

NEW MILLIPEDS IN A
NOTEWORTHY COLLECTION FROM JAMAICA¹H. F. LOOMIS²

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ABSTRACT

Epigeal millipeds collected above ground and in caves, partly by Berlese funnels, included the following 2 n. gen., 13 n. spp., and a n. var., described, illustrated and included in keys, where possible. *Glomeridesmus albiceps* (Glomeridesmidae); *Berlesedesmus* (n. gen) *flagellipes*, *Docodesmus coxalis* (Chytodesmidae); *Caraibodesmus acutipes*, *C. sculpturatus* (Eurydesmidae); *Barathrodesmus* (n. gen.) *inflatus* (Trichopolydesmidae); *Eurhinocricus aequaliramus*, *E. bisinuatus*, *E. granulatus*, *E. townsendi marginandus*, *E. valvatus*, *Rhinocricus translocatus* (Rhinocricidae); *Siphonocybe crassirostrata*, *Siphonophora compacta* (Siphonophoridae). These increase the number of recorded spp. of Jamaica by over 25%. New localities for 6 established spp. are reported.

The taxonomic history of the diplopod fauna of Jamaica covers considerable time but is decidedly fragmentary and limited. Since its beginning in 1881 to the present time, 3 dozen species have been reported, 4 of them originating in foreign countries. Only 2 papers have presented descriptions of more than 2 new species. These were by R. I. Pocock 1894: (12 spp.) and R. V. Chamberlin 1918: (8 spp.), the latter without illustrations. It is curious that as large and accessible an island as Jamaica, with its diverse habitats, great interest attaching to the evolution and origin of its diplopod fauna, and its critical geographic position, should have attracted so few taxonomic workers with such limited results.

Early in 1973 I was particularly pleased to receive, through The Field Museum of Natural History, a rather modest but important collection of Jamaican millipeds made from 16 December 1972 to 2 January 1973 by Drs. Stewart and Jarmila Peck, Carleton University, Ottawa, Canada. These millipeds were gathered in caves and from the surface, partly by use of Berlese funnels. No true troglobites were included, but 13 new species and a new subspecies were present and are described, thus increasing by more than a fourth the total endemic milliped population. Two of the species typify new genera, 1 being of a family previously known in Jamaica only by 2 specimens of an unidentifiable species.

All holotypes, some paratypes, and specimens of previously known species have been deposited in the Florida State Collection of Arthropods, Gainesville. Paratypes, where available, as well as some specimens of earlier species have been deposited in The Field Museum of Natural History, Chicago, as well as in the National Museum of Natural History, Smithsonian Institution, Washington, D. C.

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POLYXENIDAE

Specimens of this difficult group in the following locations have been sent to Dr. Bruno Condé, University of Nancy, Nancy, France, for identification. Abbey Cave, 2.5 mi SW Mandeville, Manchester Parish; 1 mi S Claremont, and Mosley Cave, near Guy's Hall, St. Ann Parish.

GLOMERIDESMIDAE

Glomeridesmus Gervais 1844:61KEY TO WEST INDIAN SPECIES OF *Glomeridesmus*

1. Head colorless, antennae dark *albiceps* new species
- 1'. Head and antennae similar in color 2
2. Postantennal pit triangular *jenkinsi* Loomis
- 2'. Postantennal pit oval to circular 3
3. Head and antennae colorless; posterior pleural margin smooth; body 10-11 mm long *trinidadensis* Loomis
- 3'. Head and antennae dark; posterior pleural margin finely hispid; body under 10 mm long 4
4. Postantennal pit larger than antennal socket; body 8-9.5 mm long *pectinatus* Loomis
- 4'. Postantennal pit not larger than antennal socket; body under 8 mm long 5
5. Penes about twice the length of adjacent legs *granadanus* Chamberlin
- 5'. Penes, where known, shorter than adjacent legs 6
6. Postantennal pit oval; posterior angles of caudal segments large; body 7 mm long *marmoreus* Pocock
- 6'. Postantennal pit circular; body 4-6.5 mm long 7
7. Posterior angles of caudal segments small, obtuse *concolor* Chamberlin
- 7'. Posterior angles of caudal segments small but acute *angulosus* Loomis

Glomeridesmus albiceps Loomis, new species

Diagnosis: Distinguished from other species by white head, dark antennae and body, and possibly by produced mesal corners of second pair of male legs.

Description: Male holotype (largest specimen), 5.5 mm long, 21 segments. Head white or colorless as are posterior 3/4 of segment 20 and all segment 21; body elsewhere dark, with lighter spots irregularly placed, all joints of antennae dark, eventually bleaching more or less in alcohol. Antennae separated by nearly twice the diameter of socket; sockets considerably smaller than adjacent circular postantennal pits. Segment 1 with dorsum almost 2X length of segment 2, lower limits broadly rounded but angular behind. Lower posterior limits of segments 14 or 15 to 20 sharply produced, those of segment 19 nearly equaling the large ones of

segment 20 (Fig. 1). Caudal end of body narrowed, last segment broadly exposed but unusually short. Pleurae finely hispid along posterior margin, inner corner angularly produced. Penes shorter, thicker, and straighter than those illustrated by Pocock 1894 for *G. marmoreus*. Second male legs shown in Fig. 2, coxae distinctly produced at mesal corners and narrowly separated.

Holotype male, 9 male, 7 female, 6 juv. paratypes, Mt. Diablo, S Moneague, 2100 ft, St. Ann Parish, 28-XII-72; female 5 mi N Alberttown, Trelawny Parish, 30-XII-72; 3 specimens, Whitfield Hall, 4200 ft, St. Thomas Parish, 1-I-73; female, Portland Gap, 5500 ft, St. Thomas Parish, 2-I-73.

CHYTODESMIDAE

When Cook (1911) described the genus *Chatelainea*, with *pterodesmoides* as its type species (West Africa) it differed so greatly from the few recognized genera of the American Chytodesmidae that he assigned it to a new family, the Chatelaineidae to which I know of no subsequent additions. With the relatively recent increase of genera in the Chytodesmidae, practically all of the characters on which his family was based now have been found in the American family. The "dorsal surface covered with minute hairs" of Cook's species seems to be approximated by the spicules or setae present in 3 of the American genera, especially in the species *Iomoides hispidus* Loomis 1934. No other characters seem sufficient for maintaining 2 families and accordingly Chatelaineidae is placed in synonymy under Chytodesmidae.

Berlesedesmus Loomis, new genus

Type species: *Berlesedesmus flagellipes* Loomis, new species

Diagnosis: Readily distinguished from the other genera in having the outer margin of all keels with 3 obvious lobes, and gonopods unique in the long slender flagellum rising from inner base of each terminal joint.

