

*Kontyû, Tokyo*, 43(2): 147-169. June 25, 1975

## On the Larvae of Melandryidae (Coleoptera, Cucujoidea) and Some Related Families Occurring in Japan\*

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**Synopsis** The larvae of 17 Japanese species belonging to the Melandryidae, Tetratomidae and Cephaloidea are described. Systematic positions of some species are discussed on the basis of larval structure: *Holostrophus* is transferred from Melandryidae to Tetratomidae, *Stenocephaloon* (Cephaloidea or Melandryidae) and *Synchroa* (Synchroidae or Melandryidae) are placed in Cephaloidea, and *Phloeotrya femoralis* LEWIS and *P. parvula* LEWIS are transferred to *Serropalpus*. A key to the Japanese species of Melandryidae based on the larvae is given.

### Family Melandryidae

So far as I am aware, more than 60 species of this family have been known to occur in Japan, and yet their larvae have been hardly studied in detail. On the other hand, in Europe VIEDMA (1966) gave an excellent work on the larvae of European species. Furthermore, the phylogenetic-systematic studies based on the adult and larval stages have been made mainly by CROWSON (1955, 1966). These works are very useful for the present study. In this paper are given descriptions of the mature larvae of 14 species belonging to eight genera of Melandryidae occurring in Japan.

The larvae of Melandryidae excluding many genera (*Mycetoma*, *Eustrophinus*, *Synstrophus*, *Eustrophus*, *Hallomenus*, *Holostrophus*, *Xylita*, *Synchroa*, *Stenocephaloon*, *Stenotrachelus* etc.) are characterized by the following points:—

Median (coronal) suture present or absent. Frontal sutures V- or lyre-shaped. Frons and clypeus not confluent. Mandibles symmetrical; molar part obsolete. Maxillary mala without uncus. Cardo not divided into two parts. Maxillary articulating area frequently bilobed, and frequently confluent to cardo. Labial palpi frequently approaching each other. Ligula wider than the distance between outer lateral sides of labial palpi, without setae. Mentum, submentum and gula fused into a single plate. Hypopharyngeal sclerome absent. Legs usually reduced in species living in decaying wood; coxal cavities separated far from each other. Body with or without ambulacral ampullae. Urogomphi present or absent. Spiracles with or without chambers on margin.

### *Orchesia ocularis* LEWIS, 1895

References: FUKUDA, 1943, *Trans. nat. Hist. Soc. Formosa*, 33: 563-565. — FUKUDA, 1959, *Illustrated Insect Larvae of Japan*, Tokyo: 486, No. 913.

\* HAYASHI, N.: Contributions to the knowledge of the larvae of Cucujoidea IX.

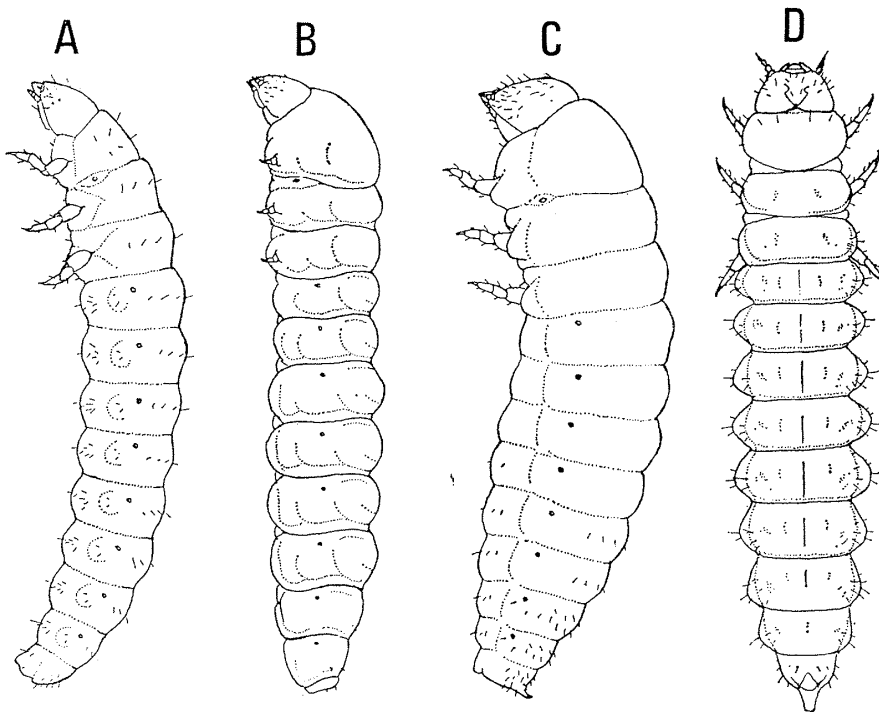


Fig. 1. Mature larvae. — A, *Orchesia ocularis* (lateral view); B, *Phloeotrya rugicollis* (lateral view); C, *Serropalpus femoralis* (lateral view); D, *Euryzilora lividipennis* (dorsal view).

Body (Fig. 1 A) nearly white, moderately depressed, with sparse, long setae, without ambulacral ampullae; urogomphi absent.

Head-capsule (Fig. 2 A & B) 1.1–1.5 mm in breadth; dorsal hind margin of head-capsule almost straight; frontal sutures widely expanded anteriorly; frons with a V-shaped impression on base; hypostomal rod comparatively short; ocelli (Fig. 2 O) 5 in number on each side. Antennae (Fig. 3 A) extremely small; 1st and 2nd joints transverse, the sensory appendage of 2nd joint being much longer than the 3rd; 3rd joint exceedingly small. Labrum strikingly undulated anteriorly. Epipharynx (Fig. 4 A) with posterior rods elongate, approaching each other at base. Mandibles (Fig. 5 A) bidentate apically; dorsal cutting edge with a single tooth; external surface with 2 setae. Maxillae (Fig. 6 A) with 3rd joint of palpus the longest; mala moderately developed outwardly at inner distal portion; maxillary articulating area bilobed by a transverse groove. Labium with palpi contiguous to each other, the apical joint being much longer than the basal, bearing a conspicuous apical papilla, the basal joint exceedingly short, without setae; ligula projecting beyond apex of labial palpus; basal region of labium strikingly constricted.

Prothoracic segment with presternum (Fig. 8 A) large, distinctly divided from eusternum. Legs (Fig. 7 A) comparatively small; coxal margin pigmented; tibia about twice as long as wide; claw with a single seta. Abdominal segments except

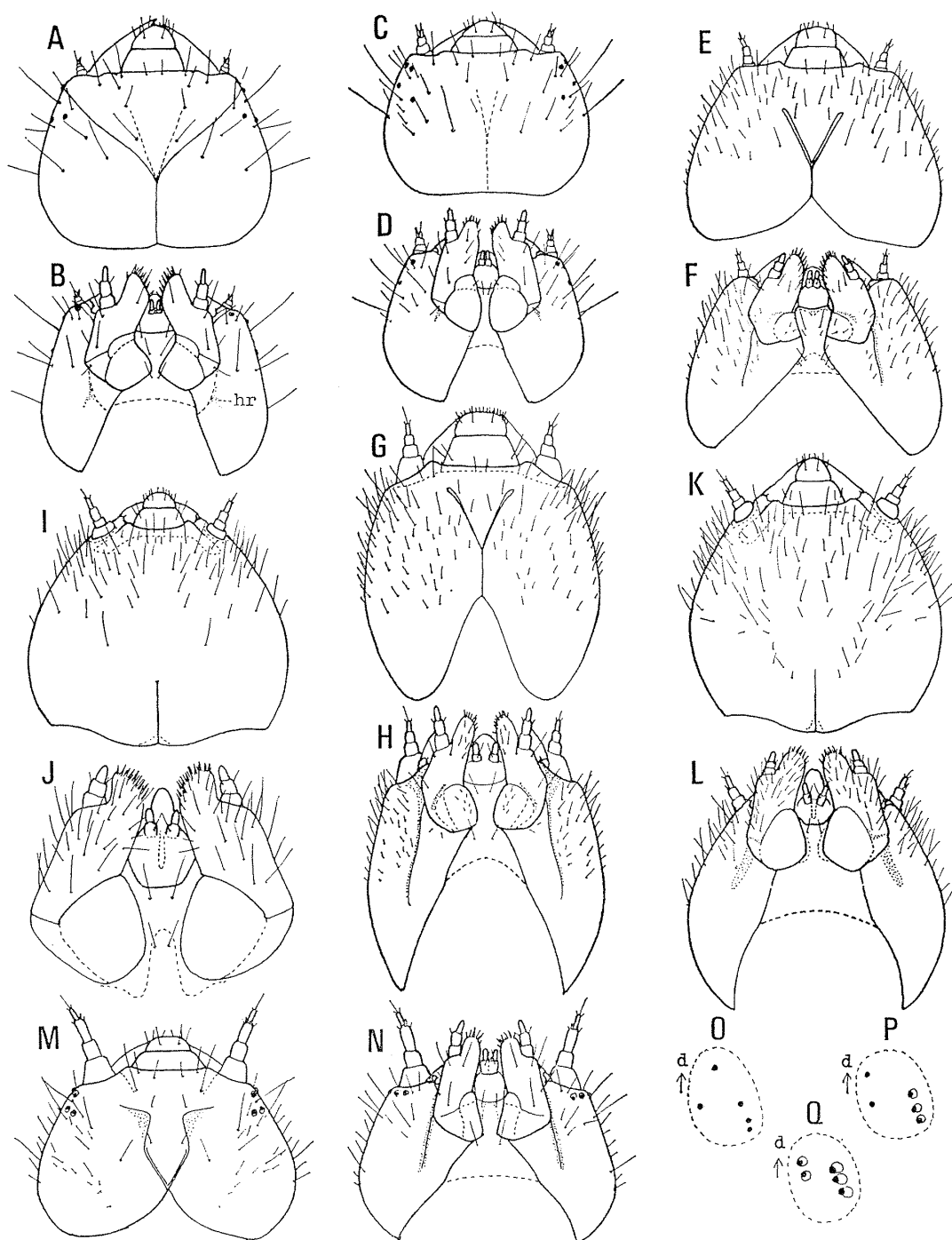


Fig. 2. Heads (A-N) and ocelli (right, d: shows dorsal surface) (O-Q). — A, *Orchesia ocularis* (dorsal view); B, ditto (ventral view, hr: hypostomal rod); C, *Abdera trisignata* (dorsal view); D, ditto (ventral view); E, *Melandrya mongolica* (dorsal view); F, ditto (ventral view); G, *Phloeotrya flavitarsis* (dorsal view); H, ditto (ventral view); I, *Serropalpus niponicus* (dorsal view); J, ditto (ventral view); K, *Serropalpus femoralis* (dorsal view); L, ditto (ventral view); M, *Euryzilora lividipennis* (dorsal view); N, ditto (ventral view); O, *Orchesia ocularis*; P, *Abdera trisignata*; Q, *Euryzilora lividipennis*.

