ON THE LARVAE OF THREE SPECIES OF CEPHALOIDAE, MELANDRYIDAE AND PYROCHROIDAE OCCURRING IN JAPAN[1]

(COLEOPTERA : CUCUJOIDEA)

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In the course of my studies on the larvae of the Cucujoidea have been found the larvae of three species belonging to the families Cephaloidae, Melandryidae and Pyrochroidae, of which descriptions will be given in the following pages.

Before going further I wish to express my sincere thanks to Prof. C. Watanabe, Prof. H. Sawada, Prof. T. Nakane and Dr. M. Miyatake for their kind help in various ways.

Family **Cephaloidae**

Up to the present the genus *Cephaloon* Newman has been represented by eight species which are confined to occur in East Asia and North America. In regards to the larval forms, however, only the larva of the North American specis *Cephaloon lepturides* Newman has been illustrated by Böving and Craighead (1931). In this paper will be stated the larva of *Cephaloon pallens* (Motschulsky) which occurs in Japan.

Cephaloon pallens (Motschulsky, 1860) (Figs. 1–12)

Mature larva: Body subcylindrical, weakly depressed, with 9th abdominal segment terminating in 2 small non-pigmented urogomphi. Ground color white, with anterior portion of head-capsule, antennae, mouth-parts, tarsunguli, spiracles and setae pigmented. Setae rather long, sparsely distributed over the whole body.

Head-capsule broad, prognathous; frontal suture lyre-shaped; frons apparently fused with clypeus. Antennae (Fig. 1) 3-jointed; sensory appendage of 2nd joint conical. Labrum about 1.7 times as wide as long, semicircular, provided with 2 setae medially and with 6 setae on the margin. Epipharynx (Fig. 2) with marginal setae; anterior and posterior regions each with a group of scattered sensillae, the latter inserted between 2 longitudinal rods; median region with 2 longitudinal rows of tuft of microtrichia. Mandibles (Figs. 3–6) 6-dentate; grinding surface of left mandible well-developed at apex; external surface of mandible with 2 setae. Maxillae (Fig. 7) with 1st and 2nd joints of palpus equal in length and the 3rd a little shorter; malar area produced into uncus at inner-distal angle; cardo

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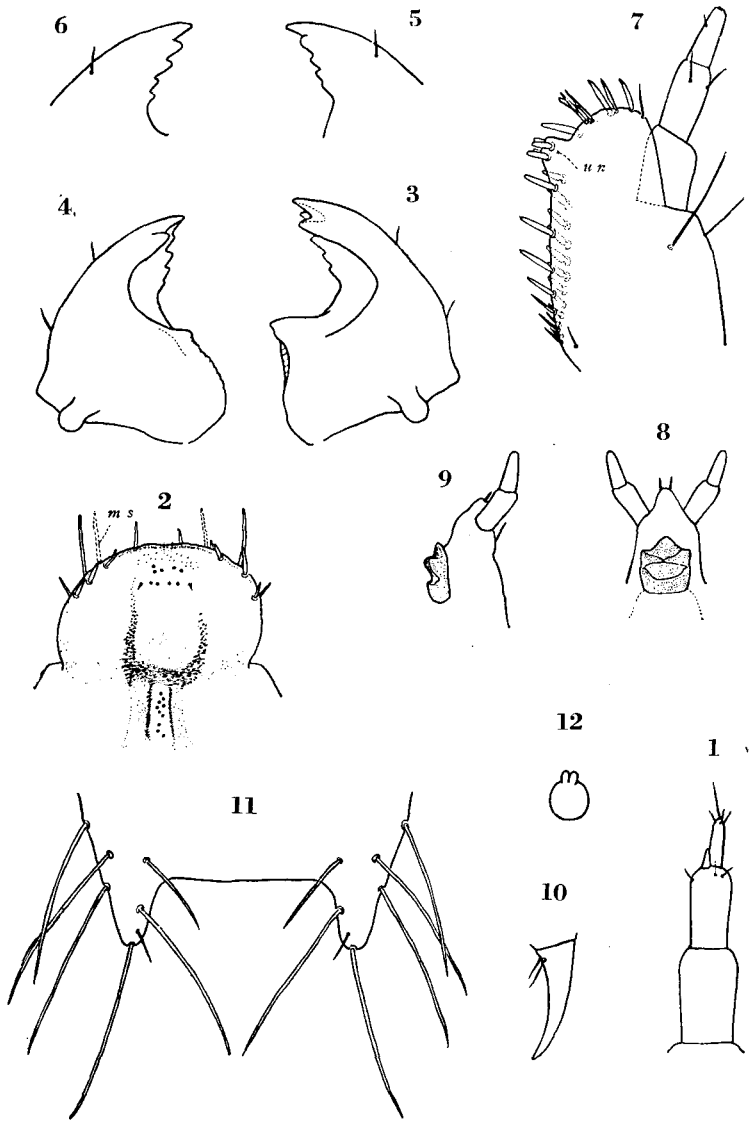
[Insecta Matsumurana, Vol. 26, No. 2, December, 1963]