Description: Body with 20 segments, small, about 5× as long as broad, strongly arched, with narrow keels obliquely descending; dorsum of segments with 4 longitudinal rows of 3 rounded tubercles, surface elsewhere irregularly densely granular. Head with anterior portion of vertex raised, elevation constricted at its posterior half; antennae quite crassate. Segment 1 with 10 short crenations along narrow anterior margin. Keels of segment 2 lower on sides than on segments 1 or 3; all lateral keels with 3 distinct outer lobes and with a sinus in posterior margin; pores opening from swollen surface of third lateral lobe. Penultimate segment with posterior angle each side little produced backward. Last segment much exposed. Coxal joint of gonopod galeate, the broad and rather simple outer joint curving back from its mesal side and with a long slender flagellum rising from its inner base.

Berlesedesmus flagellipes Loomis, new species

Description: Body small, broad, posterior end tapering gradually; 5-5.5 mm long, 1 mm wide; strongly arched; color dark brown; legs and 3 outer joints of antennae light; surface clean. Head with vertex raised from

upper limits of antennal sockets backward, somewhat narrowed shortly behind its forward part; anterior lateral angle on each side obviously swollen into a rounded elevation; vertigial surface uniformly finely granular; front and clypeal area rugulose but shining. Antennae short and crassate; joints 1, 2, 4, 7 short, subequal in length, 3 and 6 next longest, distinctly exceeded in length and thickness by joint 5. Segment 1 typical of family in shape but with anterior margin not greatly expanded forward, with 10 subequal, broadly rounded lobes; posterior margin almost smooth, with only 2-3 faint crenations on each outer oblique portion; surface with 6 rather indistinct tubercles near back margin, 4 less evident ones near middle. Segment 2 with keels extending lower on sides than on either segment 1 or 3. Succeeding segments with 4 longitudinal rows of 3 distinct rounded tubercles, surface elsewhere with scattered, densely placed granules slightly variable in size. Lateral keels rather narrow and quite strongly descending, with 3 outer lobes on all segments and a large one on posterior margin, bounded each side by a strong sinus. Pores opening from swollen median surface of third outer lobe. Penultimate segment quite small and narrow, its keels reduced, the posterior angles barely produced backward, angles of segment 18 only a little more produced. Last segment with 2 broad, short, apically rounded to subangular lobes projecting back over papillate apex; dorsal surface densely granular; 3 tiny seta-bearing tubercles on each lateral margin. Preanal scale elliptical, a small tubercle, with long seta, either side of middle near back margin. Anal valves moderately inflated, margins thick and raised. Gonopod as shown in Fig. 3. Male legs lacking secondary sex characters.

Holotype male and approximately 200 males, females, and young, Whitfield Hall, 4200 ft, St. Thomas Parish, 1-I-73; 14 specimens, Blue Mt. Peak, 7400 ft, same parish, 1-I-73; several specimens, Portland Gap, 5500 ft same parish, 2-I-73; many specimens, 1 mi S Claremont, St. Ann Parish, 26-XII-72; 4 specimens, Mt. Diablo, 2100 ft, S Moneague, same parish, 28-XII-72; 14 specimens, 5 mi N Alberttown, Trelawny Parish, 30-XII-72.

Docodesmus Cook 1896:5.

Following is a description of the first member of the genus to be reported from Jamaica and one of the few millipeds there having direct relationship with the West Indian fauna, rather than that of Central America.

A specific character not previously mentioned in *Docodesmus* is the presence of a conic lobe continuing the upper end of joint 5 of the last legs and ending in a long seta. Similar lobes were found in *D. parvior* Chamberlin and *D. cubensis* Loomis but not in *D. haitiensis* Chamberlin, the only other species examined at this time. An exceedingly long seta has been described on the last leg of species of *Hypsiloporus* Loomis 1961, of the Comodesmidae.

Docodesmus coxalis Loomis, new species

Diagnosis: Obviously most closely related to *D. cubensis* Loomis 1937 on the basis of the quite similar gonopods. Material differences are the smaller size, more convex and slender body with wider second segment, and more distinct crenations of segmental outer margins. In the key to species (Loomis 1969) it falls in the second division of couplet 6, although under

