



CRAYFISHES.

FIGS. 1-3. *Parastacus hassleri*.

FIGS. 4, 5. *Parastacus agassizii*.

FOR EXPLANATION OF PLATE SEE PAGE 694.





# A REVISION OF TROPICAL AFRICAN DIPLOPODA OF THE FAMILY STRONGYLOSOMATIDAE.

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*Custodian of Myriapoda,*

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IN THE present paper are included more or less extended descriptions of new species of Diplopoda, as well as expansions and amendments to those of such old species as an examination of type specimens shows to be desirable. It is now unsafe to make identifications from many of the older descriptions, so that a better knowledge of their types is even more important than the description of new forms. In all cases the ownership of the type has been indicated, and the localities have been carefully specified, this being rendered necessary by the frequent confusion occurring in African geography by reason of changes and duplications of names.

## Family STRONGYLOSOMATIDAE Cook.

*Strongylosomatidae* COOK, Ann. N. Y. Acad. Sci., IX, p. 5.

This family includes nearly all the Merocheta with slight development of lateral carinae and long legs. These characters are, however, not sufficient for diagnosis, but are supplemented by the long antennae, the distinct inferior carinae, the more or less spined sterna, and the long falcate or hamate copulatory legs, of which the basal joint is longer than in most other families. As distinctive secondary sexual characters may be mentioned the development of processes from the sternum of the fifth segment of males and of pads of dense hairs on the two distal joints of the anterior male legs.

### ANALYTICAL KEY TO THE AFRICAN GENERA OF STRONGYLOSOMATIDAE.

Dorsum slightly convex, the carinae rather large, prominent along the entire posterior subsegment; legs and antennae short; sterna broad, all unarmed; copulatory legs very long, slender and attenuate: Genus *Orthomorpha*, cosmopolitan in the tropics, but not indigenous in Africa.

Dorsum strongly convex, the carinae small or rudimentary, affecting only the posterior half of the subsegment; legs and antennae long and slender; sterna narrow, armed with more or less distinct conic processes; copulatory legs shorter, more or less falcate and complex .....



Copulatory legs with distal ungual portion of second joint not exceeding in length the hairy basal part, and not produced into one or more attenuate prongs; anterior male legs without cushions of densely crowded hairs on the two distal joints: Genus *Scolodesmus*, Liberia.

Copulatory legs produced into one or more attenuate prongs, so that the hairless apical part of the second joint would, if extended, much exceed the basal hairy portion; anterior legs of males with distinct cushions or pads of dense hairs on the two distal joints .....

Copulatory legs distally produced into a long arm which is curved at first mesad and then turned in a circle so that its two-pronged apex lies laterad; carinae very small, rudimentary or obsolete on poreless and posterior segments: Genus *Ectodesmus*, new, type *E. extortus*, new species, Lindi, Berlin Museum.

Copulatory legs turned mesad and superposed, their apices thus not turned outward except as they extend beyond each other after crossing; carinae distinct and produced, at least on posterior segments .....

Fifth segment without repugnatorial pores: Genus *Xanthodesmus*, new, type *X. abyssinicus*, new species, Berlin Museum.

Fifth segment provided with pores .....

Copulatory legs with two rather short, broad processes rising from near the middle of the leg and projecting mesad; sternum of fourth legs with a thin, strongly chitinized process as high as broad and somewhat narrowed laterally at base: Genus *Phaodesmus*, new, type *Ph. longipes* (Attems), Quilimane, Hamburg Museum.

Copulatory legs without such processes; sternum of fourth legs with process very small or bifid .....

Legs 4-6 with the third joint crassate and enlarged below into a distinct tuberculoid process; carinae all produced caudad beyond the posterior margin of the segment: Genus *Cnemodesmus*, Congo.

Legs with third joint not specially modified; carinae slightly produced only on anterior and posterior segments: Genus *Habrodesmus*, Liberia.

#### Genus SCOLODESMUS Cook.

*Scolodesmus* COOK, Proc. U. S. Nat. Mus., XVIII, p. 97, 1895.

Body rather small and slender, nearly cylindrical, somewhat constricted behind the first segment.

