

THE MILLIPEDS OF CENTRAL AMERICA.

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This paper, like its predecessor on the centipeds of the same region, is primarily a report upon the material of the group existing in the collections of the United States National Museum, collections which have been enriched especially by the contributions of Drs. O. F. Cook and W. M. Mann. The collection of the Museum of Comparative Zoology has also been reviewed. In addition to the forms studied in these collections, it has been the intention to include all other species thus far described from Panama, Costa Rica, Nicaragua, Salvador, Honduras, British Honduras, and Guatemala.

The forms now known to occur are listed separately for the several countries below.

PANAMA.

Stemmiulus bioculatus Gervais.
Orthoporus festae (Silvestri).
Diaporus culebrae, new species.
Diaporus chiriquensis (Pocock).
Rhinocricus ferrugineus (Daday).
Rhinocricus hagedussii (Daday).
Rhinocricus ocraceus Brölemann.
Oxygyge varicolor (Silvestri).
Orthomorpha coarctata (Saussure).
Chondrodesmus panamenus, new species.
Alocodesmus dromeus, new species.
Cyrtodesmus granosus (Gervais and Goudot).

COSTA RICA.

Platydesmus lankesteri Brölemann.
Prostemmiulus tristani Silvestri.
Prostemmiulus picadoi Silvestri.
Epinannolene bicornis Brölemann.
Gymnostreptus pacificus, new species.
Orthoporus absconsus, new species.
Orthoporus confragosus (Karsch).
Diaporus palmensis (Brölemann).

- Diaporus omalopyge* (Brölemann).
Diaporus typotopyge (Brölemann).
Rhinocricus wheeleri, new species.
Rhinocricus centralis, new species.
Rhinocricus simulans, new species.
Rhinocricus rogersi Pocock.
Rhinocricus aposematus Pocock.
Rhinocricus tristani Pocock.
Rhinocricus costaricensis Brölemann.
Rhinocricus nodosicollis Brölemann.
Rhinocricus biolleyi Brölemann.
Rhinocricus plesius Chamberlin.
Rhinocricus mucronatus Brölemann.
Spirostrophus musarum Cook.
Orthomorpha coarctata (Saussure).
Oxidus gracilis (Koch).
Tiroidesmus fimbriatus (Peters).
Nyssodesmus nigricaudus, new species.
Nyssodesmus tristani (Pocock).
Nyssodesmus limonensis (Attems).
Nyssodesmus fraternus (Carl).
Nyssodesmus bivirgatus (Carl).
Nyssodesmus riparius (Carl).
Nyssodesmus montivagus (Carl).
Nyssodesmus propinquus (Carl).
Nyssodesmus stenopterus (Brölemann).
Nyssodesmus antius (Chamberlin).
Nyssodesmus pococki (Brölemann).
Amplinus convexus (Carl).
Amplinus niteus, new species.
Aphelidesmus calverti Chamberlin.
Aphelidesmus intermedius Chamberlin.
Aphelidesmus glaphyros (Attems).
Chondrodesmus singularis, new species.
Chondrodesmus granosus (Carl).
?Chondrodesmus hoffmanni (Peters).
Phylactophallus stenomerus Pocock.
Aceratophallus lamellifer Brölemann.
Aceratophallus unicolor Carl.
Aceratophallus dux Chamberlin.
Eusphaeriodesmus stilifer (Pocock).
Colobodesmus biolleyi Brölemann.
Peridontodesmus electus Chamberlin.

NICARAGUA.

- Rhinocricus nicaraguanus*, new species.
Rhinocricus rixi Pocock.
Rhinocricus marci Pocock.
Tiroidesmus fimbriatus (Peters).
Nyssodesmus mimus, new species.
Nyssodesmus nicaraguanus, new species.

SALVADOR.

None recorded.

HONDURAS.

- Platydesmus interruptus*, new species.
Platydesmus interruptus simplex, new variety.
Siphonophora telana, new species.
Siphonophora progressor, new species.
Prostemmiulus relictus, new species.
Prostemmiulus lombardiae, new species.
Cleidogona ceibana, new species.
Amplinus manni, new species.
Amplinus orphnius, new species.
Chondrodesmus tuberculifer, new species.
Chondrodesmus alidens, new species.
Schistides atopophallus, new species.
Holistophallus peregrinus Silvestri.
Sphaeriodesmus hondurasanus, new species.

BRITISH HONDURAS.

None recorded.

GUATEMALA.

