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RESULTS OF THE BRYANT WALKER EXPEDITIONS OF THE UNIVERSITY OF MICHIGAN TO COLOMBIA, 1913, AND BRITISH GUIANA, 1914

THE DIPLOPODA

BY RALPH V. CHAMBERLIN

The diplopods secured by this expedition form a highly interesting collection of sixty-seven species, of which the great majority have not been previously described. As in the case of the chilopods, most of the collecting in the present group was done by F. M. Gaige, as indicated in the following pages in connection with the various records. As it seems obvious that our knowledge of the diplopod fauna of the regions covered by the expedition and of the adjacent regions is still very incomplete, it seems best at this time not to enter into any general discussion of the composition and derivation of the fauna. The collection from Colombia, made chiefly in the

vicinity of San Lorenzo, is more extensive than that from British Guiana, made in the Demerara River region. No species is common to the collections made in the two countries. The species secured, separately listed for Colombia and British Guiana, and for St. Croix, U. S. Virgin Islands, where a few forms were also collected, are as follows:

COLOMBIA

Glomeridesmus porcellus Gervais and Goudot.
Siphonophora graciliceps, sp. nov.
Siphonophora pearsei, sp. nov.
Stemmiulus major Carl.
Stemmiulus craurus, sp. nov.
Stemmiulus ruthveni, sp. nov.
Stemmiulus, sp.
Epinannolene lorenzonus, sp. nov.
Epinannolene xestus, sp. nov.
Epinannolene arius, sp. nov.
Epistreptus eustriatus, sp. nov.
Spirostreptus atoporus, sp. nov.
Orthoporus gaigei, sp. nov.
Rhinocricus brevipes, sp. nov.
Rhinocricus hylophilus, sp. nov.
Rhinocricus pycnus, sp. nov.
Rhinocricus amblus, sp. nov.
Microspirobolus tridens, sp. nov.
Pycnotropis colombiensis, sp. nov.
Pycnotropis cylindroides, sp. nov.
Polylepiscus, sp.
Trachelodesmus angulatus, sp. nov.
Trachelodesmus ancylophor, sp. nov.
Dromodesmus longipes, gen. et sp. nov.
Colombodesmus catharus, gen. et sp. nov.
Colombodesmus lygrus, sp. nov.
Cormodesmus hirsutellus, gen. et sp. nov.
Alassodesmus reductus, gen. et sp. nov.
Trichomorpha tuberculosa, sp. nov.
Trichomorpha rugosella, sp. nov.
Trichomorpha setosior, sp. nov.
Trichomorpha eutyla, sp. nov.
Trichomorpha eusema, sp. nov.
Trichomorpha angulella, sp. nov.
Trichomorpha paurothrix, sp. nov.

Chondrodesmus tamocolanus, sp. nov.
Chondrodesmus cerasinopes, sp. nov.
Chondrodesmus virgatus, sp. nov.
Chondrodesmus virgatus frater, var. nov.
Chondrodesmus rugosior, sp. nov.
Arionus ulophilus, gen. et sp. nov.
Agnurodesmus thrixophor, sp. nov.

BRITISH GUIANA

Glomeridesmus orphnius, sp. nov.
Siphonophora guianana, sp. nov.
Siphonophora corynetes, sp. nov.
Siphonophora relicta, sp. nov.
Siphonotus parvus, sp. nov.
Stemmiulus drymophilus, sp. nov.
Stemmiulus labbanus, sp. nov.
Prostemmiulus heterops, sp. nov.
Typhlonannolene adaptus, gen. et sp. nov.
Nanostreptus orthacanthus, sp. nov.
Nanostreptus astix, sp. nov.
Orthoporus etholax, sp. nov.
Orthoporus walkeri, sp. nov.
Orthoporus foliatus, sp. nov.
Orthoporus, sp.
Rhinocricus monilicornis (Porat).
Rhyphodesmus amphelictus, sp. nov.
Aphelidesmus guianensis, sp. nov.
Zigwadesmus guiananus, sp. nov.
Zigwadesmus modestus, sp. nov.
Guianonus ectoporus, gen. et sp. nov.
Cliodesmus cryptopygus, gen. et sp. nov.

UNITED STATES VIRGIN ISLANDS

Rhinocricus arboreus Saussure.
Rhinocricus monilicornis (Porat).
Trigoniulus lombricinus (Gerstaecker).

LIST OF SPECIES

GLOMERIDESMIDAE

Glomeridesmus porcellus Gervais and Goudot

Ann. Soc. Ent. Fr., ser. 2, 2, p. XXVII.

Colombia: San Lorenzo. Five specimens in forest at 4,000 feet. July 14, 1913; F. M. Gaige.

One specimen under leaves at 2,500 feet. July 15, 1913.

Glomeridesmus orphnius, sp. nov.

Pl. 1, Figs. 1, 2

This species in size exceeds the known West Indian species, but approaches the Colombian *G. porcellus* (Gervais and Goudot). It would seem from Brölemann's description of the form he identifies as *porcellus* that this latter is a lighter, chestnut species in which the head is always darker than the body, and in which there is a definite pattern of lighter markings. In the present species the body is a uniform deep fuscous or black, with the head pale across vertex and labrum and over the postantennal impressions; there is no definite pattern of lighter markings on collum, etc.

The tergites have the usual series of transverse striae or ridges, most of which curve caudad on the lateral wings. Lateral wings of tergites of posterior regions of body with anterior angles evenly rounded, the posterior convex below but acutely, though but moderately, produced above, beginning with the thirteenth or fourteenth, as shown in Pl. 1, Fig. 2. Anterior tergites with both angles rounded (Pl. 1. Fig. 1).

In dorsal view the collum is broader and much longer than the head; collum with lower end on each side narrowly rounded, a deep stria above the end. (Pl. 1, Fig. 1.) Width, 2.8 mm.

British Guiana: Labba Creek Sand Hills; July 27, 1914; F. M. Gaige. One female, of which, unfortunately, the posterior end of body is missing, taken in sandy soil of forest floor. Holotype, M. C. Z., 5,046.

SIPHONOPHORIDAE

Siphonophora graciliceps, sp. nov.

Pl. 1, Figs. 3-5

Densely fulvous, brighter at the ends.

Head narrow, conically narrowed forward and passing gradually into the base of the beak. Beak slender, a little curved, passing beyond distal end of the fifth antennal article. (See Pl. 1, Fig. 3.)

Collum in dorsal view with lateral edges convex, the anterior corners oblique and the anterior margin mesally incurved. (Pl. 1, Fig. 3.)

Body not keeled. Uniformly densely hairy, the hairs shorter than in *pearsei.*

Pleurites of anterior segments with cephalomesal corner not produced; anterior margin extended much farther forward in its ectal portion than within, the margin evenly curving, without teeth; posterior margin convex. (See Pl. 1, Fig. 4.) Pleurite of posterior segments as shown in Pl. 1, Fig. 5.

Number of segments, 67.

Length, about 16 mm.; width, .65 mm.

Colombia: Fundacion; Aug. 7, 1913; A. S. Pearse. One female taken with the specimens of *S. pearsei.* Holotype, M. C. Z., 5,047.

Siphonophora pearsei, sp. nov.

Pl. 1, Figs. 6-8; Pl. 2, Figs. 9-15

Yellow to brown, excepting the anterior segments, which are typically reddish or ferruginous, most of the body occasionally being also tinged with the same color. Antennae yel-

low. Head and tergites densely clothed with moderately short hairs of uniform length.

The head subglobose, abruptly rounding in to the base of the beak. Beak moderately short, its end about on a level with distal end of the fourth antennal article; essentially straight, being only very vaguely curved; hairs along sides all short, but with many long hairs beneath. (Pl. 1, Fig. 6; Pl. 2, Fig. 9.)

Collum viewed from above trapeziform in outline, the anterior margin mesally incurved, as usual.

The pleurites of anterior segments with cephalomesal angle rounded; the outer portion of anterior margin produced forward and presenting two low, angular teeth, of which the mesal one is the more acute; posterior margin widely convex. (See Pl. 1, Fig. 7.) Posterior pleurite as shown in Pl. 1, Fig. 8.

Gonopods of male as shown in Pl. 2, Figs. 12-15.

For legs of male, see Pl. 2, Figs. 10, 11.

Number of segments, 82 to 115.

Length, to 40 mm.; width, to 1.8 mm. Body typically deep, sometimes nearly cylindrical.

Colombia: Fundacion; Aug. 7, 1913; A. S. Pearse. Holotype, M. C. Z., 5,048. Sixteen specimens collected under and in rotten logs in forest. "Shoot out threads of slime when handled, after the manner of Peripatus." The males have a lower number of segments (82-92) and are in general smaller than the females.

This species approaches *S. gracilicornis* Carl, which is also a Colombian species, in form of head, pleurites, etc., but is readily distinguished by the details of the male gonopods.

Siphonophora guianana, sp. nov.

Pl. 4, Figs. 25-27

Color in general dark brown.

Head subglobose, suggesting that of *pearsei,* but a little longer and not quite so abruptly narrowed to base of the beak. Beak short and straight. Antenna proportionately thicker than in *pearsei, gracilicornis,* etc., as shown in Pl. 4, Fig. 25.

Body broad and depressed. Pores elevated on broad tubercles, which are more pronounced and keel-like in posterior region. Body uniformly densely pilose, the hairs short.

Collum in dorsal view trapeziform, rather strongly narrowed forward; the sides straight; the anterior margin mesally moderately incurved. (Pl. 41, Fig. 25.)

Pleurites of anterior segments with mesal margin weakly incised at middle; cephalomesal angle not produced; outer portion of anterior margin carried forward as usual, obtusely angled, the mesal part of margin convex; caudal margin convex. (Pl. 4, Fig. 26.) Pleurites of posterior segments with outer portion of anterior margin nearly straight, the angulation small or often obsolete, the inner weakly concave, mesal margin weakly incurved. (Pl. 4, Fig. 27.)

Number of segments in the type, 77.

Length, about 32 mm.; width, 2.5 mm.

British Guiana: Forest Sand Hills; Aug. 6, 1914; F. M. Gaige. One female collected on ground. Holotype, M. C. Z., 5,050.

One female from University of Michigan Expedition Station 165 without further data.

Labba Creek Sand Hills; July 27, 1914; F. M. Gaige. In sandy soil of forest floor. One female.

Siphonophora corynetes, sp. nov.

Pl. 2, Fig. 16; Pl. 3, Figs. 17-20

General color fulvous of ferruginous cast.

Head rather strongly narrowed forward from base, narrow in front of base of antennae. Beak straight, or nearly so. Antennae heavy, conspicuously enlarged distad of middle. (Pl. 3, Fig. 17.)

Collum of very characteristic form, the lateral margins short, the anterolateral corners oblique and excavated, the anterior margin between them strongly bowed forward and mesally excised. (Pl. 3, Fig. 17.)

Body not keeled, the pores not elevated, or but weakly so, more especially on some posterior segments, the dorsum being evenly convex.

Pleurites of anterior segments as shown in Pl. 2, Fig. 16. Those of posterior segments as shown in Pl. 3, Fig. 18.

Posterior gonopods of males erect, much exceeding the anterior pair in length; tip rather simple, spine at base of style abortive. (Pl. 3, Fig. 20.) Anterior gonopods as shown in Pl. 3, Fig. 19.

Number of segments of male type, 59.

Length, about 14 mm.; width, 1 mm.

British Guiana: First Mourie; Aug. 26, 1914. Under fallen leaves in a tree clump. One male. Holotype, M. C. Z., 5,051.

Siphonophora relicta, sp. nov.

Pl. 3, Figs. 21-23; Pl. 4, Fig. 24

Dusky brown above, with lower border of sides, all of last few tergites and the head a paler, fulvoferruginous color. Venter and legs fulvous.

This species is separable from *corynetes* by the character-

istic form of the collum of the latter. It resembles more nearly *S. guianana,* though a notably narrower form, standing apart in lacking the low keel prominence or ridges of the latter species. The rostrum is shorter in comparison with the length of the legs, and the head also proportionately a little shorter. (See Pl. 3, Figs. 21, 22.) Collum of similar form.

Also different from *guianana* in the form of the pleurites. Anterior pleurites typically as shown in Pl. 3, Fig. 23. Posterior pleurites as shown in Pl. 4, Fig. 24.

Number of segments, 62.

Length, 19 mm.; width, 1.8 mm.

British Guiana: Sand Hill Forest; Aug. 24, 1914; F. M. Gaige. One female taken in Calladium root mass. Holotype, M. C. Z., 5,052.

POLYZONIIDAE

Siphonotus parvus, sp. nov.

Pl. 4, Figs. 28, 29

Dusky brown above anteriorly, lighter brown caudally.

In comparison with the West Indian *S. purpureus* Pocock this is a much smaller form, having fewer segments and much broader relatively to its length. Head in its form, position of eyes, and form of antennae nearly as in that species. (See Pl. 4, Fig. 28.)

The two forms appear to be distinguishable by differences at the caudal end of the body. In *parvus* the penult tergite completely covers the anal tergite, excepting for the tip of cauda, and in lateral view the middorsal line appears convex, bending down more of caudal border, longer relatively to the preceding tergite; in *purpureus* the cauda is considerably exposed and the dorsal line of penult tergite in side view is

nearly straight and is smaller in comparison with the preceding tergite. (Pl. 4, Fig. 29.)

Number of segments, 28.

Length, about 3 mm.; width, .7 mm.

British Guiana: Sand Hill Forest, headwaters of Hubidibu Creek; Sept. 1, 1914; F. M. Gaige. One specimen taken in sandy soil. Holotype, M. C. Z., 5,053.

STEMMIULIDAE

Stemmiulus major Carl

Stemmatoiulus major Carl, Mém. Soc. Sci. Nat. de Neuchatel, 1914, 5, p. 851, Figs. 24, 26-29, 55-61.

Colombia: San Lorenzo, 2,000 feet; July 14, 1913. One female among fallen leaves.

Also at 3,000 feet; July 16, 1913. One female under leaves.

Stemmiulus craurus, sp. nov.

Pl. 5, Figs. 30-34; Pl. 6, Figs. 35-36

Body in general blackish above with a narrow middorsal pale line which may be in part obscure; venter and lower part of sides obscure fulvous to fulvo-ferruginous. Collum and vertex of head with a network of dark lines over a fulvous background. Head obscure fulvous below and somewhat darker between eyes and antennae. Antennae blackish and legs fulvous.

Sixth joint of antennae twice, or a little more, as long as wide. A single large ocellus on each side.

Gnathochilarium of male as shown in Pl. 5, Fig. 30; of female as in Pl. 5, Fig. 31.

Collum angular below; three striae, on each side of which only the uppermost in the male is distinct in side view, the

others being beneath, the end of the collum being inflexed, the uppermost stria more widely removed from the second than the other two are from each other.

Striation of segments as usual. Caudal margins of metazonites serrate in correspondence to the striae below, the serration weak on the sides.

Setigerous papillae of last tergite 3+3, as usual, the setae moderate.

First, second and third legs of male as shown in Pl. 6, Figs. 35, 36, and Pl. 5, Figs. 32 and 33.

Gonopods of male as shown in Pl. 5, Fig. 34.

Number of segments: male, 47 to 49; female paratype, 54.

Length of female, about 25 mm.; width, 1.8 mm. Width of male, 1.5 mm.

Colombia. More definite locality not known. 1913. One male (type) and one female.

Also Colombia: Summit of San Lorenzo, 8,500 feet; July 23, 1913. A male and female. Holotype, M. C. Z., 5,054.

Stemmiulus ruthveni, sp. nov.

Pl. 7, Figs. 46-48; Pl. 8, Figs. 49-52

Body fulvous ventrally over most of sides and in a middorsal line, the latter widening triangularly caudad on each segment; the dorsum elsewhere dusky brown, the same color also extending on each segment down the anterior border. Last tergite dusky, excepting a pale caudal border on each side. Collum with posterior border dark and also a dark anterior band just back of a narrow, pale border; the collum in general elsewhere pale with a network of dark lines. Head fulvous below level of antennae, blackish between antennae and eyes

of the two sides, the vertex areolate with pale. Antennae blackish. Legs fulvous.

For form of gnathochilarium of male, see Pl. 7, Fig. 46.

Head with a single large ocellus on each side. Sixth article of antennae about 2.4 times longer than wide.

Collum of the usual form, with three deep striae below on each side.

Tergites of second and third segments striate only below, the succeeding ones becoming more and more striate until the striae are found entirely across the dorsum. Middorsal stria distinct. Caudal margin of segments serrate in correspondence with the striae below, the serration weak on the sides and absent above.

Last tergite with the usual six setigerous papillae, the setae moderate, not exceeding in length the marginal setae of the preceding segments.

Gonopods of male as shown in Pl. 8, Figs. 51 and 52.

First, second and third legs of male as shown in Pl. 7, Figs. 47 and 48, and Pl. 8, Figs. 49 and 50.

Details at tip of third legs very nearly as in *craurus*.

Number of segments, male, 54 to 56.

Length, about 28 mm.; width, 2 mm.

Colombia: San Lorenzo, 4,500 feet; July 3, 1913; F. M. Gaige. Under log; one male. Holotype, M. C. Z., 5,057.

Also, same locality, July 22, 1913; 5,000 feet. One male and two females, from bromeliads on trees.

Stemmiulus drymophilus, sp. nov.

Pl. 6, Figs. 37-41; Pl. 7, Figs. 42-45

This is a dark-colored species, the body in general being from dark brown to black ordinarily, but little lighter on the sides below than above, but venter paler, often orange or somewhat ferruginous; covered part of prozonites irregularly pale, fulvous, and posterior border of segments colorless, the prozonites showing through. A median longitudinal dorsal line of ferruginous color. Antennae dark. Legs pale brown to ferruginous. Collum and head dark, a paler fulvous area of triangular shape in clypeal region.

A single large ocellus on each side.

Gnathochilarium of male as shown in Pl. 6, Fig. 37.

Collum rounded below, the anterior angle more widely rounded than the posterior one, with three long striae below on each side, two above the margining one.

Striae of segments arranged in general as usual, numerous and distinct. Setigerous tubercles of last tergite as usual.

First, second and third legs of male as shown in Pl. 6, Figs. 38-41, and Pl. 7, Figs. 42 and 43. Ordinary setae of first legs plumose.

Gonopods of male represented in Pl. 7, Figs. 44 and 45.

Number of segments of male, 52; of female, 50 to 54.

Length of female, near 28 mm.; width, 2.8 mm.

British Guiana: Labba Creek Sand Hills; July 27, 1914; F. M. Gaige. One female in sandy soil of forest floor. Forested Sand Hills. Collected in rotten wood and in the earth. Aug. 14 and 17, 1914; F. M. Gaige. One male (type) and nine females.

Sand Hill Forest; Aug. 19, 1914; F. M. Gaige. Two females, in rotten wood.

Labba Creek. First Timber Landing, Clay Jungle; Aug. 12, 1914; F. M. Gaige. One female, under a rotten log.

Holotype, M. C. Z., 5,059.

Stemmiulus labbanus, sp. nov.

Pl. 8, Figs. 53-55; Pl. 9, Figs. 56-60

Body brown to blackish along dorsum, without any pale median longitudinal line; paler, light brown to dilute chestnut over sides and below; a paler, sometimes more or less bluish, annulus about the caudal border of each segment. Collum and first tergites typically areolate with light in a dusky network. Head similarly areolate over vertex and below antennae, blackish in a cross-band between antennae. Antennae blackish. Legs fulvous.

A single ocellus on a triangular dark spot on each side.

Gnathochilarium of male as shown in Pl. 8, Fig. 53.

Collum with lower margin convex, the anterior angle widely rounded and the posterior one subrectangular. A long margining sulcus below and up the anterior margin to the level of the ocellus, and above this a single short one across posterior portion of plate only.

Striation of segments of trunk in general as usual. Posterior margin of metazonites deeply serrate below, the serration becoming minute in going dorsad and above absent.

Last tergite with setigerous papillae 3+3 as usual.

Gonopods of male as shown in Pl. 9, Figs. 59 and 60.

First, second and third legs of male as shown in Pl. 8, Figs. 54 and 55, and Pl. 9, Figs. 56-58.

Number of segments of male, 52 to 53; of female, 49 to 54.

Length of largest female, near 30 mm.; width, 3 mm.

British Guiana: Labba Creek, First Timber Landing, Clay Jungle. In rotten logs. Aug. 12, 1914; F. M. Gaige. One female taken under fallen leaves in a tree clump. Holotype, M. C. Z., 5,064.

Stemmiulus sp.

Colombia: San Lorenzo. At 7,600 feet on July 19, and at 8,000 feet on July 23, 1913. Five small females of fifty to fifty-two segments taken in bromeliads on the ground.

Prostemiulus heterops, sp. nov.

Pl. 9, Fig. 61; Pl. 10, Figs. 62 64

Color of body dark brown, with covered region of prozonites pale and the posterior border of metazonites transparent, so that the light color of prozonites shows through. No definite markings. Legs brown, the antennae darker.

In the type there are two ocelli on the right side and three on the left in a subvertical series, the dorsal one largest. (See Pl. 10, Figs. 63 and 64.)

Gnathochilarium as shown in Pl. 10, Fig. 62.

The lower anterior corner of the collum on each side widely rounded, with the posterior corner much more narrowly rounded. Two long true striae or sulci on each side. (See Pl. 10, Fig. 63.)

Striae of following segments disposed about as usual. The upper striae very oblique. The finer impressed lines of surface of collum and all other segments are longitudinal, fine but distinct, and numerous. Serration as shown in Pl. 9, Fig. 61.

Setigerous tubercles of last tergite 3+3 as usual.

Number of segments, 47.

Length, about 20 mm.; width, 2 mm.

British Guiana: Forested Sand Hills; Aug. 17, 1914; F. M. Gaige. One female. Holotype, M. C. Z., 5,065.

EPINANNOLENIDAE

Epinannolene lorenzonus, sp. nov.

Pl. 10, Figs. 65-67

The color at present is brown with pale annuli about caudal border of metazonites, but otherwise with no distinct light or dark markings. Legs fulvous.

Body of nearly uniform length, excepting where a little constricted a few segments back of head.

Ocelli on each side in type nineteen or twenty in four series; thus, 7, 6, 4, 2, or 8, 6, 4, 2. Eyes somewhat more than two and a half times their diameter apart.

Collum with lower margin on each side extending a little below level of the second tergite, the end bent mesad below, rounded, with both anterior and posterior corners also rounded; four principal striae on each side, with several incomplete finer ones. (Pl. 10, Fig. 65.)

Sutural constriction, as usual, sharply defined. Pore in contact with suture. Prozonite anteriorly with several fine encircling striolations.

Segments, excepting in anterior region, longitudinally striate only below.

The species is most readily distinguished by the form of the gonopods, the distal end of which is smooth, without processes or incisions, as shown in Pl. 10, Figs. 66 and 67. The gonopods of the type, however, had been dry and rubbed and most setae are apparently lost.

Number of segments, 57, or near that number.

Diameter, 2.25 mm.

Colombia: San Lorenzo, 3,000 feet; July 16, 1913. "Under leaves and stones." One male, which had dried from evaporation of the alcohol. Holotype, M. C. Z., 5,066.

Epinannolene xestus, sp. nov.

Pl. 11, Fig. 70

Fuscous or nearly black, shining; on each ordinary segment a paler vertical stripe on each side just caudad of furrow and metazonite paler caudally above. Head with dark band between eyes, below which fulvous or ferruginofulvous, the vertex with network of dark. Anal valves paler than body. Legs light ferruginous, about like the face. The paratype at 11,000 feet is more distinctly annulate, the obscure ferruginous annuli encircling segments in front of caudal border.

Eyes about once and three-fourths their greatest diameter apart. Ocelli deeply pigmented, mostly large, in four series, about 28 in number: thus, 8, 7, 7, 6.

Collum with lower end moderately bent mesad, not extending below level of second tergite; lower margin rounded, as are also both corners, the lower margin at middle a little flattened or vaguely incurved. A deep margining sulcus below and up the front to level of eye; above this three deep sulci or striae, of which the uppermost curves up anteriorly and terminates near same level as margining sulcus; the second sulcus bends up anteriorly to end against the uppermost one, and the first ends similarly on the second, or the second may extend up parallel to the first. In addition there are two or three short sulci across posterior border above the others and there may be a short impression farther cephalad. See further Pl. 11, Fig. 70.

Segmental constriction distinct and complete; marked across dorsum with a series of impressed punctae, these impressions continuing and becoming coarser down the sides and below extending upon the metazonite on the longitudinal striae. Surface of segments otherwise in general smooth and shining. The striae extending up the sides on the most anterior segments as usual. Pore removed from suture.

Last tergite caudally rounded, even with the valves. Anal valves mesally narrowly margined.

Number of segments (female), 52 to 54.

Length, about 30 mm.; width, 2 mm.

Colombia: San Lorenzo, 4,500 feet; July 3, 1913. "Under bark of stump near creek" and "under log." Two adult females and one immature one. Also at 4,000 feet; July 4, 1913; F. M. Gaige. One female. Holotype, M. C. Z., 5,067.

Epinannolene arius, sp. nov.

Pl. 10, Fig. 68; Pl. 11, Fig. 69

Brown, the posterior portion of metazonites and anterior portion of prozonites paler, as usual, lower portion of sides paler than dorsum. Collum dark within a pale border with median region covered with a network of dark over a pale background, a few following tergites also with a similar network of dark lines. Vertex of head covered with network of dark lines over a pale ground; dark between eyes, becoming paler below. Legs light brown.

Vertigial sulcus fine, ending on a transverse sulcus joining inner angles of eyes. Eyes transversely elongate, acutely angled at mesal ends, not fully 1.7 times their greatest diameter apart. Ocelli 18 to 23 in number, arranged in three series: *e. g.*, 7, 7, 4, and 9, 8, 6.

Collum strongly narrowed down the sides, each lower end moderately inflexed, rounded, the anterior corner more widely convex than the posterior. Margined below and up the front to eyes; above margining sulcus typically five striae, of which the second and third from the uppermost are complete, while the others may be more or less interrupted in the middle region, giving the appearance of seven or more distinct but mostly incomplete striae. (See Pl. 10, Fig. 68.)

Segments deeply constricted; smooth, excepting below, where striate as usual. Pore widely removed from furrow.

Gonopods of male as shown in Pl. 11, Fig. 69.

Number of segments of male, 47; of female, 54.

Width of female, 1.4 mm.; of male, 1.2 mm.

Colombia: San Lorenzo, 2,500 feet; July 15, 1913. "Under leaves and logs." One male and one female. Holotype, M. C. Z., 5,070.

Typhlonannolene, gen. nov.

Gnathochilarium as in Epinannolene. Mandibles with nine to ten pectinate lamellae. Eyes, none. Repugnatorial pores beginning on the fifth segment. Character of male gonopods unknown.

Genotype, *T. adaptus,* sp. nov.

Typhlonannolene adaptus, sp. nov.

Pl. 11, Figs. 71-73

General color brown, the body distinctly annulate, the anterior portion of prozonites and the caudal portion of metazonites being paler. Commonly a darker spot showing on each side of each segment toward ventral surface. Legs brown.

Antennae clavate as shown in Pl. 11, Fig. 73.

Gnathochilarium of female as shown in Pl. 11, Fig. 72.

Collum inflexed at ends below. Strongly narrowed ventrad, the ends narrow, rounded. Typically with six longitudinal or sublongitudinal striae on each side of which the two uppermost are longer and more oblique than the others; striae ending in a vertical margining stria along anterior border extending part way to middorsal line. (See Pl. 11, Fig. 71.)

Segments in general not truly constricted, but with suture very distinct throughout, smooth; pore contiguous with suture, the latter on some a little angularly bent at its level. Metazonites striate below, the segments otherwise wholly smooth and shining.