Carinae very small, rudimentary or wanting on poreless and posterior segments.

Sterna of posterior legs of each segment with a pair of conic processes; sternum of fourth legs of male with a rather large, thick, bidentate process; sternum of sixth legs without a process.

Legs very long and slender; anterior legs of male without distinct cushions of densely crowded hairs; third joint unmodified.

Copulatory legs rather short, broad and simple, not produced into slender arms or prongs as in the other genera.

#### SCOLODESMUS GRALLATOR Cook.

*Scolodesmus grallator* COOK, American Naturalist, XXX, p. 418, 1896; Proc. Acad. Nat. Sci. Philadelphia, 1896, p. 261.

Color dark vinous, sometimes lighter in the middle of each posterior subsegment, which gives the effect of a light median line; legs and antennae pink or yellowish in life, fading to white in alcohol.



Copulatory legs consisting distally of a broad lamina and a narrower curved, pointed process which from the ventral view is seen to cross its fellow and in lateral aspect extends at first at right angles to the leg and then bends to become somewhat parallel to it.

Length 28 mm., width 2.5 mm.; length of antenna 7.4 mm., of leg from tenth segment 7 mm.

*Locality*.—Liberia. This species is rather rare in the deep forests of western Liberia. When disturbed the living animals run away with considerable speed and on account of their long, stilt-like legs have an appearance quite unlike Diplopoda of other families.

*Type*.—No. 617, U.S.N.M. A male specimen collected at Monrovia.

#### SCOLODESMUS SECURIS Cook.

*Scolodesmus securis* COOK, Proc. Acad. Nat. Sci. Philadelphia, 1896, p. 265.

Color dark vinous, without lighter median spots, but in some specimens not fully colored there is a distinct dark median line; legs and antennae distinctly brownish, but not so dark as the body.

Copulatory legs with the larger lamina much narrower and more falcate than in *S. grallator*, being shaped much like a broad billhook. The basal hairy part of the leg is also shorter than in *S. grallator*.

Length of male 18 mm., width 1.6 mm.; length of antenna and of leg from the tenth segment, 5 mm.

*Locality*.—Togo Colony, Misahöhe, Baumann, "*Im Urwaldmoder*." There are numerous specimens.

*Type*.—Berlin Museum.

This species is throughout smaller and more slender than *S. grallator*, from which it offers considerable differences in color and copulatory legs. The sternum of the fourth legs has the process more deeply bifid than in former species.

#### SCOLODESMUS SCUTIGERINUS (Porat).

*Strongylosoma scutigerinum* PORAT, Bihang till K. Sv. Vet.-Akad. Handl., IV, No. 5, p. 37, pl. II, fig. 9, 1894.

A specimen probably referable to this species is in the Berlin Museum from North Kamerun, collected by Conradt. The copulatory legs are, as appears from Porat's figure, somewhat longer and more slender than those of *S. grallator* or *S. securis*, and they are divided at apex somewhat differently from the other species. The habit, carinae, and secondary sexual characters are also those of the present genus, but the color pattern is very distinct from the other species, the anterior subsegments being dark brown and the posterior nearly white on the specimen in hand. According to Porat, the colors are very variable, but unless he has given the measurements of young animals he was probably dealing with more than one species, for the specimen studied is a male and fully equals Porat's largest measurements, 32 mm by 3 mm. The antennae are brown, the legs whitish.



## ECTODESMUS, new genus.

Body rather robust, at least more so than the other African genera of this family; not constricted cephalad.

Carinae very small, like those of *Scolodesmus*, rudimentary and obsolete caudad.

Sterna of the posterior legs of each segment armed with distinct conic spines; sternum of fourth legs with a large, subentire, hirsute process; sternum of sixth legs with a distinct rounded-conic, hirsute median process.

Legs very long and slender; anterior legs of male with cushions of dense hairs; third joint unmodified.

Copulatory legs broad and thick near the middle, and dentate mesad; distally they are produced into a gradually attenuate, deeply divided armature, which extends at first mesad and lies in contact with the base of its fellow; it is then bent downward (caudad) and turned laterad, so that the two-pronged apex of the armature lies near its base.

