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ON SOME LITTLE KNOWN PARADOXOSOMATIDAE FROM INDIA AND CEYLON, WITH THE DESCRIPTION OF FOUR NEW GENERA (DIPLOPODA, POLYDESMIDA)

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ABSTRACT

A number of paradoxosomatid species described from India and Ceylon have been re-examined. *Pyragogonus* nov. gen. (Cnemodesmini) is proposed for *Orthomorpha willeyi* Carl, 1932, from Ceylon; *Parchondromorpha* nov. gen. and *Harpagomorpha* nov. gen. (Sulciferini) for *Orthomorpha coonoorensis* Carl, 1932, and *Orthomorpha dentata* Carl, 1932, from India, respectively. For *Sundanina laevisulcata* Carl, 1932, and *S. hirta* Carl, 1932, from India, the genus *Antichirogonus* nov. gen. is erected. Some notes are given concerning the characters of the genera *Polydrepanum* Carl, 1932, and *Dasypharkis* Attems, 1936 (Polydrepanini) and the status of the tribes Polydrepanini and Alogolykini.

SYSTEMATIC DESCRIPTIONS

Tribe Cnemodesmini Jeekel

As was pointed out in 1968 this essentially African tribe is represented in the Oriental region by a single known species which was described from Ceylon by Carl in 1932. The examination of material of this species gives the opportunity to define its generic status and give some comments on its relationship.

Pyragogonus nov. gen.

Generic diagnosis. — Medium-sized Paradoxosomatidae with 20 somites and a normal poreformula. Head without particulars. Antennae of moderate length.

Somites moderately constricted; the waist narrow, finely beaded. Metatergites smooth, hairless. Transverse furrow present from the 5th to the 17th somite. Pleural keels present in most body somites.

Paranota moderately developed, with the caudal edges mostly obtusely angular, becoming gradually acuminate in the caudal half of the body.

Sternites of middle somites about as long as wide. Cross impressions weakly developed and indistinct. Sternite of 5th somite of male with a pair of knobs between the anterior coxae. Legs long, without sexual modifications in the male, except for the tibial and tarsal scopulae which are present in all legs.

Gonopods with the coxal hook provided with a large spur projecting distad. Prefemur elongate ovoid, its longitudinal axis making a distinct angle with the axis of the femorite. Femorite relatively short and stout, incrassate towards the apex. Post-femoral section not sharply demarcated. Spermial channel running along the medial side of the femorite. Solenomerite arising from the anterior side of the apex of the femorite, slender and tapering towards the finely pointed apex. At base of solenomerite a triangular process. Tibiotarsus

consisting of a solenophore and two additional processes; the solenophore with a well developed lamina medialis and lamina lateralis. Basal process of tibiotarsus opposing the distal process and solenophore by curving a little distad.

Type-species. — *Orthomorpha willeyi* Carl, 1932.

Remarks. — In the classificatory outline of the Paradoxosomatidae (Jeekel, 1968: 84) *Orthomorpha willeyi* was already removed from the genus *Orthomorpha* Bollman and given the status of a separate, tentatively unnamed genus, which was referred to the otherwise exclusively African tribe Cnemodesmini. Within this tribe the new genus comes nearest to *Podochresimus* Attems, 1926, which has four closely related species occurring in a relatively small area in the south-west of South Africa. Basically, *Pyragrogonus* has the same gonopods as *Podochresimus*, but in the latter the femorite has two processes instead of one, and the coxal hook lacks the spurlike projection. Moreover, the femorite of the gonopods in *Podochresimus* apparently has a much less complicated structure than in *Pyragrogonus*.

The close relationship between a genus occurring in Ceylon and a South African genus, with the latter occupying an area quite isolated from the remaining African paradoxosomatid fauna, is quite remarkable. It constitutes a faunistic link not paralleled by any other distributional pattern in the family.

It is also noteworthy that both *Pyragrogonus* and *Podochresimus*, although referable to the Cnemodesmini on account of the presence of the femoral processes of the gonopods, have a type of gonopods which closely corresponds with that found in the more typical genera of the Sulciferini like e.g. *Anoplodesmus* Pocock, *Paranedyopus* Carl, etc. It appears that the two genera constitute the taxonomic link between Sulciferini and Cnemodesmini. In fact, if it were not for the presence of the single femoral process, *Pyragrogonus* could be easily located among the Sulciferini.

***Pyragrogonus willeyi* (Carl, 1932)**

Orthomorpha willeyi Carl, 1932: 425, figs. 6-7; Attems, 1937: 90, fig. 114.

Material. — The Geneva museum has in its collection 1 ♀ cotype as well as the left gonopod and a leg of a ♂ cotype. The body of this ♂ was apparently returned to the British Museum (Natural History), London, and is probably to be regarded as holotype or is to be selected as lectotype.

Description. — From the available material the following supplementary notes were made.

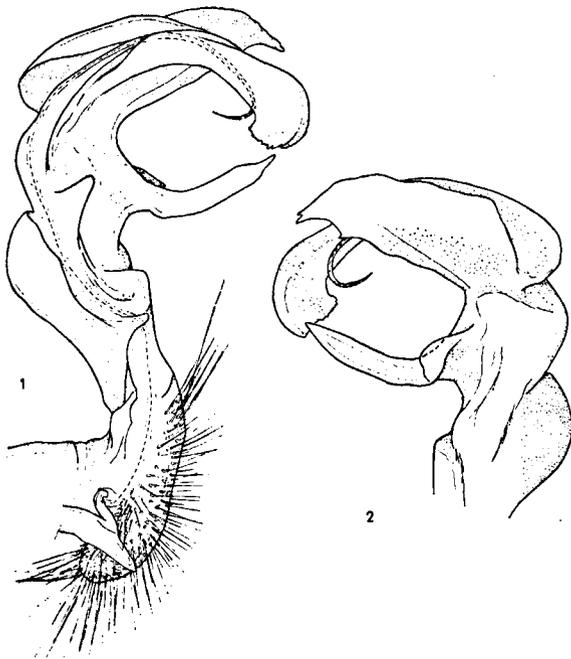
Body somites: Transverse furrow of metatergites also visible in the 17th somite. Pleural keels distinguishable up to the 16th somite, represented by a longitudinal swelling which is dorsally demarcated by a deep furrow curving upward along the posterior margin of the somite and paralleling the margin up to about halfway the level of the paranota.

Paranota: Poriferous paranota in lateral aspect with a slightly convex upper side, the underside demarcated only in the caudal third. Pores situated distinctly nearer the lower margin. Poreless paranota with the upper side slightly concave in lateral aspect.

Sternites: of middle somites one and one fifth times broader than long (♀ !). Cross impressions weakly developed and indistinct, the transverse furrow a little more deeply impressed than the longitudinal one.

Anal somite: Epiproct rather thick dorso-ventrally; the apex rather narrowly truncate, without terminal cones. Pre-apical setiferous granules almost obsolete. Hypoproct triangular, the end narrowly rounded, the setiferous tubercles weakly developed.

Gonopods: (figs. 1-2) Prefemur with a caudo-apical tuft of long setae. Femorite complicated by the presence of a number of lobes and ridges on the medial side. Cephalad of the course of the spermal channel a large longitudinal lobe ending rather abruptly near basis of solenomerite. About halfway, caudad of course of spermal channel, a deep pit. Just proximad of the base of the solenomerite and caudad of the course of the spermal channel a triangular lobe pointing meso-caudad. Postfemoral region indicated on the lateral side of the femorite, but not by sharp chitinous lines. The basal process of the tibiotarsus has on the lateral side of broadly rounded lobe. Apex of solenophore expanded and finely serrulate.



Figs. 1-2. *Pyragogonus willeyi* (Carl, 1932), cotype ♂, left gonopod. 1: medial aspect; 2: lateral aspect of distal portion.