Anal tergite caudally rounded; surpassed by the valves. Anal valves narrowly but sharply margined.

Number of segments, 67 to 73.

Length, about 42 mm.; width, 2.2 mm.

British Guiana: Second Mourie; Aug. 19, 1914; F. M. Gaige. Two females in sand.

Forested Sand Hills. "In rotten wood and in the earth." Aug. 17, 1914; F. M. Gaige. One female.

Also, Aug. 14, 1914. One female in sandy soil of forest floor.

Labba Creek Sand Hills; July 27, 1914; F. M. Gaige. Three females collected in sandy soil of the forest floor.

Sand Hill Forest; Aug. 22, 1914; F. M. Gaige. A female taken in Calladium root mass.

Holotype, M. C. Z., 5,072.

SPIROSTREPTIDAE

The following artificial key will aid in separating the species of the family described in this paper. It is based primarily upon the females.

a. Eyes twice or more their greatest diameter apart.

b. Repugnatorial pores contiguous with segmental sutures. *S. atoporus.*

bb. Repugnatorial pores well removed from sutures.

c. Last tergite transversely sulcate; segments sixty-five. *N. astix.*

cc. Last tergite not transversely sulcate; segments fifty-five to fifty-six.

d. Collum angled below, with four striae; anal scale with caudal margin only weakly convex, not mesally angled. *N. orthacanthus.*

dd. Collum with lower margin straight, only two striae; anal scale with caudal margin strongly angled. *N. gracilior.*

aa. Eyes clearly less than twice their greatest diameter apart.

b. Segments of middle and posterior region of body striate up to or nearly to pore; suture strongly ribbed throughout; eyes about 1.4 times their diameter apart. *E. eustriatus.*

bb. Segments of middle and posterior region of body striate only beneath; eyes less than their diameter apart.

c. Posterior angle of last tergite and of anal scale obtusely rounded. *O. gaigei.*

cc. Posterior angle of last tergite and of anal scale acute.

d. Last tergite with caudal portion set off or crossed by one or two sharply impressed transverse sulci; segments fifty-eight to sixty-one. Anterior angle of collum of female produced.

e. Second stria curving upwards in front as usual; next to uppermost stria very short, crossing only caudal border. *O. walkeri.*

ee. Second stria short, straight, not curving upwards anteriorly; next to uppermost stria complete, not there abbreviated. *O. foliatus.*

dd. Last tergite at most with a very shallow transverse depression, no sharply impressed sulcus, segments fifty-four to fifty-five. Anterior angle of collum of female subrectangular, male conspicuously produced. *O. etholax.*

Nanostreptus orthacanthus, sp. nov.

Pl. 11, Figs. 74 76; Pl. 12, Figs. 71-81

Exposed portion of segments greyish blue or darker over prozonite, with metazonite encroached upon by the blue below, the caudal portion of the metazonite ringed with fulvous or ferruginous to nearly white, the light ring embracing somewhat more than half of the metazonite or prozonite and dark part of metazonite both of same dark color, often nearly black. A dark line along each side at level of pores and a dark middorsal line over all or much of length. Collum and head typically abruptly darker than the following region of body, deep brown or blackish, the collum narrowly bordered with obscure ferruginous. Antennae and legs deep brown.

Median sulcus of head distinct only across vertex. Clypeal foveolae 2+2. Eye patch wider transversely than long, acutely angled at mesal end; eyes about two and one-half times their diameter apart; ocelli about 26 in number, arranged in five series: *e. g.,* 6, 8, 5, 2, 2. Antennae short, when laid back on a level with the repugnatorial pores reaching the caudal edge of collum. Cardo of mandible with lower margin in ectal view straight excepting a slight angle at caudal end. (Pl. 11, Fig. 76.)

The lower, triangular end of the collum on each side is bent obliquely under, the anterior edge of the inflexed portion being larger and more oblique than the posterior; inflexed surface covered by four longitudinal sulci. The longitudinal edge formed by bending in of lower end of collum, long and straight and with a single deep margining sulcus just above it. In situ the antenna lies in the hollow below this edge. (Pl. 11, Figs. 74, 75.)

Suture of segments deep and coarse throughout, marked

across dorsum by deep and coarse punctiform impressions; widely and moderately curved opposite pore. Pores small, each situated just in front of caudal edge of dark bend of metazonite. Metazonites deeply striate beneath and half-way up the side to the pore, the upper striae incomplete caudally, only crossing or but little surpassing the dark band of metazonite.

Last tergite caudally rounded, greatly exceeded by the anal valves. Anal valves mesally compressed and strongly elevated, the free edges evenly convex. (Pl. 12, Fig. 80.)

Anal scale as shown in Pl. 12, Fig. 81.

Characterized especially by gonopods of male, which are represented in Pl. 12, Figs. 77 and 78.

Leg of sixth segment of male as represented in Pl. 12, Fig. 79.

Number of segments, 55.

Length of male, about 40 mm.; width, 3 mm.

British Guiana: Near Demerara River, "Cacao Plantation about camp." Rotten logs. July 16, 1914; F. M. Gaige. One male and three females. Also, "East trail along Demerara River, collected in the wet earth close to the high tide mark, a common form." Aug. 8, 1914; F. M. Gaige. Ten specimens.

Labba Creek Sand Hills; July 27, 1914. In sandy soil of forest floor. Two females. Holotype, M. C. Z., 5,077.

Nanostreptus astix, sp. nov.

Pl. 12, Figs. 82-84; Pl. 13, Fig. 85

This closely parallels in its general structure the preceding species. The type appears considerably lighter in color than those of the latter species, lacks the lateral dark lines and has the middorsal line absent or but obscurely indicated on some

of the segments. Segments with fulvo-ferruginous band about caudal border embracing more than half the length of metazonite. Covered portion of prozonite also pale. The dark region of prozonite including numerous light spots or areolations, particularly on sides. On some of the segments the light color may encroach upon the dark ring so as in part almost to obliterate the latter. Last tergite and anal valves dark, excepting a narrow caudal border on each side of the former. Median region of collum areolated with light. Head with a dark band between eyes and extending ventrad between antennae; vertex areolated with light. Legs light ferruginous.

Sulcus across vertex as usual. Eyes more elongate transversely than in *orthacanthus;* ocelli 57 in number, in seven series, thus: 10, 11, 11, 10, 8, 5, 2, the two of lowest series very small. Lower margin of cardo of mandibles concavely excavated as shown in Pl. 12, Fig. 83, a deep margining sulcus above it.

Lower end of collum less abruptly bent under than in *orthacanthus,* and the lower angular part bent down more nearly vertically below level of second tergite where the latter exceeds it in *orthacanthus.* (See Pl. 12, Fig. 82.)

Segmental suture differing from that in the preceding species in being more slightly curved opposite the pore, often essentially straight, and more nearly smooth, not marked by such deeply impressed coarse punctae. Pore at or near caudal edge of dark ring.

Anal scale longer in proportion to width than in *orthacanthus* and more obtusely angled posteriorly. (See Pl. 12, Fig. 84, in comparison with Fig. 8.) A conspicuous difference is also presented by the last tergite, which is more acutely angled behind and presents a deep transverse furrow behind which the plate is depressed and more roughened. Compare

Pl. 13, Fig. 85, this furrow less marked and sometimes obscure in young specimens.

A larger species with the number of segments 65 as against 55.

Length, about 70 mm.; width, 4.5 mm.

British Guiana: Forested Sand Hills. In rotten wood. Aug. 17, 1914; F. M. Gaige. Two adult and five partly grown females.

Sand Hill Forest; Aug. 22 and 24, 1914. Three females "in Calladium root masses."

Labba Creek Sand Hills. July 27, 1914. Two females.

First Mourie; July 31, 1914. In humus of tree trunk. Two specimens.

Second Mourie; Aug. 19, 1914. In sand. One female.

Sand Hill Forest; Aug. 19, 1914. Two females.

Holotype, M. C. Z., 5,081.

Nanostreptus gracilior, sp. nov.

Pl. 13, Figs. 86, 87

A female apparently pertaining to this genus is a smaller and more slender form than those of the preceding species. It differs decidedly in not having the collum at all truly angled beneath, the lower margin on each side being straight as in the Colombian *N. inconstans* Carl, the corner rounded, the anterior one lower than the posterior. Three or four stories on each side as shown in Pl. 13, Fig. 86.

The lower edge of cardo of mandibles only very slightly incurved (Pl. 13, Fig. 86). Ocelli in type 41, in six series; thus, 9, 9, 8, 7, 5, 3.

Segmental suture deep and smooth, weakly excurved oppo-

site pore. Segments, excepting anterior ones, striate only below, as usual.

Last tergite evenly convex, caudally obtuse, without transverse sulcus. Anal scale strongly angled behind (Pl. 13, Fig. 87).

Number of segments, 56.

Length, about 36 mm.; width, 2.7 mm.

British Guiana: First Mourie; July 31, 1914; F. M. Gaige. In humus of tree trunk.

Labba Creek Sand Hills; July 27, 1914; F. M. Gaige. One female.

Holotype, M. C. Z., 5,088.

Epistreptus eustriatus, sp. nov.

Pl. 13, Figs. 88, 89

Prozonites typically cinereous or pale bluish-grey, the metazonites ordinarily darker, more brownish, with a narrow caudal border much deeper in color, ferruginous. Posterior border of last tergite and the elevated borders of anal valves also darker, ferruginous. Antennae and legs fulvous. Head with ferruginous background; a dark band between eyes; vertex with network of dark lines.

Vertigial sulcus ending in a depression at edge of the dark inter-ocular band. Clypeal foveolae 2+2. Eyes elongate transversely, being about 1.66 times wider than high, the inner angle acute, 1.4 times their diameter across. Ocelli about 47 in number, in six or seven series; *e. g.*, 11, 10, 9, 7, 5, 3, 2. Antennae, when laid back parallel to median line, scarcely reaching caudal edge of collum. Cardo of mandible with caudo-ventral corner of outer face acutely extended ventrad, the lower margin concave.

Collum with lateral lobe on each side not at all inflexed, subvertical, its anterior portion in part concealing the base of cardo of mandible. Lower margin weakly convex, both anterior and posterior corners rounded, the anterior one more widely than the posterior. On each side three striae in additional marginal one which curves below the edge inferiorly, the uppermost of these striae deepest as usual. See further Pl. 13, Fig. 88.

In a typical segment of the middle region of the body the suture is deep and wide, straight throughout or but weakly excurved opposite the pore, and is crossed by longitudinal ridges or ribs dividing it into a series of pits. Below the pore most of these ribs continue across the metazonite as the lower limiting ridges of the striae, which extend up to or nearly tc the pore; shorter striae or simple sutural ribs in part alternate with the principal striae and their limiting ridges. Pore nearly one-fourth the distance from suture to caudal margin of metazonite. Anterior region of prozonite with numerous regular cross-striolations which anastamose at intervals, excepting the most caudal one, or in part also the next to last, the striolations finely beaded. Segment otherwise dorsally wholly smooth excepting vague fine lines and punctae visible under good magnification. Sternites nearly smooth, with only vague cross-striolations finer than those of prozonite.

Last tergite obtusely rounded behind, smooth. Anal valve with mesal valve strongly elevated, each set off by a broad furrow. Anal scale sharply set off by sulcus from its annulus, the sulcus evenly turved; caudal margin only slightly convexly bowed out at middle. (See Pl. 13, Fig. 89.) Last annulus marked ventrally with strong cross-striations as shown in the figure.

Number of segments, 55 to 57.

Length, to near 80 mm.; width, 6 mm.

Colombia: Fundacion River; Aug. 12, 1913. Four females. Holotype, M. C. Z., 5,090.

Spirostreptus atoporus, sp. nov.

Pl. 13, Figs. 90, 91

While, in the absence of males, the narrower generic position of this species is doubtful, its characteristics are so pronounced that its recognition cannot give much difficulty, and it is accordingly here redescribed under Spirostreptus sens. lat. The fully developed color pattern shows a caudal ferruginous band about each metazonite, limited in front by a narrow, dark brown band passing into greyish-blue on anterior part of metazonite and on prozonite, the latter encircled also by a narrow brown stripe near edge of overlapping preceding metazonite. In some paratypes there is simply a ferruginous to fulvous caudal ring with a broader median dark brown to nearly black ring, and the covered part of prozonite again light, or the secondary darker stripes showing indistinctly. A middorsal dark line, and one also more or less evident on each side at level of pores. Collum bordered with dark, its median part areolated with light. Legs ferruginous. Four partly fused light spots between bases of antennae.

Clypeal foveolae 2+2. Eyes rather small, the inner ends narrowly rounded or subangular, two and two-thirds, or a little more, their greatest diameter apart. Ocelli about 23, in four series; *e. g.*, 7, 7, 5, 4; comparatively large. Outer face of cardo of mandible with caudal edge curving evenly into the distal one, the lower end angled only cephalo-distally. (See Pl. 13, Fig. 90.)

Lower end of collum but little inflexed; lower margin nearly straight; anterior angle well rounded, the posterior slightly obtuse. Six striae on each side above marginal one, these uniform and moderately fine and in part wavy. (See Pl. 13, Fig. 90.)

Covered region of prozonite only obscurely striolate, excepting the stria most caudal in position, which is distinct. The suture is sharply impressed and smooth throughout. The pore is contiguous with the suture on its caudal side. Surface of segments in general seen under lens to be tubercular and in part obscurely rugose, the tubercles not close. Metazonites striate only beneath.

Last tergite caudally obtusely angled. Anal valves with mesal borders only moderately elevated. Anal scale sharply set off from the annulus, conspicuously angled from behind, as shown in Pl. 13, Fig. 91; exposed portion of venter of last annulus smooth, not at all transversely striate.

Number of segments, 66.

Length, about 76 mm.; width, 4.5 mm.

Colombia: San Lorenzo; July 2, 1913. One female in log at 4,500 feet elevation. Also one from a stump at same elevation, July 5, 1913.

Cincinnati coffee plantation; July 2, 1913; A. S. Pearse. Two females under stone in cornfield.

San Lorenzo; July 13, 1913; 4,500 feet. Two females. Also, July 14, 1913, one not fully mature male at 2,000 feet.

One female without definite locality.

Holotype, M. C. Z., 5,092.

At once recognizable among the other spirostreptid species secured by the position of the repugnatorial pores and the weakly scabrous character of the surface of the segments.

Orthoporus etholax, sp. nov.

Pl. 14, Figs. 92-96

This is a dark species characterized by having the caudal portion of the metazonites darker than the anterior portion, in specimens in full color the dark brown or dusky caudal band embracing a little more than a third of the length of metazonite and ordinarily bordered in front by an abruptly paler line or narrow stripe. Anterior region of metazonite and prozonite brown, the prozonite becoming paler cephalad, but with anterior border of covered portion ordinarily very dark. Last tergite dark excepting a narrow caudal border on each side, and sometimes median area somewhat lighter, this tergite and the anal valve typically of an olivaceous cast. Collum with a narrow light border all around limited within by a blackish band, the central area paler. Head dark across vertex, paler below. Legs typically dark brown to light brown, the legs agreeing in color in general with the body.

Vertigial sulcus of head distinct. Clypeal foveolate 2+2. Eyes transversely elongate, with inner end acute and upper margin convex; separated by less than their diameter. Ocelli arranged in six series, about 56 or 58 in number; *e. g.*, 13, 12, 11, 9, 7, 4, and 12, 11, 9, 8, 5, 2. Head back of antennal socket and below eye with a smooth margining ridge, this ridge continuing along the notch; area in front of the ridge roughened.

Collum in female with inferoanterior angle obtuse, the inferocaudal one rounded. Typically with three deep sulci above the margining one and a characteristic furrow curving dorsocaudad from near middle of uppermost of these sulci, this furrow not attaining the caudal margin. Or there are four sulci if the weaker one at edge is regarded as margining sulcus. (See Pl. 14, Fig. 93.) Collum of male with ante-

ventral corner produced ventrocephalad, rounded distally. (Pl. 14, Fig. 92.)

Segmental sutures sharply impressed throughout, smooth, curved opposite the pore, which is less than half the distance from the suture to the edge of the caudal dark band of metazonite. Metazonite striate only beneath, but with same obscure broad and very low rugae above the striae proper.

Last tergite with caudal portion set off by a very shallow, more or less obscure, transverse depression or furrow; caudal angle acute. Mesal borders of anal valves compressed and elevated, the elevated region of only moderate height. Anal scale sharply set off; each side concave, the caudal angle rectangular or a little obtuse. (Pl. 14, Fig. 94.)

Gonopods of male as shown in Pl. 14, Figs. 95, 96.

Number of segments, 54 to 55.

Length, about 90 mm.; width, 6.5 mm.

British Guiana: First Mourie. In Calladium root masses in tree clump. Aug. 1 and 5, 1914; F. M. Gaige. Two females.

Labba Creek Sand Hills; July 27, 1914. One female.

Forested Sand Hills; Aug. 18, 1914; F. M. Gaige. One male in Calladium root mass.

Holotype, M. C. Z., 5,098.

Orthoporus walkeri, sp. nov.

Pl. 14, Fig. 97; Pl. 15, Fig. 98

Somewhat resembling the preceding species, *O. etholax,* but readily distinguished by difference in color pattern as well as in details of structure. Unlike *etholax,* this species has a caudal band of each typical segment lightest, subferruginous in color with the anterior portion of metazonite, embracing more than half of it, deep brown of olive cast. Last tergite,

excepting a narrow caudal border on each side and anal valves nearly black or black of olive tinge. Legs brown, lighter than in *etholax*.

Most easily separated from *etholax* by readily noted differences in the collum. The inferoanterior corner in the female is not obtuse, but is moderately extended forward as shown in Pl. 15, Fig. 98. The collum lacks the oblique furrow above the striae proper, and the next to the uppermost stria is short, crossing only the caudal border as shown in the figure. Five striae are present above the margining sulcus.

Segmental suture deeply impressed, widely curving opposite the pore, which is a little in front of a point halfway between suture and caudal edge of dark portion of metazonite.

In the type there are two transverse furrows in front of the tip of the last tergite. Anal valves with mesal borders elevated as usual. Anal scale longer in proportion to width than in *etholax*. (Pl. 14, Fig. 97.)

Number of segments, 61.

Length, about 95 mm.; width, 6.5 mm.

British Guiana: First Mourie; July 30 and Aug. 1, 1914; F. M. Gaige. One female on each date. Holotype, M. C. Z., 5,101.

Orthoporus gaigei, sp. nov.

Pl. 15, Figs. 99-103; Pl. 16, Fig. 104

Segments typically mostly blackish brown or black, excepting a narrow ferruginous ring about caudal border of each and the covered portion of prozonite, which is also pale. Anterior border of anal valves typically palest. Head and collum often in large part chestnut or ferruginous. Antennae and legs ferruginous.

Vertigial sulcus of head sharply impressed, ending in a

depression or pit at level of inner angles of eyes, where it meets a vaguer transverse line from each side. Clypeal foveolae 2+2. Eyes angled within, separated by about two-thirds their length. Antennae, when laid back on dorsum parallel with median dorsal line, not fully attaining the caudal edge of the dorsum; when laid back along the side a little surpassing the caudal margin of collum.

In the female the lower edge of the collum on each side is nearly straight with the caudal angle widely rounded, the cephalic angle subrectangular, narrowly rounded. (See Pl. 15, Fig. 99.) In the male the anterior angle of collum is produced, as, *e. g.*, in the male of *Nanostreptus incertelineatus* Silv., but more forward, the end of process rounded. (See Pl. 15, Fig. 100.) On each side below there are, in addition to the margining sulcus, three complete sulci, with sometimes (in females, at least) one or more less complete intermediate ones.

Covered portion of prozonites with encircling striolae that branch and anastamose in the ordinary manner. Exposed portion of prozonite and the metazonite subdensely finely punctulate, otherwise smooth and shining above and laterally, the metazonites longitudinally striate beneath. Metazonites not elevated. Suture sharply impressed throughout, only slightly and widely curving opposite pore, which is widely removed from it, lying approximately on the line between first and second thirds of metazonite.

Last tergite with a subtriangular caudal region set off by a shallow transverse furrow, the angle rounded; with no median keel. Anal valves with mesal borders strongly compressed and sharply elevated. Anal scale separated from the annulus by a deep sulcus; broadly triangular. (Pl. 16, Fig. 104.)

Gonopods of male as shown in Pl. 15, Figs. 101-103.

Number of segments, male type, 58; female, 57 to 62.

Length, female, to near 150 mm.; width, 8 mm. Length of male type, about 110 mm.; width, 7 mm.

Colombia: San Lorenzo. Under leaves, 2,000 feet to 3,000 feet. July 16, 1913; F. M. Gaige. One male and four females. Also along trail, between 2,500 and 3,000 feet. July 7, 1913; M. A. Carriker. Two males. At 2,000 feet; July 24, 1913; one male.

Colombia: San Lorenzo. At edge of clearing; 4,500 feet; July 9, 1913. A female and a variant male. At 4,500 feet; in leaf-cutter ant's nest; one female. July 16, 1913.

Holotype, M. C. Z., 5,103.

Orthoporus foliatus, sp. nov.

Pl. 16, Fig. 105

General color deep olive brown. In the more anterior segments there is a very distinct light fulvous to fulvoferruginous band about caudal portion of metazonite, the extreme caudal border of which, however, is darkened. The light band becomes somewhat less distinct going caudad; in middle region on dorsum it is obviously less than one-third the total length of metazonite. Legs reddish brown.

Vertigial sulcus distinct. Eyes in type with ocelli in eight series, 83 in number; *e. g.*, 15, 14, 14, 11, 11, 11, 4, 3. Area behind antenna and below eye characterized by having a rather broad inferior border which is smooth, the region above it roughened by an oblique ruga or ridge from each side of which others extend like the veins of a leaf from the midrib. (See Pl. 16, Fig. 105.)

The lower anterior angle of the collum is carried some-

what forward as in *O. walkeri.* There are only four striae or sulci above the lowest margining one on each side. Of these, the second one is characteristic, being parallel to margin and ending abruptly in front, not curving and continuing upward as do the others. (See Pl. 16, Fig. 105.)

Segmental suture deep, as usual, a little excurved opposite the pore which lies in about the middle of the darker region of metazonite. Metazonites of middle segments striate only well beneath; but up the sides and across dorsum roughened by numerous somewhat irregular and very weak longitudinal rugae or folds which may, with proper lighting, be seen with the unaided eye.

Last tergite characterized by having the caudal portion sharply set off by a transverse furrow and depressed below level of anterior region; also more strongly roughened, finely reticulo-rugose, just caudad of the furrow. Tergite rugose on the sides. Anal valve with mesal borders elevated as usual. Anal scale of usual general form, rather broad, with a broad median longitudinal elevation on keel.

Number of segments, 58.

Length, about 105 mm.; width, 7.5 mm.

British Guiana: Sand Hill Forest. In Calladium root mass. Aug. 22, 1914; F. M. Gaige. One female. Holotype, M. C. Z., 5,109.

Orthoporus sp.

In the collection are several immature females and males of an uncertain species.

British Guiana: Forested Sand Hills. Aug. 17 and 18, 1914; F. M. Gaige.

SPIROBOLOIDEA

RHINOCRICIDAE

Rhinocricus brevipes Carl

Colombia: San Lorenzo. Under leaves at elevation of 2,500 feet, July 15, 1913; and at elevation of 2,000 feet, July 16, 1916; F. M. Gaige.

Four females agreeing well in all structural details with the original description, excepting that the segments number 44, 45, and 47, instead of 42.

Rhinocricus arboreus Saussure

Unted States Virgin Islands: St. Croix; Sept. 14-18, 1914. Mr. Gaige, the collector, notes that these millipedes "were abundant over the island, usually found in the trees, where they frequently gathered in clusters of three or four to twenty or more."

Rhinocricus monilicornis (Porat)

United States Virgin Islands: St. Croix; July 16, 1914; F. M. Gaige. Four specimens taken with *Trigoniulus lumbricinus* Gerstaecker in interior of island.

British Guiana: Labba Creek Sand Hills; July 27, 1914; F. M. Gaige. Two males and six females collected in rotten wood.

East Trail along Demerara River, close to high-water mark; Aug. 8, 1914; F. M. Gaige. One male and one female.

Rhinocricus hylophilus, sp. nov.

Female.—The body in general is deep olive to nearly black, excepting the caudal borders of metazonites, which are dull ferruginous forward more than half way to the suture, and the covered portion of prozonites, which is paler, as usual. Collum bordered with ferruginous. Head on the lower bor-

der of face ferruginous. Antennae and legs also ferruginous, excepting the two proximal joints, which are darker, more brownish or olivaceous.

Sulcus of head interrupted in the interocular region. Clypeal foveolae 2+2. Antennae clavate; sensory cones numerous. Facets of eyes flat, often obscure; eye subtriangular, with apex ectad; ocelli about 28 in five transverse series; *e. g.*, 7, 7, 6, 5, 3; the ectal ocelli of upper series much the largest, the others decreasing mesad and centrad. Eyes nearly three times their greatest diameter apart.

Collum widely rounded on each side below, the second tergite extending considerably below its ends; not margined, striate or distinctly punctate, being smooth and shining.

In a typical segment from the middle region of the body the suture is fine but complete, angled at level of pore which it touches, the suture lying in a furrow which is vague dorsally but becomes distinct below level of pore. No secondary furrow. A little in front of the suture a shallow furrow, which is often irregularly developed and may be evident only across dorsum above level of pores, its lower end on each side often curving cephaloventrad. Covered portion of prozonite with the usual transverse sulcus across dorsum just caudad of this striolate region. Metazonites with deep longitudinal striae only below, the non-striate region between pore and the striae twice as wide as the striate region. Under the lens this region between striae and pore shows weaker short impressed lines which are in part branched and scattered punctae, this same sculpture continuing in a band caudad of the suture up some distance above pore on each side, the metazonite otherwise wholly smooth.

Scobina distinct to segment 22 or 23, at which they cease abruptly.

Last tergite with cauda acute, straight, extending a short distance beyond the valves, a transverse sulcus at base of cauda. Valves with mesal borders strongly compressed and elevated. Anal scale smooth.

Number of segments, 44 to 46.

Length, near 155 mm.; width, 18 mm.

Colombia: San Lorenzo. On trail in heavy forest, between 2,000 and 4,500 feet elevation. July 1, 1913. Three females. Holotype, M. C. Z., 5,110.

Rhinocricus pycnus, sp. nov.

Female.—Dark olive, the segments bordered with ferruginous behind, the ferruginous band extending nearly to the suture. Last tergite narrowly bordered behind with ferruginous and the elevated mesal margin of valves the same color. Collum bordered with ferruginous. Clypeus ferruginous, this color also extending up in the middle between the antennae, but here more obscure. Eyes also ferruginous. Legs and antennae ferruginous.

Sulcus of head interrupted at level of eyes. Clypeal foveolae 2+2. Antennae flattened, of uniform width over most of length; sensory cones numerous. Eyes consisting of about 28 ocelli in five series; *e. g.,* 7, 7, 6, 5, 5; facets distinctly convex, decreasing in size mesad, as usual.

Collum only slightly exceeded on each side by the second tergite; ends rounded; surface without margining or other sulci, under the lines showing a sculpturing of fine coriarious markings. The suture on typical segments of body complete and distinct, slightly angled at level of pore which it touches. Longitudinal striae of metazonite few, those present present only below. Elsewhere metazonite and exposed portion of prozonite seen under lens to be covered with numerous

impressed fine lines which branch and in part anastomose like those on the collum. Covered portion of prozonite with the usual wavy transverse striolations.

Scobina ending on the twenty-third segment.

Last tergite without transverse sulci; with an acute cylindrical cauda produced well beyond the valves and distally a little curved upward. Anal valves with mesal margins compressed and elevated as usual. Anal scale smooth, caudal angle obtuse, sides convex caudally and straight anteriorly.