*Ectodesmus* agrees with *Scolodesmus* in habit, rudimentary carinae, slender legs and antennae, and color pattern. It differs in having the body more robust, the process of the sternum of the fourth pair of legs more prominent, thinner and entire, in the possession of a distinct rounded process from the sternum of the sixth pair of legs, in having the ventral face of the second and third joints of anterior legs membranous or fleshy, in being provided with a pad of densely crowded hairs on the two distal joints of the anterior male legs, and finally it is distinguishable from all known African Strongylosomatidae in that the copulatory legs are distally turned laterad.

## ECTODESMUS EXTORTUS, new species.

Head slightly narrower than first segment; sulcus rather shallow; clypeus smooth, sparsely hirsute.

First segment oblong, the corners rounded and the anterior margin slightly curved laterad.

Second and third segments equal in width to the first and fourth, there being no trace of the neck-like constriction which appears in *Scolodesmus*; the second segment has the carinae very distinct and extended obliquely cephalad on a large triangular process.

Segments dorsally smooth, but not shining, a distinct transverse sulcus on the fifth and following segments to the eighteenth.

Carinae of anterior poriferous segments consisting of a slight subtriangular prominence, those of poreless segments scarcely defined, except by the superior impressed line; on posterior segments the carinae are obsolete, even the impressed line being deficient. The pores are rather large and are surrounded by a fine ring.

Transverse sulcus rather deep, not crenulate.

Last segment with the apex rather broad and rounded; between the four setiferous punctations is a small denticule.



Anal valves nearly smooth, the bristles borne on slight prominences located near the sloping margins.

Preanal scale broadly subtriangular, the apex truncate.

Sterna with conic processes much larger at the base of the posterior leg of each segment; these processes are smaller on the posterior segments and do not appear on the anterior.

Sternum of fourth pair of legs with a broad, prominent, hirsute, entire process which is strongly flattened antero-postically; sternum of sixth pair of legs with a broadly conic median process.

Legs long and slender, rather sparsely hirsute with short hairs, more numerous and longer distad; anterior legs of male slightly crassate, the two distal joints with pads of dense hairs, and the second and third joints with the ventral face smooth and membranous or fleshy.

Copulatory legs with a subconic prominence on the lateral face of the basal hairy part; above strongly thickened and then abruptly narrowed into a slender strongly curved and distally divided process, which turns laterad upon itself instead of lying across its fellow, as in other species of the present group.

Color of alcoholic specimens brown, a median band of chestnut, broadened at each transverse sulcus; on either side of this is an area of light brown, and then an equal longitudinal band of very dark brown or black, extending to the level of the pores; below this the anterior subsegments have a series of brown spots, while the surface is elsewhere very light, becoming nearly white below. Basal joints of legs white, the distal brown; antennae dark brown.

Length of male, 31 mm.; width, 3 mm.; length of antennae, 6.2 mm.; length of leg from tenth segment, 5.5 mm.

*Locality*.—Lindi, an island near Wito, off the coast of British East Africa.

*Type*.—Two male and three female specimens collected by Fülleborn in the Berlin Museum.

The process of the sternum of the fourth pair of legs differs from that of *Phaeodesmus longipes* in being broader, not so strongly chitinated, less prominent and hirsute over its entire surface.

The color pattern, while somewhat different from *Scolodesmus*, resembles that form rather than *Habrodesmus*, there being no transverse band of bright color.

#### Genus HABRODESMUS Cook.

*Habrodesmus* COOK, Proc. U. S. Nat. Mus., XVIII, p. 97, 1895.

Body rather small and very slender, not constricted behind the first segment, slightly depressed.

Carinae small but still distinct, their posterior corners produced beyond the transverse margin on anterior and posterior segments, but not on middle segments.

Sterna with conic processes short or indistinct; sternum of fourth



legs of male with two distinct conic spines or a bidentate process; sternum of sixth legs without a process.

Legs long and slender; anterior legs of male with cushions of dense hairs; third joint unmodified.

Copulatory legs terminating typically in a thicker and a more slender spine of subequal length, both turned mesad and crossing their fellows.

*Habrodesmus* belongs, apparently, to the same series as *Phaeodesmus* and *Cnemodesmus*, but is easily distinguishable from these by having the third joint of anterior male legs unmodified, and by the much smaller carinae.

