AUSTRALIAN MUSEUM SCIENTIFIC PUBLICATIONS

Verhoeff, K. W., 1928. On Diplopoda in the Australian Museum, Sydney. *Records of the Australian Museum* 16(2): 79–115, plates vi–xii. [24 January 1928].

doi:10.3853/j.0067-1975.16.1928.782

ISSN 0067-1975

Published by the Australian Museum, Sydney

ON DIPLOPODA IN THE AUSTRALIAN MUSEUM, SYDNEY.

By

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(Plates vi-xii.)

CONTRIBUTION 101 ON DIPLOPODA.

(*Translated by C. Anderson, M.A., D.Sc.*)[1]

I have recently completed a description of the Diplopoda collected in Australia by Dr. Mjöberg's Expedition.[2] This work demonstrates once more that our knowledge of Australian Diplopoda is still very incomplete. Of forty-four forms examined by me only one was previously known, and of twenty-eight genera eighteen are new. Moreover, it must be taken into consideration that most of the older descriptions are so defective that recognition according to the much higher scientific standards of to-day is almost impossible, the more so as, for the most part, the morphological and general concepts of the older authors cannot be brought into line with those now prevailing.

Dr. Anderson, Director of the Australian Museum, has been good enough to forward to me a series of the Diplopoda contained in the collection of that museum. These are from New South Wales, and make possible an important increase in our knowledge of the Australian fauna. I wish to express my gratitude to Dr. Anderson for his kindness in entrusting to me the description of the collection; some of the new forms have been dedicated to him.

1. Opisthandria-Chorizocerata *Verh.* 1910.

Family SPHÆROTHERIIDÆ.

In the paper previously referred to I have established a new morphological basis and also a new morphological conception and nomenclature for the treatment of these giant pill millipedes (Riesenkugler), and I would now refer the reader to that paper, especially to my key to the Sphærotheriid genera.[3] The only Australian Sphærotheriid previously known with certainty was *Cyliosoma* Pocock, to which in 1924 I added the genus *Cyliosomella*

[1] The translation was submitted to the author before being printed.
[2] Verhoeff.—Arkiv f. Zool., K. Svens. Vetenskapsakad., XVI, No. 5, 1924, pp. 142, 5 plates. This is my 97th and 98th contribution on Diplopoda, which, unfortunately, is not indicated on the publication.
[3] Verhoeff.—*Loc. cit.*, pp. 56-60.

from Queensland.[4] The forms described in the present paper show that these two genera occur in New South Wales also, so that we may assume that they are characteristic of the whole of Eastern Australia, and especially of the elevated portions of that region. On page 43 I have compared the most important characters of the two genera, but I must add that the co-telopods (*Nebentelopoden*) of *Cyliosoma* have a uniform syncoxal cross-bar, whilst those of *Cyliosomella* have *separated coxites*, which, however, are united in the median region. The differences in the shape of the thoracic shield emphasized by me hold also for the following new species, so that these habitually very similar genera can be easily distinguished by examining the thoracic shield with a magnifying glass. As regards the cyphopods I refer the reader to the remarks below.

CYLIOSOMA *Pocock.*

1. Key according to external characters.

(*a*) Back more *yellowish brown*, the posterior borders of the tergites dark brown. Bitelotergite *but slightly* shining, densely covered *all over* with *rather strongly developed* punctations, with intervening wrinkles, which, however, are not reticulate, sloping posteriorly at an angle of 55°. In front of the posterior border of the bitelotergite the male has an unpaired roundish *pit* with scattered short bristles ..... 1. *excavatum* n. sp.

(*b*) Back *dark brown*, more or less uniform in colour, at the most the collum and lateral portions of the thoracic shield lighter in colour. Bitelotergite shining, in places almost devoid of sculpture, but for the most part *very finely* and more or less closely punctate; very finely wrinkled on the sides, the wrinkles arranged predominantly in a reticulate manner .. *c*, *d*

(*c*) Bitelotergite of the females (at least in the older specimens) with a *ridge-like* longitudinal fold (*gratartige Längswulst*) behind the middle; in the male behind the middle is a *very deep pit*, into which from the front protrudes a longish *hump* (*Buckel*), with a dense *brush* on the posterior end; posterior border projecting in a *rounded obtuse* angle, the *middle densely clothed with short bristles*, between bristles and posterior border an excavated, pitted, posterior portion, which slopes at an angle of 55° .... 2. *penicilligerum* n. sp. (*Paracyliosoma*)

(*d*) Bitelotergite of the female *without* markings, male with various but less conspicuous markings, and in particular never with a deep double pit divided by a hump ..... *e*, *f*, *g*

(*e*) Bitelotergite of the male rounded-truncate posteriorly, in the posterior third an elevated median stripe covered with felted hairs, and on each side of this a broad roundish impression. Femoral process of the telopods tapering regularly and smooth on the edge. Femoral lobes of the co-telopods directed endwise and smooth also. The tibiotarsus is elongated and *bent obliquely* towards the end ..... 3. *queenslandicum* Bröl.

(*f*) Bitelotergite of the male with a rounded off and *oblique angled* projection posteriorly; in the posterior third a median rather broader, longish, densely pilose area, transversely depressed in front of the pilose region, so that in profile it appears somewhat S-shaped. Telopods and co-telopods as before ..... 4. *queenslandicum mjöbergi* Verh.

[4] Verhoeff.—*Loc. cit.*, pp. 43-44, 48-49.

(*g*) Bitelotergite of the male rounded off and truncate posteriorly, the posterior third with a rounded triangular, broad, densely punctate area with scattered hairs, the region of this area *flattened*, so that in profile, posterior to the middle, it slopes *evenly*. Femoral process of the telopods curved somewhat towards the end, finely *dentate* on the inside anterior to the end. On the co-telopods the femoral lobe is more strongly bent inwards, finely serrated on the end, the tibiotarsus roundish and completely inserted in the hollow of the femur and therefore directed inwards .. 5. *denticulatum* Verh.

2. Key according to the Telopods and Co-telopods.

(*a*) Femoral process of the telopods *reaching almost to the end of the* tibiotarsus.

× Femoral process curved slightly inwards. Syncoxite horns *divided into two points*, which are bent outwards, a longer outer and a shorter inner one. Tibiotarsus of the co-telopods *close* against the prefemoral lobe, the femur reaching far over it ..... 1. *excavatum* n. sp.

×× Femoral process directed *straight endwise*. Syncoxite horns with a single termination. (?) Tibiotarsus of the co-telopods widely *separated* from the prefemoral lobe, only slightly overlapped by the femur .... 2. *penrithense* Bröl.

(*b*) Femoral process of the *telopods* reaching only *about as far as the middle* of the tibiotarsus; syncoxite horns as in *excavatum* ..... *c*, *d*

(*c*) Stridulating band on the tibiotarsus of the telopods strongly bent and much nearer to the *outer* than to the inner border; femoral process *broadly rounded-truncate* on the end. Prefemur of the co-telopods 1½ times broader than long, the inner lobe constricted on the inside towards the base. Femur simply rounded on the outside .... 3. *penicilligerum* n. sp. (*Paracyliosoma*)

(*d*) Stridulating band on the tibiotarsus of the telopods less strongly bent, considerably nearer to the inner than to the outer border; femoral process simply rounded-*triangular*. Prefemur of the co-telopods about as long as broad, the inner lobe *not* constricted on the inside towards the base. Femur simply rounded on the outside or obtusely angulated.

4. *queenslandicum* Bröl.
5. *queenslandicum mjöbergi* Verh.
6. *denticulatum* Verh.

} See former key.

CYLIOSOMA EXCAVATUM *sp. nov.*

Female 21½ to 27½ mm. long by 10 to 13½ mm. broad, male 22 × 9½ mm. In general similar to the *Cyliosoma* species above, resembling *queenslandicum* both in shape and sculpture. Collum smooth and shining, without markings or bristles. This species is distinguished not only by the colour but also, in particular, by the sculpture of the bitelotergite, which, in contrast to the other tergites, is but slightly shining, on account of its being very strongly punctate and wrinkled. The dense sculpture extends over the whole surface to the edges. Posterior border of the bitelotergite is semicircular, in profile sloping posteriorly at an angle of 55°, flattened in the middle third; in this flattened area occurs a large, unpaired, roundish, but shallow pit containing short scattered bristles. The inferior wall of the lateral lobes has a longitudinal furrow and longitudinal band as in *queenslandicum*, approaching

the lateral edge in front and behind. In the latter it reaches almost to the anterior border, but here it is considerably shorter.

On the co-telopods (Pl. vi, fig. 4) the prefemur broadens inwards into a rounded lobe, well covered with bristles, and on the whole more than one and a half times broader than long. The rounded-conical tibiotarsus is deeply inserted in the femur close behind the prefemoral lobe, and the slender femur, which is considerably longer than broad, and is inclined inwards, projects far beyond the tibiotarsus.

On the telopods (Pl. vi, fig. 1) the prefemoral process is bent inwards somewhat, and extends endwise almost as far as the tibiotarsus. The latter carries posteriorly, and much nearer to its inner than its outer edge, a curved *stridulating band,* which consists of 22 to 25 transverse ridges (*Querwülste*) (Pl. vi, fig. 2), which, like a *file,* are ribbed by parellel, curved, extremely fine bands. In the young male the stridulating band lies about in the middle between the inner and the outer border. Syncoxite of the telopods in the male and young male similar in form, but in the male (Pl. vi, fig. 3) the coxite horns (*pr.*), which are bent outwards and somewhat *backwards,* extend far beyond the lobes, while in the young male, on the contrary, the lobes extend somewhat farther. In the young male the inner border of the tibiotarsus is almost straight, in the male it is decidedly bent, and, generally, the whole tibiotarsus is more strongly curved inwards. The femoral process has in the male a membranous accessory lobe, but close to the tibiotarsus this is hidden as in Pl. vi, fig. 1. The three segments of the telopod-telopodite have the usual long *slender* bristles, which are present in *queenslandicum* also. On the femur these are scattered over almost the entire surface, but are more abundant posteriorly.[5]

Occurrence.—New South Wales. Several specimens, some from the Upper Richmond River (April), some from an unknown locality.

The genus *Cyliosoma* is divided by me into *two subgenera*:

(*a*) *Cyliosoma* s. str. Antennæ with *four* olfactory cones, the bitelotergite of the male with various markings, unpaired or paired shallow pit, with a tubercle or a felted protuberance (*Wulst*), or a setigerous area, but never with a deep concavity. Prefemur with simple bristles only (the remaining species).

(*b*) *Paracyliosoma* n. subg. Antennæ with *seven* olfactory cones, the bitelotergite with short horseshoe-shaped, very deep pit

[5] How little systematic significance the tarsal spines have was observed by me in the case of a specimen of *queenslandicum* (among others) which on the tarsus of the last pair of legs in front of the claw has on the left one spine, on the right two.

(Pl. vi, fig. 7), and a protuberance therein with a broad brush. Telopods, particularly on the prefemur, with pencil-like bristles (only *penicilligerum* Verh.).

Cyliosoma penicilligerum *sp. nov.*

Male $18\frac{1}{2} \times 8$, largest female $23 \times 9\frac{1}{2}$ mm. *Collum with sparse rather coarse punctations with long erect bristles.* The thoracic shield and other tergites shining and very weakly sculptured, slightly wrinkled in a reticulated fashion on the inner areas of the thoracic shield. Sculpture of the bitelotergite likewise very fine, the sides especially with very fine striæ; in the female on the posterior third is a ridge-like median protuberance, which passes on each side into slight impressions (a feature which is, however, merely indicated in the younger females). In the male, in which the posterior border of the bitelotergite, in contrast to the almost semicircular form in the female, projects forward in an obtuse angle, the posterior half has in the middle third a very deep, short, horseshoe-shaped *pit* (Pl. vi, fig. 7), into which projects from in front a broad *protuberance,* which ends posteriorly about in the middle of the pit in a broad and very dense *brush.* In front of the brush the protuberance is covered with scattered and rather long bristles, and behind it the posterior part of the pit falls at an angle of 45°, and, like the posterior border, is covered with short bristles, the latter almost brush-like in density. Undersurface of the lateral lobes with longitudinal bands and furrows as in *queenslandicum.*

On the co-telopods the prefemur (Pl. vi, fig. 6) rises more steeply on the inside than in the preceding species, the femur is much shorter, more deeply inserted in the prefemur, and more broadly rounded terminally, hence it projects but slightly over the tibiotarsus. The telopods (Pl. vi, fig. 5) are characterized not only by their shortness but also by their broad, oblique, terminal truncation. The stridulating band is strongly curved and is close to the outer border; it consists of twenty ridges, the bands file-like as in the other species, but the bands are not so closely set as in the foregoing species. The syncoxite horns scarcely extend beyond the lobes, and are at the same time not bent back but directed obliquely outwards and endwise. More than all others this species is distinguished by the fact that the telopods have a border of *pencil-like* bristles, which, on the prefemur, occur scattered on the posterior surface, while on the exterior part of the femur and the base of the tibiotarsus they are restricted to two small groups. These *bristle pencils* are not only *much thicker* than those occurring in other species but they also taper much less towards the end.

Occurrence.—New South Wales. A female and four males from North Dorrigo, collected by A. Musgrave.

Cyliosoma queenslandicum *Brölemann.*

Male 28-30 × 13-15 mm., female 33-39 × 15½-17 mm. The longitudinal ridge (*Längswulst*) on the bitelotergite of the male appears as a narrow, yellowish, longitudinal brush. If this is removed a very fine dense punctation is revealed, which contrasts sharply with the almost smooth surrounding area, in particular with the shallow pits on either side. Body dark chestnut-brown, only the anterior border and the lateral lobes of the thoracic shield, as well as the collum, are more or less greyish-yellow.

Occurrence.—Several specimens from the Upper Richmond River, New South Wales (April), and from another unknown locality, among them three males.

Remarks.—I particularly direct attention to the fact that Bröleman's illustration of the telopods[6] is scarcely correct. In all *Cyliosoma* species examined by me the horns of the syncoxite are divided terminally into two branches as in my Pl. vi, fig. 3 (*pr.*), and I am convinced that this holds also for *Brölemann's* species. On the telopods of *queenslandicum* the stridulating band has only 20 to 21 *ridges,* and these are again file-like as in Pl. vi, fig. 2. The *stridulating band* differs from those of the two preceding species, not only in its *slightly S-shaped curvature,* but also in that it terminates at a certain distance from the end of the tibiotarsus, and then comes a rather distinct marginal piece without ridges. Of the genus *C. queenslandicum* is apparently the species most widely distributed in Eastern Australia.

The Cyphopods of Cyliosoma.

The three foregoing species can be distinguished according to the cyphopods.

(*a*) Termination about *as long as broad,* rounded-triangular, slightly *emarginated* on the outside ..... *queenslandicum*

(*b*) Termination decidedly *broader* than long, *not* emarginated on the outside.

× Termination scarcely so long as the outer basal piece, stalk of the receptaculum seminis long ..... *penicilligerum*

×× Termination somewhat longer than the basal piece, stalk of the receptaculum seminis short ..... *excavatum*

Cyliosomella *Verhoeff.*

In my cited work on Dr. Mjöberg's Diplopoda I was able to describe the male only. My opinion that the females also would differ generically in the cyphopods is confirmed by what follows. The cyphopods in *both* genera consist of *three* separate segments.

[6] Brölemann.—Rec. Austr. Mus., x, 1913, Pl. xiv, fig. 3.

CYLIOSOMA (female).

Cyphopods *much exceeded* on the outside by the coxæ of the second pair of legs, therefore much narrower than those. The two basal pieces extend downwards to an almost equal extent, but, although the inner appear somewhat shorter, the outer are never pushed behind the inner. The two basal pieces therefore have a *common basal border*, and the stalk of the receptaculum seminis extends to this. At its base the terminal piece is transversely bounded or forwardly bent towards the base; it does not extend to, or only slightly into the region of the prefemur.

CYLIOSOMELLA (female).

Cyphopods unusually large, the *same breadth as the coxæ* of the second pair of legs. Of the two basal pieces, the outer, which is in general twice as large as the inner, *extends far behind the latter*, so that there is no common basal edge. At its base the end piece is terminally emarginated in its full width, and at the same time it extends as far as the middle of the prefemur.

