletcher, 1933, Imp. Council Agr. Res., Sci. Monograph 4: 56.

Specimens examined: Type specimens: 1 ex (abdomen missing), paralectotype, Karwar, Bombay, R.M. bred 9. 24, *Acrocercops syrasta* Meyrick, E. Meyrick det., Meyrick coll; 1 ♀, paralectotype, with same data as preceding specimen, Gen. sl. no. BM-23989. Further specimens: TAIWAN — 11 ♂♂ & 5 ♀♀, Kenting Kunyen, Pintung, em. 22-24/vii/1979, ex *Mallotus philippinensis* (1992).

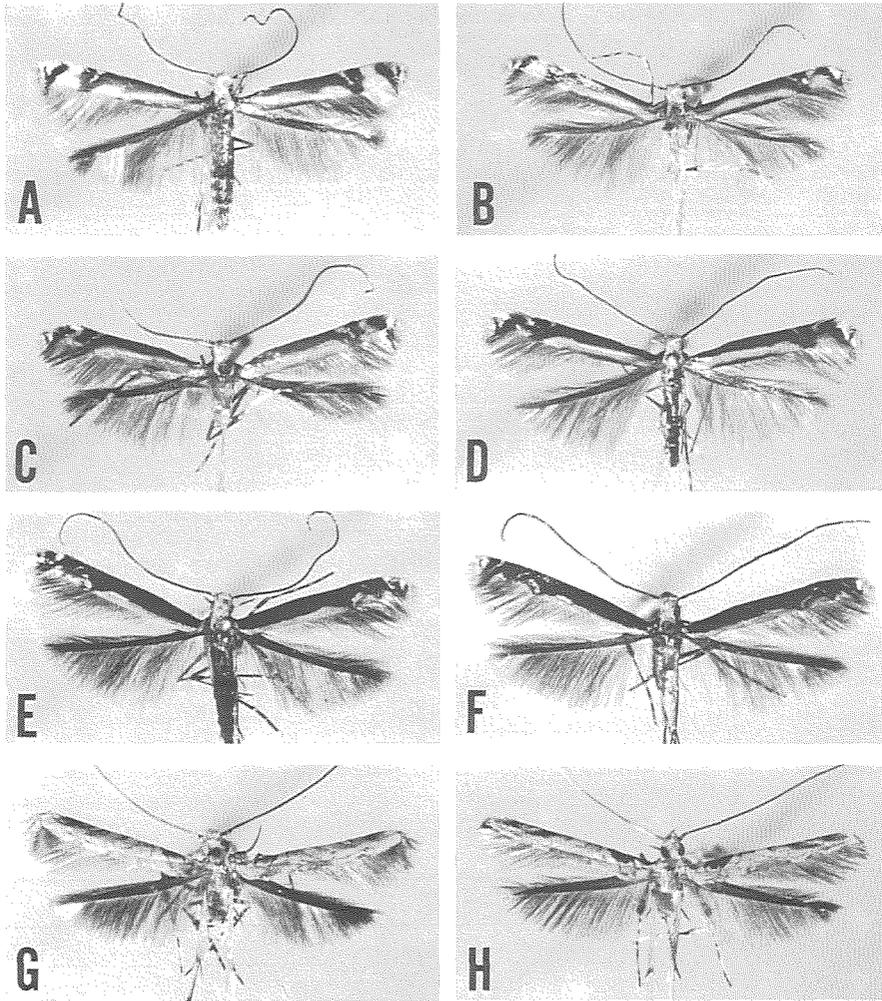
Distribution: Taiwan (new record); and India (Bombay).

Food plant: *Mallotus philippinensis* Muell.-Arg. (Euphorbiaceae).

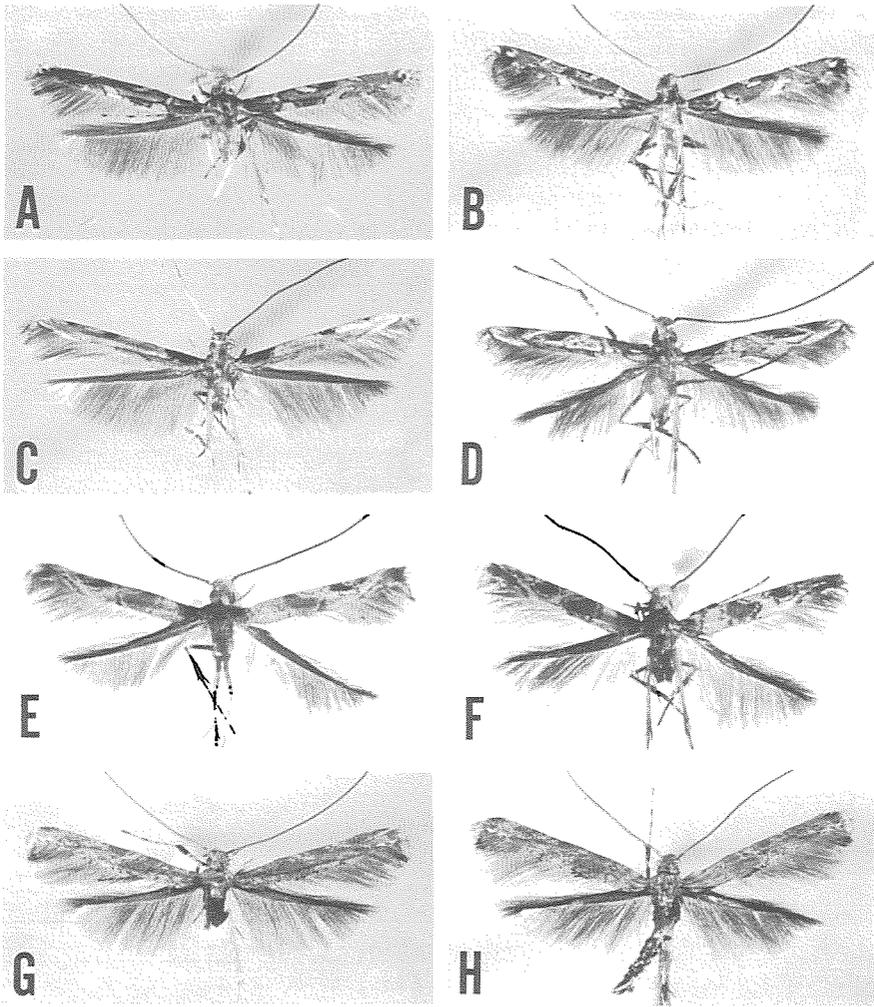
Remarks: Having examined the type specimens and the others mentioned above, we have come to conclude that *syrasta* should be transferred from *Acrocercops* to *Deoptilia* in having the flap of the antennal scape, the large plate of the male valva and the accessory projection of the female corpus bursae.



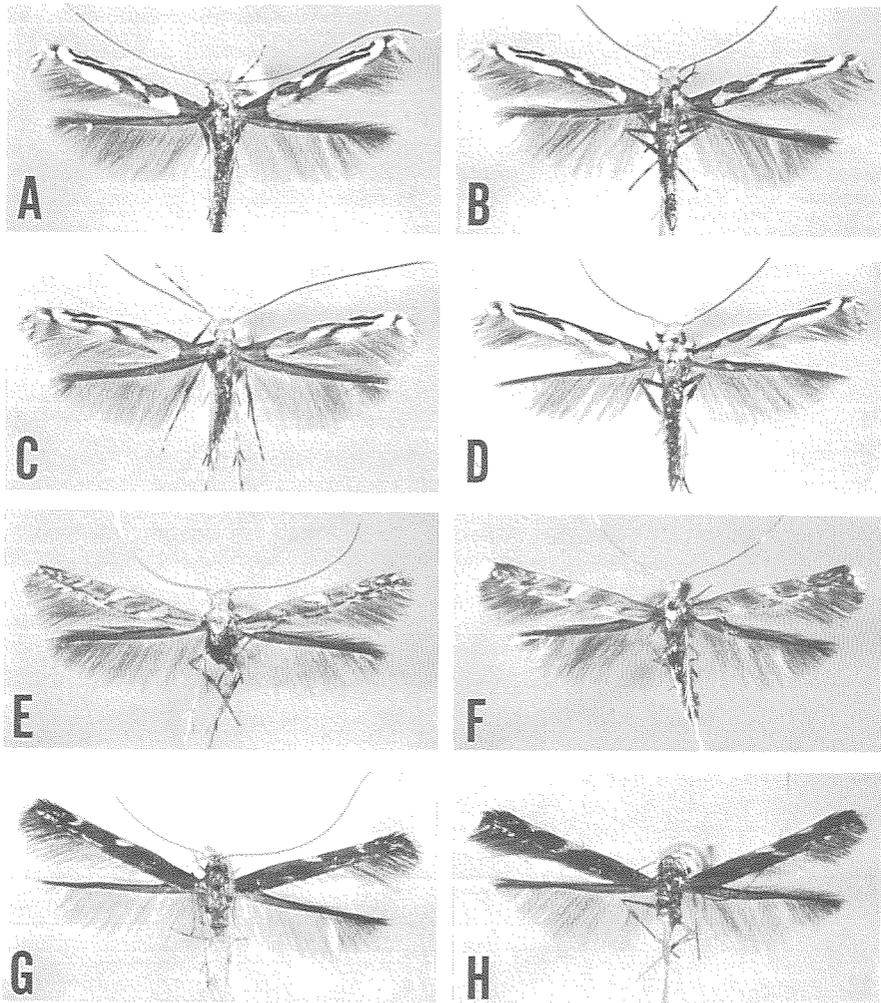
Pl. I: Fig. 33. Adult specimen. A: *Callicercops yakusimensis* Kumata et Kuroko, sp. nov. [holotype] — B: Ditto [♀, paratype, Kuriō, Yaku-sima, em. 3/xi/1973, ex *Bauhinia japonica* (1215)] — C: *Cryptolectica pasaniae* Kumata et Kuroko, sp. nov. [holotype] — D: Ditto [♀, paratype, Mugiō, Yaku-sima, Nansei Is., em. 11/xi/1973, ex *Pasania edulis* (1178)] — E: *Cryptolectica ensiformis* (Decheng) [♂, Kosugidani, Yaku-sima, Nansei Is., em. 1/viii/1965, ex *Quercus sessilifolia* (649)] — F: Ditto [♀, Izuhara, Tusima, 12/x/1979, K. Yasuda leg.] — G: *Cryptolectica chrysalis* Kumata et Ermolaev, sp. nov. [♀, paratype, Apoi, Hidaka, Hokkaidō, em. 24/vii/1963, ex *Quercus mongolica* var. *grosseserrata*] — H: Ditto [♂, paratype, Apoi, em. 17/vii/1973, ex *Q. mongolica* var. *grosseserrata* (1153)].