- Platydesmus triangulifer* Pocock.
Platydesmus analis Pocock.
Platydesmus marmoreus Pocock.
Platydesmus perpictus Pocock.
Platydesmus polydesmoides Lucas.
Platydesmus guatemalae Brölemann.
Desmethus setifer, new species.
Siphonophora barberi, new species.
Siphonophora fallens, new species.
Siphonophora globiceps, new species.
Prostemmiulus cooki, new species.
Cleidogona stollii Pocock.
Gymnostreptus lactus, new species.
Gymnostreptus vagans, new species.
Orthoporus discriminans, new species.
Orthoporus cobanus, new species.
Orthoporus rodriguezi (Brölemann).
Orthoporus rodriguezi coriaceus (Brölemann).
Parajulus stylifer Pocock.
Parajulus leucoclius, new species.
Rhinocricus stollii Pocock.
Rhinocricus scobinatus Pocock.
Rhinocricus obesus Brölemann.
Oxygygides mesites, new species.
Oxygygides lapidicina, new species.
Oxygyge ferruginopes, new species.
Oxygyge confusa, new species.
Oxygyge socia, new species.
Oxygyge equalis, new species.
Spirobolus hoplomerus Pocock.

Spirobolus stolli Pocock.
Spirobolus eximius Porat.
Oxobolus virilis, new species.
Oxobolus cinctus, new species.
Oxobolus cratus, new species.
Oxobolus pictus, new species.
Allopocockia tylopus (Pocock).
Spirobolellus articulus Pocock.
Arolus purulanus, new species.
Orthomorpha coarctata (Saussure).
Oxidus gracilis (Koch).
Amplinus areatus Pocock.
Amplinus nitidus (Brölemann).
Amplinus palicaudatus (Attems).
Amplinus orphnius, new species.
Polylepiscus stolli Pocock.
Polylepiscus actaeon Pocock.
Polylepiscus heterosculptus (Carl).
Chondrodesmus montanus (Pocock).
Chondrodesmus rodriguezi (Brölemann).
Cyclorhabdus contortus Brölemann.
Eutyporachis tessellatus Pocock.
Eutyporachis oltramarei (Carl).
Atylophor rafaelanus, new species.
Tunodesmus orthogonus, new species.
Tunodesmus laminiger, new species.
Synthodesmus simulans, new species.
Rhysodesmus championi Pocock.
Rhysodesmus stolli Pocock.
Rhysodesmus violaceus (Brölemann).
Curodesmus guatemalensis, new species.
Holistophallus peregrinus Silvestri.
Sphaeriodesmus coriaceus Pocock.
Sphaeriodesmus medius Carl.
Eusphaeriodesmus angustus (Pocock).
Cylionus constrictus Pocock.
Peridontodesmus flagellatus Pocock.
Cynedesmus celatus (Pocock).
Cynedesmus perparvus (Pocock).
Glomeroides centralis, new species.
Glomeridesmus centralis, new species.

Suborder COLOBOGNATHA.

Family PLATYDESMIDAE.

Genus PLATYDESMUS Lucas.

1. PLATYDESMUS TRIANGULIFER Pocock.

Platydesmus triangulifer Pocock, Biol. Centr.-Amer., Diplop., 1903, p. 45, pl. 4, figs. 4-4e.

Locality.—Guatemala: Volcan de Acatenango.

2. PLATYDESMUS ANALIS Pocock.

Platydesmus analis Pocock, Biol. Centr.-Amer., Diplop., 1903, p. 46, pl. 4, figs. 3-3g.

Locality.—Guatemala: (?) Guatemala city.

3. PLATYDESMUS MARMOREUS Pocock.

Platydesmus marmoreus Pocock, Biol. Centr.-Amer., Diplop., 1903, pp. 48, 61, fig. 3.

Locality.—Guatemala: Chalhuitz.

4. PLATYDESMUS PERPICTUS Pocock.

Platydesmus perpictus Pocock, Biol. Centr.-Amer., Diplop., 1903, p. 47, pl. 5, figs. 1-1j.

Locality.—Guatemala: Senahu, Chalhuitz.

5. PLATYDESMUS INTERRUPTUS, new species.

Plate 1, figs. 1, 2.

Dorsum in general brown. A black median longitudinal band geminate with a median line which expands at intervals into quadrate areas, of which there are four, each of these bounded on each side by a quadrate black area about equal to itself in size. The surface paler in a longitudinal stripe between each two black quadrate spots and in an area laterad of each of the latter. Legs and ventral surface pale, the antennae typically darkened distad. Body very broad, three times longer than wide. Eyes present. First tergite produced forward beyond the head, thus completely covering the latter from above; the anterior border acutely notched at the middle, as shown in plate 1, figure 1. Of the two rows of tubercles on the tergites the anterior one extends laterad nearly to ends of keels, the posterior row not so far. Last tergite surpassed by keels of the preceding segment (pl. 1, fig. 2). Number of segments, mostly between 40 and 50. Length, 15 mm.; width, 5 mm.

