The genus Tectoporus Carl (Diplopoda, Polydesmoidea, Strongylosomidae)

by
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The family Strongylosomidae, which, with the exception of the Nearctic continent, has a worldwide distribution, attains its largest development in the Indo-Australian region. Particularly in mountainous areas this family holds an important and characteristic share in the milliped population, and this fact together with the exceedingly restricted range of most species, justifies the opinion that the still comparatively small number of known species represents only a fraction of the existing fauna.

Of course the deficiencies in our faunistic knowledge have had their unfavourable influence on the taxonomy of supraspecific units. Many species seem to stand completely isolated in the family, and according to the personal view of their authors have been placed either in monotypical genera, or in genera purely artificial in conception. This dissentaneous treatment of new forms has led to a heterogeneity in the generic interpretation, thas has been demonstrated even in an excellent monograph of the family as has been given by ATTEMS in "Das Tierreich", **68**, 1937.

On the one hand, the number of small genera maintained in this work is considerable, although ATTEMS himself certainly was no defender of such small units, and repeatedly denounced their creation, principally on zoogeographical grounds. Indeed he reduced the number whenever affinities were evident, but even so the results were not always fully satisfactory.

On the other hand, within larger genera like *Sundanina* Att., *Kronopolites* Att., *Akamptogonus* Att. or *Orthomorpha* subg. *Kalorthomorpha* Att. we can easily distinguish species or small groups of species that in many cases show just as much, or just as little affinity to each other than to any other genus. Without attacking the accepted generic rate such groups might as well deserve the rank of genus within their own right.

To restore a rational uniformity in the conception of the genera a revision of the entire family would be a primary necessity. However, in view of the fact that most species are known only from their original specimens, such a revision is impossible.

Another way would be the splitting up of the heterogeneous units in their elements. This method would necessitate the proposal of numerous new names. It has been carried out to some extent by VERHOEFF amongst others, but it yields no results as to our knowledge of the mutual relationship between the components. Moreover such names are likely to become superfluous sooner or later with the discovery of missing links.

For the time being the only possibility that remains is to attempt a resynthesis of the genera by way of a study of the available information in litterature. Presently the genus *Tectoporus* has served as the object of such an attempt, but as the majority of the species dealt with is unknown to me, the results of course have to be provisional. The established relationships need at least partly a future confirmation.

The genus *Tectoporus* has been created by CARL in 1902 for the reception of a single species, *T. gracilipes* Carl from Java. At that time it was separated from the other known Strongylosomid genera on account of a combination of characters, of which the morphology of the lateral keels was the most important. According to CARL the keels in *gracilipes* are moderately developed and have a dorsal ridge that conceals the pore when the animal is seen from the dorsal side. The drawings of the gonopods were very good for that time, and may be still sufficient for the recognition of the species. However, morphologically they can only be properly understood by reference to similar structures. It seems quite evident that CARL and subsequent authors did not recognize those characters of the gonopods of *gracilipes* that were of essential importance to the diagnosis of the genus. This may explain why so many *Tectoporus* species have been dislocated.

Up to now only one species has been referred to *Tectoporus* besides *gracilipes*. This second species, *T. castaneus* Att. is certainly closely related to the former, but it appears that it has been assigned to the genus primarily because of the morphology of the keels, and not, at least not in the first instance, of the structure of the genopods.

Although the shape of the lateral keels and the position of the repugnatorial pores may offer good characters in the distinction of species, they have to be used with caution in a generic diagnosis. Since a long time the morphology of the gonopods has been regarded essential to the definition of Diplopod genera, and it has frequently been shown that the structure of the gonopods does not correlate with the development of the keels. In other words, a Strongylosomid genus may consist of species with well developed keels, as well as species that have completely reduced lateral keels. This principle of the prevalence of the gonopods has been adopted generally, although it has not always been applied correctly. In the case of *Tectoporus* the generic diagnosis has left no room for those species in which the keels are reduced and thus have not the particularities of the type species. The confusion that has aroused regarding *Tectoporus* is illustrated by the fact that the species referred to it here, were scattered over four genera in the "Tierreich".

