

The Australian Zoologist

Vol 2

17 May 1922

ON THE MALLOPHAGAN FAMILY TRIMENOPONIDAE; WITH A DESCRIPTION OF A NEW GENUS AND SPECIES FROM AN AMERICAN MARSUPIAL.

By Launcelot Harrison, B.Sc., B.A.

Zoology Department, University of Sydney.

With 2 Figures in the Text.

Mallophaga from Australian Marsupials have been known for many years, the first having been described by Piaget in 1880, but hitherto no species has been recorded from an American marsupial. In May, 1919, I was permitted, through the kindness of Mr. Oldfield Thomas, to examine skins of some of these latter animals in the collection of the British Museum (Natural History); and was successful in obtaining from two species of *Peromyscus* a number of individuals of a Mallophagan species, which proved to be new and curiously interesting.

Mallophaga from Australian marsupials are contained in a family, the Boopidae, which finds its closest relations in the Gyropidae, a family found upon certain South American rodents. Certain South American rodents also harbour the two contained species of a third family, the Trimenoponidae. With the exception of these three small groups, all mammalian Mallophaga belong to the widely different family Trichodectidae, which is placed in a distinct superfamily.

Believing as I do that Mallophagan parasites afford valuable indications as to the genetic relationships of their hosts, I have always been puzzled by this distribution. That the marsupials of Australia should not carry the same kinds of parasites as the Eutherian mammals is reasonable enough. But, apart from marsupials, I should have expected all other mammalian Mallophaga to belong to the Trichodectidae. Hence the occurrence of two small, but distinct, families, not upon rodents in general, nor even upon American rodents in general, but on a limited number of South American rodent species, families which showed, moreover, some relationship with the Boopidae, but differed from all other Mallophaga, was difficult to reconcile with my ideas.

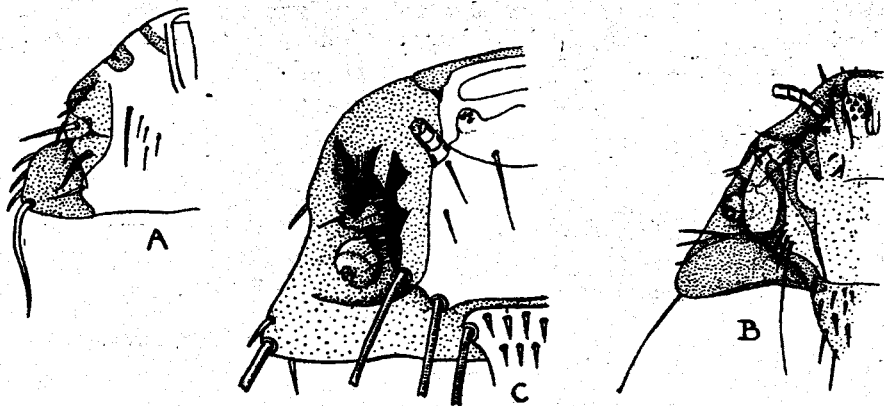
The explanation would appear to be that such Amblyceran Mallophaga as occur on South American rodents have been migrants in the past from the marsupial stock. The new genus which I describe from a South American marsupial must be placed in the Trimenoponidae, but shows some marked features of resemblance to the Boopidae, and some points of contact with the Gyropidae. It is, of course, no use trying to base definite conclusions on a single marsupial-infesting species, but it seems likely that, when more information is available concerning the Mallophagan parasites of American rodents and marsupials, the suggestion thrown out here may be upheld. It is also possible that the discovery of further connecting forms will make it advisable to unite these three anomalous groups under one family name.

FAMILY TRIMENOPONIDAE.

In my *Genera and Species of Mallophaga* (1916, p. 27), I established the family Trimenoponidae for reception of the genera *Trimenopon* and *Philandesia*, without, however, giving a diagnosis.

The Trimenoponidae may be defined as two-clawed mammal-infesting Amblycera with a spinous chaetotaxy; with reduced mandibles and modification of the mouth in the direction of a sucking organ; with head and thorax together almost as long as the abdomen and with no mesothorax visible in the mid-dorsal line; with first abdominal segment reduced, the tergite not reaching the lateral margins; and with five pairs of abdominal stigmata on segments 3-7.

As at present known, the family includes three genera, *Trimenopon* Cummings, *Philandesia* Kellogg and Nakayama, and *Acanthomenopon* now described as new. The species of these genera occur upon South American rodents and marsupials, and it is suggested that, as they do not occur upon rodents elsewhere, the family will really prove to be characteristic of American marsupials. The family is most closely related to the Boopidae, occurring on Australian marsupials, and to the Gyropidae, which are confined to South American rodents.



Text-fig. 1. Underside of head of (a) *Philandesia*, (b) *Trimenopon*, (c) *Acanthomenopon*.