Localities.—Honduras: San Juan Pueblo (type locality), eighteen specimens, and La Ceiba, one specimen (W. M. Mann).

Suggesting the Guatemalan *P. perpictus* Pocock, but different clearly in the color pattern, the greater width of the body, the more open median incision in the first tergite, etc.

Type.—Cat. No. 812, U.S.N.M.

6. PLATYDESMUS INTERRUPTUS SIMPLEX, new variety.

Agreeing with the preceding form closely in general structure, but differing in coloration. The dorsum has a sharply defined, narrow, evenly continuous, median, longitudinal, dorsal black stripe, else-

where brown, the half adjacent to the middorsal strip in each side paler than the ectal half.

Localities.—Honduras: La Ceiba (type locality), nine specimens, and San Juan Pueblo, one specimen (W. M. Mann).

Type.—Cat. No. 813, U.S.N.M.

7. **PLATYDESMUS POLYDESMOIDES** Lucas.

Platydesmus polydesmoides LUCAS, Ann. Soc. Ent. France, 1843, p. 52, pl. 3, figs. 1-8.—Pocock, Biol. Centr.-Amer., Diplop, 1903, p. 48.

Locality.—Guatemala.

8. **PLATYDESMUS GUATEMALAE** Brölemann.

Platydesmus guatemalae BRÖLEMANN, Mém. Soc. Zool. France, 1909, vol. 13, p. 112, pl. 7, figs. 78-82.

Locality.—Guatemala.

9. **PLATYDESMUS LANKESTERI** Brölemann.

Platydesmus lankesteri BRÖLEMANN, Ann. Soc. Ent. France, 1905, p. 354, pl. 9, fig. 15.

Locality.—Costa Rica: El Reventado.

DESMETHUS, new genus.

This genus differs from *Platydesmus* in that the tergites bear numerous closely arranged and setigerous tubercles over the entire surface instead of bearing only two rows of these, but the tergites each with a similar deep transverse furrow. It also differs in the last tergite, which does not surpass the valves and does not bear the caudal series of long setiferous cones, these being replaced by more ordinary tubercles. Sternites, broad. Eyes, none.

Genotype.—*Desmethus setifer*, new species.

10. **DESMETHUS SETIFER, new species.**

Plate 1, figs. 3-8.

Outer half of keels yellow. The dorsum with a pale median longitudinal stripe, each side of which is a broader dark brown band, the region between this dark band and the marginal yellow of the keels being a lighter brown due to an elongate pale area or group of light dots on each tergite. Middle region of vertex and front of head brown, the lateral portions yellow, as is also the clypeal region. Venter yellow. Antennae and legs yellow, a little infuscated distally. Body broad, five times longer than wide. Head minutely granular, bearing numerous short setae. Gnathochilarium as shown in plate 1, figure 6. The first tergite is anteriorly widely emarginate, the keels being rounded and bent forward and thus leaving the head entirely uncovered. All tergites densely covered above over their entire surfaces out to the ends of the keels with small tubercles or

broader than the keels of the preceding segment, which surpass it a little. Its caudal margin convex. Surface covered with numerous setiferous granules as with the other tergites, with six tubercles along the caudal margin bearing long setae, but these tubercles much smaller than the corresponding cones characterizing *Platydesmus*; the tergite not surpassing the anal valves which are not granular but bear numerous short setae. The sternites are also all subdensely setose. Those in the middle region very broad, the width nearly equal to the combined length of the first two joints of the legs. In going forward and backward from the middle region the sternites become progressively narrower. Legs all shortly setose.

Gonopods of male as shown in plate 1, figures 7 and 8.

Length, 16 mm.; width, 3.2 mm.

Locality.—Guatemala: San Rafael, numerous specimens (O. F. Cook, June 4, 1914).

Type.—Cat. No. 814, U.S.N.M.

Family SIPHONOPHORIDAE.

Genus SIPHONOPHORA Brandt.

11. SIPHONOPHORA BARBERI, new species.

Plate 2, figs. 1-5.

Yellow, of a usually reddish cast, with dorsum dusky and typically showing a median longitudinal black line or stripe. Head rather narrow, widest at base. Beak about equal in length to the head, a little curved. The antennae are heavy and conspicuously clavately enlarged, obviously thicker distally than at middle. The antennae exceed the beak, the latter reaching to the middle of the sixth article (see pl. 2, fig. 1). The collum is subangularly widely excised in front, sides converging forward, as shown in the figure. Pleurites of anterior and of posterior regions as shown in plate 2, figures 2 and 3.

Gonopods as represented in plate 2, figures 4 and 5.

Number of segments, 68 to 82.

Length, up to 30 mm.; the corresponding width, 1.2 mm.

Locality.—Guatemala: Jocalo, many specimens (H. S. Barber).

Type.—Cat. No. 815, U.S.N.M.