#### HABRODESMUS LAETUS Cook.

*Habrodesmus laetus* COOK, American Naturalist, XXX, p. 418, 1896; Proc. Acad. Nat. Sci., Philadelphia, 1896, p. 261.

Color in life black, the carinae and posterior margins of the segments yellow, shading through orange into the darker general color. Legs bright orange and pink; antennae dark brown. The first segment has a broader yellow border running entirely around. In alcohol the colors fade so that the body is dark chestnut brown, the legs and margins of the segments whitish.

Copulatory legs with larger distal arm produced and attenuate, with a large tooth some distance below the incurved apex. The slender arm is entirely hidden in ventral view.

Length of male, 27 mm.; width, 2 mm.; length of antennae, 5.2 mm.; of leg from tenth segment, 4.5 mm.

*Locality*.—Liberia. A very rare species inhabiting the denser parts of the forests along creeks. The very brilliant colors and agile movements give the living animal a striking appearance.

*Type*.—No. 619, U.S.N.M. A male specimen.

The sternum of the fourth legs bears two entirely distinct, somewhat rounded, and antero-postically flattened processes not heavily chitinated.

#### HABRODESMUS FALX Cook.

*Habrodesmus falx* COOK, Proc. Acad. Nat. Sci. Philadelphia, 1896, p. 265.

In size, habit, and probably in living colors closely resembling *H. laetus*.

Lateral carinae slightly larger than those of *H. laetus*, especially on middle segments where there is a very slight corner, which is obsolete in *H. laetus*.

Sterna of fourth legs with processes similar to those of *H. laetus*, but more prominent and somewhat connate at base.

Copulatory legs with larger arm expanded at apex and terminating in a broad, obliquely truncate lamina, with a small transparent process from near the middle of the apical edge.

Color in alcohol brown or black; the margins of the first, the posterior margins of the other segments, the ventral surface and legs, whitish; antennae dark brown.



Length of male, 25 mm.; width, 2.5 mm.; length of antenna, 5 mm., of leg, 5 mm.; a female is 30 mm. by 3.5 mm., with antennae 5.5 mm. and legs 5 mm. in length.

*Locality*.—Togo Colony. Numerous specimens including the type are in the Berlin Museum. One of the labels states that the legs are, supposedly in life, pinkish-red.

#### HABRODESMUS HARTMANNI (Peters).

*Strongylosoma hartmanni* PETERS, Monatsber. K. Akad. Wiss. Berlin, Phys.-Math. Kl., July 18, 1864, p. 534.

*Habrodesmus hartmanni* (PETERS) COOK, Proc. U. S. Nat. Mus., XVIII, p. 98, 1895.

Head broader than anterior segments, though nearly equaled by the first.

Vertex smooth, the sulcus distinct, but not deep; clypeus smooth, sparsely hirsute below.

First segment subelliptic, nearly straight in the middle in front, slightly and broadly emarginate behind, the lateral corners rounded.

Segments dorsally smooth except for a very distinct transverse sulcus near the middle of the posterior subsegment, beginning on the fifth segment and not distinct on segments 18–20.

Lateral carinae distinct on all the segments except the first and the last two; carinae of second segment somewhat oblique, extending considerably below the lateral corners of the first segment, their posterior corners produced somewhat more than on other segments; posterior corners of carinae of all segments distinctly, though slightly, produced beyond the posterior margin; carinae defined above by a distinct groove, while below they are distinct only in front; the poriferous face is flattened and strongly deflected so that the pores face nearly laterad; on anterior segments the pores are located about halfway between the line of the transverse sulcus and the posterior margin; on posterior segments they are gradually nearer to the posterior corner, which becomes more pointed and produced to the nineteenth, where the carina is obsolete and the pore is located in a small depression.

Transverse sulcus deep, very distinct and abrupt on the anterior side, not crenulate.

Last segment smooth, tapering gradually to the narrow truncate apex which bears four setiferous punctations of which the lower pair is much larger and farther apart than the upper.