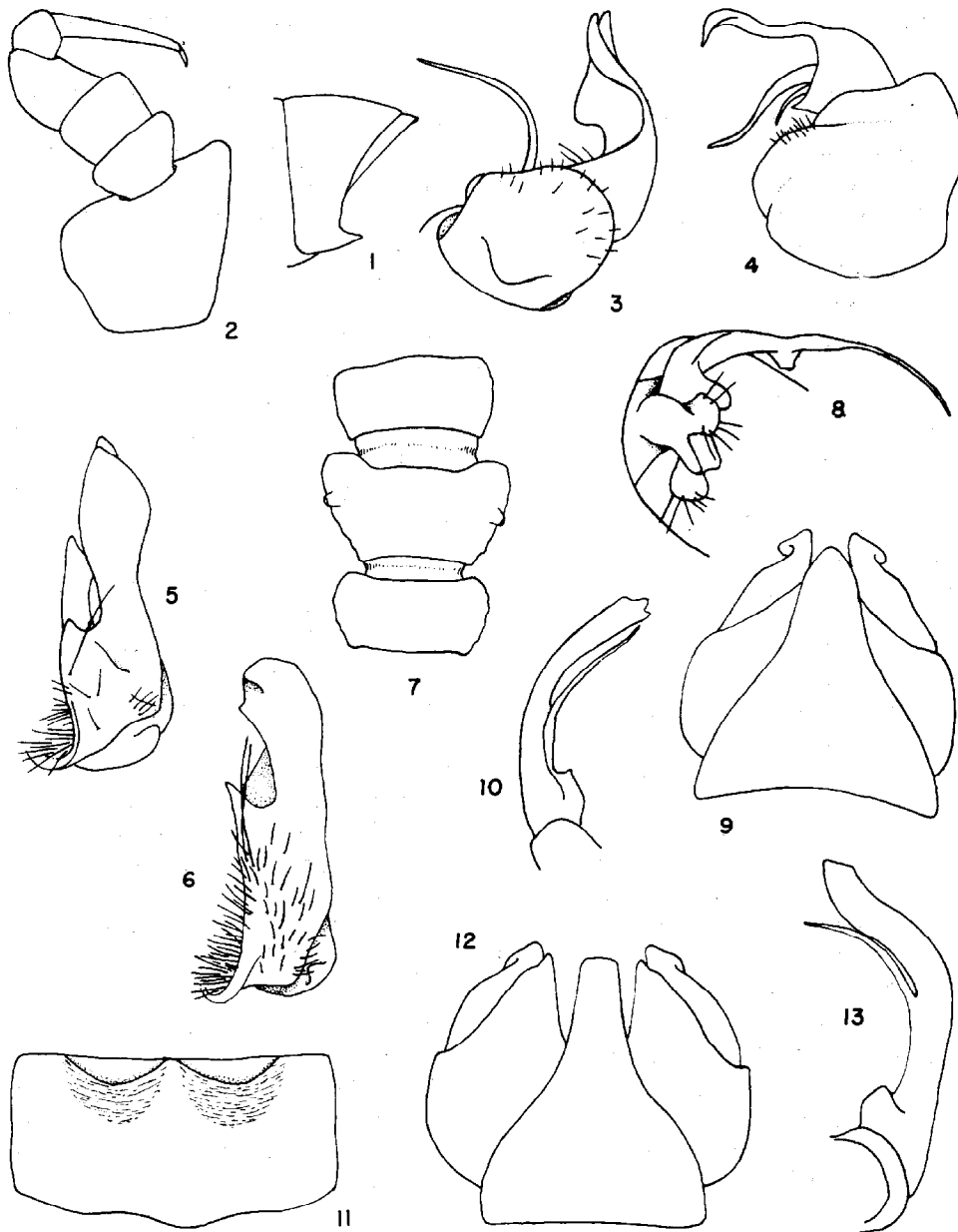


Fig. 1-13. Jamaican millipeds. 1-2, *Glomeridesmus albiceps* n. sp., 1—segments 20 and 21, lateral view; 2—second male leg, anterior view. 3, *Berlesedesmus flagellipes* n. sp., left gonopod, anterior view. 4, *Docodesmus coxalis* n. sp., left gonopod, oblique lateral view. 5, *Caraibodesmus acutipes* n. sp., left gonopod, ventral view. 6, *C. sculpturatus* n. sp., left gonopod, ventral view. 7-8, *Barathrodesmus inflatus* n. sp., 7—segments 6-8, male, dorsal view; 8—right gonopod, ventral view. 9-10, *Eurhinocricus aequaliramus* n. sp., 9—anterior gonopods, anterior view; 10—left posterior gonopod, mesal view. 11-13, *E. bisinuatus* n. sp., 11—segment 10, dorsal view; 12—anterior gonopods, anterior view, 13—right posterior gonopod, anterior view.

10 mm long, and continues to couplet 9 where it separates from *angustus* on smaller size.

Description: Largest male 8.2 mm long, 1.9 mm wide; body strongly convex. Color in alcohol dark brown, near black. In both sexes head with median sulcus impressed on posterior half of vertex only; clypeus moderately swollen, shining; surface above it finely granular to back of vertex with a small but prominent round shining tubercle rising a little behind each antennal socket; a swelling cephalad of each antenna extends laterad to side of head and completely rimmed above. Segment 1 with posterior margin on either side of median portion more oblique and a little longer than in *cubensis* Loomis; anterior margin more extensive, longer submarginal areas more distinct and ending in more pronounced crenations, the same being true of lateral crenations of other segments; median area strongly convex and divided into 5 elevated areas each side, and with a weakly developed median tubercle in each. Segment 2 distinctly wider across subquadrate anterior angles than segment 1, not broadly rounded as in *cubensis*; dorsal primary tubercles large and sharply defined as on succeeding segments; few secondary tubercles; anterior margin of segments with a heavy continuous raised rim. Pores opening from caudoectal surface of a large swelling in front of base of fourth lateral lobe of keels. Last segment little exposed from above, a conical tubercle, larger than projecting ones of segment 19, on each side of dorsum; apex little, if at all, exceeding tips of keels of segment 19, whose inner margins converge backward faintly. Anal valves quite swollen except for a depressed area each side in front of scale, the latter strongly triangular with 2 widely separated subapical tubercles. Gonopods (Fig. 4) with principal branch shorter than in *cubensis* in the drawing of which it is foreshortened; basal joint strongly raised along inner back edge, setae longer in *cubensis*. Sterna of male segments 5 and 6 very narrow, median channel bounded each side by a slight ridge, ridges between legs 5 and 7 more elevated in front and with a seta set in a distinct pit. Coxae of fourth legs swollen, especially near ventral apex, and with a small area of erect setae on anterior face.

Holotype male and about 70 males, females, and young, 1 mi S Claremont 26-XII-72; 4 males Mosley Hall Cave, near Guy's Hall, 27-XII-72; male and fragment, Mt. Diablo, 2500 ft, S Moneague, St. Ann Parish, 28-XII-72; posterior end fragment, Portland Gap, 5500 ft, St. Thomas Parish, 17-XII-72; anterior end, female, 5 mi N Alberttown, Trelawny Parish, 30-XII-72.

COMODESMIDAE

Inodesmus Cook 1896:25

Inodesmus jamaicensis Cook 1896:25

Female, Hardwar Gap, 8000 ft, St. Andrew Parish, 16-XII-72; 2 males, 2 females, 2 young, "Bambriber" Cave, Douglas Castle, St. Ann Parish, 20-XII-72; 2 young, Mosley Hall Cave, near Guy's Hall, same parish, 27-XII-72; male, several females, Whitfield Hall, 4200 ft, and 3 males, 2 females, Blue Mt. Peak, 7400 ft, St. Thomas Parish, 1-I-73; male, female, 1 young, Portland Gap, 5500 ft, same parish, 1-I-73.

CYCLODESMIDAE

Haplocyclodesmus Attems 1940:368*Haplocyclodesmus porcellanus* (Pocock 1894:509)

Two mature females, 1 mi S Claremont, St. Ann Parish, 26-XII-72. Both females 7 mm long and have definite rounded notch in posterior margin of keels from near midbody caudad.

Haplocyclodesmus sp.

Four females, 5 young, Portland Gap, 5500 ft, St. Thomas Parish, 17-XII-72; 3 females, 1 mi S Claremont, St. Ann Parish, 26-XII-72.