12. SIPHONOPHORA TELANA, new species.

Plate 2, figs. 6-8.

Yellow, a little dusky, the head darker.

Differs obviously from the preceding species in its more globose head and much shorter rostrum, the latter shorter than the head, but longer than in the Guatemalan *S. globiceps* Pocock (pl. 2, fig. 6).

Antennae clavate. Collum with sides nearly straight, converging cephalad. Anterior margin widely incurved, not straight, as represented for *globiceps*, as shown in the figure. Anterior and posterior pleurites as shown in plate 2, figures 7 and 8.

Number of segments, female, 94.

Length, 25 mm.

Locality.—Honduras: Tela, one female (W. M. Mann).

Type.—Cat. No. 816, U.S.N.M.

13. SIPHONOPHORA FALLENS, new species.

Plate 3, figs. 1-4.

Yellow, with a series of small, lighter spots along the side. Head subglobose, with beak very short, as in *S. globiceps*. The antennae are more evenly clavate than in the latter species, the sixth article thickest, whereas in the other form the antenna is of nearly uniform width over middle and distal sections; rather abruptly much thicker than at base (see pl. 3, fig. 1). Anterior margin of collum widely and not deeply concave, as shown in the figure. Pleurites of anterior and posterior regions as shown in plate 3, figures 2 and 3.

Gonopods as represented in plate 3, figure 4.

Number of segments, male, 55 to 60.

Length, 15 mm.

Locality.—Guatemala: Joyabaj-Chiché, six specimens (O. F. Cook, May, 1906).

Type.—Cat. No. 817, U.S.N.M.

A much smaller species than *S. globiceps*, differing in form of antennae, as well as in gonopods, etc.

14. SIPHONOPHORA GLOBICEPS Pocock.

Siphonophora globiceps Pocock, Biol. Centr.-Amer., Diplop., 1903, p. 41, pl. 5, figs. 6-6a.

Locality.—Guatemala: Purula, Santa Rosa, five specimens (O. F. Cook, May, 1906).

These specimens agree with the original description and figures as to form of head, beak, and antennae. They are, however, decidedly broader in proportion to length. The largest specimen is 34 mm. long and 2 mm. wide, while a specimen 18 mm. long is 1.2 mm. wide. Pocock gives his type as 21 mm. long and 1 mm. wide. The specimens in hand are also much darker in color—dusky brown. However, since Pocock had but a single specimen and the present ones are from the same locality as his, I believe there is scarcely room for doubt that they represent the same species.

15. SIPHONOPHORA PROGRESSOR, new species.

Plate 3, figs. 5-7; plate 4, figs. 1, 2.

Dusky yellow, excepting at ends, which are clearer yellow and often of a weakly ferruginous cast. Head anteriorly rounded, only slightly conical at base of beak. Sides subparallel, flaring outward at extreme base. Beak as long as head, slender (pl. 3, fig. 5). Antennae exceeding beak by their sixth and seventh articles, or nearly that amount. Second article clavately widening, the remaining portion of antennae of nearly uniform width to the small last article (pl. 3, fig. 5). Collum with sides convex; anterior margin deeply incurved at middle, as shown in the figure. Body not keeled, uniformly and very shortly pilose. Pleurites of anterior and posterior region as shown in outline in plate 4, figures 1 and 2.

Gonopods of male as represented in plate 3, figures 6 and 7.

Number of segments in female, 137 to 173. A small male, thought to be the same species, has only 99 segments.

Length, female, 60 mm.; male, 26 mm.

Locality.—Honduras: Progreso, three females and one male (W. M. Mann).

Type.—Cat. No. 818, U.S.N.M.

Superfamily STEMMIULOIDEA.

Family STEMMIULIDAE.

Genus STEMMIULUS Gervais.

16. STEMMIULUS BIOCULATUS Gervais.

Julus (*Stemmiulus*) *bioculatus* GERVAIS, Ann. Soc. Ent. France, 1844, ser. 2, vol. 2, p. 28; Ann. Sci. Nat., 1844, p. 70, pl. 5, fig. 11; Ins. Apt., 1847, vol 4, p. 200.

Stemmiulus bioculatus Pocock, Biol Centr.-Amer., Diplop., 1909, p. 109.

Locality.—Panama: Punta Sabana, Darien.

Genus PROSTEMMIULUS Silvestri.

17. PROSTEMMIMULUS RELICTUS, new species.

Plate 4, figs. 3-12.