Anal valves sparsely rugulose, apparently smooth and shining; two pairs of fine bristles borne on broad rounded prominences, both distinct from the prominent thin margins.

Preanal scale subtriangular, the apex rounded.

Sterna with a distinct conic process at the base of each leg; these processes decrease in size cephalad; sternum of fourth pair of legs with a small process the shape of which can not be seen without injury to the dried specimen.



Legs subgranular, moderately hirsute, the hairs more numerous and longer distad; anterior legs of male subcrassate and more densely hirsute, the two distal joints with broad pads of dense hairs; these pads decrease caudad and are lost at about segment 15. No other modifications of the male legs could be made out.

Copulatory legs closely similar to those figured by Pocock for the next species; more slender, the two apical divisions longer and less strongly curved, the four proximal processes not evident.

Color of dried specimen, dark brown, probably nearly black in life; clypeus, all the margins of first segment, posterior margin of all other segments, carinae, ventral surface, except a large spot below the carinae in front, and legs, dull yellowish; in life these parts may have been bright yellow or red, from the analogy of the related Liberian species, *H. laetus* Cook.

Length about 24 mm.; width 2.5 mm.; length of antenna nearly 5 mm.; of leg of segment 14 nearly 7 mm.

This description was taken from the dried male specimen, No. 250 of the Berlin Museum, the true type of the species. It was collected in Sennar by Hartmann.

From an alcoholic specimen found later it appears that the processes of the sternum of the fourth pair of legs are very slightly developed, consisting merely of rounded prominences. This individual was collected with the type and bears the same number in the Berlin Museum.

#### HABRODESMUS FLAVOCINCTUS (Pocock.)

*Tetracentrosternus flavocinctus* POCK, Ann. and Mag. Nat. Hist. (6), XVII, p. 438, pl. XVIII, fig. 5, 1896.

This species may, it would seem, be safely referred to the present genus. From the figure of the copulatory legs it appears to occupy a position intermediate between the preceding and the following species. The measurements are given as 27 mm. by 4.3 mm. It is to be presumed that this refers to the females, which in the present genus are always distinctly more robust than the males and have shorter legs.

#### HABRODESMUS MASSAI, new species.

To be distinguished from all previously described species by the subdentate posterior margins of the segments and the strongly contracted copulatory legs.

Head scarcely wider than the first segment; vertex smooth, the sulcus very distinct; clypeus sparsely hirsute, the hairs rising from slight punctations; labrum scarcely emarginate, the teeth distinct.

First segment subelliptic-reniform as in *H. hartmanni*, laterad with a narrow, though distinct, raised margin; lateral corners even more rounded than in *H. hartmanni*.

Segments smooth with a velvety appearance, scarcely shining, marked only by the transverse sulcus which is located slightly behind the middle



of the subsegment; the sulcus begins on the fifth segment and is obsolete on the seventeenth; it is much shorter and less distinct than in *H. hartmanni*, where it reaches nearly to the carinae, in *H. massai* only about halfway; posterior margin on each side subdentate with two or three broad, slightly projecting teeth; the middle of the margin is smooth, and there is a smooth space next the carina.

Lateral carinae distinctly more developed than in *H. hartmanni*, poriferous carinae thickened caudad, slightly more prominent laterad below the pore than above; pores facing nearly directly laterad, located somewhat in front of the posterior margin of the segments.

Last segment as in *H. hartmanni*; margins of anal valves less prominent and compressed.

Sterna rather sparsely hirsute, with a distinct, though not deep, transverse sulcus; conic processes very small, obsolete except on posterior segments; males with a short, broad process between the bases of the fourth pair of legs; this process ends in two rounded-conic, strongly chitinized knobs.

Legs moderately hirsute with rather short hairs; anterior male legs scarcely crassate, the pads of dense hairs as in *H. hartmanni*, perhaps slightly less developed.

Copulatory legs rather short, the apical process strongly curved near its base so that the apex lies almost in contact with a broad expansion from the anterior side of the leg near the base of the apical process; flagellum distinct only from near the end of the terminal process, which bears distally several sharp spines.

Color in alcohol nearly black, the margins of the first segment, the carinae of the anterior segments, the posterior part of the carinae of other segments, the posterior margins of all the segments; the last half of the last segment, the ventral surface and basal joints of the legs, yellowish.