Key to the Genera of Trimenoponidae.

- A. Lateral margin of head deeply emarginate *Philandesia*
 AA. Lateral margin entire.
 B. With a ventral plate partly covering the antennary fossa below *Trimenopon*.
 BB. Without ventral plate, but with two broad stout spines projecting beneath antenna *Acanthomenopon*.

Genus PHILANDESIA Kellogg and Nakayama.

Kellogg and Nakayama (1914, pp. 198-200) give a fairly detailed description and figures of the single species included in the genus, *P. townsendi*, from *Lagidium peruanum*, as well as a diagnosis of the genus. The authors' description of the mouth as "a sort of grasping tube or furrow" is not quite clear to me. The furrow spoken of is on the upper surface of the hypopharynx, and not external, as I at first took the authors to mean. Their figure might be interpreted either way, and gives no indication of the great development of chitin-

ous brushes on the anterior lobes of the hypopharynx. What the authors describe as the mesothorax is obviously the combined meso- and metathorax; while their "metathorax" really comprises the first two abdominal segments. The first abdominal segment is reduced, as in both the remaining genera of the family, and its hind margin is clearly indicated, without comment, in Kellogg and Nakayama's figure (*l.c.*, p. 198), but the lateral margins are not shown. These curve round and run straight forward to the metathoracic border, so that the tergite is narrow oblong transversely, and not crescentic as in the other two genera. The ocular emargination is described and figured as if its anterior and posterior borders were continuous in the same plane, but this is not the case. The anterior border passes backwards and downwards under the posterior to the inner limit of the antennary fossa; while the posterior border, keeping in one horizontal plane, just overlaps the anterior.

The genus may be defined as:—Trimenoponidae with a lateral emargination of the head, the anterior border of which passes under the posterior to the inner limit of the antennary fossa, the posterior just overlapping the anterior; with a ventral plate covering about half the antennary fossa below; with maxillary palps long, passing the head margin; with hypopharynx and pharyngeal skeleton modified to form a rounded chamber with grooved floor; with a great development of hypopharyngeal brushes; and with pads of moderate size upon the basal tarsal joints.

Genus TRIMENOPON Cummings.

Cummings (1913, pp. 39-41) gives an adequate description and figures of his type species, *T. echinoderma* (= *T. jenningsi* Kellogg and Faine), from *Cavia aperea*; but his generic diagnosis is brief and insufficient.

The genus may be defined as:—Trimenoponidae with lateral margin of head entire; with a ventral plate covering about half the antennary fossa below; with maxillary palps long, passing the head margin; with mouth parts not specially modified, but with weak mandibles; with a complex sculpture of the cuticle, resembling that seen in many Gyropidae; with complex ♂ genitalia; and with large pads upon the basal tarsal joints.

Genus ACANTHOMENOPON *nov.*

Trimenoponidae with lateral margin of head entire; with no ventral plate, but with two large dagger-like spines projecting beneath the antenna, one from the anterior, the other from the inner border of the fossa; with maxillary palps short, not passing the head margin; without sculpture of cuticle; with simple ♂ genitalia; and with small pads on the basal tarsal joints.

Genotype:—*Acanthomenopon horridum* Harrison.

Habitat:—Upon American marsupials of the genus *Peramys*.

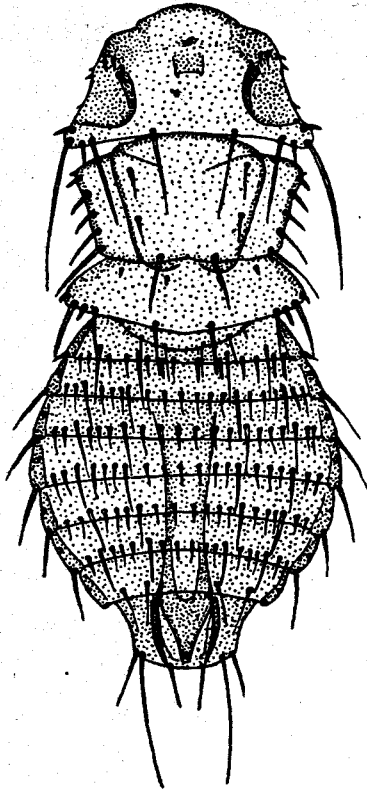
ACANTHOMENOPON HORRIDUM *n.sp.*

(Text-figs. 1c and 2.)

Material:—1 ♂ and 5 ♀♀ from skins of *Peramys domesticus* from Para; and 2 ♂♂ and 4 ♀♀ from a skin of *Peramys sp.* (B.M. No. 3.9.5.148) from Bahia, in the British Museum (Natural History). The specimens are not in good condition, having lost many of their hairs and, in most cases, the greater part of their legs, so the description, though based upon the types, is to a certain extent composite, particularly with regard to the chaetotaxy.