Taking into consideration the gonopods of *T. gracilipes* and *T. castaneus*, I have come to the conclusion that the following species have to be placed in the same genus :

Strongylosoma pygmaeum Pocock
Strongylosoma pictum Carl
Orthomorpha scutigeroides Attems
Orthomorpha filaria Attems
Orthomorpha ambigua Carl
Oxidus lamellifer Chamberlin
Oxidus malabarus Chamberlin
Oxidus pangrangus Chamberlin

Some of these species have been made the type of other genera, that consequently become synonymies of *Tectoporus*, viz. *Celebestia* Attems, *Pagioprium* Attems and *Periballopus* Verhoeff.

Before entering into a discusion on the mutual affinities of the species mentioned above, a new form is described here, in order to elucidate the characteristic structure of the gonopods of *Tectoporus* and to have some

base for comparison. The material of this species is preserved at the Zoological Museum at Amsterdam.

Tectoporus **hispidus** nov. spec.

Locality : W. Sumatra, Gunung Singgalang, 1200—1800 m., 1925, Coll. E. JACOBSON, 3 ♂♂, 10 ♀♀, 1 juv. ♀ of 7th stad.

Colour : In general dull pale chocolate brown, with a purplish tinge. Head and first segments more castaneous. Venter and legs dirty yellowish white. Colour of various specimens varies in intensity.

In detail : head yellowish brown to castaneous. Antennae yellowish white proximally, shading towards brown distally. Tip, composed of distal part of 7th joint and terminal joint, whitish. Body segments dull purplish brown, the waist somewhat darker. Prozonites with a dark median line, metazonites with especially the longitudinal and transverse furrows dark. Keels pale. Anterior segments more castaneous to yellowish brown. Ventral side of segments dirty whitish. Sternites and legs yellowish white.

Dimensions : Width of ♂ holotype 1.8 mm, ♀ allotype 2.6 mm. ♂ paratypes 1.5—1.6 mm, ♀ paratypes 2.1—2.6 mm. Width of juvenile ♀ paratype of 19 segments 1.6 mm. Length roughly 16—22 mm. ♀♀ in general longer than ♂♂.

Head and antennae : Anterior and lateral parts of head rather densely pubescent, vertex with some dispersed bristles. Median sulcus of vertex rather deep, running downward to the imaginary line that connects the upper margins of the antennnal sockets. Antennae rather long, reaching backwards along the sides to the posterior margin of the fourth segment. Second and third joint of subequal length, fourth and fifth joint slightly shorter than the preceding ones, sixth joint two thirds of length of fifth. Antennae weakly clavate, distal joints in ♂ somewhat more incrassate than in ♀.

Collum : reniform, anterior border semielliptical, posterior border slightly emarginate. Surface somewhat uneven, in the middle a weak depression. Along the anterior border a row of bristles, a row at some distance from the posterior border and two bristles in the middle. Collum narrower than the head, somewhat inflated towards the sides. Lateral margin narrowly raised.

Body segments : Prozonites dulled by a fine cellular structure. Segments moderately constricted by a rather broad waist, that is dorsally finely and indistinctly longitudinally striate. Comparatively the waist is broader in ♂ specimens, and the segments are more strongly constricted than in ♀♀. Metazonites with uneven dorsal surface. From 2nd to 18th segment each metazonite has a longitudinal and a transverse furrow, rather weak on 2nd and 3rd segments, but very distinctly developed in subsequent segments. Especially in anterior segments the dorsum of the metazonites is inflated like a cushion. Before the transverse furrow on each segment a row of 6 to 10 bristles. In first segments behind the furrow one row of bristles that in following segments gradually become arranged in two rows of 8 to 12 bristles each. Dorsal bristles rather long and strong, placed on irregular bulges of the metazonites. Posterior row of bristles close to the posterior margin, and more regularly arranged than the middle row. Dorsally the animal has somewhat the aspect of a Polydesmid. Surface of sides below the lateral keels finely granular

and rugulose. Pleural keels absent, but above the anterior legs of each segment a slight prominence.