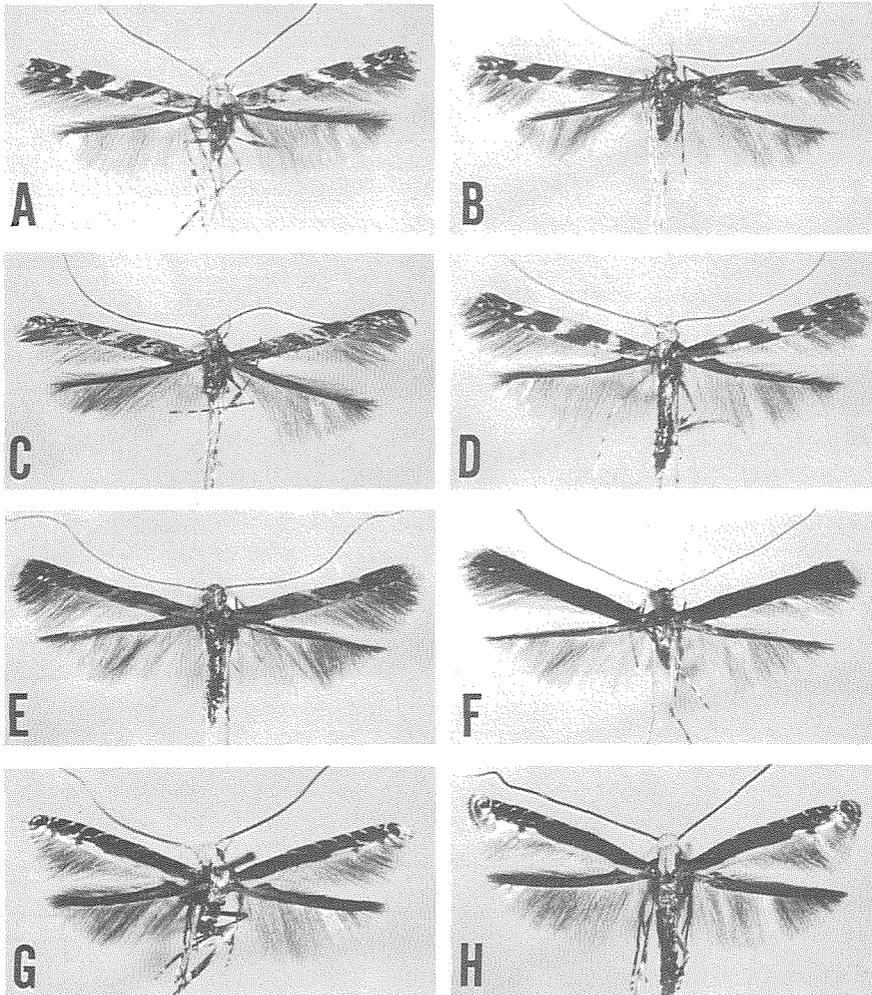
Pl. II : Fig. 34. Adult specimen. A : *Eteoryctis deversa* (Meyrick) [♀, Nisinasuno, Totigi-ken, em. 21/iv/1976, ex *Rhus javanica* (1634)] — B : Ditto [♂, Moiwa, Sapporo, Hokkaidō, 21/iv/1975] — C : *Eteoryctis picrasmae* Kumata et Kuroko, sp. nov. [holotype] — D : Ditto [♀, paratype, Todai, Ina, Nagano-ken, em. 19/iv/1976, ex *Picrasma quassioides* (1594)] — E : *Psydrocercops wisteriae* (Kuroko) [♀, Todai, Ina, em. 16/x/1975, ex *Wisteria floribunda* (1584)] — F : Ditto [♀, ditto, em. 16/x/1975] — G : *Acrocercops melanoplecta* Meyrick [♀, Kozagawa, Wakayama-ken, em. 3/vi/1964, ex *Castanopsis cuspidata* (655)] — H : Ditto [♀, Mulkharka, Nepal, em. 5/x/1983, ex *Castanopsis tribuloides* (Npl-628)].



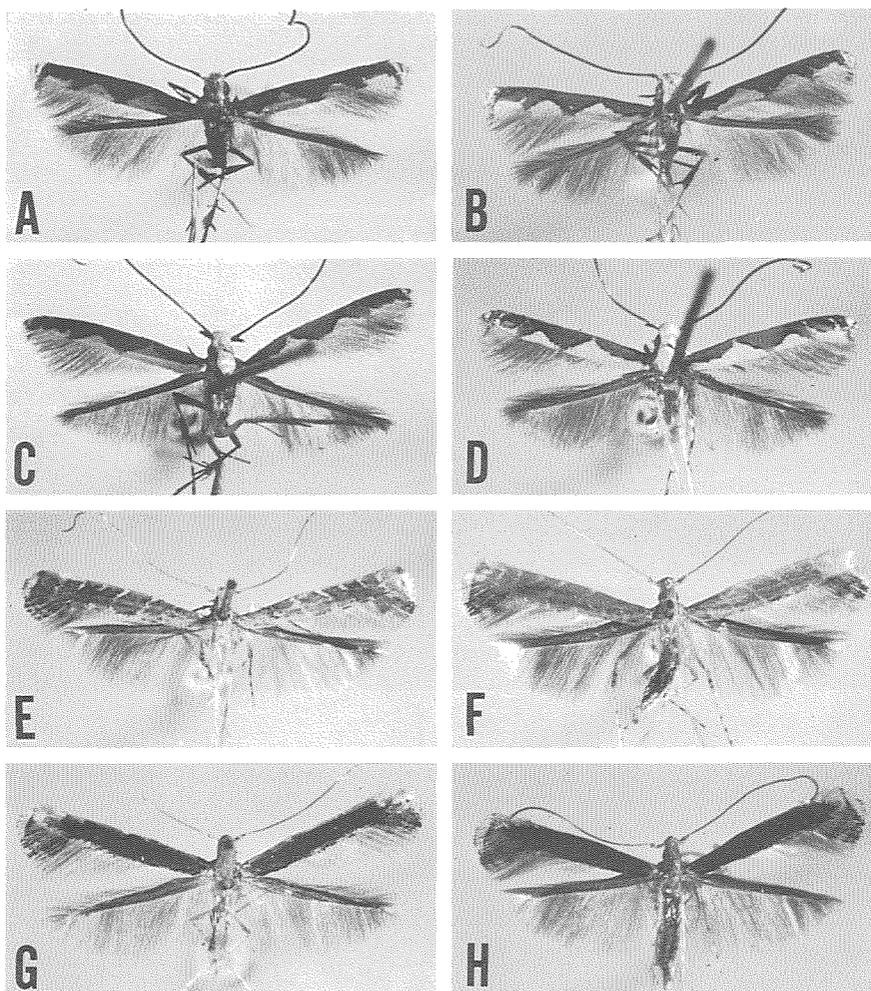
Pl. III: Fig. 35. Adult specimen. A: *Acrocercops querci* Kumata et Kuroko, sp. nov. [holotype] — B: Ditto [♀, paratype, Kozagawa, Wakayama-ken, em. 9/x/1974, ex *Quercus glauca* (1298)] — C: *Acrocercops distylii* Kumata et Kuroko, sp. nov. [holotype] — D: Ditto [♀, Kii-Ôsima, Wakayama-ken, em. 23/viii/1959, ex *Distylium racemosum*, Issiki & Yasuda leg.] — E: *Acrocercops vallata* Kumata et Kuroko, sp. nov. [♂, paratype, Ino, Kôti-ken, em. 28/vi/1957, ex *Quercus glauca* (253)] — F: Ditto [♀, paratype, Kozagawa, Wakayama-ken, em. 14/x/1974, ex *Quercus glauca* (1297)] — G: *Acrocercops unistriata* Decheng [♂, Onoaida, Yaku-sima, Nansei Is., em. 9/xi/1973, ex *Quercus phillyraeoides* (1199)] — H: Ditto [♂, Tosasimizu, Kôti-ken, em. 11/xi/1980, ex *Q. phillyraeoides* (2228)].