Length about 28 mm.; width 3.5 mm.; length of antenna 6.5 mm.; of leg of sixteenth segment, 7.5 mm.

A single male specimen, No. 1356 in the Berlin Museum, labeled, "*Ost-Afrika, M'Karamo am Pangani Massai Nyeka.*"

#### HABRODESMUS ACULEATUS (Peters).

*Strongylosoma aculeatum* PETERS, Monatsber. K. Akad. Wiss., Berlin, Phys.-Math. Klasse, February 5, 1855, p. 81.

*Habrodesmus aculeatus* (PETERS) COOK, Proc. U. S. Nat. Mus., XVIII, p. 98, 1895.

This species was described from a single female specimen, from which little can be added to the brief descriptions cited above. An identification ought scarcely to be attempted until material can be had from the type locality. This is far distant from any of the places in which *Habrodesmus* has been collected, and *aculeatus* may easily prove to be generically distinct. The habit is somewhat different from that of the species of *Habrodesmus*, more notably in that the carinae are



stronger and more projecting caudad when viewed from the side, though hardly more so than in *H. massai*; the posterior end of the body is more tapering, and the last segment more produced caudad. Finally the whole animal is more slender than the females of the species of *Habrodesmus*. According to Peters, the color pattern was also different from *Habrodesmus* in the absence of transverse yellow bands, and more similar to that of *Scolodesmus*. The greater development of the carinae, however, forbids a reference to that genus. The specimen belongs to the Berlin Museum and was collected at Terra Boror, 18° south latitude, the vicinity of Quilimane.<sup>1</sup>

#### HABRODESMUS NEGLECTUS (Silvestri).

*Stongylosoma neglectum* SILVESTRI, Ann. Mus. Civ. Genov. (2), XXXV, p. 485, fig. 2, 1895.

The characters given in the description of this species are scarcely more than generic, but from the figures it appears that it may safely be referred to the present genus.

*Locality*.—Shoa, Abyssinia. The type is in the Genoa Museum.

#### XANTHODESMUS, new genus.

Evidently closely related to *Habrodesmus*, but distinguishable by the absence of pores from the fifth segment and of a process from the sternum of the fourth pair of legs of males. The copulatory legs are similar to those of *Habrodesmus*, but are divided toward the apex into two curved prongs, a condition not known to exist in any species of *Habrodesmus*. The body is somewhat more slender and the carinae are somewhat less developed than in *Habrodesmus*, but these differences are merely quantitative and would be supposed to have specific value only, were it not for the structural characters mentioned, the constancy of which in other families of the present order is well known. The sternum of the fourth legs in the present genus seems not to be widened or otherwise modified, and is in all respects like that of the fifth pair, both being slightly sulcate longitudinally.

#### XANTHODESMUS ABYSSINICUS, new species.

Head as wide as the first segment; vertex and clypeus strongly and evenly convex, smooth; sulcus narrow and shallow, though distinct.

First segment evenly convex, a slight transverse depression in front of the posterior margin, stronger laterad; anterior and lateral margins finely raised, but not so broad as in *Habrodesmus massai*.

<sup>1</sup>Since the above was written material from Quilimane has turned up and is here described under *Phacodesmus*. It is by no means impossible that *Ph. longipes* (Attems) is a synonym of the present species, but the type of *aculeatus* is not at hand for comparison.



Second segment with lateral carinae much below the level of the others, longer and somewhat stronger; inferior carina distinct, forming with the somewhat raised margins a distinctly concave, subtriangular lateral surface for this segment; this condition is not distinct from that which appears in the species of *Habrodesmus*, but is more pronounced.

Subsequent segments strongly arched, smooth; transverse sulcus of posterior subsegments deep; sutural constriction deep and long, not crenulated; posterior margin of segment scarcely uneven.

Lateral carinae scarcely projecting beyond the posterior margins, even on posterior segments; poreless carinae distinct as a narrow ridge; poriferous carinae much broader, scarcely more prominent, and appearing less so as they pass more gradually into the general contour of the surface.