Tribe Sulciferini Attems

In the Indian and Ceylonese fauna this tribe is represented by the genera *Anoplodesmus* Pocock, 1895, *Paranedyopus* Carl, 1932, *Chondromorpha* Silvestri, 1897, the new genera *Parchondromorpha* and *Harpagomorpha* as well as the unclassified species "*Orthomorpha*" *almorensis* Turk, 1947, and "*Orthomorpha*" *greeni* (Pocock, 1892). Although the time has not yet come to make a further subdivision in this group, it is clear that the Sulciferini of India and Ceylon are not a homogeneous assembly. In *Anoplodesmus* and *Paranedyopus* the tibiotarsus of the gonopods consists of a solenophore and a basal and distal tibiotarsal process. In *Chondromorpha* and *Parchondromorpha* the distal process of the tibiotarsus is lacking. In *Harpagomorpha* there is a basal tibiotarsal process but this appears to arise from the solenophore and may not be homologous to the similar process in the genera *Chondromorpha* and *Parchondromorpha*.

Outside the area under consideration the *Anoplodesmus*-group has the genera *Akribosoma* Carl, 1935 (North-East India), *Kronopolites* Attems,

1914 (Indochina, China, Taiwan), *Annamina* Attems, 1937 (Indochina), *Oxidus* Cook, 1911 (Indochina, Korea, Ryukyu Archipelago), *Mandarinopus* Verhoeff, 1933 (China), *Margaritosoma* Jeekel, 1979 (Sumatra, Java), and the African genera *Oranmorpha* Verhoeff, 1941, and *Hoffmani* Jeekel, 1968.

The *Condromorpha*-group is represented elsewhere by *Echinopeltis* Jeekel, 1979 (Sumatra). Perhaps *Hedinomorpha* Verhoeff, 1933 (China), belongs to it also.

Harpagomorpha finally seems to be related to *Orthomorphella* Hoffman, 1963, occurring in North China and Japan.

Paranedyopus Carl, 1932

Paranedyopus Carl, 1932: 451; Attems, 1937: 141; Jeekel, 1968: 81.

Himantogonus Carl, 1932: 454; Attems, 1937: 223.

Remarks. — In 1968 the two monotypical Indian genera *Paranedyopus* and *Himantogonus* were combined under the name of the first. It is evident that Carl must have been influenced by the rather remarkable complication in the structure of the gonopods in *Himantogonus rufocinctus*, in particular by the extreme length of the solenomerite, when he proposed a separate genus instead of bringing it under the heading of *Paranedyopus*. But whereas Carl treated *Paranedyopus* and *Himantogonus* in close succession, Attems was apparently completely mystified by the extreme length of the solenomerite in *Himantogonus* and associated this genus with *Atropisoma* Silvestri, 1897. Anyhow, a brief examination of the type material of *Himantogonus rufocinctus* and *Paranedyopus subcylindricus* in the Geneva museum has shown that there exists a gross similarity between the two species, not only in the external morphology but also with regard to the basic characters of the gonopods. The proposed synonymy, therefore, seems fully justified.

In 1968 I also distinguished an unnamed generic category to accommodate both "*Sundanina*" *simplex* (Humbert, 1865), from Ceylon, and "*Orthomorpha*" *ursula* Attems, 1936, from India (Jeekel, 1968: 82). Having been in the position to examine the gonopods of the first of these two species, I have come to the conclusion that, at least for the time being, it may be best to bring

them under the generic heading of *Paranedyopus* too. It is evident that the two species are related more closely to each other than to *P. rufocinctus* and *P. subcylindricus*. Since, however, quite a number of related species will be discovered in the future, the proper discontinuity may be established and formalized in a later period.

It seems that *Paranedyopus* in its present concept takes the same taxonomic position towards *Anoplodesmus* Pocock, 1895, as *Parchondromorpha* does towards *Chondromorpha*. In both cases we have a genus in which the paranota are weakly developed (*Paranedyopus*, *Parchondromorpha*) opposed to a genus with well developed paranota (*Anoplodesmus*, *Chondromorpha*). It is also remarkable that the differentiation in the gonopods within *Anoplodesmus* and *Chondromorpha* is weak, whereas at least in *Paranedyopus* this differentiation is considerable. It will be interesting to see how the genus *Parchondromorpha* will develop with the discovery of new forms.

Paranedyopus rufocinctus (Carl, 1932)

Himantogonus rufocinctus Carl, 1932: 455, figs. 50-51; Attems, 1937: 223, fig. 281.

Paranedyopus rufocinctus; Jeekel, 1968: 81.

Material. — The type-series of this species in the Geneva museum consists of 12 ♂ and 5 ♀ specimens. Of these a ♂ has been designated lectotype, and the other specimens paralectotypes.

Description. — The following notes were made to supplement Carl's original description.

Body somites: Pleural keels represented by a curved ridge, dorsally demarcated by a furrow which curves upwards caudally and parallels the posterior margin of the sides up to the level of the paranota. The pleural keels remain visible up to the 13th or 14th somite.

Paranota: dorsoventrally rather wide, especially in the poriferous somites.

Sternites: of middle somites about as long as wide, with a distinct transverse furrow and a weak, wide longitudinal excavation. Sternite of 4th somite broad. Sternite of 5th somite with a short lamella, much broader than long, distally slightly emarginate. Remaining part of sternite with a distinct transverse impression but otherwise scarcely modified. Sternite of 6th somite with a weak

transverse furrow, longitudinally faintly concave, slightly lower than the normal sternites. Sternite of 7th somite without latero-anterior calluses.

Gonopods: (fig. 3) The drawings given by Carl, although sufficiently accurate to warrant the recognition of the species, are somewhat confusing, because the caption of fig. 51 is wrong. The illustration gives a medial aspect of the gonopod and not the lateral aspect as stated. As will be seen, the gonopods have the typical features of the Sulciferini, as displayed for instance in *Anoplodesmus*. Coxa of medium length and width, straight. Prefemur somewhat elongate. Femorite stout, of medium length, without clearly indicated postfemoral section. Its medial side characterized by the presence of a deep pit, and a medio-caudal lobe. Spermial channel running along the medio-anterior side of the femorite. Tibiotarsus consisting of three main processes, a basal process of somewhat irregular shape, a solenophore ending in an expanding shell-like lamina, and a large distal process which has its caudal margin strongly fringed. Solenomite arising from the medio-anterior end of the femorite, rather broad at base, but soon becoming narrow, then widening to a ribbon and finally

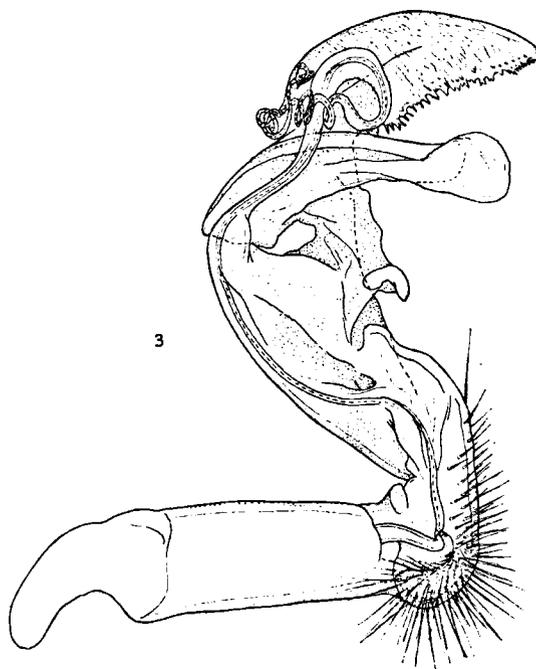


Fig. 3. *Paranedyopus rufocinctus* (Carl, 1932), lectotype ♂, left gonopod, medial aspect.

tapering again in an extremely long thin flagellum which is curved in a spiral. Apparently this long terminal section of the solenomerite is normally contained in the shell-like expansion of the solenophore.

Paranedyopus subcylindricus Carl, 1932

Paranedyopus subcylindricus Carl, 1932: 452, figs. 44-49; Attems, 1937: 141, fig. 178.