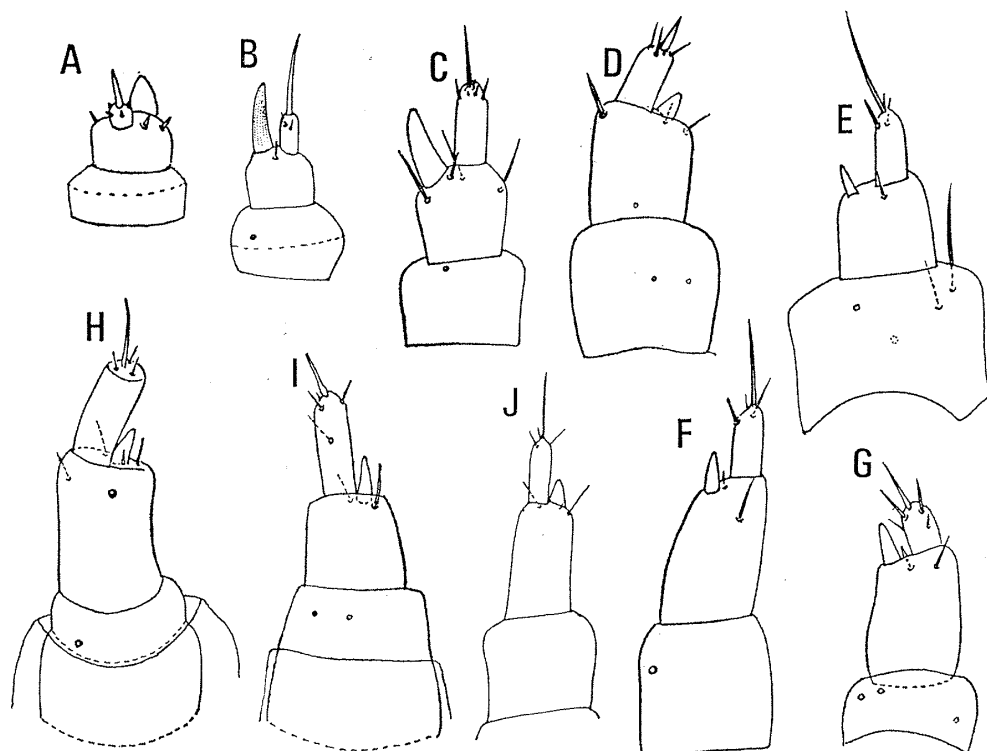


Fig. 3. Antennae.—A, *Orchesia ocularis*; B, *Abdera trisignata*; C, *Hypulus* sp.; D, *Mel-andrya mongolica*; E, *Phloeotrya flavitarsis*; F, *Phloeotrya rugicollis*; G, *Phloeotrya bellicosa*; H, *Serropalpus niponicus*; I, *Serropalpus femoralis*; J, *Euryzilora lividipennis*.

the 9th with lateral side roundly swollen; tergite with 3 or 4 long setae on lateral half. Spiracles (Fig. 8 J) annular, furnished with 2 conspicuous chambers on margin. Body-length 7–10 mm.

*Specimens examined.* 4 exs., living in tree-fungi or decaying wood permeated with mycelium, Kobotoke-toge, Tokyo-toka, 1. VI. 1949, N. HAYASHI leg. 2 exs., Daibosatsu-toge, Yamanashi-ken, 20. V. 1961, N. HAYASHI leg. 3 exs., Okunikko, Tochigi-ken, 1. VII. 1962, N. HAYASHI leg. 1 ex., Daibosatsu-toge, Yamanashi-ken, 13. VI. 1966, N. HAYASHI leg. 1 ex., Ôyama, Kanagawa-ken, 30. IV. 1967, N. HAYASHI leg. 3 exs., near Tanigawa-onsen, Gumma-ken, 17. V. 1971, N. HAYASHI leg. 2 exs., Daibosatsu-toge, Yamanashi-ken, 24. X. 1971, N. HAYASHI leg. 1 ex., Nokogiriyama, Chiba-ken, IV. 1972, N. HAYASHI leg.

#### *Orchesia imitans* LEWIS, 1895

The larva of this species is very similar to that of *O. ocularis*, from which it differs in the following points:—

Head-capsule 0.7–1.2 mm in breadth. Labrum weakly undulated anteriorly. Epipharynx (Fig. 4 B) with bases of posterior rods moderately separated from each other. Maxillary mala (Fig. 6 B) strongly developed outwardly at inner distal

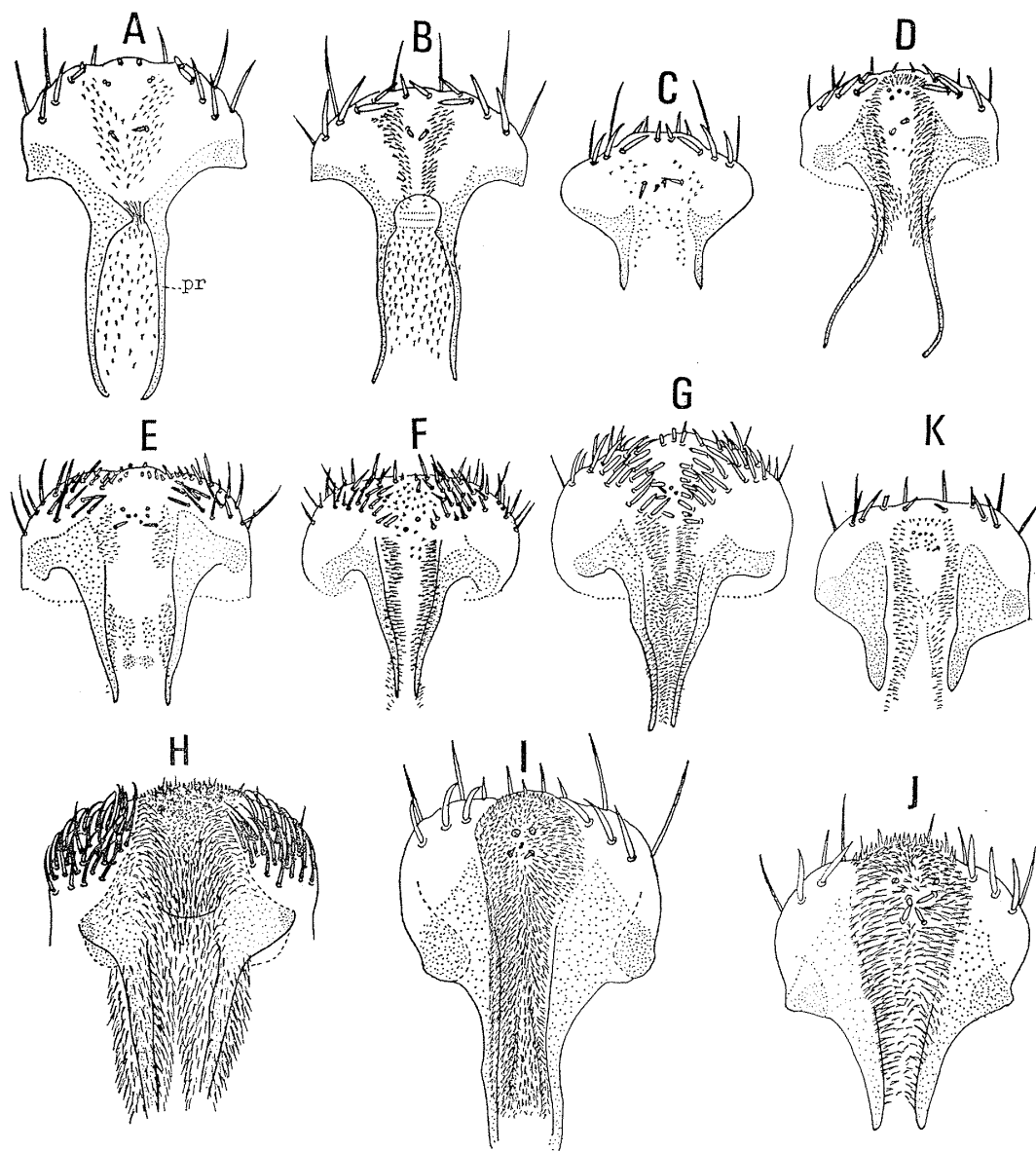


Fig. 4. Epipharynges. — A, *Orchesia ocularis* (pr: posterior rod); B, *Orchesia imitans*; C, *Abdera trisignata*; D, *Hypulus* sp.; E, *Melandrya mongolica*; F, *Phloeotrya flavitarsis*; G, *Phloeotrya rugicollis*; H, *Phloeotrya bellicosa*; I, *Serropalpus niponicus*; J, *Serropalpus femoralis*; K, *Euryzilora lividipennis*.

portion. Body slender. Body-length 5–9 mm.