Last segment subtriangular, distinctly though narrowly truncate at the apex; somewhat in front of this is a faint corner or tubercle on each side.

Anal valves somewhat rugulose, margins distinct, compressed; setiferous prominences broad.

Preanal scale semicircular, faintly and bluntly apiculate; setiferous tubercles distinct, close to the apex.

Sterna narrow, sparsely hirsute, not sulcate.

Legs slender, sparsely hirsute; the anterior with distinct pads of dense hairs on the inferior face of the distal joints, as in *Habrodesmus*.

Copulatory legs shaped much as in *Habrodesmus*, rather slender; no process from near the middle of the last joint, which is divided at apex into two slender subconnivent, subequal prongs.

Color pattern probably much as in the species of *Habrodesmus*; the single dried specimen is chestnut brown, lighter below and with a narrow pale band on the posterior margin and carinae of each segment.

Length of broken specimen about 20 mm.; width 2.4 mm.; antennae and legs bent or broken; probably slightly shorter proportionally than in *Habrodesmus hartmanni*.

*Locality*.—Abyssinia; a single male specimen collected by Steudner at Keren is in the Berlin Museum, No. 374.

#### CNEMODESMUS COOK.

*Cnemodesmus* COOK, Proc. U. S. Nat. Mus., XVIII, p. 97, 1895.

Body rather small and slender, somewhat depressed, not constricted behind the first segment.

Carinae distinct and distinctly produced on all segments, but not so prominent as in *Phaeodesmus*.

Sterna armed only with slight, rounded prominences at the bases of the legs; sternum of fourth legs with a rather broad, thin-edged, truncate and slightly notched process, the lateral sides of which are distinctly sloping.

Legs long and slender, but more robust than those of the other



genera of the group; anterior legs somewhat crassate, especially the third joint of legs 4-6, which bears in addition a subconic, truncate, oblique process, on which is located the aperture of the duct of an internal gland; two distal joints of anterior legs of male with cushions of dense hairs.

Copulatory legs comparable to those of *Habrodesmus*, that is with a very slender and a broader prong.

Distinct from all known African genera in the form of the third joint of legs 4-6. In this respect its nearest relative is *Phaeodesmus*, and the characters of the carinae support this view. The copulatory legs and process of the sternum of the fourth legs of *Phaeodesmus* accentuate the distinctness of the genera.

#### CNEMODESMUS THYSANOPUS (Cook and Collins).

*Paradesmus thysanopus* COOK and COLLINS, ANN. N. Y. Acad. Sci., VIII, p. 25, pl. I, figs. 1-6, 1893.

*Cnemodesmus thysanopus* COOK, Proc. U. S. Nat. Mus., XVIII, p. 97, 1895.

*Locality*.—Congo.

*Type*.—No. 628, U. S. N. M. Collected by the United States Eclipse Expedition to West Africa, 1889 and 1890.

#### PHAEODESMUS, new genus.

Body rather small, somewhat depressed, very slender, and not constricted behind the first segment.

Carinae more distinct than in the other genera, distinctly produced on all segments into sharply triangular corners, which extend caudad beyond the transverse margin of the segments.

Sterna with conic processes very distinct and narrowly pointed, more prominent than in other genera; sternum of fourth legs with a very prominent, antero-postically flattened, and strongly chitinized, naked process, the lateral sides of which are notched at base, so that the structure in question is broader distad; sternum of sixth legs with process rudimentary.

Legs long and slender; last joint of anterior male legs with pads of dense hairs; third joint of legs 5 and 6 with appressed spiniform processes evidently comparable with those of *Cnemodesmus*, but much smaller and the joint not crassate.

Copulatory legs with two large leaf-like processes projecting mesad from near their middle; distally the legs have two prongs not unlike those of *Habrodesmus*.

Distinct from *Habrodesmus*, which it resembles in habit and development of carinae by the large mesially directed processes of the copulatory legs, and the very prominent and flattened process of the sternum of the fourth legs of the male. The sterna of the posterior pair of legs of all segments behind the eighth are produced into sharp





Cook, O. F. 1898. "A revision of Tropical African Diplopoda of the family Strongylosomatidae." *Proceedings of the United States National Museum* 20, 695–708.

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