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LI.—New genera and species of Millipedes of the Family Platyrrhachidæ from the Indo- and Austro-Malayan subregions, contained in the collection of the British Museum

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Mormyrus psittacus.

Depth of body $3\frac{1}{2}$ times in total length, length of head $4\frac{1}{2}$ times. Snout very short, strongly curved, hardly as long as diameter of eye, which is $4\frac{1}{2}$ times in length of head; mouth terminal, below the level of the eye, its width $\frac{1}{2}$ length of head; teeth moderately large, notched, 3 in the upper jaw, 4 in the lower; chin slightly swollen. Dorsal 33, originating halfway between end of snout and caudal and considerably in advance of anal; longest rays $\frac{3}{4}$ length of head. Pectoral a little shorter than head, reaching base of ventral; latter $\frac{1}{2}$ length of head. Anal 23, originating below thirteenth dorsal ray; longest rays $\frac{2}{3}$ length of head. Depth of caudal peduncle $\frac{1}{3}$ its length. Scales $60\frac{12}{13}$; 12 scales round caudal peduncle. Silvery, dark grey on the back.

Total length 125 millim.

A single specimen.

This species is probably the same as *M. discorhynchus*, Schilthuis (nec Peters). *M. discorhynchus* differs in the snout projecting beyond the mouth, the smaller scales ($65-70\frac{15}{16}$), and the deeper caudal peduncle ($2-2\frac{1}{2}$ as long as deep).

LI.—*New Genera and Species of Millipedes of the Family Platyrrhachidæ from the Indo- and Austro-Malayan Subregions, contained in the Collection of the British Museum.*
By R. I. ПОЦОК.

MOST of the material upon which this paper is based has been acquired by the Trustees of the British Museum, during the past ten years, from various collectors, like Messrs. C. Hose, A. Everett, and H. N. Ridley, who are resident in the East and have kindly forwarded the specimens to the Museum in response to an appeal for examples of Millipedes.

A few of the species here described as new may eventually prove to be identical with species established by Peters in 1864. But without examination of the types the identification of Peters's species is almost impossible, owing to the absence of figures and to the fact, recently established by Mr. Cook, that in many cases the diagnoses were based upon two or more recognizable forms*.

* On behalf of collectors unfamiliar with the taxonomy of the Diplopoda, it may be explained that the Platyrrhachidæ are for the most part Millipedes of large or medium size, in which the body is composed of twenty segments, each segment, except the first and the last, being furnished on each side with a large more or less square and horizontal plate which bears the pore.

Genus PHYODESMUS, Cook.

Phyodesmus, Cook, *Brandtia*, i. p. 1 (1896).

Phyodesmus ornatus, sp. n. (Fig. 1, p. 431.)

♂.—*Colour* (in alcohol) of dorsal surface bluish grey, the middle of the back yellowish green; the cylindrical part of the segments with a broad blackish blotch on each side, separated by a triangular paler portion; keel-bearing portion of segments furnished with two or three black spots on each side in front and a few more behind; at the end of the body these spots show a tendency to fuse and form continuous dark bands; pores black; antennæ and legs blackish.

Length of *antennæ* excelling width of first tergite by about half its own width, less than width of second.

First tergite with its angles produced, the anterior border straight between them. Second segment about as wide as the twelfth. The anterior seven segments with merely lobulate side margins, the rest with two or three distinct though short triangular teeth; anterior border of keels convex, with rounded basal shoulders, posterior border lightly sinuous, both smooth. *Pore* on fifth and seventh segments about three diameters from the edge, on the toothed keels not more than two diameters from the notch. *Caudal process* posteriorly narrowed, posterior border straight but laterally notched.

Copulatory foot (as in fig. 1) straight, ending in a shorter blade-like ramus and a longer curved prong, from which projects a smaller lamina.

Measurements in millimetres.—Total length 100; width of second segment 14·5, of fifth 16, of twelfth 14·8.

Loc. Borneo (*Rev. G. Brown*).

Phyodesmus Hosei, sp. n. (Fig. 2.)

♂.—Resembling the preceding, but bluer in colour, without yellowish-green dorsum, and the black patches on the cylindrical part of the segments separated by a narrower pale band.

Keels also considerably larger, with the teeth much stronger, appearing as far forwards as the fifth segment; on the posterior segments long and sharp, the pore being often quite close to the adjacent notch.

Copulatory foot much longer, the long prong broader at the base, the short ensiform process much shorter and not projecting as straight forwards.

Measurements in millimetres.—Total length (at least) 96; width of second segment 15, of fifth 17·7, of twelfth 16.

Loc. Baram, Borneo (*C. Hose*).

Phyodesmus vittatus, sp. n. (Fig. 3.)

♂.—*Colour* (dry and faded) a tolerably uniform pale brown, but with a distinct continuous narrow pale band passing along the middle of the dorsum from the first to the nineteenth segments.

First tergite with its angles scarcely produced.

Body not so wide anteriorly as in the preceding two species, the fifth segment being only a little narrower than those situated more posteriorly; the keels more elevated from the base and the whole of the dorsal surface more coarsely granular; lateral margins of keels dentate from the fifth backwards; the teeth from two to four in number, not including the anterior and posterior angles. *Pore* about two diameters from the edge on the fifth and seventh segments; about one or less from the adjacent notch on the posterior segments. Sternal spines much longer than in the preceding two species.