Body blackish above, becoming paler, fulvous, down the sides and yellow ventrally; a median dorsal longitudinal fulvous stripe which expands on each tergite; a row of light spots along each side above and also one just ectad of legs. Head with two ocelli on each side, of which the lower one is proportionately larger than it is in *P. cooki*, new species (pl. 4, fig. 3). Antennae long and slender, the

sixth article about twice as long as thick (pl. 4, fig. 8). Gnathochilarium of male as shown in plate 4, figure 7. Collum with three complete longitudinal ridges below and a fourth broader one crossing only the caudal border above these (pl. 4, fig. 3). The second and the immediately succeeding tergites strongly ridged beneath, the ridging becoming weaker in going caudad. The oblique striae across metazonites on median segments extend upon dorsum, the two series almost in contact anteriorly, leaving a triangular mid-dorsal area free from them posteriorly on each segment. Transverse sulcus sharply impressed, angulate at dorsal line.

The legs of first, second, and third pairs of male as shown in plate 4, figures 4, 5, and 6.

Gonopods of male as shown in plate 4, figures 11 and 12.

Sternites of ninth segment are represented in plate 4, figures 9 and 10.

Number of segments, 44.

Length, about 28 mm.; width, 2.2 mm.

Locality.—Honduras: La Ceiba, one male (W. M. Mann).

Type.—Cat. No. 819, U.S.N.M.

The gonopods of the specimen are broken.

18. PROSTEMMIULUS LOMBARDIAE, new species.

Plate 5, figs. 1-4.

Brown throughout, darker over dorsum, the usual two series of paler spots along each side visible under lens, but no trace of mid-dorsal pale line. Anal segment and collum not differently colored. Legs yellowish, the antennae brown. Head with two ocelli on each side, of which the lower or anterior is much the smaller. The antennae are slender, with the sixth article nearly uniformly cylindrical, scarcely thicker distally than proximally and a little more than twice as long as thick (pl. 5, figs. 1 and 2). Collum with three longitudinal striae across ventral end, these setting off two ridges much less elevated and sharp than the corresponding ones in *relictus*. No striae above the uppermost of these three (pl. 5, fig. 1). Second tergite striate beneath. Striae on succeeding tergites rising higher and higher and first reaching the middorsal region on the twelfth segment. Papillae of last segment 3+3, as usual, the setae moderate in length.

Sternites of form shown in plate 5, figures 3 and 4.

Number of segments, 42.

Length, 12 mm.; width, 1 mm.

Locality.—Honduras: Lombardia, one female (W. M. Mann).

Type.—Cat. No. 820, U.S.N.M.

19. *PROSTEMMIULUS COOKI*, new species.

Plate 5, figs. 5-12.

Body in general dark brown or fuscous. A narrow, median, longitudinal stripe of fulvous or light orange color, the stripe constricted over the anterior portion of each segment. Collum and last segment also light orange in color, as is the lower part of face. Head with two ocelli on each side, of which the anterior is the smaller, as usual, but relatively larger than in, for example, the Costa Rican *P. picadoi* Silvestri (pl. 5, fig. 5). Antenna long and slender, the sixth joint about twice as long as thick. Collum typically with four longitudinal, deep striae on each side or with two complete and several shorter ones (see pl. 5, fig. 5). Second tergite deeply striate beneath, the striae on succeeding segments more numerous and extending farther dorsad, but in no case present in the median dorsal region.

The legs of first, second, and third pairs of the male as shown in plate 5, figures 6 to 8; leg of seventh segment in plate 5, figure 12.

Sternites as shown in plate 5, figures 9, 10.

Gonopods of male as represented in plate 5, figure 11.

Number of segments, 46 to 51.

Length, 28 mm.; width, 2 mm.

Locality.—Guatemala: Joyabaj, several males and females (O. F. Cook, May, 1906).

Type.—Cat. No. 821, U.S.N.M.

20. *PROSTEMMIULUS TRISTANI* Silvestri.

Prostemmiulus tristani SILVESTRI, Boll. Lab. Zool. Portici, 1916, vol. 10, p. 326, figs. xxxiv, 1-14.

Locality.—Costa Rica: La Estrella.

21. *PROSTEMMIULUS PICADOI* Silvestri.

Prostemmiulus picadoi SILVESTRI, Boll. Lab. Zool. Portici, 1916, vol. 10, p. 327, figs. xxxv, 1-4.

Locality.—Costa Rica: La Estrella.

Superfamily CHORDEUMOIDEA.

Family CRASPEDOSOMIDAE.

Genus CLEIDOGONA Cook and Collins.

22. *CLEIDOGONA CEIBANA*, new species.

Plate 6, figs. 1-6.