Remarks. — This species has been well characterized by its author and was only briefly examined. In most of its characters it closely resembles *P. rufocinctus*. It was noted that in spite of Carl's statement, the process of the sternite of the 5th somite in the male is not entirely absent. It is actually represented by a pair of very low ridges.

Paranedyopus simplex (Humbert, 1865), new comb.

Polydesmus simplex Humbert, 1865: 34, pl. 3 figs. 14-14C, pl. 5 fig. 14d.

Strongylosoma simplex; Pocock, 1892: 149.

Orthomorpha simplex; Carl, 1932: 424, fig. 5.

Sundanina simplex; Attems, 1937: 164.

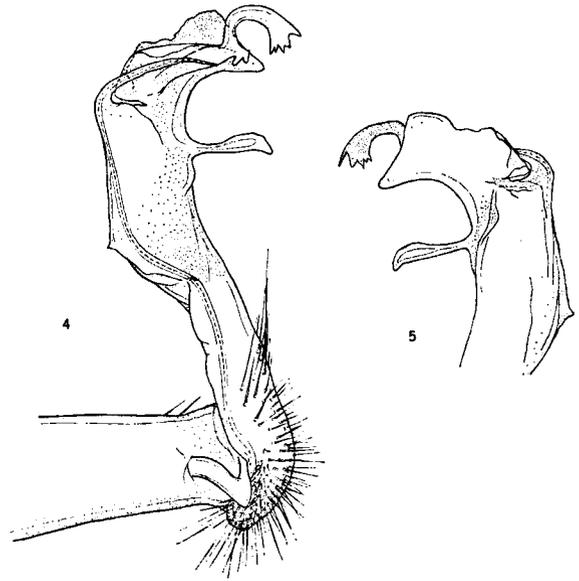
Orthomorpha greeni; Attems, 1937: 85 fig. 105.

Not: *Strongylosoma greeni* Pocock, 1892: 149, pl. 2 fig. 14.

Material. — Of this species the Geneva museum has a gonopod and a leg, labelled Pundaloya, which Carl probably kept from the specimen he studied in 1932 and which belongs to the British Museum.

Description. — Although the drawings of the gonopods as given by Humbert, Carl and Attems serve the purpose of identification of the species very well, the opportunity was taken to examine them once again in order to verify some details necessary for a proper generic allocation.

Gonopods: (figs. 4-5) with coxa straight and relatively slender. Prefemur somewhat elongate ovoid, its longitudinal axis almost in line with the axis of the femorite. Femorite elongate, slender at base, slightly constricted about halfway and widening distally. Anterior side with a small triangular lobe. Postfemoral section not demarcated. Spermal channel running along the medial side of the femorite, towards the base of the solenomerite which arises from the anterior side of the apex of the femorite. Connection between tibiotarsus and femorite, very broad, resulting in a quite proximal position of the basal process of the tibiotarsus. Re-



Figs. 4-5. *Paranedyopus simplex* (Humbert, 1865), ♂ from Ceylon, Pundaloya, left gonopod. 4: medial aspect; 5: lateral aspect of distal portion.

mainder of tibiotarsus composed of a solenophore and a distal process. Solenophore with a lamina medialis, its apex produced into a semicircular hyaline lobe which is irregularly serrulate terminally. Distal process of tibiotarsus apically obliquely truncate. Solenomerite broad at base but rapidly tapering and finely acuminate.

Remarks. — It is of importance to note here that in *Paranedyopus*, just like for instance in *Anoplo-desmus*, the gonopods have a clear demarcation between femorite and tibiotarsus on their lateral side (fig. 5). The tibiotarsus seems to be broadly attached to the medial side of the apical part of the femorite. On the other hand, the demarcation between the femoral and postfemoral sections of the gonopods appears to be completely absent. In this respect the gonopods of *Paranedyopus* are quite different from those of *Pyragrogonus* (cf. fig. 2) and of *Parchondromorpha* (cf. fig. 9). Particularly in the latter genus the postfemoral section is very sharply demarcated, with the tibiotarsus arising from its medio-caudal side. Probably these structural differences, which have been generally neglected so far, will play an important role in the future classificatory evaluation of the genera involved.

Paranedypopus ursula (Attems, 1936), new comb.

Orthomorpha ursula Attems, 1936: 202, fig. 32; Attems, 1937: 89, fig. 113.

Remarks. — Although the drawings of the gonopods by Attems are not entirely satisfactory with regard to the possibilities of comparison, they are sufficient to establish the relationship of *P. ursula* with *P. simplex*. *P. ursula* differs in the wider distal half of the gonopod femorite and in the shape and disposition of the tibiotarsal branches, which are directed slightly more mesad and proximad. In the width of the femorite *P. ursula* approaches *P. subcylindricus* and *P. rufocinctus*.

Parchondromorpha nov. gen.

Generic diagnosis. — Medium-sized Paradoxosomatidae with 20 somites and a normal poreformula. Head without particulars. Antennae of moderate length.

Somites weakly constricted. The waist rather narrow, dorsally finely longitudinally ribbed. Metatergites slightly coriaceous, hairless. Transverse furrow present from the 5th to the 18th somite. Pleural keels present up to just behind the middle of the body.

Paranota weakly developed, without produced caudal edges.

Sternites of middle somites about as long as wide. Cross impressions weakly developed but distinct. Sternite of 5th somite of male with a broad bilobate process between the anterior legs. Legs rather long, without sexual modifications in the male, except for the tibial and tarsal scopulae which are present only in a few anterior pairs of legs.

Gonopods with coxa straight. Prefemur ovoid, its longitudinal axis almost in line with the axis of the femorite. Femorite elongate, the postfemoral section laterally distinctly demarcated. Medial side of femorite in the basal half with a longitudinal fold. More distally on medio-anterior side a small lobe. Spermal channel running along the medial side of the femorite towards the base of the solenomerite which arises from the anterior side of the apex of the femorite. Tibiotarsus arising from the posterior side of apex of femorite, consisting of a slender solenophore and a basal process. Soleno-

merite slender, tapering towards apex, its distal half sheathed by the laminae lateralis and medialis of the solenophore.

Type-species. — *Orthomorpha coonoorensis* Carl, 1932.

Remarks. — The relationship between the type-species of this new genus and *Chondromorpha* Silvestri, 1897, was already observed earlier (Jeekel, 1968: 82). Actual examination of the type material has confirmed the basic similarity of the structure of the gonopods of *Orthomorpha coonoorensis* and *Chondromorpha*, but also the wide diversity in the external morphology. In general the femorite of the gonopods is relatively shorter in *Chondromorpha*, with the tendency of the prefemur to become more elongate. The morphology of the somites in *Chondromorpha* differs in the presence of well developed paranota, of a dense granulation and setation, and the absence of distinct pleural keels.

Parchondromorpha, *Chondromorpha* and *Echinopeltis* Jeekel, 1979, seem to form a group of genera within the Sulciferini characterized by the presence in the gonopods of a well developed solenophore and a basal tibiotarsal process, and the lack of the distal tibiotarsal process which is found in the more typical members of the tribe such as e.g. *Anoplodesmus* Pocock, 1895, and *Oxidus* Cook, 1911.

Parchondromorpha shares with *Echinopeltis* the weak development of the paranota, but the latter genus is distinct in having the solenophore of the tibiotarsus apically split, and the metasomites densely granular and pubescent and without pleural keels.

Parchondromorpha coonoorensis (Carl, 1932)

Orthomorpha coonoorensis Carl, 1932: 427, fig. 8; Attems, 1937: fig. 106.

Material. — The type-series in the Geneva museum consists of 6 ♂ and 2 ♀ specimens. One of the ♂ specimens, which Carl obviously primarily used for his description, was designated as lectotype, the remaining specimens as paralectotypes.

Description. — The following notes were made to supplement Carl's original description.