*Specimens examined.* 1 ex., living in tree-fungi or decaying wood permeated with mycelium, Miyakejima Is., Izu, 5. V. 1966, N. HAYASHI leg. 3 exs., Bûkasan, Kanagawa-ken, 24. IV. 1972, N. HAYASHI leg.

*Abdera trisignata* CHAMPION, 1916

Body nearly white, moderately depressed, with sparse, long setae on dorsum,

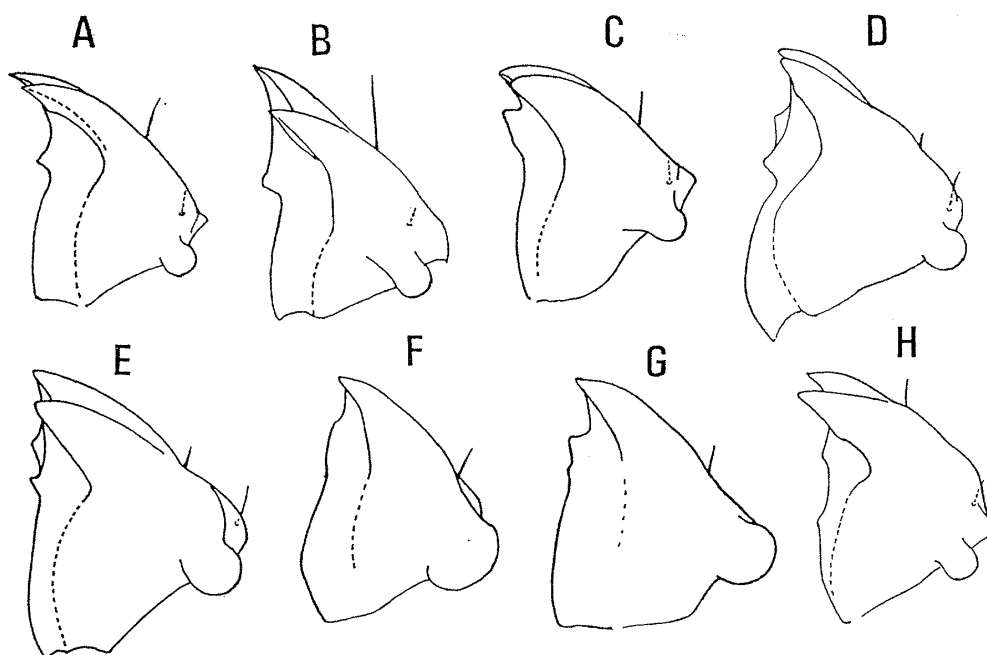


Fig. 5. Mandibles (left, ventral view). — A, *Orchesia ocularis*; B, *Abdera trisignata*; C, *Hypulus* sp.; D, *Melandrya mongolica*; E, *Phloeotrya flavitarsis*; F, *Serropalpus niponicus*; G, *Serropalpus femoralis*; H, *Euryzilora lividipennis*.

without ambulacral ampullae; urogomphi absent.

Head-capsule (Fig. 2 C & D) about 0.6 mm in breadth; dorsal hind margin of head-capsule almost straight; frontal sutures indistinct; frons with a V-shaped impression on base; hypostomal rod short; ocelli (Fig. 2 P) 5 in number on each side. Antennae (Fig. 3 B) extremely small; 1st joint transverse; 2nd joint about as long as wide, the sensory appendage being elongate, much longer than the 3rd. Labrum with anterior margin considerably produced medially. Epipharynx (Fig. 4 C) with posterior rods extremely short, far remote from each other. Mandibles (Fig. 5 B) bidentate apically; dorsal cutting edge with a single tooth; external surface with 2 setae. Maxillae (Fig. 6 C) with 3 joints of palpus subequal in length, bearing a large apical papilla on the 3rd; mala with several stout bristles on distal portion; maxillary articulating area bilobed by a transverse groove. Labium exceedingly retracted from the level of maxillary mala; palpi contiguous to each other, the basal joint being a little shorter than the apical, without setae, the apical joint with a conspicuous apical papilla; ligula not projecting beyond apex of labial palpus; basal region of labium extremely narrow.

Prothoracic segment with presternum large, distinctly divided from eusternum. Legs (Fig. 7 B) comparatively small; tibia a little less than twice as long as wide; claw with a single seta. Abdominal segments except the 9th with 3 or 4 long setae on lateral half of tergite; lateral side roundly swollen. Spiracles (Fig. 8 K) annular, furnished with a large chamber on margin. Body-length about 4 mm.

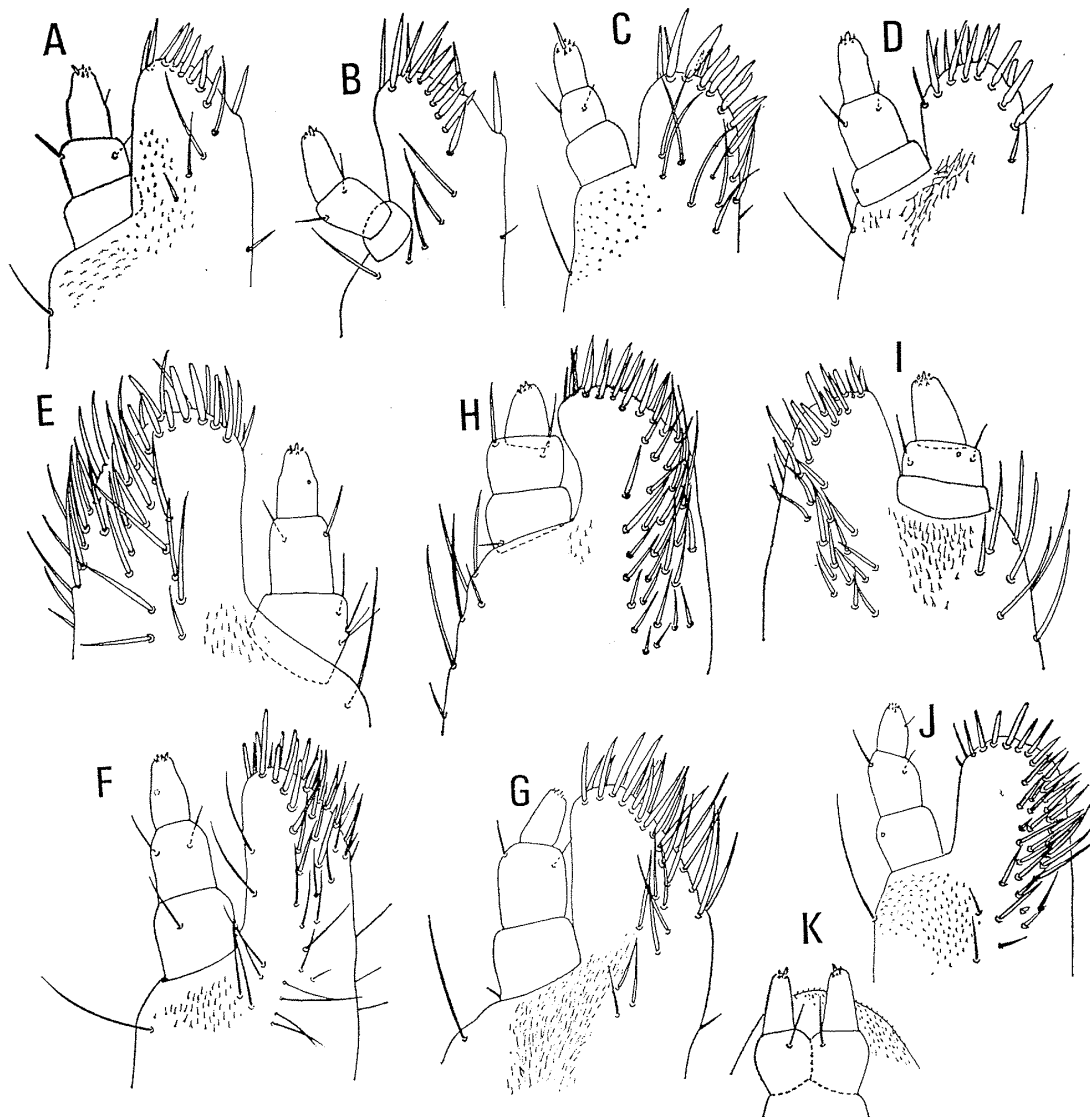


Fig. 6. Maxillae (buccal view) (A–J) and labium (anterior part, ventral view) (K). — A, *Orchesia ocularis* (left); B, *Orchesia imitans* (left); C, *Abdera trisignata* (left); D, *Hypulus* sp. (left); E, *Melandrya mongolica* (right); F, *Phloeotrya flavitarsis* (left); G, *Phloeotrya bellicosa* (left); H, *Serropalpus niponicus* (left); I, *Serropalpus femoralis* (right); J, *Euryzilora lividipennis* (left); K, *Euryzilora lividipennis*.

*Specimens examined.* 8 exs., living under or in bark of decaying conifers permeated with mycelium, near Hachioji, Tokyo-toka, 27. IX. 1971, N. HAYASHI leg. 1 ex., Sagamiko, Kanagawa-ken, 3. V. 1971, N. HAYASHI leg.

#### *Hypulus* sp.

Body nearly white, more or less cylindrical, furnished with ambulacral ampullae; urogomphi absent.