Figs. 1–12. Mature larva of *Cephaloon pallens* (Motschulsky).
1: right antenna (ventral view); 2: epipharynx (*ms*: median seta); 3: left mandible (ventral view); 4: right mandible (ventral view); 5: distal portion of right mandible (dorsal view); 6: distal portion of left mandible (dorsal view); 7: left maxilla (ventral view; *un*: uncus); 8: labium (buccal view); 9: labium (lateral view); 10: tarsungulus of left metathoracic leg; 11: urogomphi (ventral view); 12: spiracular peritreme of 1st abdominal segment.

divided by a brown marking, with a short seta; maxillary articulating area bilobed. Labium (Figs. 8, 9) with ratio of basal and apical joints of palpus as 5 : 4; ligula present, settled with 2 setae; submentum and gula fused into an area; prementum, mentum and submentum, each with a pair of setae. Hypopharyngeal sclerome thickly sclerotized.

Prothorax much longer than following thoracic segment. Legs moderately long; tarsunguli (Fig. 10) slender. 9th segment much smaller than preceding segment, with fleshy, not pointed urogomphi dorsally (Fig. 11) (urogomphus 0.21 mm. in length). Spiracular peritremes (Fig. 12) with a paired projections.

Body-length about 12 mm.

The present description is mainly based on the skin of the larva which was taken from a rotten wood of the Japanese cedar (*Cryptomeria japonica* D. Don) at Gozaisyo, Mie-ken, on March 31, 1961, by N. Hayashi.