EURYDESMIDAE

Caraibodesmus Chamberlin 1918:232KEY TO JAMAICAN SPECIES OF *Caraibodesmus*

1. Posterior margin of segments without projecting teeth between keels *bruesi* Chamberlin
- 1'. Posterior margin with projecting teeth on most segments 2
2. Segment 1 narrower than head and not angled on sides; dorsum of some segments densely hispid *criniger* Loomis
- 2'. Segment 1 angled each side, wider than head, segments nowhere densely hispid 3
3. Body about 30 mm long *pictus* Loomis
- 3'. Body not over 25 mm long 4
4. Body 23-24 mm long; dorsum granular with primary tubercles only in posterior row *verrucosus* (Pocock)
- 4'. Body shorter, with or without granules, some primary tubercles in front of posterior row 5
5. Gonopods where known, with main branch almost acute at tip *acutipes* new species
- 5'. Gonopods blunt at tip of main branch 6
6. Dorsum with a median light band but brown on sides *formosus* (Pocock)
- 6'. Dorsum almost solidly brown or black 7
7. Dorsum solidly black *mammatus* (Pocock)
- 7'. Dorsum solidly brown 8
8. Segments, at most with only primary tubercles; outer margin of keels lacking dentations *morantus* (Pocock)
- 8'. Segments granulate and tuberculate; outer margin of keels dentate 9
9. Primary tubercles of posterior margin of segments in distinct quadrate areas *pellus* Chamberlin
- 9'. Tubercles of posterior margin of segments not in distinct areas *sculpturatus* new species

Caraibodesmus acutipes Loomis, new species

Diagnosis: Probably most closely related to *C. formosus* Pocock 1894 which was founded on a female and has not since been reported. Dorsal tubercles appear less distinct than in *formosus* and lateral keels are quite oblique.

Description: Length 16 mm, width 2.5 mm, light brown to colorless. Head with a transverse concavity between antennae, a median furrow from it to behind middle of vertex after which it is much less evident; side of head slightly swollen laterad of antennal socket. Segment 1 wider than head, posterior angles acute, projecting laterad; dorsum crossed by 3 rows of erect setae; surface almost smooth, faintly tuberculate near back margin which is emarginate each side and broadly so across middle. Dorsum of segments moderately convex, a deep transverse depression, rounded at bottom, across middle of each; surface shining, with no secondary tubercles or granules, primary ones low and not prominent on front half of segments but those of posterior row, except 2 outermost each side, produced as teeth only in front of midbody; keels thin, bent obliquely upward beyond large swelling cephalad of large outer marginal tubercle; posterior angle of each, short and quite broadly triangular; keels 2-5 with 3 faint marginal teeth in front of posterior angle, keel 6 with 4 such teeth, poriferous keels thereafter with 2 teeth in front of pore, remaining nonporiferous keels with 3 teeth which become weak on caudal segments. Gonopods as shown in Fig. 5.

Sternum between third legs with 2 high conic tubercles, next 4 sterna not modified. Legs long, slender, and only moderately hairy with long setae.

Holotype male and young male, 1 mi S Claremont, St. Ann Parish, 26-XII-72.

Caraibodesmus criniger Loomis 1937:222

Several males, females, and young, Portland Gap, 5500 ft, 17-XII-72; male, several females or young, Blue Mt. Peak, 7400 ft, 1-I-73, St. Thomas Parish; male, several females or young, Mt. Diablo, S Moneague, St. Ann Parish, 28-XII-72.

Caraibodesmus sculpturatus Loomis, new species

Diagnosis: Most closely related to *C. pellus* Chamberlin 1918 but differing, at least, in having only 2 poorly defined convex areas on dorsum in front of irregular transverse depression, and none outlined behind it.

Description: Holotype male 20 mm long, 2.7 mm wide; color uniform brown. Head with vertigial sulcus deeply impressed from back of head to just between antennae; front level at middle but with a prominent rounded ridge extending laterad from in front of base of antennae and highest at outer limit. Segment 1 broader than head but narrower than segment 2, lateral angles acute; surface shining, subgranular behind middle; 6 faint low tubercles near back margin which is slightly emarginate mesad of posterior angle but barely so at midmargin. Segment 2 with rim at anterior corner of keel much raised, surface within it depressed, lessening on succeeding segments and not evident beyond midbody; posterior angle each side long, narrow, sharply acute, projecting caudo-laterally; posterior tubercles between back angles not or little projecting. Succeeding segments with similar posterior angles, intervening tubercles projecting, 6 on segments 3-8 and

11, 8 on segments 9, 10, 12-17; 10 greatly reduced ones on segments 18 and 19. Keels somewhat obliquely raised on anterior segments, outer margin with 2 dentations in advance of pores, poreless keels with 3 dentations in front of weak irregular transverse depression raised into 2 indefinite convex rectangular areas with a small tubercle, bearing a macroseta, near center of each; another smaller tubercle outside it near base of keel, and another caudomesad, behind depression, small macroseta present on some; surface elsewhere with well defined subconic granules, those at base of keels with a minute spicule; all sculpturing sharply defined to penultimate segment. Gonopod shown in Fig. 6. Legs of male with rather short dense setae directed obliquely distad on joints 2-6, coxae less setose. Third male sternum with 2 large, deeply separated, and somewhat transverse tubercles in front; surface behind them with numerous long erect setae; sterna of next 2 segments unmodified but with long setae.

Holotype male, 2 males, 14 females, several young, Mt. Diablo, S Moneague, St. Ann Parish, 28-XII-72.

PARADOXOSOMATIDAE

Chondromorpha Silvestri 1897:356

Chondromorpha kelaarti (Humbert 1865:23)

Male, Hardwar Gap, 8000 ft, St. Andrew Parish, 17-XII-72; 50 males, females, and young, St. Claire Cave, Ewarton, St. Catherine Parish, 27-XII-72.

TRICHOPOLYDESMIDAE

Barathrodesmus Loomis, new genus

Diagnosis: The very dense, distinct, and uniform pitting or reticulation of entire body surface, with exception of clypeal area, and striking swelling of seventh male body segment are characters not duplicated in other known genera of the family and, combined with the rather unusual gonopods, make its relationship with them impossible to determine at this time.

Description: Males with 19 segments, females with 20; body small, narrow, loosely jointed, its lateral keels little projecting but swollen and exceeded by pore tubercles on usual segments; entire body surface, above and below, strikingly pitted or reticulated, except for clypeal area, and with 4 more or less regular rows of erect setae across metazonites. Antennae short, crassate, and submoniliform. Segment 1 broadly suboval. Segment 2 much wider, deeply concave across front, the sides extending forward along posterior quarter of segment 1. Metazonites abruptly raised high above prozonites, crossed by 4 more or less regular rows of long erect setae. Pores borne on large subconic tubercles on upper surface of usual segments but close to, and exceeding, their outer margin. Last segment with apex short and scarcely deflexed. Males with sides of segment 7, below keels, much inflated and forming widest part of body. Gonopods held mostly within unusually large body opening, little visible in lateral view except for very long and slender terminal joints. Anterior legs without sexual modifications, but coxae of ninth male legs very widely separated.