Number of segments, 43 to 44.

Length, 54 mm.; width, 8.5 mm.

Colombia: San Lorenzo. Among fallen leaves at 2,000 feet, July 14, 1913, and under leaves at 4,200 feet, July 15, 1913. One female at each locality. Holotype, M. C. Z., 5,112.

The body of this form is usually thick in proportion to its length.

Rhinocricus amblus, sp. nov.

Pl. 16, Figs. 106-108

Body dark, the exposed portion of the prozonites dark bluish to brownish, the metazonites mostly abruptly darker, deep brown, excepting a narrow, pale caudal border. Covered portion of prozonites pale, with a network of darker lines. Segments often paler below adjacent to legs. Head ferruginous excepting for a dark subquadrate mark between the eyes, the vertex covered with a network of dark lines and a similar network at the sides of and below the dark mark. Collum sometimes ferruginous, with network of darker lines. Legs and antennae ferruginous. Last tergite and anal valves dark, excepting a narrow, pale border on each side of the tergite, the cauda wholly dark. When dry the body may appear essentially black excepting for the pale caudal border of each segment.

Median sulcus of head interrupted at level of eyes. Clypeal foveolae 2+2. Antennae very short, with only four sensory cones. Eyes small, subcircular.

Collum rounded at each end, with a short margining sulcus across the end on each side. Surface densely but very finely punctate and punctolineate. Second tergite extending a little below end of collum on each side. The typical segments of body have the suture sharply impressed throughout, the segments a little constricted at its level; suture bending angularly a little away from pore at level of latter. Pores minute. Covered portion of prozonite smooth. Exposed portion of prozonite anteriorly, with two fine transverse striae across dorsum. The prozonite and metazonite in general with numerous minute impressed points and short lines running out from these points as frequent in Trigoniulus, these more marked on the prozonite than on the metazonite. Segments longitudinally sharply striate beneath.

Last tergite smooth, with a subcylindrical cauda which is rounded at the end and extends beyond the anal valves. (Pl. 16, Figs. 106, 107.) Anal valves not margined, the mesal borders rounded, slightly compressed, but not set off. Caudal margin of anal scale convex.

For gonopods of male, see Pl. 16, Fig. 108.

Number of segments: female, 45 to 46; male, 43.

Length, 42 mm.; width, 4.7 mm.

Colombia: San Lorenzo. Under leaves and logs at 2,500 feet; July 15, 1913. Four females. At 4,500 feet, in stumps; July 5, 1913. Three females.

Under log, 4,500 feet, July 2, 1913. One female.

Under log, 4,500 feet, July 3, 1913. One male. F. M. Gaige.

Holotype, M. C. Z., 5,114.

SPIROBOLELLIDAE

Microspirobolus tridens, sp. nov.

Pl. 16, Fig. 109; Pl. 17, Fig. 110

Dorsum fulvous to buff, with a middorsal stripe formed by a series of black triangular marks with bases cephalad, the lateral angles extending laterad in black lines along anterior borders of the somites to unite with the black band along each side. Venter and lower part of sides again light colored excepting borders of segments. Last tergite black, excepting a light spot anteriorly on each side. Collum also blackish, excepting a pale spot on each side behind. Legs ferruginous.

Eyes about equal in length and breadth. Ocelli about 18 in only four series; *e. g.,* 5, 5, 5, 3. Eyes separated by a space three times as long as their diameter. Antennae very small.

Collum narrowed moderately down each side, the lateral ends rounded and bent a little mesad below; margin below and up the front as usual.

Each ordinary segment with a moderate encircling furrow or constriction; this crossed by numerous ridges or ribs both on dorsum and down the sides, the depressions between the ridges on the sides continuing upon the prozonite as deep striae which curve upward. Metazonite striate below.

Last tergite rounded caudally, projecting caudad freely above valves for a short distance. Anal valves weakly margined along mesal edges, the borders not protruding.

Characterized especially by the form of the gonopods of the male, which are represented in Pl. 16, Fig. 109, and Pl. 17, Fig. 110.

Number of segments, 34 to 37.

Length, about 18 mm.; width, to 2 mm.

Colombia: San Lorenzo; 4,500 feet; July 3, 1913. Four

males and three females taken under bark of stump. Holotype, M. C. Z., 5,118.

TRIGONIULIDAE

Trigoniulus lumbricinus (Gerstaecker)

United States Virgin Islands: St. Croix; July 16, 1914; F. M. Gaige. "Collected in rotten logs in deep ravine in interior of island. This form was a very abundant one, and was present under almost every stone that was turned over, as well as in rotten wood, beneath loose bark, etc. It was noted to be equally abundant on the high and very dry hillside and in the damp ravine." In the vial with the Trigoniulus were four specimens of *Rhinocricus monilicornis* (Porat), to which this note in part, therefore, applies.

POLYDESMOIDEA

EURYURIDAE

Pycnotropis colombiensis, sp. nov.

Pl. 17, Figs. 111-113

When in full color the dorsum is blackish brown to black, with the keels fulvous. Last tergite paler, brown or reddish brown, across caudal border. Legs and antennae brown.

Vertigial sulcus sharply impressed, lying in a deep furrow which anteriorly branches, sending a shallow furrow obliquely out to each antennal socket.

Collum narrower than the succeeding tergite. Lateral lobes or keels wholly smooth, conspicuously narrowed and the ends strongly convex. Surface between the keels divided into polygonal areas like those of other tergites, these areas forming four transverse, in which the areas of the first and last are more or less incomplete. (Pl. 17, Fig. 111.)

The polygonal areas of the tergites in general more pro-

nounced toward the keels, with their surface more convex and the tubercles correspondingly more distinct.

In the last tergite the cauda has the caudal margin convex and crenate, while the lateral margins are essentially straight and smooth, excepting a single setigerous notch.

Sternite of fourth segment anteriorly, between fourth legs, with two straight conical processes, and with two smaller conical processes between fifth legs. The sternite of the fifth segment also bears two pairs of similar processes, of which those of the posterior pair are much more widely separated than those of the anterior pair.

In the gonopods of the male there is near the middle of the principal distal branch an acute tooth below, and one or sometimes two smaller teeth proximad of the acute distal end. (See, further, Pl. 17, Figs. 112 and 113.)

Length of male, about 42 mm.; width, 6.8 mm.

Colombia: San Lorenzo. Four specimens taken under a log at 4,500 feet, July 2, 1913. Ten specimens, partly immature, on logs at 3,000 feet, July 16, 1913. One male and two females in stumps at 4,500 feet, July 4, 1913. F. M. Gaige.

Cincinnati Coffee Plantation. One male and three females, one immature, taken in a rotten log, July 2, 1913. A. S. Pearse.

Holotype, M. C. Z., 5,120.

Pycnotropis cylindroides, sp. nov.

Pl. 17, Figs. 114-116

Dorsum a dull or grey olive brown throughout, the keels not lighter in color, or somewhat more reddish than dorsum; the olive cast sometimes not apparent. (Male type.) Antennae light brown. Legs yellow to light brown of slight olive tinge.

Contrasting strongly with the previous species not only in color but also in form from the great narrowness of the carinae, this giving the body a nearly cylindrical appearance. The carinae in general are so narrow that the poriferous swelling occupies the entire width in posterior part, with the part in front still narrower, merging into the general surface of the segment. Anterior keels wider than the posterior ones. Posterior angles slightly produced from fifth segment caudad. Dorsal surface of segments divided into polygonal areas as in *P. colombiensis,* but tubercles absent or obsolete and irregularly developed. Some metazonites more or less roughened toward the keels. See further, Pl. 17, Figs. 114 and 115.

Caudal margin of last tergite strongly convex, the sides converging caudad.

Gonopods of male as shown in Pl. 17, Fig. 116.

Length, about 45 mm.; width, 6.5 mm.

Colombia: San Lorenzo. A female in its "mud nest" with eggs was taken under a log at 5,300 feet elevation, and a male under a log at 5,000 feet, July 23, 1913. Holotype, M. C. Z., 5,125.

PLATYRRHACIDAE

Rhyphodesmus amphelictus, sp. nov.

Pl. 18, Figs. 117, 118

General color dark brown, the keels scarcely paler, but the cauda over all but anterior portion abruptly lighter.

Surface of head densely granular, with granules of different sizes. A deep furrow across vertex, widening anteriorly to occupy entire space between the rims of antennal sockets.

Collum much narrower than the second tergite (width about as 7.25 to 10); lateral end in general outline subrectangular, but a little rounded at apex. Surface densely granular,

a row of larger tubercles along anterior and posterior margins and tubercles of similar size in intervening space not serially arranged; on each side an area of granules or tubercles elevated above margin proper.

Each ordinary metazonite with dorsal surface densely granular and with three transverse series of larger tubercles, the three series equally developed. Along the lateral margin of the keel a series of much larger rounded tubercles giving the appearance of a fine or less even serration. Pore removed from margin by a distance of from one and a half to two times the diameter of its rim.

Cauda subquadrate, broader than long, a little narrower at base than in middle of its length, the sides and the caudal margin being weakly convex.

Gonopods of male with two distal branches, these smooth and unbranched, the lower (posterior) one much shorter, curling dorsad distally, the larger branch curling into a circle and in situ resting against the sternite of the sixth segment. See further, Pl. 18, Figs. 117, 118.

Length, male, 70 mm.; width, 12 mm.

British Guiana: Labba Creek Sand Hills; July 27, 1914; F. M. Gaige. One male and one female.

Two males and two females taken at Cacao Plantation about camp in rotten wood, July 16 and 17, 1914; F. M. Gaige.

One adult and several immature specimens from bank of Demerara River collected in a very damp and much decayed stump; July 17, 1914; F. M. Gaige.

Holotype, M. C. Z., 5,127.

I adopt for the genus of this species the name Rhyphodesmus, although the species on which Cook based his brief diagnosis of the genus has not as yet been described and cannot be determined from the published data.

Aphelidesmus guianensis, sp. nov.

Pl. 18, Figs. 119-122

Dorsum with metazonites deep colored or blackish, the prozonites in some degree lighter and the keels entirely pale fulvous or, in types as preserved, nearly white. Last tergite dark throughout. Legs and antennae light brown.

Collum strongly narrowed laterad, the lateral lobe or keel near its outer end only one-third as long as the middorsal line of the plate, while at its base, *i. e.,* near inner end of light area, about two-thirds as long as that line. Anterolateral corner widely convex, the caudolateral more narrowly rounded. (Pl. 18, Fig. 119.)

In the second tergite the lateral margin of keels straight, with the two angles in general outline rectangular, but the outer edge of the anterior one produced ectad. In the third tergite the caudolateral angle of keel moderately acute, the outer edge of keel oblique and a little convex, the anterolateral corner with ectal process smaller. In the fourth tergite the outer edge of keel still more convex, with anterior corner more rounded and the process or tooth still slighter and rounded, scarcely evident, as shown in Pl. 18, Fig. 120.

Cauda with sides convex; caudal margin obtusely notched at middle. Anal scale very broadly shield-shaped, the sides convex excepting at anterior end, where concave; posterior angle very obtuse. (Pl. 18, Fig. 121.)

In the male gonopods the tarsus characterized by bearing a short, plate-like process on its caudal side. See further, Pl. 18, Fig. 121.

Length of male type, 46 mm.; width, 7 mm.

British Guiana: Forested Sand Hills; Aug. 17, 1914; F.

M. Gaige. One male and two females collected in rotten wood and in the earth.

Sand Hill Forest. One male in rotten wood, Aug. 19, 1914, and two females in Calladium root masses, Aug. 24, 1914; F. M. Gaige.

First Mourie. One female "collected in ground litter in tree clump," Aug. 6, 1914; F. M. Gaige.

Polylepiscus sp.

One young and badly broken specimen of this genus was secured. Its poor condition renders it inadvisable to attempt to place or describe it specifically.

Colombia: San Lorenzo; Cincinnati Coffee Plantation. In a rotten log; July 2, 1913; A. S. Pearse.

LEPTODESMIDAE

Trachelodesmus angulatus, sp. nov.

Pl. 18, Figs. 123-125

Metatergites greyish blue, the prozonites paler. Sides just under the keels also greyish blue, the lower part of sides and the venter fulvous. Head with ground yellow; a network of dark lines over vertex and darker areas below this and in region below level of antennae. Collum also with a network of dark lines. Legs and antennae fulvous.

Body constricted anteriorly, as usual.

This species stands apart from others thus far described in the details of the metazonites, as notably in the acute, caudally produced caudal angles of all keels from the fifth caudad and the second to fourth also bearing at the caudal angle a caudally directed but less conspicuous tubercle, this uniform with the tubercles of the caudal series. Dorsal surface of metazonites densely granular, with each typical one divided

into three transverse rows of large polygonal areas, of which the most caudad are incomplete, only the anterior halves being present; six areas in each series. From caudal edge of metazonite project six larger tubercles directly caudad, one tubercle from each area. Each area of the two anterior rows also with a less conspicuous central tubercle among the smaller granules. Tubercles of margin of keels larger, more or less directed caudad of ectad, serriform, the most caudal largest, particularly large on the poriferous segments on which it is confluent, with one or two preceding tubercles to form the large poriferous prominence on which the pore opens below the upper edge, a nodule, the tip of a fused tubercle, lying just over it. (See Pl. 18, Fig. 124.) Sides obscurely granular. Second, third and fourth tergites with three marginal tubercles or teeth, of which the one at the anterior corner is smallest; the caudal series of tubercles as in the more caudal segments, but only one series in front of this. Legs not granular.

Collum acutely angular on each side, a tubercle at apex, margin convex each side of this angle. Six tubercles along caudal border, and two rows of rather obscure tubercles farther forward, the surface otherwise densely granular. (Pl. 18, Fig. 123.)

Sternal spines present larger than those of corresponding segments in other species, but the most caudal ones not larger than the others, all being curved and subequal excepting those of eighth and ninth segments, the most anterior ones present, which are reduced. (See Pl. 18, Fig. 125.)

Length, about 16 mm.; width, 2.5 mm.

Colombia: San Lorenzo. Two females of 19 segments and two younger specimens taken in forest at 4,000 feet; July 14, 1913; F. M. Gaige. Holotype, M. C. Z., 5,136.

Trachelodesmus ancylophor, sp. nov.

Pl. 19, Figs. 126, 127

General color light horn-brown, a considerable portion of metazonite and prozonite above darker, dusky, in the type the collum and vertex of head with a network of dark lines. Legs and antennae fulvous.

Body rather slender, widest near middle and narrowing very gradually forwards, the anterior constriction including particularly the third and fourth segments.

The head not granular or tuberculate, smooth throughout.

Collum a little narrower than head, inclusive of cardines of mandibles. Margin widely and evenly convex over anterior and lateral regions back to caudolateral angles, which are subrectangular; caudal margin convex on each side just within the angle, the median region nearly straight. The dorsal surface presents along the caudal border about ten larger, more elevated, rounded tubercles, between which are wedged in smaller tubercles forming in general two rows, one in line with anterior and one with posterior borders of the larger tubercles; the remaining portion closely covered with smaller and lower flattened tubercles back of anterior border, such as occur in *Trachelodesmus constrictus* Peters. A row of about six widely separated setae just behind the depressed anterior border. (Pl. 19, Fig. 126.)

The second tergite with two irregular series of mostly large tubercles across median region; the principal tubercles on each side are much larger than those of median region, there being behind them a caudal series of much smaller tubercles; a large, blunt tubercle at anterolateral corner is carried forward against the end of the collum. Third tergite

also with two rows of rounded tubercles, the fourth with an irregular series of smaller tubercles between the other two, two large, rounded tubercles on lateral margin of keel. A typical metazonite of middle region of body has the dorsal surface divided into large polygonal areas, which are more distinct toward the sides, these forming two transverse rows of mostly eight areas each; these larger areas bear densely arranged smaller tubercles. Lateral margins of poriferous metazonites convex, each with a very large, rounded tubercle through the ectal face of which the pore opens. Suture between metazonite and prozonite longitudinally striate as in *constrictus*. Prozonites finely granular above. (Pl. 19, Figs. 126, 127.)

Cauda triangularly narrowed caudad, narrowly truncate at tip; caudal surface bearing six setae; two setae on each side and a pair above, in front of a more widely separated pair on basal portion of tergite.

Sterna very wide, as usual, but narrower than the tergites exclusive of keels; not granular or tuberculate. Sterna from thirteenth to eighteenth bearing small spines in the usual position adjacent to the posterior legs, the nineteenth segment with a pair of very much larger curved spines.

Sides of segments smooth, or nearly so.

Legs not granular, or only very obscurely so, but otherwise typical in form.

Length, about 15 mm.; width, 2 mm.

Colombia: San Lorenzo. One female under a log at about 6,200 feet, July 19, 1913.

One broken female at 6,200 feet, July 19, 1913, and two females from a locality of which the number cannot longer be deciphered.

One female among bromeliads on ground at 7,600 feet, July 19, 1913.

Holotype, M. C. Z., 5,138.

Resembles *T. constrictus* Peters, but differs—*e. g.*, in lacking the anterior row of larger tubercles on the collum, in having two rows of tubercles, instead of but one, on the second tergite, in having sternal spines only from thirteenth segment caudad, and conspicuously in having the sterna and legs free from true granulations.

Dromodesmus, gen. nov.

Body composed of head and 20 segments.

Sternum of nineteenth segment narrowed caudad, the posterior pair of legs being rather close together and projecting directly caudad, or nearly so. No spines on this sternum, but preceding ones of posterior and middle segments with a pair of spines at bases of posterior pair of legs.

Legs exceptionally long.

Keels of anterior and median regions well developed, carried high, margins smooth, and posterior angles of all from the second caudad conspicuously produced; the posterior keels reduced anteriorly, leaving only the caudolateral processes prominent, the posterior end of body narrowing conspicuously caudad. Dorsal surface of metazonites densely granular and with longer tubercles in transverse series. Repugnatorial pores on segments 5, 7, 9, 10, 12, 13, 15-19. Cauda triangular, caudal apex narrowly truncate.

Gonopods of male with telopodite deeply bifid, both branches segmented, the outer (anterior) toward base, the inner (posterior) toward middle; outer branch in genotype trifid, with two processes acute and one plate-like; the inner branch distally bifid.

Genotype, *Dromodesmus longipes,* sp. nov.

Dromodesmus longipes, sp. nov.

Pl. 19, Figs. 128-133; Pl. 20, Figs. 134-135

The general color of most of the types as at present is brownish grey, with legs fulvous and antennae brown. But the only specimen in full color, the male type, is deeply oliveaceous or nearly black above, excepting the processes or the keels, which are yellow. Lighter, brownish yellow beneath. Antennae brown. Legs lighter brown, fulvous beneath proximally.

Antennae long (see Pl. 19, Fig. 131, for proportions of joints). Surface of head minutely granular, with fewer longer setigerous granules. Vertigial sulcus distinct to level of antennae.

Collum with anterior and lateral margins together forming a nearly evenly convex curve. Caudal angles a little less than rectangular, extended slightly caudad. (Pl. 19, Fig. 128.)

Keels of anterior segments bent up and carried a little above level of dorsum, in going caudad becoming more nearly horizontal. All margins of keels wholly smooth. Dorsum of a typical metazonite with a distinct transverse furrow in front, of which there is a median longitudinal furrow, often irregularly developed, giving a number of quadrangular areas; a row of smaller areas along caudal border. Two transverse rows of tubercles caudad of the transverse suture and one in front, the latter of six widely separated tubercles. (For form, see Pl. 19, Fig. 129.)

Cauda triangular, with tip narrowly truncate; a large setigerous tubercle on each side, with a smaller one more dorsal in position between it and the tip. Mesal margins of valves raised. Anal scale angular behind, with a setigerous tubercle each side of the angle. (Pl. 19, Fig. 130.)

Form of posterior legs of male as shown in Pl. 20, Fig. 134.

Gonopods of male as shown in Pl. 20, Fig. 135, and Pl. 19, Fig. 132.

Length, female, 36 mm.; width, 5 mm.

Colombia: Fundacion. About 18 specimens, mostly badly preserved and faded, from under a log along Fundacion River, Aug. 12, 1913. Holotype, M. C. Z., 5,142.

Colombodesmus, gen. nov.

Like Trachelodesmus and related genera in having sterna broad and in large part bearing paired spines, but a spine at base of each leg on segments where present instead of only at base of legs of each posterior pair, and the last pair of spines not more strongly developed than the others. Keels well developed in anterior region, marginally serrate, becoming more weakly developed, less projecting in middle and posterior region. The pores borne on distinct lateral processes on caudal portion of margin; present on segments 5, 7, 9, 10, 12, 13, 15-19. Body not obviously constricted in neck-line form anteriorly. Metatergites finely tubercular or granular. Cauda triangular, tip narrowly truncate. Legs, in the genotype at least, granular, as in most species of Trachelodesmus; the claws well developed.

Genotype, *C. catharus,* sp. nov.

Colombodesmus catharus, sp. nov.

Pl. 20, Figs. 136-140; Pl. 21, Fig. 141

The type at present has the prozonite above and on the sides smoky brown, the body otherwise at present light grey throughout excepting a pair of light brown spots on the front of metatergites, the two spots on collum large and subconfluent. Legs and antennae light yellowish grey, darker distally, especially the tip of antennae.

Antennae inserted not far apart, the distance between their sockets but little greater than the diameter of the latter. Head depressed or widely furrowed from base of each antenna caudolaterad, the proximal portion of antenna lying in this furrow. Vertigial sulcus distinct to level of antennae. Setae over entire surface of head numerous and nearly uniformly distributed.

Collum but little narrower than head inclusive of cardines. Anterior margin convex, continuing evenly about the rounded anterior corners into the sides. Posterior angles subrectangular. Lateral margin in front of posterior corner with two or three weak and wide crenulations. Entire dorsal surface densely granular, but with no large tubercles. A little behind the anterior border along edge of the darker area a transverse row of four widely separated setae. (Pl. 20, Fig. 136.)

Second tergite a little wider than the collum, its keels bent forward, decidedly longer than median portion of tergite, the lateral margin of each with an acute tooth at anterior corner followed by two crenulations, the posterior corner being a little acute and distally rounded. (See Pl. 20, Fig. 136.) The third tergite similar to second, but median region a little longer actually and relatively to the keels. Fourth tergite with keels less bent forward and length of median region obviously greater relatively and actually, the four marginal teeth of keels the same. Each keel of the fifth tergite has an anterior laterally bidentate portion separated by a cleft from an equally long projection bearing the pore in its lateral margin, this prominence smooth excepting for a few slight granules. The other poriferous keels are similar, excepting that three teeth are normally evident on anterior lobe. The non-poriferous keels have four marginal teeth, these less rounded, more serriform than in anterior segments, with the posterior angle

becoming larger and projecting more and more caudad. The pore-bearing prominence also comes to project caudad in the more posterior segments. (See Pl. 20, Figs. 137 and 138.)

Dorsal surface of metazonites in general but weakly convex, densely granular, a transverse furrow but weakly developed, two rows of a few more prominent, apically darker, granules behind this furrow. Sides of metazonites more finely granular. Sterna with granules still finer, largely obsolete, and sparer, in part becoming short setae. Spines at bases of legs all very short. (See also Pl. 20, Fig. 139.)

Cauda proper with two setae on rounded tubercles on each lateral margin and a pair on dorsum at base. (Pl. 20, Fig. 138.) Anal scale with caudal margin convexly rounded, a long seta on each side. (Pl. 21, Fig. 140.) Anal valves mesally margined.

Legs with proximal joints granular. Last joint proportionately very long. Claws well developed. (For proportions, etc., see Pl. 21, Fig. 141.)

Length, about 30 mm.; width, 4.2 mm.

Colombia: San Lorenzo. One female taken under a stone in a damp creek bed at 4,500 feet; July 3, 1913. Holotype, M. C. Z., 5,144.

Colombodesmus lygrus, sp. nov.

Pl. 21, Figs. 142-144

This is a darker form than the preceding one, the general color of dorsum and sides being a dark or dusky brownish grey, the poriferous processes alone being lighter, fulvous. Venter paler. Legs proximally white or fulvous white, distally brownish, the light color extending typically to or a little beyond middle of femur. Antennae dark excepting at tip.

The keels in general form and dentitions similar to those

of *catharus,* but with the poriferous process proportionately much smaller and less sharply set off; this process shortly subcylindrical, with distal end oblique and having a semicircle of granules above and overhanging the pore. (See Pl. 21, Figs. 142 and 144.) The dorsal surface of metatergite more strongly granular; with two transverse series of slightly larger, setigerous granules or tubercles behind transverse sulcus and one in front of it, the latter of fewer granules. Sides of segment also obviously more concavely and densely granular than in the other species. Anal valves and scale more strongly granular than in *catharus.*

Spines of sterna nearly as in the genotype, but the posterior pair of each segment larger proportionately to the anterior pair.

For form of leg, see Pl. 21, Fig. 143.

Length, about 35 mm.; width, 4 mm.

Colombia: San Lorenzo. One female under leaves at 4,500 feet; July 21, 1913. Also one female under log at edge of clearing at 4,500 feet; July 9, 1913.

One male, in which the gonopods had unfortunately been broken off and lost, under leaves at 2,000 feet; July 16, 1913; F. M. Gaige.

Holotype, M. C. Z., 5,145.

Cormodesmus, gen. nov.

Sterna narrower than in Colombodesmus, Trachelodesmus, etc. Without sternal spines, but with a rounded tubercle at base of each leg on its anteromesal side on all but anterior segments. Metatergites wider comparatively between anterior corners than between posterior. Keels all well developed, thick, laterally lobed through the development of large tubercles, elevated above dorsum. No repugnatorial pores obvious,

as in Batodesmus. Metatergites coarsely tubercular, the cauda tubercular. Legs rather long, granular. Gonopods of male deeply bifid into a broad anterior plate and a posterior branch lying against the former, the posterior branch, through which the seminiferous tube runs, with a spur toward its base.

Genotype, *C. hirrutellus,* sp. nov.

In the concealed or absent repugnatorial pores suggesting Batodesmus, but readily distinguished from that genus in lacking spines on the sterna, in the tubercles of tergites, etc.

Cormodesmus hirrutellus, sp. nov.

Pl. 21, Figs. 145-148; Pl. 22, Fig. 149

The types at present are dark brown, inclusive of legs and antennae, excepting that the prozonites may be paler, especially below, the color due mostly to adherent material and growths, beneath which the color is fulvous.

Surface of head granular. A series of longitudinal striae across base of vertex. Vertigial sulcus and furrow distinct to level of antennae. Antennal sockets separated by not more than the diameter of the latter. Antennae short, when extended straight back not quite attaining caudal edge of collum. (Pl. 21, Fig. 146.)

Collum with anterior and lateral margins together forming an evenly convex line, excepting for a tubercular projection at anterolateral corner below; the posterior corners more narrowly rounded. Posterior margin weakly convex excepting at ends, where more strongly convex. On dorsal surface a row of tubercles entirely across anterior border; at each end the plate presents an elevation formed by tubercles of the anterior series and two caudad of it, the latter series not extending across middle region of plate. On the median part

of the posterior border two tubercles. Setae as on other tergites. (Pl. 21, Fig. 145.)

Second tergite much wider than the collum, its ends or keels bent forward, the anterolateral corners appearing as thick, rounded tubercles; the third tergite also bent forward at ends. (Pl. 21, Fig. 145.) The following are, as wholes, not bent forward at ends, but with the anterolateral corners strongly produced forward and similarly rounded, these anterior processes becoming shorter in going caudad, but projecting as rounded tubercles on all but the last few. The posterior angles on all but the most anterior keels also come to project similarly caudad. Between these two projecting end tubercles on a typical segment are two intervening large marginal tubercles with a large tubercle below the more anterior of them, giving the keel a thick, heavy appearance. Between these large marginal tubercles there are typically four, or indistinctly five, transverse rows of similar but somewhat smaller tubercles, the most anterior row having but two tubercles, or, if a fifth row is present, this also with two, this forming the second row, the other usually with six each, inclusive of those on keels within marginal ones. Each tubercle bears a large seta and numerous very short, fine setae. (See, further, Pl. 21, Fig. 147.)

