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## ASSASSIN BUGS OF THE GENUS *GHILIANELLA* IN THE AMERICAS (HEMIPTERA, REDUVIIDAE, EMESINAE)

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This paper brings together and summarizes available data on the genus *Ghilianella* in the Americas. Descriptions of the genus and subgenera are given, as well as a checklist of the 88 known species. The keys differentiate the 80 species of which specimens were available for study; they are expansions of those published in 1925 by McAtee and Malloch (the fine work of these authors has aided me greatly in the completion of this paper). Among the species treated in the following pages, 15 are described as new, 1 is redescribed, and the "hypotypes" of 7 others are described. For 32 previously described species, notes are given on specimens examined, and the paper closes with notes on the 8 species not included in the keys. In the illustrations (see pp. 407-421) I have tried to keep together similar structures from the various species so that a comparison of them could be made.

In this paper, the term "hypotype" is used to refer to a specimen herein described and belonging to the opposite sex of the corresponding holotype described by another author. Additional specimens of the hypotype are called "parahypotypes." Thus, I have followed the terminology suggested by Frizzell (1933).

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### **Genus *Ghilianella* Spinola**

*Ghilianella* Spinola, 1850, p. 102.

The following descriptions are abstracted from McAtee and Malloch (1925):

Genus *Ghilianella* Spinola: foretarsi without distinguishable segmentation under the highest power (even when cleared), consisting of but one heavily chitinated segment, with an unequal pair of claws, a single claw, or without distinct claws. Foretarsus with two longitudinal series of angularly deflected spines, which under high power appear like elongate knifelike teeth on its ventral surface. Head with a more or less pronounced spine or tubercle between bases of antenna, labrum closely adherent to base of rostrum, not projecting spine-like. Adults never winged. Head and thorax more or less granulate, the former with a profound constriction anterior of eyes. Mesothorax and metathorax each tricarinate or with a median carina and lateral rows of tubercles above and usually unicarinate below.

Abdomen more or less carinate or keeled below. Front tibia with a patch of short pale golden hairs on inner side apically and a tuft of longer ones at the apex inferiorly. Middle and hind legs and antenna much longer than body. When the legs have pale markings, they are almost invariably as follows: middle and hind femora with two postmedian bands and a subapical spot, and tibiae with a sub-basal spot; in the pale species, dark markings tend to appear at these same places; frontal and femoral spines mostly pale.

Subgenus *Ghilianella* Spinola, 1850: claws of foretarsi two, the inner short, closely applied to the base of outer.

Subgenus *Ploeodonyx* McAtee and Malloch, 1925: claw of foretarsus single; claw separated from tarsus by a suture; forefemur rather slender as a whole, but notably thicker near base than at first strong spine.

Subgenus *Lissonyx* McAtee and Malloch, 1925: claw of foretarsus single; claw entirely fused with tarsus; forefemur rather stout, little if any thicker at base than at first strong spine.

Table I, below, is the checklist of the known species of *Ghilianella* in the Americas. Included are 88 species of which the males of 56 and the females of 60 are known. The origin of the holotype is also given. The keys to both sexes follow the table.

TABLE 1.—Checklist of species of *Ghilianella*, origin of the holotype, and the sexes known

Species <sup>1</sup>	Known sexes		Origin of holotype
	Male	Female	
<i>aliena</i> McAtee and Malloch, 1925		x	Venezuela
<i>alterata</i> McAtee and Malloch, 1925		x	Venezuela
<i>alveola</i> McAtee and Malloch, 1925		x	Grenada
<i>amicula</i> ( <i>Ploeodonyx</i> ) McAtee and Malloch, 1925		x	French Guiana
<i>analís</i> (Dohrn), 1860	x		Dutch Guiana
<i>andersoni</i> Brindley, 1931	x		British Guiana
<i>angulata</i> ( <i>Lissonyx</i> ) (Uhler), 1893	x	x	St. Vincent
<i>annectens</i> McAtee and Malloch, 1925		x	Panama
<i>annulata</i> (Dohrn), 1863	x		South America
<i>apiculata</i> McAtee and Malloch, 1925	x		Dominican Republic
<i>approximata</i> McAtee and Malloch, 1925	x	x	Bolivia
<i>aracataca</i> McAtee and Malloch, 1925	x	x	Colombia
<i>assanutrix</i> Bergroth, 1906	x	x	Venezuela
<i>atabapo</i> Maldonado, 1953		x	Venezuela
<i>atriclava</i> Bergroth, 1911	x		French Guiana
<i>bethei</i> Dohrn, 1863		x	Colombia
<i>bicaudata</i> McAtee and Malloch, 1925	x	x	Cuba
<i>borincana</i> , new species	x		Puerto Rico
<i>brasiliensis</i> (Dohrn), 1860		x	Brazil
<i>brevicornis</i> Brindley, 1931	x		British Guiana

See footnote at end of table.

TABLE 1.—Checklist of species of *Ghilianella*, origin of the holotype, and the sexes known—Continued

Species <sup>1</sup>	Known sexes		Origin of holotype
	Male	Female	
<i>bulbifera</i> Champion, 1898	x		Panama
<i>calva</i> , new species		x	Colombia
<i>calymmata</i> , new species		x	Colombia
<i>campulligaster</i> , new species	x		Brazil
<i>clavellata</i> , new species		x	British Guiana
<i>claviventris</i> Bergroth, 1906	x		Venezuela
<i>colona</i> McAtee and Malloch, 1925	x		Colombia
<i>cuneata</i> McAtee and Malloch, 1925		x	Panama
<i>fenestrata</i> , new species	x		Costa Rica
<i>filiventris</i> Spinola, 1850	x	x	Brazil
<i>galapagensis</i> Heidemann, 1901		x	Galapagos
<i>gerstaeckeri</i> (Dohrn), 1860		x	Haiti
<i>gibberosa</i> Piza, Jr. (see Toledo Piza), 1939	x		Brazil
<i>gibbiventris</i> Champion, 1898	x	x	Panama
<i>glabrata</i> ( <i>Ploeodonyx</i> ) McAtee and Malloch, 1925		x	British Guiana
<i>gladiator</i> McAtee and Malloch, 1925	x	x	Trinidad
<i>globifera</i> Bergroth, 1906	x	x	Venezuela
<i>globulata</i> McAtee and Malloch, 1925	x	x	Guatemala
<i>granulata</i> Champion, 1898	?	?	British Honduras
<i>grapta</i> , new species	x	x	Venezuela
<i>haitiana</i> , new species	x	x	Haiti
<i>ica</i> McAtee and Malloch, 1925	x		Peru
<i>ignorata</i> Dohrn, 1860	x		Venezuela
<i>imbecilla</i> (Dohrn), 1860	?	?	Peru
<i>insidiatrix</i> ( <i>Ploeodonyx</i> ) Bergroth, 1922	x	x	French Guiana
<i>lissa</i> Maldonado, 1953	x		Venezuela
<i>longula</i> McAtee and Malloch, 1925	x	x	Cuba
<i>maculata</i> McAtee and Malloch, 1925	x		Cuba
<i>mariae</i> Wygodzinsky, 1953	x	x	Peru
<i>megharpacta</i> , new species	x		Peru
<i>minimula</i> McAtee and Malloch, 1925	x	x	Brazil
<i>mirabilis</i> McAtee and Malloch, 1925	x	x	Brazil
<i>monense</i> Maldonado, 1953	x	x	Mona Island
<i>nanna</i> , new species		x	Argentina
<i>nebulosa</i> (Dohrn), 1860	x		Bolivia
<i>neivai</i> Piza, Jr. (see Toledo Piza), 1939	x	x	Brazil
<i>obesa</i> , new species		x	Costa Rica
<i>pachitea</i> McAtee and Malloch, 1925	x		Peru
<i>panamana</i> , new species		x	Panama
<i>pascoei</i> Bergroth, 1906	x	x	Venezuela
<i>patruela</i> McAtee and Malloch, 1925		x	Costa Rica
<i>pendula</i> McAtee and Malloch, 1925		x	Panama
<i>perigynium</i> McAtee and Malloch, 1925	x	x	Peru
<i>persimilis</i> McAtee and Malloch, 1925	x	x	Cuba
<i>personata</i> McAtee and Malloch, 1925		x	Brazil
<i>peruviana</i> McAtee and Malloch, 1925		x	Peru

See footnote at end of table.

TABLE 1.—*Checklist of species of Ghilianella, origin of the holotype, and the sexes known—Continued*

Species <sup>1</sup>	Known sexes		Origin of holotype
	Male	Female	
<i>perversa</i> McAtee and Malloch, 1925		x	Colombia
<i>productilis</i> Barber, 1914	x	x	Florida
<i>puncticauda</i> Maldonado, 1953	x	x	Venezuela
<i>recondita</i> McAtee and Malloch, 1925	x	x	Colombia
<i>rhabdita</i> , new species	x		Brazil
<i>semipallida</i> Bergroth, 1906		x	Venezuela
<i>servillei</i> (Spinola), 1837	x	x	Brazil
<i>signata</i> McAtee and Malloch, 1925	x	x	Colombia
<i>signoreti</i> (Dohrn), 1860	x	x	Jamaica
<i>similata</i> McAtee and Malloch, 1925		x	Venezuela
<i>simillima</i> McAtee and Malloch, 1925	x		Cuba
<i>spinata</i> , new species	x	x	Jamaica
<i>spinicaudata</i> , new species		x	Jamaica
<i>sipinolae</i> Dohrn, 1860			Brazil
<i>stipitata</i> McAtee and Malloch, 1925		x	Venezuela
<i>strigata</i> McAtee and Malloch, 1925	x		Costa Rica
<i>subglobulata</i> McAtee and Malloch, 1925	x	x	Venezuela
<i>succincta</i> McAtee and Malloch, 1925		x	Brazil
<i>sulcata</i> Maldonado, 1953	x		Venezuela
<i>truncata</i> McAtee and Malloch, 1925		x	Panama
<i>uncinata</i> McAtee and Malloch, 1925	x		Panama
<i>varicornis</i> (Dohrn), 1860	x	x	Puerto Rico

<sup>1</sup> Unless otherwise noted, all species are of the subgenus *Ghilianella*.