Copulatory foot (as in fig. 3) long, straightish, ending in two unequal prongs, the longer strongly curved and slender, the shorter more laminate and abruptly hooked.

Measurements in millimetres.—Total length 93 (at least); width of second segment 13·8, of fifth 15, of twelfth 14·3.

Loc. Borneo (*H.M.S.* 'Samarang').

This species belongs doubtfully to the genus *Phyodesmus*, being apparently more coarsely granular than the type (*P. pictus*, Peters), with the anterior angles of the first tergite not produced to anything like the same extent. Either of the other species here referred to *Phyodesmus* may prove to be identical with *pictus*, Pet., *Petersii*, Cook, or *montrado*, Cook, which have not yet been satisfactorily diagnosed.

Phyodesmus areatus, sp. n.

♀.—*Colour* (dry and faded specimen) greyish brown; cylindrical half of segments blackish above, with a median pale band; keel-bearing portion paler in the middle, with three blotches in front on each side, also some brown spots posteriorly, the spots separated by whitish lines, which form a kind of pale network pattern. Anterior angles of first tergite produced. Dorsal surface of all the segments distinctly granular, the rows of tubercles distinct.

Side margins of the keels from about the eighth distinctly dentate, but the teeth all small, about four in number not including the anterior and posterior angles, so that the pores never come close to the nearest notch, being usually separated by about two diameters from it; on the fifth segment the

pores are about three diameters from the edge; posterior margin of posterior keels finely serrulate.

Sternal spines longish. Coxæ of second leg produced into a long spiniform process.

Measurements in millimetres.—Total length 96; width of second segment 13·5, of fifth 17, of twelfth 16·3.

Loc. Borneo (44·106).

This form may prove to be the female of *P. ornatus*, but the teeth on the margins of the keels are smaller and more numerous, the dorsal surface is far more coarsely granular &c., the anterior borders of the keels less convex &c.

The development of the coxal processes on the second leg may be a generic character.

STENONIODES, gen. nov.

Anterior end of the *body* normally attenuate, the second segment much narrower than the fifth.

First tergite carinate, broad in front, the anterior border of the keel on a level with that of the rest of the tergite.

Antennæ short in both sexes, the length less than the width of the second tergite.

Tergites granular or coriaceous, with three rows of tubercles distinct but not strong; keels large, horizontal; anterior and posterior margins entire, lateral border at most sinuate, base of the keel elevated into a rounded prominence nearly on a level with the summit of the back. *Pores* far removed from the side margin of the keel; anterior and posterior angles of keels rounded, not in any sense spiniform: only in the segments posterior to the sixteenth do the posterior borders of the keels project distinctly backwards.

Caudal process with convex posterior border and rounded angles.

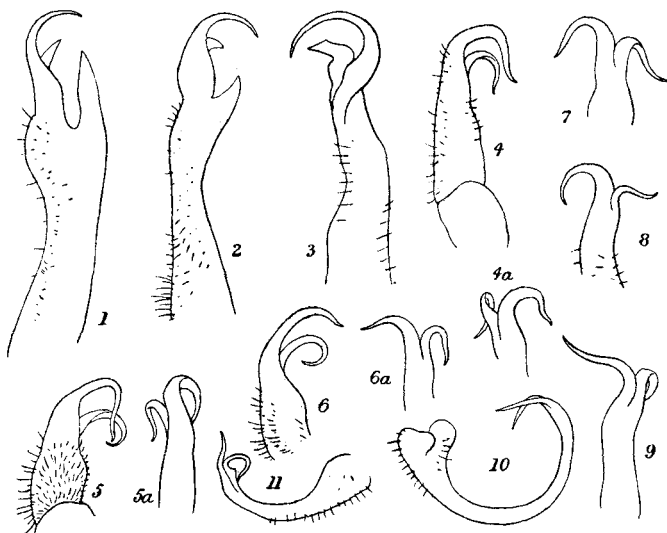
Sterna with two pairs of longish spines; the anterior pair divided downwards and forwards, the posterior pair vertically downwards.

Copulatory feet of male short, terminating in two subequal prongs.

Type *S. Catorii*.

This genus resembles *Phyodesmus* in the form of its first tergite, which either has the anterior angles produced or is broadest along the anterior margin; but the lateral margins of the keels are only lightly sinuate, not deeply toothed as in *Phyodesmus*. In the position of the anterior sternal spines it approaches *Phractodesmus*, but the latter has the posterior sternal spines directed backwards, not vertically downwards,

the pores close to (about one diameter from) the edge, the first tergite without produced or widely rounded front keels, &c.



- Fig. 1.—*Phyodesmus ornatus*. Left copulatory foot; outer view.
 Fig. 2.—*Phyodesmus Hosei*. Ditto.
 Fig. 3.—*Phyodesmus vittatus*. Right copulatory foot; outer view.
 Fig. 4.—*Stenoniodes Catorii*. Left copulatory foot; outer view.
 Fig. 4 a.—Ditto. Apex of copulatory foot from below.
 Fig. 5.—*Stenoniodes Creaghii*. Left copulatory foot; outer view.
 Fig. 5 a.—Ditto. Ditto from below.
 Fig. 6.—*Acanthodesmus pinangensis*. Left copulatory foot; outer view.
 Fig. 6 a.—Ditto. Right copulatory foot from below.
 Fig. 7.—*Acanthodesmus perakensis*. Ditto.
 Fig. 8.—*Acanthodesmus Petersii*. Ditto.
 Fig. 9.—*Acanthodesmus lineatus*. Ditto.
 Fig. 10.—*Eurydirorhachis dulitensis*. Right copulatory foot; outer view.
 Fig. 11.—*Eurydirorhachis discrepans*. Left ditto.