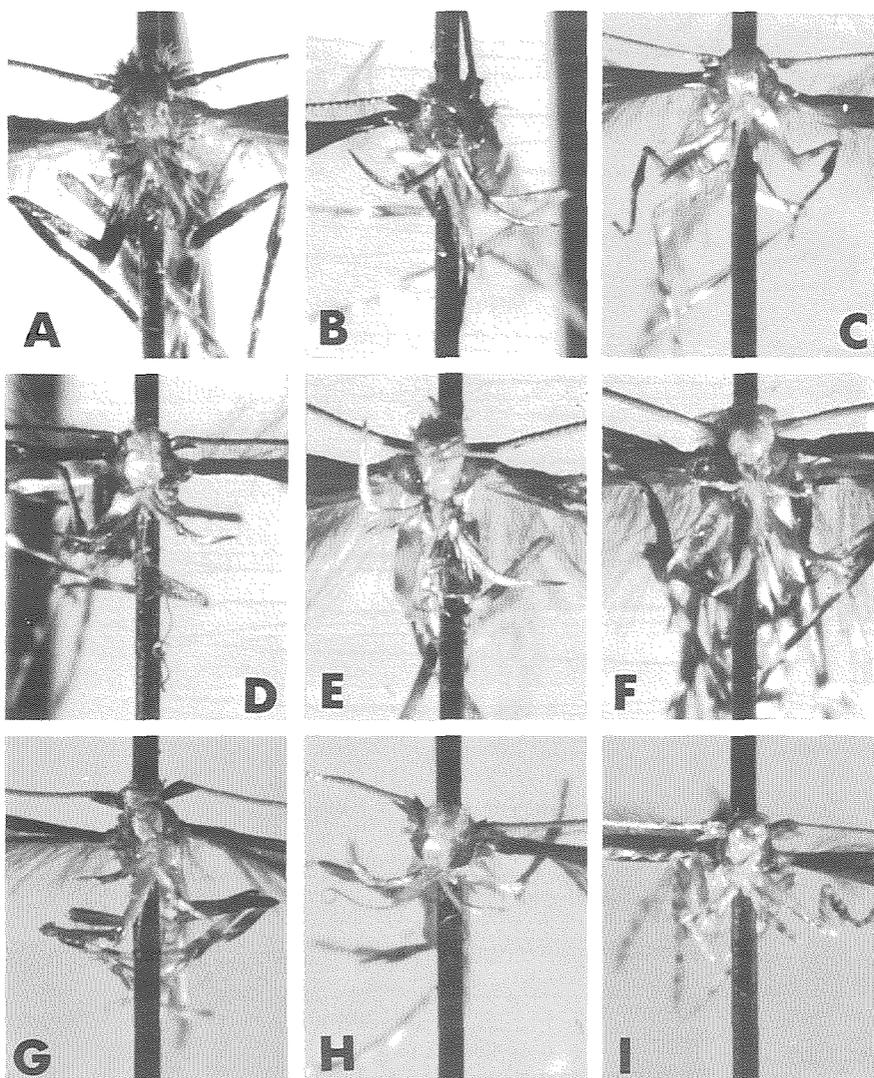
Pl. IV : Fig. 36. Adult specimen. A : *Acrocercops mantica* Meyrick [♀, Mine, Tusima, em. 9/xi/1979, ex *Castanopsis cuspidata* (2090)] — B : Ditto [♂, Tosasimizu, Kōti-ken, em. 14/xi/1980, ex *C. cuspidata* (2265)] — C : Ditto [♀, Mugiō, Yaku-sima, Nansei Is., em. 11/xi/1973, ex *C. cuspidata* (1184)] — D : Ditto [♂, Gongar, Janakpur, Nepal, em. 7/ix/1982, ex *C. tribuloides* (Npl-391)] — E : *Acrocercops leucophaea* Meyrick [♀, Malipu-Suri Dhoban, Janakpur, Nepal, em. 2/ix/1983, ex *Engelhardtia spicata* (Npl-301)] — F : Ditto [♀, Dhunche, No.1 West, Nepal, em. 15/vi/1968, ex *Lyonia ovalifolia*] — G : *Acrocercops defigurata* Meyrick [♂, Godawari, Nepal, em. 8/viii/1983, ex *Juglans* sp. (Npl-271)] — H : Ditto [♀, Suri Dhoban-Gongar, Janakpur, Nepal, em. 29/viii/1983, ex *Juglans* sp. (Npl-322)].



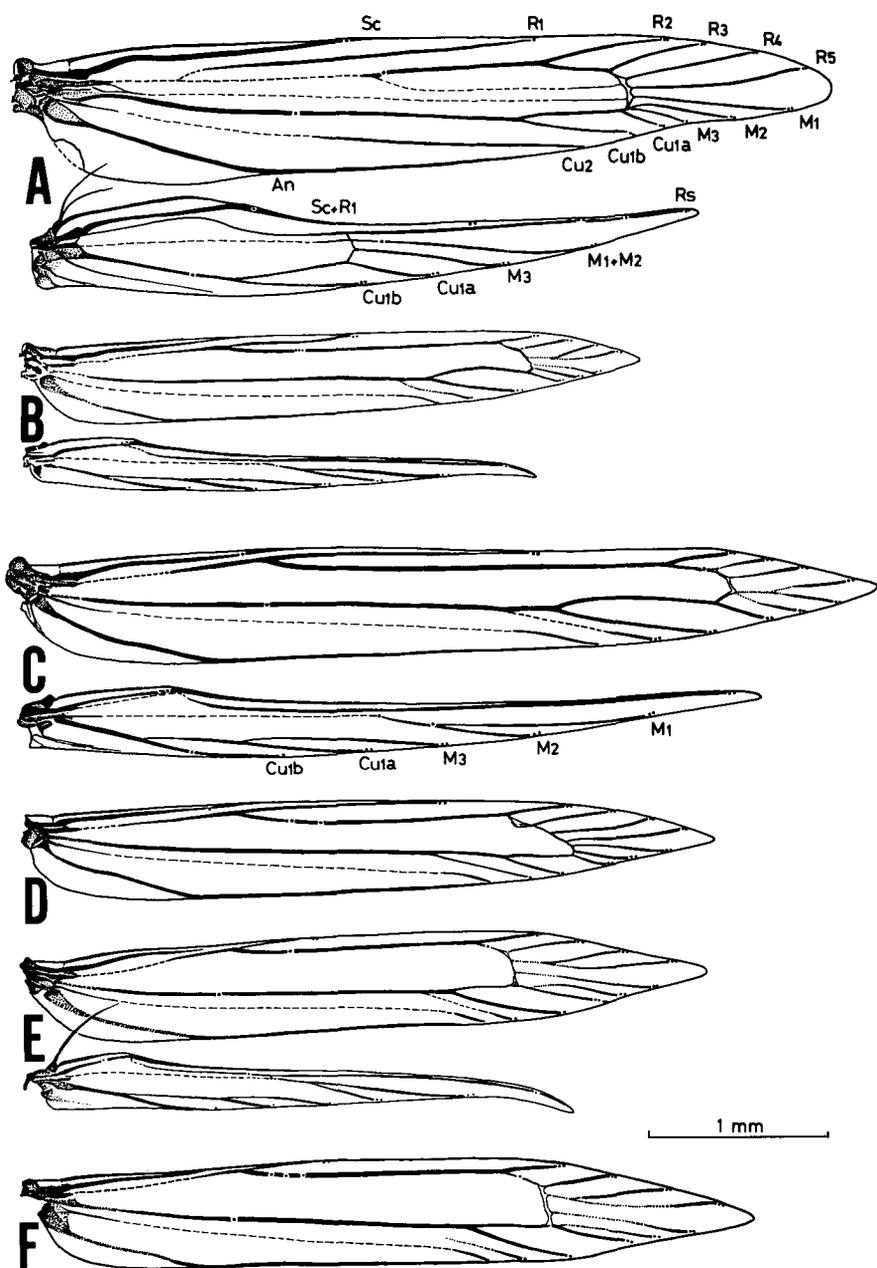
Pl. V : Fig. 37. Adult specimen. A : *Acrocercops transecta* Meyrick [♀, Ôtaki, Kiso, Nagano-ken, em. 19/vii/1975, ex *Lyonia ovalifolia* (1456)] — B : Ditto [♂, Katura, Wakayama-ken, em. 18/v/1957, ex *L. ovalifolia*, T. Kodama leg.] — C : Ditto [♂, Misumai, Sapporo, Hokkaidô, em. 13/ix/1967, ex *Juglans ailanthifolia* (890)] — D : Ditto [♂, Moiwa, Sapporo, Hokkaidô, em. 4/ix/1972, ex *J. ailanthifolia*] — E : Ditto [♀, Kamitusima, Tusima, em. 9/xi/1979, ex *Platycarya strobilacea* (2144)] — F : Ditto [♀, Mine, Tusima, em. 14/xi/1979, ex *P. strobilacea* (2083)] — G : *Artifodina japonica* Kumata [holotype] — H : Ditto [♂, paratype, Asizuri, Kôti-ken, em. 16/xii/1980, ex *Myrsine seguinii* (2255)].