Barathrodesmus inflatus Loomis, new species

Description: Males with 19 segments, females with 20. Body slender, loosely jointed, dorsum strongly arched, entire body surface, except smooth clypeal area, densely and sharply impressed with uniform tiny pits, giving a reticulated appearance. Vertex of head lacking a median furrow, but its central area with a large rounded concavity. Antennae short, thick, moniliform; joint 6 longest and thickest. Segment 1 suboval, narrower than head, with a shallow median concavity widening greatly on posterior half, surface either side considerably inflated; a row of 10-12 long erect setae near front margin, 2 submedian rows of about 6 setae each, and a similar row preceding back margin. Segment 2 much wider than first, its anterior margin deeply concave, lateral limits extending forward well in front of back margin of segment 1. Metazonites rising sharply high above strong posterior constriction of prozonites; dorsum crossed by 4 somewhat indefinite rows of long erect setae rising from tiny granules; keels scarcely projecting laterad, unusually thick, outer margin rounded, lacking front or back angles; pores opening from shining conic tubercles on upper surface of usual keels and projecting beyond outer margin. Last segment with apex short and weakly deflexed. Outer joint of legs long and slender. Segment 7 of males (Fig. 7) very wide and deeply emarginate in front, by far the widest part of body; sides below keels strikingly inflated; gonopodial opening very large and containing most of basal portion of gonopods (Fig. 8) and hiding them from lateral view, except projecting apical joint of each which is long, very slender, hyaline, and crossing its opposite counterpart. Male legs not modified.

Holotype male and over 100 males, females, and young, Whitfield Hall, 4200 ft, 1-I-73; male, 2 females, fragment, Blue Mt. Peak, 7400 ft, 27-XII-72; 8 males and females, Portland Gap, 5500 ft, 2-I-73; St. Thomas Parish; many specimens, 1 mi S Claremont, 26-XII-72; about 100 specimens, Mt. Diablo, 2100 ft, 28-XII-72; female, 1 young, Mosley Hall Cave, near Guy's Hall, 27-XII-72; St. Ann Parish.

RHINOCRICIDAE

Key *Eurhinocricus* Brölemann 1903:131

KEY TO JAMAICAN SPECIES OF *Eurhinocricus*

1. Size large, 55-60 mm long *gossei* (Pocock)
- 1'. Size small to large but not exceeding 55 mm 2
2. Segments completely dark in front of transverse sulcus, completely light behind it *mandevillei* (Pocock)
- 2'. Color pattern more complicated 3
3. Body 50-55 mm long, segments 54-56 *granulatus* new species
- 3'. Body not over 45 mm long; segments not over 50 4
4. Sides of gonopodial sternum undulated, apical half unusually wide *solitarius* (Pocock)
- 4'. Sides of gonopodial sternum concave, apical half narrowed 5
5. Lateral rim of segment 1 restricted or lacking *townsendi* (Pocock)
- 5'. Lateral rim of segment 1 more or less extensive 6

6. Segments without scobinae, gonopodial sternum broadly acutely angled at tip *valvatus* new species
- 6'. Scobinae present, gonopodial sternum rounded at tip or narrowly pointed 7
7. Border of segments above scobinae strongly bisinuate.....
..... *bisinuatus* new species
- 7'. Border of segments above scobinae straight..... 8
8. Size small, 17-22 mm long, segments 35-37 *sabulosus* (Pocock)
- 8'. Size larger and with more segments 9
9. Last segment rounded at apex, much exceeded by anal valves *heteroscopus* (Chamberlin)
- 9'. Last segment more or less rounded at apex, moderately or little exceeded by valves 10
10. Sides of distal half of gonopodial sternum parallel.....
..... *cingendus* (Loomis)
- 10'. Sides of distal half of gonopodial sternum concave 11
11. Eyes separated by little more than 2X diameter of one.....
..... *aequaliramus* new species
- 11'. Eyes separated by about 3X diameter of one..... 12
12. Segments not crossed by either transverse sulcus.....
..... *cockerelli* (Pocock)
- 12'. A transverse sulcus quite evident across dorsum of some segments *parvior* (Chamberlin)

Eurhinocricus aequaliramus Loomis, new species

Diagnosis: Possibly most closely related to *E. heteroscopus* (Chamberlin) on basis of size, number of segments, and his statement regarding posterior gonopods, but easily separated by longer last segment and less protruding valves.

Description: Females 38-41 mm long, 46-50 segments, males shorter and relatively more slender, 48 segments. Anterior part of forebelt and posterior part of hindbelt light, intervening area dark. Head impressed on posterior half with a pronounced sulcus; eyes separated by little more than 2X width of 1, composed of 26-30 ocelli in 5 rows; antennae short, not much exceeding middle of side of segment 1; mandibular stipes acutely toothed at lower anterior corner. Segment 1 broadly rounded each side, rim extending from lower corner of eye only to lower limit of side. Segment 2 definitely concave from lateral shoulder to base of legs; regular sulcus strong across dorsum on anterior segments, weakening to posterior third of body and thereafter little evident, if at all. Secondary sulcus weak but crossing most segments to near midbody, close to regular sulcus and near bottom of shallow transverse constriction behind which surface is more convex than in front. Lateral striae faint, not extending over half way to pores, even on anterior segments; general surface of segments dull. Pores small and shallowly set. Scobinae small and variable. Last segment broadly rounded at short apex which equals but does not exceed valves. Preanal scale broadly rounded at apex. Gonopods as shown in Fig. 9 and 10, inferior branch of posterior gonopod reaching almost to tip of main branch. Coxae of legs 3 and 4 strongly raised, those of 5-7 barely so; outer joint of third legs to those at midbody with inflated ventral pads.

Holotype male, another male, 5 females, Hardwar Gap, 8000 ft, St. Andrew Parish, 16-XII-72.

Eurhinocricus bisinuatus Loomis, new species

Diagnosis: Position of this species among other members of the genus is difficult to determine because of the unusually large scobinae, presence of marginal excavations in so small a species, and shape of sternum of anterior gonopods.