Head and antennae: Labrum rather deeply

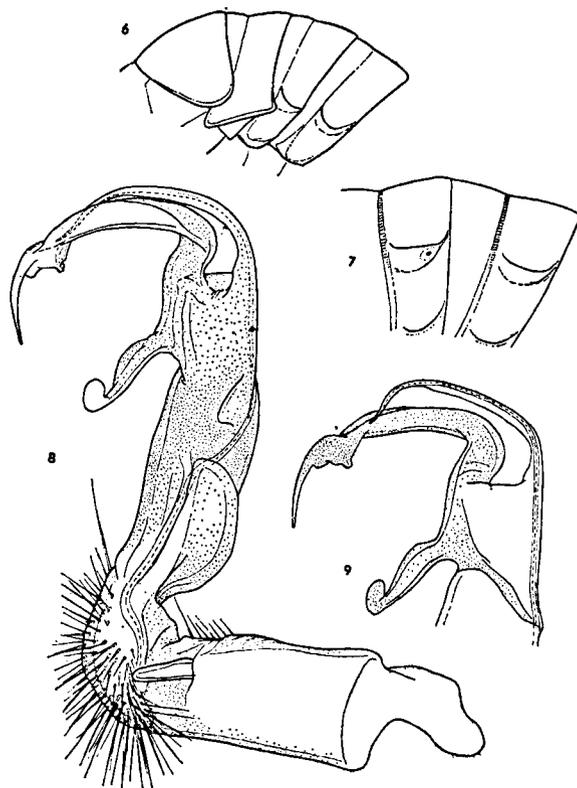
emarginate. Lateral margin of clypeus widely rounded, widely emarginate near the labrum. Headplate moderately setiferous up to between the antennal sockets. Antennal sockets separated by almost one and one third times the diameter of a socket or by just over half the length of the 2nd antennomere. Vertigial sulcus weakly impressed above, a little deeper below, ending just above the upper level of the antennal sockets. Antennae of moderate length and moderately stout, very slightly clavate. Length of antennomeres decreasing from the 2nd to the 6th, the 6th antennomere about three quarters of the length of the 2nd. Pubescence of antennae moderate in the basal part to dense towards the apex.

Body somites: weakly constricted; the waist rather narrow, rather sharply demarcated from prosomites. Prosomites dulled by fine cellular structure. The waist distinctly but finely longitudinally ribbed down to just below the level of the paranota. Metatergites shiny, slightly coriaceously wrinkled. Transverse furrow of metatergites almost obsolete in the 5th somite weakly impressed in the 6th, becoming distinct from the 7th somite onwards. Pleural keels without caudal lappets, dorsally demarcated by a furrow curving upward near posterior margin of somite as in *Pyragrogonus willeyi*.

Paranota: see figs. 6-7.

Sternites and legs: Sternites of middle somites one and one sixth times broader than long. Cross impressions distinct but rather weakly impressed. Sternite of 5th somite of male with a broad bilobate process directed obliquely cephalad, two times broader than long, almost occupying the entire width between the coxae of the anterior pair of legs. Caudad of process a weak transverse furrow; the caudal half of the sternite deeply longitudinally excavate and scarcely raised above the ventral level of the metasomal ring. Sternite of 6th somite deeply excavated and caudally hardly raised above the ventral level of the ring. Tibial and tarsal brushes, composed of relatively short setae, present only in a few anterior pairs of legs. Relative length of podomeres: 3rd > 6th > 2nd > 5th > 4th; the 6th podomere three fifths of the length of the 3rd, the 5th just over half the length of the 6th.

Anal somite: Epiproct as in *Pyragrogonus wille-*



Figs. 6-9. *Parchondromorpha coonoorensis* (Carl, 1932). 6: collum and 2nd to 4th somites of a paralectotype ♂, lateral aspect; 7: 10th and 11th somites of same, lateral aspect; 8: right gonopod of lectotype ♂, medial aspect; 9: distal portion of left gonopod of same, lateral aspect.

yi. Hypoproct triangular with the apex obtusely angular, acuminate. Setiferous tubercles somewhat projecting outside the margin.

Gonopods: (figs. 8-9).

Harpagomorpha nov. gen.

Generic diagnosis. — Medium-sized Paradoxosomatidae with 20 somites and a normal poreformula. Head without particulars. Antennae of moderate length.

Somites weakly constricted; the waist of moderate width, dorsally with longitudinal ribs. Metatergites strongly longitudinally rugose, in most somites with a series of six produced teeth along the caudal margin. Transverse furrow absent. Pleural keels present up to the 18th somite.

Paranota moderately developed, with an acuminate caudal edge. Dorso-ventral diameter rather wide, dorsal demarcation sharp, no ventral demar-

cation. Poriferous somites similar to poreless, the pore situated on dorsal surface, mesad of furrow, not visible from a lateral view.

Sternites of middle somites much wider than long. In posterior somites distinct sternal cones at base of each caudal pair of legs. Cross impressions obsolete, only a transverse furrow between the successive coxal sockets. Sternite of 5th somite of male with a well-developed process between the anterior legs. Legs of moderate length, in the male with tibial and tarsal brushes in the anterior half of the body. No other sexual modifications.

Gonopods with a relatively long and slender coxa. Prefemur ovoid, its axis almost in line with the axis of the femurite. Femurite long and slender, the postfemoral section laterally distinctly demarcated. Spermial channel running along the medial side. Solenomerite arising from the anterior side of apex of femurite, rather long and slender. Tibiotarsus consisting of a solenophore only, which has a number of secondary processes, and which curves strongly in a caudal, proximal and finally anterior direction. Lamina lateralis well developed, with a large process near the base at caudal side. Lamina medialis rather strongly developed, and bearing two additional processes besides the somewhat expanding laminate apex proper of the tibiotarsus.

Type-species. — *Orthomorpha dentata* Carl, 1932.

Remarks. — It has been suggested (Jeekel, 1968: 83) that *Orthomorpha dentata* Carl, a species described from the Indian peninsula, deserves a generic status of its own. It was pointed out that, especially with regard to similarities in the structure of the tibiotarsus of the gonopods, it might have a certain relationship with *Orthomorphella pekuensis* (Karsch, 1881) from northern China and Japan. Differences in the gonopod structure mainly concern an additional process near the apex of the tibiotarsus in *O. dentata* which is lacking in *Orthomorphella*, and the shape of the femurite. On the other hand some very peculiar and unique features of the external morphology of *O. dentata*, such as the shape of the paranota, the position of the pores of the repugnatorial glands, the sculpture of the metatergites, etc., strongly support a generic status of this species.

The allocation of *Orthomorphella* Hoffman, 1963, and *Harpagomorpha* nov. gen. in the tribe Sulciferini is tentative. In fact, both genera seem to have certain relations with the tribes Orthomorphini and Hylomini, and may represent transitions between the Sulciferini on the one hand and the Orthomorphini and Hylomini on the other.

The wide separation of the distributional areas of *Orthomorphella* and *Harpagomorpha* may be an argument to regard the two genera as relicts of an ancient morphological link between Sulciferini and the two other tribes.

Harpagomorpha dentata (Carl, 1932)

Orthomorpha dentata Carl, 1932: 428, figs. 9-13; Attems, 1937: 90, fig. 115.

Material. — The type material in the Geneva museum consists of 3 ♂ specimens. One of these has been selected as lectotype (the gonopods are stored in a small separate tube), the others are labelled as paralectotypes.

Description. — The following notes were made to supplement the original description.

Width: Lectotype and paralectotype each 2.8 mm; the other paralectotype is much smaller and was initially mistaken for a juvenile specimen. Its width is 2.1 mm.

Collum: Width slightly less than the head. Subtrapezoidal in dorsal outline; the middle surface rather weakly convex, becoming more strongly convex towards the lateral sides, the lateral sides somewhat appressed to the body. Anterior border of collum straight in the middle, widely rounded more laterally, and widely concave towards the lateral sides. Lateral border widely rounded, with a bluntly angular edge. Posterior border weakly and widely concave in the middle, widely convex laterally down to the edge which is slightly produced caudad.