For the two *Cyliosomella* species, namely, my earlier *castaneum* from Queensland[7] and the new species from New South Wales, I give here a summary of the most important differences.

CYLIOSOMELLA CASTANEUM *Verh.*

Bitelotergite of the male with elongated *tubercles* (*Höcker*) before the posterior third, otherwise weakly punctate. Femoral process of the telopods distinctly *shorter* than the tibiotarsus, the latter *without* stridulating ridges. Accessory lobe (*Nebenlappen*) of the femoral process triangular. Femoral process of the co-telopods *not* distinctly marked off, slightly emarginate on the terminal border and without accessory lobes. Tibiotarsus without *serrations* (*Höckerchensäge*) at their ends; the syncoxal processes of the telopods are produced in triangular points but these are not specially defined.

C. ANDERSONI *sp. nov.*

Bitelotergite of the male *without* tubercles, but anterior to the middle of the posterior border is a shallow *pit*, which with the area near it is densely clothed with short bristles; the sides of the bitelotergite are wrinkled with fine striæ. Femoral process of the telopods extends forward almost as far as the tibiotarsus; the accessory lobe is broadly rounded. Tibiotarsus with a distinct series of *stridulating tubercles* on the inside. On the syncoxal processes the end is fully rounded and the accessory processes are sharply defined there against. Femoral processes of the co-telopods are sharply and fully *marked* off at the base, *deeply* emarginate on the terminal border, and with membranous accessory lobes on the inside. Terminal joint of the co-telopods with *serrations*.

CYLIOSOMELLA ANDERSONI *sp. nov.*

Male $23\frac{1}{2}$-$27\frac{1}{2} \times 11$-12 mm., female 32-36 × 16-$16\frac{1}{2}$ mm. Antennæ with four olfactory cones, the sixth segment slightly cask-shaped and emarginated, $1\frac{3}{4}$ times longer than broad, also $1\frac{3}{4}$ times longer than the fifth segment. Thoracic shield as in *castaneum*. Collum smooth and shining, with only a small pit behind the anterior border. Transverse row and boldly projecting ciliary bristles.

[7] Verhoeff.—*Loc. cit.*, pp. 48-49.

Tergites predominantly smooth and shining with only sparse and fine punctations. Inner lobe of the thoracic shield with fine wavy wrinkles.

Bitelotergite finely but rather densely punctate, with fine wavy wrinkles on the sides; a shallow but distinct longitudinal *impression* in front of the middle of the posterior border. This and the area near it is rather more strongly punctate, and at the same time more densely covered with very short disparate (*abstehende*) bristles, and also with some scattered longer ones. Bitelotergite forming a rounded arc, the posterior descending *perpendicularly,* a fine marginal furrow in front of the posterior border. Inferior wall of the lateral lobes very close behind the anterior border, and with a black, shining, extremely short, narrow, oval protuberance (*Wulst*), but without furrow.

On the cyphopods of the female (compare above) the terminal piece is triangular, the outer side $1\frac{2}{3}$ times longer than the inner. Base of the receptaculum tapers in a triangular form and then passes into a stalk. Tarsus of the last pair of legs of the male has one spine in front of the claw on the outside and seven on the inside.

The *co-telopods* (Pl. vii, fig. 8), which I have previously dealt with, have on the tibiotarsus a stridulating band consisting of 8-9 slight simple tubercles without file-like ridges. On the stridulating band of the telopods also (Pl. vii, figs. 9, 10) only simple tubercles are to be seen, and file-like ridges such as are found in *Cyliosoma* are absent.

The femur is distinctly longer than the prefemur (in distinction to *Cyliosoma*) and about as long as broad. The spinescence (*Beborstung*) of the telopods is simple; the bristles therefore are long and thin. In front of the termination of the femoral process one can see on the inside a small swelling (*Wulst*). Between the two pincers (*Zangenarmen*) projects a rather large, rounded, membranous lobe on the inner base of the femoral process (Pl. vii, fig. 10). The processes of the syncoxite extend beyond the coxal lobes, are broadly rounded on the end, and produced outwards in short, simple and blunt projections. For further details I would refer to Pl. vii, figs. 9 and 10.

Occurrence.—Several specimens from the Upper Richmond River, New South Wales, have been examined.

Cyliosomella andersoni dorrigense *subsp. nov.*

Male 27 × 12 mm. This is distinguished from *andersoni* by a *scattered but coarse punctation* on the thoracic shield and the succeeding tergites. It differs in particular in the structure of the bitelotergite, on which the dense simple punctation is more strongly impressed. In addition there are irregular scattered corrugation pits (*Runzelgrübchen*). The posterior half is covered

in the middle with short scattered bristles with some longer ones in between, but neither a *pit nor a swelling* is developed; the bitelotergite does not descend vertically behind, but slopes at an angle of about 70°.

Antennæ with four olfactory cones, but on one of the two antennæ, in addition to the four normal larger olfactory cones, there are also two abnormal and more slender ones (hence the enumeration is 4 + 2).

Occurrence.—The single male comes from North Dorrigo, New South Wales, collected by A. Musgrave.

II. POLYDESMOIDEA.

Family STRONGYLOSOMIDÆ.

In my work on Mjöberg's Australian Diplopoda[8] I have dealt with the morphology of the Strongylosomid gonopods, and in regard to the new forms described below I make the following observations.

The six new genera, namely, *Paraulacoporus, Myallosoma, Rhopalowales, Walesoma, Leucotessara* and *Hoplatessara,* show us once more the greatest variation in the structure of the gonopods, and particularly in the expansion of the femur, the development of its lateral rami (*Nebenäste*), the size, position, and form of the solænomerite and of the tibiotarsus, the relative size of both, and particularly their condition of separation or union. In the work mentioned above I have also stressed the necessity for taking into consideration more than formerly the structure of the sides of the pleurotergites of the body, namely the lateral folds (*Seitenwülste*), lateral furrows (*Seitenfurchen*), and the position of the repugnatorial pores (*Wehrdrüsenporen*). Forms which from consideration of the gonopods show themselves to be the closest allies also show agreement or great similarity in the structure of the sides of the body. On the other hand, forms in which the structure of the sides of the body is very similar may nevertheless have very differently shaped gonopods, for example, *Australiosoma* and *Walesoma,* or *Paraustraliosoma* and *Leucotessara.* Certain primitive characters are again found among the new forms. Thus *Myallosoma* (Pl. vii, figs. 12, 13) has on the tibiotarsus, behind the femoral lateral ramus, a basal portion separated off by a constriction on the outside, but in *Leucotessara* (Pl. ix, fig. 20) this basal portion (*tt*) is not merely marked off on both sides by a constriction (*y*), but on the outside there is a deep incision, so that the terminal portion is separated from the base by a neck. In both cases we have to deal with demarcation which we must refer to the primary articulation between tibia and tarsus. The demarcated termination with its hook-like process in *Leucotessara* (Pl. ix, fig. 20, *c*) suggests a *terminal claw* (*ungulum*), a condition which,

[8] Verhoeff.—*Loc. cit.*, pp. 3-8, 12-15.

moreover, forcibly recalls that of *Australiosoma hamuligerum* Verhoeff.[9] The primitive complete separation of solænomerite and tibiotarsus is shown among the new forms by *Leucotessara* (Pl. ix, fig. 20) and *Hoplatessara* (Pl. ix, fig. 21), whilst in *Rhopalowales* (Pl. viii, fig. 14) there is only a slight fusion, which is more pronounced in *Myallosoma* (Pl. vii, fig. 12). Gradations in the reduction of the true tibiotarsal section and stronger development of the solænomerite are found in *Paraulacoporus* (Pl. vii, fig. 11) and *Solœnodolichopus* (Pl. x, figs. 24, 26), whilst *Walesoma* (Pl. viii, fig. 16) has only a hooked remnant (*ta*) of the tibiotarsus, and thus forms a transition to the genera which, like *Helicopodosoma* and *Otoplacosoma*,[10] have suffered complete loss of the tibiotarsus.

I must here mention an interesting feature of the *spermatic canal*, which is important also in regard to homologous structures. I refer to an exceptionally developed *loop structure* (*Schleifenbildung*) which forms a *kink* (*Knickung*) in its course. In *Rhopalowales* (Pl. viii, fig. 15 *u*) and *Hoplatessara* (Pl. ix, fig. 22 *d*) this loop can be traced *to the extreme point of the lateral ramus* of the solænomerite; that is the spermatic canal does not run direct to the place where it opens but follows a *very roundabout course*. The beginning of such a detour is found in *Paraulacoporus* (Pl. vii, fig. 11) and *Dicladosoma* (Pl. viii, fig. 18), in which the spermatic passage bends towards the accessory process, but this deviation is so short that it forms only a semicircular arc. In *Rhopalowales* and *Hoplatessara* on the contrary the loop of the spermatic canal traverses the *entire* length of the lateral ramus.

As in my previous paper,[11] I give here also, with reference to the two new genera, two new generic keys, one according to the gonopods, the other on the basis of other characters.

A. Key to Australian Strongylosomidæ according to the structure of the body rings.

(*a*) Body with either lateral folds (*Seitenwülste*) or with narrower or broader lateral wings (*Seitenflügel*); gland pores always widely separated from the lateral furrows ..... *c, d*

(*b*) Never with lateral folds or lateral wings, at the most with lateral furrows, and then the gland pores are situated in or close to them, but often the lateral furrows are completely lacking (only the collum and second or second-fourth pleurotergites are different) ..... *l, m*

(*c*) Body with short but true lateral wings, those of the second pleurotergite the largest; they form ear-shaped plates, rounded anteriorly and posteriorly, and extend laterally farther than the remaining lateral wings; seen from above they project unusually far obliquely forward and outward over the collum ..... 1. *Otoplacosoma* Verh.

(*d*) Body with folds or lateral wings, those of the second pleurotergite never exceptionally strongly developed ..... *e, f*

[9] Verhoeff.—*Loc. cit.*, pp. 26-27, fig. 15.
[10] Verhoeff.—*Loc. cit.*, pp. 28, 31, figs. 17-19.
[11] Verhoeff.—*Loc. cit.*, pp. 9-12.

(*e*) Most of the lateral folds are produced posteriorly into more or less strongly developed *points at the posterior angle*, the folds exceptionally deep on the inside near these points ..... *g*, *h*

(*f*) Most of the lateral folds *completely rounded behind*, only some of the most anterior ones (second-fourth) produced into points behind .... *i*, *k*

(*g*) Posterior angle point shorter and rounded off, gland pores situated behind the middle of the folds, not contiguous either to the posterior angle or to the inferior border Lateral furrows strongly bent inwards in front, rather widely separated from the suture.

× First pair of legs of the male has on the femur a strong process on the inside, and an almost hemispherical gibbosity (*Aufwölbung*) on the outside, also the postfemur is almost hemispherically convex on the outside without pegs (*Zapfen*) between the coxæ of the tenth pair of legs.

α Legs with light and dark rings, back with V-shaped white markings on the metazonites ..... 2. *Dicladosoma* Bröl.

β Legs not ringed, back uniformly dark in colour .... 3. *Hoplatessara* g. n.

×× Process on the femur of the male displaced backwards, femur and prefemur less swollen, the latter only slightly bent on the outside. Back brown, with broad light-yellow longitudinal bands in the middle.

α Two elongated *pegs* between the coxæ of the tenth pair of legs of the male ..... 4. *Myallosoma* g. n.

β No pegs between these coxæ ..... 5. *Rhopalowales* g. n.

(*h*) Posterior angle point longer and more acute.

× Gland pores on the interior border of the lateral folds. Lateral furrows bent only slightly inwards, running almost straight along the suture in front but at some distance from it. Process on the femur of the first pair of legs of the male; this is obtuse and displaced somewhat backwards. Body uniformly black in colour ..... 6. *Helicopodosomella* Verh.

×× Gland pores placed exteriorly, only a little removed from the termination of the posterior point. Lateral furrows curved inwards in strong arcs even anterior to the middle, a little distance from the suture. Femur on the first pair of legs of the male without process. Body with light and dark rings .... 7. *Mjöbergodesmus* Verh.

(*i*) Lateral folds appear like *very short* lateral wings, which on the second-fourth pleurotergites are produced in triangular posterior points. Two lateral furrows are curved inwards in strong arcs in front, and pursue a short transverse course somewhat behind the suture, and posteriorly they are bent at an angle of almost 90° in front of the posterior margin. Metazonites finely wrinkled as if by a needle point .. 8. *Helicopodosoma* Verh.

(*k*) Lateral folds weaker, the lateral furrows *abbreviated*, very far distant from the suture in front, therefore neither bent in front nor produced behind. Pleurotergites 2-4 without posterior point, or at most with a short angulation.

× Lateral folds of the second-fourth pleurotergites completely *rounded* posteriorly, sternite of the sixth pair of legs of the male *without* marking.

α Coxæ of the seventh pair of legs of the male produced into pegs. First pair of legs of the male with small protuberance on the inside of the femur, not displaced posteriorly ..... 9. *Australiosoma* Bröl.

β Coxæ of the sixth and seventh pair of legs of the male expanded into a bulge on the inside. First pair of legs of the male with a strong process on the inside of the femur ..... 10. *Leucotessara* g. n.

γ Coxæ of the sixth and seventh pair of legs of the male without marking. Femur of the first pair of legs of the male as in *Australiosoma* ..... 11. *Walesoma* n.g.

×× Lateral folds of the second-fourth pleurotergites produced posteriorly in rather sharp angles. Sternite of the sixth pair of legs of the male with two paramedian protuberances. Coxæ of the sixth and seventh pair of legs simple. Protuberance on the first pair of legs displaced posteriorly..12. *Paraustraliosoma* Verh.

(*l*) Instead of the disappearing lateral folds we find *lateral furrows*, and in or on them lie the gland pores. Femur on the first pair of legs of the male without larger process, but with or without pegs .... 13. *Aulacoporus* Verh. ..... 14. *Paraulacoporus* g. n.

(*m*) On the sides of the pleurotergites near the gland pores we find *neither lateral folds nor lateral furrows.*

× Metazonites without transverse furrows, body small, third and fourth pleurotergites without lateral furrows .... 15. *Pseudostrongylosoma* Verh.

×× Metazonites with strong transverse furrows, body larger, third and fourth pleurotergites with deep, curved, lateral furrows .... *Solænodolichopus* Verh.

(Compare also *Antichiropus* Att.)

B. Key to Australian Strongylosomidæ according to gonopods.

(*a*) Gonopods not forked and without lateral rami, twisted helicoidally at the end, the spermatic duct opening on the end of the screw ..... *c, d*

(*b*) Gonopods forked or with many branches, or at least with one lateral ramus, not twisted helicoidally at the end ..... *e, f*

(*c*) The hooked, backwardly bent end of the helicoidal termination is expanded towards the end and concave *like a spoon* .... 1. *Helicopodosomella* Verh.

(*d*) The helicoidal end tapers off gradually.

× Gonopods with a *club-like* termination, from which the helicoid comes off laterally ..... 2. *Otoplacosoma* Verh.

×× Gonopods *without* club, with two sharp bends at the end, small, and with two points ..... 3. *Helicopodosoma* Verh.

(*e*) Femur rather long, with club-like thickening, solænomerite long, fused as far as the middle with the tibiotarsus, which from here appears as a broad, backwardly bent, spoon-like lateral branch .... 4. *Mjöbergodesmus* Verh.

(*f*) Tibiotarsus *never* bent back as a broad spoon-like lateral branch, and at the same time fused as far as the middle with the solænomerite .. *g, h*

(*g*) Femur *several times longer than broad*, therefore very slender, never divided, at least as long as the telopodite, and closely applied to the latter (Pl. viii, fig. 16) ..... *i, k*

(*h*) Femur either scarcely longer than broad, or, if longer than the solænomerite, separated therefrom as far as its base, or the femur is on the whole only poorly developed. Sometimes the femur is somewhat longer than broad, but even then it is shorter than the terminal telopodite (*Resttelopodite*) and not closely applied to the latter ..... *l, m*

(*i*) Telopodite primarily divided behind the end of the femur into solænomerite and tibiotarsus, the latter extending beyond the former .... 5. *Pseudostrongylosoma* Verh.