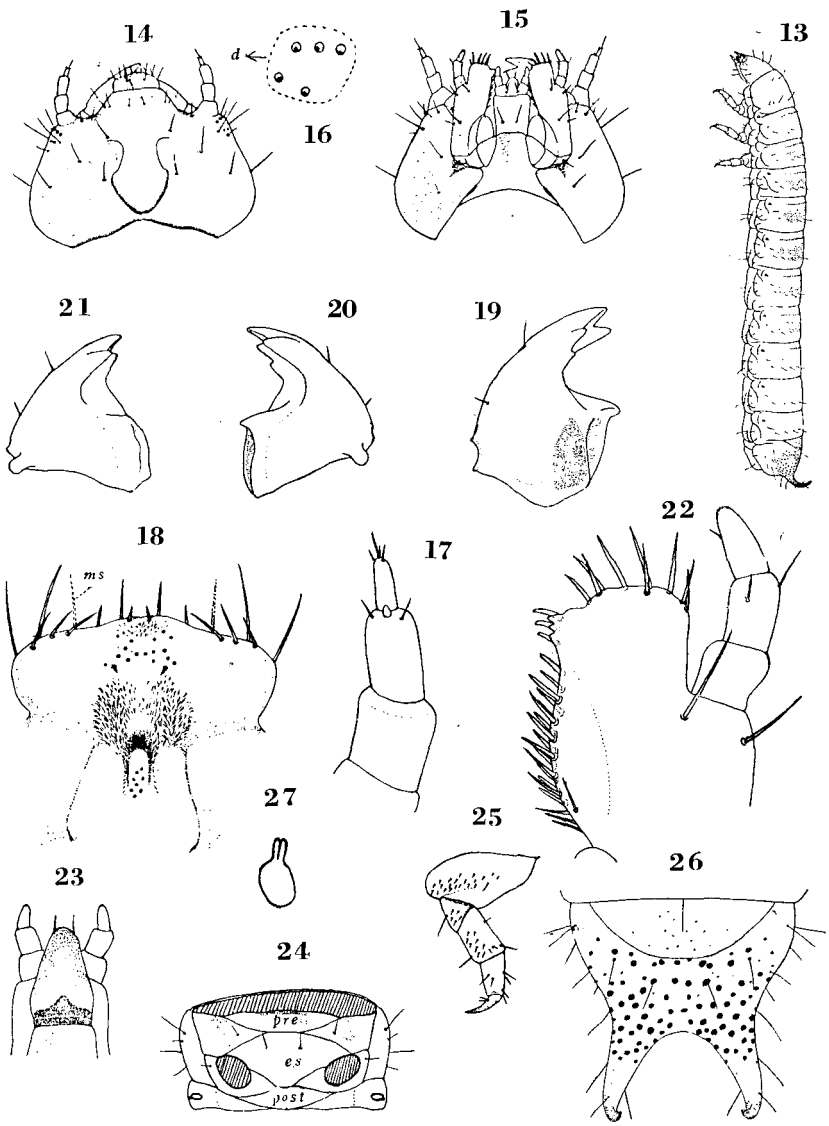
Family **Melandryidae**

The genus *Stenocephaloon* Pic is represented by a single species, *S. metallicum* Pic, which occurs in Japan. In this paper the larva of this species will be stated herein after. Furthermore, this genus has been confused in its systematic position, being placed in the Cephaloidae or in the Melandryidae. Having examined the larvae of both genera *Cephaloon* and *Stenocephaloon* I am inclined to the opinion that *Stenocephaloon* might as well be placed in the Melandryidae.

Stenocephaloon metallicum Pic, 1932 (Figs. 13–27)

Mature larva: Body subcylindrical and flattened ventrally, with 9th segment terminating in 2 upturned, curved, pointed urogomphi. General color yellowish white; head, numerous asperities on thorax and abdomen, many dots on terminal segment, and urogomphi more pigmented.

Head-capsule (Figs. 14, 15) about 2.3 mm. in length and about 3.5 mm. in breadth, rather depressed, with several obscure maculations dorsally; frontal suture lyre-shaped; frons and clypeus fused; ocelli (Fig 16) with 5 spots on each side. Antennae (Fig. 17) 3-jointed; 2nd joint with a small sensory appendage. Labrum about 2.5 times as wide as long, elliptical, with anterior margin slightly produced anteriorly; discal surface with 2 median setae and 8 marginal setae. Epipharynx (Fig. 18) with 8 marginal setae, the anterior and posterior sensillae being visible; median region with 2 clusters of microtrichia; proximal region with a pair of very obscure longitudinal rods which are often absent. Mandibles (Figs. 19–21) tridentate apically; left mandible differs from the right in having a distinct additional tooth on dorsal cutting edge and a strong projection at apex of grinding surface; dorsal surface of each molar area with a marking by microsculpture. Maxillae (Fig. 22) with 1st joint of palpus a little shorter than 2nd or 3rd joint; malar area with inner-distal angle slightly exerted into a tridenticulate uncus; cardo with a longitudinal brown marking at middle; maxillary articulating area divided into 2 lobes. Labium (Fig. 23) with 2-jointed palpus, each joint being subequal in length, and both palpi separated by about twice width of basal joint; ligulal region well elevated anteriorly; prementum, mentum and submentum distinctly delimited by sutures, but submentum and gular areas united. Hypopharyngeal sclerome



Figs. 13–27. Mature larva of *Stenocephaloon metallicum* Pic.
13: larva (lateral view); 14: head (dorsal view); 15: head (ventral view); 16: right ocelli (*d*: shows dorsal surface); 17: left antenna (ventral view); 18: epipharynx (*ms*: median seta of labium); 19: left mandible (dorsal view); 20: left mandible (ventral view); 21: right mandible (ventral view); 22: left mexilla (ventral view); 23: labium (buccal view); 24: prothorax (ventral view; *pre*: presternum; *es*: eusternum; *post*: poststernellum); 25: left mesothoracic leg (anterior view); 26: 9th abdominal segment (dorsal view); 27: spiracular peritreme of 1st abdominal segment.

with a transverse marking and heavily sclerotized.