Body somites: Prosomites dulled by a fine cellular structure, rather sharply demarcated from the waist. Waist of moderate width, dorsally with longitudinal ribs, laterally and ventrally finely longitudinally striate. Pleurae finely and densely longitudinally rugulose. Pleural keels present up to the 18th somite; up to the 17th somite with sharply pointed produced caudal edges which are project-

ing slightly behind the caudal border of the somites.

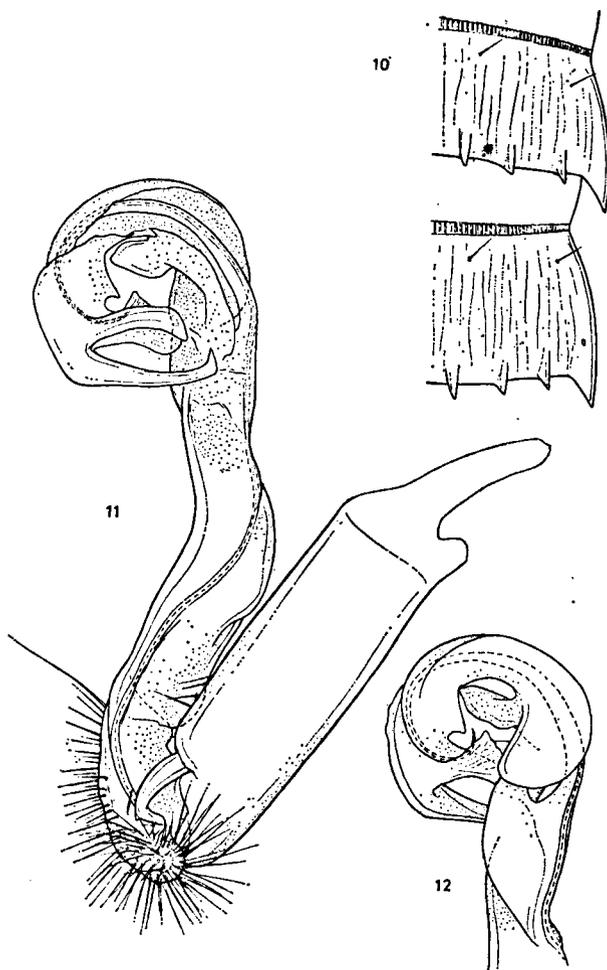
Paranota: (fig. 10) Second somite as wide as collum; the 3rd and 4th somites each a little wider than the preceding ones.

Sternites and legs: Sternites of middle somites two times wider than long, with especially in the posterior somites sternal cones at the base of the caudal pair of legs. No cross impressions, only a transverse furrow between the anterior and posterior coxal sockets of each sternite. Pubescence moderately dense; surface finely rugulose. Sternite of 5th somite with a parabolically rounded process, broader than long. No setae on the anterior surface. Transverse impression behind the base of the process abortive; the caudal half of the sternite with a triangular excavation which is level with the ventral surface of the metasomal ring. On each side an isolated tuft of setae. Sternite of 6th somite deeply excavated and level with the ventral side of the metasomal ring, except near the coxal bases; the surface with four tufts of setae. Sternite of 7th somite without calluses. Legs of moderate length, rather stout; those of anterior half of body with tibial and tarsal brushes.

Anal somite: Epiproct dorsoventrally thick; the setiferous tubercles weakly pronounced. Apex of epiproct with a pair of rather widely separated and rather long, acuminate cones directed backwards and slightly downwards.

Gonopods: (figs. 11-12) Coxa long and slender, straight, with some sparse hairs laterally near apex. Coxal hook bearing a small tooth at the edge. Lateral demarcation between prefemur and femur oblique. Femorite slightly curved backwards, post-femoral section clearly demarcated on lateral side. Solenomerite rather long and slender, gradually tapering, sheathed by the laminae lateralis and medialis of the tibiotarsus. Tibiotarsus near base with a subtriangular process, and at the apex with a slender elongate and apically uncate process and a shorter lanceolate prong. The functional apex expanding triangularly.

Remarks. — Although one of the paralectotypes is much smaller than the other and the lectotype, no structural differences could be found either in the gonopods or in the external morphology preventing its reference to the species. Only the spini-



Figs. 10-12. *Harpagomorpha dentata* (Carl, 1932), lectotype ♂. 10: right side of 14th and 15th somites, dorsal aspect; 11: right gonopod, medial aspect; 12: distal portion of left gonopod, lateral aspect.

form processes along the caudal margin of the metatergites are slightly less developed than in the larger specimens.

Antichirogonus nov. gen.

Generic diagnosis. — Small-sized Paradoxosomatidae with 20 somites and a normal pore formula. Head without particulars; antennae short.

Somites moderately constricted; the waist rather broad, without sculpture. Metatergites smooth, with some sparse hairs or rather densely pubescent. Transverse furrow well impressed, without sculpture. Pleural keels weakly developed, present only up to the 4th somite.

Paranota weakly developed in 2nd, 3rd and 4th and in the poriferous somites, absent in the poreless ones.

Sternites somewhat longer than wide, weakly setiferous, with moderately developed cross-impressions. Sternite of 5th somite of male with a well-developed process between the anterior coxae. Sternite of 7th somite without particulars. Legs of moderate length, rather stout, without modifications in the male, except the tibial and tarsal scapulae which are present in the legs of the anterior half of the body.

Gonopods with short coxa. Prefemur subovoid, its longitudinal axis not in line with the axis of the femorite. Lateral demarcation between prefemur and femorite transverse. Femorite of moderate length, rather stout; a postfemoral section not demarcated. At caudal side of apex of femorite a short thumblike process curving a little cephalad. Spermal channel running along the medio-anterior side of the femorite towards the base of the solenomerite. Solenomerite of moderate length, arising from the medio-anterior side of apex of femorite. Tibiotarsus arising from the latero-caudal side of the apex of the femorite, consisting of a solenophore only, which curves widely in a caudal and somewhat lateral direction. Lamina lateralis well developed, reaching well proximad of basis of solenomerite, ending distally in a rounded triangular lobe. Lamina medialis also rather well developed, arising about halfway from the lamina lateralis and reaching far distad of terminal lobe of lamina lateralis. Apex of tibiotarsus serrulate, and with a slight rounded production. Solenomerite gradually tapering, applied to medial side of lamina lateralis and, more distally, to lateral side of lamina medialis.

Type-species. — *Sundanina laevisulcata* Carl, 1932.

Remarks. — This new genus, which includes besides the type-species also *Sundanina hirta* Carl, 1932, both from the Indian Peninsula, was referred to as an unnamed generic category in the classificatory outline of the Paradoxosomatidae (Jeekel, 1968: 87). Although it is clearly referable to the subfamily Paradoxosomatinae, its tribal status was considered doubtful.

In 1968 the paradoxosomatid fauna of the Indian Peninsula and Ceylon as far as not referable to the subfamily Alogolykinae was classified in the tribes Eviulisomatini, Sulciferini, Hylomini, Cnemodesmini and Xanthodesmini. With neither of these *Antichirogonus* shows any particular relationship, and at least within the limits of that fauna the genus clearly deserves a separate tribal status.

Closely related genera are apparently also lacking in adjacent geographical areas, but among the as yet unclassified species mentioned in the 1968 classification at least some may be referable to the same tribe as *Antichirogonus*. Among these must be mentioned "*Orthomorpha*" *kuekenthali* (Attems, 1897) from Borneo and/or Celebes (Jeekel, 1968: 39). This species also could not be classified in the existing system of tribes, and in 1968 was already supposed to be closely related to *Sundanina laevisulcata* and *S. hirta*. It is evident that the gonopods in *O. kuekenthali* are much more complicated in the structure of the tibiotarsus which in addition to the usual lamina medialis and lamina lateralis has a third lamina at least. Also the thumblike process in *Antichirogonus* appears to be replaced by a long rodlike production the nature of which has to be verified yet. *O. kuekenthali* apparently has a similar basal expansion of the lamina lateralis of the tibiotarsus as found in *Antichirogonus*, but a more exact illustration of the gonopods of *O. kuekenthali* is needed before definite conclusions can be reached.

