

The Larva and Pupa of *Brontispa namorikia* Maulik  
(Coleoptera: Chrysomelidae: Hispinae)

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(Presented by Mr. Van Zwaluwenburg at the meeting of December 12, 1949)

In the Annals and Magazine of Natural History, (XI) 13:498-502, July, 1946 (actually published June 25, 1947) I described this species from three specimens collected in the Marshall Islands. Through the courtesy of Elwood C. Zimmerman, Experiment Station, H.S.P.A., I have now had the opportunity of studying 19 larvae, 8 pupae and 45 imagos of the same species, collected in Kusaie, Caroline Islands, July 26, 1947 by D. B. Langford while on a survey for the Pacific Science Board, National Research Council. Part of this material has kindly been presented to the British Museum by Mr. Zimmerman.

The drawings were made at the British Museum (Natural History) by Arthur Smith and have been supplied by Mr. Zimmerman. During my illness this note was prepared for publication from my manuscript notes by Mr. Leslie Bairstow of the British Museum, to whom my thanks are due.

In the Proceedings of the Zoological Society of London, (B) 108:49-71, 1938, I published a revision of the genus *Brontispa*. In that paper, food-plants, geographical distribution and relationships of all known species of *Brontispa* were discussed. All species except two are from islands of the Pacific Ocean; the exceptions are, one species from Mauritius and one from Rodriguez in the Indian Ocean. In the same paper, larvae of three species were described. *B. namorikia* is therefore the fourth species of *Brontispa* of which the larva is now known. It is the third of which the pupa is described.

*Nepionotype*: In the British Museum (Natural History).

*Neanotype*: In the British Museum (Natural History).

*Food-plant*: Coconut palm.

LARVA

**FORM OF BODY**—Elongate, parallel-sided, with ten lateral projections on each side, twenty in all. All segments of body well-marked.

**COLOR**—Alcohol specimens cream, upper side browner than the underside. Tail-shovel, lateral projections, head and thoracic segments slightly lighter. No pattern or markings on the body.

**NUMBER OF SEGMENTS IN THE BODY**—Head 1 + thorax 3 + abdomen 8 = 12 segments. The tail-shovel may represent a ninth segment of the abdomen.

**NUMBER OF SPIRACLES**—Pro-mesothoracic 1 pair + abdominal 8 pairs = 9 pairs. The thoracic spiracle projects between the pro- and mesothorax.

In abdominal segments 1 to 7 each spiracle is situated in the middle of a lateral area of a tergite, not far from the base of the corresponding lateral projection. The eighth tergite has no spiracle, the spiracles of the last abdominal pair being situated at the concavity of the tail-shovel, on the edge of its basal slope and separated from each other by the width (1 mm.) of the concavity of the tail-shovel. The opening of every spiracle has a circular rim.