## Keys to the Species of Ghilianella

### MALES

- 1 Mesothorax distinctly longer than prothorax; shape of abdomen various . . . . . 2
- Mesothorax little if any longer than prothorax; abdomen usually gradually widening from base . . . . . 29
- 2(1) Abdomen with an abrupt bulbous swelling behind middle . . . . 3
- Abdomen without bulbous swelling . . . . . 22
- 3(2) Interantennal spine well developed, acute; head and prothorax usually distinctly granulose; claspers of hypopygium with upper and lower margins in most species without a rounded notch above or below; metathorax usually much attenuated anteriorly . 4
- Interantennal spine not developed, a mere wart, blunt; head and prothorax but little granulose; claspers of hypopygium long, obtriangular with at least the upper margin notched . . . . . 19
- 4(3) Hypopygium with a large apical hooklike process which has an emargination or concavity on each side of hook, not entirely filled by claspers . . . . . 17
- Hypopygium with a small process visible only under high magnification; the upper margin of hypopygium but little concave; the claspers entirely filling the space between the margin and the process . . . . . 5

- 5(4) Fifth tergum bearing a pair of strongly divergent long conical horns . . . . . 6  
Fifth tergum without such horns . . . . . 7
- 6(5) Horns more vertical, width between tips of horns 5.0 mm . . **mirabilis**  
Horns more flattened, width between tips of horns 2.5 mm. **brevicornis**
- 7(5) Seventh tergum short, sixth entirely incorporated into the bulbosity, which thus appears almost terminal . . . . . 8  
Seventh tergum long, sixth not wholly incorporated into bulbosity, which is distinctly subterminal . . . . . 9
- 8(7) Sixth tergum more than half as long as fifth, provided with a smaller elevation similar in shape to that of fifth . . . . . **filiventris**  
Sixth tergum less than half as long as fifth, without elevations. **atriclava**
- 9(7) Widest part of bulbosity in fourth segment; top of abdomen with two distinct longitudinal lines of gray hairs (fig. 24) . . . . **globifera**  
Widest part of bulbosity in fifth segment . . . . . 10
- 10(9) Fifth tergum lacking subangulate ridged elevations; sixth trisinate posteriorly . . . . . **claviventris**  
Fifth tergum with subangulate ridged elevations; sixth slightly convex posteriorly . . . . . 11
- 11(10) Elevations of fifth tergum distinctly inside lateral margins of disk (fig. 45) . . . . . **approximata**  
Elevations of fifth tergum on lateral margins of disk, the margins passing over as carinae . . . . . 12
- 12(11) Elevations of fifth tergum pointed, nearer to posterior margin; clasper long and slender, slightly upcurved apically; abdomen not spotted. 13  
Elevations of fifth tergum more rounded or squared, at or close to middle; clasper of different shape . . . . . 14
- 13(12) Sixth segment more involved in bulbosity; seventh tergum apiculate and surpassing claspers . . . . . **recondita**  
Sixth segment less involved in bulbosity; seventh tergum not apiculate and not surpassing claspers . . . . . **bulbifera**
- 14(12) Seventh tergum surpassing hypopygium by more than length of claspers; abdomen unspotted . . . . . **puncticauda**  
Seventh tergum slightly or not surpassing apex of hypopygium, spotted . . . . . 15
- 15(14) Abdomen with 12 large pilose spots; four of these on sixth segment (figs. 16, 100) . . . . . **signata**  
Abdomen with 10 or 14 pilose spots, none of these on sixth segment . . . . . 16
- 16(15) With a total of 14 spots on abdomen; fifth sternum with two more extensive spots near anterior margin and four smaller on apical margin (figs. 17, 102) . . . . . **grapta**  
With a total of 10 spots on abdomen; fifth sternum with only two patches on posterior margin . . . . . **ignorata**
- 17(4) Seventh tergum without longitudinal carina, tip of tergum projecting little if any beyond apex of hypopygium; apical hook of latter much curved at base standing well clear of sternum so that it is usually visible as a hook to the unaided eye . . . . . **uncinata**

- Seventh tergum with a longitudinal carina on apical half, tip of tergum projecting well beyond apex of hypopygium; apical central hook of latter relatively small, not much curved at base and not standing well clear of the sternum at base so that it is only visible as a hook under a moderate magnification . . . . . 18
- 18(17) Sixth tergum not longer than wide at base (fig. 19) . . . **subglobulata**  
Sixth tergum distinctly longer than wide at base . . . . **globulata**
- 19(3) Prothorax with two long spines above near middle (fig. 85) . . **spinata**  
Prothorax without such spines . . . . . 20
- 20(19) Upper margin of hypopygium with a large apical process, standing clear from base (fig. 25) . . . . . **fenestrata**  
Upper margin of hypopygium with a very small hidden apical process . . . . . 21
- 21(20) Claspers each with a deep excavation on upper margin before apex, the lower margin entire; fifth sternum with regular microscopic striae which run from base to apex and are slightly outwardly directed . . . . . **strigata**  
Claspers each with a deep rounded excavation on upper margin before apex, and a deep incision about opposite on lower margin (fig. 27); fifth sternum lacking regular striae, granular, the granulations being partially grouped in irregular transverse rows . . . **patruela**
- 22(2) Abdomen nearly as wide at hypopygium as at any point proximad to it . . . . . 23  
Abdomen notably widest at third or fourth segment; seventh tergum remarkably elongated and slender, projecting beyond apex of hypopygium by at least the length of the latter . . . . . 28
- 23(22) Hypopygium almost annular, the terminal hook large, flanked each side by a space, which is not filled by the broadly triangular claspers; seventh tergum not especially narrowed subapically, apex a strong process projecting well beyond hypopygium . . . **apiculata**  
Hypopygium more elongate, hook small, seventh tergum different . . 24
- 24(23) Hypopygium scarcely inflated and but little deeper than abdomen . . 25  
Hypopygium somewhat inflated, notably thicker vertically than adjacent part of abdomen . . . . . 27
- 25(24) Apical process of hypopygium exposed, short, vertical (fig. 23).  
**borincana**  
Apical process of hypopygium if developed bent cephalad and hidden by claspers . . . . . 26
- 26(25) Claspers oblong, almost truncate apically, slightly beveled off at inferior angle . . . . . **ica**  
Claspers broader basally, rather pointed apically, superior angle sloped off with a long bevel . . . . . **pachitea**
- 27(24) Seventh tergum longer, much narrowed and slightly transversely corrugated subapically, the apex pointed and slightly keeled (figs. 5, 30) . . . . . **aracataca**  
Seventh tergum shorter, but little narrowed and faintly transversely wrinkled subapically, the apex triangular, bluntly pointed (fig. 20) . . . . . **colona**
- 28(22) Abdomen widest at fourth segment, each tergum with a pair of small round spots of pale yellow pile on hind margin; spiracles yellow . . . . . **assanutrix**  
Abdomen widest at fifth segment, terga lacking pilose spots; spiracles blackish . . . . . **gladiator**

- 29(1) Abdomen with bulbous swelling, clavate, or decidedly widest at fourth, fifth, or sixth segment . . . . . 30
- Abdomen parallel sided, if some segment wider very slightly so . . . . . 33
- 30(29) Abdomen with subapical bulbosity; hypopygium with large apical process (figs. 21, 46) . . . . . **gibbiventris**
- Abdomen clavate or of different shape; apical process of hypopygium small . . . . . 31
- 31(30) A spinelike process above behind each eye; seventh tergum triangular; eighth sternum partially hidden by seventh . . . . . **mariae**
- Without such spinelike processes . . . . . 32
- 32(31) Abdomen widest across apex of fourth segment . . . . . **andersoni**
- Abdomen widest across apex of fifth segment . . . . . **angulata**
- 33(29) Apical process of hypopygium hooked and visible under subtriangular claspers, margin of hypopygium deeply concave above before apex (figs. 26, 38) . . . . . **neivai**
- Hypopygium on lateral aspect different . . . . . 34
- 34(33) Apex of upper margin of hypopygium with long tapering process mostly hidden by broad rectangular claspers; hypopygium almost at right angle to rest of abdomen (fig. 13) . . . . . **campulligaster**
- Hypopygium different, in line with rest of abdomen or slightly bent upward . . . . . 35
- 35(34) Apical angles of abdominal terga 2 to 6 produced laterally . . . . . 36
- Apical angles of abdominal terga 2 to 6 not produced laterally . . . . . 38
- 36(35) Dense patches of golden short hairs on several places, very conspicuous on base of fourth, fifth, and sixth segments; forefemur thickened on basal half of the part basad of first ventral spine (fig. 74).  
**insidiatrix**
- Without dense patches of golden hairs, forefemur gradually thickened to first ventral spine . . . . . 37
- 37(36) Head and thorax densely granulate; hind margin of sixth tergum with backward sloping tubercle; 12 mm. long (fig. 1) . . . . . **haitiana**
- Head and thorax not granulate; sixth tergum without such tubercle; 15 mm. long . . . . . **lissa**
- 38(35) Hind margin of sixth sternum almost straight; head and thorax copiously granulate; seventh tergum triangular apically, not keeled, extending little if any beyond hypopygium; upper margin of hypopygium convex . . . . . **pascoeii**
- Hind margin of sixth sternum with a broad central rounded concavity and smaller lateral ones, the sternum longest at a point between the lateral margin and median line or with a different set of characters . . . . . 39
- 39(38) Pronotum on hind margin with two short spines set on round elevations; middle and hind femora with raised bumps; sparsely granulose; overall body length 11.3 mm. . . . . **nebulosa**
- Without spines on apex of pronotum and with other set of characters . . . . . 40
- 40(39) Narrowed portion of seventh tergum distinctly longer than terminal expanded part . . . . . **persimilis**
- Narrowed portion of seventh tergum distinctly shorter than terminal expanded part if narrowed portion is present . . . . . 41
- 41(40) Head and thorax conspicuously granulate . . . . . 42
- Head and thorax not granulate or very sparsely so . . . . . 45