Description: Broken holotype male with 40 segments; other male 26 mm long, 2.5 mm wide, with 42 segments. First segment encircled by a dark marginal band joined along middorsum by another band with a light area either side; middorsum of other segments variably dark with an irregular light area extending to pore. Surface of body a little dulled, only slightly shining. Head with very short vertigial sulcus in front of segment 1. Antennae short, thick, not reaching beyond posterior margin of segment 1. Eye patches subcircular, separated by about 3X diameter of an eye; composed of 20-25 ocelli in 5 rows—5,5,5,3,2,-5,6,6,5,3, counting forward. Lower anterior corner of mandibulary stipes a right angle produced into a tiny projecting tooth. Segment 1 broadly, evenly rounded on sides, a narrow marginal rim from opposite lowest ocellus to lowest limit of side. Segment 2 with rounded shoulder each side, mesad of which surface is depressed; ventral anterior margin strongly elevated. Segments with a very shallow median constriction in which regular sulcus appears to pass directly through pore and across dorsum from about segment 5 or 6 to last quarter of body; secondary sulcus deeply impressed on sides and dorsum to segment 7 but diminishing rapidly on segments 8 and 9 and absent beyond. Pores quite large, opening in a depression followed by a sulcus reaching to near back margin of segments on anterior third of body. Very large adjacent scobinae on segments 8-13 (Fig. 11), pits broadly open in front and extending at a much lower level than striate areas to front segmental margin; posterior margin bisinuate above them. Lateral striae restricted, not extending beyond tip of legs. Last segment ending in a rather acute apex considerably exceeded by moderately inflated valves. Preanal scale subtriangular, apex quite broadly rounded. Gonopods shown in Fig. 12-13. Mesal corners of coxae of legs 3-5 only a little raised; outer joint of third legs to those near end of body with ventral pads. Front rim of segment 7, behind gonopods, thin and high at middle, evenly rounded from side to side and rolled back.

Holotype male, another male, Hardwar Gap, 8000 ft, St. Andrew Parish, 16-XII-72.

Eurhinocricus granulatus Loomis, new species

Diagnosis: Related to the lowland *E. gossei* (Pocock) but a little smaller and differing in the shape of the gonopods and apparently also in the granular front face of the 3 basal joints of male legs 3-7.

Description: Length 50-55 mm. Color light brown with anterior half of segments a little darker. Segments 54-56. Head with antennae reaching to, or slightly behind, posterior margin of segment 2; eyes separated by a little more than 3X diameter of an eye, composed of 5 rows containing 27-28 ocelli; median furrow present only on clypeus and usually for a short distance at back of vertex; mandibulary stipes acutely lobed at lower an-

terior corner. Segment 1 broadly rounded below, usually with a rim from lower corner of eye to lowest point of side. Segment 2 extending considerably below segment 1, ventrally flattened to slightly concave, lateral shoulder rather abruptly rounded. Anterior sulcus present only across segments 2-7 or 8, regular one well impressed only below large deep pores and lacking an adjacent lateral sulcus; transverse constriction very faint; surface of segments smooth and shining; lateral striations exceeding tips of legs only on a few anterior segments. Scobinae present. Last segment moderately rounded at apex, usually a little exceeded by valves; preanal scale broadly rounded at apex but slightly angled in 1 specimen. Gonopods especially wide, sternal plate considerably broader than long (Fig. 14), basal spine of posterior gonopod very slender and normally closely applied to concave face of main branch (Fig. 15). Male legs 3-7 with anterior surface of joints 1, 2, and half of 3 densely and finely granular; coxae of third legs mesally produced; corners of succeeding 4 pairs decreasing in size; distoventral corner of second joint of legs 3-7, and several following gonopods, prominent, almost lobed; ventral pads beneath outer joint from third legs to those near posterior end of body.

Holotype male, 5 others, female, and fragment, Hardwar Gap, 8000 ft, St. Andrew Parish, 16-XII-72.

Eurhinocricus townsendi (Pocock 1894:505)

Two males and female, Whitfield Hall, 4200 ft, St. Thomas Parish, 1-I-73, first specimens to be reported since original collection from "Jamaica". Pocock's short description is amplified somewhat hereafter.

Largest male 21 mm long with 43 segments. Color mostly dark with an irregular and somewhat lighter spot extending onto both mid and hind-belts on each side. Mandibulary stipes almost square at lower front corner which does not project. Rim of segment 1 short and faint to absent. Segment 2 with large, smooth, rounded lateral shoulder, ventral surface concave. Segments lacking a transverse constriction, dorsal surface evenly convex from front to back; regular sulcus faintly evident only below pores, no anterior sulcus. Pores large and conspicuous. Last segment noticeably exceeded by valves. Preanal scale rather broadly rounded at apex. Ventral striations nowhere extending as much as half way to pores. Rim of segment 7, behind gonopod, evenly rounded from side to side, vertical, not rolled back.

Eurhinocricus townsendi marginandus Loomis, new subspecies

Diagnosis: While the posterior gonopods appear no different from those of *townsendi*, minor differences of anterior gonopods and body characters enumerated below seem to justify subspecific recognition.

Description: Largest specimen, female, 30 mm long, 38 segments; male 21 mm long, 42 segments; color essentially as in *townsendi*. The 4 sense cones of antennae small, quite withdrawn into a tight conical cluster in end of short last joint. Mandibulary stipes with lower corner in front produced into a sharp protrusion, larger in male. Rim of segment 1 narrow, usually originating near lower corner of eye, sometimes reduced in length. Segment 2 with lateral shoulder as in *townsendi* but ventral surface almost flat. Anterior sulcus of segments nowhere evident, regular one usually finely