Lateral keels: well developed but narrow. 2nd segment almost attaining width of collum, its keels below the level of those of following segment, and posteriorly rounded. In ♂ 3rd segment narrower than 2nd and 4th. In ♀ 3rd segment broader than 2nd, and of subequal width as 4th. In both seexs 5th segment distinctly broader than the preceding one. Lateral keels of 3rd and 4th segment both anteriorly and posteriorly rounded, largest width in the middle. 5th segment with keels anteriorly rounded and posteriorly obtusely edged. In following segments the posterior edge becomes acute and more and more spiniform and projects behind the posterior margin of the segments. Lateral margin of poreless keels dorsally finely brimmed, the rim distinct in the anterior part but becoming indistinct in the posterior part of the keels. Poreless keels with two small lateral dents, indistinct on 3rd and 4th segments, more distinct from 6th onwards. Up to the anterior dent the porebearing keels are similar to the poreless. Behind this dent the lateral rim disappears and is followed up by an oblique latero-dorsal, longitudinally sub-rhomboid area, in the middle of which lies the repugnatorial pore in a slight excavation. Thus the pore is not concealed by a dorsal ridge when the animal is seen from the upper side. The lower lateral edge of the rhomboid area is, when seen from above, very obtuse.

Sternites and legs: In ♂ sternites about as broad as long, in ♀ about 1½ times as broad as long, moderately pubescent. Transverse and median impressions present, but rather weak in the centre of the sternite. At the base of each leg a backwardly directed cone. Sternite of 5th segment of ♂ with a process arising broadly from the entire sternal surface, tapering rather strongly while curving forward and ending in a thin lamella that is bilobate by a weak median incision. The anterior concave side of this process is set with long hairs that are curved and spiralled at their end. Legs of ♂ as well as ♀ rather long and slender. In ♂ 1st, 2nd and 3rd pair strongly incrassate and ventral side of the joints excepting the 2 distal joints with long hairs similar to those of sternal process of 5th segment (Fig. 1 and 2), 4th and subsequent pairs becoming gradually more prolonged, not conspicicuously incrassate but all legs before the 7th segment have the long hairs. Tarsal brushes absent.

Last segment: Tail equilaterally triangular, the end narrowly truncate. Anal scale trapeziform, lateral and posterior sides weakly emarginate.

Gonopods: (Fig. 3 and 4). Coxa moderately long, sub-cylindrical with a slight bent about halfway. Anterior and latero-anterior side of the distal part with a bristle area. Praefemur more or less oviform, distally not prolonged. Femur moderately long, rather slender and straight, laterally distinctly marked from both praefemur and tibiotarsus. Canal remaining on the medial side. Postfemur not marked. Tibiotarsus with two hyaline lobes at the anterior side (*f* and *g*), and a long spiniform process at the posterior side (*b*). The part of the tibiotarsus distally of the course of the solaenomerite has two strong processes (*c* and *d*) of which *c* is rather strongly curved in a medio-posterior direction, and *d* in a posterior direction. On the lateral side this part of the tibiotarsus has a strong, rounded lobe (*e*). On the medial side the tibiotarsus has a lobe (*a*), that

