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A New Genus of Mecoptera from Tasmania (1)

By

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PLATES VII, VIII

Late in 1939 Dr. J. W. Evans, of the Department of Agriculture, Tasmania, sent me for examination three specimens of a wingless Mecopteron from Mt. Wellington and Mt. Mawson, Tasmania. Since all three insects were females, publication of the description of the species was delayed, with the hope that the male also might be found. This hope was realized in September 1940, when Mr. D. Martin collected a male, as well as another female, on Mt. Mawson. These additional specimens were promptly sent to me by Dr. Evans. The insect turns out to be a very interesting one; it is not only the first record of the family Panorpidae (s.s.) in the Australian region, but it is also the only apterous member of the family known. I am greatly indebted to Dr. Evans for the opportunity of studying this remarkable species.

Apteropanorpa, new genus

Both sexes completely apterous, without indications of wing vestiges. Head large, much as in *Panorpa,* with a conspicuous rostrum, fully as large as that in *P. conigera* McL.; eyes small, only slightly protruding; ocelli absent; antennae elongate, with about 60 segments; clypeus broad, more remote from antennal insertions than in *Panorpa;* subgenal suture weak, subgenal processes very inconspicuous; labium long; mandibles toothed as in other Panorpids; maxillary palpi long, similar to those in *Panorpodes;* labial palpi small; thoracic nota contiguous, forming a heavy dorsal shield; 1st abdominal tergite fused with the metanotum; legs slender, typically panorpid, with smooth tarsal claws; abdomen very large and bulbous, with minute dorsal and ventral sclerites. *Female* abdomen: 9th abdominal sternite divided, forming two elongate plates, much as in *Panorpodes;* 10th abdominal sternite apparently absent (or very lightly sclerotized); 11th reduced to a small median plate; cerci long. There is apparently no internal skeleton (vulvar retractor apodeme) in the 9th abdominal segment. *Male* abdomen: tergites 2-6 small; tergites 7 and 8 coalesced with their sternites, forming a ring around the abdomen; 7th and 8th abdominal segments very short; 9th and 10th

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essentially as in *Panorpa*, forming a bulb which is curved over the 7th and 8th segments. The styles (forceps) (2) of the coxopodites of 9th segment are in the form of small, cylindrical processes directed inward and apparently attached to part of the 11th segment. The cerci absent or very minute.

Genotype: *Apteropanorpa tasmanica*, n.sp.

I consider this genus to be more closely related to *Panorpodes* (eastern Asia) than to *Panorpa* or *Neopanorpa*. This is especially well indicated by the structure of the terminal abdominal segments. In *Panorpa* the 9th abdominal sternite of the female is a large median plate, covering all of the ventral surface of the segment; in *Apteropanorpa* and *Panorpodes* the sternite is divided and reduced to a pair of slender plates. In *Panorpa* and *Neopanorpa* the 7th and 8th abdominal segments of the male are elongate, whereas in *Apteropanorpa* and *Panorpodes* they are very short. An even more striking similarity between *Apteropanorpa* and *Panorpodes* is found in the structure of the 6th abdominal segment of the male. In these genera the tergites and sternites of that segment are widely separated by membranous areas; but in *Panorpa* and *Neopanorpa* these tergites and sternites are fused so as to form a cylindrical plate around the entire segment.

The apterous condition of *Apteropanorpa* is the most obvious feature of the genus. The head is also unusual in having small eyes, no ocelli, and inconspicuous subgenal processes.

Apteropanorpa tasmanica, n.sp.

(Plates VII, VIII)

Length of body, not including antennae, 5·5-6 mm. Head reddish brown; antennae varying from dark brown to light reddish brown; thorax light yellow-brown above, dark reddish brown laterally; abdomen with dark reddish brown tergites, membranous areas mottled with brown and white; cerci brown. The coloration is essentially the same in all types, except one female paratype from Mt. Mawson, which has some dark brown on the mesonotum. The sternites of the terminal abdominal segments of the female probably include good specific characteristics; their structure is shown in Pl. VIII, fig. 4. The abdominal terminalia of the male are represented in Pl. VIII, figs. 1 and 2; the 9th sternite consists of a median plate, partially divided distally.