- 42(41) Claspers very large, subtriangular; frontal spine poorly developed; apical process of hypopygium large (fig. 4) . . . . . **megharpacta**  
 Claspers small, oblong; frontal spine developed; apical process of hypopygium small . . . . . 43
- 43(42) Short species 14 to 17 mm. long . . . . . 44  
 Long species over 23 mm. long (fig. 6) . . . . . **signoreti**
- 44(43) Head with a pair of divergent pointed tubercles just behind transverse sulcus; eighth sternum very short, nearly hidden by seventh; 15–17 mm. long . . . . . **minimula**  
 Head without such tubercles; eighth sternum long, nearly half as long as seventh; 14 mm. long . . . . . **rhabdita**
- 45(41) Eighth sternum with sides more or less concealed . . . . . 46  
 Eighth sternum visible on its entire width, the spiracle moderately pedunculate . . . . . 47
- 46(45) Clasper with longitudinal furrow on upper margin . . . . . **sulcata**  
 Clasper without such furrow (fig. 44) . . . . . **maculata**
- 47(45) Abdomen nearly cylindrical; clasper very broadly triangular, width at apex equaling length (fig. 8) . . . . . **personata**  
 Abdomen otherwise; claspers elongate not triangular . . . . . 48
- 48(47) Seventh tergum without constriction, apex moderately pointed and not surpassing claspers; first tergum with well-developed conical elevation; length 24 mm. (fig. 60) . . . . . **gibberosa**  
 Seventh tergum of different shape; first tergum without conical elevation . . . . . 49
- 49(48) Apical process of hypopygium short, exposed, vertical, and with an apical U-shaped notch (fig. 42) . . . . . **varicornis**  
 Apical process of hypopygium bent cephalad, hidden by claspers or of different shape . . . . . 50
- 50(49) Claspers wide subbasally, much narrowed apically . . . . . 51  
 Claspers of nearly same width throughout their length, rectangular or trapezoidal on lateral aspect . . . . . 52
- 51(50) Seventh tergum with shallow lateral constriction; 25 mm. long. **simillima**  
 Seventh tergum without constriction; 29 mm. long . . . . . **longula**
- 52(50) Short species, 18 mm. long; seventh tergum surpassing hypopygium by a clasper length; yellowish brown (fig. 9). . . . . **bicaudata**  
 Longer species, over 24 mm. long; seventh tergum slightly surpassing hypopygium; reddish brown or black . . . . . 53
- 53(52) Claspers oblong; reddish brown and mottled with fuscous; apical process of hypopygium developed, tapering (fig. 22). **productilis**  
 Clasper trapezoidal; abdominal segments black and banded basally with gray; apical process of hypopygium undeveloped. **monenes**

## FEMALES

- 1 Mesothorax on dorsal aspect longer than prothorax . . . . . 2  
 Mesothorax not longer than prothorax. . . . . 26
- 2(1) Abdomen with a bulbous swelling beyond middle and prominent lateral elevations on either fifth or sixth tergum . . . . . 3  
 Abdomen without bulbous swelling or lateral elevations on fifth or sixth tergum . . . . . 18
- 3(2) Fourth tergum the widest (fig. 87). . . . . **globifera**  
 Fifth or sixth tergum the widest. . . . . 4

- 4(3) Fifth tergum the widest, sides before hind margin prominently elevated usually standing above connexivum. . . . . 5  
 Sixth tergum about as wide as or wider than fifth, bearing a large median tubercle. . . . . 17
- 5(4) Sixth tergum with a prominent median falcate tubercle on its hind margin (fig. 97). . . . . **bethei**  
 Sixth tergum without large median tubercle, though fifth or sixth may be more or less elevated at middle of hind margin. . . . . 6
- 6(5) Fifth tergum with a pair of divergent, long conical horns, each nearly equal in length to width of tergum . . . . . **mirabilis**  
 Fifth tergum without such horns . . . . . 7
- 7(6) With long spines, one on each side, on: head behind eyes, middle of prothorax, mesothorax, and metathorax; other long spines on abdomen (fig. 69). . . . . **spinata**  
 Without such spines. . . . . 8
- 8(7) Elevations of fifth tergum distinctly inside lateral margin of disk. . . . . 9  
 Elevations of fifth tergum on lateral margins of disk. . . . . 10
- 9(8) Seventh tergum broader than long (fig. 107) . . . . . **clavellata**  
 Seventh tergum longer than broad (fig. 99) . . . . . **approximata**
- 10(8) Abdomen with one or more pairs of large pale pilose spots on dorsum and venter . . . . . 11  
 Abdomen without such pale pilose spots . . . . . 12
- 11(10) Yellow spots extensive; with spots on sixth segment. . . . . **signata**  
 Yellow spots small; without spots on sixth segment . . . . . **grapta**
- 12(10) Eighth tergum much shorter than wide. . . . . 13  
 Eighth tergum as long as or longer than wide. . . . . 15
- 13(12) Posterior angles of seventh tergum produced distinctly beyond middle of hind margin which is merely convex and not at all tuberculate; ninth tergum with lateral and shorter median ridges (figs. 109, 125).  
**subglobulata**  
 Posterior angles of seventh tergum produced no farther than median convexity of hind margin. . . . . 14
- 14(13) Hing margin of seventh tergum tuberculate; eighth nearly semicircular; ninth tergum with lateral margin elevated apically and with long median ridge (figs. 98, 136) . . . . . **globulata**  
 Hind margin of seventh tergum not tuberculate; eighth trapezoidal; median elevation of ninth anchor shaped, the arms passing under lateral elevations (fig. 127) . . . . . **puncticauda**
- 15(12) Posterior lateral angles of seventh tergum distinctly produced beyond middle of hind margin which is not tuberculate (figs. 96, 137).  
**gladiator**  
 Posterior lateral angles of seventh tergum produced no farther than median convexity of hind margin which is slightly tuberculate. . . . . 16
- 16(15) Seventh sternum about twice as long on median line as sixth, with a broad convex process apically which is slightly emarginate medianly.  
**perigynium**  
 Seventh sternum only a third longer than sixth, somewhat angulate apically . . . . . **recondita**
- 17(4) Fifth tergum about equal in length to its width at hind margin (fig. 49). . . . . **pendula**  
 Fifth tergum about twice as long as its width at hind margin (fig. 57).  
**cuneata**

- 18(2) Eighth and ninth terga each with a prominent median longitudinal ridge; seventh sternum at least one and one-half times as long as sixth on median line, the latter with a very deep median concavity on hind margin (figs. 62, 106, 134) . . . . . **aracataca**  
With a different set of characters . . . . . 19
- 19(18) Seventh tergum with posterior angles produced as divergent acute processes; other terga ornamented on their hind margins with a pair of spots of golden pubescence; abdomen boat shaped (fig. 118).  
**assanutrix**  
Posterior angles of seventh tergum not so produced; abdomen not so ornamented . . . . . 20
- 20(19) Sixth tergum with a prominent median elevation or tubercle on hind margin . . . . . 21  
Sixth tergum with or without a wartlike median elevation on hind margin . . . . . 23
- 21(20) Elevation of sixth tergum very large and broad, hoodlike, with a small wartlike projection on its apical margin (fig. 56) . . . **calymmata**  
Elevation of sixth tergum smaller, conical . . . . . 22
- 22(21) Ninth tergum with a long, broad, median ridge (fig. 120).  
**panamana**  
Ninth tergum with a short, narrow median ridge (fig. 126) . . **obesa**
- 23(20) Seventh sternum distinctly produced at middle of hind margin . . 24  
Seventh sternum not produced at middle of hind margin . . . . 25
- 24(23) Seventh tergum much longer than wide; middle of hind margin conspicuously declivate, the lateral angles prominent acute; genital segments as in figure 119 . . . . . **stipitata**  
Seventh tergum little longer than wide, hind margin not declivate medianly, almost straight across, the lateral angles and median point very slightly produced . . . . . **similata**
- 25(23) Abdomen clavate; eighth tergum semicircular; ninth tergum truncate cuneate . . . . . **filiventris**  
Abdomen parallel sided; eighth tergum hexagonal; ninth tergum with apex truncate (fig. 128) . . . . . **atabapo**
- 26(1) Posterior angles of at least four terga more or less ampliate or produced, the outline of dorsum of abdomen on dorsal aspect not a continuous straight or curved line (fig. 89) . . . . . 27  
Posterior angles of terga, except sometimes fifth, sixth, or seventh, not produced, the outline of dorsum of abdomen a continuous straight or curved line . . . . . 35
- 27(26) Forefemur notably thicker near base than at first strong spine (fig. 74) . . . . . 28  
Forefemur enlarging gradually from base to first strong spine . . 30
- 28(27) A strong tubercle on hind margin of sixth tergum . . . . . 29  
No obvious tubercle on hind margin of sixth tergum (fig. 54).  
**glabrata**
- 29(28) Eighth tergum with disk prominently elevated each side of a broad median sulcus; ninth tergum convex medianly, the margin elevated, very slightly corrugate . . . . . **insidiatrix**  
Eighth and ninth terga with disk depressed and margins elevated, each longitudinally carinate and transversely corrugate (fig. 112).  
**amicula**