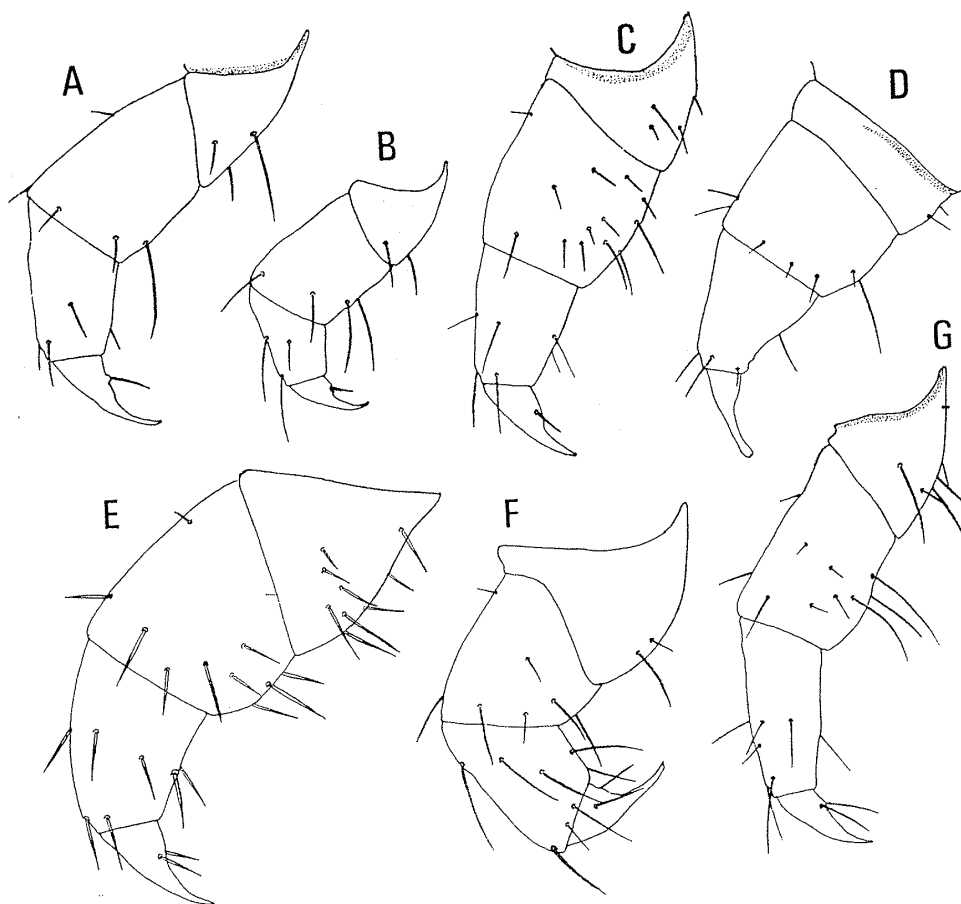


Fig. 7. Metathoracic legs except Fig. C (left, posterior view). —A, *Orchesia ocularis*; B, *Abdera trisignata*; C, *Melandrya mongolica* (mesothoracic leg, left, posterior view); D, *Phloeotrya flavitarsis*; E, *Serropalpus niponicus*; F, *Serropalpus femoralis*; G, *Euryzilora lividipennis*.

Head-capsule about 0.6 mm in breadth, with dorsal hind margin bilobed; median (coronal) and frontal sutures present, the latter being V-shaped; hypostomal rod probably extending backwards; ocelli probably present. Antennae (Fig. 3 C) with 3 joints subequal in length; 1st joint transverse; 2nd joint about as long as wide, the sensory appendage large, subequal to the 3rd in length. Epipharynx (Fig. 4 D) with posterior rods elongate. Mandibles (Fig. 5 C) tridentate apically; external surface with 2 setae. Maxillae (Fig. 6 D) with 1st joint of palpus transverse, about 2/3 as long as the 2nd, the 2nd and 3rd joints being subequal in length; mala evenly rounded apically. Labium with palpi contiguous to each other, the apical joint being slender, much longer than the basal, the basal joint with a seta; ligula moderately produced beyond apex of labial palpus. Legs small. Spiracles oval or annular, without chambers on margin. Body-length about 5 mm.

*Specimen examined.* 1 ex., living in decaying wood, Tachibanayama, Fukuoka-ken, 4. X. 1970, N. HAYASHI leg.



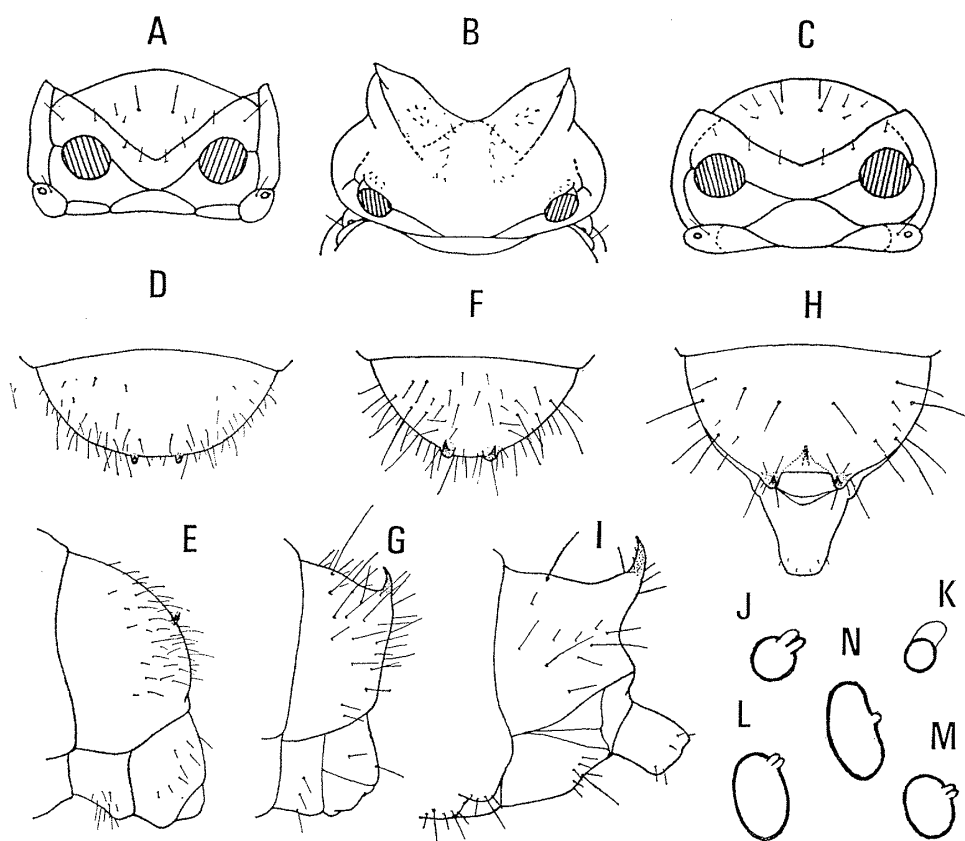


Fig. 8. Prothoracic segments (ventral view) (A-C), 9th abdominal segments (D-I) and spiracles of 1st abdominal segments (J-N). — A, *Orchesia ocellaris*; B, *Phloeotrya flavitarsis*; C, *Euryzilora lividipennis*; D, *Serropalpus niponicus* (dorsal view); E, ditto (lateral view); F, *Serropalpus femoralis* (dorsal view); G, ditto (lateral view); H, *Euryzilora lividipennis* (dorsal view); I, ditto (lateral view); J, *Orchesia ocellaris*; K, *Abdera trisignata*; L, *Melandrya mongolica*; M, *Phloeotrya flavitarsis*; N, *Euryzilora lividipennis*.

*Notes.* The present description is mainly based on the exuviae of the larva.

#### *Melandrya mongolica* SOLSKY, 1871

Body nearly white, more or less cylindrical; prothoracic to 6th abdominal segments with ambulacral ampullae on dorsum; urogomphi absent.

Head-capsule (Fig. 2 E & F) 2.7–4 mm in breadth, more or less trapezoidal in outline, scattered with short setae; dorsal hind margin of head-capsule bilobed; median (coronal) suture short; frontal sutures forming a V-shaped corneous marking, its basal angle about 60°; hypostomal rod elongate; ocelli absent. Antennae (Fig. 3 D) small; 1st joint almost as long as wide; 2nd joint subequal to or a little shorter than the 1st, sensory appendage about half as long as the 3rd; 3rd joint 1/2 to 2/3 as long as the 2nd, the apical seta stout. Epipharynx (Fig. 4 E) with posterior rods comparatively far remote from each other, moderately long; antero-lateral

region of lateral half of epipharynx with a cluster of bristles. Mandibles (Fig. 5 D) bidentate apically, armed with 2 teeth on dorsal cutting edge; external surface with 2 setae. Maxillae (Fig. 6 E) with 1st and 2nd joints of palpus usually subequal in length, and longer than the 3rd; mala with many bristles on distal and buccal surfaces. Labium with palpi contiguous to each other, the basal joint subequal to the apical in length, bearing a seta; ligula slightly or moderately produced beyond apex of labial palpus, rounded apically; mentum with a transverse, interrupted marking along cephalic margin.

Prothoracic segment large, much wider than the succeeding, well developed laterally; presternum and eusternum confluent. Legs (Fig. 7 C) small; tibia about 1.5 times as long as wide; claw with a single seta. Ninth abdominal segment extremely small. Spiracles (Fig. 8 L) elliptical, furnished with 2 chambers on margin. Body-length 12–20 mm.

*Specimens examined.* 2 exs., living in decaying oak wood, Daibosatsu-toge, Yamanashi-ken, 21. V. 1961, N. HAYASHI & H. TAKENAKA leg. 2 exs., Oogiyama, Yamanashi-ken, 29. IV. 1973, N. HAYASHI leg.

*Melandrya gloriosa* LEWIS, 1895

The larva of this species is very similar to that of *M. mongolica*, the difference between them being found only in the ligular form.

Anterior margin of ligula nearly straight. Body-length 12–20 mm.

*Specimens examined.* 3 exs., living in decaying oak wood, Nenoue-kôgen, Gifu-ken, 30. IV. 1971, N. HAYASHI leg. 3 exs., Oogiyama, Yamanashi-ken, 29. IV. 1973, N. HAYASHI leg.

*Phryganophilus ruficollis* FABRICIUS, 1798

References: PALM, 1940, Opusc. ent., 5: 7–15. — VIEDMA, 1966, Eos, 41: 483–506.

Body nearly white, subcylindrical, furnished with ambulacral ampullae on thoracic and abdominal segments except for caudal ones; urogomphi absent.