(*k*) Telopodite simple behind the end of the femur, on which there may be one to two lateral rami, traversed along its length by the spermatic canal; therefore a primary tibiotarsus is not developed.

× The spermatic canal opens at the extreme end of the telopodite, and an accessory process (*Nebenfortsatz*) does not occur either in front or behind the opening of the spermatic canal.

α End of the femoral section with 1-2 accessory processes, femur longer than the terminal telopodite. Femur on the first pair of legs of the male without larger process, with or without small pegs in the same place .... 6. *Aulacoporus* Verh.

β End of the femoral section *without* accessory process, femur scarcely as long as the terminal telopodite. Femur on the first pair of legs of the male with strong process (Pl. viii, figs. 16, 17) ..... 7. *Walesoma* n.g.

×× The spermatic canal terminates *before* the end of the telopodite, and there is an accessory process in front of and behind the opening.

α Femur either without accessory process at the end or with two differing greatly in size; the terminal telopodite on the side opposite to the opening of the spermatic canal and the lateral processes enclosing this, *without* lateral ramus ..... 8. *Solänodolichopus* Verh.

β Femur with two large very similar spine-like processes on the end; the terminal telopodite on the side opposite to the canal opening with a *lateral ramus* which is forked at the end (Pl. vii, fig. 11) ..... 9. *Paraulacoporus* n.g.

(*l*) *Solænomerite* separated from the femur *to the base* of the latter, tapering *lash-like* and enclosed in a sheath of the tibiotarsus. Femur one and a half to twice as long as broad ..... 10. *Paraustraliosoma* Verh.

(*m*) Solænomerite neither lash-like nor sheathed by the tibiotarsus, of very stout form, and resting on the *end* of the femur; the latter only seldom longer than broad, mostly quite short ..... *n, o*

(*n*) Femur quite *without* a lateral ramus on the end. Solænomerite divided into two short branches at the end with a tendency to form an accessory loop (*Nebenschleife*) of the spermatic canal. Solænomerite and tibiotarsus completely separated, the latter without median constriction (Pl. viii, figs. 18, 19) ..... 11. *Dicladosoma* Bröl. Verh. char. em.

(*o*) Femur with *one* or *two* lateral rami on the end ..... *p, q*

(*p*) Solænomerite and tibiotarsus *fused in the basal moiety*, a *forked* lateral ramus on the end of the femur. Solænomerite divided into two branches, one with the spermatic canal opening, the other with a long *accessory loop* (Pl. vii, figs. 12, 13). Prefemur roundish and short, transversely separated from the femur (*gegen das Femur quer abgegrenzt*) .... 12. *Myallosoma* g. n.

(*q*) Solænomerite and tibiotarsus remain primarily *separated* to the end of the femur, or at most are fused in the basal fourth ..... *r, s*

(*r*) End of the femur with only *one* lateral ramus which is *not* forked.

× Solænomerite with three branches at the end, the spermatic canal opening on the middle one, but without accessory loop. Tibiotarsus very large, divided into two segments by a median constriction, bent back, hook-like at the end..... ..... 13. *Australiosoma* Bröl. Verh. char. em.

xx Solænomerite ending in two branches with a large lobe between them, the spermatic canal opening on the bent branch and forming an *accessory loop* on the extended branch. Tibiotarsus smaller and forming a concave cap over the branch containing the canal opening. Prefemur wedge-shaped, pushed sharply forward against the femur, and drawn out (Pl. viii, figs. 14, 15) ..... 14. *Rhopalowales* g. n.

(*s*) End of the femur with *two* long, lanceolate, lateral rami.

x Tibiotarsus club-like on a long stalk, *not* divided into two segments, and without terminal hook. Solænomerite divided into three processes at the end, the spermatic canal opening on the inmost, an *accessory loop* in the middle one (Pl. ix, figs. 21, 22) ..... 15. *Hoplatessara* g. n.

xx Tibiotarsus club-like but divided by a pronounced constriction into *two* segments; with strong hook at the end. Solænomerite with *simple* lobe at the end ..... 16. *Leucotessara* g. n.

1. Walesoma helmsii, *gen. et sp. nov.*

Male $33\frac{1}{2} \times 4$ mm., female $32 \times 4\frac{1}{3}$ mm. Back unicoloured, brownish black, abdomen lighter in colour, legs yellowish. Head with scattered setæ in front and with some pits and longitudinal wrinkles. Vertex furrow deep, three setigerous pits on either side between the antennal pits. Sides of the collum rounded and with deep marginal furrow. Lateral folds of the second pleurotergite projecting posteriorly with rounded tip, the third and fourth fully rounded posteriorly, as well as the succeeding lateral folds. Pores on fifth, seventh, ninth, tenth, twelfth, thirteenth, fifteenth to nineteenth rings therefore exhibiting the typical distribution.

Prozonites dull, metazonites rather shining, with slight wrinkling. Pores about equally distant from the lateral folds. Lateral furrows strongly bent anteriorly, widely separated from the sutures.

Transverse furrows deep, widely separated from the lateral furrows. Sutures finely pearled. The truncated and backwardly directed terminal process with a small point on either side.

Femur of the first pair of legs in the male with strong setigerous process projecting at an obtuse angle over the inner margin. Femur and postfemur slightly arched forward on the outside. Coxæ of the second pair of legs of the male somewhat emarginate at the end near the opening of the vasa deferentia. The downwardly-projecting sternite plate between the triangular coxæ of the sixth and seventh pairs without expansion and without process.

The gonopods (Pl. viii, figs. 16, 17) are characterized by their slender and simple form; femur and terminal telopodite about equally long, demarcated on one side only by a constriction. The slender terminal telopodite has in the middle on the outside a spinous bent process (*ta*), the slight remnant of a free tibiotarsus, and on the inside opposite to this is a slender bent fold (*Wulst*). The basal part of the terminal telopodite between the process and

the end of the femur is to be regarded as a fused solænomerite and tibiotarsus.

The spermatic canal bends inwards slightly at the end in the terminal lobe of the solænomerite, but is without trace of a secondary curvature (*Nebenbiegung*) ; the border of the terminal lobe is finely dentate (Pl. viii, fig. 17).

Occurrence.—Upper Richmond River, New South Wales. Collected by R. Helms (April).

2. PARAULACOPORUS SULCATUS *gen. et sp. nov.*

Male 50 × 5 mm. Body brownish black, greyish-yellow on the abdomen, back with rather broad yellowish *median band,* which continues over the pro- and meta-zonites to the telson. Legs black, brownish on the joints.

Head with setæ in front and punctated with scattered pits; three small setigerous pits between the antennal pits. Vertex with a deep furrow, which broadens anteriorly into a sort of groove and is striated with lateral furrows.

Sides of collum rounded and with marginal furrow. Lateral folds of the second to fourth pleurotergites completely rounded in front and behind. Repugnatorial gland pores distributed as usual, exceptionally dense on the lateral furrows, which are curved anteriorly but do not reach the suture. *Among the lateral furrows* on the flanks are several curved longitudinal furrows, which are in part longer, in part of reduced length. Transverse furrows deep, widely separated from the lateral furrows. Sutures finely pearled. Back dull, finely wrinkled in places on the metazonites. The truncated process of the telson with two small points, an emargination between them. The lateral furrows are more and more *reduced in length* and indistinct on the posterior rings, namely, the fifteenth to nineteenth. One can speak of *rudiments* of the lateral folds inasmuch as near the lateral furrows on the outside, especially on the porigerous rings, a slight *swelling* can still be detected.

Femur on the first pair of legs of the male with strong, setigerous process, displaced slightly backwards. Femur and postfemur only slightly arched on the outside. Coxæ of the second pair of legs as in *Walesoma.* The sternite plate, which expands downwards between the coxæ of the fourth pair of legs, much higher than in *Walesoma,* in the basal moiety almost parallel-sided and naked, in the terminal moiety shaped like the segment of a circle and setigerous. The sixth and seventh pair of legs of the male without special features.

The *gonopods* (Pl. vii, fig. 11) on the end of the long femur with two strong, almost equally large, spinous, secondary processes directed endwise, one showing a slender, the other an expanded

base. The somewhat S-shaped terminal telopodite is an extensive fusion of tibiotarsus and solænomerite. About the middle appears a leaf-like bent *expansion,* finely dentate on the edge, the end projecting in an angulated point. In the terminal third the telopodite is divided into the true solænomerite and a *tarsal branch,* which is bifurcated, and hooked backwards at the end. The solænomerite is a broad leaf, with three projections at the end, the median containing the opening of the spermatic canal. The spermatic canal makes a short secondary loop in the basal projection and the terminal projection juts forward in a triangular point. The median expansion may be regarded as a lateral ramus of a post-femoral or tibial segment. This gonopod can also be regarded as a phylogenetic *forerunner* of that of *Walesoma* (Pl. viii, fig. 16), the tarsal branch unrecognizable in both cases; *Walesoma* retains a rudiment of the leaf-like expansion in a small fold (*w*). The farther the solænomerite extends, as in *Walesoma,* the more all the adjacent parts of the gonopods tend to disappear, until finally only the solænomerite remains, as in *Helicopodosoma* and its allies.

Occurrence.—North Dorrigo, New South Wales, collected by Musgrave, 4th January; two males.

Solanodolichopus *Verhoeff.*

For purposes of orientation I give for the two new species and the three forms previously described by me, a key based on the principal characters.

(*a*) Body with light or dark *longitudinal bands.* Gonopods either with a longitudinal slit on the terminal telopodite and at the same time without lateral ramus on the end of the femur (*teres* Verhoeff), or without such slit and with two lateral rami on the end of the femur, like *rubriventris* (*vittatus* and *dorsalis* Verh.); in the latter the terminal telopodite has in the middle only *one* lateral ramus and a second shorter one behind the lobe with the opening of the spermatic canal. Solænomerite with the canal opening always tapering to *a slender point*[12] 1-3

(*b*) Body *without* light longitudinal band. Gonopods on the terminal telopodite without longitudinal cleft, the solænomerite forming a *broad* expanding lamella ..... *c, d*

(*c*) Metazonites with only very fine sparse wrinkles even in the region above the pores. Body *ringed,* the metazonites for the most part dark brown and the prozonites wine red. Terminal telopodite with only *one* broad, trapezoidal, lateral ramus. End of the femur with a small tooth and a larger spine-like process widely separated from it. Solænomerite almost constant in breadth throughout. Coxæ of the second pair of legs of the male projecting forwards on the inside and slightly excavated (Pl. x, figs. 26, 27) ..... 4. *walesius* n. sp.

(*d*) Metazonites more distinctly and densely wrinkled, especially on the region over the pores. Back brownish black, without rings, only the abdomen passing into a wine red colour. Terminal telopodite with *two* spine-like, therefore slender, lateral rami. End of the femur with a small peg close to a long lateral branch, which is produced in a spine-like manner. Solænomerite somewhat club-shaped (Pl. x, figs. 24, 25). Coxæ on the second pair of legs of the male projecting upwards on the inside, rounded-triangular on the end but not excavated ..... 5. *rubriventris* n. sp.

[12] cp. Verhoeff.—*Loc. cit.,* pp. 20, 21.

SOLANDOLICHOPUS WALESIUS *sp. nov.*

Male 48 × 5 mm., female 48 × 5 mm.

Front of the head with scattered bristles and coarse punctations, sides of the head with longitudinal wrinkles, vertex with a deep median furrow, 3 + 3 small setigerous pits between the antennal pits. Sides of the collum rounded and wrinkled. Lateral edges of the second pleurotergite completely rounded off, third and fourth pleurotergites with curved lateral grooves, the outer edges turned up in a roll (*wulstig aufgeworfen*). Behind the pores of the fifth pleurotergite a short lateral furrow, the lateral furrows completely lacking from the sixth ring onwards, and the lower sides also are without longitudinal wrinkles. Back rather brilliant, also the prozonites, which are very slightly wrinkled. Metazonites with a few scattered wrinkles. Pores large and nearer to the posterior border than to the suture even on the fifth ring, suture finely notched, the transverse furrow deeply incised. Telson process truncated and with two points, with emargination between the points.

The wine-red colour of the prozonites extends on to the anterior bands of the metazonites, which are otherwise dark brown. The lower sides and abdomen are also wine-red, the legs yellowish.

Femur of the first pair of legs of the male with a strongly setigerous process on the inner aspect, strongly arched forward on the outside. Postfemur moderately arched. Second pair of legs as in *Walesoma,* but the three last joints have a dense tuft of hair (in *Walesoma* only on the two last). Plate between the coxæ of the fourth pair of legs as in *Paraulacoporus,* otherwise projecting very far downwards and somewhat forwards, the terminal border rounded-truncate in the middle.

Gonopods (Pl. x, figs. 26, 27) distinguished by a broad, almost trapezoidal, leaf-like, lateral ramus (*a*) in the basal half of the terminal telopodite, which is drawn out into a sharp point. The horn-like bent solænomerite remains almost of the same breadth throughout, is obliquely truncated on the end and runs out into a short blunt process with a small tooth. The spermatic canal makes no accessory loop. Of the two processes on the end of the femur one is small and triangular (*z*), the other large and spinous (*pr.*).

Occurrence.—North Dorrigo, New South Wales, collected by A. Musgrave, 4th January, 1923.

SOLANDOLICHOPUS WALESIUS *sp. nov.*

Male 53 × 5 mm.

Apart from the characters already mentioned this species agrees with the foregoing in its outward form and also in the

structure of the first-seventh pairs of legs in the male. The gonopods (Pl. x, figs. 24, 25) correspond as regards the two processes on the end of the femur (*z* and *pr.*) with those of *vittatus* Verh., yet the longer process on the end is still more strongly produced in a spine-like manner.

The terminal telopodite, on the contrary, is very different in form from that of *vittatus*, and is distinguished by a long solænomerite leaf, which expands in a somewhat club-like manner in the terminal moiety, contains the canal opening on a triangular point on the extreme terminal edge, and near it are several small teeth. The basal half of the terminal telopodite ends on either side in a spinous process (*a*, *b*), and from the longer of these it expands under an obtuse angle, where some short points are found.

Occurrence.—Upper Richmond River, New South Wales, April, one male, three females.

Dicladosoma *Bröl.*, Verh. *char. em.*

The forms which belong here are all very striking on account of their pattern, namely, the light and dark rings of their limbs, which are predominantly dark in colour but light on the ends, and the V-shaped, light, longitudinal stripes on the metazonites. The telson process is truncate and rounded without sharp points or angles. The three forms in front of me are therefore distinguished from one another by the following characters.

(*a*) Tibial segment of the tibiotarsus of the gonopods only slightly excavated terminally, *without* transverse ridge (*Leiste*) and *without* recurved lobes, with simple rounded lobes opposite the end of the solænomerite, the end of the tibia with longish lamella, rounded to triangular in shape, without deep emargination between this and the anterior lobes, so that there is no neck-like constriction. The V-shaped light-coloured metazonite bands are produced on to the prozonites .. 1. *annulatipes* Verh.

(*b*) Tibial segment *very deeply* excavated terminally, with strong *transverse ridge* in front of the solænomerite end terminating in a projecting angle; from this proceeds a *hooked* recurved lobe. End of the tibia without lamella, but projecting in a knob or process. In front of the recurved lobe is a *deep excavation*, so that the basal segment appears to be constricted in a neck-like manner.

× The recurved lobe of the tarsus is *broad* and rounded, the end of the tibia drawn out in a strong process. Coxæ of the sixth pair of legs of the male excavated on the inside of the end and projecting in a blunt *knob*. The V-shaped bands, at least in the posterior half of the body, are *produced* on the prozonites (Pl. ix, fig. 23) ..... 2. *andersoni dorrigensis* Verh.

×× The recurved lobe is *narrow*, and opposite to it on the end of the tibia there is merely a humpy protuberance but no process. Coxæ of the sixth pair of legs of the male neither excavated nor provided with a knob. The V-shaped bands of the metazonites are never produced on the prozonites (Pl. viii, figs. 18, 19) .... 3. *andersoni* n. sp.

5. DICLADOSOMA ANNULATIPES *Verhoeff.*

Male 48 × 4½ mm., female 42 × 4½ mm.