- 30(27) Seventh tergum narrower basally than apically, posterolateral angles sharply produced, with a long spinelike median projection (fig. 89). **spinicaudata**  
Seventh tergum differently shaped and without median long spine . 31
- 31(30) Angulations of terga less pronounced; apex of sixth tergum scarcely wider than that of seventh . . . . . 32  
Angulations of terga more pronounced; apex of sixth tergum notably wider than that of seventh . . . . . 33
- 32(31) A strong tubercle on hind margin of sixth tergum; head and thorax strongly granulate; length over 21 mm. . . . . **peruviana**  
Hind margin of sixth tergum without a tubercle; head and thorax not granulate; length under 15 mm. . . . . **calva**
- 33(31) Eighth tergum pentagonal; ninth tergum with lateral margins raised from middle and curving mesad on apex, with a median subcircular elevation near apex (fig. 123) . . . . . **haitiana**  
Eighth tergum broadly elliptical; ninth tergum different, with a median low ridge . . . . . 34
- 34(33) Elevated margins of ninth tergum produced apically as distinct spines (fig. 142) . . . . . **annectens**  
Elevated margins of ninth tergum not forming spines . . **truncata**
- 35(26) Basal spine of forefemur at less than its own length from base of femur; foretibia and tarsus combined three fourths as long as femur; interantennal spine a mere wart, abdomen racket shaped (figs. 55, 115) . . . . . **galapagensis**  
Basal spine of forefemur at slightly or distinctly more than its own length from base of femur; other characters not as above . . . 36
- 36(35) Seventh sternum distinctly or slightly produced on middle of hind margin . . . . . 37  
Seventh sternum not produced medianly . . . . . 48
- 37(36) Hind margin of seventh tergum not tuberculate . . . . . 38  
Hind margin of seventh tergum more or less tuberculate . . . . 40
- 38(37) Hind margin of seventh tergum concave medianly; seventh sternum roundly produced medianly (fig. 8) . . . . . **personata**  
Hind margin of seventh tergum not concave medianly . . . . . 39
- 39(38) Seventh tergum triangularly produced on hind margin; head and thorax copiously granulate; eighth tergum short and broad (fig. 116) . . . . . **alterata**  
Hind margin of seventh tergum straight; head and thorax sparsely granulate; eighth tergum semicircular . . . . . **semipallida**
- 40(37) Median tubercle on hind margin of seventh tergum extending farther posteriorly than lateral angles; ninth tergum with three fingerlike ridges at apex . . . . . **persimilis**  
Median tubercle on hind margin of seventh tergum not extending as far posteriorly as lateral angles, if extending apex of ninth tergum without fingerlike longitudinal ridges . . . . . 41
- 41(40) Apex of ninth tergum distinctly upcurved . . . . . 42  
Apex of ninth tergum not upcurved . . . . . 43
- 42(41) Apex of ninth tergum emarginate medianly; projection of seventh sternum rectangular, longer than its basal width (figs. 61, 90). **monense**  
Apex of ninth tergum straight; projection of seventh sternum rounded (fig. 132) . . . . . **productilis**

- 43(41) Apex of ninth tergum decurved . . . . . 44  
 Apex of ninth tergum straight . . . . . 45
- 44(43) Apex of ninth tergum distinctly decurved, longitudinally strigate  
 and with a strong median carina, the lateral margins depressed  
 (fig. 144) . . . . . **succinta**  
 Apex of ninth tergum slightly decurved, the lateral margins strongly  
 elevated, depressed median area with a carina that extends from  
 the upper transversely corrugated third of tergum (fig. 117) . **aliena**
- 45(43) Ninth tergum with strong posterolateral fingerlike elevation or  
 projection (fig. 140) . . . . . **signoreti**  
 Ninth tergum without projection on posterolateral angles . . . . 46
- 46(45) Short species, under 13.0 mm. long . . . . . **nanna**  
 Long species, over 19.0 mm. long . . . . . 47
- 47(46) Hind margin of seventh sternum concave and with a rectangular  
 median projection; ninth tergum pointed apically; length 23 mm.  
**brasiliensis**  
 Hind margin of seventh sternum with a large median concavity and  
 with a sharp short median projection inside; ninth tergum truncate  
 apically; length 19.5 mm. . . . . **neivai**
- 48(36) Eighth sternum visible only as two small rounded laterally situated  
 protuberances below apex of seventh tergum, not continued down-  
 ward in center over base of ninth tergum. . . . . **alveola**  
 Eighth tergum covering base of ninth tergum . . . . . 49
- 49(48) Sixth tergum with a prominent protuberance; seventh with a smaller  
 median one on middle of hind margin . . . . . 50  
 Sixth tergum without a prominent protuberance . . . . . 51
- 50(49) Abdomen parallel sided, long and slender; ninth tergum with a short  
 apical projection on either side (fig. 138) . . . . . **varicornis**  
 Abdomen clavate; ninth tergum rounded apically, the depressed  
 apex overlaid by two short tapering ridges . . . . . **perversa**
- 51(49) Apex of ninth tergum with a strong bidentate tubercle on each side  
 (fig. 143) . . . . . **bicaudata**  
 Ninth tergum different . . . . . 52
- 52(51) Abdomen clavate; posterolateral angles of fifth tergum laterally  
 produced over margin; short species 11.5 mm. . . . . **mariae**  
 Abdomen parallel sided; angles of fifth tergum not produced . . 53
- 53(52) Sixth sternum a third longer on sides than in middle . . . . **pascoei**  
 Sixth sternum not so deeply emarginate posteriorly . . . . . 54
- 54(53) Apex of ninth tergum overlaid by two strong fingerlike processes;  
 length over 30 mm. . . . . **longula**  
 Apex of ninth tergum with a low median carina; length less 20 mm.  
**minimula**

***Ghilianella bicaudata* McAtee and Malloch**

FIGURES 9, 53, 143

*Ghilianella bicaudata* McAtee and Malloch, 1925, pp. 101-102 (female).—  
 Wygodzinsky, 1953, p. 291.

MALE: Head, thorax, legs, and antenna yellowish brown, legs paler.  
 Head laterally, mesothorax and metathorax laterally and ventrally  
 brownish. Forefemur with two rows of blackish dots on upper surface;

Middle and hind femora each with irregular longitudinal rows of brownish spots. Middle and hind tibiae each with narrow subbasal blackish band. Abdominal segments yellowish brown, irregularly variegated with blackish brown, third to sixth sterna each with an elongate dot at each side of median line.

Body and legs with very scarce appressed silvery pilosity.

Head sparsely granulose; eyes small. Interantennal spine well developed, straight.

Thoracic segments sparsely granulate; lengths of segments: 2.5, 2.0, 1.7 mm. Armature of forefemur with inner row consisting of short setae arising from warts, a single preapical stout spine. Claws of foretarsi two, the inner very short and closely appressed to base of outer. First spine of forefemur at twice its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

Abdomen on dorsal aspect parallel sided; apical angles of second to sixth terga not produced; hind margins of terga with small median blackish warts, straight. Seventh tergum slightly longer than sixth, surpassing claspers by a clasper length, medianly carinate to middle of segment, constriction inconspicuous or obsolete, very slightly longer than distance from end of constriction to apex of tergum. Hind margins of second to fourth sterna straight or very shallowly concave medianly; of fifth and sixth concave medianly and convex laterally; of seventh and eighth straight. Sixth sternum twice as long as seventh. Eighth sternum visible on its entire width, hind margin laterally concave. Hypopygium opening upwards, claspers relatively broad, twice as long as broad (fig. 9).

Overall body length 18.0 mm.

In the key this species is close to *productilis* and *monense*, but it can be easily separated from these by its small size. Figures 53 and 143 show the genital segments of the female.

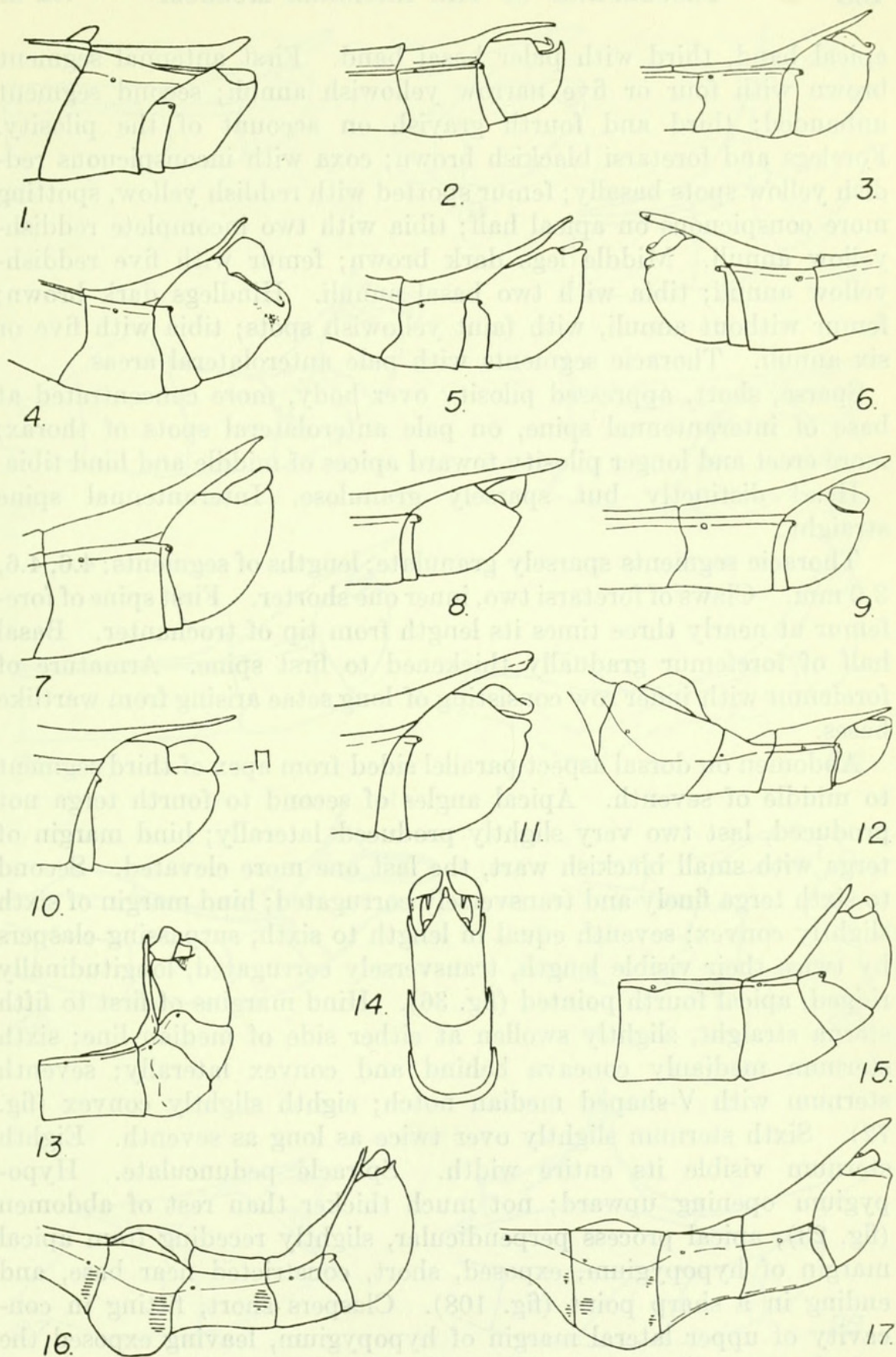
Types: Hypotype, male, Soledad, Cuba, February 11, 1925, J. G. Myers collector, MCZ 29467. Parahypotypes, two males, one with same data as hypotype, the other intercepted at New Orleans in pineapples from Cuba by Hadden and Pritchett (this specimen labeled *G. bicaudata* by H. G. Barber), in USNM. Females identified: two from Soledad, Cuba, one collected on August 1920 by Banks and the other on February 1925, by Myers, both in MCZ.