Prothorax about twice as wide as long and long-oval in dorsal view; venter of prothorax (Fig. 24) with well-defined lobes, and eusternum (*es*) much larger than other lobes. Mesothoracic to 6th abdominal segments each with a single transverse row of asperities on the cephalic portion and extensively scattered asperities behind row on dorsal surface; 3rd to 8th abdominal segments each with only scattered asperities throughout on ventral surface. Legs (Fig. 25) with many spiniform setae on antero-ventral surface. Abdomen scarcely enlarged posteriorly; 1st to 8th segments markedly produced into a pleural ridge on each side; 9th segment (Fig. 26) apparently longer than 8th segment, the dorsum with a ∪-shaped groove and scattered tubercles and the post-ventral surface with a transverse tubercle on median portion between urogomphi and posterior margin. Spiracular peritremes (Fig. 27) with a paired projections.

Body-length about 25 mm.

Described from 9 larvae, of which 7 were collected under the loose bark of a decaying tree at Yumoto, Nikko, Tochigi-ken, on May 31, 1952, by N. Hayashi, and the rest were taken from a rotten wood at Yatsugatake, Nagano-ken, on July 20, 1960, by Y. Ishiyama.

It should be noted here that the larva described and illustrated by myself in the "Illustrated Insect Larvae of Japan, 1959" on page 484 (No. 910) as *Pytho nivalis* Lewis of the family Pythidae is, in reality, the larva of the present species, *Stenocephaloon metallicum* Pic.

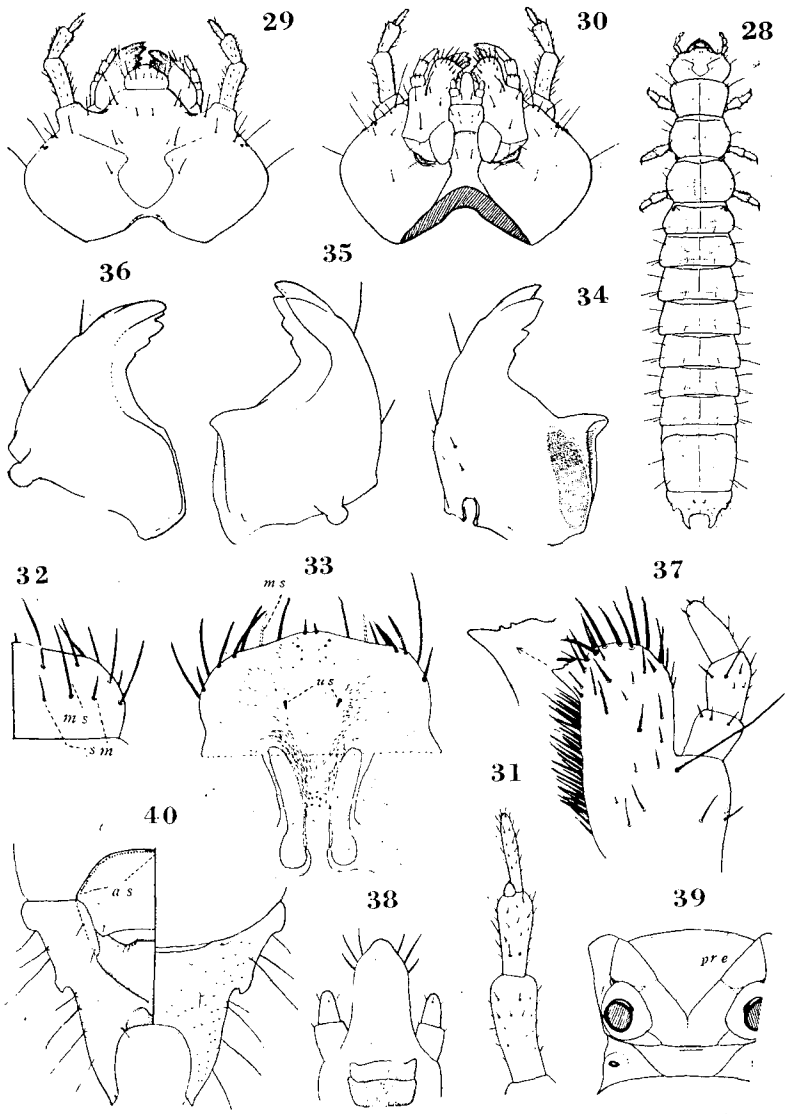
Family **Pyrochroidae**

Of the genus *Pseudodendroides* Blair two species, *P. niponensis* (Lewis) and *P. ocularis* (Lewis), have been known to occur in Japan, and yet no larvae of these species have been informed. In this paper the larva of *P. niponensis* will be stated herein after.