This species was described from a single defective specimen lacking the head and the first-sixth rings.[13] After I was able to examine several more specimens, including two complete males, the deficiency could be supplied. But I can refer to *D. andersoni,* for both species agree in the characters of these body parts, and also in the first-seventh pair of legs.

Occurrence.—Upper Richmond River, New South Wales, April, several specimens, including two males, the gonopods of which agree with my figure.[14]

6. DICLADOSOMA ANDERSONI *sp. nov.*

Male 55 × 5½ mm.

Head punctated with scattered pits and bristles, some scattered punctations also in the region between the antennal pits. Sides of the head with coarse longitudinal wrinkles, vertex with deep furrow, from which proceed lateral wrinkles. Sides of the neck rounded, with distinct, somewhat rugose marginal furrow. Lateral edges (*Leisten*) of the second pleurotergite rounded in front, angular posteriorly, but not projecting; lateral edges of the third and fourth pleurotergites rounded in front, with weak triangular points behind; the remaining lateral folds appear triangular when viewed from the outside, with a straight border above, become narrow anteriorly and posteriorly, the pores much behind the middle, somewhat closer to the inferior border than to the lateral furrow. Prozonites dull, metazonites shining, with only very fine wrinkles. Sutures finely pearled, transverse furrows deep, coming rather close to the lateral furrows. The transverse furrows begin on the fifth ring; on the first-fourth they are completely lacking. Lateral furrows strongly curved inwards in front but not reaching the suture; viewing them from the outside one can see that the lateral furrows are curved slightly upwards anteriorly. Flanks under the lateral folds without longitudinal wrinkles.

First pair of legs of the male with a strongly bristled process displaced somewhat backwards, otherwise only slightly curved inwards; femur and postfemur strongly arched outwards. Coxæ of the second pair of legs of the male expanded inwards, projecting like a blunt triangle, the three last joints with dense tuft of setæ, broadest now and then on the tarsus. The downwardly directed plate between the fourth coxæ is particularly high, parallel-sided in the basal half, rounded trapezoidal in the terminal half, 1½ times higher than fourth coxæ are long (in *Paraulacoporus* only as high as the coxæ, in *Walesoma* even lower). Coxæ on the sixth and seventh pair of legs without special features.

The *gonopods* (Pl. viii, figs. 18, 19) are, in comparison with those of *annulatipes,* more deeply emarginated on the end of the

[13] Verhoeff.—*Loc. cit.,* pp. 27-28.
[14] Verhoeff.—*Loc. cit.,* Pl. ii, fig. 16.

solænomerite; on the end of the tibiotarsus appears an exceptionally deep sinuation (*b*), in front of which is a transverse ridge, which runs out into a tooth-like angle (*d*), whilst the terminal lobe likewise projects somewhat angularly, and, by means of an obliquely recurved ridge with dilatation, is united to an uncinate recurved lobe (*c*), which proceeds from the transverse ridge. A triangular lamella (*e*) on the tibiotarsus marks the boundary between the tibial and tarsal segments. The sinuation posterior to this is considerably deeper than in *annulatipes,* so that the tarsal segment appears more strongly defined.

The femoral segment (Pl. viii, fig. 19, *fe*), about as long as broad, is on one side strongly demarcated from the terminal telopodite. Solænomerite and tibiotarsus remain separated from one another almost to the end of the femur.

Occurrence.—Booloombayt, Myall Lakes, New South Wales, 30th August, 1922, two males, collected by A. Musgrave.

7. Dicladosoma andersoni dorrigensis *sub-sp. nov.*

Male 49 × 4½, 52 × 4¾ mm., female 46 × 5 mm.

Apart from the differences mentioned above this form agrees with the foregoing species. The *gonopods* (Pl. ix, fig. 23) differ only in the two processes, which are curved against one another in the region of the deep sinuation between the tibial and tarsal segment, the backwardly bent lobe is broader, and opposite to it (instead of the triangular lamella) is a cone-shaped process. In its markings this form is exactly similar to *annulatipes,* as also in the annulation of its legs and antennæ.

Occurrence.—North Dorrigo, New South Wales, 4th January, 1923, collected by A. Musgrave.

8. Hoplatessara musgravei *gen. et sp. nov.*

Male 53 × 5 mm., female 44½ × 5¼ mm.

Uniformly black, only the legs of a prevailing yellowish brown, but the last three joints are dark brown. Structure of the head as in *Dicladosoma,* but the vertex furrow is rather more strongly pitted in the middle, and the sides of the head, especially behind the antennal pits, are much more weakly wrinkled. In shape and sculpture very similar to *Dicladosoma,* but the sutures are more strongly streaked, and the transverse furrows are very deep and extend almost to the lateral furrows. The first-fourth pleurotergites are without transverse furrow, the fifth-seventeenth have a deep furrow, the eighteenth one somewhat less deep, the nineteenth and twentieth none. Terminal process roundly truncate without points. Prozonites dull, metazonites shining, both finely wrinkled.

Gonopods (Pl. ix, figs. 21, 22). One the side of the femur, which is 1½ times longer than broad, are two long lanceolate lateral rami

(*pr* 1, *pr* 2), pointed at the ends, the longer pitted and excavated anterior to the end, both shorter than the solænomerite. The long tibiotarsus, which with its roundish club-like termination in great part overlaps the solænomerite, exhibits in front of the club a slight inflection, otherwise there is no variation in section, the long stalk remaining almost uniformly slender till this inflection is reached. Tibiotarsus and solænomerite are separated from one another almost to their bases, the latter bent anterior to the middle in an obtuse angle, S-shaped posterior to this, widening suddenly on the outside into an elongated lobe (*l*) divided into three points terminally. The largest point is recurved and contains the opening (*x*) of the spermatic canal. The two shorter points (*e* and *d*) oppose one another like pincers, and the proximal one contains the sharply-bent end of a long accessory loop of the spermatic canal.

The first-seventh pair of legs of the male are as in *Dicladosoma*, that is, the first pair, especially the femur and postfemur, are strongly inflated, and almost semicircular on the outside.

Occurrence.—Hazelbrook, Blue Mountains, New South Wales, one pair, 24th December, collected by A. Musgrave.

Remark.—The close relationship between *Dicladosoma* and *Hoplatessara* is shown both in bodily shape and in all characters of the male, so that the two could even be united as subgenera.

9. Hoplatessara clavigera *n. sp.*

Male 47 × 4¼ mm.; is distinguished from the foregoing as follows:

H. musgravei.	H. clavigera.
Back uniformly black, legs light in colour, but the two terminal joints blackish. Sternite plate between the fourth coxæ almost parallel-sided basally, almost circular terminally. Gonopod solænomerite *more than twice* as long as the distance between its base and the root of the femoral lateral ramus. Tibiotarsus with only the end half of its club extending beyond the solænomerite, the latter very strongly developed (Pl. ix, fig. 21). Of the lateral rami of the femur only the longer has 1-2 excavations in front of the point. Tibiotarsus almost *straight* in the basal half. Solænomerite bulging out on the inside posterior to the middle. The accessory loop of the spermatic canal is long, sharply folded down, and reaches almost to the point of the median terminal process (Pl. ix, fig. 22).	Back reddish brown, the metazonites straw yellow behind the transverse furrow, legs quite white. Sternite plate between the fourth coxæ taper from the base onwards in a trapezoidal manner, the terminal joint rounded-obtuse. Gonopod solænomerite (Pl. xi, fig. 28) only slightly longer than the distance between its base and the root of the lateral ramus of the femur. Tibiotarsus extending about as far beyond the solænomerite as this is long. Strongly *bent* twice in the basal half. Solænomerite not so strongly developed, without any bulge on the inside. On the two lateral rami of the femur (Pl. xi, figs. 28, 29) there is a whole row of excavations in the terminal half so that they seem divided into compartments, and notched and tubercled on the outside. The accessory loop of the spermatic canal (Pl. x, fig. 30) is developed only as a short curve without sharp angle and without sinking into the median terminal process.

In other respects *H. clavigera* agrees with *musgravei,* but the forehead between the antennal pits is more strongly rugose, also the dorsal surface of the body and especially of the collum is more densely wrinkled and less shining. Transverse furrows are still more deeply incised and without notches; on the eighteenth segment they are strikingly deeper than in *musgravei.* The first-eighth pairs of legs of the male are quite similar to those of *musgravei.*

As regards the gonopods I call special attention to the fact that the femur is extremely short; the solænomerite, apart from the differences already mentioned, is very similar to that of the foregoing species, and almost exactly similar in the three terminal processes, only the middle one (*d*) is not so close to the distal, and the proximal (Pl. x, fig. 30, *x*), with the seminal opening, is still more delicate. Lateral rami of the femur are throughout closely applied to the tibiotarsus.

Occurrence.—This species, which evidently comes from New South Wales, I received for examination from the Zoological Museum of Stuttgart. A more exact locality is, unfortunately, not known.

10. LEUCOTESSARA LUCIDA *gen. et sp. nov.*

Male 40 × 5 mm.

Body yellowish white with narrow, yellowish brown striæ on the transverse furrows, on the posterior borders of the metazonites, the median portion of the latter, and in part also inwards from the lateral folds, which are completely rounded. Collum with three brown longitudinal bands, of which the middle one is the broadest. Head with broad brown band along the forehead, which sends out a narrow band behind the antennal pits. Legs yellowish white. Lateral folds of the second-sixth pleurotergites completely rounded anteriorly and posteriorly, sides of the collum rounded and with a rather broad margin. Vertex with an incised median furrow, extending as far as the forehead, separating two small *bosses* on the forehead. This and the region behind the antennal pits strongly rugose.

Repugnatorial pores large, with typical distribution, about median between the lateral furrows and the inferior border of the lateral folds. Lateral furrows curved inwards in front, but remaining a good distance from the strongly streaked sutures. Transverse furrows unusually deep and even slightly indented (*gekerbt*). Metazonites smooth and brilliant, slightly rugose, prozonites dull, almost without sculpture. Telson process truncate, without projecting angles.

On the femur of the first pair of legs of the male is a strong, setigerous process, but femur and postfemur are but moderately arched outwards. The sternite plate between the coxæ of the

fourth pair of legs tapers trapezoidally, the last third with rounded obtuse-angled termination. Coxæ of the sixth and seventh pair of the male expanding inwards in a rounded protuberance. Between the coxæ of the tenth pair there are no processes. Coxæ of the second pair rounded on the inside, forming triangular projections.

The gonopods (Pl. ix, fig. 20) are most like those of *Hoplatessara,* but they show such differences that a generic separation appears to be justified. The femur is extremely short, and on its side are two lanceolate lateral rami, of which the longer (*pr* 2) is more slender and of a pale glassy consistence; the shorter is stouter and yellowish. Tibiotarsus and solænomerite are separated from one another except for a short distance basally. Special attention has already been called to the tibiotarsus, with its evidently primitive segmentation into tibia (tt_1), tarsus (tt_2) and ungulum (c). The tarsus rests with a *stalk-like base* on the tibia, and near the stalk the tibia extends endwise into a rounded lobe. On the outside near the stalk is an exceptionally strong constriction. The tarsus is exceptionally broad in comparison with the solænomerite, and rests like a mighty club on the tibia. On its end is a rounded cap, which is strongly hooked opposite to the solænomerite; in front of the hook the tarsus has a projecting point. The solænomerite is also club-like, and is strongly inflated, especially in the middle; it is bent in an S-shape, expands outwards in a lamelliform manner in the terminal third, and is bent somewhat hook-like at the end. The spermatic canal pursues a quite simple course, *without* any indication of an accessory loop.

Occurrence.—Duggan's Gully, Upper Chichester, New South Wales, one male, 21st September, collected by A. Musgrave.

11. Myallosoma hamuligerum *gen. et sp. nov.*

Male 35 × 4 mm.

Body predominantly brown on the sides, with broad *yellowish white longitudinal bands* on the back, but with a brown transverse band on the posterior border of the tergites. Abdomen and legs reddish yellow. Head mostly smooth. The fine furrow on the vertex extends forward to between the antennal pits, and between these are two small setigerous pits. Sides of the collum in front with deep marginal furrow which arches over the lateral lobes. Lateral folds of the second pleurotergite projecting in grooved ribs (*ausgehöhlte Rippen*) which are somewhat angular in front, and posteriorly are produced, and are indeed stronger and more pointed than in the otherwise similar *Rhopalowales clavigera.* Lateral folds of the third and fourth pleurotergites produced posteriorly in short triangular points. The remaining rings have lateral furrows and lateral folds, the latter projecting backwards as rounded lappets. Pores closer to the lower surface of the lateral folds than to the lateral furrows. Suture pearled and notched. Lateral furrows

strongly curved inwards in front, but they do not reach the suture. Nor do the deep transverse furrows reach the lateral furrows. Prozonites dull, metazonites smooth and brilliant; the former are very finely and densely punctate, the latter slightly and sporadically rugose. Telson process broad and truncate, without points or angles.

Femoral process of the first pair of legs of the male is displaced against the posterior side, hence it is only partly visible from in front; it carries bristles and is moderately large. Femur is strongly expanded outwards, the post-femur only slightly arched outwards in front. Sternite plate between the coxæ of the fourth pair of legs almost semicircular, but on each side it is slightly indented two or three times, and is strongly bristled in the terminal half. Coxæ of the sixth and seventh pair without expansion inwards. Sternite of the tenth pair of the male with two longish, rather widely separated *protuberances* between the coxæ, projecting inferiorly (*nach unten abstehende*).

Gonopods (Pl. vii, figs. 12, 13) are in many respects similar to those of *Rhopalowales;* for example, in the partial fusion of the tibiotarsus and solænomerite and the structure of the latter, but the fusion of the tibiotarsus and solænomerite is still more extensive and extends almost to the middle of the terminal telopodite (*b*). Femoral segment decidedly longer than broad, on its end a lateral ramus of very peculiar shape, being constricted at the base, and divided into two processes in the middle, one longer, directed endwise, slender and uncinate (*pr*), the other (*pr*2) shorter, standing off obliquely, rounded-triangular, dentate on the outer margin, and also uncinate on the end. The terminal telopodite (*Resttelopodite*) falls into two halves, namely, a terminal segment formed by the separated portions of the solænomerite and tibiotarsus, and a similar basal segment between the beginning of the division (*b*) and the end of the femur. This basal part is again divided by a constriction (*y*) into a narrower stalk and a broader bulging terminal portion. The *stalk* I regard as a postfemur.

The tibiotarsus is sickle-shaped, but at the same time broad and leaf-like, dentate on the broad end and obliquely truncated, the terminal arch turned up longitudinally *into a fold* on the solænomerite side (Pl. vii, fig. 13, *w*), the fold falling away towards the truncated end. The solænomerite is *bifurcated* into a short and broad branch (sl_1) in which the spermatic canal opens, and a longer branch (sl_2) tapering to a point, traversed for its entire length by the long accessory loop of the spermatic canal, which finally doubles back in a sharp turn. The spine-like accessory branch clings closely to the tibiotarsus, and therefore, in correspondence with the latter, it makes a cornuate curve. The shorter solænomerite branch is broad and somewhat uncinate; it is only a short distance from the end of the longer process on the lateral ramus of the femur.

Occurrence.—Myall Lakes, New South Wales, one male, 30th August, 1922, collected by A. Musgrave.

Remark.—As regards its gonopods *Myallosoma hamuligerum* is somewhat reminiscent of *"Australiosoma" kosciuskovagum* Bröl., but a closer comparison is rendered very difficult, as in Brölemann's figure the course of the spermatic duct is not clearly discernible. In any case this form is sharply distinguished from Brölemann's, for the latter has a simple spine-like lateral ramus of the femur, which Brölemann designates *tb* in his illustration.[15]

12. Rhopalowales clavirera *gen. et sp. nov.*

Male 46 × 4 mm., female 35½ × 4 mm.