*Ghilianella borincana*, new species

FIGURES 23, 36, 72, 108

*Ghilianella longula*, Barber, not McAtee and Malloch, 1939, p. 388.

MALE: Body and head blackish brown. Interantennal spine stramineous. Beak brown, first segment paler, second with paler



FIGURES 1-17.—1, *Ghilianella haitiana*, male, lateral view of last abdominal segments. 2, *G. varicornis*, same. 3, *G. longula*, same. 4, *G. megharpacta*, same. 5, *G. aracataca*, same. 6, *G. signoreti*, same. 7, *G. insidiatrix*, same. 8, *G. personata*, same. 9, *G. bicaudata*, same. 10, *G. minimula*, same. 11, *G. simillima*, same. 12, *G. approximata*, same. 13, *G. campulligaster*, same. 14, *G. campulligaster*, rear view, same. 15, *G. rhabdita*, lateral view, same. 16, *G. signata*, same. 17, *G. grapta*, same.

apical band, third with paler basal band. First antennal segment brown with four or five narrow yellowish annuli; second segment unbanded; third and fourth grayish on account of the pilosity. Forelegs and foretarsi blackish brown; coxa with inconspicuous reddish yellow spots basally; femur spotted with reddish yellow, spotting more conspicuous on apical half; tibia with two incomplete reddish-yellow annuli. Middle legs dark brown; femur with five reddish-yellow annuli; tibia with two basal annuli. Hindlegs dark brown; femur without annuli, with faint yellowish spots; tibia with five or six annuli. Thoracic segments with pale anterolateral areas.

Sparse, short, appressed pilosity over body, more concentrated at base of interantennal spine, on pale anterolateral spots of thorax; more erect and longer pilosity toward apices of middle and hind tibia.

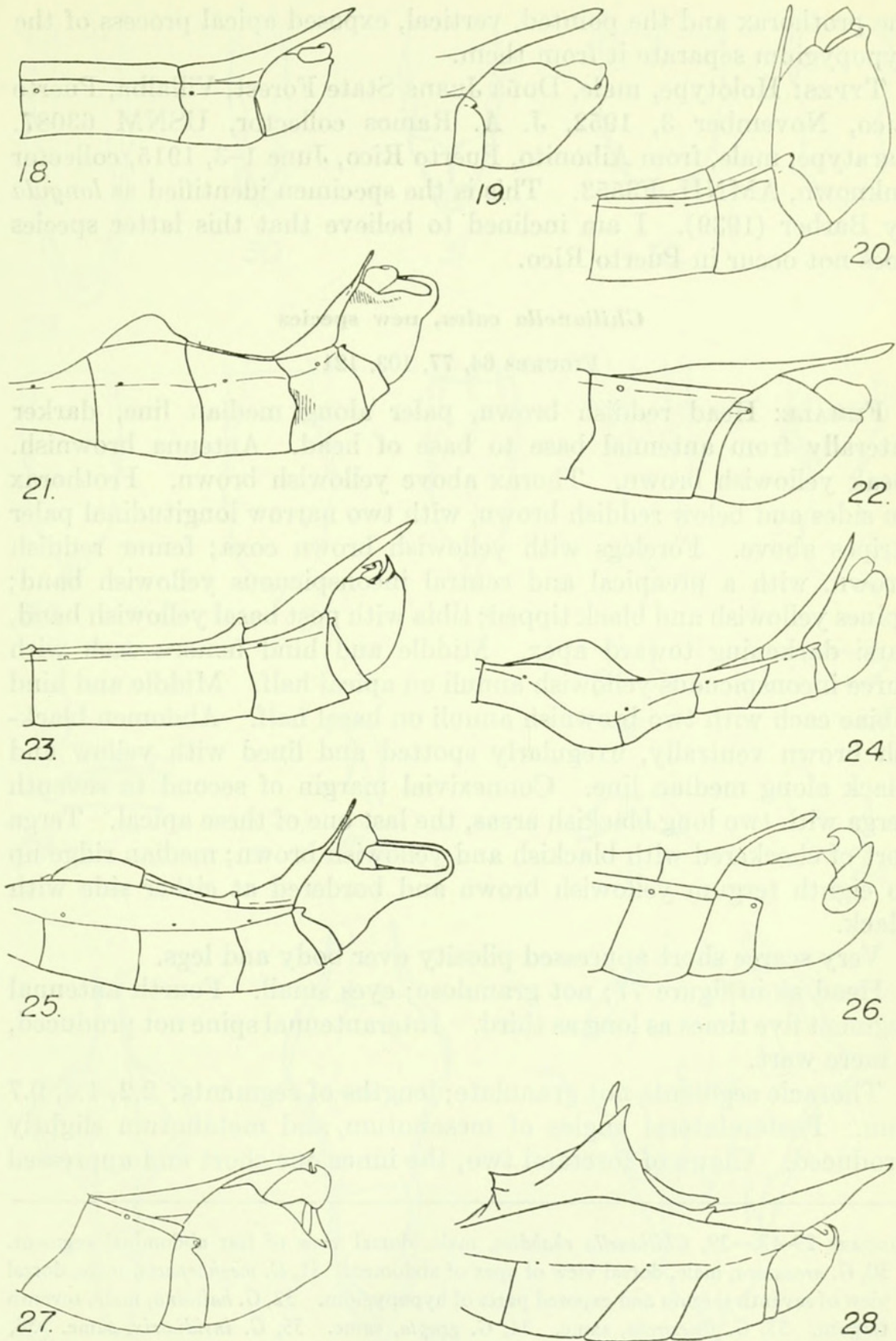
Head distinctly but sparsely granulose. Interantennal spine straight.

Thoracic segments sparsely granulate; lengths of segments: 4.6, 4.6, 3.0 mm. Claws of foretarsi two, inner one shorter. First spine of forefemur at nearly three times its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine. Armature of forefemur with inner row consisting of long setae arising from wartlike bases.

Abdomen on dorsal aspect parallel sided from apex of third segment to middle of seventh. Apical angles of second to fourth terga not produced, last two very slightly produced laterally; hind margin of terga with small blackish wart, the last one more elevated. Second to sixth terga finely and transversely corrugated; hind margin of sixth slightly convex; seventh equal in length to sixth, surpassing claspers by twice their visible length, transversely corrugated, longitudinally ridged, apical fourth pointed (fig. 36). Hind margins of first to fifth sterna straight, slightly swollen at either side of median line; sixth sternum medianly concave behind and convex laterally; seventh sternum with V-shaped median notch; eighth slightly convex (fig. 72). Sixth sternum slightly over twice as long as seventh. Eighth sternum visible its entire width. Spiracle pedunculate. Hypopygium opening upward; not much thicker than rest of abdomen (fig. 23); apical process perpendicular, slightly receding from apical margin of hypopygium, exposed, short, constricted near base, and ending in a sharp point (fig. 108). Claspers short, fitting in concavity of upper lateral margin of hypopygium, leaving exposed the apical process of the hypopygium, slightly wider basally, apex pointed and turned cephalad.

Overall body length 30.0 mm.

This species, in general appearance, seems close to *productilis*, *monense*, and *varicornis*; however, the mesothorax being longer than



FIGURES 18-28.—18, *Ghilianella maculata*, male, lateral view of last abdominal segments. 19, *G. subglobulata*, same. 20, *G. colona*, same. 21, *G. gibbiventris*, same. 22, *G. productilis*, same. 23, *G. borincana*, same. 24, *G. globifera*, same. 25, *G. fenestrata*, same. 26, *G. neivai*, same. 27, *G. patruela*, same. 28, *G. spinata*, same.

the prothorax and the pointed, vertical, exposed apical process of the hypopygium separate it from them.

**Types:** Holotype, male, Doña Juana State Forest, Villalba, Puerto Rico, November 3, 1952, J. A. Ramos collector, USNM 63087. Paratype, male, from Aibonito, Puerto Rico, June 1-3, 1915, collector unknown, AMNH F3553. This is the specimen identified as *longula* by Barber (1939). I am inclined to believe that this latter species does not occur in Puerto Rico.

*Ghilianella calva*, new species

FIGURES 64, 77, 103, 121

**FEMALE:** Head reddish brown, paler along median line, darker laterally from antennal base to base of head. Antenna brownish. Beak yellowish brown. Thorax above yellowish brown. Prothorax on sides and below reddish brown, with two narrow longitudinal paler stripes above. Forelegs with yellowish brown coxa; femur reddish brown, with a preapical and central inconspicuous yellowish band; spines yellowish and black tipped; tibia with post basal yellowish band, tarsi darkening toward apex. Middle and hind femora each with three inconspicuous yellowish annuli on apical half. Middle and hind tibiae each with two brownish annuli on basal half. Abdomen blackish brown ventrally, irregularly spotted and lined with yellow and black along median line. Connexival margin of second to seventh terga with two long blackish areas, the last one of these apical. Terga sort of checkered with blackish and yellowish brown; median ridge up to eighth tergum yellowish brown and bordered at either side with black.