Stenoniodes Catorii. (Fig. 4, 4 a.)

♂.—*Colour* of segments a uniform purplish black, only the three borders of the keels yellowish white; head, antennæ, and legs blackish; sterna and bases of legs ochre-brown.

First tergite granular, with an anterior marginal row of beads, its anterior border straight, keels not or hardly elevated; the following three segments granular above, the following segments merely coriaceous, granular on the keels; the prominence at the base of the keels conspicuous and sculptured like the dorsum, being coriaceous; keels wider

than dorsum of segments, their anterior borders convex, but not sharply shouldered at base; posterior border also lightly convex, at all events at the base, where in the posterior half of the body it is distinctly shouldered. Pores about six diameters from the lateral margin of the keels.

Copulatory foot (as in fig. 4, 4 a), when viewed from below, ending in two prongs, one above the other at the base, whence they diverge, the inferior prong curving upwards, outwards, and backwards, the superior upwards, inwards, and backwards.

Measurements in millimetres.—Total length 78, width 15·5; width of second segment 11·3, of fifth 15·5.

Loc. Sandakan (*D. Cator*).

Stenoniodes angulicollis, sp. n.

♂.—Closely allied to *S. Catorii*, but not so black in colour, being browner.

Keels of the first segment more elevated, projecting forwards, so that the anterior border between them is distinctly concave.

Prominence at the base of the keels on the other segments low and relatively but little noticeable as compared to *Catorii*.

Copulatory feet practically as in *Catorii*.

Measurements in millimetres.—Total length 73; width of second tergite 10·5, of fifth 15·2.

♀.—Larger than male and more convex, with smaller keels, those of the first tergite not being produced.

Measurements in millimetres.—Total length 80; width of fifth segment 17, of caudal process 4.

Loc. Sandakan (*D. Cator*).

Stenoniodes Creaghii, sp. n. (Figg. 5, 5 a, p. 431.)

Smaller than *Catorii*, but very closely resembling it in colour (except that the white border on the keels is broader, being distinctly traceable on the first tergite) and structure, the tergites presenting the same smooth prominence at the base of the keels; the keels, however, of the first tergite are distinctly more produced, though not so much as in *angulicollis*; and the copulatory organ is shorter, with the prongs a little differently disposed, as shown in figg. 5, 5 a.

Measurements in millimetres.—Total length 67; width of second tergite 11, of fifth 13.

♀.—Like the male in colour; rather more granular than the female of *angulicollis*, the anterior rows of tubercles being distinct on all the tergites.

Measurements in millimetres.—Total length 69; width of fifth segment 13·5, of caudal process 3·5.

Loc. North Borneo, Sandakan coast (*Governor Creagh*).

This species is smaller than the preceding two, is rather more coarsely granular, and has the edges of the keels more broadly whitened.

Stenoniodes baluensis, sp. n.

Colour black, with the white margins to the keels conspicuous as in *Creaghii*, with the same form of first tergite but with coarser granulation, the two anterior rows of tubercles being distinct on all the segments and the tergites even at the end of the body distinctly, though finely granular; lastly, the tail is narrower than in the other species, with side margins that are straight and parallel, with angles more squared.

Measurements in millimetres.—Total length 92; width of fifth segment 17·5, of caudal process 3·6.

Loc. Mount Kina Balu (*J. Whitehead*).

Stenoniodes sicutensis, sp. n.

♂.—*Colour* a very deep chocolate-brown or black; margins of keels with a strong red tinge, the coloured rim also broader than in the other species.

First tergite with its anterior angles not produced in front of the anterior border; the rest of the tergites and upperside of keels more coarsely granular; elevation at the base of the keel not very conspicuous, and not smoother than the rest of the keel; lateral borders of keels more strongly lobulate than in the other species. *Copulatory feet* short as in *Creaghii*, but with the prongs shorter and curled almost as they are in *Catorii*.

Measurements in millimetres.—Total length 64; width of second segment 9·5, of fifth 12·5, of caudal process 3·2.

Loc. Sibutu Island, Sulu Archipelago (*A. Everett*).

Genus ACANTHODESMUS, Peters.

Acanthodesmus, Peters, Mon. Ak. Wiss. Berlin, 1864, pp. 546–547.

Acanthodesmus pinangensis, sp. n. (Figg. 6, 6 a.)

Smaller than *Andersonii* and differently coloured.

♂.—*Colour.* Dorsal surface a blackish or reddish brown, the base of the keels the same tint as the dorsum of the segment, the rest of the keels a dull brownish yellow; lateral portions of first and second segments not yellow, of third only slightly so; legs and antennæ distally infuscate.

Sterna and *coxae* pale yellow.

Dorsum of posterior segments coriaceous, not granular, upperside of keels granular; margins of keels lobulate, straight; pore about a diameter and a half from the edge. Caudal process with its margin less convex than in *Andersonii*.