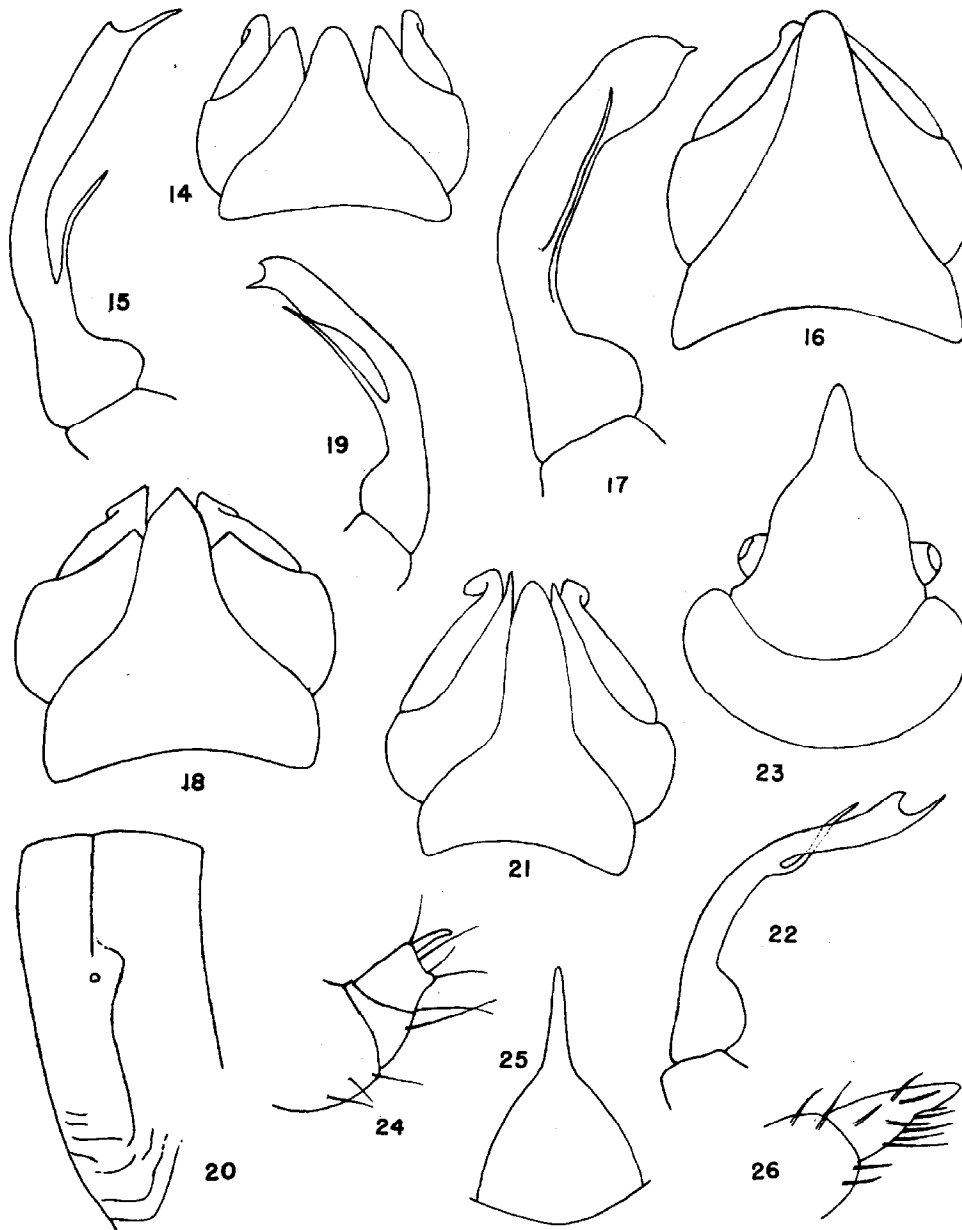


Fig. 14-26. Jamaican millipeds. 14-15, *Eurhinocricus granulatus* n. sp., 14—anterior gonopods, anterior view; 15—left posterior gonopod, lateral view; 16-17, *E. townsendi marginandus* n. subsp., 16—anterior gonopods, anterior view; 17—left posterior gonopod, mesal view; 18-19, *E. valvatus* n. sp., 18—anterior gonopods, anterior view; 19—right posterior gonopod, lateral view; 20-22, *Rhinocricus translocatus* n. sp., 20—right side of segment 6, lateral view; 21—anterior gonopods, anterior view; 22—right posterior gonopod, laterocaudal view. 23-24, *Siphonocybe crassirostrata* n. sp., 23—head, vertical view; 24—last joints of left anterior gonopod, lateral view. 25-26, *Siphonophora compacta* n. sp., 25—head in vertical view, edge of segment 1 somewhat end on; 26—end of fifth and all of sixth joints of anterior gonopods, lateral view.

impressed on lower sides to near or just above pores and passing behind them; transverse constriction evident near pores and below them but faint on dorsum; pores not especially large, most followed by a fine lateral sulcus of varying length. Lateral striations reaching almost to pores, at least as short rudiments. Last segment surpassing valves which are evenly convex. Preanal scale broadly rounded at apex, its margins slightly concave. Anterior gonopods (Fig. 16) with sides of sternum more deeply and uniformly concave than in *townsendi*, terminal fourth not parallel sided, apex less broadly rounded; posterior gonopods (Fig. 17) as in that species. Rim of segment 7, behind gonopods, raised and a little reflexed into a straight-sided, medianly-acute angle.

Holotype male 1 moult from maturity, 2 mature and 5 young females, Whitfield Hall, 4200 ft, St. Thomas Parish, 1-I-73.

Eurhinocricus valvatus Loomis, new species

Diagnosis: The close-set eyes, long antennae, and numerous segments in relation to its size, and angled apex of gonopod sternum, form a combination of characters that make it difficult to associate the species with any others.

Description: Length 27 mm, width 2.7 mm; 49 segments. In alcohol the color is essentially dark, but an inconspicuous light spot on either side of dorsum of each segment; surface of body moderately shining. Vertex of head faintly sulcated on posterior half. Eyes separated by little more than 2X diameter of an eye, composed of 6 rows of ocelli—6,6,5,5,3,2, counting forward. Mandibulary stipes with lower anterior corner only faintly produced. Antennae reaching to back margin of segment 2. Segment 1 very broadly rounded below, a very fine margining rim from lower edge of eye to just around lower limit of side. Segment 2 with only a slightly rounded lateral shoulder, ventral surface flat. Anterior or supplementary sulcus strongly impressed across dorsum of most segments and with 1 or 2 adjacent small striations near or on dorsum of some segments. Lateral striations strong, extending to or above level of pores in front of them on all but a few segments at ends of body. Transverse constriction lacking, surface in its usual location convex. No scobinae present. Pores large and strongly impressed. Last segment rounded at apex, greatly exceeded by valves which are somewhat laterally compressed. Preanal scale about 2X as wide as long, ending in an acute angle. Gonopods shown in Fig. 18 and 19. Coxae of legs 3-6 only moderately lobed at mesal corner and decreasing in size from front to back. Last joint of legs with ventral pad from 3rd pair to posterior fifth of body. Anterior margin of segment 7, behind gonopods, high, thin, and evenly concave in front from side to side.

Holotype male, Blue Mt. Peak, St. Thomas Parish, 1-I-73.

Rhinocricus Karsch 1881:68

KEY TO JAMAICAN SPECIES OF *Rhinocricus*

1. Size large, up to 140 mm long, segments about 53, clypeus very deeply excavated..... *excisus* Karsch
- 1'. Body not over 47 mm long, less than 50 segments, clypeus normally excavated..... 2

2. Segments with a secondary sulcus in front of regular one.....
 *bruesi* Chamberlin³
- 2'. Segments without a secondary sulcus 3
3. Scobinae present, margin of segment above them bisinuate.....
 *newtonianus* Chamberlin
- 3'. Scobinae lacking, posterior margin of all segments straight....
 *translocatus* new species

Rhinocricus excisus Karsch 1881:73

Female, 1 mi S Claremont, St. Ann Parish, 26-XII-72; female, 5 mi N Alberttown, Trelawny Parish, 30-XII-72. While the clypeus in both specimens is unusually deeply excised, it does not approach "the insertion of the antennae" as Pocock 1894:491 stated.