Lower part of sides, venter, and legs pale fulvous, the legs darkened distally. Upper part of sides and dorsum brown, with a series of paler areolated spots along each side. Upper part of head and

the antennae brownish over a pale background. Ocelli about 25 in five series; thus: 7, 6, 5, 4, 3. Segments with sides weakly elevated or longitudinally ridged on each side, the lateral setiferous tubercle arising from caudal end of the ridge. Caudal margin of segments gently sinuate, bulging convexly near or just below level of the lateral tubercle and concave just above and below this. In the ninth legs of the male the first joint is nearly as long as the second; it is thick proximally and bends a little and narrows just distad of the middle, being somewhat compressed in the dorsoventral direction; process on basal part small. The second joint is strongly clavate and is a little constricted near the middle. The tenth legs of the male have the usual coxal pouches, from which, in the type, conspicuous clavate processes are extruded (see pl. 6, fig. 1). The eleventh legs of the male have the usual coxal process, which is a little curved at the distal end, and the coxal pouches, which give rise to processes similar to those of the tenth legs, but smaller (pl. 6, fig. 2). The process from the sternite between the twelfth legs is large and is remarkable in being furcate anteriorly, the branches extending each side of the gonopods (see pl. 6, figs. 3 and 4).

The gonopods are represented in plate 6, figures 5 and 6.

Length, about 15 mm.

Locality.—Honduras: La Ceiba, one male (W. M. Mann).

Type.—Cat. No. 822, U.S.N.M.

23. CLEIDOGONA STOLLI Pocock.

Cleidogona stolli Pocock, Biol. Centr.-Amer., Diplop., 1903, p. 52, pl. 5, figs. 8-8c.

Locality.—Guatemala: Volcan de Agua.

Superfamily NANNOLENOIDEA.

Family NANNOLENIDAE.

Genus EPINANNOLENE Brölemann.

24. EPINANNOLENE PITTIERI Brölemann.

Epinannolene pittieri Brölemann, Ann. Soc. Ent. France, 1903, vol. 72, p. 136, pl. 50, figs. 3-7.

Locality.—Cocos Island.

25. EPINANNOLENE BICORNIS Brölemann.

Epinannolene bicornis Brölemann, Ann. Soc. Ent. France, 1905, vol. 74, p. 356, pl. 9, fig. 16.—Pocock, Biol. Centr.-Amer., Diplop., 1909, p. 107.

Locality.—Costa Rica: Cariblanco.

Superfamily SPIROSTREPTOIDEA.

Family SPIROSTREPTIDAE.

Genus GYMNOSTREPTUS Brölemann.

26. GYMNOSTREPTUS LAETUS, new species.

Plate 6, figs. 7-9.

Dorsally the prozonite and anterior portion of metazonite olive or in part of a somewhat bluish tinge, the posterior part of metazonite banded with reddish brown or ferruginous. Legs light reddish yellow. Sulcus present across vertex of head. Head with irregularly impressed lines on each side adjacent to collum. Eyes transversely elongate, angled at mesal ends. Ocelli in six series, as 11, 10, 9, 7, 5, 3. Collum not inflexed beneath, the lower anterior corner less rounded than the lower posterior, the inferior margin weakly convex. Above lower margin a series of four striae, the limiting ridges of which end at the anterior marginal thickening, and typically a short stria between second and third that does not extend forward to the middle, or with three striae above and two or three shorter ones below them (pl. 6, fig. 7). The segments in general have the metazonites dorsally strongly punctate and further roughened with intervening anastomosing rugae. Prozonites also densely punctate, but the punctae smaller on the average and the rugae less developed. Metazonites longitudinally striate below pore, with the upper striae short, not extending far from sulcus. Pore small, well removed from sulcus. Anal tergite strongly roughened with punctae and a close network of rugae, without distinct transverse furrow. Anal valves exceeding the tergite; borders strongly compressed and elevated. Anal sternite or scale short and broad, the caudal side very obtusely angled (pl. 6, fig. 8).

Gonopods of male as shown in plate 6, figure 9.

Length, about 78 mm.; width, 5 mm.

Locality.—Guatemala: Joyabaj, one male and two females (O. F. Cook, May, 1906).

Type.—Cat. No. 823, U.S.N.M.

May readily be distinguished from *vagans* in having the tergites strongly punctate as well as rugose instead of being rugose only, in the greater distance of the segmental sulcus from the pore, in the different form of the collum, and in the structure of the gonopods.

27. GYMNOSTREPTUS VAGANS, new species.

Plate 6, fig. 10; plate 7, fig. 1.