Copulatory organ with the prongs differently curved, the inner being bent more abruptly backwards and the outer less abruptly backwards.

Measurements in millimetres.—Total length 64; width of second segment 8.2, of fifth 10.

Loc. Pinang (*H. N. Ridley*).

Acanthodesmus perakensis, sp. n. (Fig. 7, p. 431.)

As large as *Andersonii*, but differently coloured and more coarsely sculptured.

Legs and antennæ flavous as in that species; dorsum of keel-bearing portion of segments brown, lateral portions on base of keel noticeably darker, the rest of the keel flavous; cylindrical area of segments dorsally pale brownish yellow with a median black band.

Dorsal surface of all the segments, even at the end of the body, very distinctly granular, more so than in *Andersonii*.

Copulatory organ with practically the same curvature of prongs as in *Andersonii*.

Measurements in millimetres.—♂ (small). Total length 68; width of fifth segment 10. ♀. Total length 82; width of fifth segment 13.

Loc. Perak. Specimens presented by J. H. Leech, Esq.

Acanthodesmus Petersii, sp. n. (Fig. 8.)

♂.—*Colour* faded, apparently as in *perakensis*, but the keels without indication of a black basal patch, as much yellow on them as in *Andersonii*, the cylindrical part with traces of a median dark line. But apart from its colouring, which is of doubtful value, seeing that the specimen is faded, the species certainly differs from both *Andersonii* and *perakensis* in the form of the copulatory foot, the inner prong of which is not bent backwards but inwards, then slightly forwards at the tip.

Measurements in millimetres.—Total length 72; width of fifth segment 10.

Loc. Malay Peninsula (*Ind. Mus.*).

Acanthodesmus lineatus, sp. n. (Fig. 9.)

♂.—*Colour* black, the edges of the keels very narrowly bordered with pale yellow and a narrow (1 mm. wide) longitudinal dorsal band extending from the upper surface of

the head to the base of the last segment; sterna and bases of legs pale; antennæ and legs ochraceo-fuscous.

Antennæ long, as wide as the third segment, less than the ninth by half the width of the keel.

Dorsal surface finely granular or coriaceous, the tubercles not very distinct; keels large and nearly horizontal, with anterior and posterior borders finely serrulate and lateral margin almost entire; only finely sinuous on the posterior keels; anterior angles strongly convex, anterior border also convex, with rounded basal shoulder; posterior border angulate basally, lightly concave; posterior angle acute, shortly spiniform; pores about three diameters from the edge.

Caudal process very wide, rather strongly notched just before its posterior angles; the middle of its posterior surface widely produced.

Copulatory feet with the external prong directed downwards and outwards, the lower or inner prong curved almost vertically upwards and backwards.

Measurements in millimetres.—Total length 54; width of second segment 7·8, of fifth 9·5.

Loc. Singapore (*H. N. Ridley*).

This species differs from the preceding in the presence of a median dorsal yellow band, the small amount of yellow on the keels, the greater distance of the pore from the margin, its larger keels and longer antennæ.

EURYDIRORHACHIS, gen. nov.

Antennæ short, a trifle exceeding the width of the first tergite.

Body very wide in front, owing to the large size of the anterior keels, which resemble in shape and approximately in size those of the rest of the body, the second segment being as wide across as the seventeenth or sixteenth; first tergite with its angles not produced forwards, but widest just behind the anterior border.

Tergites coarsely granular, tubercles distinct; keels with anterior and posterior borders finely serrulate; lateral margin lobulate, fluted, the pore remote from it; anterior border basally shouldered, angle rounded, posterior angle square or acute, but not spiniform; from the fifteenth segment the keels project posteriorly beyond the level of the posterior border of the tergite.

Caudal process very wide, widest at its posterior angles.

Sterna with four short spines directed posteriorly.

Copulatory organ long, curved, ending in two short subequal prongs.

Differing from *Acanthodesmus* and allied genera by the large size of the keels of the second and third segments, especially of the second.

Eurydirorhachis dulitensis, sp. n. (Fig. 10, p. 441.)

Colour black, the lateral margin and anterior and posterior angles of the keels ochre-yellow, but only at the hinder end of the body does the yellow extend inwards and involve the pore; first tergite and caudal process scarcely noticeably yellow; antennæ blackish; legs fulvo-fuscous, with paler basal segments.

Dorsal surface of segments coarsely granular on anterior half of body, less coarsely posteriorly, but the rows of tubercles distinct on all of them; margins of the keels indistinctly four or five lobate; the posterior border basally indistinctly angulate. Pores situated about two or three diameters from the lateral border, but farther away from it in the posterior than in the anterior half of the body.

Copulatory feet as in fig. 10; distal segment thick and hairy at base, then suddenly narrowed and running out into a long strongly arched smooth ramus, curved upwards and backwards and ending in two short subequal prongs.

Measurements in millimetres.—♀. Total length 83; width of fifth segment 15, of second 13.6.

Loc. Mount Dulit, N. Borneo (*C. Hose*).

Eurydirorhachis baramensis, sp. n.

♀.—Resembling the preceding, but with the keels more flavous, the yellow even in the anterior half of the body extending as far as the pore, while the first tergite has its side margins very distinctly flavous and nearly the whole of the caudal process is pale; the legs and antennæ also are paler. Keels a little larger.