Dark brown, with broad, dull grey median stripes on the back, the lateral folds and flanks thereunder likewise lighter in colour, legs yellowish, second and third terminal joints darker. With lateral furrows and lateral folds, the latter projecting posteriorly in small but distinct angles, the former curved inward in front but not reaching the suture. Sutures very distinctly notched, the deep transverse furrows a good distance from the lateral furrows, well impressed on the fifth-seventeenth rings, weaker on the eighteenth and wanting on the remainder. Pores widely distant from the posterior end of the lateral folds, in the middle between the inferior border of the latter and the lateral furrow. Metazonites rugose. Viewed from the outside the lateral folds appear broad in front, and posteriorly tapering gradually to a conical point. Lateral folds of the second pleurotergite project in short points, of the third and fourth in a somewhat angular manner. Telson with broad truncated process, which projects only slightly on the corners of the truncation.

Femur of the first pair of legs of the male with strongly setigerous process, femur and postfemur somewhat strongly arched outwards. Coxæ of the second pair expanded inwards and projecting in a rounded knob. Sternite plate between the coxæ of the fourth pair of legs reaching considerably beyond the coxæ, tapering trapezoidally, rounded off in a broad arc terminally, setigerous in the terminal half, a division (*Absetzung*) on the sides behind the basal third. Coxæ of the sixth and seventh pairs simple. *No* sternal process between the coxæ of the tenth pair.

Gonopods (Pl. viii, figs. 14, 15). As already mentioned these in many respects resemble those of *Myallosoma*. But the prefemur (in distinction to the roundish prefemur of *Myallosoma*, which terminates transversely against the femur) is here considerably produced and obliquely wedge-shaped exteriorly as well as interiorly and its end is pushed forward, so that *femur and prefemur are pushed against one another like triangular wedges.* The setigerous

[15] Brölemann.—Rec. Austr. Mus., x, 6, 1913, pl. xv, fig. 18.

prefemur region *reaches to the base of* the femoral *lateral ramus,* while in *Myallosoma* it is widely separate therefrom. Thus one can say, shortly, that the prefemur and femur of the gonopods lie *behind* one another in *Myallosoma,* in *Rhopalowales,* on the contrary, *alongside* one another. *Rhopalowales* is distinguished, in general, from all other strongylosomid genera described here by the sharply projecting wedge-shaped prefemur.

The femoral lateral ramus (Pl. viii, fig. 14 *pr*) extends almost as far endwise as the solænomerite; it is bent in a slight S-shape, maintains about the same breadth and has a somewhat club-like terminal thickening. Tibiotarsus and solænomerite are fused for only a short distance at the base, that is, behind the root of the femoral lateral ramus. The tibiotarsus (*tt*) has a very characteristic shape; in the middle is a nearly right-angled bend, then it is stalk-like, and terminally it is clubbed and at the same time spoon-shaped opposite the opening of the seminal duct. On the extreme end it projects in a blunt tooth-like process. The solænomerite (Pl. viii, fig. 15) strongly recalls that of *Myallosoma,* but is clearly distinguished by the fact that between the two branches a broad rounded-off lobe (*lo*) is inserted, and the latter is excavated on the inside. The branch (*sl*) which contains the opening of the seminal duct is bent in a somewhat uncinate manner and is turned backwards. The lobe (*lo*) is connected to this by a strongly bent, finely dentate, and delicate lamella. The other forwardly projecting branch (sl_2) tapers off into a spine, and is traversed for its whole length by the accessory loop (*u*) of the seminal duct, which bends back suddenly near the end.

Occurrence.—Nowra, New South Wales, 21st April, 1905, two males, one female, of which one had just moulted, the other two being somewhat beyond that stage. All three are therefore more or less soft and showed a false rugosity. On this account I am unable to give any trustworthy details regarding the structure of the back.

III. Spiroboloidea.

Whilst the Spiroboloidea seem to be entirely absent from Western Australia, at least according to the investigations of Hartmeyer and Attems,[16] they occur everywhere in Eastern Australia, as proved anew by the following contribution, and they manifestly form an important contingent of the Diplopod fauna. Hitherto, however, these, especially the smaller forms, have been the least known.

I have already provided a key for six Australian Spiroboloid genera.[17] Since in the following account two new genera are described, I give here a new key but in abbreviated form.

[16] Attems.—In Michaelsen u. Hartmeyer, Fauna Südwest Australiens, iii, 6, Jena, 1911—Myriopoda.
[17] Verhoeff.—*Loc. cit.* pp. 99-101.

Key to the Australian Spiroboloid genera.

A. Posterior gonopods *without* distinct jointing. Sternites of the anterior gonopods triangular-trapezoid, or semicircular, not projecting in a long process. Body without scobinæ.

(*a*) Pores of the repugnatorial glands *close behind* the obliterated sutures, body without longitudinal stripes, telson with short process. Coxæ of the third-fifth pair of legs of the male produced into long terminal lobes (Pl. x, fig. 32). Sternite of the anterior gonopods trapezoidal projecting in a triangle at the end, the triangle covered with warts. Telopodite of the anterior gonopods *not* cleft (Pl. x, fig. 31). Coxites divided into *three* regions. Posterior gonopods (Pl. x, fig. 34) bent in a sickle shape, but without sudden contraction behind the basal third, and *without* a sudden expansion in front of the terminal third, with a lateral ramus inside in the middle ..... 1. *Walesbolus* g. n.

(*b*) Pores of the repugnatorial glands *far behind* the sutures .... *c*, *d*

(*c*) Telopodites of the anterior gonopods *cleft into two halves* up to half their length. Posterior gonopods bent *hookwise* and with accessory lobes posterior to the middle. Preanal segment without process, body of a light ground colour, with black longitudinal stripes, 2 + 2 labral pits .... 2. *Attemsobolus* Verh.

(*d*) Telopodites of the anterior gonopods *not* cleft. Labrum with several indistinct pits ..... *e*, *f*

(*e*) Posterior gonopods behind the basal third with sudden expansion inward in the form of steps, and likewise suddenly expanded inwards anterior to the terminal third. Preanal segment *without* process. Coxites of the anterior gonopods either divided by a deep emargination into principal and accessory portions, or such division is at least indicated by a slight sinuation.

× Body *without* longitudinal stripes. Sternite of the anterior gonopods almost semicircular, somewhat crenate (*eingeschnitten*) on the terminal margin, with large parallel-sided cushions posteriorly. Main portion of the coxites of the anterior gonopods projecting *equally as far as* the telopodite, the latter not divided into segments; the main coxal portion is divided from the accessory portion by a deep sinuation. Terminal third of the posterior gonopods triangular, and running out into a spine .... 3. *Queenslandobolus* Verh.

×× Body *with longitudinal stripes.* Sternite of the anterior gonopods projecting triangularly at the end, with a triangular tapering ridge posteriorly. Main portion of the coxites of the anterior gonopods *falls much short* of the telopodite, and is separated from the accessory portion by a shallow sinuation only. The telopodite is divided into two sections by a constriction. Terminal third of the posterior gonopods hatchet-shaped and broad .... 4. *Howeobolus* g. n.

(*f*) Posterior gonopods bent sicklewise, without sudden expansion either posterior to the basal third or anterior to the terminal third. Preanal segment with a short *process*. Coxites of the anterior gonopods not divided into two segments by emargination, therefore in general consisting of two instead of three regions, the main portion produced into a conical end process; telopodite forming a broad thumb-like termination without median constriction, but on one side there is a median obtuse-angled sinuation. Sternite of the anterior gonopods similar to that of *Howeobolus*. Body without longitudinal bands ..... 5. *Poratobolus* Verh.

B. Posterior gonopods decidedly *two-jointed*. Sternite of the anterior gonopods projecting in a *process*. Pores of the repugnatorial glands *in* or mostly *in front of* the sutures.

(*a*) Sides of the collum broad, forming a rounded right to obtuse angle. Sternite of the anterior gonopods consisting of a broad triangular basal portion and more slender process. Posterior gonopods elongated, *without* inflexion.

× Posterior gonopods divided into *two* branches. Anal valves depressed in a dimple longitudinally near the inner margins, or at any rate above near the posterior angle, so that the inner margins appear more or less *pad-like* (*wulstig*) ..... 6. *Dinomatocricus* Brölemann.

×× Posterior gonopods *without* accessory branch, therefore simple. Anal valves uniformly arched, at most with indications of weak impressions, or compressed on the inside along their length .... 7. *Adelobolus* Verhoeff.

(*b*) Sides of the collum narrow triangular, projecting under an angle of 45° to 70°. Sternite of the anterior gonopods consisting of *broad process* and narrower basal portion. Posterior gonopods consisting of coxites and telopodites, which appear *sharply inflected against one another* ..... 8. *Trigoniulus* Pocock.

Walesbolus lobatus *gen. et sp. nov.*

Female 41 × 4½ mm. with 87 pairs of legs, only the telson apodous; male 41 × 3⅘ mm., with 87 pairs of legs, 50½ × 4 mm. with 93 pairs of legs.

Body black, only the posterior margins of the rings with narrow light-coloured areas, legs reddish yellow. Sutures of the diplosomites for the most part obliterated, also on the lower part of the sides, where they are most distinct, they are not furrow-like, yet with certain lighting they are also indicated on the back. Gland pores close behind the sutures. Antennæ with four olfactory cones, labrum with several small shallow pits on each side. Ocelli 2, 4, 5, 6, with rather flat but distinctly differentiated cornea lenses. Head smooth, with a few fine striated (*geritzte*) furrows between the antennæ. Duplomentum with several irregular transverse furrows in the posterior half.

Collum predominantly smooth, with *rounded-truncate* lateral lobes and deep marginal furrow, which bends over at a right angle on the lateral lobes. Metazonites of the body mostly without furrows, with rather numerous and somewhat irregular longitudinal striations on the under part of the sides in the region of the legs. On the prozonites in the inferior half of the region below the pores there are grooves which trend very obliquely forwards and upwards and finally quite upwards. Pleurotergites less shining and with very fine, striated, longitudinal wrinkles on prozonites and metazonites. Preanal segment with short rounded off process extending only slightly over the anal valves. The anal valves smooth and regularly arched, without impressions.

On the first pair of legs of the male the coxæ are separated for half their breadth, on the second pair the coxæ are in close contact for their entire length, only the penes separated for a short distance at the end, these segments separated for only half their breadth,

the end rounded and obliquely truncated on the outside. Coxæ of the third to fifth pair of the male with broad, rounded, humpy process (Pl. x, fig. 32) extending beyond the prefemur. On sixth and seventh pair this is low and does not extend beyond the prefemur. On the third to seventh pairs of the male the end of the coxæ are broad and rounded off, and therefore the telopodite is displaced far outwards, and all the telopodite segments are quite glabrous inside and outside, only the tarsus having a few setæ on the end. Pads are not present (*Polster fehlen*).

The gonopods (Pl. x, fig. 31) show again the division of the coxites into three segments, of which I have previously spoken.[18] The telopodite then includes the small median, and the large main segment (co_3). The telopodite which extends rather far beyond the latter is only slightly tapered towards the obliquely truncated end, which is excavated on either side; on the whole it is almost S-shaped. The main coxal segment is very broad, rounded off in an arch on the outside, excavated on the inside, and carries numerous warts of varying sizes on the terminal region; some of these are strong and peg-like. One of these pegs (Pl. xi, fig. 33) projects free outwards behind the excavation. The sternite of the anterior gonopods resembles that of *Poratobolus*,[19] but the projecting broad terminal lobe is covered with numerous warts. The curved sickle-like *posterior* gonopods (Pl. xi, fig. 34) have a broad trench-like excavation along their length, broaden gradually in the lower third near the base, carry on the inside a bidentate lateral ramus in the middle, and in the terminal third, which tapers gradually, are ornamented with very fine transverse striations. The extreme truncated termination ends in a very pale point. In front of the transversely striated termination runs an oblique fold (*Wulst*).

Occurrence.—Several pairs from Port Stephens, Fingal's Bay, New South Wales, 24th August, 1920, collected by A. Musgrave.

Howeobolus insularum *gen. et sp. nov.*

Male $28\frac{1}{2} \times 2\frac{1}{3}$ mm., with 79 pairs of legs and two apodous terminal rings; female $29 \times 2\frac{1}{2}$ mm., with 89 pairs of legs and two apodous terminal rings. Orange yellow, with three black longitudinal bands, one narrow median and two broad lateral, in the neighbourhood of the gland pores; telson orange yellow, only the preanal segment with dark, dorsal, transverse bands. Legs yellowish.

Labrum with a scattered group of small pits and longitudinal rugæ on either side. Forehead with transverse curved striæ, and with small pits between the eyes. Vertex with short longitudinal pit produced in lines on each side.

[18] Verhoeff.—*Loc. cit.* p. 95.
[19] Verhoeff.—*Loc. cit.* pl. iv, fig. 64.

Ocelli 1, 3, 4, 5, 7. Collum with rounded-truncate sides and deep marginal furrow, which extends backwards on the lateral lobes in flat curves.

Pores far behind the sutures; the sutures are, however, obliterated to such an extent that their position is, for the most part, doubtful; only with certain lighting can they be recognized on the lower part of the sides as shallow even depressions. On several rings, however, pseudo-sutures can be recognized on the back, sometimes more, sometimes less distinct, lying in the region of the metazonites behind the pores. Metazonites with distinct but somewhat diffuse *longitudinal striations,* which *extend almost to the pores.* This longitudinal striation is continued, for the most part, on the prozonites, forwards, then obliquely upwards to the level of the foramina. The back between the pores on the prozonites with sporadic pits and *curved rugæ.* The latter are in part arranged in transverse rows, and therefore indicate a continuation of the sutures. Metazonites on the back irregularly rugose. Preanal segment completely rounded behind, finely rugose. Anal valves evenly arched, without impressions. Antennæ with four olfactory cones. Duplomentum with only two transverse furrows in the posterior half. Stipites with four to five oblique lines posteriorly.

Coxæ on the first and second pairs of legs of the male as in *Walesbolus,* on the third to fifth pair with slight forward arching, which does not extend beyond the prefemur, otherwise very broad, so that the prefemur is pushed far outwards (Pl. x., fig. 37). The coxæ of the sixth and seventh pair of legs similar, but almost without arching; on third-seventh pairs the telopodite segments are bare on the outside, on the inside, at the most, with single bristles, with more on the tarsus only.

Sternite of the anterior gonopods projecting triangularly on the terminal margin in the middle, the point of the triangle rounded-rectangular, the lateral angles passing into the remainder of the terminal border under an obtuse angle, a triangular cushion behind, the point running out in a ridge-like manner at the end of the triangular projection.

The *anterior* gonopods (Pl. x, fig. 35) are particularly distinguished by the *telopodite,* which is divided on both sides in the middle segments (joints) by a constriction. Outwardly this division is emphasized by the presence of two short transverse furrows, enclosing a groove which can be interpreted as a vestigial joint. The two segments of the telopodite are of about the same size; the oval terminal segment (te_2) extends for its entire length beyond the exceptionally short *coxite.* On the latter the main portion is broadly rounded off, and carries a few small warts, and is marked off by a slight sinuation from the median part of the coxite, which projects but little.

On the sickle-shaped *posterior* gonopods (Pl. xi, fig. 36) the basal and terminal thirds project suddenly and strongly beyond the median portion; the basal third projects at an obtuse angle. The hatchet-shaped expanded end is swollen in front of the terminal border, sinuated on the inside, and near the sinuation it projects angularly on both sides. The middle part is deeply sinuated on the inside anterior to the centre. A broad longitudinal groove transverses the median and terminal part, and in this region also is a very fine and close striation, which does not extend to the edges.

Occurrence.—One male, one female, from Lord Howe Island, about 300 miles east of Port Macquarie, New South Wales, collected by R. Baxter.

ATTEMSOBOLUS DORSOVITTATUS *n. sp.*

Female 26-27 × 2¼-2⅓ mm., with two apodous terminal rings.

Body black, with two broad, orange-yellow, longitudinal bands at the level of the foramina, a little narrower than the broad, black, median, longitudinal band, the posterior borders with a narrow yellowish band, the legs greyish yellow.

Labrum with 3 + 3 small pits, antennæ with four olfactory cones, head smooth and shining, without median furrow, ocelli 2, 5, 6, 6; sides of the collum rounded-truncate, with a strongly curved marginal furrow; collum otherwise smooth and shining. Pores of the repugnatorial glands very small, situated far behind the sutures, which, indistinct in themselves, are distinguished by a *row of pits,* which traverses without interruption not only the lower part of the sides but also the back.