Anal valves granulotubercular; mesal borders margined. Anal scale trapeziform, the caudal margin straight, with a setigerous tubercle at each outer angle. (Pl. 21, Fig. 148.)

Gonopods of male as shown in Pl. 22, Fig. 149.

Length, near 35 mm.; width, 5.2 mm.

Colombia: San Lorenzo. A male and two females from stumps at 4,500 feet; July 5, 1913.

Also two smaller specimens at 5,300 feet; July 23, 1913.

A not quite adult male in forest at 4,000 feet; July 14, 1913.

Holotype, M. C. Z., 5,147.

The dark color of these specimens is due in considerable part to foreign material and growths held by the granules and numerous short setae, the parts more free from this showing a fulvous background.

Alassodesmus, gen. nov.

A genus close to Trachelodesmus, but differing from the latter in lacking repugnatorial pores on segments 12 and 15, and in their presence on segment 14, the pore-formula being —, —, 9, 10, 13, 14, 16-19. Pores large and conspicuous.

Genotype, *A. reductus,* sp. nov.

Alassodesmus reductus, sp. nov.

Pl. 22, Figs. 150-153

General color light brown. Legs lighter, more fulvous.

Differing conspicuously from Trachelodesmus, as represented, *e. g.,* by *T. ancylophor,* in the weaker development of the keels, the tergites at the sides merely bulging convexly, and the absence of definite polygonal areas above and of the larger tubercles, the marginal tubercles being small like the others, or a few but slightly larger and more conical. The repugnatorial pores open laterally, not elevated on tubercles, each surrounded by a rim which may be slightly raised; above each pore usually two or three small tubercles, of which the caudal one is larger, and on most caudal segments corners to project as a small, distally rounded, caudal process. Pores present on segments —, 9, 10, 13, 14, 16-19. Dorsal surface of metazonites finely roughened, granular or sharpened both above and below. Sides of metazonites coarsely granular under the keels, the granules becoming finer and sparser below. (Pl. 22, Fig. 150.)

Sterna not granular. Spines of sternites of nineteenth segment as stout at base as the adjacent joint of the leg, narrowing distad, curving dorsad, as long as the two first joints of leg taken together. The other spines abruptly smaller, present forward to the tenth segment inclusive. (See Pl. 22, Fig. 151.)

Cauda short and broad, distally truncate or incurved between the two lateral tubercles. Anal scale shown in Pl. 22, Fig. 152.

Legs of same general structure as in Trachelodesmus, with claw reduced, etc. Not granular. (Pl. 22, Fig. 153.)

Width, 3.2 mm.

Colombia: San Lorenzo. One specimen, unfortunately lacking the head and first seven segments, taken in a log at about 6,200 feet, July 19, 1913, along with the type of *Trachelodesmus ancylophor,* sp. nov. Holotype, M. C. Z., 5,151.

Trichomorpha tuberculosa, sp. nov.

Pl. 22, Figs. 154-156; Pl. 23, Figs. 157-158

Dorsum black with the keels yellow. Lower border of clypeus yellow. Antennae brown. Legs brownish yellow.

Dorsum only slightly arched, nearly flat, the keels being at a high level. All keels in the male well developed, with angles on all from the second caudad acutely and strongly produced, becoming particularly long in the caudal region, those of the seventeenth to nineteenth segments with distal ends distinctly curving mesocaudad. Anterior corners of keels rounded, with the usual tooth at lower end of corner, and back of this the ectal edge weakly serrate or serratocrenulate, the serrations absent on most caudal keels. Caudal margin not truly toothed, bearing usually, however, two setigerous tubercles. Dorsal surface of prozonites smooth; dorsal

surface of metazonites strongly tuberculate, the tubercles in irregular in part confined transverse series, of which there are usually about four caudad of the transverse sulcus, which is distinct, and six in front of it, the tubercles in general smaller toward the anterior and posterior margins, the tubercles extending out upon the keels, but just within the margin of latter fewer and more weakly developed. All tubercles setigerous. (Pl. 22, Figs. 154, 155.)

Sternites of fifth and sixth segments in the male each with a pair of low and broad, distally rounded, large tubercles between first pair of legs.

In the male metatarsal pads projecting distad between the tarsi are developed on the first seven pairs of legs. In the seventh legs of the male the femur is much thickened, widest distad, and is strongly bent, its base projecting as a prominent lobe, as shown in Pl. 22, Fig. 156.

Gonopods small, their form as shown in Pl. 23, Figs. 157, 158.

Length, 33 mm.; width, 4.6 mm.

Colombia: San Lorenzo. One male from stump in woods at 4,500 feet; July 5, 1913.

One female from log at 6,200 feet; July 19, 1913.

Holotype, M. C. Z., 5,152.

Trichomorpha rugosella, sp. nov.

Pl. 23, Figs. 159-162; Pl. 24, Figs. 163-164

Entire dorsum black, excepting the caudolateral corners of the keels, which are yellow. Venter brown. Antennae light brown. Legs with first joint brown, the second whitish; the third joint or femur and the tibia brown excepting for light ring at distal end; last two joints brown or also a little

paler at distal end. The legs thus have a more or less banded appearance.

Dorsum but weakly arched, with the keels high and forming an obtuse angle with adjacent part of metazonites. All keels from second caudad with posterior angles acutely and strongly produced, the processes becoming longer and also curved distally, more curved caudad, though the curvature is never strong. Lateral margins of keels nearly smooth, showing, however, a weak and often vague serration behind the anterior corner and usually two similar ones caudad of this at points of insertion of setae. Caudal margin of keels not dentate. (*Cf.* Pl. 24, Fig. 164.)

Surface of metazonites with transverse sulcus distinct. Both in front and caudad of sulcus the surface is entirely divided by deep impressions into tubercle-like elevations which are mostly longer than wide and each of which bears a seta; there are two series of these areas behind the sulcus and three somewhat irregular ones in front, the tubercles of the latter more weakly developed in the middle region. General dorsal surface of keels convexly elevated, the tubercles over this elevation small. (*Cf.* Pl. 24, Fig. 164.)

Anal scale as shown in Pl. 23, Fig. 159.

In the male the tarsal pads of legs cease abruptly at the tenth pair. Femur of seventh legs curved, apppearing excavated below, the proximal end below bulging roundly but with no true process. (Pl. 24, Fig. 163.)

Gonopods of male as shown in Pl. 23, Figs. 161-162.

Length of male, 20 mm.; width, 2.4 mm.

Colombia: San Lorenzo. A male and female taken in forest at 4,000 feet; July 14, 1913; F. M. Gaige.

A female apparently not in full color and an immature individual probably pertaining to this species were taken at 3,400 feet, under leaves, on July 15, 1913.

Holotype, M. C. Z., 5,154.

Tricomorpha setosior, sp. nov.

Pl. 24, Figs. 165, 166

The type, which may not be in full color, is at present light horn-brown above with the keels light. Sides, venter, and legs fulvous.

This species seems easily distinguishable from the others here described by the peculiarities of keels and dorsal sculpturing. The keels have the lateral margin finely but distinctly serrate, there being typically on a median segment four to six serrations caudad of the usual one back of anterior corner, each bearing a seta. The posterior processes of keels in middle and posterior regions have the tip more or less bent mesad, this curvature being particularly noticeable on the most caudal ones. (See Pl. 24, Figs. 165 and 166.)

All metatergites are strongly densely tubercular, the tubercles becoming weaker on keels. Tubercles shorter, more nearly circular in outline than, *e. g.,* in *tuberculosa* and *rugosella,* and correspondingly more numerous. Three somewhat irregular rows back of transverse furrow in addition to a marginal series of much smaller tubercles on caudal edge, and four or five rows in front of the furrow. Tubercles all bearing rather long setae, which form a conspicuous feature.

Length, about 20 mm.; width, 3.2 mm.

Colombia: San Lorenzo. One female taken under leaves in forest at 4,500 feet on July 20, 1913; F. M. Gaige. Holotype, M. C. Z., 5,157.

Trichomorpha eutyla, sp. nov.

Pl. 24, Figs. 167-170; Pl. 25, Fig. 171

Dorsum black, with the keels ferruginous yellow to yellow. Antennae dark brown. Legs paler, yellowish brown.

Dorsum but weakly arched and the keels at a high level. Posterior angles of all keels from the second caudad acutely and strongly produced. Lateral margins of keels wholly smooth, excepting the usual tooth or serration toward the anterior corner, this small, the second, third and fourth keels also with two weak indentations of serrations caudad of this. Caudal margin of all keels caudad of the fifth with a single distinct tooth as shown in Pl. 24, Figs. 167 and 168. Processes of keels all straight, none at all distally curved.

Dorsal surface of metazonites smooth, no tubercles at all developed; typically a distinct transverse furrow, from which a number of straight, parallel sulci extend caudad, partly dividing the caudal region into separate areas. Dorsal surface of keels moderately elevated and wholly smooth.

In the legs of the male the pads beneath tarsi are large and are strongly and equally developed to the twenty-fourth legs, caudad of which they abruptly cease or show as but a slight angle over the twenty-fifth legs. (Pl. 25, Fig. 171.) Anterior legs and sterna without special lobes or processes.

Gonopods of male as shown in Pl. 24, Figs. 169, 170.

Length of male, 20 mm.; width, 2 mm.

Width of female, to 2.6 mm.

Colombia: San Lorenzo. Seven males and females taken under logs and stones at the edge of a clearing at 4,500 feet; July 9, 1913; M. A. Carriker.

Cincinnati Coffee Plantation, in rotten log; July 2, 1913; A. S. Pearse. Several broken specimens, male and female.

Holotype, M. C. Z., 5,158.

Trichomorpha eusema, sp. nov.

Pl. 25, Figs. 174-178

A species characteristically marked in having the keels and the metazonite of each ordinary segment entirely fulvous caudad of the transverse sulcus and in a median spot in front of it, the anterolateral portion of metazonite within the keel and the prozonite deep chocolate brown to nearly black. Antennae light brown. Legs fulvous.

Dorsum low, with keels high and elevated. Posterior processes of keels strongly developed, as usual, straight or only slightly curved at tip in a few of the most caudal. Lateral margin of keel with a distinct serration caudad of the rounded anterior corner, otherwise smooth. A small, acute tooth at angle between posterior process and caudal margin of metazonite proper. (See Pl. 25, Figs. 174 and 175.)

Tergites above with a deep transverse sulcus; area behind this sulcus, divided by longitudinal sulci into longitudinally oblong elevated areas extending to caudal margin or with posterior ends set off as smaller setigerous tubercles, forming a second row along the margin, typically ten or eleven areas in each series. Region in front of transverse furrow with no such areas set off by sulci, smooth or nearly so.

Seventh leg of male shown in Pl. 25, Fig. 176.

Gonopods of male as shown in Pl. 25, Figs. 177, 178.

Length, 24 mm.; width, 2.6 mm.

Colombia; San Lorenzo. Two females taken in forest at 4,000 feet; July 14, 1913; F. M. Gaige.

One female under a stone in a damp creek bed at 4,500 feet, July 3, 1913.

One male and one female from stump in forest at south end of Cincinnati Coffee Plantation; July 5, 1913; F. M. Gaige.

Holotype, M. C. Z., 5,161.

Trichomorpha angulella, sp. nov.

Pl. 25, Fig. 173

General color of dorsum and keels brown, in part of a chestnut cast, excepting only the caudal processes of the keels, which are fulvous. Antennae brown. Legs fulvous.

Convexity of dorsum and elevation of keels as usual. Posterior processes of keels straight, more than usually slender and acute, especially on the more posterior segments. Lateral margin of keels wholly smooth excepting the usual serration caudad of the anterior corner, this distinct. Caudal margin wholly untoothed and smooth. (See Pl. 25, Fig. 173.) Metatergite with transverse sulcus distinct.

Surface in front of this sulcus wholly smooth and bearing a transverse series of widely separated setae; surface caudad of the sulcus a little roughened by rather fine longitudinal or in part somewhat oblique impressed lines; a series of setae along caudal border and one farther forward, the latter typically of six setae in all.

Length, about 16 mm.; width, 1.6 mm.

Colombia: San Lorenzo. Two adult and one immature female at 2,500 feet; July 15, 1913. Holotype, M. C. Z., 5,165.

Trichomorpha paurothrix, sp. nov.

Pl. 25, Fig. 172

Dorsum black, excepting the outer border and posterior processes of keels, which are yellow; the mesal, convex area of keel mostly dark like the dorsum in general; the processes of keels bright yellow, the anterior light portion of a more vague cast. Antennae dark brown, the legs a lighter, fulvous brown.

Dorsum and relation of keels as usual. Keels with lateral margin presenting the usual serration behind rounded anterior corner, otherwise smooth, a single seta caudad of the serration; caudal margin not toothed. (See, further, Pl. 25, Fig. 172.)

Metazonites with transverse sulcus deep, a median longitudinal sulcus also distinct. The region in front of the sulcus is further divided on each side by a weaker longitudinal furrow, thus giving a larger mesal area and a smaller one adjacent to the keel. The region behind the transverse sulcus with two large, rounded areas on each side adjacent to the sulcus and four much smaller areas or tubercles on each side along caudal border, these decreasing in size from the outer to the mesal end of the series. Each of the larger anterior areas bears a seta; but the surface of the metazonites is otherwise glabrous. Dorsal surface of keel moderately convexly elevated, the surface smooth.

Length, about 24 mm.; width, 3 mm.

Colombia: San Lorenzo. July 22, 1913; one female from a bromeliad on tree at 5,000 feet. Holotype, M. C. Z., 5,167.

Chondrodesmus tamocalanus, sp. nov.

Pl. 26, Fig. 179-182

Dorsum black or nearly so, a narrow stripe along caudal border of metazonites sometimes lighter, reddish, and the keels yellow, the line limiting the yellow area running obliquely from the mesal end of caudal edge of keel to cephalolateral corner, the cephalolateral region commonly tinged with reddish. Cauda yellow. Collum narrowly bordered in front and behind with yellow and its keels entirely yellow. Antennae

and legs of a pronounced pink tinge, this color deeper distad, the proximal joints showing some fulvous.

Dorsum but moderately arched, the keels horizontal.

The collum moderately narrowed down the sides. Anterior margin curving widely over anterolateral corner around to caudolateral corner, which in its general outline is subrectangular but with apex rounded. Surface smooth, wholly lacking granules, under the lens at most showing a network of fine coriarious lines.

On the metazonites in general tubercles wholly absent or at most only obscurely indicated in part. The entire surface with network of deep coriarious impressed lines.

Keels of segments two to four with anterior corners rounded, the posterior rectangular and the lateral margin straight, the margins wholly smooth. On the sixth segment the caudal of keels has become acute, the production of the angle gradually increasing on successive segments in going caudad. Anterior and lateral margins of keels smooth and even throughout. Caudal margin mostly with a single, low, obtuse tooth at middle, or else wholly smooth. (Pl. 26, Figs. 179-181.)

Gonopods of male as shown in Pl. 26, Fig. 182.

Length of male type, 38 mm.; width, 7.6 mm.

Width of female, 8.8 mm.

Colombia: Near Mamatoca, at foot of mountain; July 28, 1913. A male and two females taken under leaves along a ditch from the Tamocal River, elevation 200 feet.

Fundacion River; Aug. 12, 1913. A recently moulted male taken under log. It is now light brown in color, with the legs reddish in typical manner. It is 9 mm. long.

Cincinnati Coffee Plantation; July 5, 1913; F. M. Gaige.

One recently moulted female agreeing in appearance with the preceding male.

San Lorenzo; July 1, 1913. One male on trail between 2,000 and 4,500 feet, in heavy forest.

Holotype, M. C. Z., 5,168.

This species in the exceptionally small size and general structure of the male gonopods is obviously close to the Ecuadorean *C. armatus* Silvestri and the Colombian *C. riparius* Carl. The terminal process of the gonopods is very similar to that of *riparius,* though the sickle-shaped end portion is somewhat less slender and the broad tooth proximad of it arises from the ectal edge, not from the mesal, as described and figured by Carl for *riparius.* It has a tooth on the caudal margin of the keels not present in *riparius.* The keels are yellow forward to anterior corner instead of only back of middle.

Chondrodesmus cerasinopus, sp. nov.

Pl. 26, Figs. 183, 184

A species resembling the preceding one. The dorsum deep brown rather than black, with the light color of keels not so bright a yellow, more horn-colored, and continuing farther forward on the anterior corners. The entire head is dark, brownish black, the clypeal region not pale as it is in the other species. Legs and antennae contrasting in being of a uniform dark cherry red.

The dorsum is more strongly arched and the keels more depressed. The posterior angles of keels in general less produced and lacking an obtuse tooth on posterior margin, this being often finely granular or uneven. The marginal thickening of the keel on the poriferous segments is notably more

elevated, with mesal face of elevation commonly projecting over base, grooved. (Pl. 26, Figs. 183, 184.)

The surface of the metazonites is more strongly roughened, with distinct areas in considerable part developed and a transverse furrow more evident on some of the segments.

Length, 60 mm.; width, 10 mm.

Colombia: Fundacion River; Aug. 19, 1913. One female taken under a log. Holotype, M. C. Z., 5,173.

Chondrodesmus virgatus, sp. nov.

Pl. 26, Figs. 185, 186

The animal is conspicuously marked dorsally with alternating cross bands of dull reddish brown and yellow, considerably more than the caudal half of each metazonite being yellow, the remaining portion and the prozonite being of the darker color. Cauda proper yellow. Collum with yellow caudal border and anterior border, which does not extend to ends. Venter yellow. Head uniformly reddish. Legs reddish excepting proximally. Antennae yellow distally, proximally with reddish tinge.

Collum strongly narrowed at sides in the usual manner. Surface wholly smooth.

All keels narrow. Tergites two to four with outer portion narrow ectad, both corners of keel well rounded and obtuse in general outline. Posterior angle of the keels of the sixth segment is the first to be a little produced. Posterior margins of all keels smooth and even, or at most very minutely and irregularly uneven. All poriferous swellings are sharply set off from the ordinary marginal rim in front, each lanceolate in outline with apex cephalad. See, further, Pl. 26, Figs. 185 and 186. Surface without transverse sulci and otherwise wholly smooth.

Length, about 35 mm.; width, 6.5 mm.

Colombia: Fundacion; Aug. 19, 1913. One adult female and one immature specimen taken under log on Fundacion River. Also one female in same locality taken Aug. 12, 1913. Holotype, M. C. Z., 5,174.

Chondrodesmus virgatus, var. **frater**, var. nov.

Similar in appearance to the preceding species, but the yellow color covering the entire metazonite on all segments, excepting a narrow stripe along anterior margin between the keels, which is more or less suffused with the reddish color of the prozonite. Keels entirely yellow. Collum with median region reddish, the border yellow all the way around, the anterior yellow stripe not restricted to median region as it is in *virgatus*. Venter yellow. Antennae wholly yellow. Legs mostly yellow, a reddish tinge weak and uneven in some.

Surface of metazonites wholly smooth as in *virgatus*. Form of keels in general similar; but in the present form the posterior angle of the fifth keels is distinctly produced, not at all rounded as in *virgatus*. The posterior angle of the seventeenth keel is also more produced.

Length, about 40 mm.; width, 6.5 mm.

Colombia: San Lorenzo; July 25, 1913. One female taken under a log at 2,000 feet. Holotype, M. C. Z., 5,177.

Chondrodesmus rugosior, sp. nov.

Pl. 27, Figs. 187, 188

Dorsum brown, with keels pale, light olive grey to olive yellow, over entire length. Collum with only the keels light, there being in the type no pale anterior and posterior borders. Head brown, not paler in clypeal region. Legs at present

dilute olive yellow to olive grey, the distal articles having a weak pink tinge. All articles of antennae with pink tinge.

Margin of collum curving widely and evenly about each antero-lateral corner to caudal corner, which is nearly rectangular in general outline, though with its apex founded as usual. Surface smooth excepting for the usual network of fine impressed lines.

The anastomosing lines of the metazonites of the segments of median and posterior regions much more deeply impressed, producing a strong roughening which is heightened by pronounced rugae, particularly on the more posterior plates; distinct polygonal areas are also set off. Low tubercles irregularly developed, particularly along caudal borders. Keels moderately broad. Pore swelling evenly passing into ordinary marginal elevation in front, not set off. Posterior angles of keels not truly produced in segments in front of the sixteenth, the angle bulging slightly caudad first on the seventh keels. Posterior margin of keels often rather finely uneven, but not presenting a true tooth, or such only occasionally indicated. See further Pl. 27, Fig. 188.

In the gonopods the terminal blade is much broader than in those of *tamocalanus,* etc., and the major tooth below the apical prong is on the mesal edge as in *riparius* Carl, the outer edge presenting merely several low serrations. See further Pl. 27, Fig. 188.

Length, about 48 mm.; width, 9.5 mm.

Colombia: San Lorenzo; July 5, 1913. One male taken in a stump in woods at 4,500 feet. Holotype, M. C. Z., 5,178.

Zigwadesmus guiananus, sp. nov.

Pl. 27, Figs. 189-193; Pl. 28, Fig. 195

Color above and over sides brownish chestnut to chocolate, the venter more fulvous. Keels and an immediately adjoining portion of tergite above them yellow, as is also a narrow median dorsal longitudinal stripe which is interrupted on anterior part of each prozonite. Legs light brown. No pale spot on each side of prozonite such as characterizes *brunneus*. Antennae darker brown.

Head widely and deeply excavated from base of each antenna caudad, an elliptic, somewhat elevated organ lying in this excavation, as in the genotype.

Keels of second, third and fourth segments normally developed. Each with a low tooth at anterior corner, which is better developed than in *brunneus*. Caudal angle of fourth keels more broadly produced than in *brunneus*. Keels caudad of the fourth narrow and thick, appearing as simple bulgings of the tergite with a margining sulcus; caudal angles produced in all, but keels in anterior portion becoming low and obsolete, though in general a little better developed than in the genotype and inserted a little higher on the sides of the segments. Poriferous process set off by a sharp sulcus from remaining portion of keel, its ectal face elongate elliptic. (Pl. 27, Figs. 189-191.)

The conical tubercles at distal end of cauda are shorter and more rounded than in *brunneus* and are not directed somewhat ventrad of caudad as in that species. (See Pl. 27, Fig. 193, and Pl. 28, Fig. 195.)

The anal scale differs from that of *brunneus* in having the caudal margin between setigerous tubercles rounded, instead of angular, and not surpassing the tubercles. (Pl. 27, Fig. 192.)

Length, 38 mm.; width, 5.2 mm.

British Guiana: Cacao Plantation about camp. One female taken in rotten wood, July 18, 1914; F. M. Gaige.

Also one female in "Forested Sand Hills," Aug. 18, 1914; F. M. Gaige.

Holotype, M. C. Z., 5,179.

This and the following one are the first species to be referred to this genus in addition to the genotype, *Z. brunneus,* the latter having been described from Trinidad.

Zigwadesmus modestus, sp. nov.

Pl. 27, Fig. 194; Pl. 28, Figs. 196-199

Brown, the keels and a small area just above each paler, as usual. No middorsal stripe and no light spots on sides of prozonites.

The anterior keels as in the other species, the angulation of the fourth more as in *brunneus.* The posterior angles of keels in general less produced and less acute than in the other two known species. The poriferous processes are obviously different in being directed more nearly ectad, with caudal angle more rounded; section in the anterocaudal direction shorter, the whole more approaching a cylindrical form. (See Pl. 28, Figs. 196, 197, and 198.)

The cauda much as in *guiananus,* but the terminal tubercles or processes even shorter. (Pl. 28, Fig. 199.) Anal scale with caudal margin between setigerous tubercles obtusely angular, extending beyond the tubercles. (Pl. 27, Fig. 194.)

Length, about 22 mm.; width, 3.25 mm.

British Guiana: Forested Sand Hills. One female of nineteen segments taken in sandy soil of forest floor. Aug. 14, 1914; F. M. Gaige. Holotype, M. C. Z., 5,181.

CRYPTODESMIDAE

Arionus, gen. nov.

Body composed of head and twenty segments.

Collum covering the head; its anterior border divided into ten areas by radial lines as in Docodesmus, etc., elsewhere granular.

Second tergite broader than collum and than third tergite, its lateral border showing these areas separated by short radial lines. Other tergites with keels comparatively narrow; presenting three lateral areas separated by impressed radial lines and slight marginal indentations, or occasionally on one or both sides, in more posterior segments four lobes. Caudal margin of keels with one incision. Keels continuing nearly the general outline of dorsum. Caudal border of metatergites divided into a series of areas by longitudinal impressions, the margin correspondingly weakly crenate. Pores inconspicuous, on caudal lobe back from margin; occurring on segments five, seven, nine, ten, twelve, thirteen, fifteen to nineteen. Dorsal surface of metatergites coarsely granular or tubercular, tubercles nearly uniform.

Penult tergite with caudal margin convex, the areas, of which there are six in all in the genotype, produced caudad as stout acute teeth, of which the lateral one on each side or process of keel is not larger than others, which accordingly extend farther caudad.

Anal tergite small, now lobate, with cauda exposed from above.

Gonopods of male with coxae large. The telopodite also large and stout, exposed in lateral view.

Genotype, *A. ulophilus,* sp. nov.

Arionus ulophilus, sp. nov.

Pl. 28, Figs. 200, 201; Pl. 29, Figs. 202 206

Dorsum (metazonites) brown, paler in going caudad. Venter paler, fulvous.

Vertex of head covered by an elevated shield-shaped and strongly tubercular area, this area crossed by a longitudinal sulcus ending in a notch in the lower end of the elevated area. This area brown, the lower smoother parts of head fulvous. Face with a large, rounded prominence on each side ectad of antennal socket. (Pl. 29, Fig. 202.)

Collum with anterior margin convex, the border in form of a rim divided by sulci and slightly marginal crenations into ten lobes. The surface otherwise densely tuberculate, all of the tubercles small. (Pl. 29, Figs. 202, 203.)

Second tergite bowed forward at ends so that basal lobes of posterior margin extends ectad and appears as a shorter fourth lobe. This and following segments show an anterior rim divided into areas similar to those of caudal border, these becoming shorter in going caudad. (Pl. 29, Fig. 203.) Dorsum of metazonites densely tubercular, none of tubercles large, forming five or six more or less irregular transverse rows. Pores small, scarcely elevated. (Pl. 28, Fig. 201.)

On antepenult tergite the caudal areas project as obtuse processes with the caudal processes of keels large; these processes on the penult are longer, more acute and six in number inclusive of the processes of keels which are of similar size. (Pl. 29, Fig. 204.)

Anal tergite as shown in Pl. 29, Fig. 204. Anal scale, Pl. 28, Fig. 200.

Gonopods of male as represented in Pl. 29, Figs. 205 and 206.

Length, 11 mm.; width, 1.9 mm.

Colombia: San Lorenzo. One male in forest at 4,000 feet, July 14, 1913; F. M. Gaige. Holotype, M. C. Z., 5,182.

Guianonus, gen. nov.

A genus resembling the preceding one, Arionus, in having the keels narrow and in having the metatergites densely covered with numerous coarse granules or tubercles, of which none are specially enlarged. The keels are more elevated than in the other genus, standing out nearly horizontally. Keels laterally fundamentally three-lobed excepting most posterior, which are four-lobed. Posterior processes of keels of penult tergite strongly developed, clearly surpassing the median portion of caudal margin. At once distinguishable from Arionus in the position and distribution of the repugnatorial pores, which open at the distal end of the caudal lobe of keels of segments five, seven, nine, ten, twelve, thirteen, fifteen, and sixteen. Cauda simple, exposed from above.