Measurements in millimetres.—Total length 82; width of fifth segment 15.5, of second 13.5.

Loc. Baram, N. Borneo (*C. Hose*).

Eurydirorhachis discrepans, sp. n. (Fig. 11.)

♂.—*Colour* (dry) a uniform chocolate-brown, the yellow on the keels (if any) being not distinctly indicated except on the first segment, where it is very visible. Closely related to the preceding species, but with the side margins of the keels much more distinctly lobulate, the lobules on the poste-

rior half of the body taking the form of smooth rounded teeth or tubercles.

Copulatory feet (as in fig. 11) much shorter and less curved than in *dulitensis*, with the inner terminal flagellum angled at the base and strongly curled.

Measurements in millimetres.—Total length 65; width of fifth segment 11.5, of second 11.

Loc. Borneo.

HOPLURORHACHIS, gen. nov.

First tergite broadest in front of the middle, but the anterior angles not produced.

Dorsal surface of segments finely granular or coarsely coriaceous; the three rows of tubercles visible, the posterior the largest; margins of keels entire; pores remote from the margin.

Caudal process broad, posteriorly strongly tridentate, the lateral angles and the middle being strongly produced.

Sterna from seventh segment armed with four long posteriorly or downwardly directed spines.

Distal end of copulatory organ shorter than hairy basal ramus, bent at right angles to it and trifid.

Type *H. Everetti*.

Differing from allied genera (*Acanthodesmus* &c.) in having the lateral angles of the caudal process produced and spiniform.

Hoplurorhachis Everetti, sp. n. (Figg. 12, 12 a, p. 441.)

Colour black or deep brown, the dark colour spreading on to the keels at least as far as the pore; the rest of the keels and legs and antennæ and the processes of the tail flavous.

Length of *antennæ* a little less than width of second segment.

Anterior end of body rapidly increasing in width posteriorly from the first to the fifth segments.

Anterior border of *keels* (e. g. of twelfth segment) thickened, shouldered basally, anterior angle rectangularly rounded; posterior border finely crenulate, the angle subacute, a triangular prominence at the base; pore separated from the lateral margin by at least four diameters; posterior border of this keel on a line with the posterior border of the segment; tail narrow, with prominent processes.

Copulatory foot with straight basal ramus; terminal portion broad, giving off internally a wide short lamina, externally a longer posteriorly projecting lamina, and bearing in addition

a long curved prong, which surpasses the external lamina in length, and a much shorter prong, the apex of which overhangs the base of the long prong.

Loc. N.W. Borneo (*A. Everett*). Three male examples.

Hoplurorhachis Hosei, sp. n. (Fig. 13, p. 441.)

Resembling the preceding in colour, but easily recognizable by being more coarsely granular, having the pore closer to the side margin (barely three diameters from it on the twelfth segment), the anterior and posterior edges of the keels more coarsely serrulate, the process at the base of the posterior side more dentiform and less triangular, being narrower at the base; the tail broader, with the processes shorter, and the infero-lateral tubercle on the anal segment much longer; and, lastly, by the form of the copulatory feet, the ramus of this organ being distinctly curved when viewed from the side and terminating in two processes—an outer long curved prong, the apex of which is bent at right angles, and an inner branch, which is subdivided into a laminate portion and a two-pronged branch.

Length 69 millim., width 13.

Loc. Baram (Borneo). One example obtained by C. Hose.

Genus PHRACTODESMUS, Cook.

Phractodesmus, Cook, *Brandtia*, i. p. 1 (1896).

Phractodesmus Ridleyi, sp. n.

♀.—*Colour* a uniform blackish brown, with a longitudinal white dorsal band (2–2·5 millim. broad) passing from behind the border of the first tergite to the posterior border of the nineteenth; legs and antennæ fuscous; sterna and bases of legs pale.

Antennæ longer than the width of the first segment, shorter than that of the second.

First tergite broadest along the anterior border, which is straight and transverse; the anterior angles not produced forwards, but continuous with the anterior border.

Dorsal surface of all the segments thickly granular, the rows of tubercles distinct even on the first tergite; keels depressed, their edges smooth, the anterior and lateral being slightly thickened, the latter lobulate, the former basally shouldered; the anterior angles bluntly rounded, forming an obtuse angle in the posterior half of the body, an acute one in the anterior half; the posterior angle not rounded, square or pointed, but not spiniform; porous area large, a diameter or

less from the edge. *Caudal process* with two pairs of prominent tubercles at the sides of the posterior border, which is rather strongly though not angularly produced mesially.

Sternal spines strong, the posterior pair directed posteriorly, the anterior pair downwards and forwards.

Measurements in millimetres.—Total length 76; width of second tergite 10, of fifth 12·5.

Loc. Singapore (*H. N. Ridley*).

In colouring this species seems to resemble *P. subvittatus*, Peters (Mon. Ak. Wiss. Berlin, 1864, p. 545), the type of the genus, which came from the island of Linga, 100 miles to the south-east of Singapore. There is nothing, in fact, in Peters's diagnosis to separate the two; but Mr. O. F. Cook, who has examined the type, says in his diagnosis of the genus *Phractodesmus*, "first segment broadest at or behind the middle," which is certainly not the case in *Ridleyi*; and again, "carinæ laterally margined outside the pore." But in *Ridleyi* the margination is scarcely, if at all, more noticeable than what is presented, for example, by *Acanthodesmus Andersonii*, Poc. So that, apart from geographical reasons, there is little doubt that the two are specifically different, though I strongly suspect they are referable to the same genus.