Pseudodendroides niponensis (Lewis, 1887) (Figs. 28–40)

Mature larva: Head and body segments flattened, firmly sclerotized, smooth and shiny; ground color pale testaceous, dorsum of each segment with obscurely brown marking except 9th tergite castaneous.

Head-capsule (Figs. 29, 30) about 1.82 mm. in length and about 3.36 mm. in breadth; frontal suture lyre-shaped; frons completely fused with clypeus; ocelli with 5 spots on each side. Antennae (Fig. 31) 3-jointed, with sensory appendage of 2nd joint conical. Labrum (Fig. 32) transverse, the anterior margin weakly projecting medianly; discal surface with 2 median setae (*ms*), 4 submedian setae (*sm*) and 8 marginal setae. Epipharynx (Fig. 33) with setae on antero-lateral margin; anterior region with several scattered sensillae; median region with a pair of unisetiferous sensillae (*us*) and sides of median region rather extensively suffused by microtrichia; posterior region with a pair of symmetrical sclerites and sensillae on space between them. Mandibles (Figs. 34–36) 5-dentate; grinding surface of left mandible strongly produced at apex; dorsal surface of each molar area with a marking by microsculpture. Maxillae (Fig. 37) with 2nd and 3rd joints of palpus subequal in length and together slightly longer than 1st joint; malar area with a strongly pointed uncus at inner-distal angle; maxillary articulating area not bilobed. Labium (Fig. 38) with 2 joints of palpus subequal in length; ligulal area projecting anteriorly; submentum and gula fused



Figs. 28–40. Mature larva of *Pseudodendroides niponenses* (Lewis).
28: larva (dorsal view); 29: head (dorsal view); 30: head (ventral view); 31: left antenna (ventral view); 32: right half of labrum (*ms*: median seta; *sm*: submedian setae); 33: epipharynx (*us*: unisetiferous sensillae); 34: left mandible (dorsal view); 35: ditto (ventral view); 36: right mandible (dorsal view); 37: left maxilla (ventral view); 38: labium (buccal view); 39: prothorax (ventral view; *pre*: presternum); 40: right half of 9th abdominal segment (*as*: asperities).

into an area. Hypopharyngeal sclerome heavily sclerotized.

Pronotum a little smaller than each of the succeeding thoracic tergites; presternum (Fig. 39) (*pre*) triangular. Tarsunguli of legs slender, weakly curved towards acute apex. Tergites (except pronotum and caudal tergite) each with a fine, transverse, corneous ridge behind anterior margin. Sternites each with a weak impression on middle; 8th segment about twice as long as 7th segment (ratio of width to length 8 : 7), slightly narrowed backwards; 9th segment (Fig. 40) heavily sclerotized, furnished with 2 lateral undulations on each side; dorsal surface with sparse granules; margin between both urogomphi bisinuously concaved ventrally, but in its portion of dorsum smooth; anterior margin of sternite with an arch by asperities (*as*). Spiracular peritremes of abdominal segments annular.

Body-length about 27 mm.

Described from 5 larvae which were collected under the bark of a decaying tree at Daibosatsu-toge, Yamanashi-ken, on May 22, 1961, by N. Hayashi.

The larva of this species is readily characterized by the peculiar shape of the 9th abdominal segment.

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(*Continued from 98*)

been considered to be arrhenotokous. Indeed, this type of gynogenesis is readily distinct from any other types as in the ptinid beetle, *Ptinus clavipes*, f. *mobilis* Moore (see: Sanderson, Proc. Roy. Soc. Edinburgh Ser. B 67 : 333–350, 1960) and the poeciliid fish *Mollienisia formosa* (Girard) (see: Haskins et at., Evolution 14 : 473–483, 1960). By the way, this supports the taxonomic conclusion in the original descriptions of these species (see: Watanabe, Ins. Mats. 19 : 54–58, 1955) for holding the two as full species, because these must be reproductively isolated each other by this curious parthenogenesis, even if interspecific matting occurs frequently in nature. CHIHISA WATANABE

Errata

Vol. 26, No. 2, 1963, p. 98, line 6 from top, for "Pine-caterpilar" read "Pine-caterpillar."

Vol. 26, No. 2, 1963, p. 108, line 15, from top for "specis" read "species."

Vol. 26, No. 2, 1963, p. 112, line 12, from top, for "with a paired projections" read "with paired projections."

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