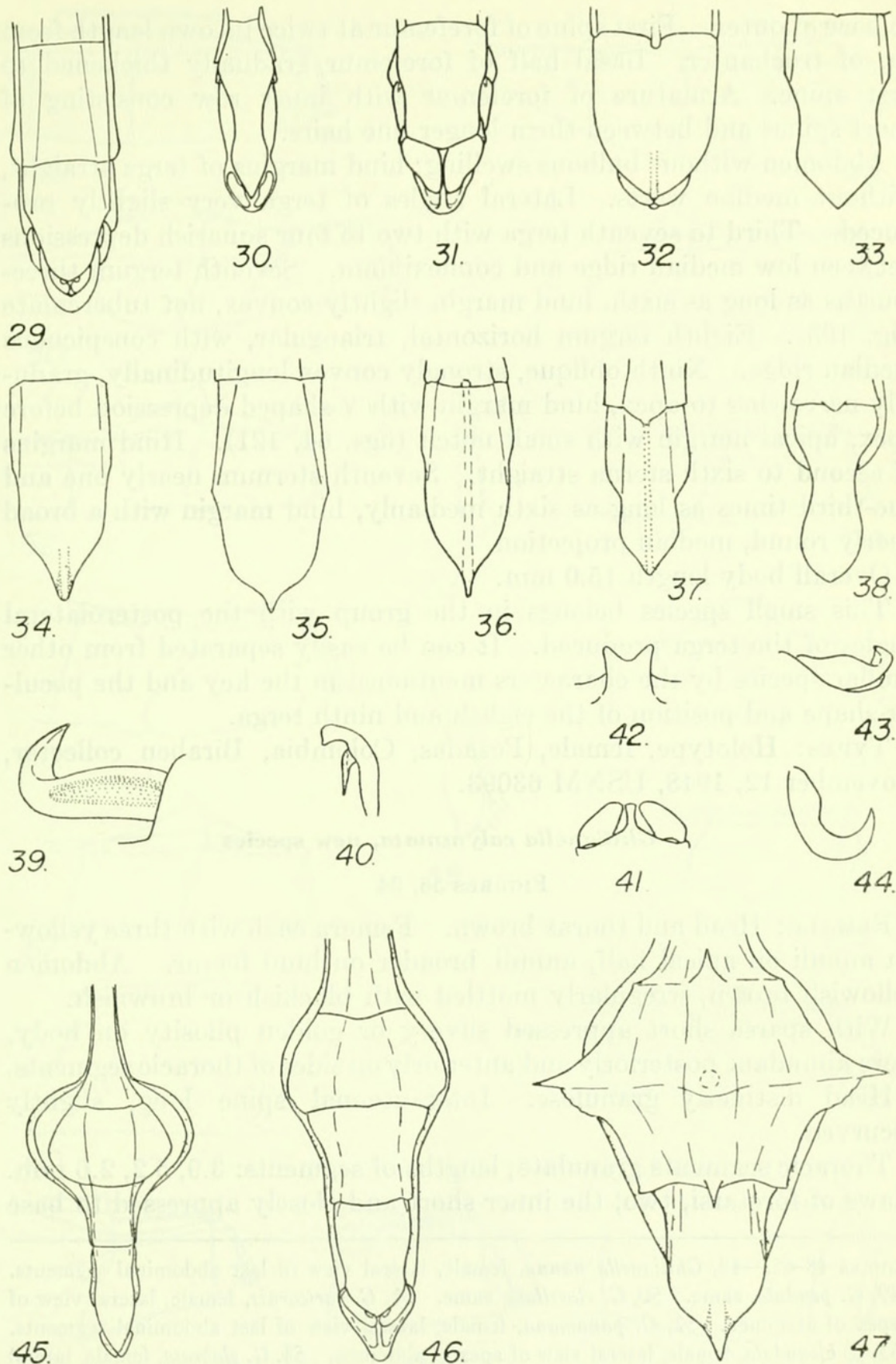
Very scarce short appressed pilosity over body and legs.

Head as in figure 77; not granulose; eyes small. Fourth antennal segment five times as long as third. Interantennal spine not produced, a mere wart.

Thoracic segments not granulate; lengths of segments: 2.2, 1.4, 0.7 mm. Posterolateral angles of mesonotum and metanotum slightly produced. Claws of foretarsi two, the inner one short and appressed

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FIGURES 29-47.—29, *Ghilianella rhabdita*, male, dorsal view of last abdominal segment. 30, *G. aracataca*, male, dorsal view of apex of abdomen. 31, *G. megarpacta*, male, dorsal view of seventh tergum and exposed parts of hypopygium. 32, *G. haitiana*, male, seventh tergum. 33, *G. fenestrata*, same. 34, *G. grapta*, same. 35, *G. insidiatrix*, same. 36, *G. borincana*, same. 37, *G. varicornis*, same. 38, *G. neivai*, same. 39, *G. varicornis*, male, lateral view of clasper. 40, *G. campulligaster*, same, dorsal view. 41, *G. ica*, male, projection of apical angle of hypopygium. 42, *G. varicornis*, same. 43, *G. subglobulata*, male, dorsolateral view of clasper. 44, *G. maculata*, male, dorsal view of clasper. 45, *G. approximata*, male, dorsal view of last abdominal segments. 46, *G. gibbiventris*, same. 47, *G. spinata*, same.



For explanation, see opposite page.

to base of outer. First spine of forefemur at twice its own length from tip of trochanter. Basal half of forefemur gradually thickened to first spine. Armature of forefemur with inner row consisting of short spines and between them longer fine hairs.

Abdomen without bulbous swelling; hind margins of terga straight, without median warts. Lateral angles of terga very slightly produced. Third to seventh terga with two to four squarish depressions between low median ridge and connexivium. Seventh tergum three-fourths as long as sixth, hind margin slightly convex, not tuberculate (fig. 103). Eighth tergum horizontal, triangular, with conspicuous median ridge. Ninth oblique, strongly convex longitudinally, gradually narrowing to apex, hind margin with V-shaped depression before apex, apical margin with small notch (figs. 64, 121). Hind margins of second to sixth sterna straight. Seventh sternum nearly one and one-third times as long as sixth medianly, hind margin with a broad nearly round, median projection.

Overall body length 15.0 mm.

This small species belongs in the group with the posterolateral angles of the terga produced. It can be easily separated from other similar species by the characters mentioned in the key and the peculiar shape and position of the eighth and ninth terga.

Types: Holotype, female, Posadas, Colombia, Biraben collector, November 12, 1948, USNM 63093.

*Ghilianella calymmata*, new species

FIGURES 56, 94

FEMALE: Head and thorax brown. Femora each with three yellowish annuli on apical half, annuli broader on hind femur. Abdomen yellowish brown, irregularly mottled with blackish or brownish.

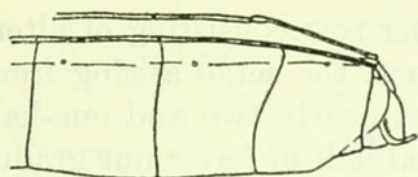
With sparse short appressed silvery or golden pilosity on body, more abundant posteriorly and anteriorly on sides of thoracic segments.

Head distinctly granulose. Interantennal spine long, slightly decurved.

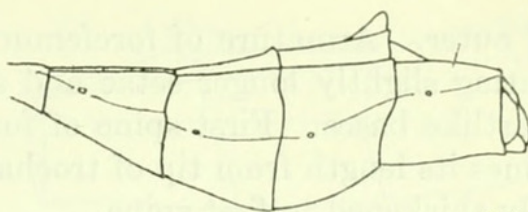
Thoracic segments granulate; lengths of segments: 3.9, 5.2, 2.6 mm. Claws of foretarsi, two, the inner short and closely appressed to base

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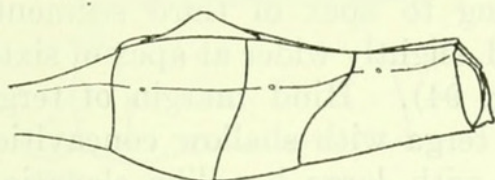
FIGURES 48-65.—48, *Ghilianella nanna*, female, lateral view of last abdominal segments. 49, *G. pendula*, same. 50, *G. clavellata*, same. 51, *G. varicornis*, female, lateral view of apex of abdomen. 52, *G. panamana*, female, lateral view of last abdominal segments. 53, *G. bicaudata*, female, lateral view of apex of abdomen. 54, *G. glabrata*, female, lateral view of last abdominal segments. 55, *G. galapagensis*, same. 56, *G. calymmata*, same. 57, *G. cuneata*, same. 58, *G. approximata*, female, lateral view of apex of abdomen. 59, *G. monense*, female, lateral view of last abdominal segments. 60, *G. gibberosa*, male, lateral view of seventh sternum, after de Toledo. 61, *G. monense*, female, hind margin of seventh sternum. 62, *G. aracatata*, female, lateral view of last abdominal segments. 63, *G. grapta*, same. 64, *G. calva*, same. 65, *G. succinta*, same.



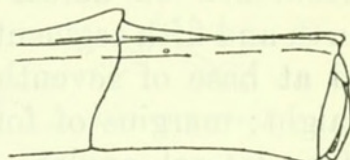
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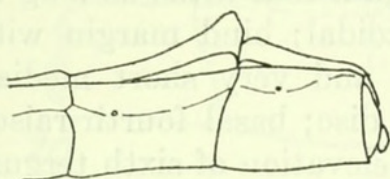
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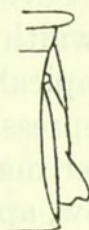
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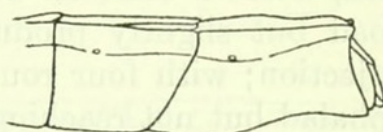
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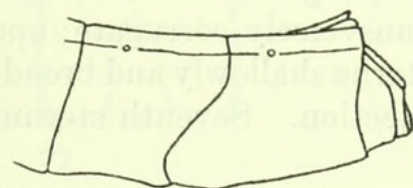
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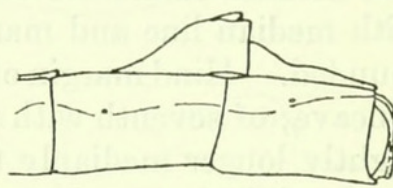
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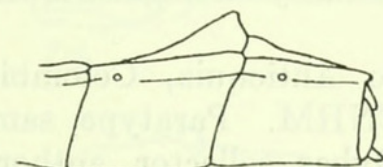
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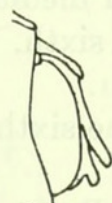
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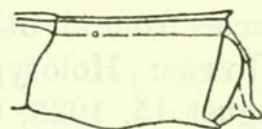
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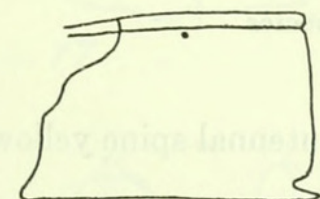
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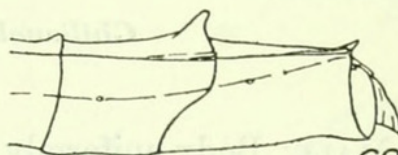
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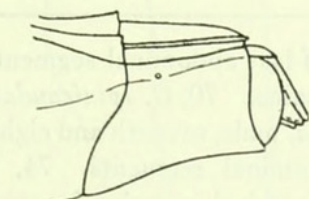
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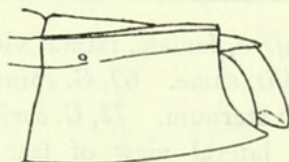
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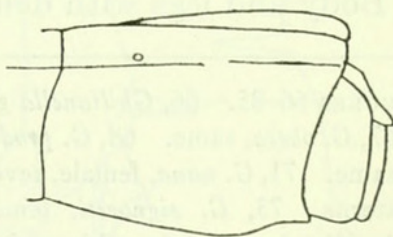
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63.