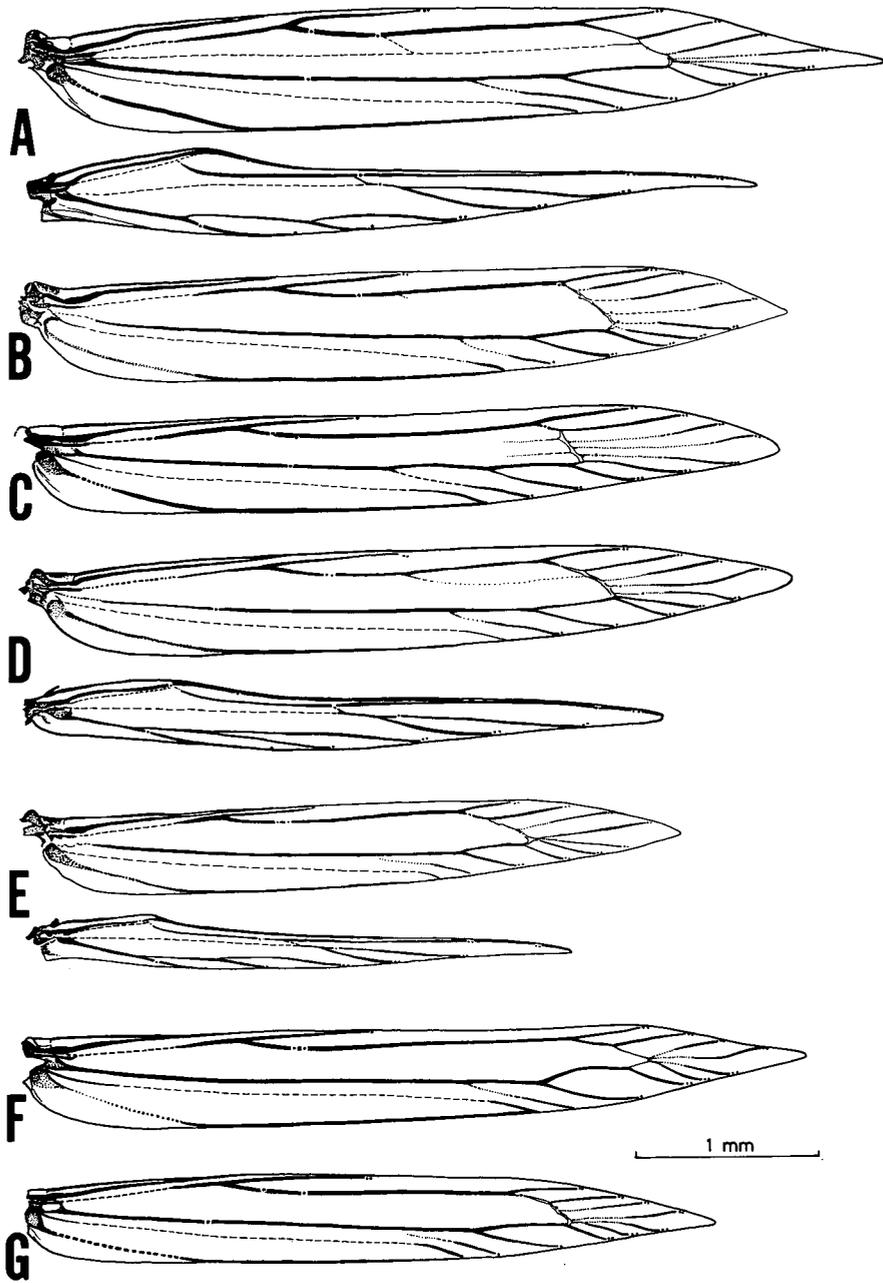
Pl. VI : Fig. 38. Adult specimen. A : *Dialectica geomatra* (Meyrick) [♂, Katetu, Amami-Ōsima, Ryūkyū Is., em. 23/x/1965, ex *Ehretia microphylla*] — B : Ditto [♂, Tina, Okinoerabu, Ryūkyū Is., em. 25/x/1965, ex *E. microphylla*] — C : *Dialectica japonica* Kumata et Kuroko, sp. nov. [holotype] — D : Ditto [♂, paratype, Hikosan, Kyūsyū, em. 30/vi/1955, ex *Ehretia ovalifolia*] — E : *Deoptilia heptadeta* (Meyrick) [♂, Onoaida, Yaku-sima, Nansei Is., em. 9/vi/1973, ex *Mallotus japonicus* (1203)] — F : Ditto [♀, Tosasimizu, Kōti-ken, em. 13/xi/1980, ex *M. japonicus* (2225)] — G : Ditto [♂, Koza, Wakayama-ken, em. 23/x/1974, ex *M. japonicus* (1344)] — H : Ditto [♀, Ino, Kōti-ken, em. 11/xi/1980, ex *M. japonicus* (2212)].



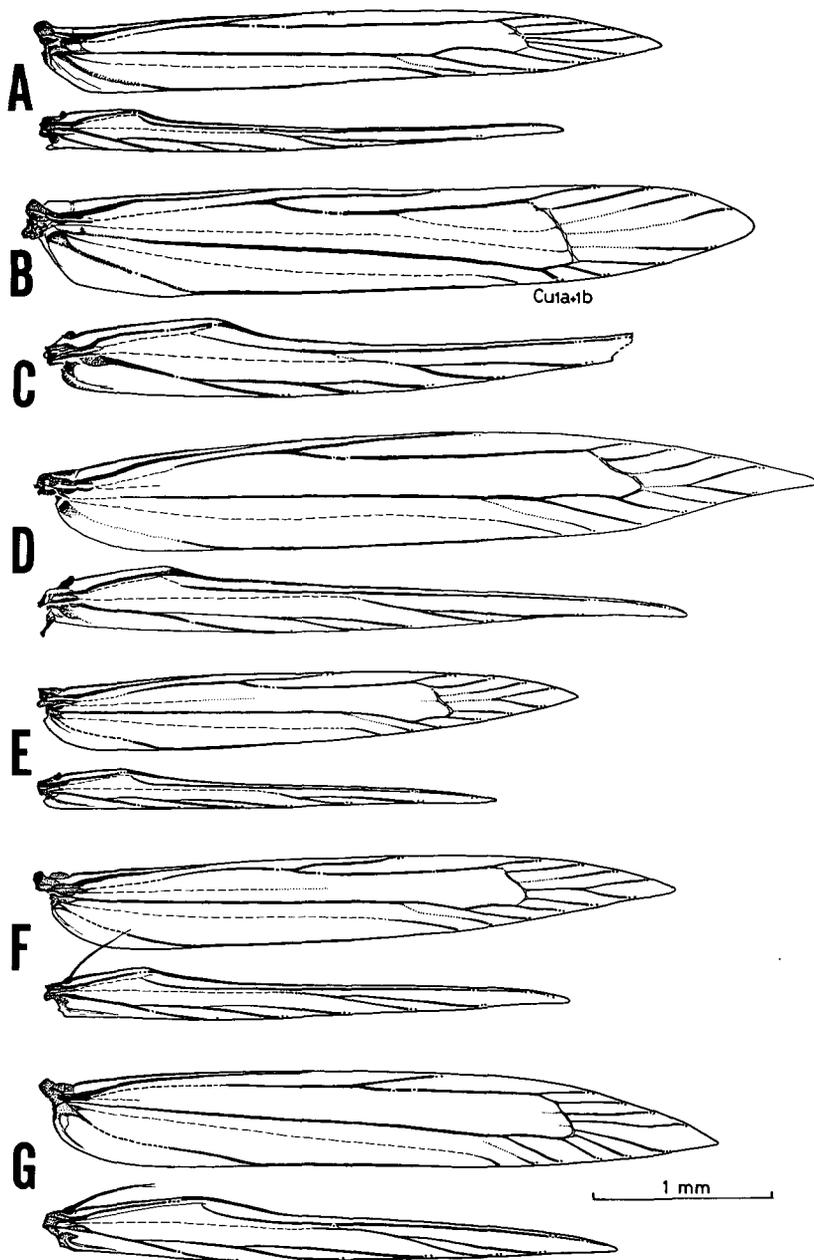
Pl. VII: Fig. 39. Head of adult in frontal view, showing antennal scape. A: *Callicercops yakusimensis* Kumata et Kuroko, sp. nov.—B: *Cryptolectica pasaniae* Kumata et Kuroko, sp. nov.—C: *Eteoryctis deversa* (Meyrick)—D: *Psydrocercops wisteriae* (Kuroko)—E: *Acrocercops distylii* Kumata et Kuroko, sp. nov.—F: *Artifodina japonica* Kumata—G: *Dialectica geometra* (Meyrick)—H: *Dialectica japonica* Kumata et Kuroko, sp. nov.—I: *Deoptilia heptadeta* (Meyrick).