Telopodite of gonopods of male large and exposed.

Genotype, *Guianonus ectoporus,* sp. nov.

Guianonus ectoporus, sp. nov.

Pl. 29, Figs. 207-209; Pl. 30, Figs. 210, 211

Dorsum dusky brown or chestnut, collum and head lighter, more ferruginous. Venter fulvous brown.

Vertex of head somewhat raised as in Arionus; but the area only obscurely tubercular above and below, more distinctly so across its median region.

Collum with anterior rim presenting twelve areas, the one at each end of the series smaller than the others.

Second tergite considerably wider than collum and than following tergites; moderately bowed forward at ends, but

much less strongly so than in, *e. g., Arionus ulophilus;* keel longer than median region of metatergite, its anterior lobe large and rounded. (Pl. 30, Fig. 210.) In the third and fourth metatergites the keels are not longer than the middle region; anterior lobes smaller; anterior margin incised each side of a distinct lobe. (Pl. 30, Figs. 210, 211.) Keels of other segments shorter than median region of metatergite. On the keels of the fifth and succeeding segments the anterior lobe becomes smaller and is bent upward, soon appearing merely as a tubercle, while the lobe of the caudal margin remains distinct and is usually distally obtusely angular. The lateral lobes of keels, especially the anterior ones, also tend to be bent more or less upward. The porigerous lobe is typically bifid at the tip, the pore opening between the two subdivisions a little above the edge, not elevated on a secondary cone or eminence. The caudal border of segments divided into lobes by longitudinal furrows and corresponding crenations as in Arionus, the crenations becoming deeper on the more caudal segments. Dorsal surface of segments densely coarsely granular, two granules in each of four longitudinal rows on each metatergite a little larger, more tubercle-like than the others, these tubercles more distinct on posterior segments. (See also Pl. 29, Fig. 207.) Keels of seventeenth to nineteenth segments four-lobed and having posterior angles produced, the processes on nineteenth segment obviously larger than the caudal teeth or crenations of the median region of segment. (See Pl. 29, Fig. 207.)

Cauda in general outline posteriorly rounded, but with a short distal piece set off and truncate across end; across basal region a transverse series of four tubercles, the end one on each side projecting as a distinct lateral process or tooth; surface in front of these tubercles with smaller granules. (Pl.

29, Fig. 207.) Anal valves margined. Anal scale triangular, a tubercle on each side of caudal angle. (Pl. 29, Fig. 208.)

Gonopods of male as shown in Pl. 29, Fig. 209.

Length, 10 mm.; width, 1.3 mm.

British Guiana: Second Mourie. Aug. 20, 1914; F. M. Gaige. Two males collected among the dead leaves on the ground in a tree clump.

Sand Hill Forest, on headwaters of Hubidibu Creek. Aug. 26, 1914; F. M. Gaige. Three smaller females taken in sandy forest floor.

Holotype, M. C. Z., 5,183.

CYRTODESMIDAE

Cliodesmus, gen. nov.

Body composed of head and twenty segments.

Collum narrow, not covering the head above.

Second tergite much wider, the keel expanded, its anterior border carried forward. Caudal margin of keel of second and third segments with a projection above a transverse furrow into which the edge of the succeeding keel fits. Keels of segments in general bent downward at outer ends, the ectal margin rounded and crenate. Anterior and posterior margins entire. Dorsum strongly arched. Each metatergite with two transverse rows of large tubercles, the collum with three; no granules or setae. Pores on upper part of anterior slope of keels except on segments fifteen to nineteen, where they have shifted to the outer slope; present on segments five, seven, nine, ten, twelve, thirteen, and fifteen to nineteen.

Nineteenth segment extending completely over the twentieth, its keels meeting behind as in Cyrtodesmus, etc.

Coxae of male gonopods large, concealing the telopodite.

Genotype, *Cliodesmus cryptopygus,* sp. nov.

Cliodesmus cryptopygus, sp. nov.

Pl. 30, Figs. 213-217

Vertex of head and metazonites, together with the normally exposed portion of prozonites, black above, the covered portion of prozonites and the anterior portion of each keel normally overlapped by the preceding keel, pale, whitish. Lower part of head, antennae, and venter in general with legs pale, fulvous or whitish fulvous.

Head granular in a cross band between and just above antennae, elsewhere nearly smooth. A transverse depression across clypeus. Antennae with joints short, as a whole first clavately widening and then again narrowing at distal end. (Pl. 30, Fig. 213.)

Collum with ends or keels rounded, each above with a large, transversely elongate or somewhat double tubercle. Median region of plate with three transverse rows of large tubercles, six in each row, the ectal tubercle of the two anterior rows on each side in some degree fused with each other at base of keel. (Pl. 30, Fig. 213.)

Second tergite evenly and moderately bending forward on each side; anterior margin entire; lateral margin with five crenations, of which that at anterior corner is largest; caudal margin of keel deeply excavated at base of distal depressed portion, leaving an angle mesad of it which projects over a transverse furrow in caudal edge of plate into which the anterior border of the succeeding tergite fits. (Pl. 30, Fig. 213.) Dorsum of tergite with two transverse rows of tubercles, six in each series, and in addition two partially confluent tubercles on keel in a line just mesad of the caudal excavation, the keel elsewhere smooth. Third tergite with keels not expanded as those of the second are, there being but three lateral crena-

tions; caudal excavation of keel and the tubercle of segment as in the second. In the fourth and succeeding keels there is no excavation on the caudal side, the anterior border being bent down so as to bend beneath the preceding keel as a whole instead of fitting into a furrow and notch. Fourth keels with four crenations on lateral margin, the following ones with six. Tubercles in general as described for the second segment, excepting that typically only one tubercle is distinct at the bend in the keel.

Penult tergite widely overlapping the last segment, the keels meeting behind, or separated only by a narrow incision; caudal end of each keel rounded, four crenations between the rounded caudal end and the widely rounded anterior corner; dorsum convexly elevated above the keels, which are pale in color throughout, and bearing two transverse rows of tubercles, six in each row. The keels curve down marginally all the way around. (Pl. 30, Fig. 214.)

Anal segment with cauda short and rather narrow, distally rounded. Valves a little convex, mesally margined. (Pl. 30, Fig. 215.) Scale subtrapeziform. (See Pl. 30, Fig. 215.)

Gonopods of male with coxae, completely concealing the telopodites when in situ. See further Pl. 30, Figs. 216 and 217.

Length, 8 mm.; width, 1.2 mm.

British Guiana: First Mourie. Aug. 26, 1914; F. M. Gaige. A male and a female collected under fallen leaves in a tree clump. Holotype, M. C. Z., 5,187.

Agnurodesmus thrixophor, sp. nov.

Pl. 30, Fig. 212

Dorsum brown over fulvous, the brown pigment on each metatergite tending to outline roughly two transverse rows of polygonal area. Venter and legs fulvous.

Collum with anterior margin straight; the caudal and lateral margins together forming a convex or semi-circular curve. Across the anterior border a series of longitudinal sulci, leaving between them ridges or elongate tubercles, each of which bears a seta; this series of tubercles continues out upon the lateral lobe or keel, but shifts a little caudad, the tubercles being shorter and more remote from the anterior margin. Back of this anterior series of ridges the surface bears numerous shorter setae. (Pl. 30, Fig. 212.)

The second tergite is long, bent downward and expanded below, the lower margin attaining the lower level of head and the anterior rounded corner protruding forward also as far as the anterior edge of the head or nearly so. Lateral margin with ten crenations, the first being the much larger rounded anterior corner. Caudal margin notched somewhat as in Cliodesmus, but the notch larger and more obtuse. Keel margined all the way around.

The third tergite with keel much shorter, only four crenations on ectal margin. Caudal border concavely excavated for reception of succeeding keel. In the following segments the anterior margin smooth and straight, or nearly so, the mesal angle jutting forward as usual. Four crenations at ectal end of fourth to sixth keels, usually five on the others or six on a few of the last ones. Within the margining rim all around, or more vaguely on anterior border, a series of areas separated by sulci or depressions, each one bearing a seta; the

margin often vaguely crenate in correspondence with all or most of these border areas. The fourth and immediately following keels narrowing and rounded distad; those of more posterior segments more quadrate. (Pl. 30, Fig. 212.) Caudal margin of keels of last few segments oblique, the caudal angle becoming acute, those of the eighteenth more strongly bent back, while those of the nineteenth nearly meet in the middle line and widely overlap the last segment in the usual manner. Across each ordinary metatergite two rows of long setae, typically six setae in each series between the keels.

Cauda of anal segment narrow, distally rounded, not reaching caudal edge of keels of nineteenth segment. Anal scale broad, triangular, the caudal angle extending beyond the tubercles.

Length, about .16 mm.; width, 2.5 mm.

Colombia: San Lorenzo. July 3, 1913; F. M. Gaige. One female under log at 4,500 feet. Holotype, M. C. Z., 5,188.

Easily distinguished from *A. verrucosus* (Brőlemann), the genotype, by differences in the collum. In the latter species the collum is crossed by two series of setae in which those of the posterior series are larger. In *thrixophor,* on the contrary, there is an anterior series of long setae, while the remaining part of the plate bears shorter setae.

PLATE I

Glomeridesmus orphnius, sp. nov.

Fig. 1. Collum and tergite. x 45.

Fig. 2. Lower part of tergites XIII, XIV and XV. x 45.

Siphonophora graciliceps, sp. nov.

Fig. 3. Anterior end, dorsal view.

Fig. 4. Anterior pleurite. x 75.

Fig. 5. Pleurite of posterior region. x 75.

Siphonophora pearsei, sp. nov.

Fig. 6. Rostrum, etc., in side view, outline. x 30.

Fig. 7. Pleurite of right side, anterior region. x 75.

Fig. 8. Pleurite of left side, posterior region. x 76.

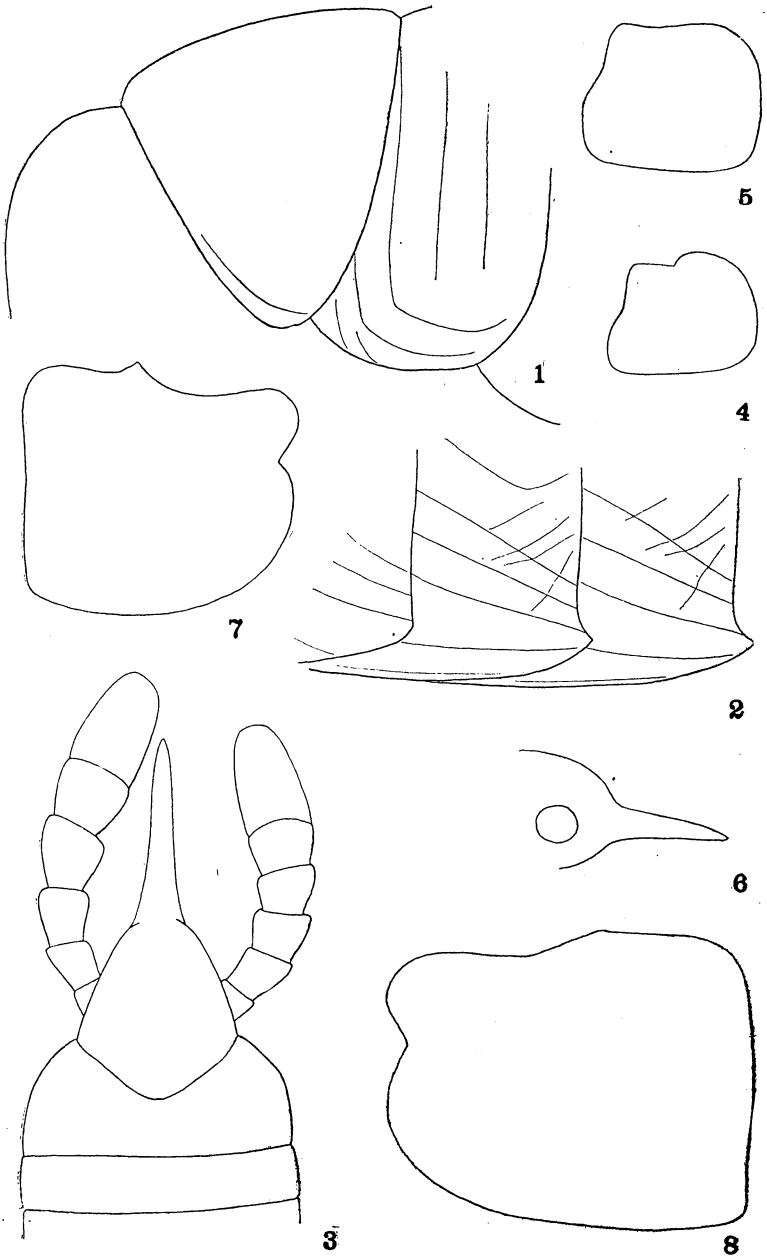
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Plate II

Siphonophora pearsei, sp. nov.

Fig. 9. Anterior end, dorsal view. x 30.

Fig. 10. Leg of sixth segment of male. x 76.

Fig. 11. Leg from posterior region of male. x 76.

Fig. 12. Gonopods of male, posterior view. x 75.

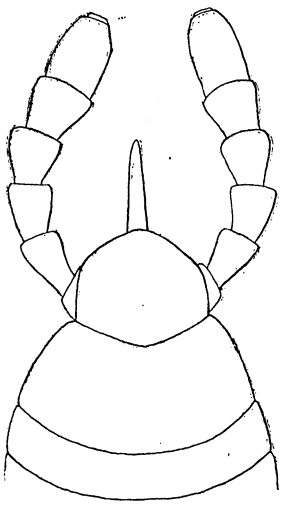
Fig. 13. Distal portion of left anterior gonopod, mesal view. x 112.

Fig. 14. Posterior gonopod. x 112.

Fig. 15. Tip of posterior gonopod. x325.

Siphonophora corynetes, sp. nov.

Fig. 16. A pleurite of right side of anterior region. x 76.



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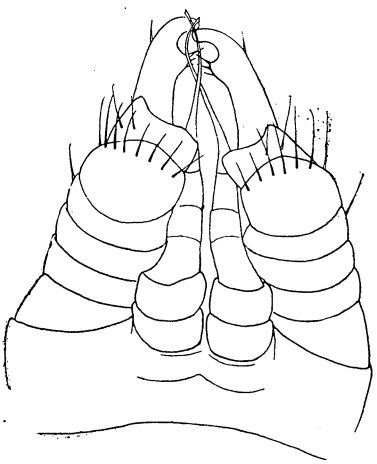

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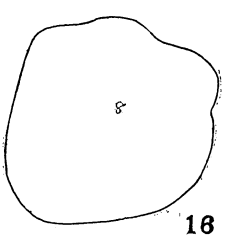

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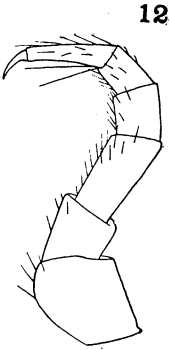

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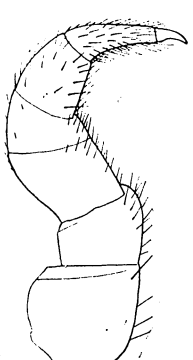

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PLATE III

Fig. 17. Anterior end, dorsal view. x 47.

Fig. 18. Pleurite from right side of posterior region. x 75.

Fig. 19. Anterior gonopod. x 185.

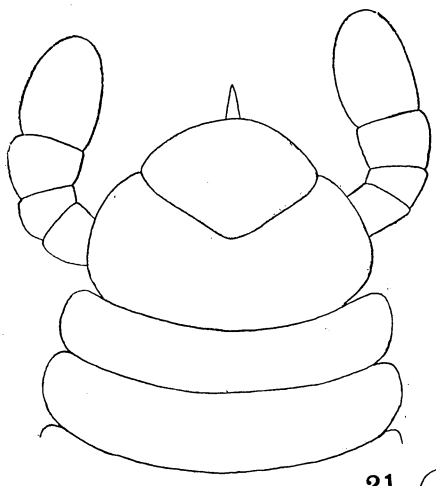
Fig. 20. Posterior gonopod. x 185.

Siphonophora relicta, sp. nov.

Fig. 21. Anterior end, dorsal view. x 45.

Fig. 22. Head and collum in outline, from in front. x 45.

Fig. 23. Right pleurite from anterior region. x 75.



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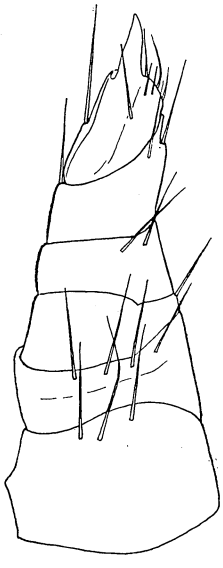

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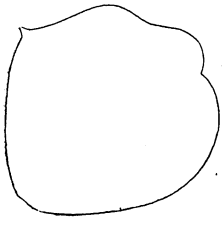

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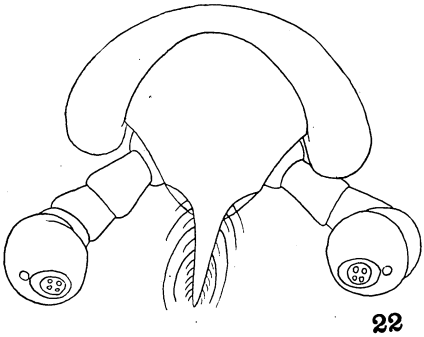

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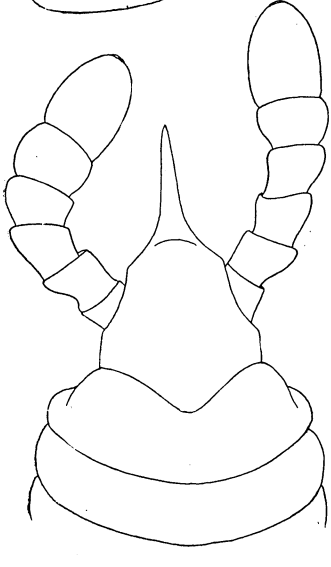

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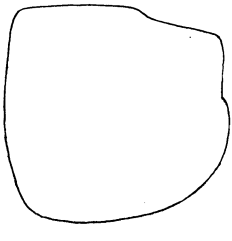

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Plate IV

Siphonophora relicta, sp. nov.

Fig. 24. A left pleurite from posterior region. x 75.

Siphonophora guianana, sp. nov.

Fig. 25. Anterior end, dorsal view. x 30.

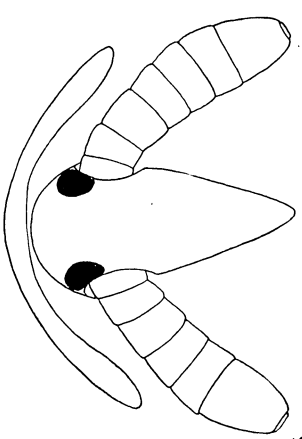
Fig. 26. Left pleurite of anterior region. x 76.

Fig. 27. Left pleurite from posterior region. x 75.

Siphonotus parvus, sp. nov.

Fig. 28. Head and collum from in front. x 112.

Fig. 29. Caudal end, from above. x 75.



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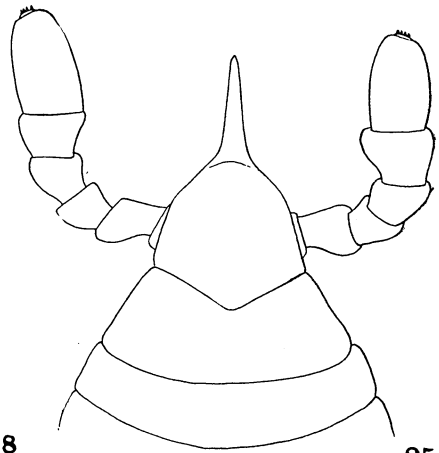

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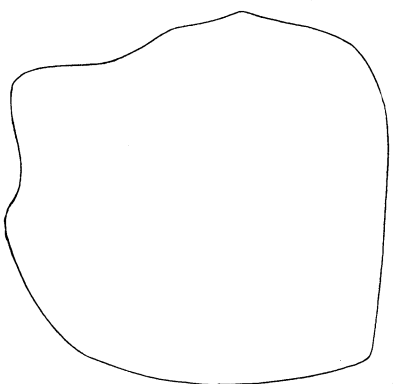

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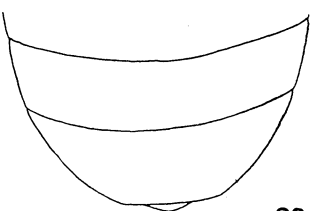

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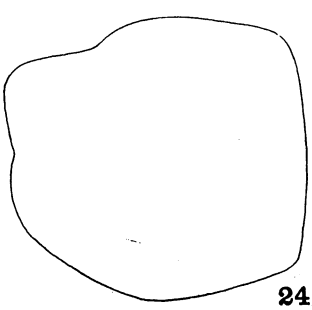

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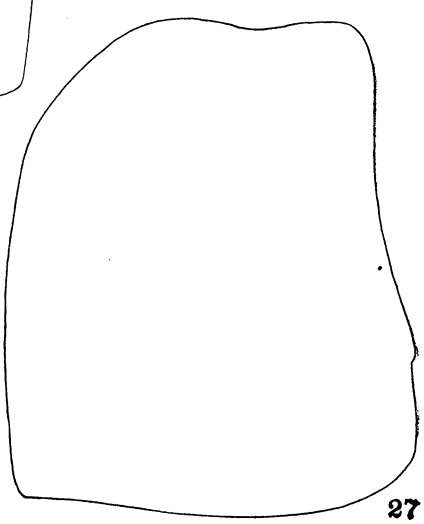

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Plate V

Stemmiulus craurus, sp. nov.

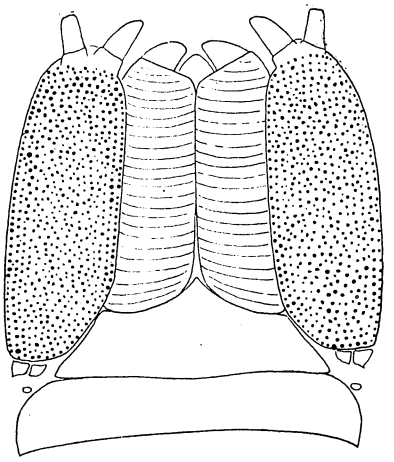
Fig. 30. Gnathochilarium of male. x 76.

Fig. 31. Gnathochilarium of female (setae omitted). x 75.

Fig. 32. Second legs of male. x 45.

Fig. 33. Tip of third leg of male. x 765.

Fig. 34. Gonopods of male, posterior view. x 46.



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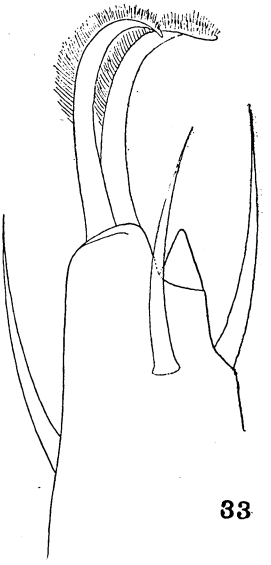

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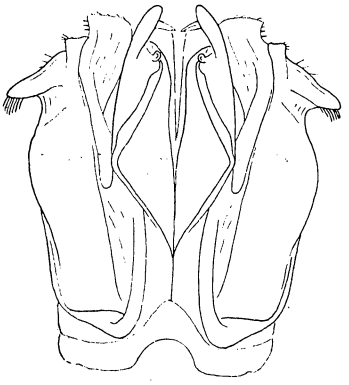

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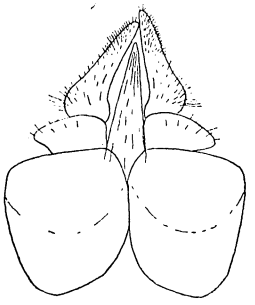

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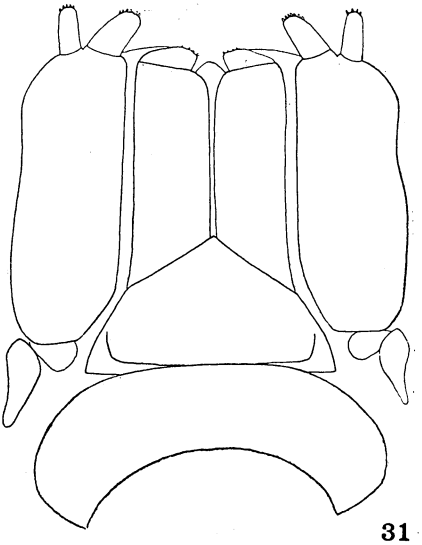

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PLATE VI

Stemmiulus craurus, sp. nov.

Fig. 35. First legs of male. x 45.

Fig. 36. Third legs of male. x 45.

Stemmiulus drymophilus, sp. nov.

Fig. 37. Gnathochilarium of male (setae, excepting upper laterals, omitted). x 45.

Fig. 38. First leg of male. x 45.

Fig. 39. Second legs of male, anterior view. x 45.

Fig. 40. Third leg of male. x 45.

Fig. 41. Tip of third leg of male. x 325.

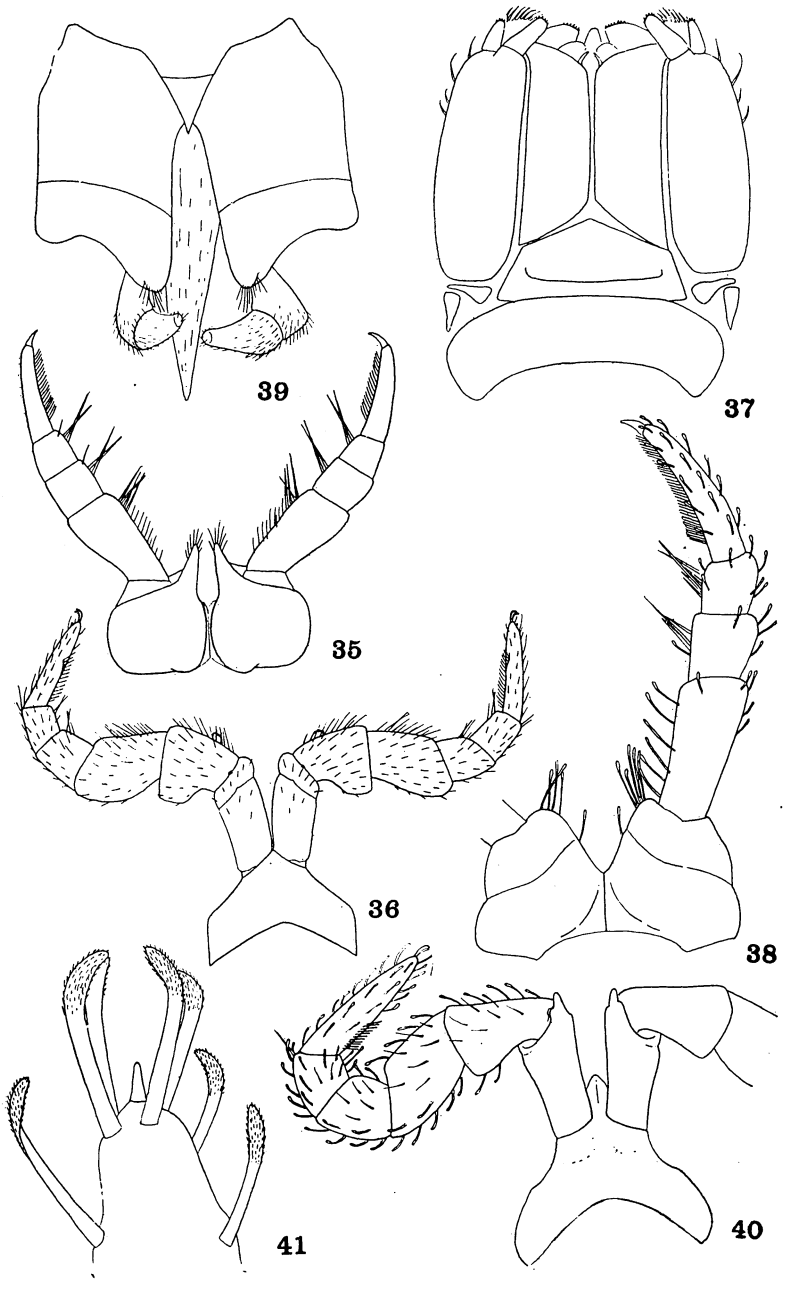
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PLATE VII

Stemmiulus drymophilus, sp. nov.