Holotype (♂): No. 25462, Museum of Comparative Zoology; collected on snow, on Mt. Mawson (4500 ft. elevation), Mt. Mawson, National Park, Tasmania, September, 1940 (D. Martin).

Allotype: collected on low shrubs (*Richea scoparia* Hook f.) on the summit on Mt. Wellington, Tasmania, May 31, 1939 (V. V. Hickman); in the Museum of Comparative Zoology.

Paratypes: 1♀, same collecting data as allotype; 1♀, Mt. Mawson (4200 ft. elevation), Tasmania, on snow (T. Raphael); both in the Australian Museum, Sydney.—1♀, same collecting data as holotype, in the Museum of Comparative Zoology.

(2) For these abdominal structures I have used the terminology proposed by Ferris (Microentomology, 4 : 79-108, 1939).

In general appearance the female of this insect closely resembles the members of the family Boreidae, but the absence of the long ovipositor, a characteristic of the latter, eliminates all possibility of confusing it with a Boreid. Because of its wingless condition, determination of the family position of *A. tasmanica* must be made on details of body structure. The presence of the two tarsal claws as well as the structure of the abdominal terminalia excludes it from the Bittacidae; and the well-developed rostrum eliminates it from the Choristidae and Nannochoristidae. It has no characteristics, however, which prevent its inclusion in the family Panorpidae, though, of course, certain features, treated above as generic, have not previously been found in any panorpid. *Apteropanorpa* appears to be a highly specialized derivative of primitive Panorpid stock. It has some characteristics of *Panorpa* and some of *Panorpodes*. The elongate rostrum, for example, is like that of *Panorpa*, whereas the long maxillary palpi, simple claws, and the structure of the terminal abdominal segments are like those of Panorpodes. The wingless condition of *Apteropanorpa* is suggestive of *Brachypanorpa* (United States), the females of which are subapterous; but the rostrum in *Brachypanorpa* is even shorter than that of *Panorpodes*.

Apteropanorpa also presents a striking combination of general and specific characteristics. Among the former may be listed the nearly undivided 9th sternite; in all other Panorpidae this sternite is either forked or split for most of its length. On the other hand, the modification of the styles (forceps) of the coxopodite of the 9th abdominal segment of the male, and the absence of wings and ocelli are obvious specializations. *A. tasmanica* is especially interesting as a third instance of independent wing loss among Mecoptera, the other two cases being the Californian *Apterobittacus* (Bittacidae) and the Holarctic *Boreus* (Boreidiae). Noteworthy in this connexion is the fact that three specimens of *tasmanica* were found on snow, an environment in which the adults of *Boreus* also normally occur.

As mentioned above, *tasmanica* is the first record of the family Panorpidae (s.s.) in the Australian region. Although this family is essentially a Holarctic one, many species have been found in southern India, French Indo-China, and the East Indies.(3) The occurrence of a species of this family in the Australian region is therefore not very surprising; but what is remarkable is that this particular species is apterous, nivicolous, and confined (apparently) to certain mountains in Tasmania.

(3) Navas has described a Chilean Panorpid (*Panorpa ruizi*), but the collecting data of the unique type are probably incorrect (Rev. Chil. Hist. Nat. 30 : 330, 1926).

PLATE VII.

Apteropanorpa tasmanica, n.sp. (female, paratype).

FIG. 1.—Dorsal view.
FIG. 2.—Lateral view (only part of the antennae is shown in these photographs).