Pl. VIII: Fig. 40. Wing venation. A: *Callicercops yakusimensis* Kumata et Kuroko, sp. nov., fore and hind wings [Grc-1737] — B: *Cryptolectica pasaniae* Kumata et Kuroko, sp. nov., fore and hind wings [Grc-1964] — C: *Cryptolectica ensiformis* (Decheng), fore and hind wings [Grc-1261] — D: *Cryptolectica chrysalis* Kumata et Ermolaev, sp. nov., fore wing [Grc-1968] — E: *Eteoryctis deversa* (Meyrick), fore and hind wings [Grc-1962] — F: *Eteoryctis picrasmae* Kumata et Kuroko, sp. nov., fore wing [Grc-790].



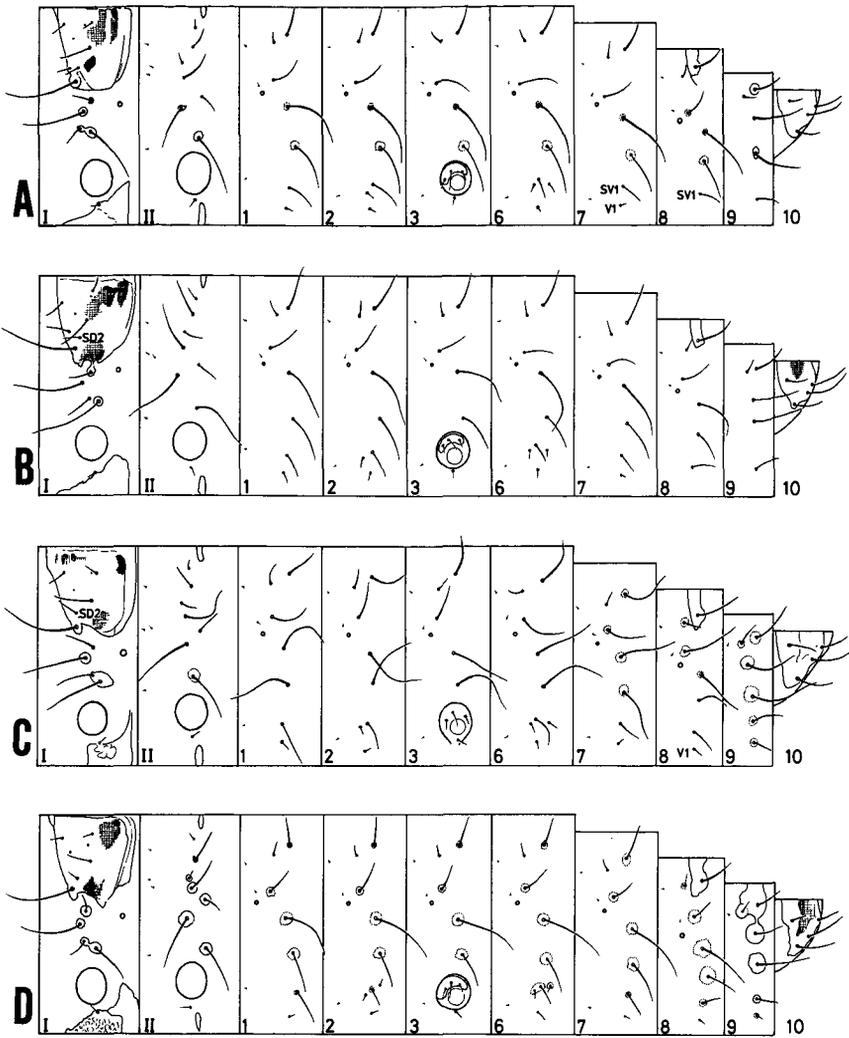
Pl. IX: Fig. 41. Wing venation. A: *Acrocercops brongniardella* (Fabricius), fore and hind wings [Grc-576, Berlin] — B: *Acrocercops melanoplecta* Meyrick, fore wing [Grc-1263] — C: *Acrocercops querci* Kumata et Kuroko, sp. nov., fore wing [Grc-1910] — D: *Acrocercops distylii* Kumata et Kuroko, sp. nov., fore and hind wings [Grc-1670] — E: *Acrocercops vallata* Kumata et Kuroko, sp. nov., fore and hind wings [Grc-853] — F: *Acrocercops mantica* Meyrick, fore wing [Grc-1967] — G: *Acrocercops transecta* Meyrick, fore wing [Grc-889, ex *Lyonia ovalifolia*].



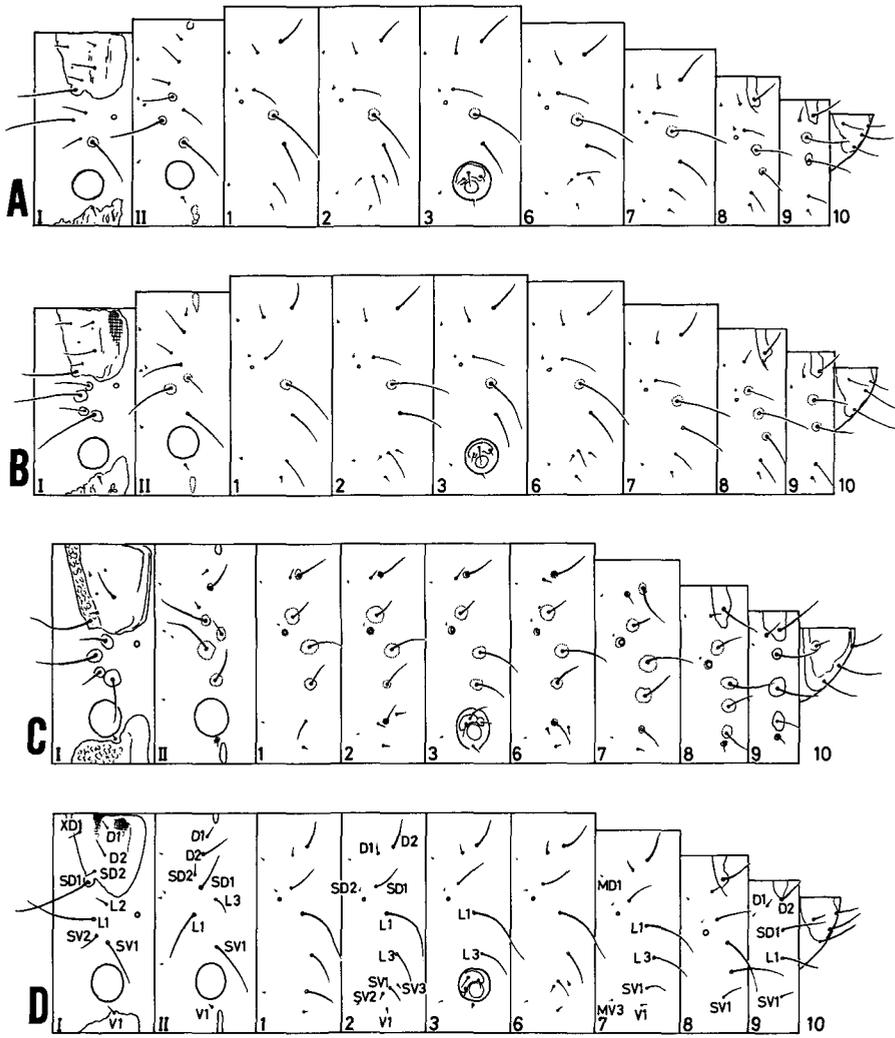
Pl. X: Fig. 42. Wing venation. A: *Psydrocercops wisteriae* (Kuroko), fore and hind wings [Grc-1965] — B: *Artifodina japonica* Kumata, fore wing [Grc-1643] — C: Ditto, hind wing [Grc-1116] — D: *Dialectica scariella* (Zeller), fore and hind wings [Grc-996] — E: *Dialectica geometra* (Meyrick), fore and hind wings [Grc-2050] — F: *Dialectica japonica* Kumata et Kuroko, sp. nov., fore and hind wings [Grc-2046] — G: *Deoptilia heptadeta* (Meyrick), fore and hind wings [Grc-1671].