Fig. 42. Second leg of male, ectal view. x 46.

Fig. 43. Tip of second leg of male. x 325.

Fig. 44. Gonopods of male, anterior view (setae from distal end probably rubbed off). x 30.

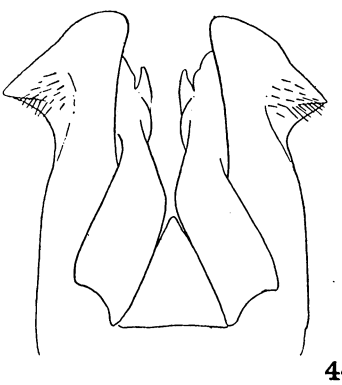
Fig. 45. Gonopods of male, posterior view. x 30.

Stemmiulus ruthveni, sp. nov.

Fig. 46. Gnathochilarium of male. x 55.

Fig. 47. First legs of male. x 46.

Fig. 48. Second legs of male, posterior view. x 46.



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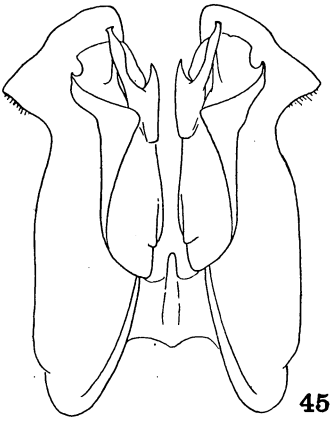

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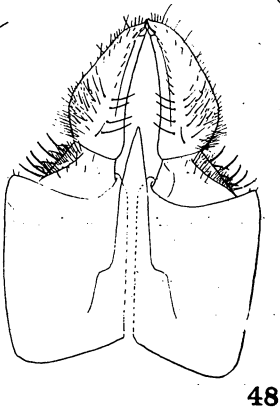

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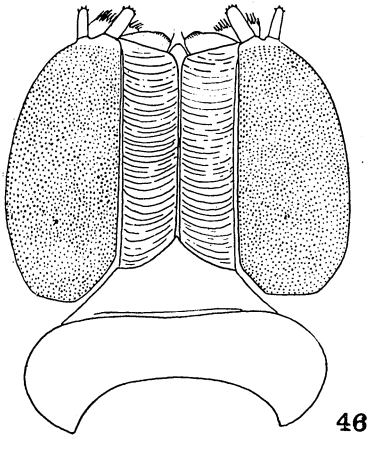

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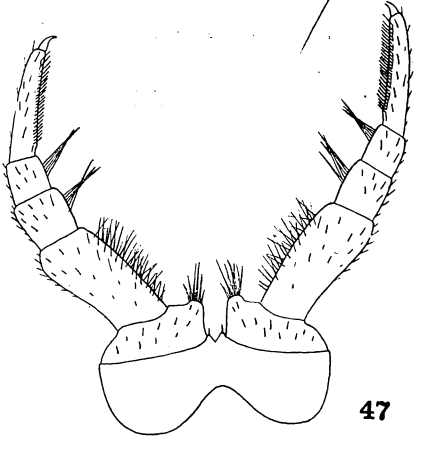

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Plate VIII

Stemmiulus ruthveni, sp. nov.

Fig. 49. Third legs of male. x 45.

Fig. 50. Tip of third leg of male. x 325.

Fig. 51. Gonopods of male, posterior view. x 30.

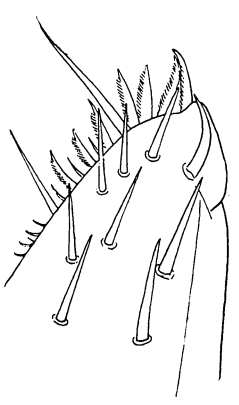
Fig. 52. Distal ends of telopodite of gonopod, anterior view. x 75.

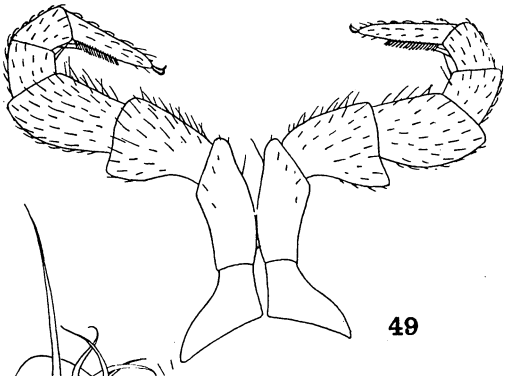
Stemmiulus labbanus, sp. nov.

Fig. 53. Gnathochilarium of male. x 45.

Fig. 54. First leg of male. x 45.

Fig. 55. Tip of second leg of male. x 325.





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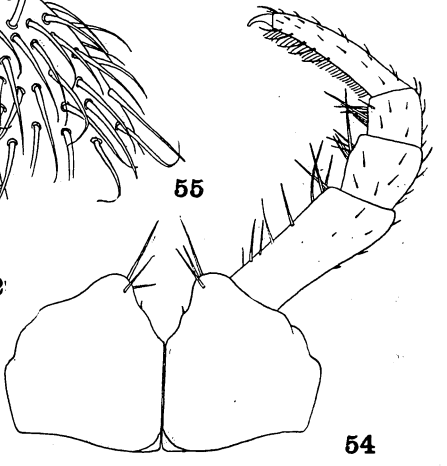

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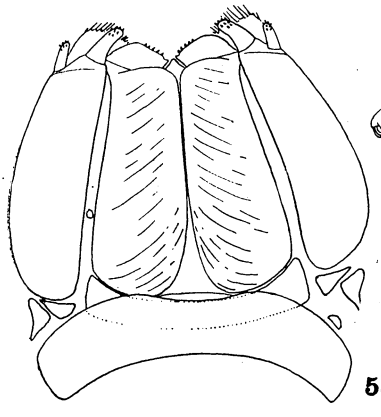

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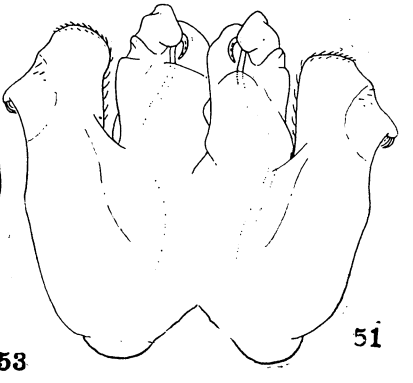


51

PLATE IX

Stemmiulus labbanus, sp. nov.

Fig. 56. Second leg of male. x 45.

Fig. 57. Third leg of male, caudal view. x 45.

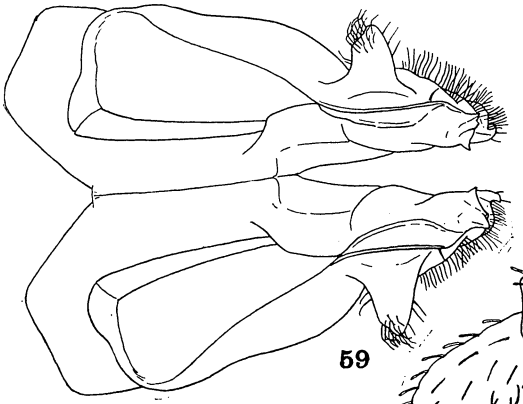
Fig. 58. Tip of third leg of male. x325.

Fig. 59. Gonopods of male, posterior view. x 30.

Fig. 60. Gonopods of male, anterior view. x 30.

Prostemmiulus heterops, sp. nov.

Fig. 61. Caudal edge of ventral end of twentieth tergite. x 75



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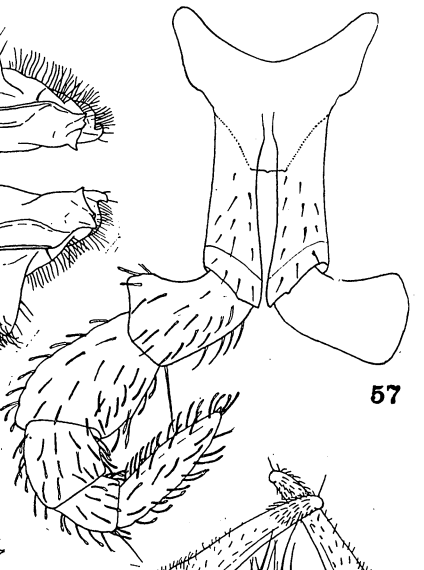

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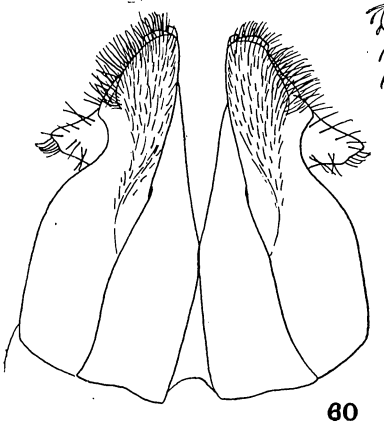

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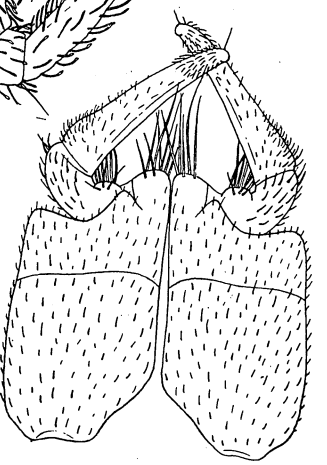

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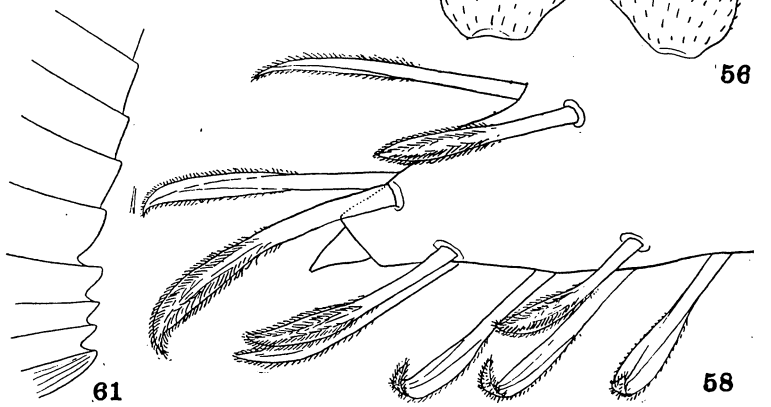

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58

PLATE X

Prostemmiulus heterops, sp. nov.

Fig. 62. Gnathochilarium of female. x 55.

Fig. 63. Head and collum from right side, female. x 30.

Fig. 64. Portion of head of same from left side to show eyes. x 30.

Epinannolene lorenzonus, sp. nov.

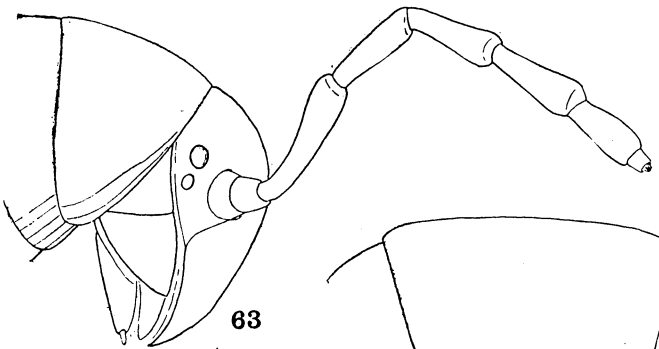
Fig. 65. Collum and adjacent parts, left side. x 17.

Fig. 66. Right gonopod, posterior view (setae probably in part rubbed off). x 30.

Fig. 67. Right gonopod, anteromesal view. x 30.

Epinannolene arius, sp. nov.

Fig. 68. Collum of female. x 45.



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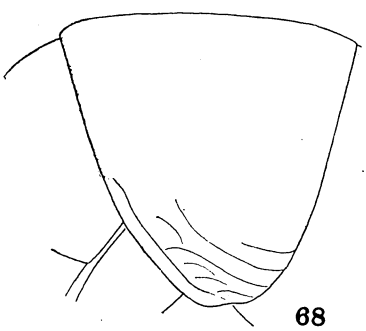

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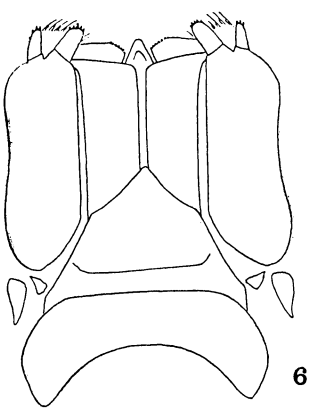

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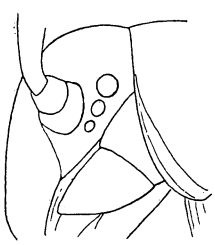

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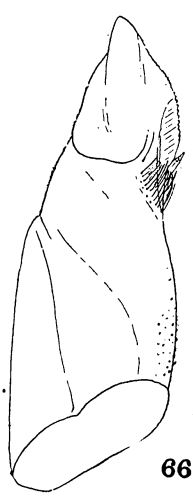

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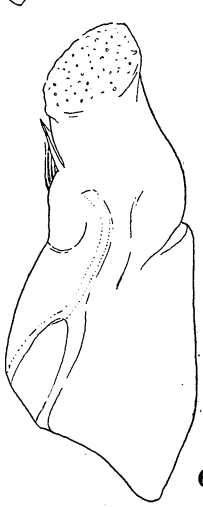

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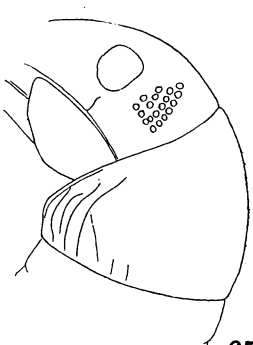

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PLATE XI

Epinannolene arius, sp. nov.

Fig. 69. Gonopods of male, posterior view. x 75.

Epinannolene xestus, sp. nov.

Fig. 70. Collum and portion of head, lateral view. x 30.

Typhlonannolene adaptus, sp. nov.

Fig. 71. Anterior end, lateral view. x 30.

Fig. 72. Gnathochilarium of female. x 45.

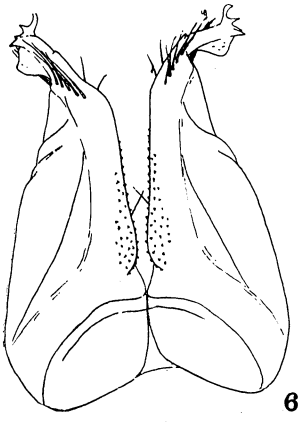
Fig. 73. Antenna, with setae omitted. x 30.

Nanostreptus orthacanthus, sp. nov.

Fig. 74. Collum, ventrolateral view. x 17.

Fig. 75. Ends of collum and succeeding two tergites, ventral view. x 17.

Fig. 76. Cardo of mandible, ectal view. x 45.



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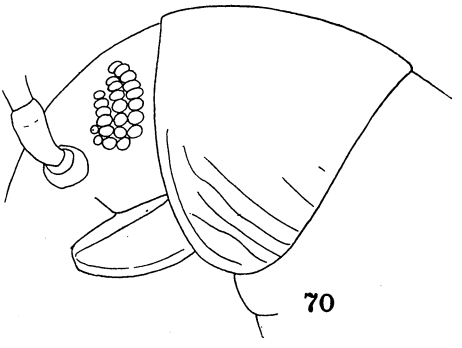

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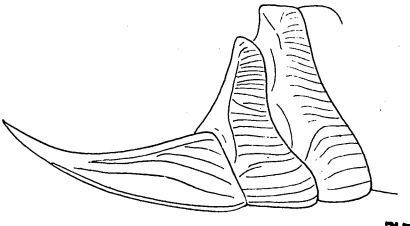

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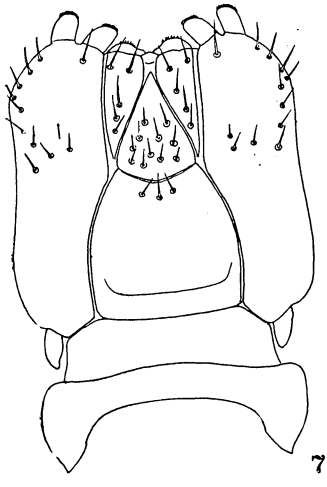

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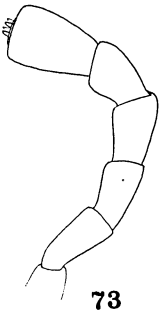

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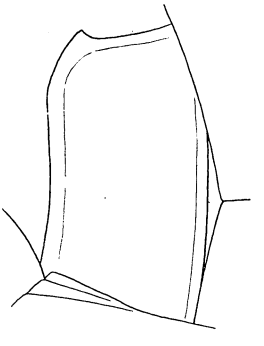

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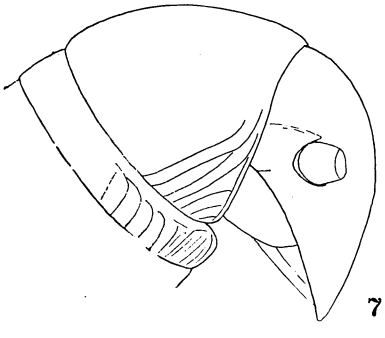

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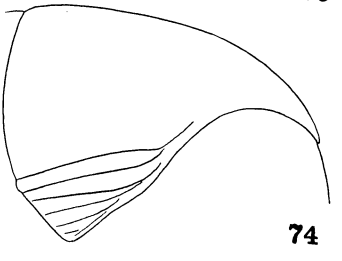

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PLATE XII

Nanostreptus orthacanthus, sp. nov.

Fig. 77. Gonopods of male, anterior view. x 22.

Fig. 78. Right gonopod, posterior view. x 22.

Fig. 79. Leg of sixth segment of male. x 45.

Fig. 80. Caudal end of body, dorsal view. x 17.

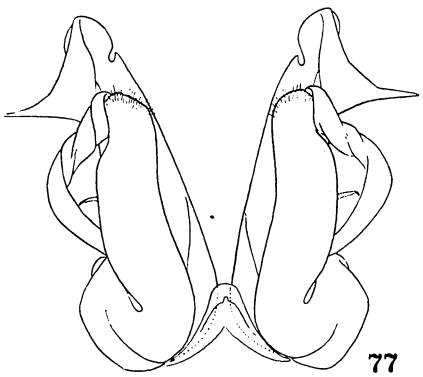
Fig. 81. Anal scale. x 17.

Nanostreptus astix, sp. nov.

Fig. 82. Collum, lateral view. x 17.

Fig. 83. Outer face of cardo of mandible, in outline. x 45.

Fig. 84. Anal scale. x 17.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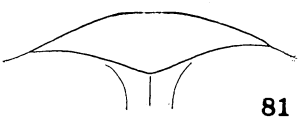
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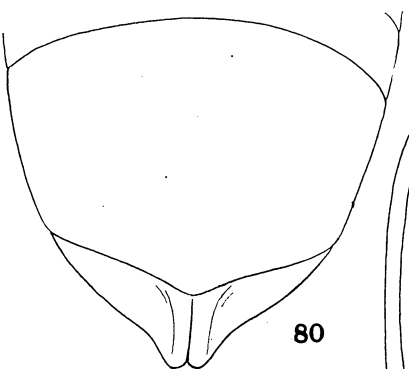
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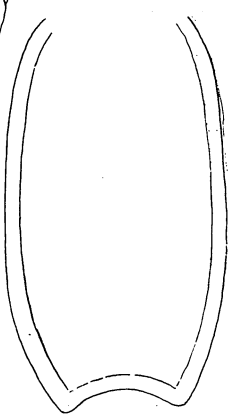
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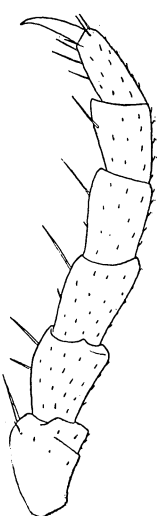
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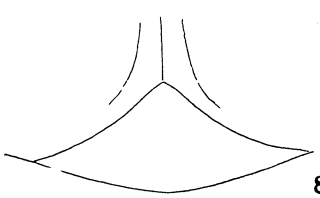

84

PLATE XIII

Nanostreptus astix, sp. nov.

Fig. 85. Caudal end of body, dorsal view. x 17.

Nanostreptus gracilior, sp. nov.

Fig. 86. Collum, etc., lateral view. x 30.

Fig. 87. Anal scale. x 60.

Epistreptus eustriatus, sp. nov.

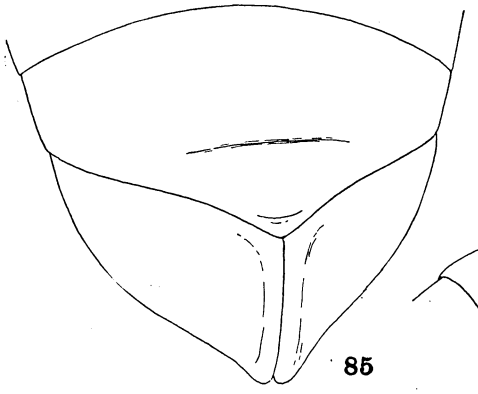
Fig. 88. Collum, etc., lateral view. x 13.

Fig. 89. Caudal end of body, ventral view. x 13

Spirostreptus atoporus, sp. nov.

Fig. 90. Collum, lateral view. x 17.

Fig. 91. Anal scale. x 17.



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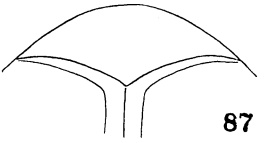

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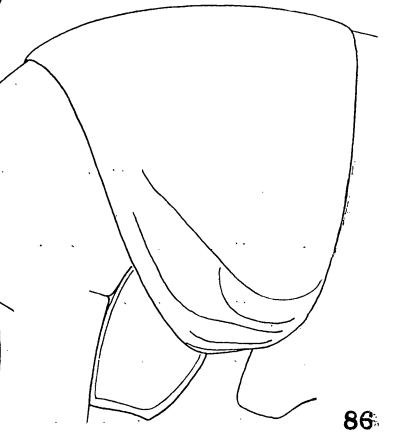

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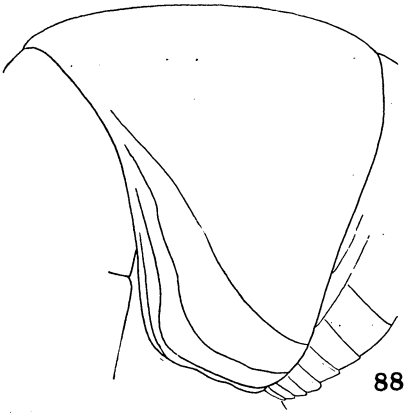

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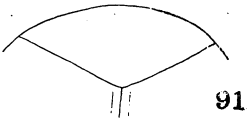

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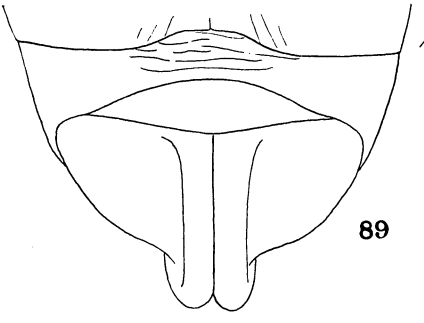

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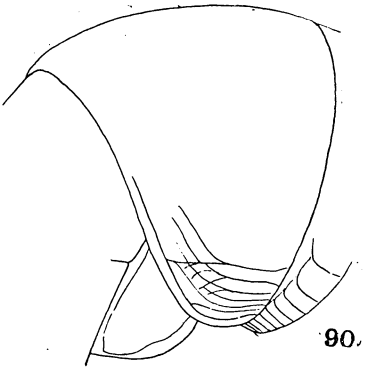

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Plate XIV

Orthoporus etholax, sp. nov.

Fig. 92. Collum, etc., lateral view (male). x 13.

Fig. 93. Collum and adjacent parts of female, lateral view. x 13.

Fig. 94 Anal scale of female. x 15.

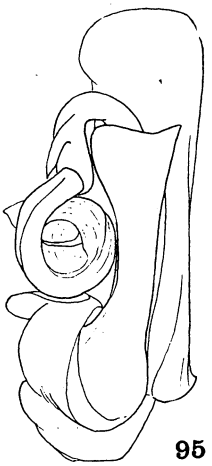
Fig. 95. Left gonopod of male, anterior view. x 17.

Fig. 96. Left gonopod, posterior view. x 17.

Orthoporus walkeri, sp. nov.

Fig. 97. Anal scale. x 17.

92



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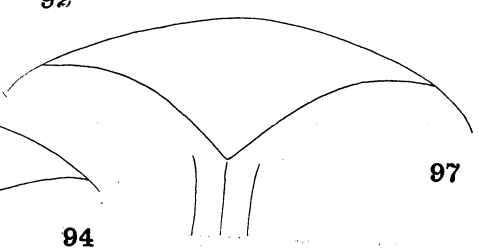

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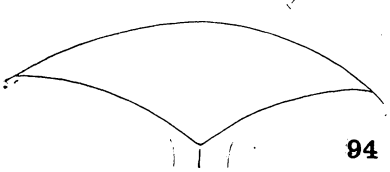

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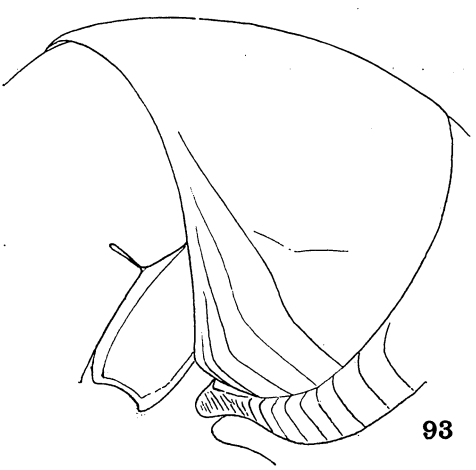

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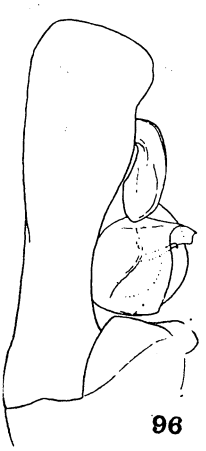

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Plate XV

Orthoporus walkeri, sp. nov.

Fig. 98. Collum, etc., of female. x 13.

Orthoporus gaigei, sp. nov.

Fig. 99. Collum of female. x 13.

Fig. 100. Collum of male. x 13.

Fig. 101. Right gonopod of male, viewed from a little laterad of directly in front. x 17.

Fig. 102. Tip of right gonopod of a variant male, anterior view. x 17.

Fig. 103. Tip of left gonopod of same variant male. x 17.