64.



65.

For explanation, see opposite page

of outer. Armature of forefemur with inner row consisting of alternating slightly longer setae and short spines, the setae arising from wartlike bases. First spine of forefemur at nearly two and one-half times its length from tip of trochanter; basal half of forefemur gradually thickened to first spine.

Abdomen on dorsal aspect widening to apex of third segment; fourth and fifth segments parallel sided, slightly wider at apex of sixth and at base of seventh segments (fig. 94). Hind margin of terga straight; margins of fourth and fifth terga with shallow concavities before lateral angles. Sixth tergum with large hoodlike elevation medianly before hind margin. Seventh tergum four-fifths as long as sixth, shorter than its basal width, trapezoidal; hind margin with broad but slightly produced apical angles and very short median projection; with four round depressions on disc; basal fourth raised cephalad but not reaching upper margin of elevation of sixth tergum (fig. 56). Eighth tergum narrow, apical margin semicircular, margins and median carina elevated; transversely corrugate. Ninth tergum with median line and margins elevated, transversely corrugate; apex rounded. Hind margin of second to sixth sterna shallowly and broadly concave; of seventh with small median projection. Seventh sternum slightly longer medianly than sixth.

Overall body length 27.0 mm.

The hoodlike elevation of the sixth tergum easily distinguishes this species from all others.

**TYPES:** Holotype, female, Puerto Barrio Antioquia, Colombia, August 15, 1938, C. H. Seevers collector, CNHM. Paratype, same collecting place, August 9, 1938, H. S. Dybas collector, author's collection.

*Ghilianella campulligaster*, new species

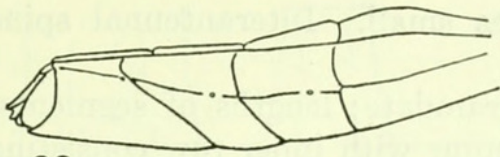
FIGURES 13, 14, 40

**MALE:** Body uniformly blackish brown, interantennal spine yellowish. Legs, antenna, and beak somewhat lighter.

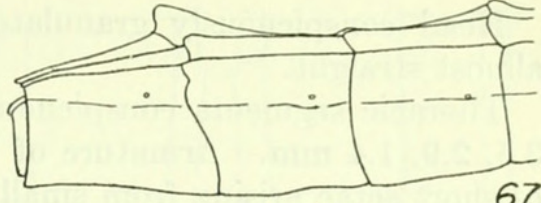
Body and legs with dense appressed short silvery pilosity.

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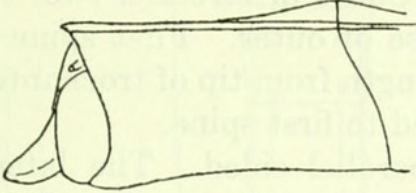
FIGURES 66–85.—66, *Ghilianella globifera*, female, lateral view of last abdominal segments. 67, *G. obesa*, same. 68, *G. productilis*, same. 69, *G. spinata*, same. 70, *G. spinicaudata*, same. 71, *G. nana*, female, seventh sternum. 72, *G. borincana*, male, seventh and eighth sterna. 73, *G. signoreti*, female, lateral view of last abdominal segments. 74, *G. insidiatrix*, male, foretibia and tarsi. 75, *G. varicornis*, male, apical margin of seventh and eighth sterna. 76, *G. spinicaudata*, female, lateral view of head. 77, *G. calva*, female, dorsal view of head. 78, *G. spinicaudata*, female, lateral view of prothorax. 79, *G. haitiana*, male, dorsal view of head. 80, *G. spinata*, male, lateral view of head. 81, *G. obesa*, female, lateral view of prothorax. 82, *G. fenestrata*, male, same. 83, *G. haitiana*, male, lateral view of head and prothorax. 84, *G. spinata*, male, lateral view of metathorax. 85, *G. spinata*, male, lateral view of prothorax.



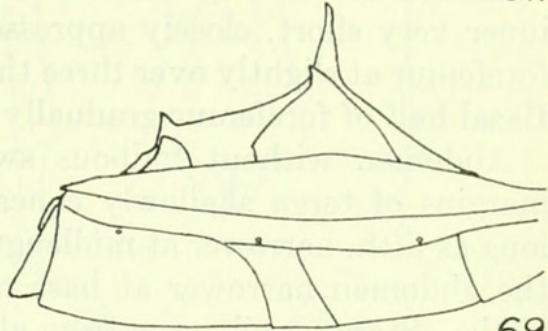
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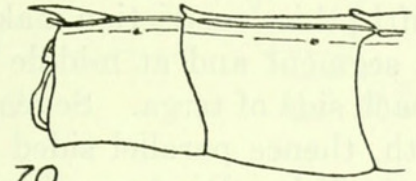
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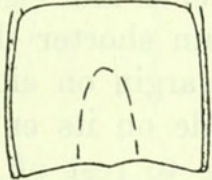
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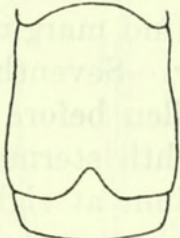
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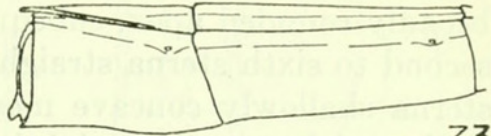
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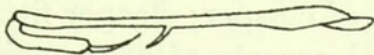
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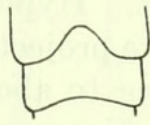
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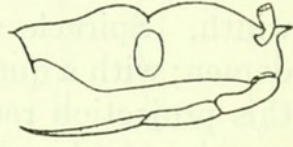
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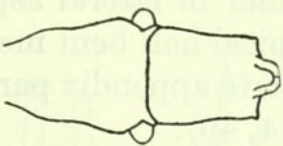
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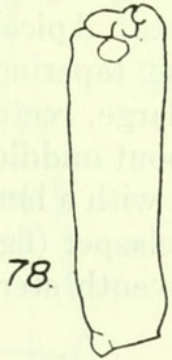
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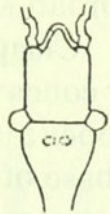
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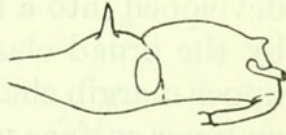
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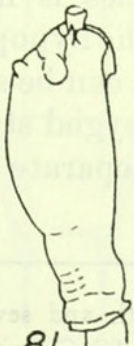
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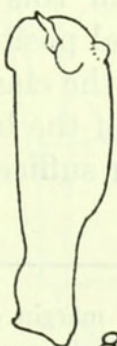
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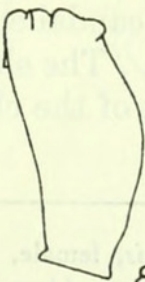
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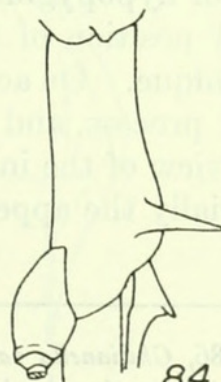
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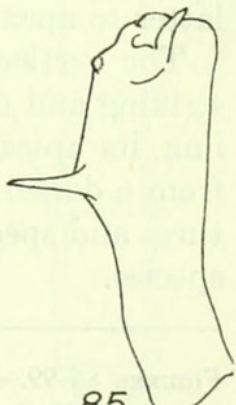
82.



83.



84.



85.

For explanation, see opposite page.

Head conspicuously granulate; eyes small. Interantennal spine almost straight.

Thoracic segments conspicuously granulate; lengths of segments: 3.5, 2.9, 1.4 mm. Armature of forefemur with inner row consisting of short setae arising from small warts. Claws of foretarsi two, the inner very short, closely appressed to base of outer. First spine of forefemur at slightly over three times its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