Head-capsule wide, with dorsal hind margin bilobed; frontal sutures V-shaped, its basal angle comparatively narrow; hypostomal rod elongate; ocelli 5 in number on each side. Antennae small, the 3rd joint the shortest; sensory appendage of 2nd joint shorter than the 3rd. Mandibles bidentate apically; dorsal cutting edge with additional teeth (probably 2 teeth). Maxillary palpus with 2nd joint long, almost twice as long as wide. Ligula projecting. Mentum with a transverse, interrupted marking along cephalic margin. Prothoracic segment large, much wider than the succeeding, well developed laterally. Legs small. Spiracles with 2 chambers on margin, abdominal spiracles annular. Body-length about 21 mm.

*Notes.* This species is widely distributed in Japan and Europe. The above-mentioned characters are based upon the descriptions and illustrations given by PALM (1940) and VIEDMA (1966).

*Phloeotrya flavitarsis* LEWIS, 1895

Body nearly white, subcylindrical; mesothoracic to 8th abdominal segments with ambulacral ampullae on dorsum; urogomphi absent.

Head-capsule (Fig. 2 G & H) 1.8–2.5 mm in breadth, extremely narrow, slightly widened medially, scattered with short setae; dorsal hind margin of head-capsule strikingly bilobed; frontal sutures V-shaped, its basal angle about 45°, pigmented apically; hypostomal rod elongate; ocelli absent. Antennae (Fig. 3 E) small; joints decreasing towards apex in length; 1st joint transverse, about 1.5 times as long as the 2nd; 2nd joint as long as wide, sensory appendage small. Labrum with anterior margin almost straight. Epipharynx (Fig. 4 F) with a pair of clusters of bristles on anterior region; posterior rods long, approaching apically. Mandibles (Fig. 5 E) bidentate apically, furnished with 2 teeth on dorsal cutting edge; external surface with 2 setae. Maxillae (Fig. 6 F) with joints of palpus slightly decreasing towards apex in length, the 1st joint being as long as wide; mala rather cylindrical, bearing numerous bristles on distal and buccal surfaces; maxillary articulating area longitudinal. Labium with palpi moderately separated from each other, the basal joint being shorter than the apical, bearing a seta; ligula projecting beyond apex of labial palpus.

Prothoracic segment large, moderately constricted behind cephalic margin, a little wider than the succeeding; presternum (Fig. 8 B) strongly retracted anteriorly, confluent to eusternum. Legs (Fig. 7 D) exceedingly small; femur a little wider than long; tibia subequal to femur in length, strongly tapered apically; claw slender, without setae. Ambulacral ampullae not developed. Ninth abdominal segment extremely small. Spiracles (Fig. 8 M) nearly annular, furnished with 2 small chambers on margin. Body-length 15–23 mm.

*Specimens examined.* 4 exs., living in decaying hardwood, Karuizawa, Nagano-ken, 25. V. 1969, N. HAYASHI leg.

*Phloeotrya rugicollis* MARSEUL, 1876

The larva of this species is easily distinguished from that of *P. flavitarsis* by the following points:—

Body (Fig. 1 B) with ambulacral ampullae well developed. Head-capsule 1.5–2.2 mm in breadth; dorsal hind margin less bilobed. Antennae (Fig. 3 F) with 1st joint nearly as long as wide; 2nd joint longitudinal, subequal to or longer than the 1st; 3rd joint about a half as long as the 2nd. Labrum with anterior margin strongly produced medially. Epipharynx (Fig. 4 G) with bristles more longitudinally distributed. Mandibles with a single tooth on dorsal cutting edge. Maxillae with 3rd joint of palpus the longest; mala slightly widened basally. Ligula not projecting beyond apex of labial palpus. Presternum of prothoracic segment not retracted anteriorly. Body-length 10–20 mm.

*Specimens examined.* 7 exs., living in decaying wood. Meguro, Tokyo, 3. XII. 1957, A. HAGA leg.

*Phloeotrya bellicosa* LEWIS, 1895

The larva of this species is easily distinguished from that of *P. flavitarsis* by the following points:—

Body with ambulacral ampullae probably more developed. Head-capsule with dorsal hind margin probably less bilobed. Antennae (Fig. 3 G) with 1st joint about a half as long as the 2nd; 2nd joint longitudinal, much longer than the 1st, the sensory appendage longer than half the 3rd; 3rd joint shorter than half the 2nd, apical seta shorter. Labrum with anterior margin weakly produced medially. Epipharynx (Fig. 4 H) with bristles longer, more densely and laterally distributed; region between clusters of bristles suffused with microtrichia. Mandibles with a single tooth on dorsal cutting edge. Maxillae (Fig. 6 G) with 3rd joint of palpus much shorter than the 2nd; mala moderately widened basally. Presternum of prothoracic segment probably not retracted anteriorly. Body longer than 15 mm.

*Specimen examined.* 1 ex., living in decaying wood, near Mt. Hakusan, Ishikawa-ken, 18. VIII. 1966, N. HAYASHI leg.

*Notes.* The present description is mainly based on the exuviae of the larva.

*Serropalpus niponicus* LEWIS, 1895

Body nearly white; 1st to 5th abdominal segments with ambulacral ampullae on dorsum; caudal 4 segments strongly decreasing towards the end; urogomphi exceedingly small.

Head-capsule (Fig. 2 I & J) 1.3–2.5 mm in breadth, strikingly enlarged backwards, scattered with short setae; dorsal hind margin moderately produced medially; median (coronal) suture deeply impressed, but frontal suture absent; hypostomal rod not extending backwards; ocelli absent. Antennae (Fig. 3 H) with basal insertion distinctly separated from mandible; 1st joint about as long as wide, its base being enveloped by skin; 2nd joint longitudinal, almost as long as the 1st, the sensory appendage being subequal to or shorter than half the 3rd; 3rd joint about 2/3 as long as the 2nd. Clypeus and labrum small. Epipharynx (Fig. 4 I) with microtrichia densely and longitudinally distributed; posterior rods long. Mandibles (Fig. 5 F) small, exceedingly thickened basally, not divided apically; dorsal cutting edge with a weak elevation; external surface with a single seta; ventral condylus enormous, flattened. Maxillae (Fig. 6 H) with basal 2 joints of palpus transverse, subequal in length, while the 3rd joint longitudinal, a little longer than the 2nd; mala moderately produced outwards at the outer distal angle, bearing numerous bristles on distal and buccal surfaces. Maxillary articulating area large. Labium with palpi moderately separated from each other, the basal joint being a little shorter than the apical, bearing a seta, tending to be confluent to prementum; ligula con-

siderably projecting beyond apex of palpus; prementum with a longitudinal maculation on the middle.

Prothoracic segment large, slightly wider than the succeeding; presternum confluent to eusternum, with a longitudinal, pigmented line between coxal cavities. Legs (Fig. 7 E) small; tibia about 1.5 times as long as wide; claw with 2 setae. Ninth abdominal segment (Fig. 8 D & E) extremely small; urogomphi flexed, comparatively approaching each other. Spiracles oval or annular, without chambers on margin. Body-length 10–18 mm.

*Specimens examined.* 15 exs., living in decaying fir-wood, Hongawa, Kochi-ken, 29. VI. 1959, K. KOJIMA leg.

*Serropalpus femoralis* (LEWIS, 1895), comb. nov.

The larva of this species is similar to that of *S. niponicus*, from which it differs in the following points:—

Head-capsule (Fig. 2 K & L) about 1.2 mm in breadth, more slender; hypostomal rod extending backwards. Antennae (Fig. 3 I) with 1st joint large, almost 1.5 times as long as the 2nd; 2nd joint about as long as wide, subequal to the 3rd in length. Epipharynx (Fig. 4 J) with posterior rods shorter. Mandibles (Fig. 5 G) with 2 teeth on dorsal cutting edge. Maxillae (Fig. 6 I) with 3rd joint of palpus much longer than the 1st or 2nd; mala not produced outwardly at outer distal angle. Prothoracic segment without a longitudinal, pigmented line between coxal cavities. Ambulacral ampullae indistinct (Fig. 1 C). Urogomphi (Fig. 8 F & G) larger. Body-length about 9 mm.

*Specimens examined.* 3 exs., living in decaying hardwood, Bûkasan, Kanagawa-ken, 24. IV. 1972, N. HAYASHI leg.

*Notes.* The larva of this species exhibits wide disagreement with those of *Phloeotrya* in the structures of the head-capsule, mouth-parts, 9th abdominal segment, spiracle, etc., and is similar to *Serropalpus*. Therefore, this species is transferred from *Phloeotrya* to *Serropalpus*.

*Serropalpus parvulus* (LEWIS, 1895), comb. nov.

The larva of this species is very similar to that of *S. femoralis*, from which it differs in the following points:—

Head-capsule about 1 mm in breadth; dorsal surface entirely colorless. Mandibles with a single tooth on dorsal cutting edge. Ambulacral ampullae distinct. Body-length about 7 mm.

*Specimens examined.* 3 exs., living in decaying hardwood, Komaba, Tokyo, 5. VI. 1972, K. TSUJI leg.

*Notes.* Having examined the larva of this species, I have come to the conclusion that it should be transferred from *Phloeotrya* to *Serropalpus*.

*Euryzilora lividipennis* LEWIS, 1895

Body (Fig. 1 D) nearly white, moderately depressed; 1st to 8th abdominal segments strongly swollen laterally, bearing inconspicuous ambulacral ampullae on dorsum; 9th abdominal segment with well developed urogomphi and a long anal projection.