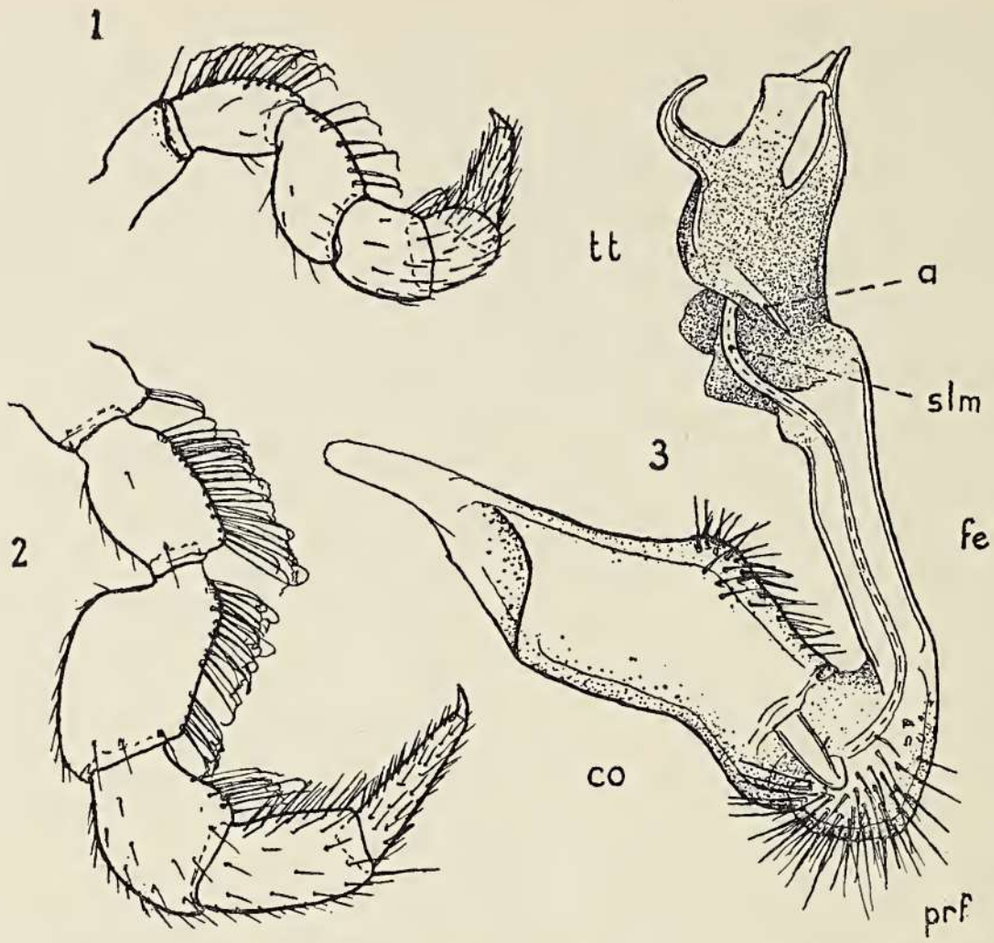

Fig. 1. *Tectoporus hispidus* nov. spec., first leg of ♂ paratype. — Fig. 2. id., second leg of ♂ paratype. — Fig. 3. id., left gonopod of ♂ holotype, medial aspect, *co* : coxa, *prf* : praefemur, *fe* : femur, *tt* : tibiotarsus, *slm* : solaenomerite, *a* : medial lobe of tibiotarsus.