The general color is grayish brown, with a caudal band of ferruginous. Legs fulvous. Head smooth. Sulcus present only across vertex. Eyes acutely angled at mesal ends, separated from each other

by a little more than their greatest diameter (once and a sixth); ocelli in six transverse, curving series, as 12, 11, 9, 7, 6, 3. Collum angled below on each side, corner behind angle obliquely excised and the anterior corner widely excised. Above lower angle a series of five longitudinal ridges uniting with the elevated margin anteriorly. The lower angle not inflexed (pl. 6, fig. 10). Segmental furrow deeply impressed across dorsum, its anterior face or wall subvertical, its posterior one widely slanting. Surface caudad of furrow roughened with densely arranged anastomosing rugae or ridges, which are chiefly longitudinal and part of which cross the furrow to its anterior edge. Surface in front of furrow similarly roughened, but the ridges much finer. Metazonite deeply striate below, the striae defined by ridges. Covered portion of prozonites marked with transverse encircling striae, as usual. Pores beginning on sixth segment. Last tergite caudally obtuse, much exceeded by the valves. Surface roughened with a dense network of fine rugae and crossed between caudal end and middle by a transverse furrow, a smaller furrow occurring also near the end. Mesal borders of anal valves strongly compressed and elevated, in profile weakly convex. Anal scale short and broad, caudally very obtusely angular, the surface densely punctate.

The gonopods as shown in plate 6, figure 1.

Number of segments, 59.

Length, 80 mm.; width, 5 mm.

Locality.—Guatemala: Candalaria Rocks, Scamay Estuary, one male, June, 1904; Trece Aguas, one lighter colored male, taken July, 1907.

Type.—Cat. No. 824, U.S.N.M.

28. *GYMNOSTREPTUS PACIFICUS*, new species.

Plate 7, figs. 2-4.

Olive, the caudal borders of segments ringed with fulvous or fulvo-ferruginous. Legs reddish brown. Head smooth and shining. The usual sulcus across vertex distinct. Eyes angled at mesal end, a little more than their diameter (about once and a sixth) apart. Ocelli in six or seven series, as 12, 11, 9, 7, 6, 4, 1. Collum a little inflexed below, with lower inferior corner moderately produced, in the male apically rounded. Above lower end with seven or eight striae, of which the uppermost is deepest, the others decreasing in depth or height of limiting ridge in going ventrad. The number of striae in the female fewer—five or six (pl. 7, figs. 2 and 3). Metazonites covered dorsally with a dense, close network of rugae, with meshes punctiform or but little elongate. Prozonites without distinct rugae, but punctate, the punctae fine. Pores small, remote from the sulcus,

but clearly in front of middle of metazonite. Striae immediately below pore weaker and incomplete. Anal tergite not covering valves, obtusely rounded behind; surface densely reticulo-rugose and punctate, with a shallow transverse depression in front of caudal end. Valves with margins compressed and elevated; surface densely finely punctate. Anal sternite very obtusely angled behind, wide, and short.

Gonopods shown in plate 7, figure 4.

Number of segments, 65 to 69.

Length, up to about 100 mm.; width, from 5 to 6 mm.

Locality.—Costa Rica: Santo Domingo de San Mateo, several males and females (W. R. Maxon, May 16, 1906).

Type.—Cat. No. 825, U.S.N.M.

May be distinguished from *G. laetus* in not having the rugae so sharply defined and not so dominantly longitudinal, as well as in the clearly different form of the gonopods. It is a larger and darker form, with legs dark reddish brown instead of light yellowish.

Genus ORTHOPORUS Silvestri.

29. ORTHOPORUS ABSCONSUS, new species.

Plate 7, figs. 5-8.

General color fuscous, with the paler annuli in the type not pronounced. A fine sulcus across vertex joining a transverse line between angles of eyes. No median sulcus below. The frontal and clypeal region roughened with coriarius impressions. Eyes separated by their longer diameter; mesal angle acute. Collum not truly inflexed below; on each side with six or seven striae, of which the uppermost is limited below by a pronounced ridge, the others with limiting lower edges weaker (pl. 7, fig. 5). Dorsal region of segments in general densely and strongly punctate, both in front of and behind the sulcus, the latter cross ribbed. Striae on sides and below sharply impressed across metazonite. Anal tergite not covering the valves; obtusely angled behind; surface densely coarsely punctate and puncto-rugose. The valves similarly roughened. Anal scale as shown in plate 7, fig. 6.

Most readily recognized by form of gonopods, as represented in plate 7, figures 7 and 8.

The number of segments is uncertain, as the type was broken into pieces mingled with those of other specimens; but it is probably near 69.

Width, 4 mm.

Locality.—Costa Rica: Santo Domingo de San Mateo, Pacific side, one male in vial with specimens of *G. laetus* (W. R. Maxon).

Type.—Cat. No. 826, U.S.N.M.

30. *ORTHOPORUS DISCRIMINANS*, new species.

Plate 8, figs. 1-4.