Of greater direct significance perhaps is the possible relationship between *Antichirogonus* and *Polylobosoma* Jeekel, 1980, from Southern China and Indochina. The gonopods of *Polylobosoma roseipes* (Pocock) have been illustrated recently (Jeekel, 1980), and they show, besides a great amount of basal similarity with those of *Antichirogonus*, a particularity which may be of taxonomic importance, i.e. the lateral curvature of the apical part of the tibiotarsus. In connection with the proposal of *Polylobosoma* this structure has been discussed, and it was noted that a similar condition is found in several East Asian genera and as yet unclassified species.

Although *Polylobosoma* was preliminarily referred to the tribe Sulciferini it may be better to eventually set up a new tribe for the genera and

species mentioned earlier in order to make the Sulciferini a more natural group.

***Antichirogonus laevisulcatus* (Carl, 1932)**

Sundanina laevisulcata Carl, 1932: 436, figs. 19-23; Attems, 1937: 163, fig. 202.

Material. — The Geneva museum has two samples of this species. One of these labelled "Vandaravu Sholas" consists of 3 ♂, 2 ♀ and a juvenile ♂ with 19 somites. One ♂ of this sample has been designated as lectotype. The other sample labelled "Sholas bei Mariyonshola, 11-14.iv.1927" consists of 5 ♂, 1 ♀ and a juvenile ♂ with 19 somites. All these additional specimens have been labelled as paralectotypes.

Description. — The following notes were taken to supplement the original description.

Head and antennae: Labrum rather deeply emarginate. Lateral margin of clypeus not emarginate. Pubescence of clypeus moderately dense up to the lower part of the vertex. Antennal sockets separated by one and a quarter times the diameter of a socket or by four fifths of the length of the 2nd antennomere. Antennae distinctly moniliform, with the 2nd to 5th antennomeres obconical. 6th antennomere thickest. Antennomeres of subequal length; pubescence consisting of relatively long hairs.

Body somites: (fig. 13) Prosomites dulled by a minute cellular structure; metatergites shiny. Constriction moderate; the waist rather broad, shiny, without sculpture. Pleurae smooth or slightly wrinkled. Pleural keels of 2nd to 4th somites weakly developed, without caudal lappets.

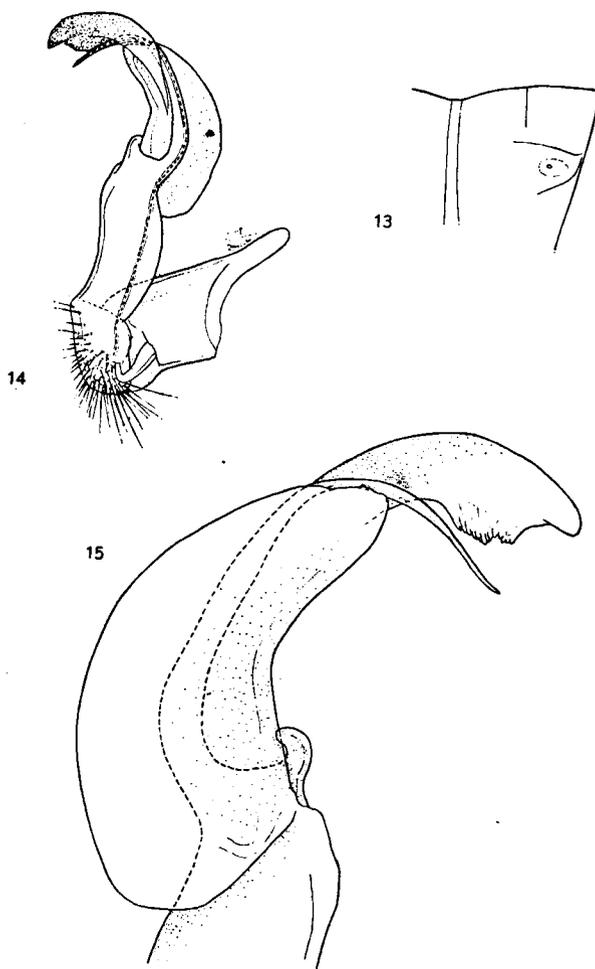
Sternites: Process of sternite of 5th somite of male half as wide at base as the intercoxal space. Pubescence of process consisting of long hairs, no typical brush. Caudad of process a deep transverse impression, and a longitudinal impression between the posterior coxae. Sternite of 6th somite deeply longitudinally excavated, the impression widening in the middle to a rhomboid form. Sternite of 7th somite without latero-anterior lobes or swellings.

Gonopods: (figs. 14-15) see generic diagnosis.

***Antichirogonus hirtus* (Carl, 1932)**

Sundanina hirta Carl, 1932: 439, figs. 24-26; Attems, 1937: 164.

The single ♂ specimen, the holotype, on which this



Figs. 13-15. *Antichirogonus laevisulcatus* (Carl, 1932). 13: left side of 12th somite of a paralectotype ♂, lateral aspect; 14: right gonopod of lectotype ♂, medial aspect; 15: distal portion of same, lateral aspect.

species was based is preserved in the Geneva museum. *A. hirtus* is easily distinguished from the type-species of the genus by the characters indicated by Carl.

Subfamily Alogolykinae Hoffman

The original tribal concept of the Alogolykini as initiated by Hoffman (1963) was extended and the group was raised to the rank of a subfamily, which included apart from the Alogolykini s. str. a second tribe, Polydrepanini (Jekel, 1968). The two tribes were distinguished from each other primarily by the relative length of the femorite of the gonopods, the former having a strongly reduced femorite, the latter a femorite of normal length.

The diversity of the gonopod structure in the subfamily Alogolykini is quite considerable. A very simple structure is found in "*Strongylosoma*" *montigena* Carl, 1935, in which the gonopod has a solenomerite, a simple spinelike tibiotarsus arising from the medio-posterior side of the apex of the femorite, and a little spine on the latero-anterior side of the femorite, which may represent a femoral process. The solenomerite is relatively strongly developed, stout and entirely free, whereas the other branches are small, simply acuminate prongs.

In extreme contrast with this structure the gonopods of the genus *Polydrepanum* Carl have a long flagelliform solenomerite which is for the greater part enfolded by a strongly developed laminate tibiotarsus. Typically the solenomerite makes a loop at the base, which resembles the condition found in the genus *Aphelidesmus* Brölemann, belonging to the taxonomically unrelated family Euryuridae. At the base, the tibiotarsus in *Polydrepanum* has one or two smaller branches, the homology of which is uncertain.

The examination of some species of the Polydrepanini, including the type-species of *Polydrepanum*, has revealed some important deficiencies in the descriptions and drawings of the gonopods by previous authors. Apparently, the course of the spermal channel in the femorite has been misinterpreted or at least incorrectly indicated. Actually, a number of genera of the Alogolykinae are characterized by a gonopod acropodite which is torced near the junction of prefemur and femorite, resulting in a course of the spermal channel along the lateral side of the femorite.

Another extreme type of gonopod is found for instance in *Tetracentrosternus* Pocock, where the femorite is completely reduced. The three main branches, solenomerite, tibiotarsus and, possibly, femoral process arise here directly from the apex of the prefemur.

Phenomena like the torsions of the acropodite and reductions of the femorite have occurred independently in several totally unrelated groups of polydesmid millipedes, and it is not possible to assign any relative classificatory significance to either of these evolutionary tendencies.