Genus ILODESMUS, Cook.

Iloidesmus, Cook, *Brandtia*, i. p. 1 (1896).

Iloidesmus Whiteheadi, sp. n. (Fig. 15.)

♀.—*Colour* black, with a longitudinal yellow band 3–4 millim. wide, extending from the summit of the head on to the caudal process; legs and antennæ fulvo-fuscous; sterna brown.

Antennæ a little longer than the width of the first tergite, much less than that of the second.

First tergite widest across the middle, its anterior border convex. Dorsum convex, rather coarsely but not very closely granular, nineteenth segment nearly if not quite smooth; the rows of tubercles traceable on all the segments except on the first, which seems to be uniformly granular. Anterior and posterior borders of the keels finely serrulate, lateral border not emarginate, but furnished with small rounded or sharp teeth, irregular both in shape and number; anterior border with basal shoulder; anterior angle squared even on the fifth segment, often a little produced laterally, the anterior border straight or slightly convex; posterior border slightly concave

even on the fifth segment; posterior angle acute, but hardly spiniform even at the end of the body. Pores separated by about their own diameter from the lateral border.

Caudal process broad, its border widely convex.

Sterna with very short tuberculiform processes at the bases of the legs.

Measurements in millimetres.—Total length 73; width of second segment 10, of fifth 12.

♂.—Smaller than female (length 55 millim., width of fifth segment 9·8), with larger keels. *Copulatory legs* with hairy portion of distal segment short, much shorter than distal portion, which is long, simple, and stout, with a strong curvature, its distal portion being directed upwards and outwards, ending in a slender filiform tip.

Loc. Albay, S.E. Luzon (*J. Whitehead*).

Perhaps identical with *dorsalis* of Peters from Luzon, which, according to Peters, is nearly allied to *margaritiferus*, Gerv. (= *Meyenii*, Brandt). This new form differs from *margaritiferus*, according to specimens in the British Museum, in being much more coarsely granular, with the posterior angles of the keels less acute. In spite of the fact that in this species the copulatory feet do not cross and are not branched, I believe it belongs to *Ilodesmus*.

Genus TAPHODESMUS, Cook.

Taphodesmus, Cook, *Brandtia*, i. p. 1 (1896).

Taphodesmus sanguineus, sp. n. (Figg. 14, 14 a.)

♀.—*Colour* black, the marginal thickening of the keels blood-red.

Antennæ a little exceeding width of first tergite in length, much less than width of second.

Dorsum of segments strongly convex; keels small, the three rows of tubercles conspicuous, subequal in size, the spaces between them and the upperside of the keels coarsely granular, the marginal thickenings of the keels irregularly tubercular; anterior angles of all the keels from the fourth backwards widely rounded, posterior angle squared or acute, not spiniform; anterior edge of keels basally shouldered.

Caudal process semicircularly rounded.

Sterna not spined.

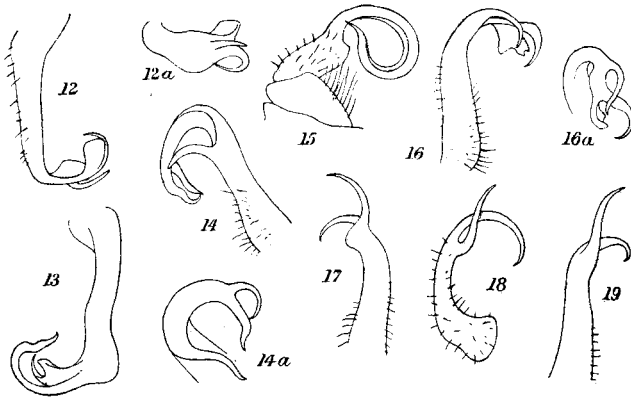
♂.—Smaller than female and less convex. *Copulatory feet* closely applied along the inner edges of the distal segment, the terminal portion ending in three prongs, the proximal shorter, lightly curved, projecting outwards, the distal two

arising from a common stout branch, which curves strongly upwards and outwards.

Measurements in millimetres.—♀. Total length 65; width of second segment 7, of fifth 8.

Loc. Minahassa, N. Celebes (*C. Hose*).

The generic position of this species is, I think, doubtful. The genitalia of the type are not known; but *T. sanguineus* at least differs from it in not having the pores borne in lateral excavations of the keels.



- Fig. 12.—*Hopluorhachis Everetti*. Right copulatory foot; outer view.
 Fig. 12 a.—Ditto. Apex of ditto from below.
 Fig. 13.—*Hopluorhachis Hosei*. Left copulatory foot; outer view.
 Fig. 14.—*Taphodesmus sanguineus*. Right copulatory foot from below.
 Fig. 14 a.—Ditto. Apex of right copulatory foot.
 Fig. 15.—*Ilodesmus Whiteheadi*. Left copulatory foot; outer view.
 Fig. 16.—*Eutrachyrhachismargaritatus*. Right copulatory foot from below.
 Fig. 16 a.—Ditto. Apex of organ.
 Fig. 17.—*Diodontodesmus Woodfordi*. Left copulatory foot from below.
 Fig. 18.—*Diodontodesmus verrucosus*. Right ditto.
 Fig. 19.—*Paradesmorhachis solomonis*. Ditto.