Head-capsule (Fig. 2 M & N) 1.7–2.1 mm in breadth, depressed, widened basally; dorsal hind margin bilobed; frontal suture lyre-shaped, its base reaching the hind margin of head-capsule; frons longitudinally narrow, adorned with a V-shaped marking along frontal sutures; hypostomal rod long; ocelli (Fig. 2 Q) 5 in number on each side. Antennae (Fig. 3 J) comparatively long; 1st joint almost as long as wide; 2nd joint longitudinal, a little longer than the 1st, the sensory appendage being shorter than half the 3rd; 3rd joint about half as long as the 2nd. Epipharynx (Fig. 4 K) with posterior rods short. Mandibles (Fig. 5 H) bidentate apically; dorsal cutting edge with a tooth; grinding surface slightly produced at extremity; external surface with 2 setae. Maxillae (Fig. 6 J) with 1st joint of palpus subequal to the 3rd in length, and a little shorter than the 2nd; mala rounded apically, bearing a longitudinal row of many bristles on buccal surface; maxillary articulating area bilobed by a transverse groove, tending to be confluent to cardo. Labium (Fig. 6 K) with basal joints of palpi confluent to each other and to prementum, bearing a seta on each basal joint; ligula not projecting beyond apex of labial palpus.

Prothoracic segment moderately produced backwards; presternum (Fig. 8 C) large, subtriangular, not confluent to eusternum. Legs (Fig. 7 G) comparatively well developed; tibia more than twice as long as wide; claw with 2 setae. Abdominal segments with several setae on lateral side. Ninth abdominal segment (Fig. 8 H & I) with margin between urogomphi retracted, adorned with a small corneous marking; urogomphi strongly flexed. Spiracles (Fig. 8 N) longitudinally oval, furnished with a small chamber on margin. Body-length 10–18 mm.

*Specimens examined.* 12 exs., living under bark of decaying wood (*Fagus crenata*), Jiumonji-toge, Okuchichibu, 8. VI. 1970, N. HAYASHI leg. 8 exs., Tsutaonsen, Aomori-ken, 24. VII. 1961, N. HAYASHI leg.

The larvae described in this paper may be distinguished by the following key:—

**Key to the Species Based on the Larvae**

1. Urogomphi absent ..... 2
- Urogomphi present ..... 11
2. Dorsal hind margin of head-capsule almost straight (Fig. 2 A & C); ambulacral ampullae absent ..... 3
- Dorsal hind margin of head-capsule bilobed (Fig. 2 E & G); ambulacral ampullae present ..... 5

3. Sensory appendage of antenna extremely slender (Fig. 3 B); ligula not projecting beyond apex of labial palpus (Fig. 2 D); spiracles with a single chamber on margin (Fig. 8 K); body less than 5 mm in length. . . . . *Abdera trisignata* CHAMPION  
 — Sensory appendage of antenna not extremely slender (Fig. 3 A); ligula projecting beyond apex of labial palpus (Fig. 2 B); spiracles with 2 chambers on margin (Fig. 8 J); body more than 5 mm in length. . . . . 4
4. Anterior margin of labrum strongly undulated; posterior rods of epipharynx approaching each other at base (Fig. 4 A); maxillary mala moderately developed outwardly at the inner distal portion (Fig. 6 A); body not slender . . . . .  
 . . . . . *Orchesia ocularis* LEWIS  
 — Anterior margin of labrum weakly undulated; posterior rods of epipharynx separated from each other at base (Fig. 4 B); maxillary mala well developed outwardly at the inner distal portion (Fig. 6 B); body slender. . . . .  
 . . . . . *Orchesia imitans* LEWIS
5. Three joints of antenna subequal in length, sensory appendage large (Fig. 3 C); spiracles without chambers. . . . . *Hypulus* sp.  
 — Three joints of antenna unequal in length, sensory appendage small; spiracles with 2 chambers . . . . . 6
6. Head-capsule wide, with dorsal hind margin bilobed less than 1/3 of median length of head-capsule (Fig. 2 E) . . . . . 7  
 — Head-capsule long, with dorsal hind margin bilobed more than 1/3 of median length of head-capsule (Fig. 2 G). . . . . 9
7. Angle between frontal sutures small; 2nd joint of maxillary palpus nearly twice as long as wide; spiracle of 1st abdominal segment annular. . . . .  
 . . . . . *Phryganophilus ruficollis* FABRICIUS  
 — Angle between frontal sutures large (Fig. 2 E); 2nd joint of maxillary palpus a little longer than wide (Fig. 6 E); spiracle of 1st abdominal segment oval (Fig. 8 L) . . . . . 8
8. Anterior margin of ligula round. . . . . *Melandrya mongolica* SOLSKY  
 — Anterior margin of ligula almost straight. . . . . *Melandrya gloriosa* LEWIS
9. Second joint of antenna shorter than the 1st (Fig. 3 E); mandible with 2 teeth on dorsal cutting edge (Fig. 5 E). . . . . *Phloeotrya flavitarsis* LEWIS  
 — Second joint of antenna as long as or longer than the 1st; mandible with a single tooth on dorsal cutting edge . . . . . 10
10. First joint of antenna about as wide as long (Fig. 3 F); epipharynx with clusters of bristles approaching each other (Fig. 4 G). . . . . *Phloeotrya rugicollis* MARSEUL  
 — First joint of antenna about twice as wide as long (Fig. 3 G); epipharynx with clusters of bristles far separated from each other (Fig. 4 H). . . . .  
 . . . . . *Phloeotrya bellicosa* LEWIS
11. Dorsal hind margin of head-capsule bilobed; frontal suture distinct, lyre-shaped (Fig. 2 M); anal region (10th abdominal segment) elongately projecting backwards (Fig. 8 H & I); spiracles with a chamber (Fig. 8 N). . . . .

- .....*Euryzilora lividipennis* LEWIS
- Dorsal hind margin of head-capsule not bilobed; frontal suture absent (Fig. 2 I & K); anal region not elongately projecting backwards; spiracles without chambers ..... 12
12. Second joint of antenna longitudinal, longer than the 3rd (Fig. 3 H); ventral surface of prothoracic segment with a longitudinal, pigmented line between coxal cavities; urogomphi exceedingly small (Fig. 8 D & E); body more than 10 mm in length.....*Serropalpus niponicus* LEWIS
- Second joint of antenna as long as wide, not longer than the 3rd (Fig. 3 I); ventral surface of prothoracic segment without a longitudinal, pigmented line between coxal cavities; urogomphi not exceedingly small (Fig. 8 F & G); body less than 10 mm in length ..... 13
13. Ambulacral ampullae indistinct; mandible with 2 teeth on dorsal cutting edge (Fig. 5 G).....*Serropalpus femoralis* (LEWIS)
- Ambulacral ampullae distinct; mandible with a single tooth on dorsal cutting edge.....*Serropalpus parvulus* (LEWIS)

#### Family Tetratomidae

In general, the larvae of this family are closely related to those of Eustrophinae (Melandryidae). Having examined the larvae of *Holostrophus orientalis* LEWIS and *H. lewisi* CSIKI belonging to Eustrophinae, I am inclined to the opinion that *Holostrophus* might as well be placed in Tetratomidae.

The larvae of this family (*Tetratoma*, *Penthe*, *Pisenus* and *Holostrophus*) possess the following characters in common:—

Median (coronal) and frontal sutures present, the latter being lyre-shaped. Frons and clypeus confluent or not, tending to be confluent. Mandibles asymmetrical except *Tetratoma*; molar part well developed or obsolete, in the latter case molar part bearing a prosthema-like projection. Maxillary mala with or without uncus. Cardo divided into two parts. Maxillary articulating area bilobed, not confluent to cardo. Labial palpi moderately separated from each other. Ligula not wider than the distance between outer lateral sides of labial palpi, bearing setae or spines on apex. Mentum and submentum not confluent, the latter being slightly divided from gula. Hypopharyngeal sclerome absent except *Pisenus*. Legs not extremely reduced; coxal cavities approaching each other. Body without ambulacral ampullae. Urogomphi present. Spiracles with 2 chambers on margin.

Several genera belonging to Eustrophinae (Melandryidae), e.g., *Mycetoma*, *Eustrophinus*, *Synstrophus*, *Eustrophus* and *Hallomenus*, seem to be more akin to Tetratomidae than to Melandryidae in view of the characters of tetratomid larvae as described above.



*Holostrophus orientalis* LEWIS, 1895

Body (Fig. 9 A) nearly white, subcylindrical, bearing sparse long setae on dorsum, 9th abdominal segment strongly elevated, adorned with a number of small, pigmented tubercles.

Head-capsule (Fig. 9 B & C) about 1.0 mm in breadth, moderately widened basally; dorsal hind margin of head-capsule moderately incurved; suture between frons and clypeus indistinct; hypostomal rod comparatively short; ocelli (Fig. 9 D)