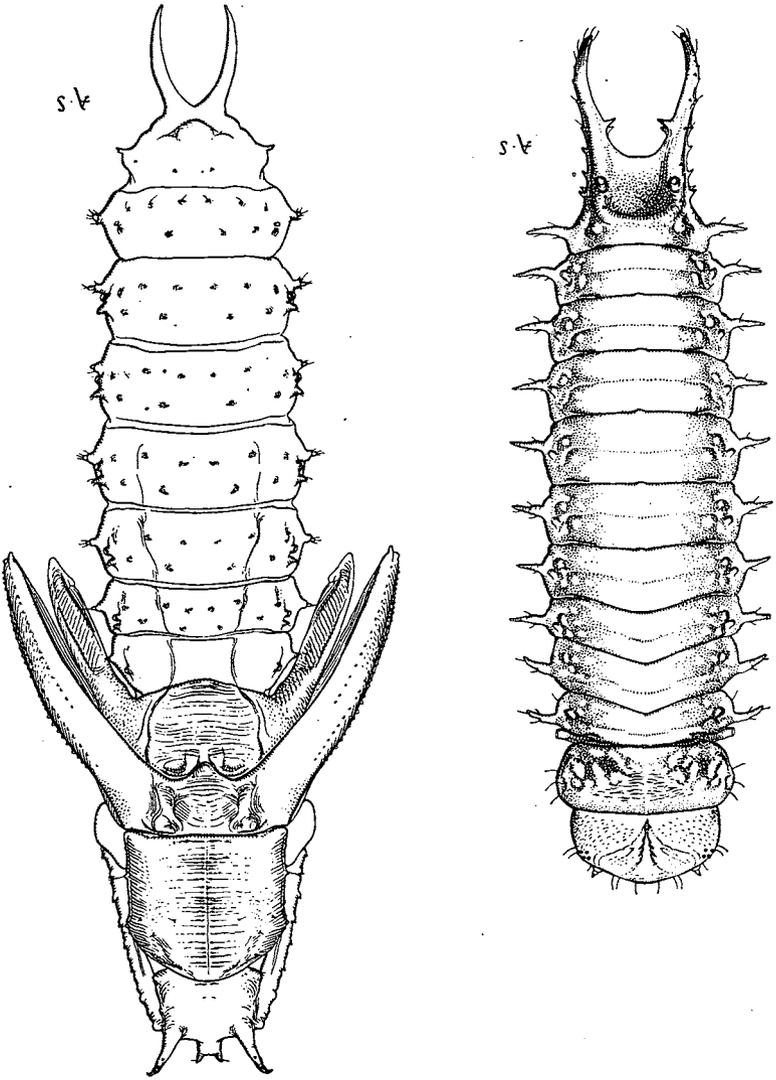
**HEAD**—Broader than long, as broad as the base of the prothorax, with a well-formed cranium, but not very convex above; three sutures, two oblique and one longitudinal, meeting on the basal area, but not in a clearly-defined manner. In front between the upper condyle of the mandible and a group of ocelli is a two-segmented antenna, its basal segment having a circular area ringed with a dark line, and its apex having only a small papilla. There is a group of five ocelli, three in a line and two in another line parallel to it; the ocelli are black except that owing to lack of pigment one is not seen in some specimens. Labrum, two mandibles (each with two teeth), two maxillae (with two palpi) and labium (with two palpi) are well-developed.

**DORSAL ASPECT OF THORAX**—Prothorax slightly narrower than mesothorax, broader than long, lateral margins rounded without any process, upper surface with many fine parallel transverse ridges extending from side to side. Mesothorax broader than long, upper surface with one short fold across the middle; each lateral margin with a well-developed process. Metathorax almost equal to mesothorax in length and breadth, upper surface with one short fold across the middle; each lateral margin with a well-developed process.

**VENTRAL ASPECT OF THORAX**—Leg well-developed, two-segmented, terminating in a sharp claw; opposite the claw is a pulvillus.

**DORSAL ASPECT OF ABDOMEN**—First to seventh abdominal segments similar to one another, nearly equal to one another in length and breadth; eighth segment narrowed to the tail-shovel; each lateral margin of each segment with a well-developed process. A cleared specimen appears to show each abdominal tergite as having a transverse fold across the middle and, on tergites second to seventh, a row of widely-spaced spinules parallel to, and in front of, the furrow and a second row behind the furrow including four spinules rather evenly and closely spaced. On close examination of this cleared specimen, however, the transverse fold and spinules appear to relate to a second surface very slightly below the true outer surface; in uncleared specimens there seems no external indication of furrow and spinules except that towards the lateral parts of the tergites some spinules appear to show through the surface from below. The explanation for this is obscure. In any event, the first and eighth tergites show no appearance of such major spinules, but all abdominal tergites, especially towards their lateral margins, are covered with very minute spinules which give them a shagreened appearance.

Figure 1.—Larva, drawn from an uncleaned specimen 5.6 mm. in length, and pupa, drawn from a cleared specimen 7.0 mm. long, of *Bronitstya namorkhia* Maulik.



**VENTRAL ASPECT OF ABDOMEN**—Across the middle of each of the ventrites from fourth to seventh—one series of six spinules; beyond these on each side but not on the same line—two spinules; altogether, ten spinules. The spinules on the seventh ventrite are smaller. The median spinules are stronger than corresponding spinules on the tergites. Anus situated in the middle of the eighth ventrite.