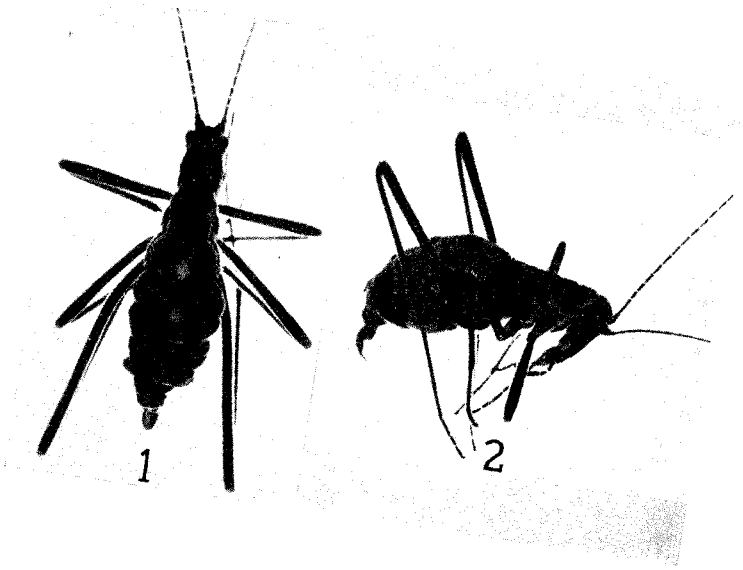
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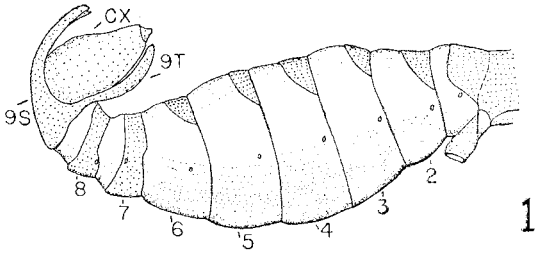
PLATE VIII.

Apteropanorpa tasmanica, n.sp.

FIG. 1.—Lateral view of abdomen of male (holotype). 2-8 abdominal segments; 9T, 9S, ninth abdominal tergite and sternite; cx., coxopodite of ninth abdominal segment.
FIG. 2.—Ventral view of male abdominal terminalia.
FIG. 3.—Front view of head of female.
FIG. 4.—Ventral view of terminal abdominal segments of female.
FIG. 5.—Lateral view of thorax of female. 11s., eleventh sternite; ABD., abdomen.



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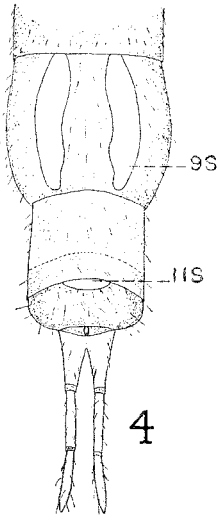

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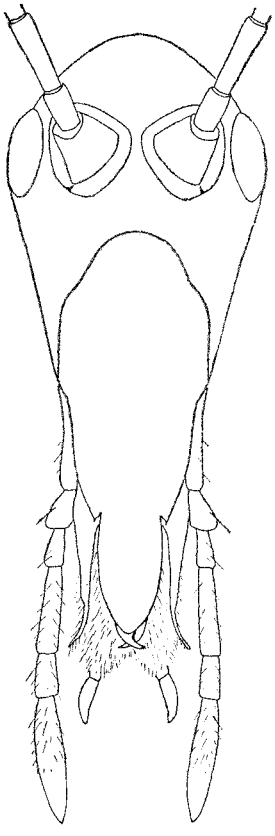

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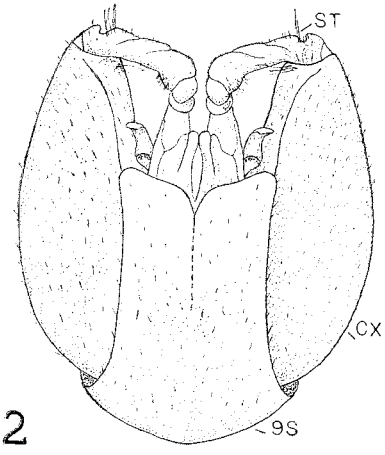

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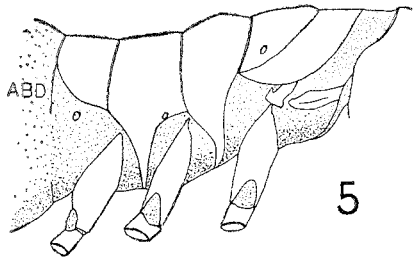

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