EUTRACHYRHACHIS, gen. nov.

First tergite widest at or a little in front of the middle, its sides produced into angular processes.

Dorsal surface of body granular, the rows of tubercles very conspicuous, but not extending on to the keels, the posterior row coarser than the others. Keels not margined, laterally dentate. *Pores* close to the edge, scarcely dorsal; suture lightly sculptured.

Caudal process rounded, its tubercles prominent,

Anal sternite bitubercular.

Sterna granular, furnished with blunt tuberculiform processes at the bases of the legs.

Copulatory feet of male strongly curved inwards at the apex and ending in three processes.

Type *E. victoriæ*.

Eutrachyrhachis margaritatus, sp. n. (Figg. 16, 16 a.)

Colour black, the teeth on the keels and the tubercle on the dorsum clear and shining.

Antennæ not exceeding in length the width of the first tergite.

First tergite convex, depressed in the middle, swollen on each side, covered with granules, and bearing in addition four rows of large tubercles.

Keels of anterior segments depressed, those of the second larger than of the succeeding segments; upperside of all the keels coarsely granular, with two or three tubercles intermixed; anterior and posterior borders serrate or bluntly denticulate; lateral borders strongly and bluntly, but very variably toothed, bearing two, three, or sometimes four rounded teeth in addition to those at the angle; but sometimes there are but two, one close to each of the angular teeth, with a rather deeply emarginate space between; anterior angle of keels strongly shouldered.

Caudal process with border convex, the superior and marginal tubercles prominent.

Copulatory organ with its inferior (anterior) process forming a quadrate lamina; adjacent to this is a median, strongly recurved prong, while above and situated more proximally is another prong which curves beneath or above the last-named towards the lamina.

Measurements in millimetres.—Total length 43; width of second segment 6, of fifth 7.

Loc. Victoria Mountain, New Guinea.

Eutrachyrhachis victoriæ, sp. n.

♀.—*Colour* black, apices of keels yellowish red; the tubercles clearer yellowish.

Dorsal tubercles clearer than in *margaritatus*; margins of keels strongly bidentate, with usually one or more small tubercles between them; the anterior tooth much the largest on the second, third, and fourth segments, the posterior much the largest on the sixteenth, seventeenth, eighteenth, and nineteenth. Caudal process more ovate than in *margaritatus*,

the posterior border produced some distance behind the posterior lateral tubercles.

Measurements in millimetres.—Total length 55; width of second segment 7.5, of fifth 9.

Loc. Victoria Mountain, New Guinea.

In the form of its keels, as in other features, this species would seem to resemble *Platyrrhachis pergranulosus* of Silvestri (Ann. Mus. Genova, xxxiv. p. 639, 1895), from Maroka, in New Guinea; but the statement "segmentum primum angulis anticis rectis, valde productis" does not apply to the first tergite of *victoriæ*, in which the lateral angles have the form of a conical triangular tooth.

The structure of the copulatory feet of *Loriæ*, Silvestri (*loc. cit.*), and *pergranulosus* does not seem to be the same as that presented by *E. margaritatus*; *E. Loriæ* further differs in colour and *pergranulosus* in the form of its keels from *margaritatus*.

DIODONTODESMUS, gen. nov.

Allied to *Eutrachyrhachis*, but with the keels larger and higher, body less convex, the anterior cylindrical portion of the segments smooth; the area between the tubercles on the dorsum also smooth, and the suture not sculptured.

Copulatory foot of male ending in two simple branches directed inwards.

Type *D. Woodfordi*, sp. n.

Diodontodesmus Woodfordi, sp. n. (Fig. 17.)

♀.—*Colour* (of dry and probably faded specimen) a tolerably uniform greyish black; the cylindrical half of the segments white above, with a median dark stripe.

Length of *antennæ* less than width of first tergite.

First tergite granular, with only the posterior row of tubercles distinct, its anterior border evenly convex from the rounded angular lateral prominence; second and third segments also granular throughout, with large depressed keels. The rest of the segments very sparsely granular above, almost entirely smooth on the posterior end of the body, much more coarsely granular on the keels, the anterior lines of tubercles weak, the posterior conspicuous. Keels with anterior and posterior borders denticulate, anterior angle rounded, posterior angle acute but not spiniform; lateral margin lightly sinuate; keels of segments 2 to 13 directed obliquely forwards, keels not shouldered basally.

Pores dorsal, close to the border, rather less than a diameter from the edge.

Caudal process semicircular, with sinuate border.

Sterna nearly smooth, sparsely granular in front and behind.

Hairs on legs normal, setiform.

Measurements in millimetres.—Total length 62; width of second segment 8·3, of fifth 9·8.

♂.—Flatter and smoother than female, with keels larger and rather strongly bidentate, the lateral border from the fifth to the eighteenth being angularly emarginate, with sometimes minor denticulations.

Copulatory feet as in fig. 17, the anterior lower branch curving inwards, then abruptly downwards and backwards.