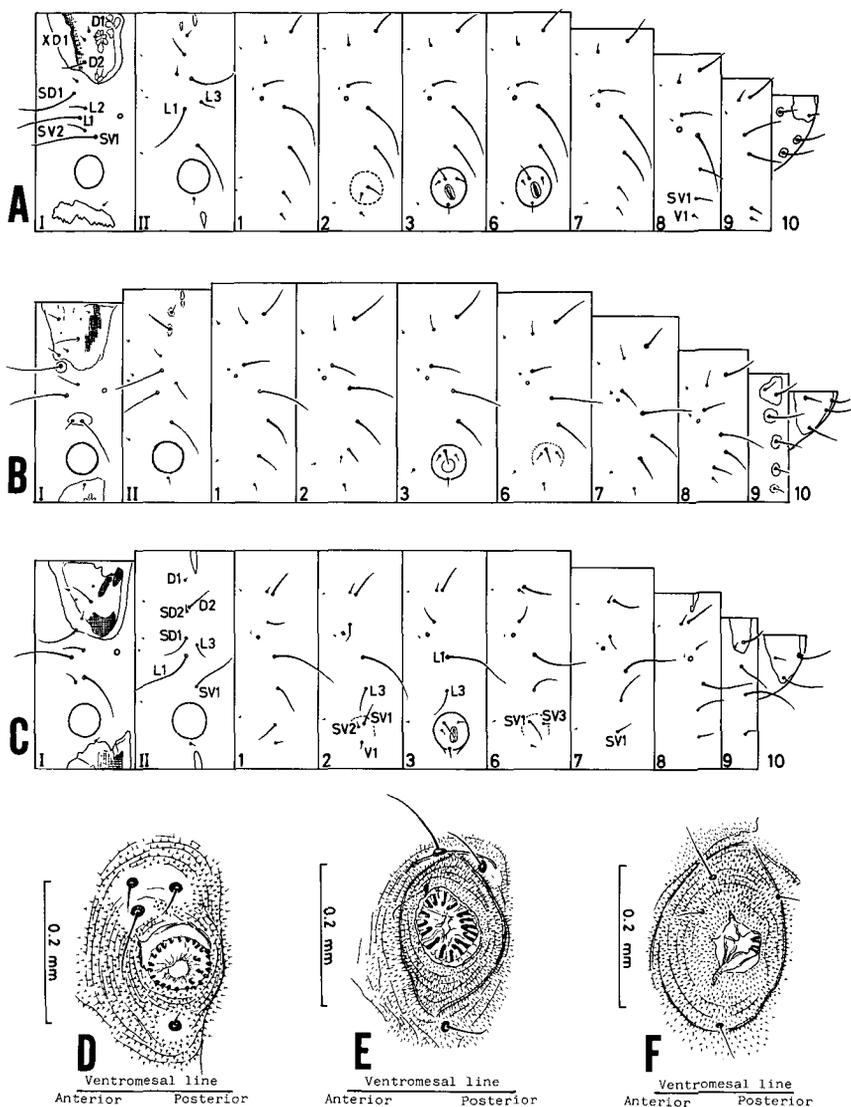
Pl. XI: Fig. 43. Body chaetotaxy of larva. A: *Callicercops yakusimensis* Kumata et Kuroko, sp. nov., last instar [Kuriō, Yaku-sima, Nansei Is., 16/x/1973, on *Bauhinia japonica* (1215)] — B: *Cryptolectica pasaniae* Kumata et Kuroko, sp. nov., last instar [Mugiō, Yaku-sima, 14/x/1973, on *Pasania edulis* (1178)] — C: *Cryptolectica chrysalis* Kumata et Ermolaev, sp. nov., last instar [Apoi, Hidaka, Hokkaidō, 4/vii/1962, on *Quercus mongolica* var. *grosseserrata* (625)] — D: Ditto, penultimate instar [ditto].



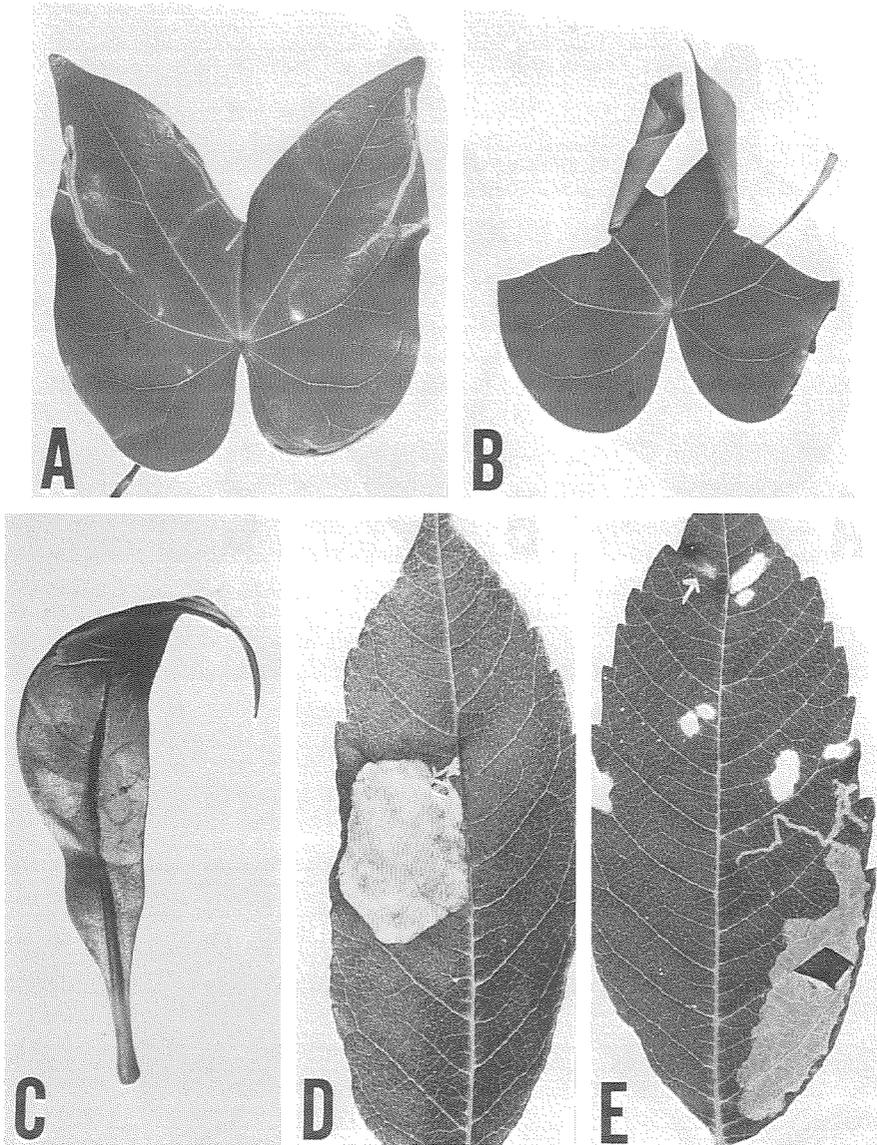
Pl. XII: Fig. 44. Body chaetotaxy of last instar larva. A: *Eteoryctis deversa* (Meyrick) [Moiwa, Sapporo, Hokkaidō, 15/ix/1969, on *Rhus ambigua* (936)] — B: *Eteoryctis picrasmae* Kumata et Kuroko, sp. nov. [Misumai, Sapporo, 22/vi/1967, on *Picrasma quassioides* (859)] — C: *Psydrocercops wisteriae* (Kuroko) [Kozagawa, Wakayama-ken, 21/v/1970, on *Wisteria floribunda* (1044)] — D: *Acrocercops melanoplecta* Meyrick [Kozagawa, 15/v/1964, on *Castanopsis cuspidata* (655)].