Body with the usual alternating bands, these of bluish tinge and brown or ferruginous, the bands of latter color about caudal region of segments. Legs reddish brown. Sulcus on head present only across vertex, weak, its anterior end lying in a depression. Head smooth. Eyes their longer diameter apart. Collum not inflexed below, the lower end on each side of the usual general form. Above margining sulcus three deep sulci limited each by a ridge below it (pl. 8, fig. 1). Segments in general minutely punctate in front of segmental sulcus dorsally, behind sulcus more coarsely punctate and with anastomosing rugae, particularly on more posterior portions, these fading out toward sulcus. The rugae less sharply defined than in, for example, *laetus*. Striate below level of pore, with the uppermost striae short and weaker. Anal tergite not covering the valves, rounded caudally; crossed in front of caudal end by a transverse depression or furrow; surface densely punctate, also with a network of weak, fine rugae. Valves punctate. Anal sternite broadly triangular, the apical angle obtuse (pl. 8, fig. 2).

Gonopods of male as shown in plate 8, figures 3 and 4.

Number of segments, near 56.

Length, about 65 mm.; width, 4 mm.

Locality.—Guatemala: Pancajche, one male, June, 1904.

Type.—Cat. No. 827, U.S.N.M.

Characterized by sculpturing and particularly by the form of the gonopods, the large process at distal end of the anterior pair extending cephalad of ectad across telopodite of posterior pair being a readily noted distinctive feature.

31. *ORTHOPORUS COBANUS*, new species.

Plate 8, figs. 5-7.

Segments each of a somewhat bluish brown color anteriorly and with a caudal, rather broad band of more reddish brown or ferruginous color, or sometimes fulvous, this caudal band often also encroaching on the prozonite of succeeding segment. Anal segment dark. Legs dark reddish brown. Head smooth. Sulcus present only on vertex, rather weak. The eyes small and widely separated, being twice their diameter apart. Ocelli in five series, as 9, 8, 7, 5, 2. Collum truncate at each end below, both the anterior and the posterior angles obtuse, the latter the more rounded. Above lower margin three long striae curving upward anteriorly and, typically, a short one above and one below the lowermost of these (pl. 8, fig. 5). Sulcus of segments deeply impressed throughout, over dorsum

crossed by fine and well separated ridges or ribs. Dorsal surface behind the sulcus densely punctate, in part with an obscure network of obsolete fine ridges. Longitudinal striae on metazonite begin just below the pore, the two or three uppermost of these on segments in middle region being short, the others complete. Dorsum in front of sulcus more finely punctate, the punctae disappearing anteriorly. Pores beginning on sixth segment, each well removed from the sulcus. Last tergite obtuse and rounded caudally, exceeded by the valves, densely finely punctate. Valves with mesal margins moderately compressed and elevated. Anal scale triangular, wider than long, the caudal angle rounded.

Gonopods as shown in plate 8, figures 6 and 7.

Number of segments in male, 63.

Length, about 57 mm.; width, 4.5 mm.

Localities.—Guatemala: Coban-Tache (type locality), two males and a female, May, 1904; Coban, coffee plantation, two males and a female, May, 1904; Sepaiuite, one female, May, 1904; Secanquim, several females of mostly larger size (G. P. Goll, December, 1905); Joyabaj, several males and females, May, 1906; Trece Aguas, one male, June, 1907.

Type.—Cat. No. 828, U.S.N.M.

32. ORTHOPORUS CONFRAGOSUS (Karsch).

Spirostreptus confragosus KARSCH, Zeits. Ges. Naturw., 1881, ser. 3, vol. 6, p. 44.

Spirostreptus (Scaphiostreptus) confragosus BRÖLEMANN, Ann. Soc. Ent. France, 1905, vol. 74, p. 367, pl. 9, fig. 20; pl. 10, fig. 21.

Orthoporus confragosus Pocock, Biol. Centr.-Amer., Diplop., 1909, p. 101.

Locality.—Costa Rica: San José.

33. ORTHOPORUS FESTAE (Silvestri).

Plusioporus festae SILVESTRI, Boll. Mus. Torino, 1896, vol. 11, No. 254, p. 3.

Orthoporus festae Pocock, Biol. Centr.-Amer., Diplop., 1909, p. 102.

Locality.—Panama: Isthmus of Darien, Punta Sabana.

34. ORTHOPORUS RODRIQUEZI (Brölemann).

Spirostreptus rodriguezi BRÖLEMANN, Mém. Soc. Zool. France, 1900, vol. 13, p. 104, pl. 6, fig. 47; pl. 7, fig. 58.

Orthoporus rodriguezi Pocock, Biol. Centr.-Amer., Diplop., 1909, p. 103.

Locality.—Guatemala.

35. ORTHOPORUS RODRIQUEZI CORIACEUS (Brölemann).

Spirostreptus rodriguezi coriaceus BRÖLEMANN, Mém. Soc. Zool. France, 1900, vol. 13, p. 106.

Orthoporus rodriguezi, var. *coriaceus* Pocock, Biol. Centr.-Amer., Diplop., 1909, p. 103.

Locality.—Guatemala.



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