Metazonites with longitudinal furrows only in the region of the legs, prolonged on to the prozonites, the furrows curving somewhat upwards on the latter. Such prozonite furrows are also developed on the upper part of the sides (where metazonite furrows are wanting) almost to the level of the pores. Pleurotergites are otherwise shining and almost devoid of sculpture. Telson entirely without process, smooth and brilliant. Anal valves arched and without impressions.

This species is distinguished from *bivittatus* Verhoeff—

1. By the orange-yellow longitudinal stripes on a black ground.
2. By the transverse rows of pits, which extend over the whole back and mark the sutures.
3. By the 3 + 3 small labrum pits.

Occurrence.—Only two females from the Upper Richmond River, New South Wales (April) are before me. Despite the absence of the male I have no doubt that this species also belongs to *Attemsobolus,* for in size, form, colouring, and sculpture it agrees closely with *bivittatus.*

TRIGONIULUS *Pocock.*

Key to Australian species.

(*a*) Corneal lenses of the ocelli (which are arranged mostly in six rows) *strongly convex.* Sides of the collum rugose. Head, collum, and telson *not* distinguished by contrasting colours.

× Anal valves arched, with only an indication of a longitudinal impression on the inside; sutures below the pores *not* indented (*gekerbt*), moreover, the prozonites exhibit fine scratched (*geritzte*) furrows which ascend obliquely, partly as prolongations of the metazonite grooves. Back closely rugose and punctate between the gland pores, most strongly on the prozonites. Preanal segment intricately rugose, forehead and vertex not very shining, irregularly wrinkled. Terminal lobe on the telopodite of the posterior gonopods rounded off and closely adpressed to the swelling in front of it..... ..... 1. *insculptus* Verh.

×× Anal valves with deep pit-like depressions on the inside, the pits exceptionally wide above. In front of the sutures, under the pores, is a row of short grooves, which appear *indented.* Prozonites without oblique furrows, and in general the metazonite grooves are not prolonged. Back without close punctation between the pores, *with a transverse row* of *pits* only, exactly between the pores, otherwise finely rugose, but only sparsely punctate. Preanal segment with only traces of rugosity, except for a very fine punctation. Forehead and vertex predominantly shining, with only a few fine scratched lines. On the telopodite of the posterior gonopods the rounded-off terminal lobe is separated from the swelling in front of it by a triangular sinuation. The swelling is without warty border .... *digitulus* Bröl. (Compare *digitulus richmondanus* m. below.)

(*b*) Corneal lenses either flattened and smooth, or in general without distinct boundaries between them ..... *c, d*

(*c*) Corneal lenses of the ocelli, which are arranged in seven rows, are flattened and smooth, but nevertheless are sharply separated from one another. Head, collum and telson are *not* distinguished by contrasting colours. Sides of the collum wrinkled. Anal valves arched, with shallow longitudinal impressions on the inside, but only in front. Sutures below the pores *indented.* Prozonites without oblique furrows. Preanal segment with pit-like impressions on each side in front of the obtuse-angled projection. Forehead and vertex as in *digitulus.* On the telopodite of the posterior gonopods, the terminal lobe has two projecting angles (Pl. xii, fig. 38, *e* and l_2) and is separated by a quadrangular indentation (*a*) from the very warty swelling (*w*) in front of it ..... *montium* sp. n.

(*d*) The corneal lenses of the ocelli are *blended* in a plane, and are therefore not clearly distinguishable. Sides of the collum smooth, head capsule smooth and brilliant above. Below the pores in front of the suture is a row of pits or short lines, which are continued on to the lower part of the sides in fine, scratched, oblique furrows. Head, collum, and telson distinguished from the rest of the body by their lighter colour.

× Ocelli in three to four rows. Body black; head, collum, and telson orange-yellow. Anal valves arched, smooth, and brilliant, almost devoid of sculpture, only somewhat impressed below on the inside. Punctation and rugosity very fine. Young male (last stage) with 87 pairs of legs ..... 4. *hemityphlus* Verh.

×× Ocelli in six-seven rows. Body reddish-brown, with narrow, reddish-yellow rings on the posterior border. Head, collum, and telson greyish-yellow. Anal valves and preanal segment finely and reticulately rugose, the former arched and with a broad, flat, and pitted impression in front only. Female with 97 pairs of legs ..... 5. *hebes* sp. n.

TRIGONIULUS MONTIUM *sp. nov.*

Male 72 × 5 mm., with 109 pairs of legs, only the telson apodous. Body greyish-black, the posterior borders with brown rings, legs yellowish-brown. Ocelli 34 (4, 6, 6, 6, 5, 4, 3), with very flat, depressed, but sharply bounded corneal lenses. Antennæ with four olfactory cones. Labrum with 2 + 2 large pits, or deep grooves in the middle. Vertex and forehead rather brilliant, with scratched transverse furrows at intervals, a median furrow on the vertex and impressed again in front between the antennal pits. The triangular lateral lobes of the collum rugose and with sporadic punctations, somewhat truncate terminally, their margins forming an angle of about 60° externally, a deep furrow behind the anterior margin.

Body on the whole *dull*. Actual sutures developed only on the under part of the sides as fine ridges (*Leiste*), and the longitudinal furrows on the metazonites extend as far as these, therefore to the region of the legs; these longitudinal furrows are continued on the prozonites as irregular curved grooves, rising upwards and forwards. Finely punctate between the grooves. On the upper part of the sides the furrows are obliterated except for isolated traces, but a row of curved streaks or pits forms a continuation of the suture. On the back the continuation of the sutures is more or less recognizable as fine structure lines. Prozonites with numerous punctations and pits, of which many are elongated. Metazonites predominantly with fine longitudinal wrinkles. The large pores are distinctly in front of the suture. Telson without process; preanal segment finely rugose, the anal valve arched and with only pit-like impressions.

Coxæ of the third and fourth pairs of legs of the male (Pl. xii, fig. 39) with strong club, extending well beyond the prefemur, and rounded at the end; its neck is only half as broad as the club. Prefemur with straight border on the inside, femur sinuated on the inside and excavated in a channel-like manner. On the fifth pair also the coxæ project in a broad process, with a rounded-truncate termination but not club-shaped and therefore with no basal neck. Femur excavated on the inside and furrowed. Coxæ of the sixth and seventh pairs similar to those of the fifth, but the broad coxal process is shorter; on the sixth truncate, on the seventh rounded off.

The long process *on the sternite* of the anterior gonopods tapers conically in the basal half, is slightly constricted behind the middle, and is broadly rounded-truncate at the end. The head of the

process, which is demarcated by a transverse suture, is almost twice as long as broad. Coxites of the anterior gonopods with broad rhomboidal base, produced into a long, thin, and almost pointed, slightly curved process.

Telopodite consists of two branches, which, however, are so closely apposed to one another that their separation is recognized only on close inspection or in preparation. The *main* portion of the telopodite consists of a triangular base, broadly seated on the *coxite* and produced into a long bent process. The lateral ramus is closely adpressed to the main portion throughout its whole length, so that it, too, is produced into a long process, which lies close on the process of the main portion and projects equally as far; it is bent almost into a sickle shape, but its base is only half as broad as that of the main portion. It rests somewhat broadly and obliquely on the base, only slightly distal from the base of the main portion.

On the posterior gonopods the coxites correspond with those of related species as regards their structure and connection with the telopodites. The telopodites (Pl. xii, fig. 38) are distinguished by a terminal lobe divided into three parts, and two of these project in angles (*e* and l_2), while the middle one is simply rounded. A deep quadrangular indentation (*a*), the edge of which has a fine accessory lamella, separates the terminal lobe from an elongated *swelling,* which contains the termination of the seminal duct (*x*), and is for the most part thickly covered with warts (*w*, w_1). The naked end of this swelling projects in a short process. Between the swelling and the gradually broadening base of the telopodite lies a deep sinus (*b*). There is no porigerous area on the expanded inner base.

Occurrence.—The only specimen available for study is a male from Hazelbrook, Blue Mountains, New South Wales, 24th December, collected by A. Musgrave.

Trigoniulus hebes *sp. nov.*

Female 60 × 5¼ mm., with 97 pairs of legs, only the telson apodous.

Ocelli 29 (3, 4, 5, 5, 5, 4, 3), with strongly flattened corneal lenses, and with indistinct boundaries, particularly on the outside, the whole mass smaller than in the preceding species, and therefore separated behind from the collum by a broad stripe, whilst in the former it extends as far as the collum. Terminal joint of the antennæ with four olfactory cones.

Body reddish-brown, head, collum, and telson greyish-yellow, posterior border of the rings with a narrow strip of reddish-yellow, legs yellowish.

Lateral lobes of the collum triangular-rounded, distinctly but shallowly emarginate in front, with furrow behind the anterior margin, the sides of the triangle including an angle of about 50°. Sides of the collum smooth.

Forehead and vertex smooth, posterior part of vertex rugose. Gland pores large, situated somewhat forward of the sutures, the actual pores in a rounded hollow. Dorsal surface with fine punctation and longitudinal striæ, likewise the prozonites and the anterior half of the metazonites, whilst the posterior half of the latter is nearly smooth and therefore shining like the remainder of the dorsal surface.

Sutures distinct as far as the pores, obliterated above. Longitudinal furrows of the metazonites only on the lower sides, but extending somewhat over the region of the legs, continued on the prozonites in oblique and (especially below) closely crowded grooves. Sutures below the pores with small pits which are continued in front in oblique furrows, also in the area of the upper sides, whilst the metazonites show no longitudinal furrows in that region. Anal valves arched with impression quite in front only, with fine reticulated wrinkles, which occur on the preanal segment also, and very finely punctate between the wrinkles.

Occurrence.—Upper Richmond River, New South Wales, April; adult female and a young male of 49 × 3¾ mm., with gonopodal anlage which reveals all the principal parts of the copulatory apparatus, that is, sternite, coxite, and telopodite of the anterior gonopods, as also unjointed posterior gonopods, but nevertheless it exhibits no special features. The anlagen of posterior gonopods take the form of two longish scales in contact in the middle line and extending upwards just as far as the telopodites of the anterior gonopods; the coxites are, however, very low, likewise the triangular, forwardly projecting, incompletely demarcated sternite.

Trigoniulus digitulus richmondanus *sub-sp. nov.*

Male 70 × 4¾ mm., with 107 pairs of legs, only the telson apodous; young male 65 × 4½ mm., with 105 pairs; female 70 × 5¼ mm., with 105 pairs of legs, containing eggs apparently ready for extrusion; female 74 × 5¼ mm., with 105 pairs; young female 40½ mm., with 89 pairs, 7 apodous terminal rings.

The sutures on the dorsum above the pores become more indistinct inwards. Sculpture of the body rings almost as in *digitulus* Bröl., but the transverse series of small pits on the back between the pores are weaker. Apart from this, the form differs from *digitulus*—

1. By the more strongly pointed end of the sternite process of the anterior gonopods, and therefore by the fact that the terminal

part of the telopodites does not extend outwards in an essentially (*am Grunde*) triangular form.

2. On the posterior gonopods (Pl. xii, fig. 40) the terminal lobes (*e*) are more broadly rounded, but the longitudinal pad (*Längswulst*) (*w*) in front of the same has a deep pit (*fo*) and in front of this a very finely setose region. Terminal lobes and longitudinal pad are more strongly adpressed to one another.

Coxæ on the third and fourth pairs of legs of the male produced into club-like, egg-shaped processes strongly constricted at the base, and extending beyond the prefemur. Femur, postfemur, and tibia with longitudinal furrows on the inside. Coxæ on the fifth-seventh pairs of legs of the male broadly rounded on the end and somewhat produced, but without club-like processes.

The head on the end of the process of the anterior gonopodal sternite is separated off by a transverse suture and is almost semicircular, but above the semicircle it is produced in a triangular projection, almost to a point. On the broad telopodites ("T" in Brölemann's figure[20]) the *lamella,* which is bent back against the base, is not produced triangularly, but bent at an obtuse angle; moreover, the telopodite, except on the terminal fourth, forms a *longitudinal pad* on the border opposite to the coxite process. Longitudinal pad and lamella are both disposed with the free border against the coxite process, but lie on the opposite surfaces of the telopodite (in Brölemann's figures the longitudinal pad is quite lacking).

Occurrence.—Upper Richmond River, New South Wales, April.

LIST OF AUSTRALIAN DIPLOPODA DESCRIBED IN THIS PAPER.

1. *Cyliosoma excavatum* sp. nov.
2. *Cyliosoma penicilligerum* sp. nov., *Paracyliosoma* subg. nov.
3. *Cyliosoma queenslandicum* Bröl.
4. *Cyliosomella andersoni* sp. nov.
5. *Cyliosomella andersoni dorrigense* subsp. nov.
6. *Walesoma* n. g., *helmsii* sp. nov.
7. *Paraulacoporus* n. g., *sulcatus* sp. nov.
8. *Solänodolichopus walesius* sp. nov.
9. *Solänodolichopus rubriventris* sp. nov.
10. *Dicladosoma annulatipes* Verh.
11. *Dicladosoma andersoni* sp. nov.
12. *Dicladosoma andersoni dorrigense* subsp. nov.
13. *Hoplatessara* n. g., *musgravei* sp. nov.
14. *Hoplatessara clavigera* sp. nov.

[20] Brölemann.—Rec. Austr. Mus., x, 6, 1913, pl. xv., fig. 28.

15. *Leucotessara* n. g., *lucida* sp. nov.
16. *Myallosoma* n. g., *hamuligerum* sp. nov.
17. *Rhopalowales* n. g., *clavigera* sp. nov.
18. *Walesbolus* n. g., *lobatus* sp. nov.
19. *Howeobolus* n. g., *insularum* sp. nov.
20. *Attemsobolus dorsovittatus* sp. nov.
21. *Trigoniulus montium* sp. nov.
22. *Trigoniulus hebes,* sp. nov.
23. *Trigoniulus digitulus richmondanus* subsp. nov.

Summary of Contents.

Addendum.

R. V. Chamberlin's "Myriopoda of the Australian Region"[21] came to my notice after this paper had been completed. It must, however, be emphasized that identification of any of the forms described here with those of Chamberlin is excluded, for his work is unaccompanied by illustrations, and without figures identification is impossible in the case of the majority of Diplopod species. As regards the Diplopoda at least, Chamberlin's paper is too provisional in character to permit of its being used for systematic purposes.

[21] Chamberlin.—Bull. Mus. Comp. Zool. Harvard, lxiv, 1, 1920, pp. 1-269.

EXPLANATION OF PLATE VI.

Figs. 1-4. *Cyliosoma excavatum* sp. nov.

Fig. 1. Femur and tibiotarsus of the telopods seen from the front; × 56.

Fig. 2. Certain parts of the stridulating band on the tibiotarsus of the telopods; × 220.

Fig. 3. Terminal parts on the syncoxite of the telopods; *lo,* lobe; *pr,* horn; × 56.