Contrary to the previous characterization of the tribes Alogolykini and Polydrepanini, it seems bet-

ter to give prevalence to the torsion of the acropodite as a character for distinguishing the two tribes, if only for purely geographical reasons. Whereas the reduction of the acropodite occurs throughout the range of the subfamily, the torsion of the femorite appears to be restricted to, and seems to characterize all the Alogolykinae of the Indian peninsula and Ceylon. Therefore, the Polydrepanini are henceforth characterized by a torced acropodite, the Alogolykini by an untorced acropodite in which the spermal channel runs along the medial side. In both tribes the femorite may vary between normal length and complete reduction.

As a result the classification of the genera of the Alogolykinae is modified as follows.

Tribe Alogolykini Hoffman.

The three genera originally referred to this tribe in 1968 are not reallocated. However, *Singhalorthomorpha* Attems, recently removed from the Eviulisomatini and placed in this tribe (Jeekel, 1980) actually belongs to the Polydrepanini. On the other hand, three genera assigned to the Polydrepanini should find a place among the Alogolykini. The latter tribe then consists of the following genera:

Alogolykus Attems, 1936 - 1 species - Burma

Tetracentrosternus Pocock, 1895 - 1 species - Burma

Yuennanina Attems, 1936 - 2 species - Southern China

Delarthrum Attems, 1936 - 1 species - Pakistan (Punjab)

Pocockina Jeekel, 1965 - 1 species - Burma

Orophosoma Jeekel, 1980 - 2 species - Nepal, Tibet.

Possibly to be associated with this tribe are certain species from northern India and Burma which have not yet been properly allocated as to genus, either because the gonopods are to be re-examined or the male characters are unknown.

"*Kronopolites*" *unicolor* Attems, 1936 - India (Assam)

"*Kronopolites*" *spiniger* Attems, 1936 - India (Assam, Sikkim)

"*Strongylosoma*" *montigena* Carl, 1935 - India (Sikkim)

"*Orthomorpha*" *bisulcata* Pocock, 1895 - Burma

"*Orthomorpha*" *coexisternis* Pocock, 1895 - Burma
Similarly uncertain is the status of *Trogodesmus* Pocock, 1895 (syn. *Attemsina* Hoffman, 1963) with five species in India (Assam) and Burma. The gonopods in this genus suggest those of *Orophosoma*, but a re-examination is needed.

Tribe Polydrepanini.

After the removal of *Delarthrum*, *Pocockina* and *Orophosoma* and the addition of *Singhalorthomorpha*, this tribe consists of the following genera:

Dasypharkis Attems, 1936 - 2 species - India

Gyrodrepanum Carl, 1932 - 1 species - India (also introduced in the Fiji Island)

Polydrepanum Carl, 1932 (syn. *Grammorhabdus* Carl, 1932) - 2 species - India

Singhalorthomorpha Attems, 1914 - 3 species - Ceylon

Probably this tribe has also the genera:

Telodrepanum Carl, 1932 - 1 species - India

Xiphidiogonus Carl, 1932 - 3 species - India

and the not yet properly classified species:

"*Polydrepanum*" *implicatum* Carl, 1941 - India

"*Sundanina*" *granulifera* Attems, 1936 - India

"*Sundanina*" *trifida* Carl, 1941 - India

Polydrepanum tamulum Carl, 1932

Polydrepanum tamulum Carl, 1932: 434, figs. 16-18; Attems, 1937: 152, fig. 189.

Material. — Of the original type series of 6 specimens, the Geneva museum has 1 ♂ and 1 ♀ cotype, whereas the remaining 2 ♂ and 2 ♀ specimens are obviously preserved in the British Museum (Natural History), London.

Description. — The following notes were taken from the cotype ♂ to supplement the description by Carl.

Head and antennae: Sides of clypeus widely emarginate near the labrum. Frontal region rather convex. The antennal sockets separated by about seven tenths of the length of the 2nd antennomere. Vertex rather convex, the sulcus well impressed, but not reaching the upper level of the antennal sockets. Antennae moderately stout, hardly clavate. Relative length of antennomeres: 2nd < 3rd = 4th = 5th > 6th, the 6th antennomere only slightly shorter than the 2nd.

Collum: almost as wide as the head. The lateral sides rather widely rounded.

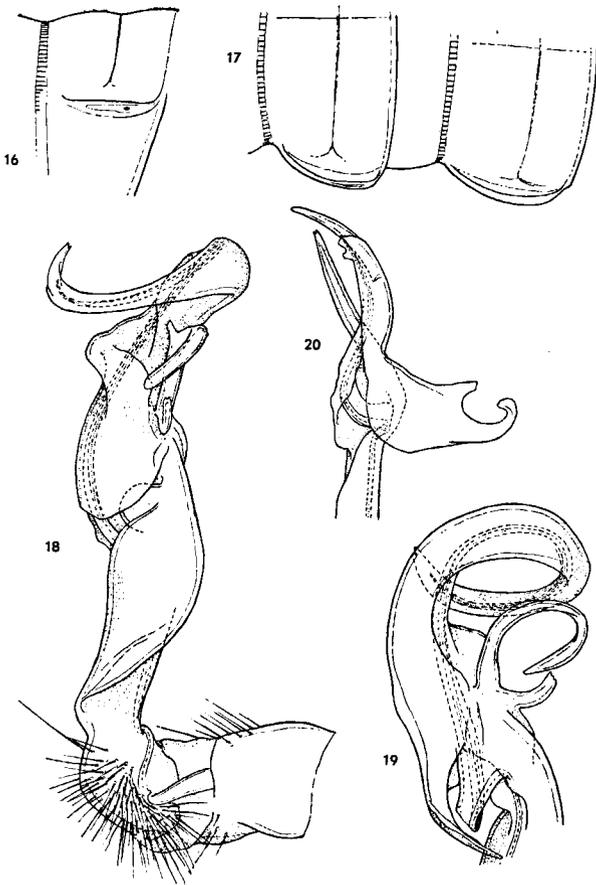
Body somites: Sides granular in the lower part. Along the posterior margin a well impressed pre-marginal furrow running upwards to the level of the paranota. Pleural keels present up to the 4th somite. In the 5th to 7th somites only a small rounded posterior lappet.

Paranota: (figs. 16-17) 2nd somite much wider than the collum. Its paranota laterally rounded, with a well separated tooth at the latero-anterior edge; the posterior edge projecting slightly behind the caudal margin of the somite; 3rd and 4th somites subequal in width and somewhat narrower than the 2nd, the caudal edge of the 3rd slightly projecting caudad.

Sternites and legs: Sternites of middle somites as long as wide, with well developed cross-impressions. Sternite of 5th somite with a thick process between the anterior coxae, consisting a thick base tapering into a broadly rounded laminate apex, which on the anterior surface has a thick brush of minute setae. The process is directed mainly ventrad and only slightly cephalad. Posterior side of the base with a pair of low cones. Transverse furrow distinct, but not deeply impressed. Posterior part normal. Sternite of 6th somite deeply concave between the coxal sockets and not raised above the ventral level of the metasomal ring. Sternite of 7th somite with a rather strongly developed ridge latero-cephalad of the gonopod aperture. Legs of moderate length, rather stout, but not particularly incrassate. Relative length of podomeres: 3rd > 6th > 5th > 4th = 2nd; the 6th podomere five sevenths of the length of the 3rd and one and one quarter times the length of the 5th.

Anal somite: Epiproct with a pair of well developed pre-apical setiferous tubercles and a pair of terminal cones. Hypoproct subtrapezoidal with the caudal margin convex. Setiferous tubercles rather well developed, projecting slightly caudad.

Gonopods: (figs. 18-19) Coxa short, with a setiferous area covering the anterior, lateral and posterior sides of the distal part. Prefemur short. Femorite rather long and stout, torded at base so that the spermal channel runs along the lateral side. Tibiotarsus long, directed distad and laterad a



Figs. 16-19. *Polydrepanum tamulum* Carl, 1932, cotype ♂ from Madras. 16: left side of 10th somite, lateral aspect; 17: left side of 10th and 11th somites, dorsal aspect; 18: right gonopod, medial aspect; 19: distal portion of left gonopod, latero-anterior aspect.