Description of ♂: Head. Almost twice as wide as long, shape best seen from Fig. 2, not so triangular as in *Philandesia* and *Trimenopon* owing to prominent bulge in frontal region; hind border slightly concave; lateral margin en-

ture; dorsal surface with no very characteristic features apart from the chitinous incassations marking the inner limit of the antennary fossa. Undersurface (Fig. 1c) characteristic, with distinct mentum and submentum, the latter having a much raised gular portion, with strongly projecting truncated postero-lateral angles, from which arise two very long hairs. Maxillary palps short, not reaching margin of head. The antenna is four-jointed, of the usual Amblyceran type. It is partially concealed by two comparatively enormous broad-bladed spines. The first of these rises from the anterior border of the antennary fossa, and projects backwards for nearly half its length. The second is broadly based along the lateral margin of the fossa, and projects backwards along the border of the raised gular area. A minute broad-bladed spine also projects backwards from the clypeal angle.



Text-fig. ii. *Acanthomenopon horridum* ♂.

Thorax. The prothorax is roughly oblong in shape, widest at the anterior angles, tapering slightly posteriorly, and almost twice as broad as long. It comprises a central raised portion and two prominent wings. No mesothorax is visible dorsally. The metathorax is much shorter and a little wider than the prothorax, and is narrowest anteriorly, widening to the postero-lateral angles, thence obtusely rounded on the abdomen.

Abdomen. Almost as broad as long. First segment reduced to a crescentic tergite above, and a small sternite below; widest at fifth segment, thence tapering rapidly; segments 2-8 sub-equal in length, segment 9 almost twice the length and much narrower. (The concavity of its sides is exaggerated in the figure. They should be almost flat). Stigmata on the pleura on segments 3-7.

Legs. Of usual Amblyceran type, showing no signs of adaptation to mammalian habitat, except that the claws are more sharply bent than is usual in bird-infesting forms. Femur stout, with anterior border strongly arched; tibia narrow pyriform; tarsus with basal joint short, carrying a slight pad, distal joint long and curved. No marked difference between first and remaining legs.

Chaetotaxy. Head singularly free from hairs dorsally. Three small spines at anterior border of antennary fossa; three prickles along lateral border of same; a long hair flanked by two spines at temporal angle; and four evenly spaced hairs on hind margin. On the underside, there is a pair of short hairs on the mentum, a pair of spines on the submentum, and a series of six short spinous hairs on the raised gular region, in addition to the two long hairs at the postero-lateral angles already mentioned. A comb of spines projects beneath the antenna from the inner wall of the fossa.

Prothorax bears four short hairs on the raised central portion, a series of six spines, increasing in length from before backwards on the lateral margins, and a pair of hairs on the hind border. Metathorax bears a row of four prickles anteriorly, two short spines and two hairs at the postero-lateral angles, and a pair of hairs close to the mid-line on the hind border. Ventrally, the prosternite has a pair of long hairs at its antero-lateral angles, and is closely covered with small spines. The mesosternite has two long hairs laterally on either side, with three spines between. The metasternite has two irregular rows of short spines anteriorly, and a row of about five stiff hairs posteriorly.

Abdomen bears dorsally four longitudinal rows of stiff hairs, with a series of about sixteen short spines lying among them. Ventrally, there are six longitudinal rows, and interspersed with the hairs are about a dozen peg-like spines in each segment.

Genitalia. Basal plate fairly broad, extending almost to the anterior margin of segment 4, and passing backwards into a solid triangular "penis," flanked by a pair of slender, but strongly chitinous, curved parameres.

Description of ♀. Differs from ♂ only in being somewhat larger in all measurements, and in having the terminal segment of the abdomen evenly rounded, and not so elongate as in the ♂. The usual two stiff rows of hairs are placed obliquely on the gonapophyses.

Measurements in millimetres.

| | Length | Breadth | Length | Breadth |
|---|--------|---------|--------|---------|
| | | ♂ | | ♀ |
| Head | .218 | .403 | .218 | .420 |
| Prothorax | .184 | .340 | .190 | .370 |
| Metathorax | .101 | .370 | .105 | .403 |
| Abdomen from anterior angles | .520 | .504 | .571 | .554 |
| Total length and greatest breadth | 1.008 | .504 | 1.092 | .554 |

Type ♂ and allotype ♀ in the Australian Museum, Sydney, New South Wales, No. K45561; paratype material will be sent to the British Museum (Natural History), and to the Stanford University, California.

REFERENCES.

- Cummings (1913). On some nondescript Anoplura and Mallophaga. *Bull. Ent. Research*, iv., pp. 35-45.
- Harrison (1916). The genera and species of Mallophaga. *Parasitology*, ix., pp. 1-154.
- Kellogg and Nakayama (1914). Mallophaga of the Vizcacha. *Ent. News*, xxv., pp. 193-201.