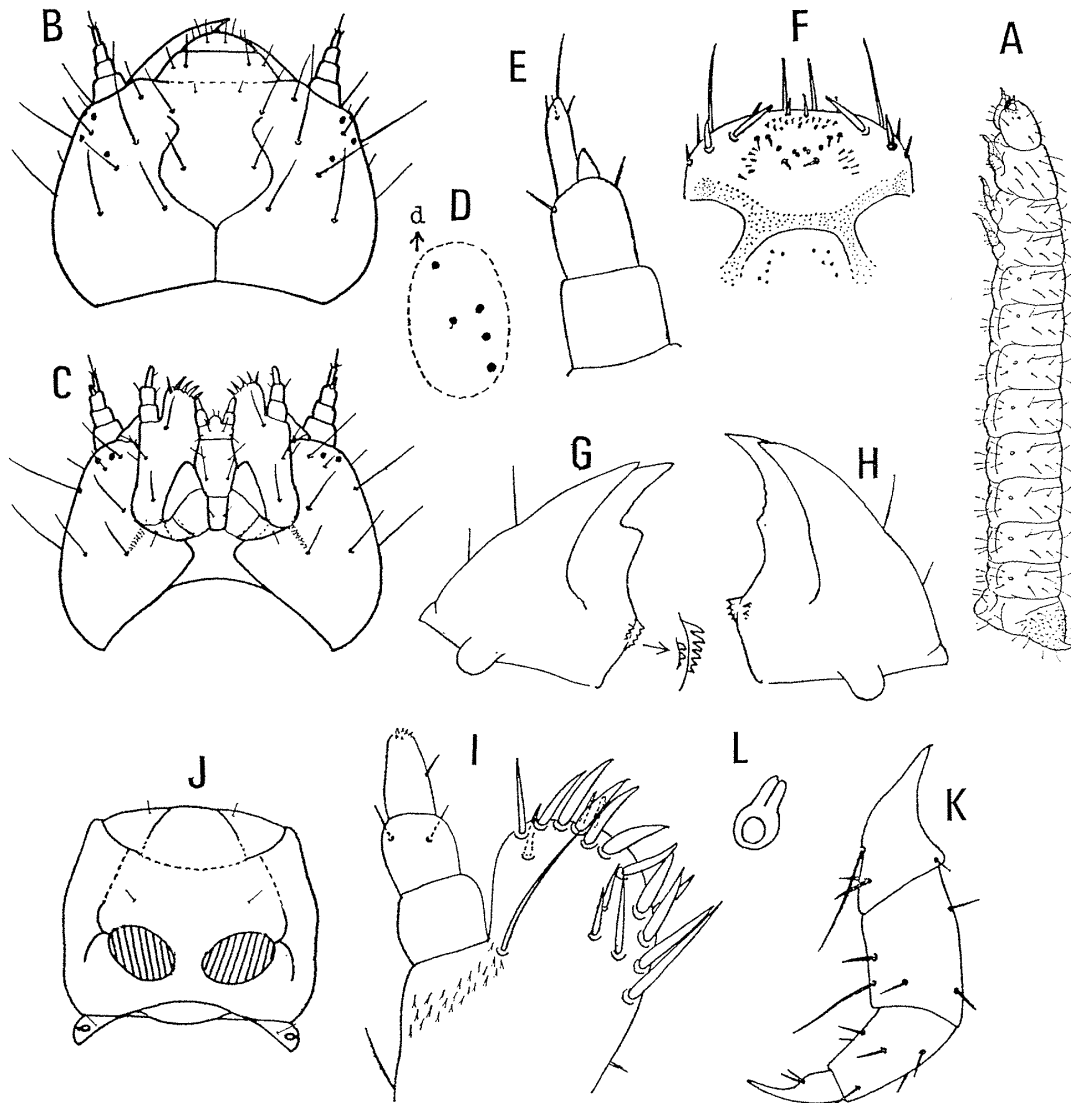


Fig. 9. Mature larva of *Holostrophus orientalis*. — A, Larva (lateral view); B, head (dorsal view); C, ditto (ventral view); D, ocelli (right, d: shows dorsal surface); E, antenna (right, ventral view); F, epipharynx; G, mandible (right, ventral view); H, ditto (left, ventral view); I, maxilla (left, buccal view); J, prothoracic segment (ventral view); K, meta-thoracic leg (left, posterior view); L, spiracle of 1st abdominal segment.

5 in number on each side, of which dorsal one is well separated. Antennae (Fig. 9 E) with joints subequal in length; 1st joint about as long as wide; sensory appendage of 2nd joint shorter than half the 3rd. Epipharynx (Fig. 9 F) with microtrichia very sparsely distributed; posterior rods short. Mandibles (Fig. 9 G & H) asymmetrical, bidentate apically; dorsal cutting edge with a single tooth, that of right mandible being stronger; molar part obsolete, furnished with a prostheca-like projection and 2 or 3 microscopic projections on grinding surface; external surface with 2 setae. Maxillae (Fig. 9 I) with 1st and 2nd joints of palpus subequal in length, a little shorter than the 3rd; mala rounded apically, the bristles being stout; maxillary articulating area reaching the middle of mentum. Labium with basal joint of palpus a little shorter than the apical, lacking in setae; ligula not reaching the half of labial palpus; submentum strikingly constricted.

Prothoracic segment about 1.5 times as wide as long; presternum (Fig. 9 J) not conspicuously developed, its posterior margin being indistinct. Legs (Fig. 9 K)

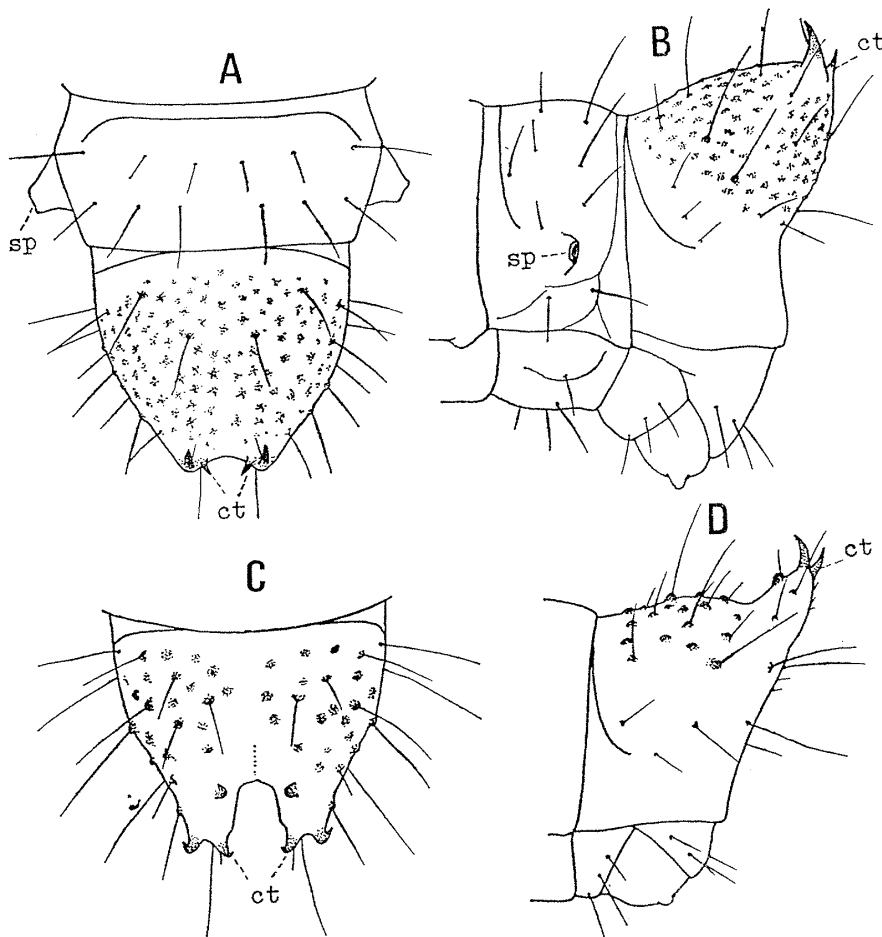


Fig. 10. Eighth and 9th abdominal segments of *Holostrophus* spp. (ct: caudal tubercles, sp: spiracle of 8th abdominal segment). — A, *H. orientalis* (dorsal view); B, ditto (lateral view); C, *H. lewisi* (dorsal view); D, ditto (lateral view).

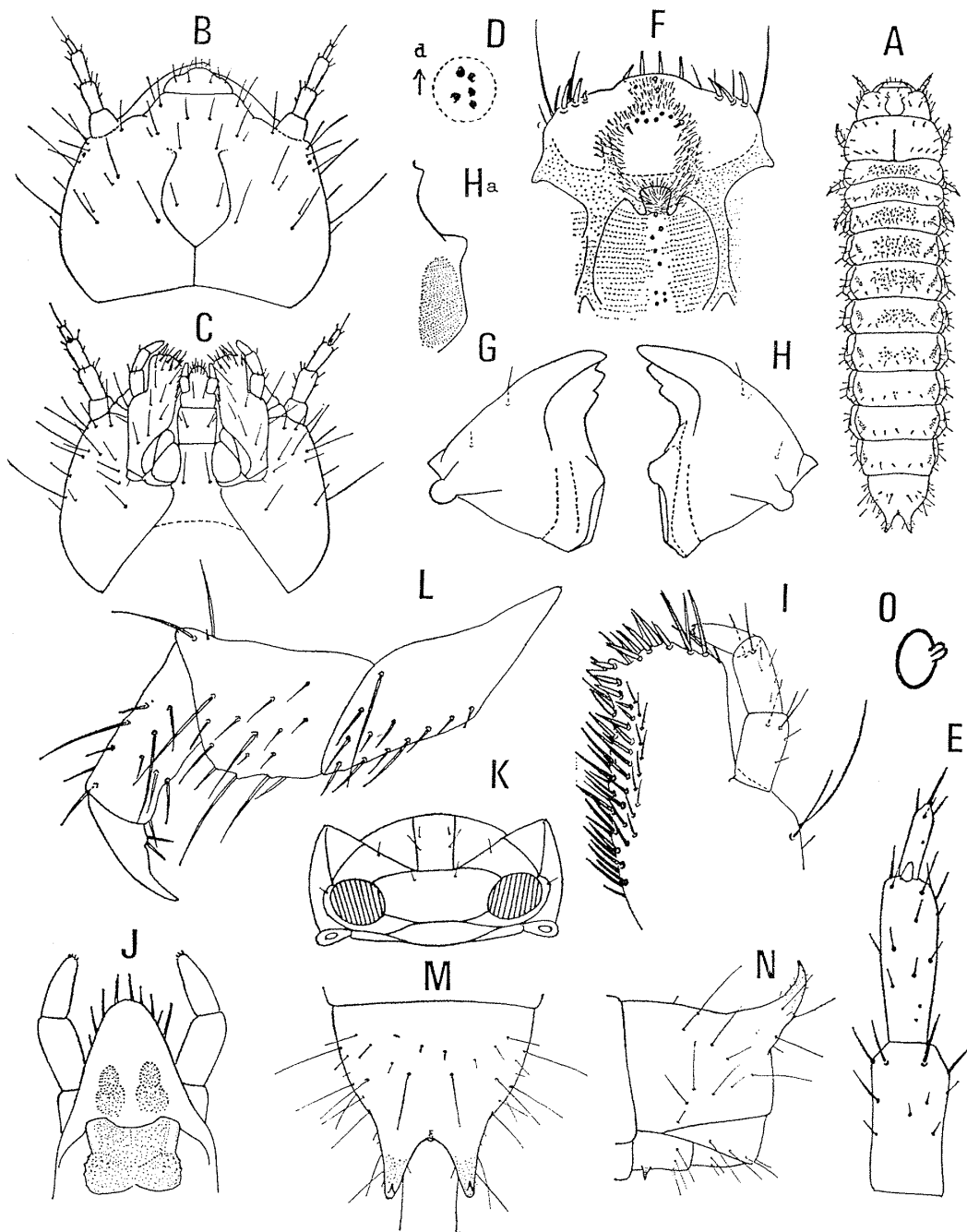


Fig. 11. Mature larva of *Synchrona melanotoides*. — A, Larva (dorsal view); B, head (dorsal view); C, ditto (ventral view); D, ocelli (right, d: shows dorsal surface); E, antenna (left, ventral view); F, epipharynx; G, mandible (right, ventral view); H, ditto (left, ventral view); Ha, ditto (molar part, dorsal view); I, maxilla (right, buccal view); J, hypopharynx and labial palpi; K, prothoracic segment (ventral view); L, metathoracic leg (left, posterior view); M, 9th abdominal segment (dorsal view); N, ditto (lateral view); O, spiracle of 1st abdominal segment.