Measurements in millimetres.—Total length 55; width of second segment 8, of fifth 9.

Loc. Solomon Islands (*C. M. Woodford*).

Diodontodesmus verrucosus, sp. n. (Fig. 18, p. 441.)

♂.—Differing from the preceding species in being a uniform blackish tint throughout, in having the keels perfectly horizontal, the rows of tubercles much coarser, the two anterior rows extending right on to the keels and almost to the emargination, the three rows being very strong even on the first three segments; pores smaller and a little more lateral; caudal process with conspicuous lateral tubercles and a more transverse posterior border. Legs thinner, longer, and studded with clavate hairs.

Copulatory feet with a stout angular prominence at the base of the lower (posterior) prong; the prongs themselves longer than in *Woodfordi*.

Measurements in millimetres.—Total length 55; width of second segment 9, of fifth 9·6.

Loc. Solomon Islands (*C. M. Woodford*).

The species may be recognized as follows:—

- a. Lateral margins of segments almost entire, at most sinuous (the rest as under *a*¹) *Woodfordi*, ♀.
- b. Lateral margins of segments strongly and angularly emarginate, so as to be bidentate (♂).
 - a*¹. Anterior rows of tubercles on dorsum of segment very weak, obliterated on the anterior segments; cylindrical half of segments white above, with median black line *Woodfordi*, ♂.
 - b*². Two anterior rows of tubercles coarse and strong on all the segments, extending on to the keels; segments of a uniform tint *verrucosus*, ♂.

PARADESMORHACHIS, gen. nov.

First tergite broadest behind the middle; keels of second and third tergites with simple toothed side-edges; fourth and following segments to the eighteenth with margins strongly thickened, smooth, as in many Oriental (*e. g.* Burmese) species of *Orthomorpha*, the pore situated on the thickening in its posterior half, about its own diameter from the edge, looking upwards and outwards; nineteenth tergite with simple normal keels; caudal process semielliptical; dorsal surface of segments granular, with three rows of tubercles or granules, the posterior being most conspicuous.

Sterna not spined.

Anal sternite bitubercular.

Copulatory foot of male with two long prongs, curved inwards apically.

Paradesmorhachis solomonis, sp. n. (Fig. 19.)

Colour a uniform greyish brown; margin of keels greenish grey, shining.

Length of *antennæ* nearly equal to width of second segment.

First, second, and third tergites somewhat coarsely granular all over, strongly convex, with the keels of second and third nearly horizontal, with toothed side margins, the anterior and posterior edges being much more finely toothed. The rest of the segments much smoother, the keels and back nearly horizontal, only weakly granular, the posterior row of tubercles conspicuous, the rest faint, the tubercles spreading on to the keels; anterior and posterior borders of keels irregularly tubercular, except on the thickened margin, which is smooth; posterior angles acutely rounded, in no sense spiniform; anterior angles obtusely rounded, anterior border strongly shouldered at base.

Copulatory feet strongly curved, the convexity outwards, ending in two long prongs, the lower angled at the base and running forwards, the upper continuing the curvature of the basal piece and projecting inwards and backwards.

Measurements in millimetres.—Total length 43; width of second tergite 5·8, of fifth 6·2.

Loc. Solomon Islands (*C. M. Woodford*).

POLYDESMORHACHIS, gen. nov.

First tergite broadest across the middle, where on each side it is furnished with a conspicuous tuberculiform keel. Second segment as wide as the fifth. Keels horizontal or elevated, keels of only the posterior three directed backwards.

Dorsum with three rows of tubercles, the posterior two rows very faint. *Keels* with lateral margins entire, though granular, those that bear the pore notched or emarginate posteriorly. *Pores* completely marginal, though just visible when the segment is viewed from above.

Caudal process semicircularly rounded.

Anal sternite bitubercular.

Sterna not spined.

Polydesmorhachis atratus, sp. n.

♀.—*Colour* of upper surface a uniform blackish brown, the edges of the keels only indistinctly yellow; legs and antennæ infuscate; sterna pale.

Antennæ short, their length a little less than width of second segment.

First tergite mesially depressed, elevated laterally and posteriorly, beset with tubercles and granules. *Keels* of segments 2 to 7 elevated, the rest horizontal; anterior and posterior borders of keels as far back as the seventeenth segment directed obliquely forwards, almost smooth, anterior border basally shouldered, anterior angle rounded and nearly rectangular, strongly convex on the sixteenth, seventeenth, and eighteenth segments; anterior border straight on the anterior part of the body, convex on the posterior seven keel-bearing segments; posterior angle never spiniform, obtusely rounded, square on the sixteenth, produced on the seventeenth to nineteenth. The dorsal surface of keels and of the rest of the segment granular, in addition to the tubercles; the suture of the segments costulate.

Measurements in millimetres.—Total length 61; width of second segment 8·5, of fifth 8·5.

Loc. Palawan Island, between Borneo and the Philippines (*A. Everett*).

LII.—On two new *Gammarids* from New Zealand.

By GEORGE M. THOMSON, F.L.S.

[Plate X.]

THE Amphipods described in the present paper were obtained in the Bay of Islands in January 1884. They were taken by me in the dredge in about 8 fathoms of water on a nearly clean sandy bottom. Only males were met with, and as, in the case of both species, they were very distinct and conspicuous on account of the abnormal development of the