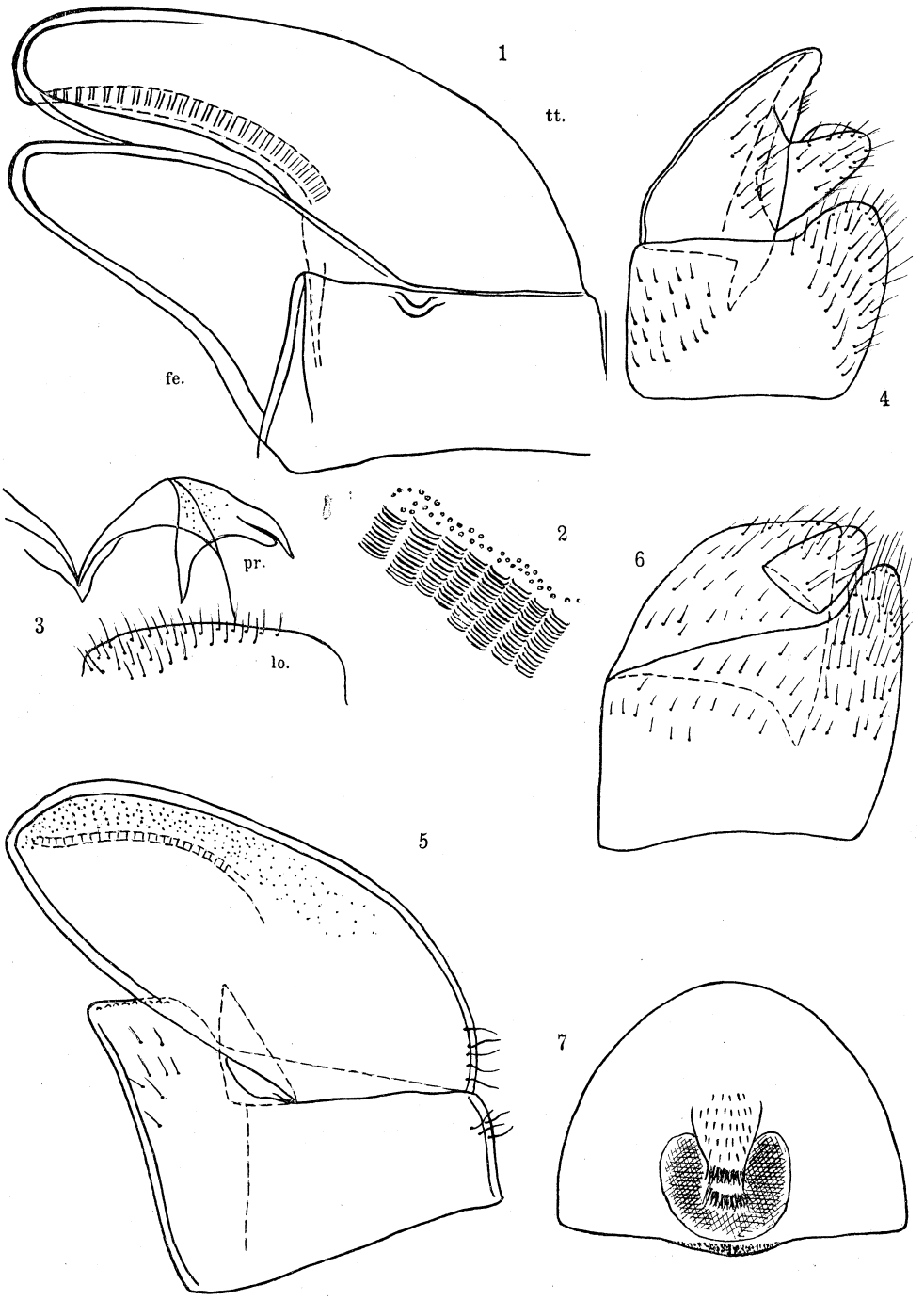
Fig. 4. The three terminal segments of the co-telopods; × 56.

Figs. 5-7. *Cyliosoma penicilligerum* sp. nov.

Fig. 5. Femur and tibiotarsus, front view; × 56.

Fig. 6. Three terminal segments of the co-telopods; × 56.

Fig. 7. Bitelotergite of the male represented from directly behind; × 8.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EXPLANATION OF PLATE VII.

Figs. 8-10. *Cyliosomella andersoni* sp. nov.

Fig. 8. Femur (*fe*) and tibiotarsus of the co-telopods; *pr,* process of the former; *y,* accessory lobe of the same; × 56.

Fig. 9. Syncoxite and left telopodite of the telopods viewed from the front; × 10.

Fig. 10. Tibiotarsus and femoral process of the telopods, front view; × 56.

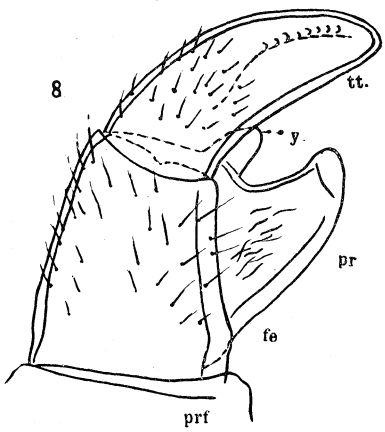
Fig. 11. *Paraulacoporus sulcatus* gen. et sp. nov.

Fig. 11. Gonopod without prefemoral segment and without coxa; × 56.

Figs. 12, 13. *Myallosoma hamuligerum* gen. et sp. nov.

Fig. 12. Gonopod-telopodite; *prf,* prefemur; *fe,* femur; pr^1 and pr_2, lateral rami of the same; *tt,* tibiotarsus; sl_1 and sl_2, rami of the solænomerite; *b,* point of separation of tibiotarsus and solænomerite; *r,* spermatic channel; × 56.

Fig. 13. Tibiotarsus and solænomerite of the foregoing; × 125.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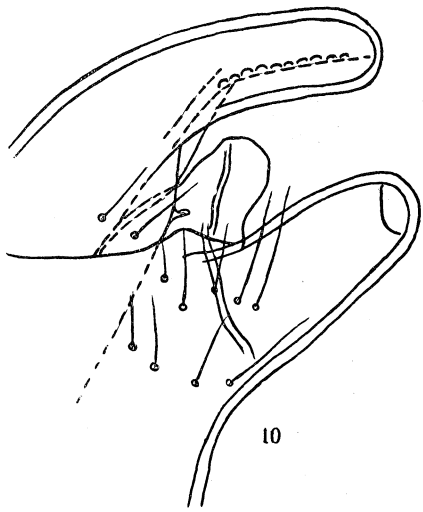
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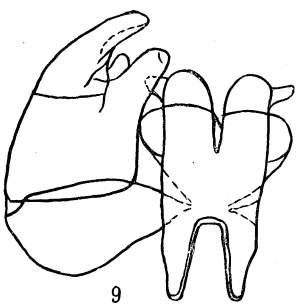
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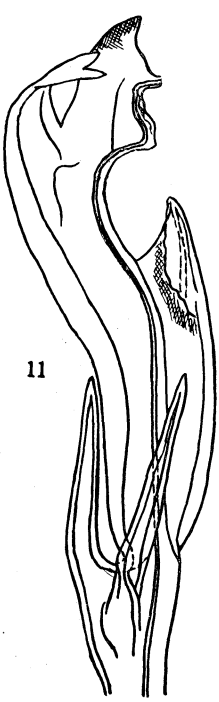
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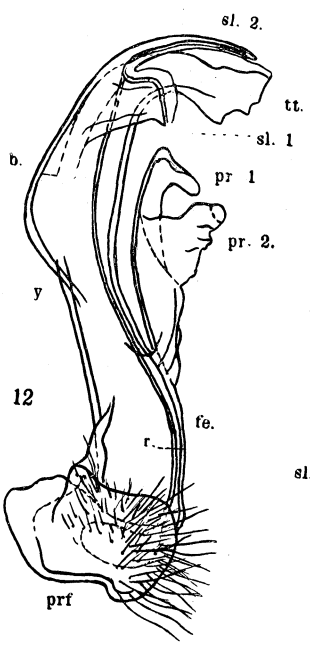
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fe.
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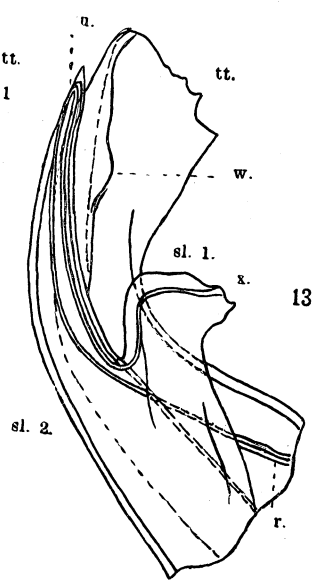
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EXPLANATION OF PLATE VIII.

Figs. 14, 15. *Rhopalowales clavigera* gen. et sp. nov.

Fig. 14. Gonopod-telopodite without coxa, lettering as in Pl. vii, fig. 12; × 56.

Fig. 15. Solænomerite; *u*, large loop of the spermatic canal; *x*, opening of the same; × 125.

Figs. 16, 17. *Welestina helmsii* gen. et sp. nov.

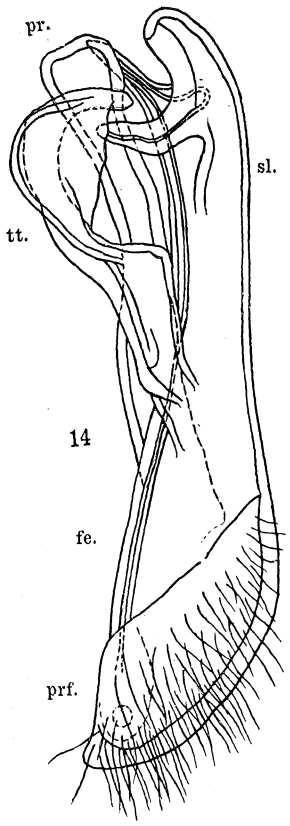
Fig. 16. Gonopod-telopodite and terminal half of the coxæ, with the coxal horn (*coa*); *y*, boundary between femur and tibiotarsus; × 56.

Fig. 17. Terminal lobe of the solænomerite with the opening of the spermatic canal (*x*); × 220.

Figs. 18, 19. *Dicladosoma andersoni* gen. et sp. nov.

Fig. 18. Tibiotarsus and solænomerite (*sl*), without bases; × 56.

Fig. 19. Basal half of the gonopod-telopodite with the bases of the foregoing; × 56.



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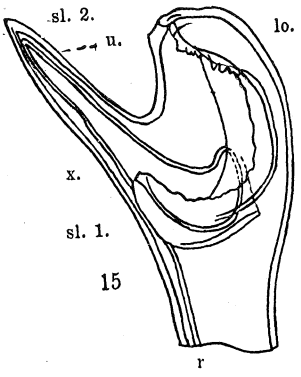

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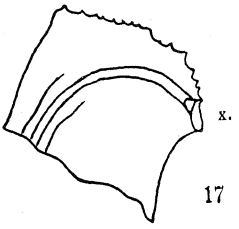

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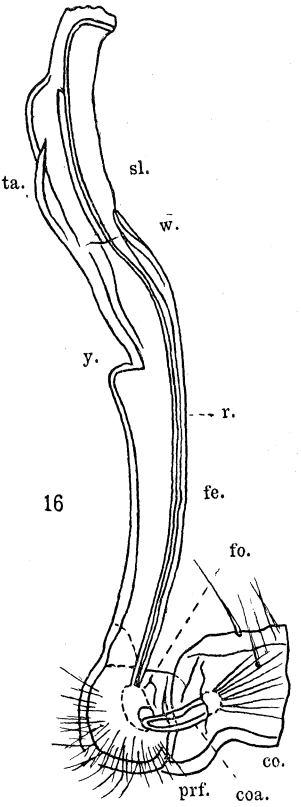

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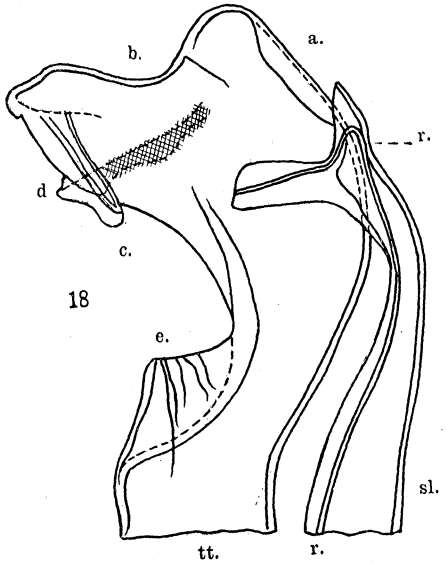

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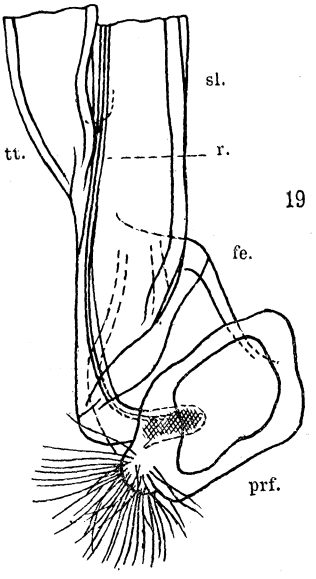

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EXPLANATION OF PLATE IX.

Fig. 20. *Leucotessara lucida* gen. et sp. nov.

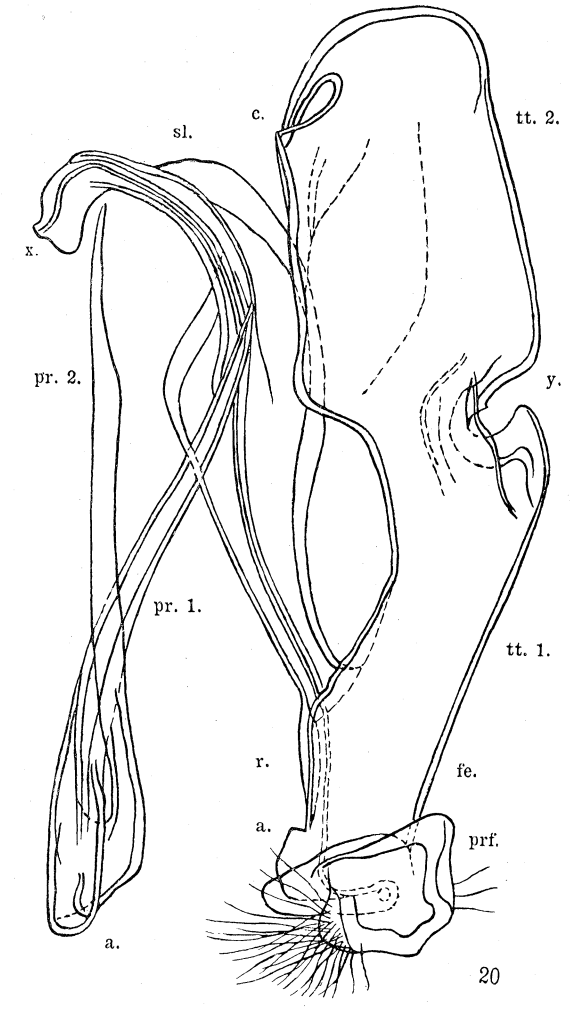
Fig. 20. Gonopod-telopodite in which the femoral lateral rami are broken off at *a* and shown separately on the left (pr_1 and pr_2); tt_1 tibial, tt_2 tarsal segments of the tibiotarsus; × 56.

Figs. 21, 22. *Hoplatessara musgravei,* gen. et sp. nov.

Fig. 21. Complete gonopod-telopodite (lettering as in Pl. vii, fig. 12); × 56.

Fig. 22. Terminal segment of the solænomerite; *x,* opening of the spermatic canal; × 125.

Fig. 23. *Dicladosoma andersoni dorrigense,* subsp. nov. Tibiotarsus of the gonopods without basal portion; × 56.



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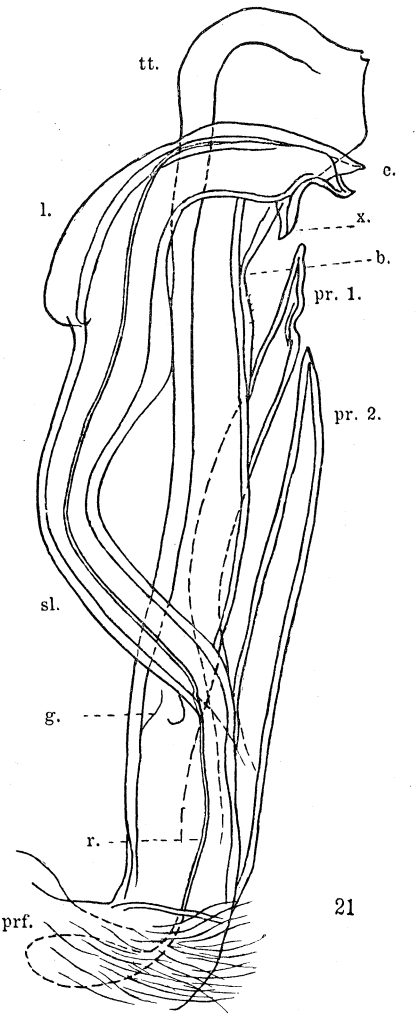

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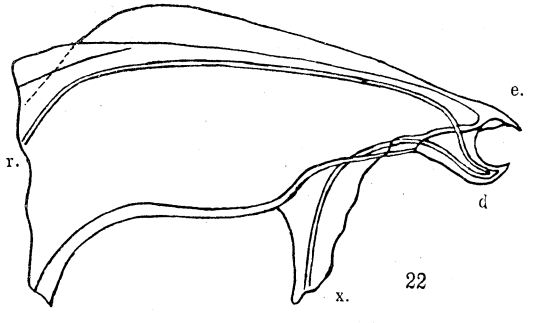

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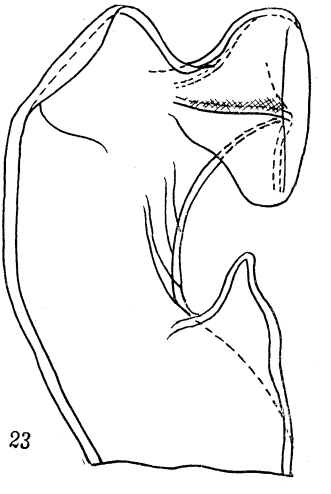

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EXPLANATION OF PLATE X.