comparatively short; tibia a little less than twice as long as wide; claw with 2 setae. Abdominal segments except the 9th with 2 transverse rows of setae on tergite, each row consisting of about 6 setae; epipleurum well swollen, divided into 2 lobes. Ninth abdominal segment (Fig. 10 A & B) subequal to head-capsule in breadth, much longer than the 8th, the hind margin (between urogomphi) weakly retracted; urogomphi strongly flexed; inner basal portion of urogomphus with a tooth-like tubercle (Fig. 10 A & B: ct); anal region strongly produced. Spiracles (Fig. 9 L) annular, the chambers being large; 8th abdominal spiracle (Fig. 10 A & B: sp) much larger, strongly projecting outwardly. Body-length about 8 mm.

*Specimens examined.* 25 exs., living in tree-fungi, Nishinakama, Amami-ôshima, 19. V. 1960, N. HAYASHI leg.

#### *Holostrophus lewisi* CSIKI, 1895

The larva of this species is distinguished from that of *H. orientalis* by the following points:—

Head-capsule about 0.8 mm in breadth; suture between frons and clypeus visible. Ninth abdominal segment (Fig. 10 C & D) not strongly elevated; hind margin (between urogomphi) deeply retracted, forming 2 large caudal projections; tooth-like tubercle (Fig. 10 C & D: ct) larger; tubercles of dorsal surface more sparsely distributed. Spiracle of 8th abdominal segment not much larger, and not projecting outwardly. Body-length about 6 mm.

*Specimens examined.* 15 exs., living in tree-fungi, near Tanigawa-onsen, Gumma-ken, 28. VII. 1967, N. HAYASHI leg.

#### Family Cephaloidae

In my previous paper (1963), *Stenocephaloon metallicum* PIC was treated as a component of Melandryidae. However, having examined the melandryid larvae, I am inclined to the opinion that *Stenocephaloon* should be referred to Cephaloidae. On the other hand, *Synchroa* (Synchroidae or Melandryidae) is similar to *Cephaloon* and *Stenocephaloon* in larval forms, and its systematic position has been discussed by CROWSON (1966) and other authors.

Having examined the larva of *Synchroa melanotoides* LEWIS, I was convinced that this genus should be placed in Cephaloidae.

The larvae of three genera, *Cephaloon*, *Stenocephaloon* and *Synchroa* possess the following characters in common:—

Median (coronal) suture present or absent. Frontal sutures lyre-shaped. Frons and clypeus confluent. Mandibles asymmetrical; molar part well developed. Maxillary mala with uncus. Cardo divided into two parts. Maxillary articulating area bilobed. Labial palpi moderately separated from each other. Ligula not wider than the distance between the outer lateral sides of labial palpi, bearing setae. Mentum and submentum not confluent, though the submentum and gula are united.

Hypopharyngeal sclerome present. Legs moderately developed; coxa strongly produced at the tip; coxal cavities widely or moderately separated from each other. Presternum of prothoracic segment not confluent with eusternum, not reaching the point between coxal cavities. Body without ambulacral ampullae. Urogomphi present. Spiracles with 2 chambers on margin.

The larvae of *Phellopsis* (Zopheridae) and *Calopus* (Oedemeridae) are very similar to cephaloid larvae in many points, but they differ from cephaloids in having the suture between frons and clypeus.

*Synchroa melanotoides* LEWIS, 1895

Reference: FUKUDA, 1959, Illustrated Insect Larvae of Japan, Tokyo: 485, No. 912.

Body (Fig. 11 A) slightly pigmented, moderately sclerotized, depressed, tapered caudally, bearing a transverse area of asperities on mesothoracic to 5th abdominal segments.

Head-capsule (Fig. 11 B & C) about 2.5 mm in breadth, depressed, dorsal hind margin of head-capsule incurved; median (coronal) suture present; post-frons (region surrounded by frontal sutures) longitudinal; hypostomal rod indistinct, not extending backwards; ocelli (Fig. 11 D) 5 in number on each side. Antennae (Fig. 11 E) comparatively elongate; 1st joint about twice as long as wide; 2nd joint subequal to or a little longer than the 1st, slightly clavate, sensory appendage small, cone-shaped; 3rd joint a little shorter than half the 2nd. Labrum transverse, anterior margin rather strongly produced medially. Epipharynx (Fig. 11 F) with posterior rods characteristically shaped as illustrated. Mandibles (Fig. 11 G & H) tridentate; grinding surface of left mandible strongly produced at the extremity; dorsal surface of each molar part with a marking by microsculpture; external surface with 2 setae. Maxillae (Fig. 11 I) with palpus rather elongate, the 1st and 2nd joints subequal in length, while the 3rd joint is shorter; uncus of mala bidentate, sharply pointed. Labium (Fig. 11 J) with palpus rather elongate, the basal joint being a little longer than the apical; ligula elevated, not reaching the apex of labial palpus; mentum about as long as wide. Hypopharyngeal sclerome (Fig. 11 J) heavily sclerotized, thickened basally.

Prothoracic segment about twice as wide as long; hind margin of segment slightly produced backwards; presternum (Fig. 11 K) trilobed, subequal to eusternum in length. Legs (Fig. 11 L) with coxal cavities far remote from each other; coxa strongly elevated at the tip; joints excepting claw with numerous setae; claw with 2 setae. Abdominal segments except 9th markedly produced laterally (epipleurum well ridged, bilobed); each asperity corneous, furnished with a single seta. Ninth abdominal segment (Fig. 11 M & N) with hind margin (between urogomphi) narrowly rounded, provided with a small cavity on upper part and a small, corneous plate on lower part; ventral surface with a single spine near lateral side; anal region not produced outwardly. Spiracular chambers (Fig. 11 O) moderately developed. Body-length about 16 mm.

*Specimens examined.* 5 exs., living under bark of decaying oak wood, Kobotoke-toge, Tokyo-toka, IV. 1960, N. HAYASHI leg. 9 exs., near Noboribetsu, Hokkaido, 25. VI. 1964, N. HAYASHI leg. 3 exs., Manazuru, Kanagawa-ken, 9. V. 1971, N. HAYASHI leg. 3 exs., Yabitsu-toge, Kanagawa-ken, 31. V. 1971, N. HAYASHI leg. 2 exs., Bûkasan, Kanagawa-ken, 24. IV. 1972, N. HAYASHI leg. 1 ex., near Tanigawa-onsen, Gumma-ken, V. 1972, N. HAYASHI leg. 3 exs., Futase, Okuchichibu, Saitama-ken, 24. IX. 1972, N. HAYASHI leg.

### Acknowledgements

I wish to express my sincere gratitude to Dr. C. WATANABE for his constant guidance. I am much obliged to Dr. R. A. CROWSON of Glasgow University, who kindly gave me valuable suggestions about *Stenocephaloon*. I am greatly indebted to Mr. S. NOMURA of Toho-gakuen for his kindness in determining species. Many thanks are also due to the following gentlemen for their kindness in offering material: Mr. A. HAGA, Dr. K. KOJIMA, Mr. H. TAKENAKA and Mr. K. TSUJI.

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*Kontyû, Tokyo*, **43**(2): 169. June 25, 1975

## A Synonymic Note on *Stathmopoda auriferella* (WALKER) (Lepidoptera, Stathmopodidae)

Sigeru MORIUTI

Through the courtesy of Dr. T. KUMATA, Hokkaido University, I was able to examine the type-specimen of *Chryoclista basiflavella* MATSUMURA, 1931. As the result, I have reached the conclusion that *basiflavella* is conspecific with *Gelechia? auriferella* WALKER, 1864.

### *Stathmopoda auriferella* (WALKER, 1864)

*Gelechia? auriferella* WALKER, 1864, List Spec. Lep. Ins. Coll. Brit. Mus., **30**: 1022.

*Stathmopoda auriferella*: KASY, 1973, Tijdschr. Ent., **116**: 255, f. 43, 44.

*Chryoclista basiflavella* MATSUMURA, 1931, 6000 Ill. Ins. Japan.: 1087, no. 2227, *n. syn.* —

INOUE, 1954, Check List Lep. Japan, **1**: 74, no. 375.

For other synonyms, see KASY (*loc. cit.*).

Holotype of *basiflavella*: ♀ (without abdomen), with the following labels: "Japan/Matsumura," "Tokyo [in Japanese] 1915/S. Hirayama [in Japanese]," "Holotype/*Chryoclista/basiflavella*/Matsumura," in the collection of the Ent. Inst., Hokkaido Univ.

This widely known species has frequently appeared in Japanese literature as *Stathmopoda theoris* (MEYRICK, 1906).