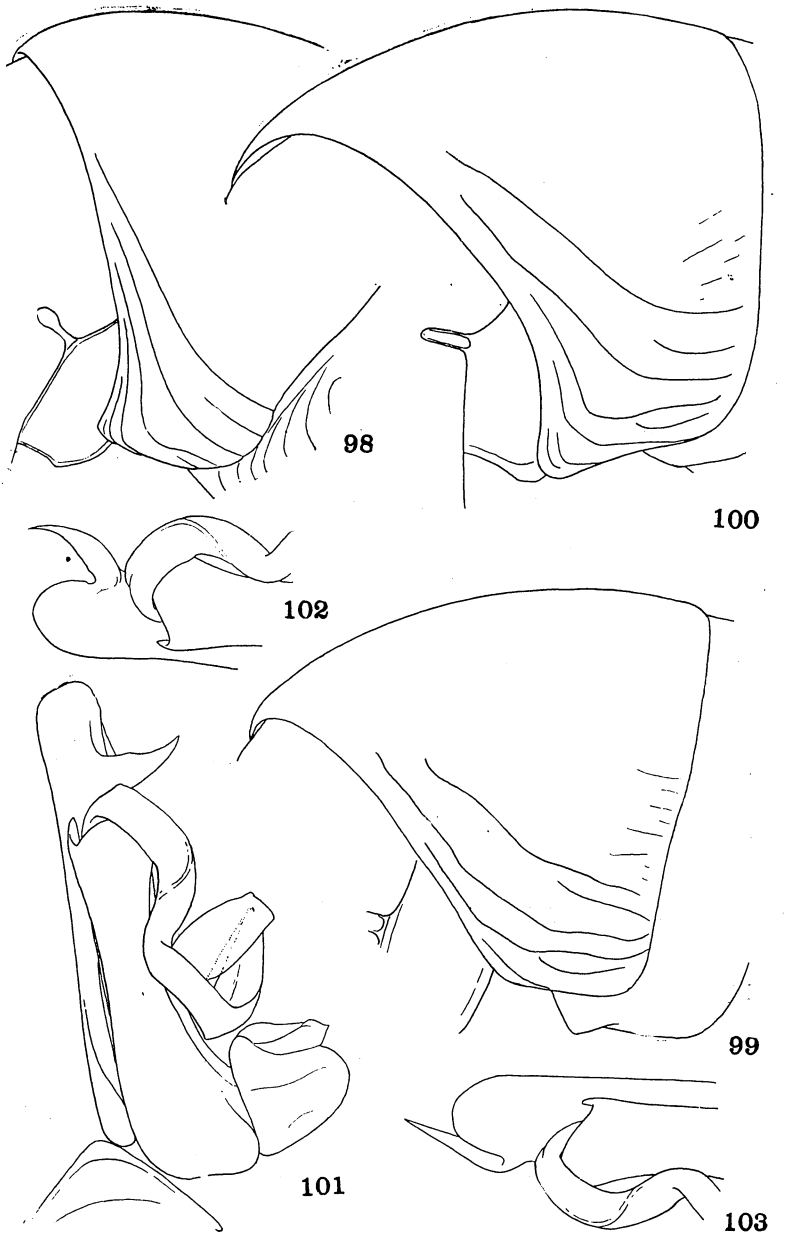
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PLATE XVI

Orthoporus gaigei, sp. nov.

Fig. 104. Anal scale. x 17.

Orthoporus foliatus, sp. nov.

Fig. 105. Collum, etc., of female, lateral view. x 13.

Rhinocricus amblus, sp. nov.

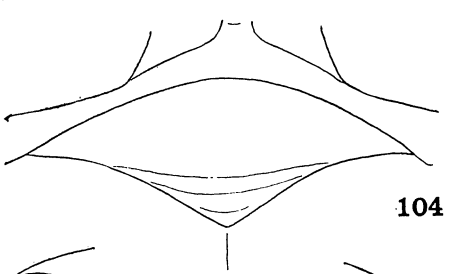
Fig. 106. Caudal end of body, lateral view, male. x 17.

Fig. 107. The same, dorsal view. x 17.

Fig. 108. Gonopods of male, anterior view, the left posterior gonopod omitted. x 30.

Microspirobolus tridens, sp. nov.

Fig. 109. Gonopods of male, paratype, anterior view. x 45.



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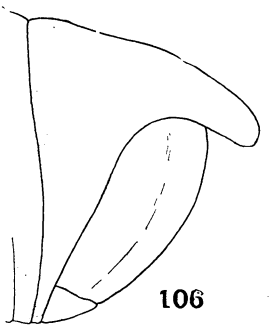

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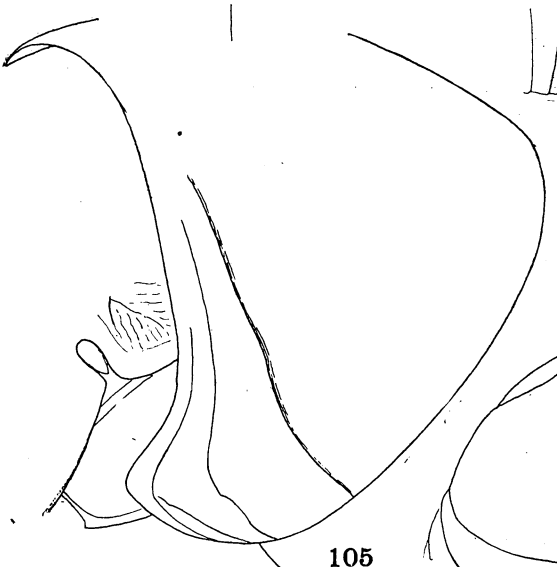

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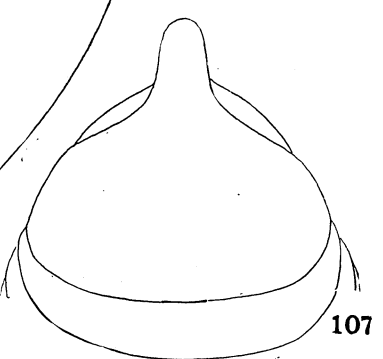

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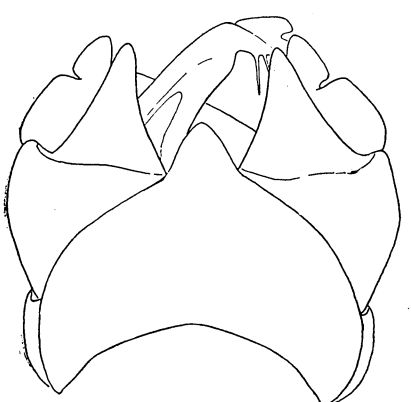

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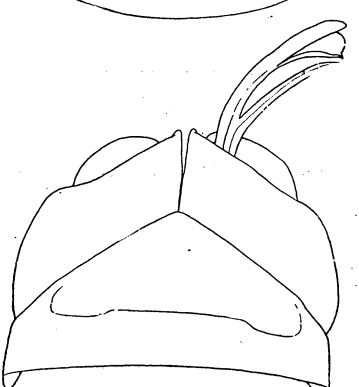

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PLATE XVII

Microspirobolus tridens, sp. nov.

Fig. 110. Posterior gonopod, caudal view. x 75.

Pycnotropis colombiensis, sp. nov.

Fig. 111. Keels of collum and succeeding two tergites. x 13.

Fig. 112. Left gonopod, caudoventral view. x 30.

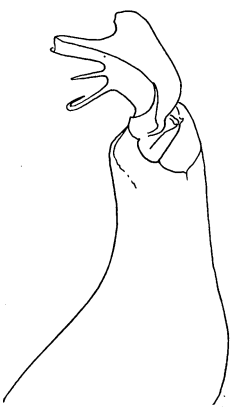
Fig. 113. Right gonopod, ectal view. x 30.

Pycnotropis cylindroides, sp. nov.

Fig. 114. Tenth right keel of male (type). x 13.

Fig. 115. Seventeenth, eighteenth, and nineteenth right keels in outline. x 13.

Fig. 116. Left gonopod, caudoventral view. x 30.



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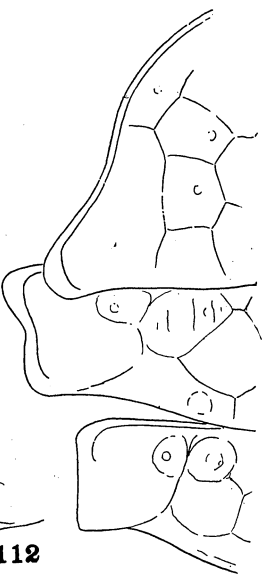

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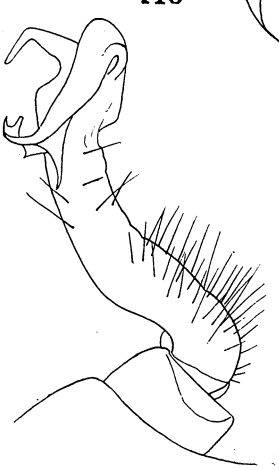

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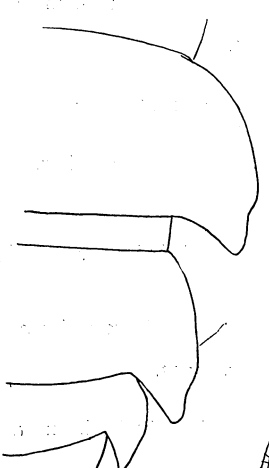

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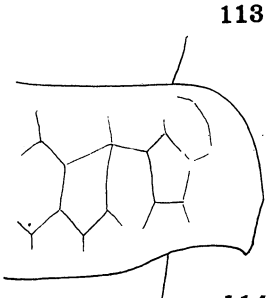

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PLATE XVIII

Rhyphodesmus amphelictus, sp. nov.

Fig. 117. Distal end of gonopods, ventral view. x 17.

Fig. 118. Left gonopod, ectal view. x 17.

Aphelidesmus guianensis, sp. nov.

Fig. 119. Lateral portion of collum and second tergite, laterodorsal view. x 13.

Fig. 120. Fourth and fifth keels, male, view a little lateral of dorsal. x 13.

Fig. 121. Anal scale. x 13.

Fig. 122. Right gonopod, ectal view.

Trachelodesmus angulatus, sp. nov.

Fig. 123. Left ends of collum and second tergite, female, laterodorsal view. x 33.

Fig. 124. Seventeenth right keel. x 33.

Fig. 125. Left sternal spines of seventeenth and eighteenth segments, ectal view. x 45.

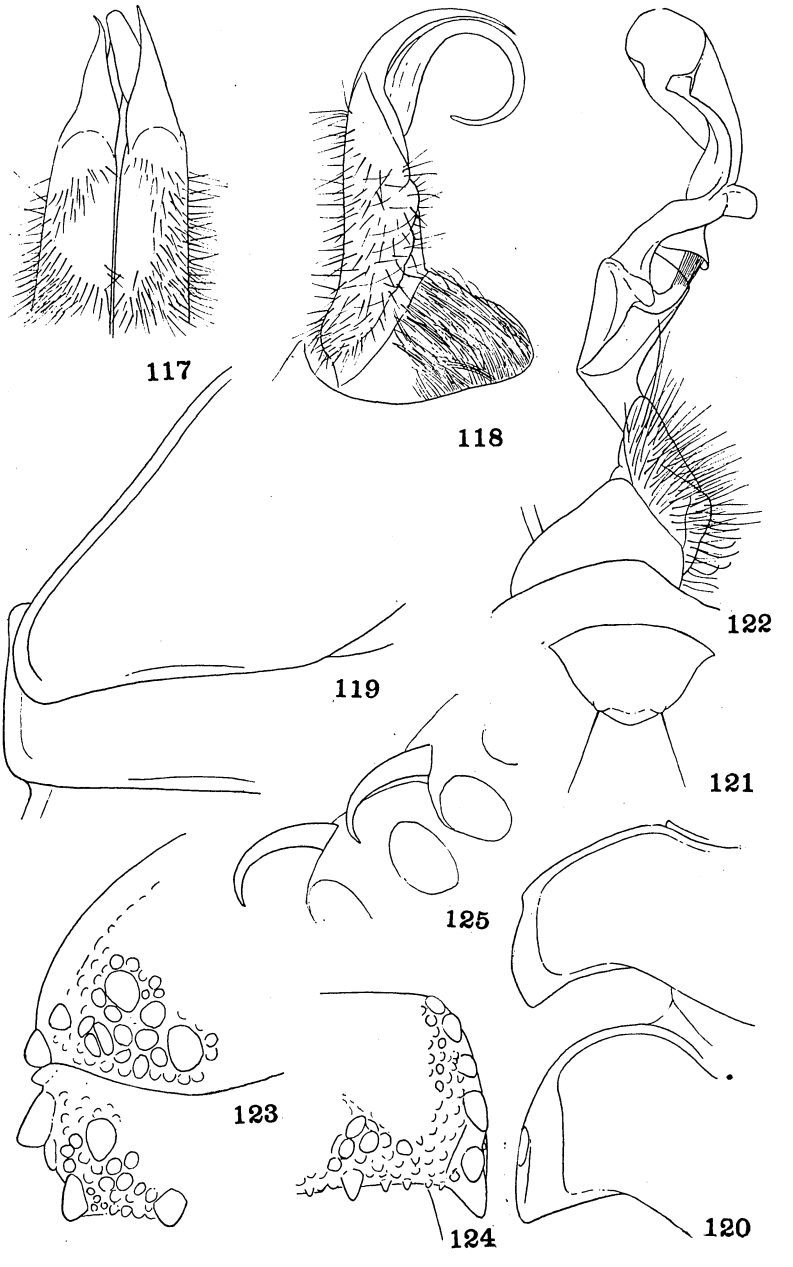
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Plate XIX

Trachelodesmus ancylophor, sp. nov.

Fig. 126. Left ends of collum and second tergite, view a little lateral of dorsal. x 33.

Fig. 127. Left keel of fifteenth segment. x 33.

Dromodesmus longipes, sp. nov.

Fig. 128. Left ends of collum and second tergite in outline (tubercles, etc., omitted), dorsal view. x 13.

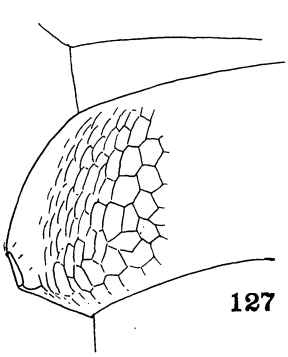
Fig. 129. Tenth left keel, in outline, dorsal view. x 13.

Fig. 130. Right side of caudal end in outline, dorsal view (setae of cauda omitted). x 13.

Fig. 131. Antenna (male type), in outline. x 13.

Fig. 132. Left gonopod, ventral view. x 33.

Fig. 133. Anal scale.



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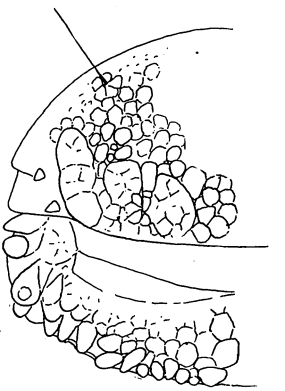

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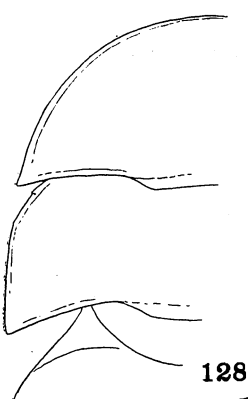

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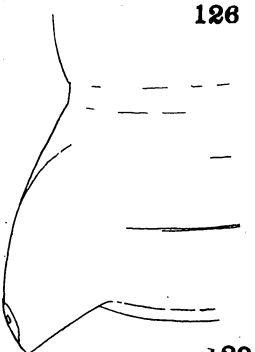

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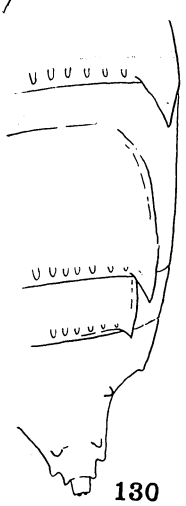

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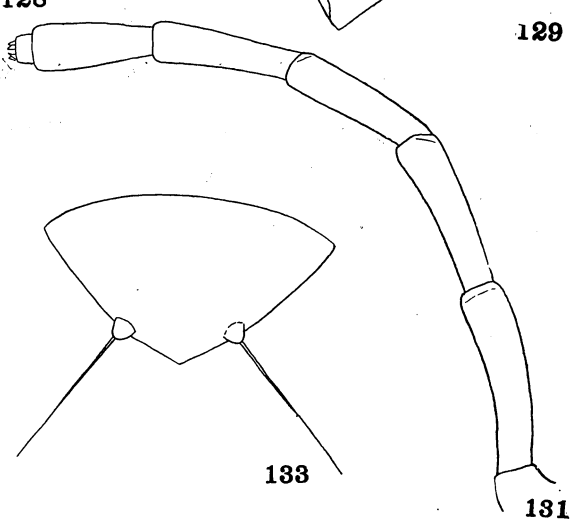

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PLATE XX

Dromodesmus longipes, sp. nov.

Fig. 134. Leg of fourth to last pair of male type, in outline. x 13.

Fig. 135. Left gonopod, ectal view. x 33.

Colombodesmus catharus, sp. nov.

Fig. 136. Left ends of collum and succeeding two tergites in outline, the tubercles, etc., not represented. x 17.

Fig. 137. Tenth left keel in outline. x 17.

Fig. 138. Left side of caudal end of body, dorsal view, in outline. x 17.

Fig. 139. Right sternal spines of last two pediferous segments, with bases of legs. x 30.

Fig. 140. Anal scale. x 30.

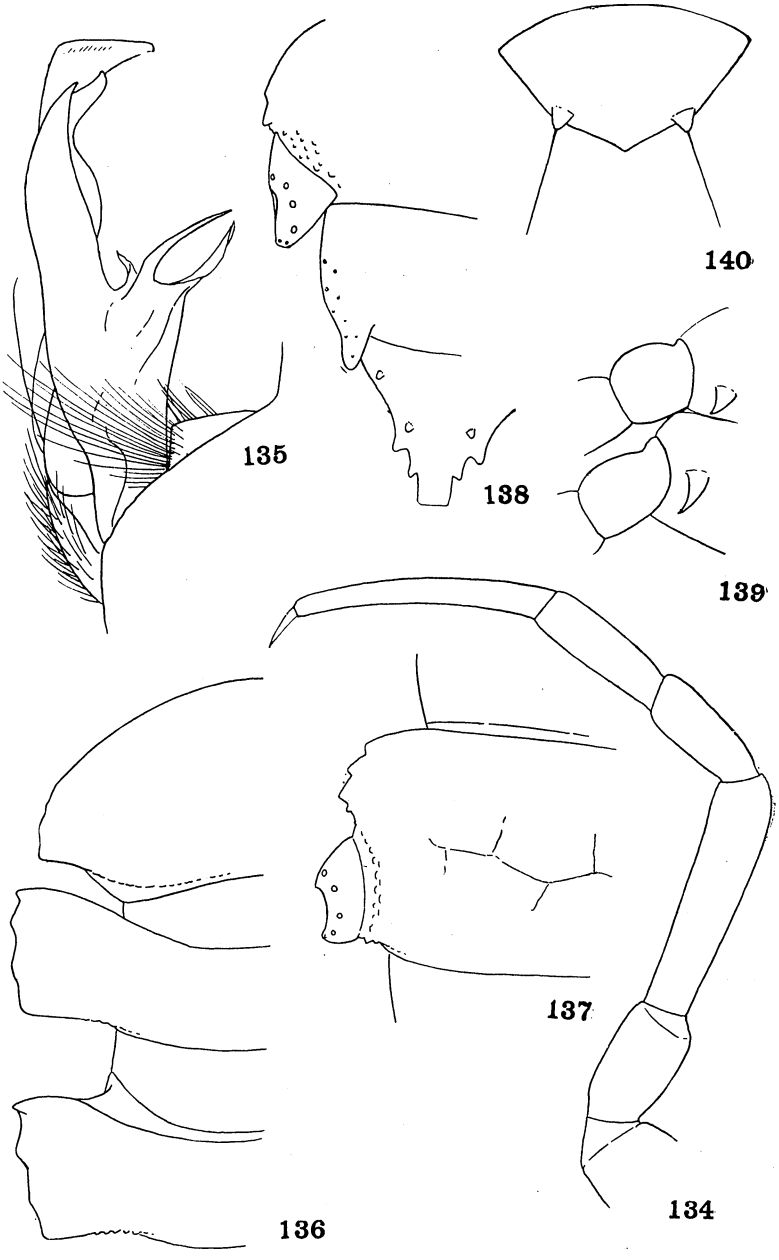
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Plate XXI

Colombodesmus catharus, sp. nov.

Fig. 141. Penult leg in outline (setae and granules omitted). x 30.

Colombodesmus lygrus, sp. nov.

Fig. 142. Tenth keel, dorsal view. x 17.

Fig. 143. Penult leg (granules and setae omitted). x 30.

Fig. 144. Eighteenth and nineteenth left keels. x 17.

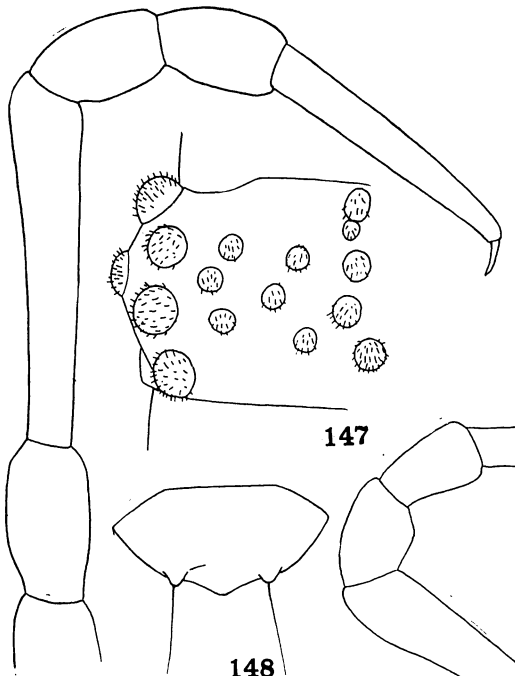
Cormodesmus hirsutellus, sp. nov.

Fig. 145. Collum and second tergite, dorsal view. x 30.

Fig. 146. Antenna. x 30.

Fig. 147. Eleventh left keel. x 30.

Fig. 148. Anal scale. x 45.



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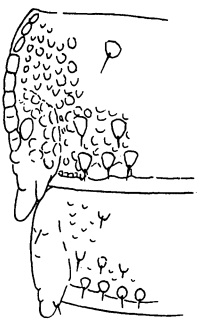

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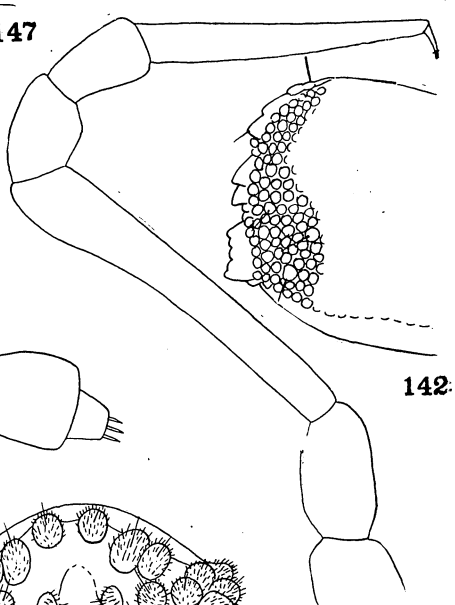

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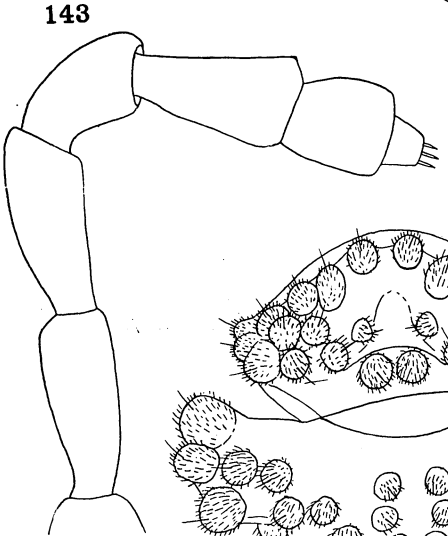

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PLATE XXII

Cormodesmus hirsutellus, sp. nov.

Fig. 149. Gonopods of male, type, ventral view. x 30.

Alassodesmus reductus, sp. nov.

Fig. 150. Thirteenth right keel. x 30.

Fig. 151. Sternal spines and bases of adjacent legs of last two pediferous segments, lateral view. x 30.

Fig. 152. Anal scale. x 75.

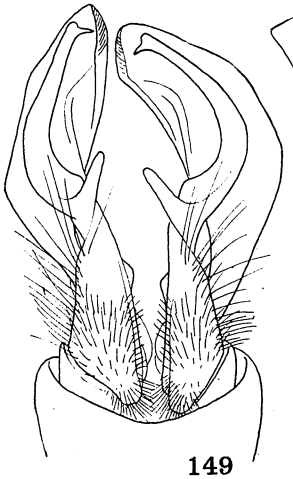
Fig. 153. Leg of one of last pairs, with setae omitted. x 45.

Trichomorpha tuberculosa, sp. nov.

Fig. 154. Tenth keel. x 17.

Fig. 155. Eighteenth and nineteenth keels. x 17.

Fig. 156. Seventh leg of male, with setae omitted. x 17.



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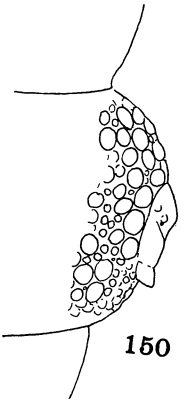

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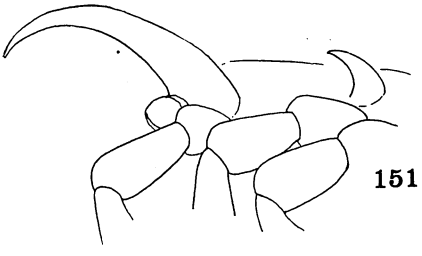

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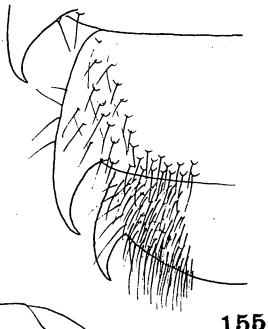

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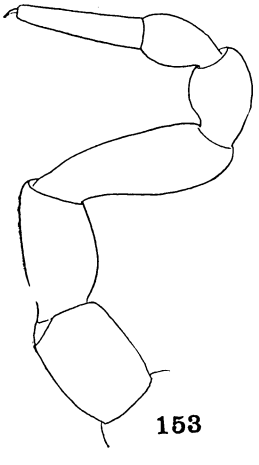

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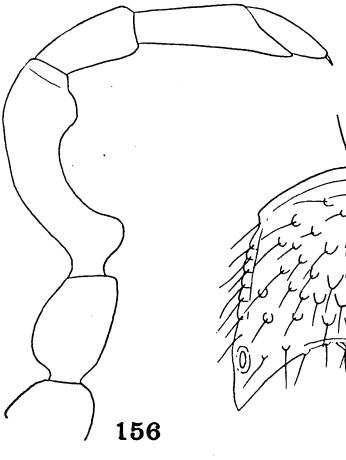

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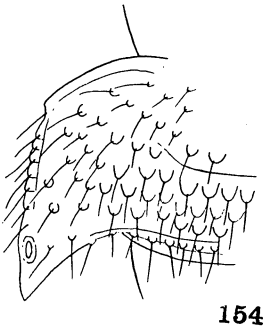

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PLATE XXIII

Trichomorpha tuberculosa, sp. nov.