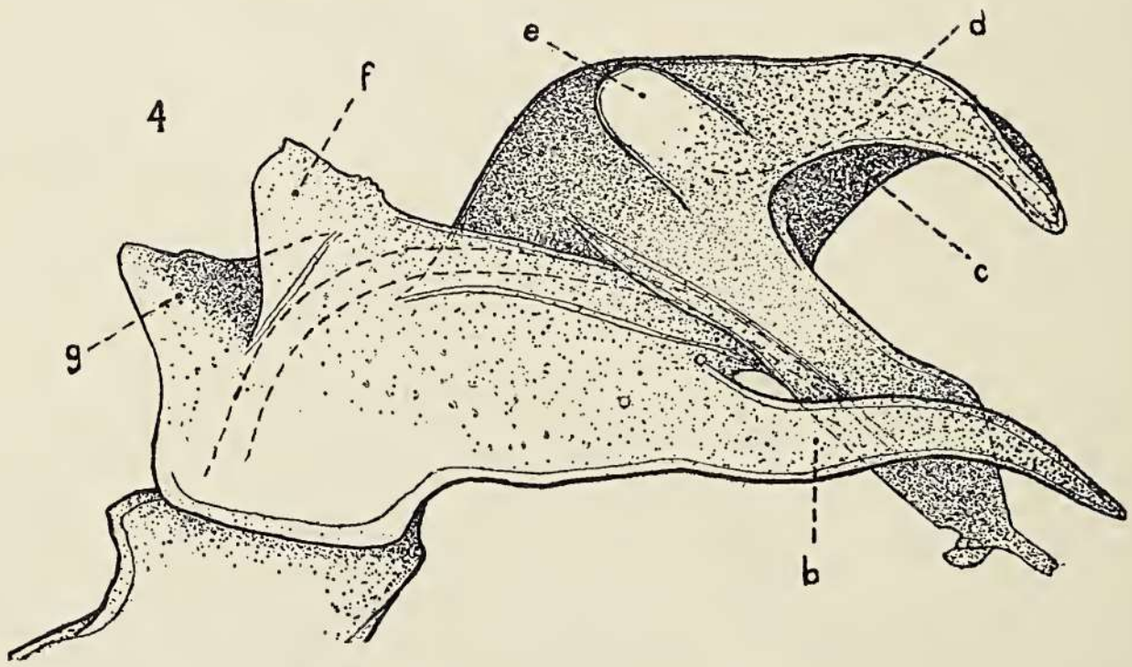

Fig. 4. *Tectoporus hispidus* nov. spec., tibiotarsus of right gonopod of a ♂ paratype, lateral aspect, *b* : basal process on posterior side of tibiotarsus, *c*, *d* and e : processes distally of the course of the solaenomerite, *f* and *g* : hyaline lobes at the anterior side of the tibiotarsus.

is placed trnsversely on the course of the solaenomerite. The solaenomerite is visible only from a medial view, at least its proximal part. The rest is completely sheathed by two thin lamellae on the lateral side of the tibiotarsus. Of these two lamellae the proximal one is the continuation of lobe *f* ; more terminally it is overlapped by the distal lamella. The end of the tibotarsus is hyaline and bears a terminal digitiform, and a rounded beaklike lappet.

(To be concluded)

Overwintering van de pop van Lasiocampa quercus L. Volgens een opmerking in de Catalogus overwintert de pop een enkele maal. Ik heb echter nog nooit een *quercus*-kweek gehad (natuurlijk uit het Noorden), of bij sommige poppen was dit het geval.

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Literatuur

Lems, K., Libellentabel. Uitgave van de Insectencommissie van de N. J. N.

Alweer een voortreffelijke publicatie van deze actieve commissie ! Het 22 pagina's tellende werkje ziet er keurig verzorgd uit, de 33 figuurtjes, die de in de determinatie-tabellen vermelde kenmerken toelichten, zijn heel duidelijk.

Eigenlijk moest iedere entomoloog zich de tabel aanschaffen, vooral nu de twee delen van LIEFTINCK geheel uitverkocht zijn. De prijs bedraagt slechts f 0.40 (ook voor niet-leden), bestellen bij de tabellenadministratie der N. J. N., p.a. TEP VALK, Jan Gijzenkade 123, Haarlem. De Odonata vormen maar een kleine orde in Nederland, net geschikt om te combineren met een grotere. En faunistisch is er stellig nog veel goed werk in te doen. Het is uitgesloten, dat LIEFTINCK en GEYSKES reeds het hele land afgegrasduind hebben ! — Lpk.

Séguy, E., La Biologie des Diptères, Encyclopédie Entomologique, **26**, 1950.

De Bibliotheek van onze Vereniging ontving van ons erelid, Prof. E. SÉGUY, dezer zeer belangrijke studie. Het ruim 600 bladzijden grote werk bevat zo'n schat van gegevens en is zo beknopt geschreven, dat het een boek geworden is, dat men niet achter elkaar uitleest, doch telkens weer opslaat om een gegeven op te zoeken.

Het werk is verlucht met 7 voortreffelijke gekleurde en 3 zwarte platen, benevens met 500 tekeningen. Er is ontzettend veel literatuur voor doorgewerkt, die telkens aan het eind der hoofdstukken vermeld wordt, terwijl aan het slot van het boek nog een literatuurlijst van 13 blz. met speciale literatuur staat.

Dit boek mag met recht een deel van de Encyclopédie Entomologique heten, omdat het al onze kennis over het leven der Diptera samenvat. De Vereniging is ons erelid grote dank verschuldigd voor dit fraaie geschenk ; hij heeft met dit werk alle dipterologen een grote dienst bewezen. — Kr.