**LATERAL PROCESSES**—Compared with the size of the larva each lateral process is short, and in this species the processes are all nearly equal to one another. They are round in cross-section, thicker at the base, tapering towards the apex, with the surface wrinkled. On each side their arrangement is as follows: Prothorax 0 + mesothorax 1 + metathorax 1 + abdomen 8 = 10 processes.

**TAIL-SHOVEL**—About twice as long as broad; very deeply emarginate in the middle; dorsally concave at base, the concavity smooth; ventrally flat. Each of the two prongs enclosing the emarginate portion bent inward in its apical portion and terminating in a small spine. As each side of the basal portion of the tail-shovel has a certain depth, there are an upper and a lower edge along each prong on its outer side, although on its inner side there is only one edge. Along the upper outer edge: from the spiracle to the apical portion, five spines widely spaced and of unequal size (the middle ones being larger); in front of the spiracle, a group of three small spines. Along the lower outer edge: seven or eight widely and unequally spaced spines, those on the basal portion being larger than those on the apical portion. On the inner margin of each prong: two comparatively large spines, one above the other, situated nearer the base than the middle.

#### PUPA

**SPECIAL FEATURES**—In the head, antennae, wings and thorax the pupa resembles the imago, but in the abdomen it has features of its own not possessed by either the larva or the imago.

**COLOR**—Alcohol specimens cream, underside lighter. On the upper surface a broad median stripe, lighter than the lateral areas particularly of the abdominal segments.

**HEAD**—In front on each side of the head, a fairly long process (the pupal equivalent of the interantennal process of the imago), darker towards the apex than the base, the apical portion bending downwards and terminating in a sharp point; on the dorsal side of this process at the bend, one or two minute spinules. Two conical processes in front of head.

**NUMBER OF SEGMENTS AND PROCESSES OF ABDOMEN**—Abdomen with eight segments and the tail-shovel possibly representing a ninth segment. In the middle of each lateral margin of first to eighth abdominal segments a lateral process, eight on each side, sixteen in all.

**DORSAL ASPECT OF ABDOMEN**—Seven pairs of spiracles, one pair on each of the first seven abdominal tergites; each spiracle being on the lateral area not far from the base of the corresponding lateral process. Spiracle on seventh abdominal tergite very small and flush with surface. Except on the first tergite, a strong spinule near each spiracle. The first tergite is altogether without spinules. On the second to seventh tergites the spinules are distributed as follows: On each tergite two sub-parallel trans-

verse series of spinules, one anterior and the other posterior. In the anterior series six widely-spaced spinules can be counted, although the extreme lateral ones (one on each side) are not in the same line but are placed much posteriorly and might almost equally well be regarded as belonging to the posterior series, which otherwise consists of four spinules slightly less widely spaced, the two inner ones opposite the central space of the anterior series. On the eighth tergite there are only two spinules in one transverse line.

**VENTRAL ASPECT OF ABDOMEN**—Each of the fourth, fifth and sixth ventrites has across the middle one transverse series of ten spinules, of which the median six are placed more closely and the two on each side not so closely and not in the same line but somewhat posteriorly. On the seventh ventrite the spinules have become irregular and somewhat smaller.

**LATERAL PROCESSES**—Short, each with two segments, a broad basal one and a smaller rounded one terminating in a point and fine hairs.

**TAIL-SHOVEL**—Different in structure from that of the larva. The prongs are smooth, enclosing an acute angle; each prong is broader at its base, tapering to a point at its apex and curving inward.

#### CHARACTERS COMMON TO ALL KNOWN LARVAE OF BRONTISPA

In conclusion, attention may be drawn to certain features common to all known larvae belonging to the genus *Brontispa*:

- (1) The head is well-developed and not of the flattened type correlated with the leaf-mining habit in some hispine larvae.
- (2) The pro-, meso- and metathorax are almost equal to one another in length and breadth and tend to lose the lateral marginal process, which is sometimes represented only by a tuft of fine hairs.
- (3) The tail-shovel bears spines. The form and structure of the tail-shovel are specifically diagnostic; I believe that this is true not only for this genus but for the whole subfamily.