Fig. 157. Left gonopod, mesal view. x 75.

Fig. 158. Gonopod, ventroectal view. x 75.

Trichomorpha rugosella, sp. nov.

Fig. 159. Anal scale. x 45.

Fig. 160. Left gonopod of male, ventral view. x 75.

Fig. 161. Left gonopod of male, mesal view. x 75.

Fig. 162. Tip of left gonopod, ectal view. x 75.

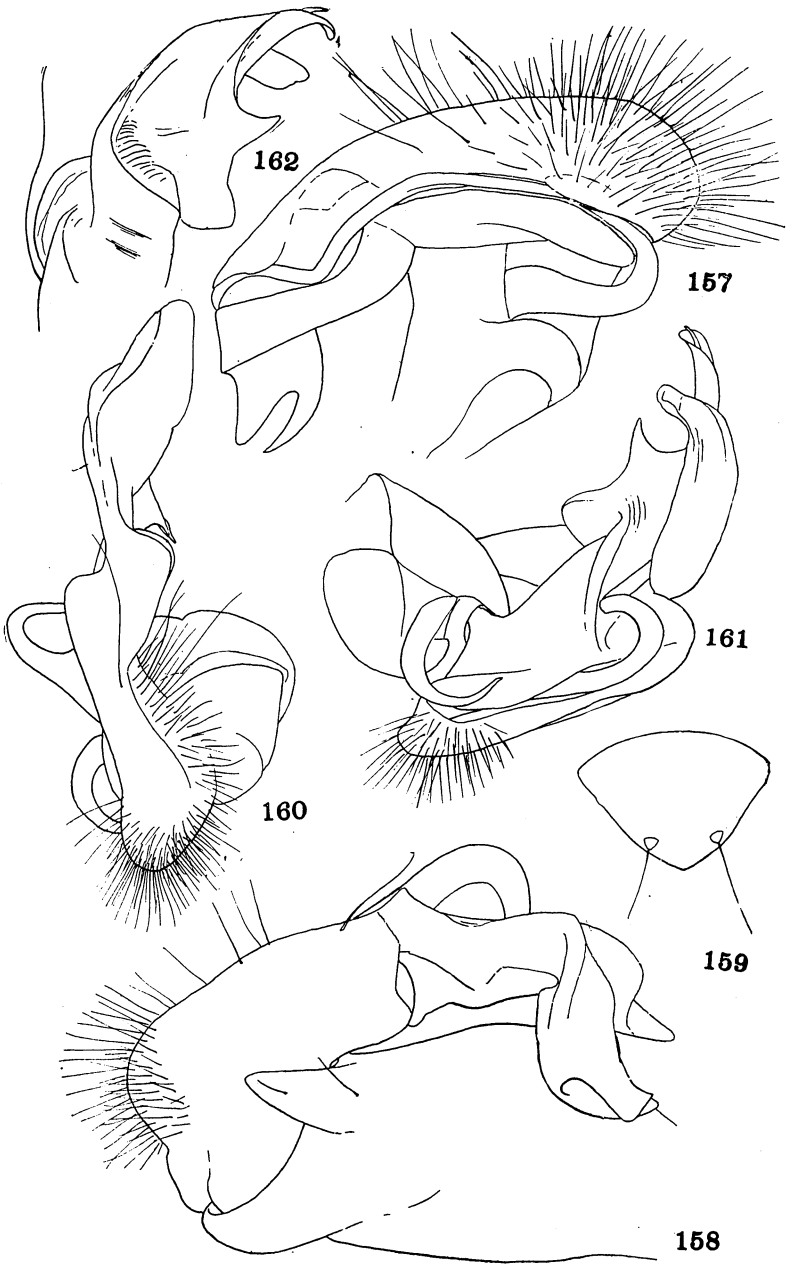
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Plate XXIV

Trichomorpha rugosella, sp. nov.

Fig. 163. Seventh leg of male, with setae omitted. x 30.

Fig. 164. Eighteenth and nineteenth left keels of male, type. x 30.

Trichomorpha setosior, sp. nov.

Fig. 165. Sixth keel. x 30.

Fig. 166. Eighteenth and nineteenth keels. x 30.

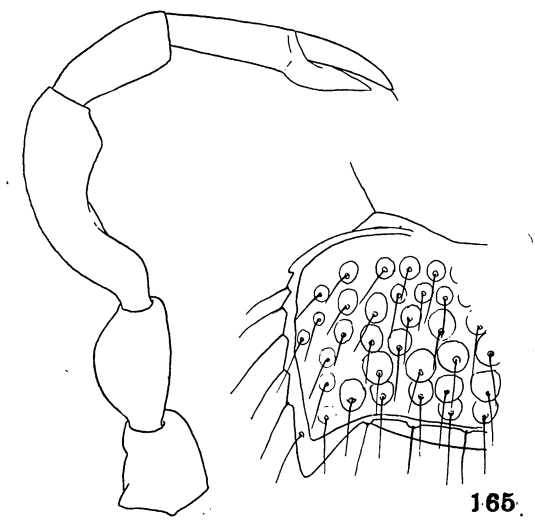
Trichomorpha eutyla, sp. nov.

Fig. 167. Left end of tenth tergite. x 30.

Fig. 168. Seventeenth to nineteenth keels, in outline. x 30.

Fig. 169. Right gonopod, ventral view. x 75.

Fig. 170. Right gonopod, ectal view. x 75.



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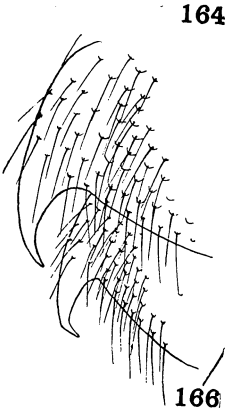

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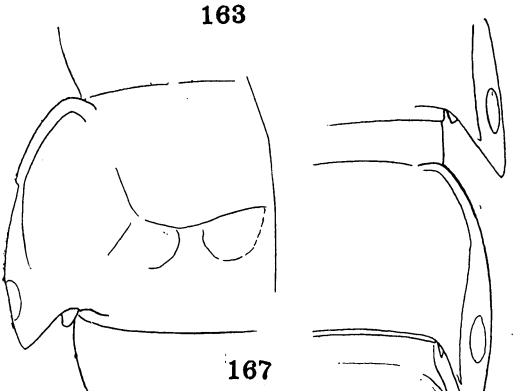

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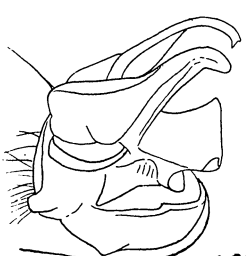

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Plate XXV

Trichomorpha eutyla, sp. nov.

Fig. 171. Seventh leg of male. x 30.

Trichomorpha paurothrix, sp. nov.

Fig. 172. Right half of seventeenth tergite. x 30.

Trichomorpha angulella, sp. nov.

Fig. 173. Right ends of eighteenth and nineteenth tergites. x 45.

Trichomorpha eusema, sp. nov.

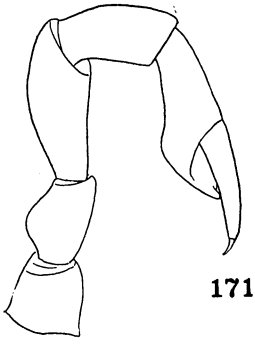
Fig. 174. Tenth keel, etc., of male type. x 17.

Fig. 175. Eighteenth and nineteenth keels, etc., male type. x 17.

Fig. 176. Seventh leg of male (type). x 30.

Fig. 177. Left gonopod, ventral view, type. x 75.

Fig. 178. Left gonopod, ectal view. x 75.



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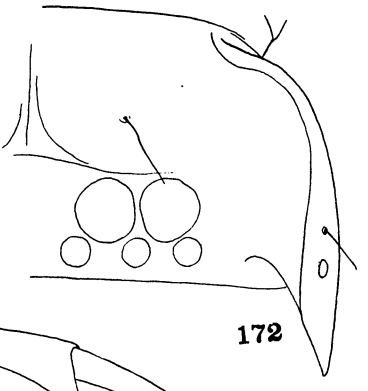

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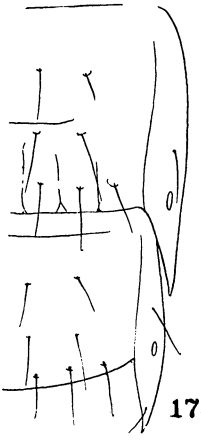

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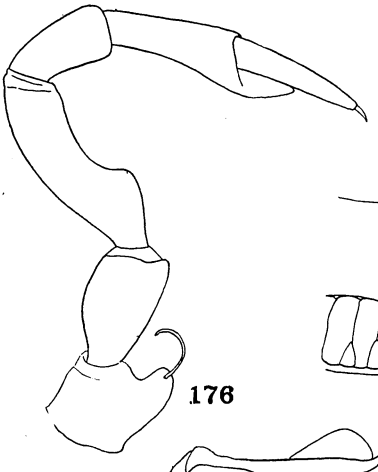

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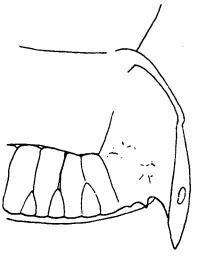

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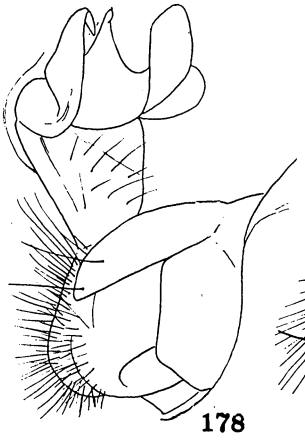

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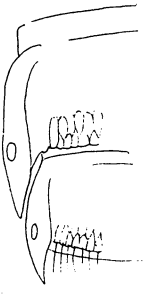

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Plate XXVI

Chondrodesmus tamocalanus, sp. nov.

Fig. 179. Twelfth right keel of type, male. x 17.

Fig. 180. Eighteenth left keel of same. x 17.

Fig. 181. Tenth keel of a male paratype. x 13.

Fig. 182. Right gonopod, anteromesal view. x 45.

Chondrodesmus cerasinopes, sp. nov.

Fig. 183. Eleventh keel, in outline. x 13.

Fig. 184. Seventeenth to nineteenth left keels. x 13.

Chondrodesmus virgatus, sp. nov.

Fig. 185. Tenth left keel. x 17.

Fig. 186. Seventeenth left keel. x 17.

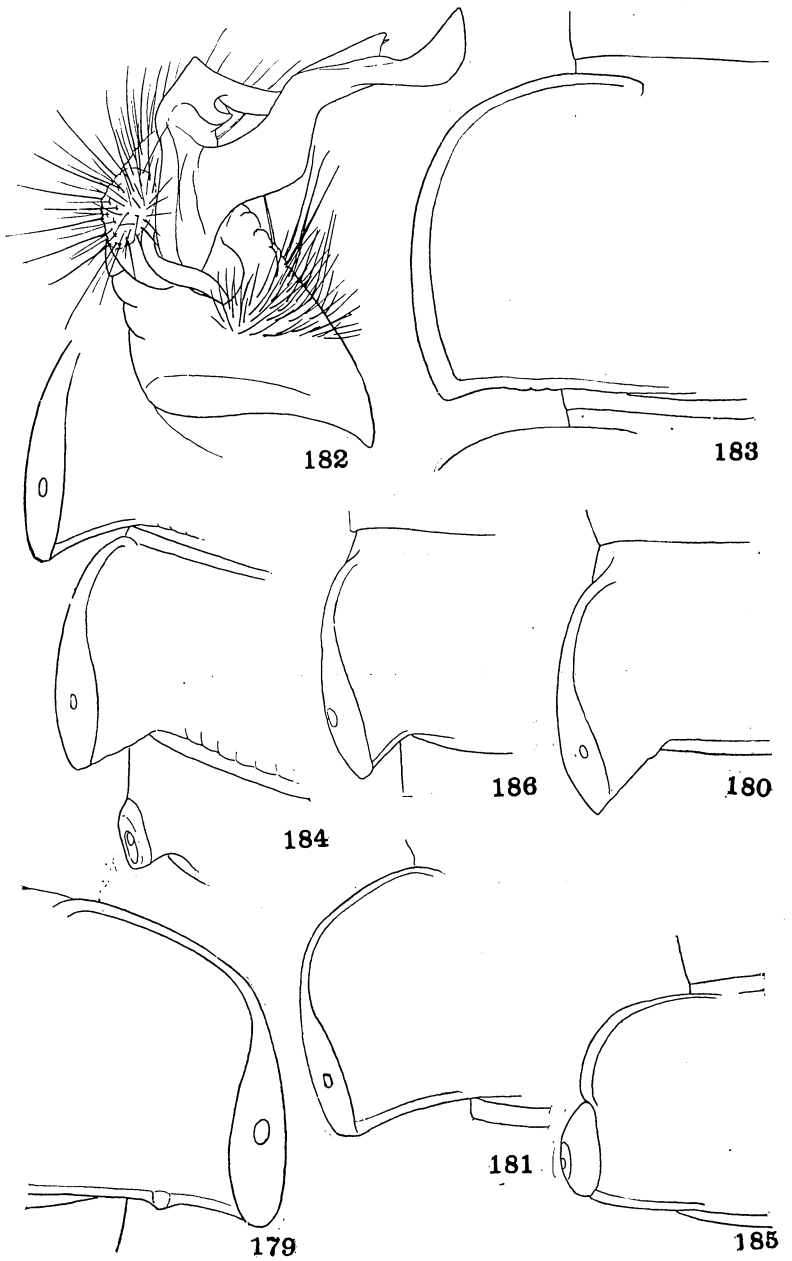
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PLATE XXVII

Chondrodesmus rugosior, sp. nov.

Fig. 187. Tenth keel. x 13.

Fig. 188. Left gonopod, antedomesal view. x 30.

Zigwadesmus guiananus, sp. nov.

Fig. 189. Third, fourth and fifth keels. x 17.

Fig. 190. Tenth keel. x 17.

Fig. 191. Thirteenth and fourteenth keels, lateral view. x 17.

Fig. 192. Anal scale. x 17.

Fig. 193. Cauda, etc., lateral view. x 17.

Zigwadesmus modestus, sp. nov.

Fig. 194. Anal scale. x 30.

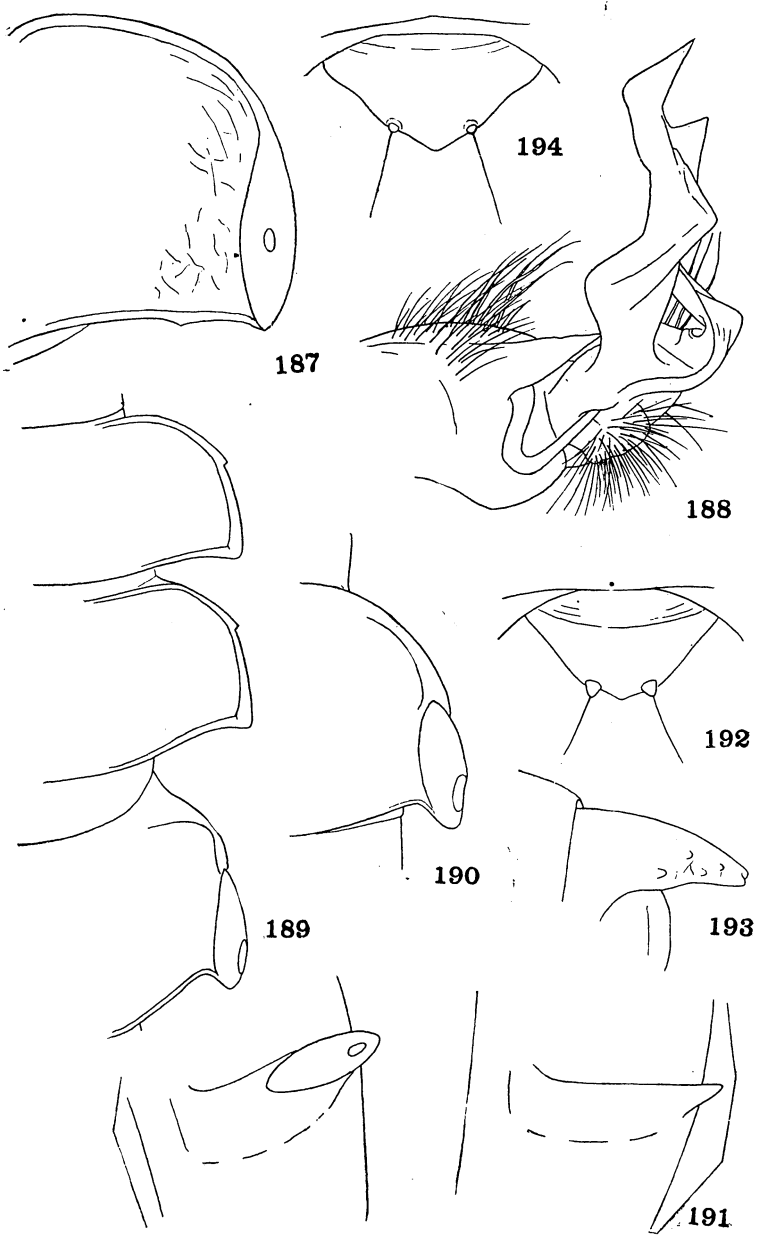
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PLATE XXVIII

Zigwadesmus guiananus, sp. nov.

Fig. 195. Last tergite, dorsal view. x 17.

Zigwadesmus modestus, sp. nov.

Fig. 196. Fourth and fifth keels. x 30.

Fig. 197. Tenth keel. x 30.

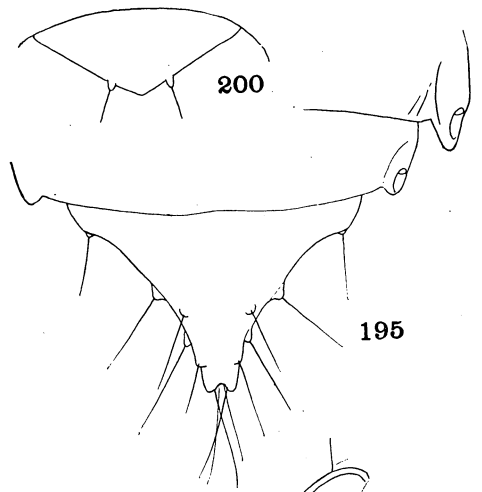
Fig. 198. Thirteenth and fourteenth keels, lateral view. x 30.

Fig. 199. Last tergite, dorsal view, with setae omitted. x 30.

Arionus ulophilus, sp. nov.

Fig. 200. Anal scale. x 75.

Fig. 201. Tenth keel.



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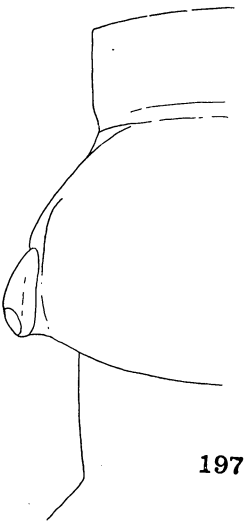

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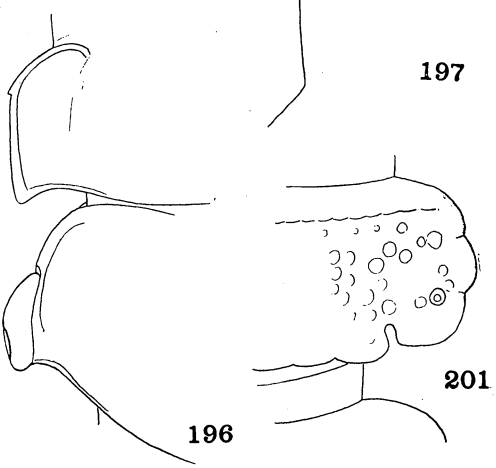

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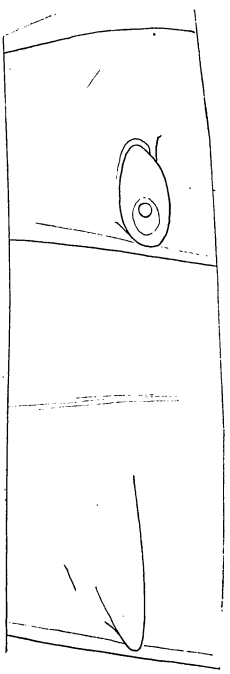

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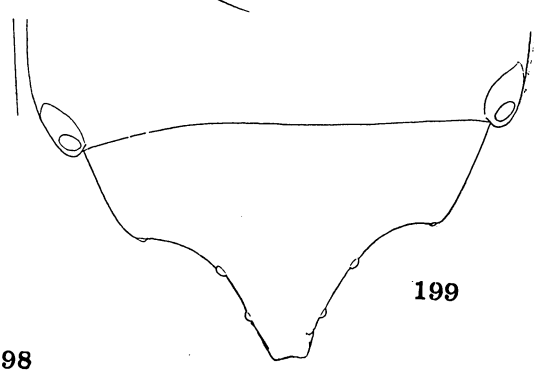

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PLATE XXIX

Arionus ulophilus, sp. nov.

Fig. 202. Head with collum and second tergite, ventroanterior view. x 30.

Fig. 203. Collum and succeeding three tergites, lateral view, in outline. x 30.

Fig. 204. Caudal end of body in outline, dorsal view (tubercles of general surface omitted). x 30.

Fig. 205. Gonopods, ventral view. x 45.

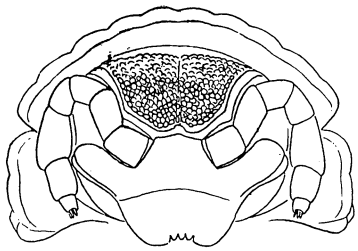
Fig. 206. Gonopod, mesal view. x 75.

Guianonus ectoporus, sp. nov.

Fig. 207. Last three tergites. x 45.

Fig. 208. Anal scale. x 75.

Fig. 209. Gonopods of male, caudal view. x 75.



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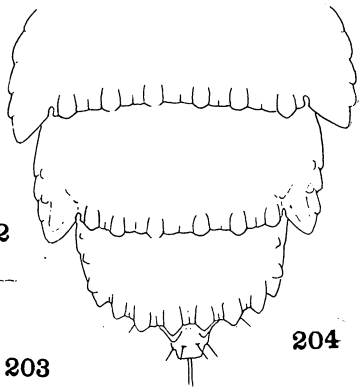

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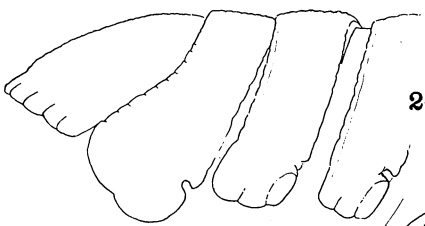

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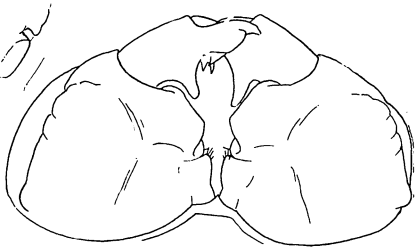

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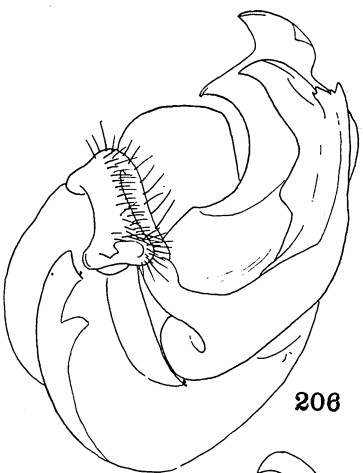

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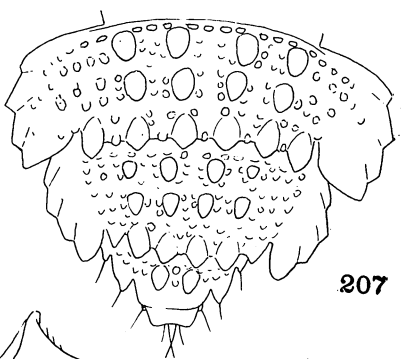

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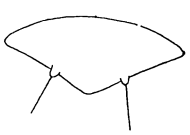

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PLATE XXX

Guianonus ectoporus, sp. nov.

Fig. 210. Right side of anterior end of body in outline, dorsal view. x 45.

Fig. 211. Tenth and eleventh keels in outline. x 45.

Agnurodesmus thrixophor, sp. nov.

Fig. 212. Collum and the three following tergites, lateral view. x 17.

Cliodesmus cryptopygus, sp. nov.

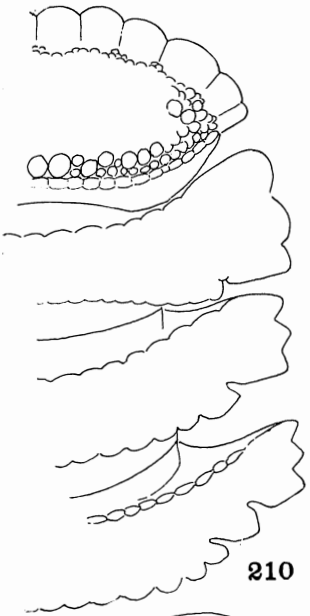
Fig. 213. Head, collum and three following tergites, lateral view. x 30.

Fig. 214. Anal end of body, dorsal view. x 30.

Fig. 215. Anal end of body, ventral view. x 30.

Fig. 216. Gonopods in situ, ventral view. x 75.

Fig. 217. Right gonopod in situ, mesal view. x 75.



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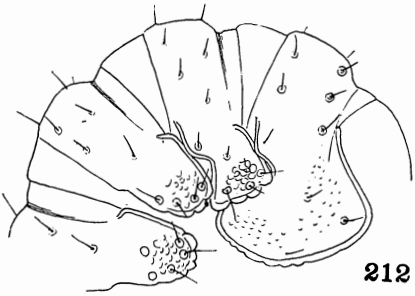

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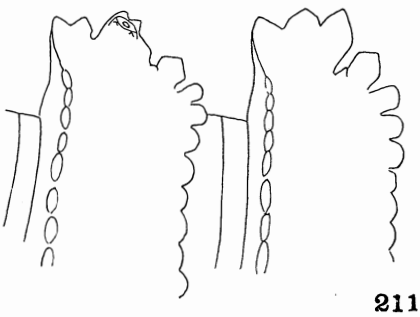

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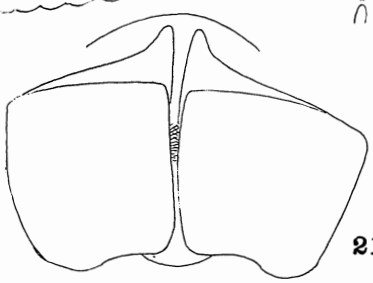

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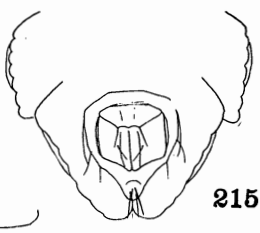

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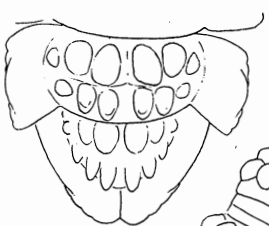

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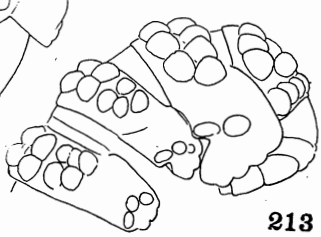

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