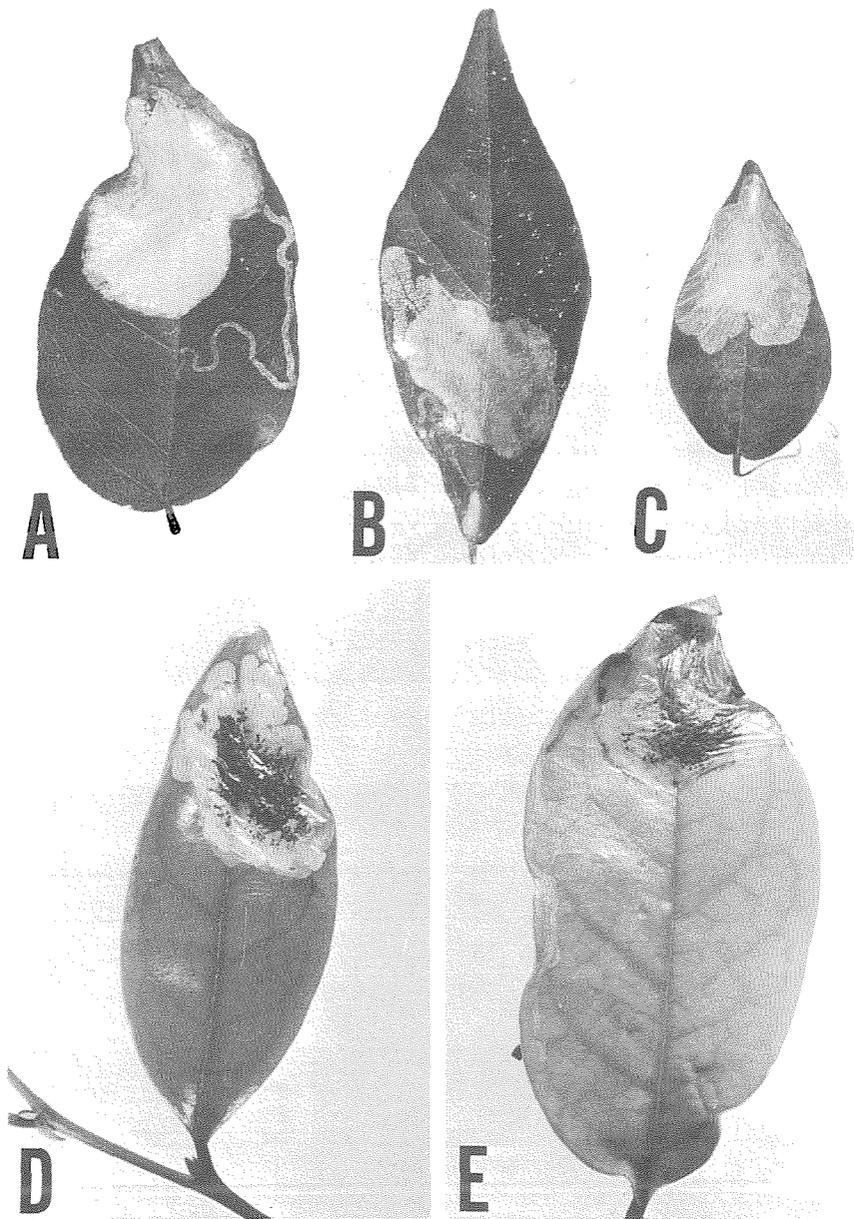
Pl. XIII : Fig. 45. Body chaetotaxy of last instar larva. A : *Acrocercops unistriata* De-cheng [Onoaida, Yaku-sima, Nansei Is., 15/x/1973, on *Quercus phillyraeoides* (1199)] — B : *Acrocercops distylii* Kumata et Kuroko, sp. nov. [Kii-Ôsima, Wakayama-ken, 24/ix/1974, on *Distylium racemosum* (1338)] — C : *Acrocercops mantica* Meyrick [Kozagawa, Wakayama-ken, 21/v/1970, on *Castanopsis cuspidata* (1034)] — D : *Acrocercops transecta* Meyrick [Misumai, Sapporo, Hokkaidô, 30/viii/1967, on *Juglans ailanthifolia* (890)].



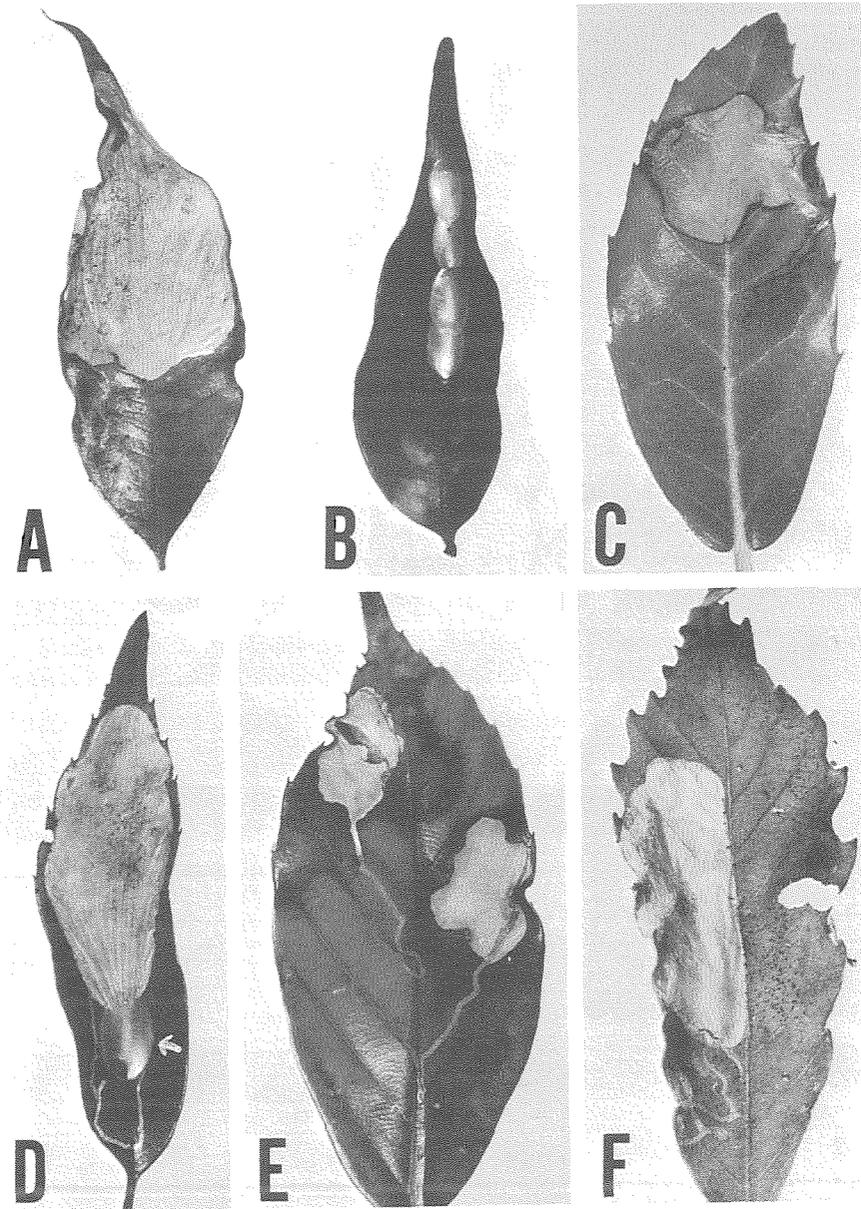
Pl. XIV: Fig. 46. Body chaetotaxy and ventral proleg of last instar larva. A: *Artifodina japonica* Kumata [Nati, Wakayama-ken, 18/x/1966, on *Myrsine seguinii* (836)] — B: *Dialectica aemula* (Meyrick) [Dolakha Bazal, Janakpur, Nepal, 30/viii/1983, on *Cynoglossum* sp. (Npl-427)] — C: *Deoptilia heptadeta* (Meyrick) [Kozagawa, Wakayama-ken, 21/v/1970, on *Mallotus japonicus* (1037)] — D: *Callicercops yakusimensis* Kumata et Kuroko, sp. nov., 4th abdominal proleg [breeding no. 1215] — E: *Acrocercops distyllii* Kumata et Kuroko, sp. nov., 3rd abdominal proleg [breeding no. 1338] — F: *Deoptilia heptadeta* (Meyrick), 3rd abdominal proleg [breeding no. 1037].