Figs. 24, 25. *Solänodolichopus rubriventris* sp. nov.

Fig. 24. Tibiotarsus and femoral lateral ramus (*pr*) of the gonopods; × 56.

Fig. 25. Terminal lobe of the solænomerite with the opening of the spermatic canal; × 125.

Figs. 26, 27. *Solänodolichopus walesius* sp. nov.

Fig. 26. Tibiotarsus and terminal portion of the femur of the gonopods; × 56.

Fig. 27. Terminal lobe of the solænomerite with the opening (*x*) of the spermatic canal; × 125.

Fig. 30. *Hoplatessara clavigera* sp. nov.

Fig. 30. Terminal third of the longer lateral ramus of the gonopodal femur; × 125.

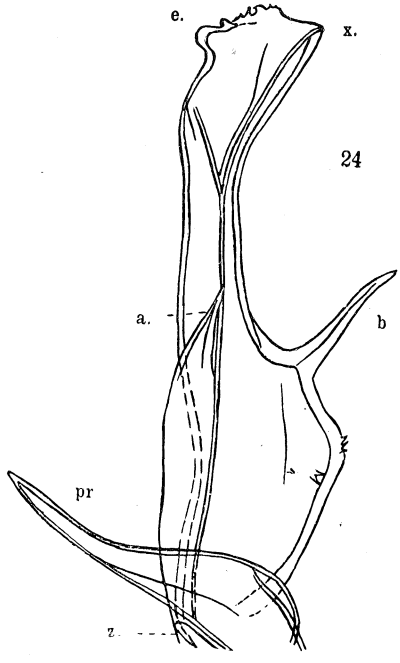
Figs. 31, 32. *Walesbolus lobatus* gen. et sp. nov.

Fig. 31. An anterior gonopod, isolated and bent somewhat apart; *s*, muscle support; *en*, coxal muscle process; *co* 1-3, parts of the coxite; *te*, telopodite; *m*, m_1, m_2, motors of the same; × 56.

Fig. 32. Coxa and prefemur of a third pair of legs of the male; × 80.

Fig. 35. *Howeobolus insularum* gen. et sp. nov.

Fig. 35. An anterior gonopod (as in fig 31); *y*, constriction between the two segments of the telopodite (te_1 and te_2); × 56.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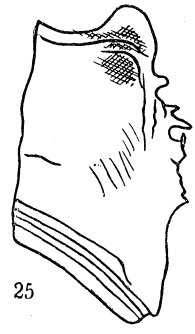
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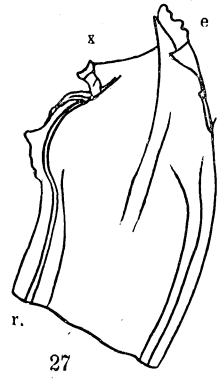
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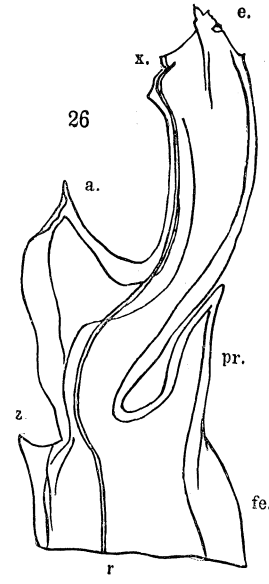
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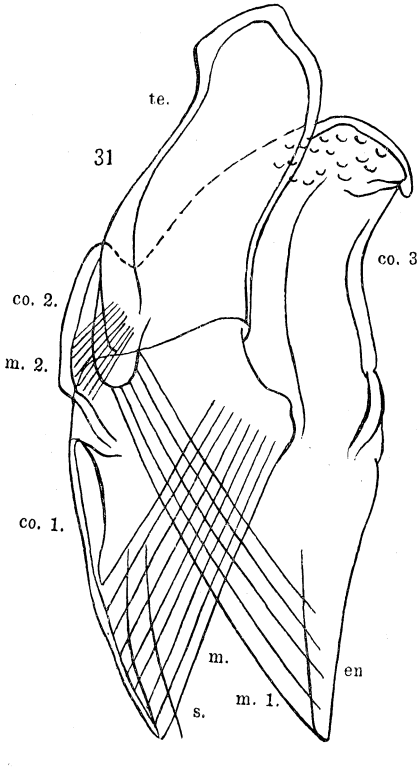
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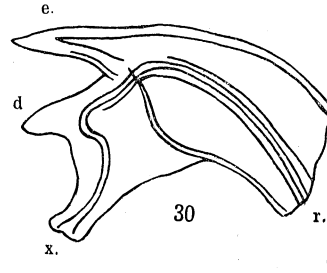
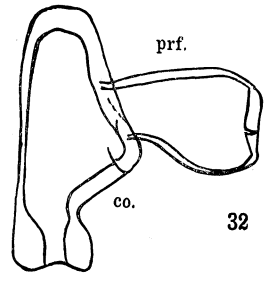
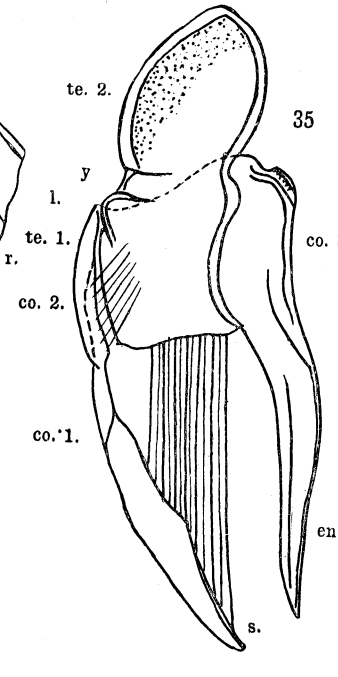
m. 1.
s.


e.
d
30
r.
x.


prf.
co.
32


te. 2.
35
y
l.
te. 1.
co. 3.
co. 2.
co. 1.
en.
s.

EXPLANATION OF PLATE XI.

Figs. 28, 29. *Hoplatessara clavigera* sp. nov.

Fig. 28. Gonopod-telopodite, without prefemur; *a*, point of attachment of the femoral lateral rami (pr_1 and pr_2); *g*, base of attachment of the solænomerite (*sl*); × 56.

Fig. 29. Terminal third of the longer lateral ramus of the gonopodal femur; × 125.

Figs. 33, 34. *Walesbolus lobatus* gen. et sp. nov.

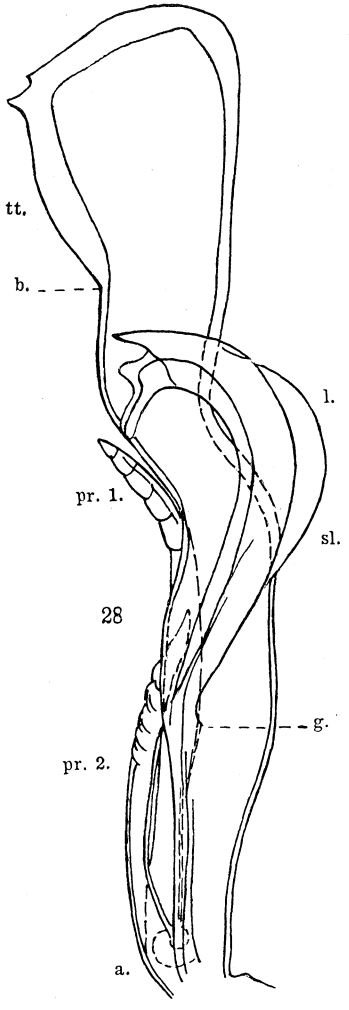
Fig. 33. Terminal segment of the main portion of the gonopodal coxa; × 125.

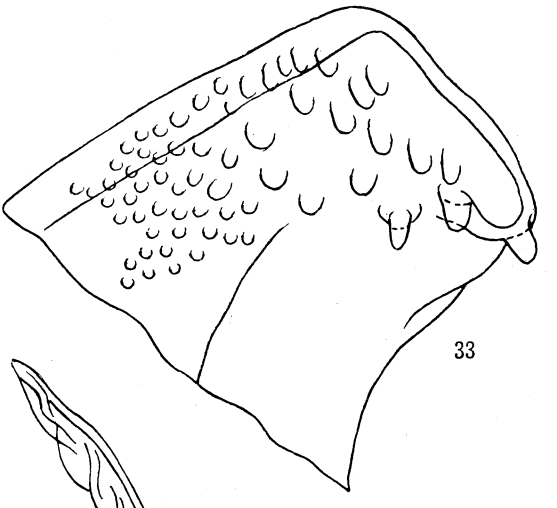
Fig. 34. Posterior gonopod, united flexibly with the muscle support (*s*), of which the end is shown; × 56.

Figs. 36, 37. *Howeobolus insularum* gen. et sp. nov.

Fig. 36. A posterior gonopod, without muscle support; × 56.

Fig. 37. Coxa and prefemur of a third pair of legs of the male; × 80.


tt.
b.
l.
pr. 1.
sl.
28
pr. 2.
g.
a.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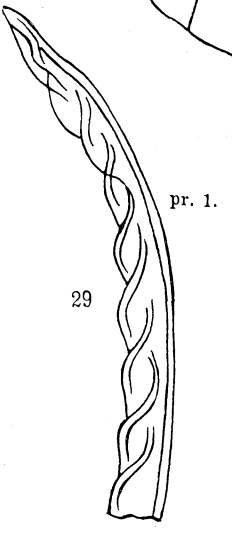
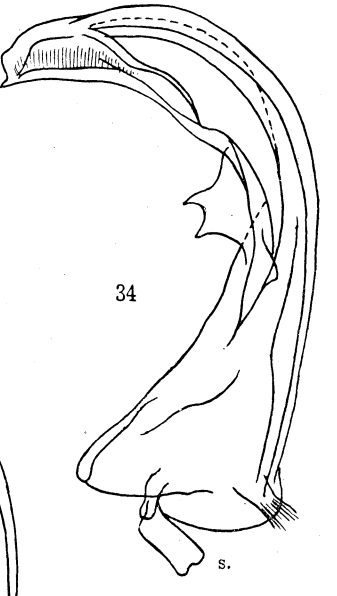

pr. 1.
29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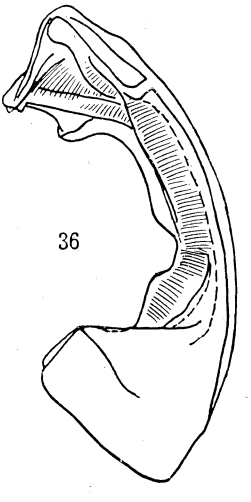
s.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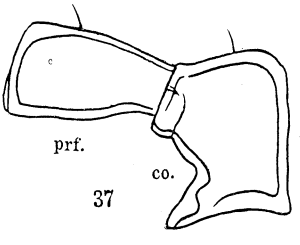

prf.
co.
37

EXPLANATION OF PLATE XII.

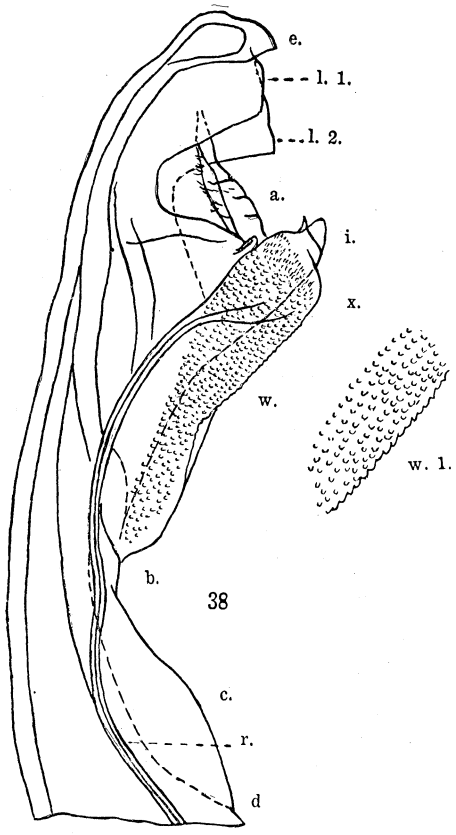
Figs. 38, 39. *Trigoniulus montium,* sp. nov.

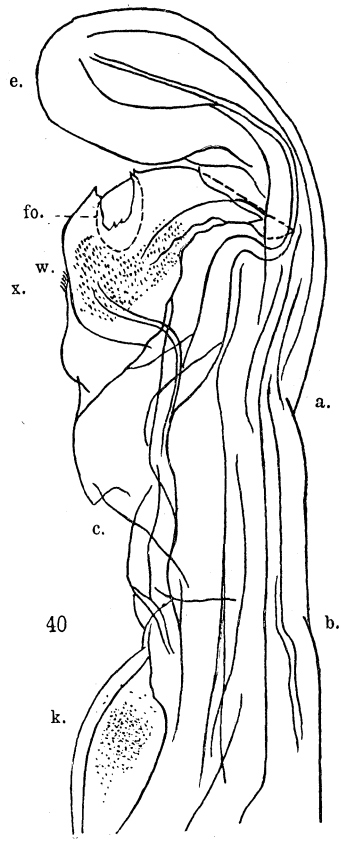
Fig. 38. Telopodite of the posterior gonopods without the basal portion; *w,* inner pad, with the opening (*x*) of the spermatic canal (*r*); near it (*w*) a part of the pad more strongly magnified (× 125); *b,* inner constriction; *e,* terminal point; × 56.

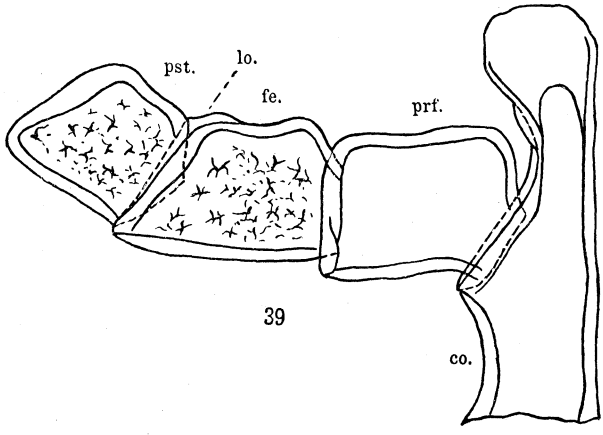
Fig. 39. The four proximal joints of a third pair of legs of the male; × 56.

Fig. 40. *Trigoniulus digitulus richmondanus* subsp. nov.

Fig. 40. Telephodite of the posterior gonopods without the basal portion; *w,* inner pad with the opening (*x*) of the spermatic canal and a pit-like hollow (*fo*); *b,* constriction; *k,* pore cushion; *e,* terminal lobe; × 56.


e.
l. 1.
l. 2.
a.
i.
x.
w.
w. 1.
b.
38
c.
r.
d


e.
fo.
w.
x.
a.
c.
40
b.
k.


pst.
lo.
fe.
prf.
39
co.

CORRIGENDA.

Page 44, line 5 and footnote [6]. *For* Bogan *read* Bogen.

Page 95, fourth line from bottom. For *walesius* read *rubriventris*.