Rhinocricus translocatus Loomis, new species

Diagnosis: A curious species in that regular sulcus is in normal position on anterior segments, and not preceded by secondary one; but from mid-body segments backward, it is progressively moved forward to far in front of pores, a condition I do not know in any other species.

Description: Length 27-36 mm with 36-43 segments; color mostly dark with back half of segments somewhat lighter, posterior margin of segments colorless, translucent, much of head and antennae light or colorless. Antennae quite slender, reaching to back margin of segment 2; eyes separated by a little more than diameter of one, composed of 19-25 ocelli usually arranged in only 4 rows; vertigial furrow generally well impressed on clypeus and vertex and sometimes more or less continuous between antennae. Segment 1 broadly rounded on sides with a pronounced marginal rim on rounded portion but not reaching eye; some specimens with short but distinct lateral sulcus. Segment 2 with lateral shoulders broadly rounded, ventral surface flat to a little concave. Segment 2 to penultimate segment with a strong, deep sulcus in usual position on anterior half of body but thereafter gradually removed in front of pores and on caudal segments far from them. Pores large and impressed, followed by a strong lateral sulcus in some specimens. Lateral striations deeply impressed throughout body but nowhere extending more than halfway to pores. Scobinae lacking. Last segment broadly rounded on short apex which does not exceed valves. Preanal scale broadly rounded to subtruncate at apex, its side margins concave. Gonopods (Fig. 21) with coxal endites long and slender, their tips at least equaling tip of sternum; posterior gonopods unusually slender (Fig. 22), the spine short and rising from near their middle. Coxae of legs 3-7 with mesal corners rounded and little produced, these legs and a few behind gonopods with small pad beneath outer joint. Anterior margin of segment 7, behind gonopods, with a straight oblique ridge each side converging to a narrow deep median depression.

Holotype male, 4 other males, Portland Gap, 5500 ft, St. Thomas Parish, 17-XII-72.

³I have never seen this species and wonder why Hoffman (1955) excluded it from enumeration of the species of *Eurhinocricus*. It has not been reported since the original description.

SIPHONOPHORIDAE

Siphonocybe Pocock 1903:50KEY TO SPECIES OF *Siphonocybe*

1. Body broad, about 9X as long as wide; living color buff with dark median stripe, head and antennae white *harti* (Pocock)
- 1'. Body at least 10-11X as long as wide; color usually lighter, without dark stripe, head and antennae color of body 2
2. Segment 1 very wide; lateral keels almost horizontal, scarcely produced caudad; beak half the length of entire head *laticollis* Loomis
- 2'. Segment 1 much narrower; lateral keels moderately to greatly elevated; beak less than half as long as entire head 3
3. Beak $\frac{2}{5}$ length of entire head; lateral keels rising only slightly and not greatly produced backward on caudal segments *pilosa* Loomis
- 3'. Beak a third or less length of head; keels strongly elevated, greatly protruding behind posterior margin of caudal segments 4
4. Pores opening below apex of keels; dorsal setae of last segments very much longer than on other segments; beak slender *alba* Loomis
- 4'. Pores opening at apex of keels; setae of last segments little longer than those on other segments; beak thick *crassirostrata* new species

Siphonocybe crassirostrata Loomis, new species

Diagnosis: Strong lateral keels and shape of anterior gonopods indicate closest relationship with *C. alba* Loomis, but the species may be separated by using last couplet of key.

Description: A slender species, holotype male largest, 11 mm long, 0.7 mm wide, with 56 segments; 2 largest females with 43 and 45 segments. Color of most specimens light, but one apparently darkened by preservative. Head (Fig. 23) campanulate, beak stout, not deflexed, short, $\frac{2}{5}$ as long as rest of head; antennae inserted on sides of head; short, compact, joints 4-6 of about equal diameter, only about $\frac{2}{3}$ of joint exceeding tip of beak. Segment 1 widest near posterior angles; anterior margin almost straight across in vertical view; with dorsal arch; lateral margin rather short, strongly and evenly rounded. Sides of segments 2-4 little inflated, less so than those thereafter. From segment 5 caudad strong lateral keels are evident as large conic tubercles directed obliquely upward and backward from sides of dorsum but not or little exceeding caudal margin on anterior segments and becoming projecting on those behind, large pores at apex of tubercles. Segments strongly convex in both directions, beset with erect setae of moderate length and density, those of last 2 segments and valves slightly longer. Anterior gonopods with outer joint broad and truncate near apex which is composed of a slender, somewhat curved process (Fig. 24).

Holotype male, 3 others, 3 females, Mt. Diablo, 2500 ft, S Moneague, 28-XII-72; 2 young females, 1 mi S Claremont, 26-XII-72, St. Ann Parish.

Siphonophora Brandt 1837:179
Siphonophora compacta Loomis, new species

Diagnosis: Shorter, with fewer segments, and much shorter antennae than only other Jamaican species, *S. robusta* Chamberlin 1918, known only from original collection in Kingston.

Description: Body stout, very blunt at ends, almost parallel sided between segment 4 and penultimate one. Male 5 mm long, 0.5 mm wide, 32 segments; female 9 mm long, 0.7 mm wide, 44 segments; color white. Head (Fig. 25) conical; beak slender, not deflexed, its tip reaching only to base of sixth antennal joint; antennae issuing from large openings directed obliquely downward and ectocephalad on sides of head. Antennae short, heavy, and compact, base of joints little constricted, their sides nearly parallel. Segment 1 with anterior margin straight but showing curvature of dorsum in Fig. 25, lateral edge each side elongate, forming almost a straight line. Dorsum of segments strongly convex from side to side but nearly flat lengthwise; dorsal setae short, quite dense, flexed obliquely backward, those of last 2 segments slightly longer, those of valves considerably longer. Last joint of anterior gonopods ending in a nearly straight, finger-like projection shown in Fig. 26.

Holotype male and female, Mt. Diablo, S Moneague, St. Ann Parish, 28-XII-72.

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BRAZIL ENTOMOLOGY MEETING

The third meeting of the "Sociedade Entomologica do Brasil" will be held 1-6 February 1976 at Maceio, Alagoas. This meeting will be known as the "III Congresso Brasileiro de Entomologia", following the tradition of former reunions.

All phases of entomological research will be discussed at this meeting; however, major emphasis is usually given to applied and basic entomology concerned with tropical and subtropical crops grown in Brazil.

Most of the papers will be given in Portuguese. This should not be an obstacle if you are interested in the entomological problems of Brazil. Many of the members speak both English and Spanish and there should be little problem in the exchange of ideas.

Deadlines for papers to be given at the Congress are: 1) titles of papers by 15 Sept. 1975; 2) summary of papers by 15 Oct. 1975; 3) paper itself by 15 Nov. 1975.

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