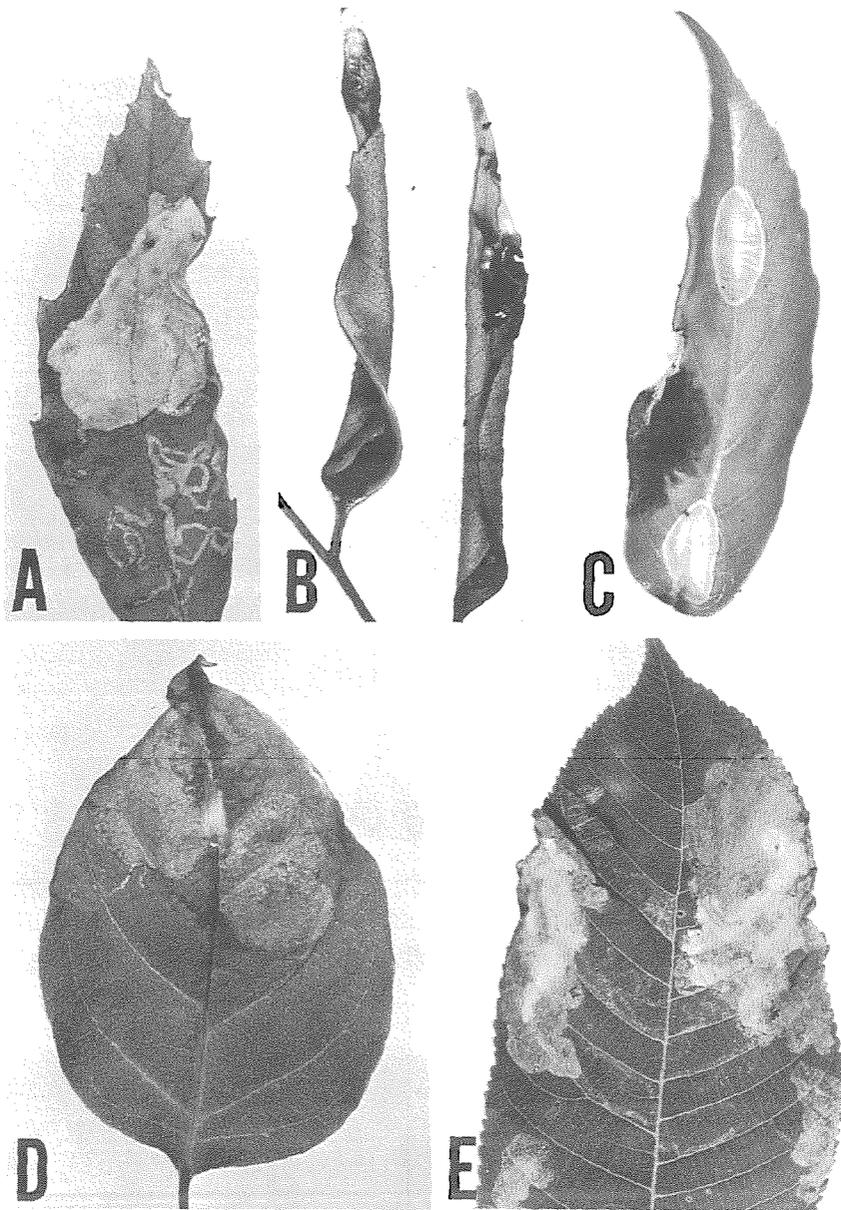
Pl. XV: Fig. 47. Larval leaf-mine, leaf-roll and cocoon. A: *Calliarcops yakusimensis* Kumata et Kuroko, sp. nov., leaf-mines on *Bauhinia japonica* (upper side) [breeding no. 1215] — B: Ditto, leaf-rolls on *Bauhinia japonica* (upper side) [breeding no. 1215] — C: *Cryptolectics pasaniae* Kumata et Kuroko, sp. nov., leaf-mine on *Pasania edulis* (lower side) [breeding no. 1178] — D & E: *Eteoryctis deversa* (Meyrick), leaf-mines on *Rhus javanica* (upper side), arrow showing cocoon [breeding no. 1045].



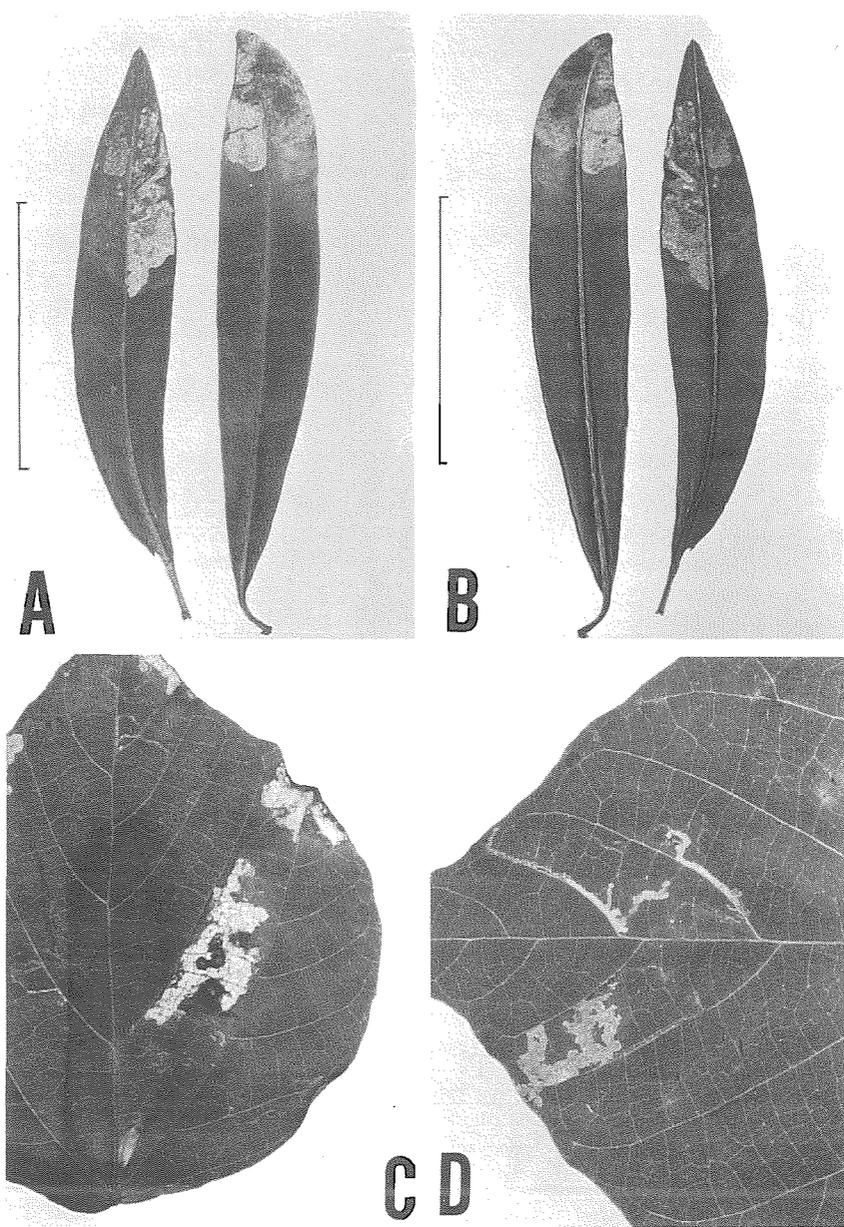
Pl. XVI: Fig. 48. Larval leaf-mine. A: *Psydrocercops wisteriae* (Kuroko), on *Wisteria floribunda* (upper side) [breeding no. 1044] — B & C: Ditto, on *W. floribunda* (upper side) [breeding no. 1326] — D: *Acrocercops distylii* Kumata et Kuroko, sp. nov., on *Distylium racemosum* (upper side) [breeding no. 1249] — E: Ditto, on *D. racemosum* (upper side) [breeding no. 1338].



Pl. XVII: Fig. 49. Larval leaf-mine and cocoon. A: *Acrocercops melanoplecta* Meyrick, leaf-mine on *Castanopsis cuspidata* (upper side) [breeding no. 1035] — B: Ditto, cocoon on leaf of *C. cuspidata* [ditto] — C: *Acrocercops unistriata* Decheng, leaf-mine on *Quercus phillyraeoides* (upper side) [breeding no. 1199] — D & E: Ditto, leaf-mines on *Q. glauca* (upper side), arrow showing cocoon [breeding no. 1051] — F: Ditto, leaf-mine on *Q. serrata* (upper side) [breeding no. 1323].



Pl. XVIII: Fig. 50. Larval leaf-mine and cocoon. A: *Acrocercops vallata* Kumata et Kuroko, sp. nov., leaf-mine on *Quercus glauca* (upper side) [breeding no. 1297] — B: *Acrocercops mantica* Meyrick, leaf-mines on *Castanopsis cuspidata* (upper side) [breeding no. 1034] — C: Ditto, cocoons on leaf of *C. cuspidata* [ditto] — D: *Acrocercops transecta* Meyrick, leaf-mine on *Lyonia ovalifolia* (upper side) [breeding no. 1030] — E: Ditto, leaf-mine on *Juglans ailanthifolia* (upper side) [Moiwa, Sapporo, Hokkaidō, ix/1969].



Pl. XIX : Fig. 51. Larval leaf-mine. A: *Artifodina japonica* Kumata, on *Myrsine seguinii* (upper side) [breeding no. 1337] — B: Ditto (lower side) [ditto] — C & D: *Deoptilia heptadeta* (Meyrick), on *Mallotus japonicus* (upper side) [breeding no. 1037].