Fig. 20. *Polydrepanum asperrimum* (Carl, 1932), lectotype ♂, distal portion of right gonopod, medial aspect.

little, then curving mesad and caudad and finally laterad and distad again. The tibiotarsus consists of a large, complicated lamellate solenophorous structure, which almost completely enfolds the solenomerite. Near its basis it has on the medio-anterior side two prongs curving towards each other: the basal one short, the distal one longish, bearing halfway its length a small lateral process. Solenomerite long, flagelliform, curving proximad at its very base, then caudad, and distad, following the curvature of the tibiotarsus.

Polydrepanum asperrimum (Carl, 1932)

Grammorhabdus asperrimus Carl, 1932: 441, figs. 27-30; Attems, 1937: 152, fig. 190.

Polydrepanum asperrimum; Jeekel, 1968: 84.

Material. — The type material in the Geneva museum consists of 2 ♂ and 3 ♀ specimens. The ♂ from Neutral Saddle has been labelled as lectotype, the other specimens, including the single ♂ from Tandikudi, as paralectotypes.

Description. — The following notes were made to supplement the original description by Carl.

Head and antennae: Antennal sockets separated by three fifths of the length of the 2nd antennomere. Frontal region not inflated. Vertigial sulcus well impressed, but not reaching the upper level of the antennal sockets. Antennae rather stout, rather distinctly clavate. 6th antennomere four fifths of the length of the 2nd.

Body somites: Pleural keels of 2nd to 4th somites represented by distinct caudal lappets. From 5th somite onwards represented by a granulated swelling above the anterior coxal sockets, and a caudal lappet which continues upwards along the caudal margin of the sides in a low premarginal ridge. The caudal lappet remains visible up to the 8th or 9th somite.

Paranota: very similar to those of *P. tamulum*, but more prominent. The lateral furrow of the marginal callus a little longer. The upper furrow of the marginal callus continues as a premarginal furrow along the caudal border of the metatergite and reaches almost the middle.

Sternites and legs: Sternites of middle somites as long as wide, with rather weakly developed cross-impressions. Sternite of 5th somite of male with a well-impressed transverse furrow; its caudal half almost normal. Sternite of 6th somite strongly flattened and scarcely raised above the ventral level of the metasomal ring. Legs as in *P. tamulum*, but slightly stouter and shorter.

Anal somite: Epiproct and hypoproct as in *P. tamulum*.

Gonopods: (fig. 20) Differing from those of *P. tamulum* in the more slender femorite. The basal lamella of the tibiotarsus greatly enlarged and broadly produced cephalad, ending in a hook-like structure. On the lateral side near the base of the tibiotarsus arises a long spinelike process point-

ing distad; more towards the apex a shorter similar process pointing in the same direction. Both processes projecting distad of the apex of the solenophorous part of the tibiotarsus which is only weakly curved.

Dasypharkis rugulosa (Carl, 1932)

Orthomorpha rugulosa Carl, 1932: 421, figs. 3-4.

Dasypharkis rugulosa; Attems, 1936: 224, fig. 43; Attems, 1937: 143, fig. 180.

Material. — Of this species a cotype ♂ from Pumbarai in the Geneva museum has been studied. **Description.** — The following notes were made to supplement Carl's and Attems's descriptions.

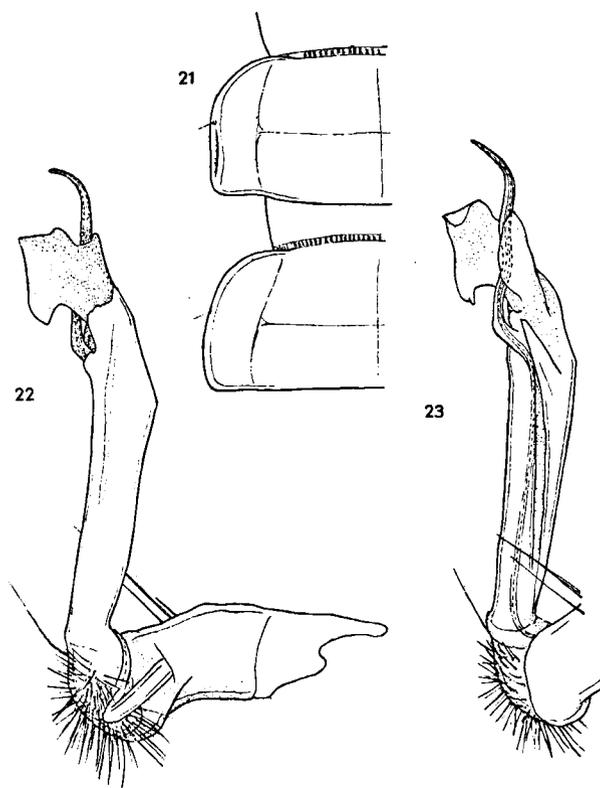
Head and antennae: Headplate including the vertigial part coarsely wrinkled. Pubescence moderate up to the frontal region. Antennal sockets separated by eight ninths of the length of the 2nd antennomere. Vertigial sulcus rather deeply impressed but not reaching the upper level of the antennal sockets. Relative length of antennomeres: 3rd > 2nd = 4th = 5th > 6th; the 6th antennomere equal to four fifths of the length of the 3rd.

Collum: a little wider than the head, sausage-shaped or elongate reniform in dorsal outline. Surface with two rows of setae; the caudal half with a median sulcus. Lateral sides slightly raised, widely rounded, the marginal rim narrow.

Body somites: Prosomites silky. Metatergites from the 2nd somite onwards with a median furrow, from the 4th onwards also with a transverse furrow which is faintly striolate. Waist of moderate width, distinctly ribbed, shiny like the metatergites. Sides rugulose granulose. Pleural keels faintly indicated in the 2nd and 3rd somites. Along the caudal margin of the sides a distinct premarginal furrow running upwards to the level of the paranota.

Paranota: (fig. 21) with rather narrow marginal rims. The poriferous somites with the pores situated laterally in a distinct longitudinal impression; sometimes a weak hair in front of this impression and a similar hair in the corresponding position on the poreless paranota.

Sternites: of middle somites about as long as wide; pubescence moderate to rather weak. Cross impressions weakly developed; the transverse furrow present only between the successive coxal



Figs. 21-23. *Dasypharkis rugulosa* (Carl, 1932), cotype ♂ from Pumbarai. 21: left side of 10th and 11th somites, dorsal aspect; 22: right gonopod, medial aspect; 23: left gonopod, lateral aspect.

sockets, the longitudinal furrow obsolete, and replaced by a wide and weakly impressed longitudinal excavation.

Anal somite: finely coriaceous. Lateral granules of epiproct weakly developed; the apex with two small paramedian cones.

Gonopods: (figs. 22-23) Coxa short, slightly curved caudad. Prefemur short ovoid, its longitudinal axis somewhat oblique on the axis of the femorite. Femorite relatively long and slender, without demarcated postfemoral section. Spermial channel running along the anterior side of the prefemur directly towards the lateral side of the femorite towards the base of the solenomerite which arises from the lateral side of the apex of the femorite. Near the base of the solenomerite a spiniform process pointing distally. On the medial side the femorite is somewhat produced distad of the base of the tibiotarsus.

Remarks. — Although Carl and Attems both gave good illustrations of the gonopods of this species, they failed to indicate clearly the exact course of the spermal channel. The fact that the spermal channel runs on the lateral side of the femorite from its very basis onwards throws an entirely new light on the relationship of the species. Instead of being related to the genus *Delarthrum* Attems, 1936, as was suggested earlier (Jeekel, 1968: 85), the genus seems to be related to *Polydrepanum*, and falls clearly in the redefined concept of the Polydrepanini. Perhaps it is nearly related to "*Sundanina*" *granulifera* Attems.

ACKNOWLEDGEMENTS

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