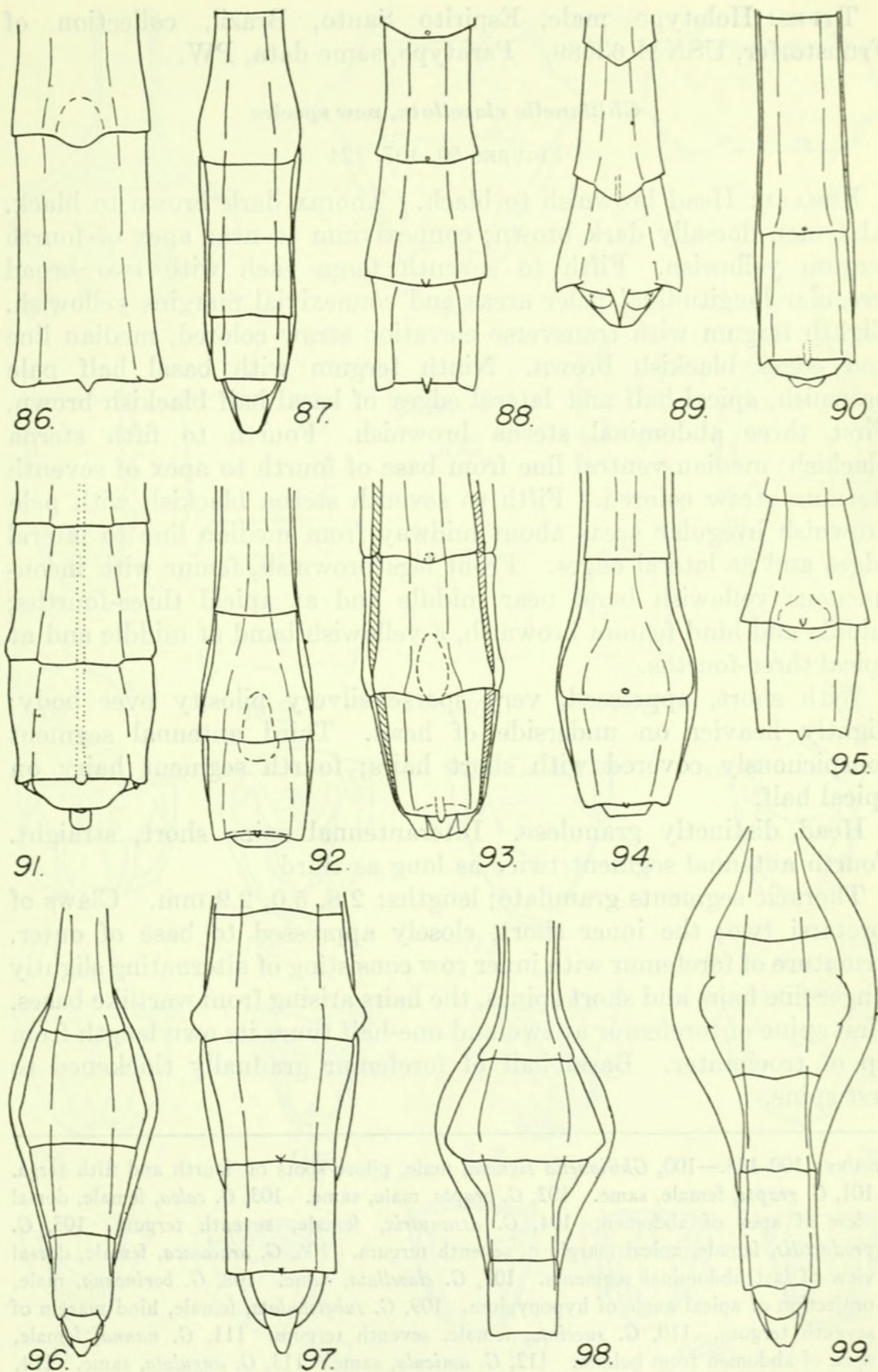
Abdomen without bulbous swelling, parallel sided. The lateral margins of terga shallowly concave. Sixth tergum three-fourths as long as fifth, narrower at midlength than fifth; this constriction makes the abdomen narrower at base of second segment and at middle of sixth. Sterna easily seen from above on each side of terga. Seventh tergum abruptly narrowed after basal fifth, thence parallel sided to broadly rounded apex, subequal in length to fifth. Hind margins of second to sixth sterna straight. Hind margin of seventh and eighth sterna shallowly concave medianly. Seventh sternum shorter than sixth and longer than eighth, swollen before hind margin on either side of median line (fig. 13). Eighth sternum visible on its entire width. Spiracle short. Hypopygium at right angle to rest of abdomen; with a quadrate projection on the outside of the upper margin, this projection reaching to about midlength of margin; basal half of margin raised and reaching to upper margin of clasper; clasper fitting between these two raised structures. Apical process of hypopygium developed into a long, broad at base, tapering point, most of it hidden by the broad claspers. Claspers large, rectangular in lateral aspect, upper margin shallowly concave about middle, apical half bent mesad; on inner surface near upper margin with a lanceolate appendix parallel to and pointing to the base of the clasper (figs. 14, 40).

Length 20.0 mm. to apex of seventh sternum; 0.3 mm. from the latter to apex of hypopygium.

The vertical position of the hypopygium in this species is most striking and unique. On account of its unusual position the hypopygium, its apical process, and the caudal end of the claspers can be seen from a dorsal view of the insect. The shape of the hypopygial structures and specially the appendix of the clasper suffice to separate this species.

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FIGURES 86-99.—86, *Ghilianella varicornis*, female, apical margin of sixth and seventh sterna. 87, *G. globifera*, female, dorsal view of last abdominal segments. 88, *G. haitiana*, same. 89, *G. spinicaudata*, same. 90, *G. monense*, same. 91, *G. nanna*, same. 92, *G. panamana*, same. 93, *G. obesa*, same. 94, *G. calymmata*, same. 95, *G. annectens*, same, lateral view. 96, *G. gladiator*, same, dorsal view. 97, *G. bethei*, same. 98, *G. globulata*, same. 99, *G. approximata*, same.



For explanation, see opposite page.

Types: Holotype, male, Espirito Santo, Brazil, collection of Fruhstorfer, USNM 63089. Paratype, same data, PW.

*Ghilianella clavellata*, new species

FIGURES 50, 107, 124

FEMALE: Head brownish to black. Thorax dark brown to black. Abdomen dorsally dark brown; connexivium to near apex of fourth tergum yellowish. Fifth to seventh terga each with two broad irregular longitudinal paler areas and connexivial margins yellowish. Eighth tergum with transverse elevation straw colored, median line and edges blackish brown. Ninth tergum with basal half pale brownish, apical half and lateral edges of basal half blackish brown. First three abdominal sterna brownish. Fourth to fifth sterna blackish; median ventral line from base of fourth to apex of seventh sternum straw colored. Fifth to seventh sterna blackish with pale brownish irregular areas about midway from median line to lateral edges and at lateral edges. Front legs brownish, femur with inconspicuous yellowish band near middle and at apical three-fourths; middle and hind femora brownish, a yellowish band at middle and at apical three-fourths.

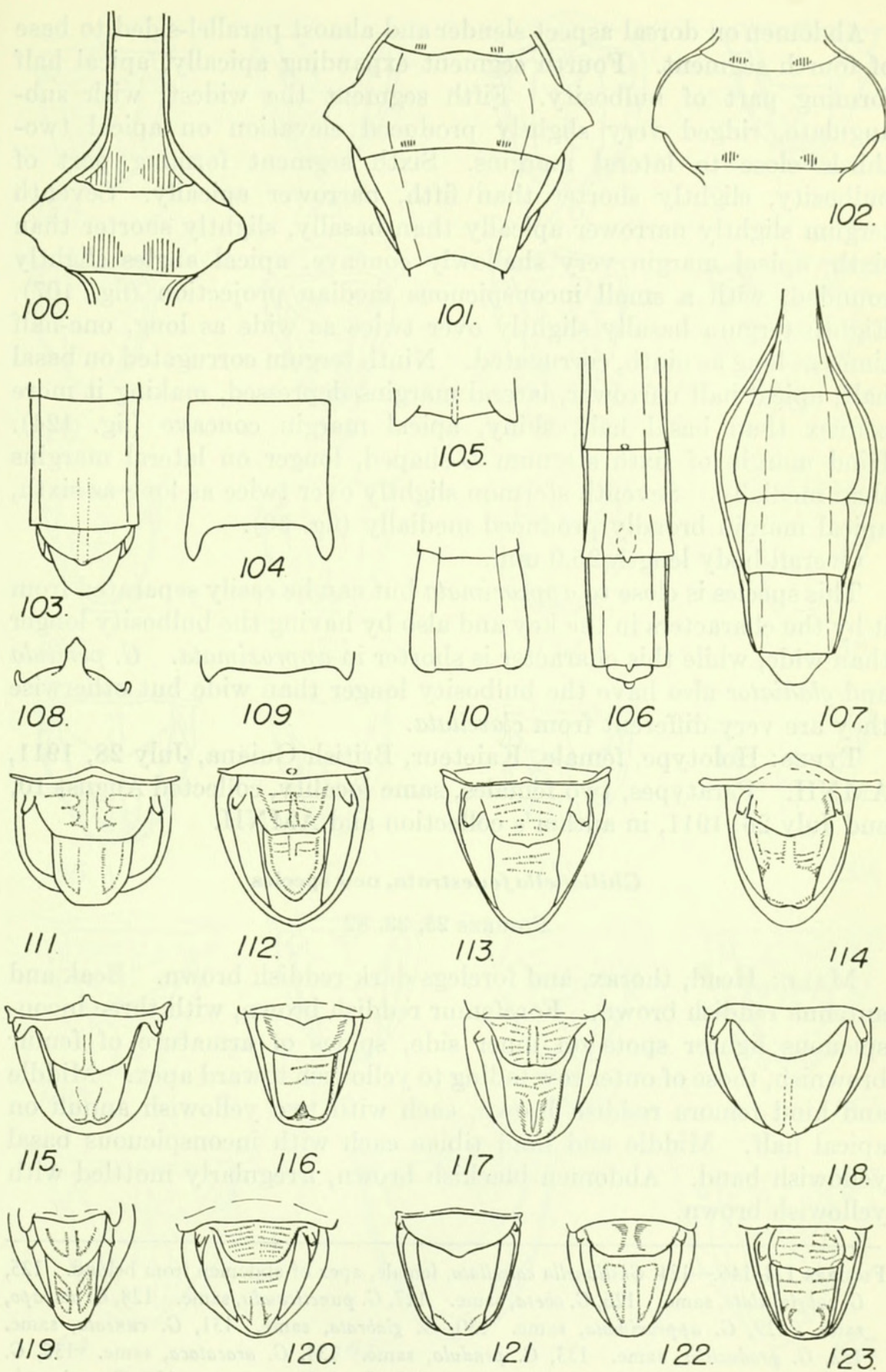
With short, appressed, very sparse silvery pilosity over body; slightly heavier on underside of head. Third antennal segment conspicuously covered with short hairs; fourth segment hairy on apical half.

Head distinctly granulose. Interantennal spine short, straight. Fourth antennal segment twice as long as third.

Thoracic segments granulate; lengths: 2.8, 5.0, 2.9 mm. Claws of foretarsi two; the inner short, closely appressed to base of outer. Armature of forefemur with inner row consisting of alternating slightly longer fine hairs and short spines, the hairs arising from wartlike bases. First spine of forefemur at two and one-half times its own length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

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FIGURES 100-123.—100, *Ghilianella signata*, male, pilose spots on fourth and fifth terga. 101, *G. grapta*, female, same. 102, *G. grapta*, male, same. 103, *G. calva*, female, dorsal view of apex of abdomen. 104, *G. assanutrix*, female, seventh tergum. 105, *G. productilis*, female, apical margin of seventh tergum. 106, *G. aracataca*, female, dorsal view of last abdominal segments. 107, *G. clavellata*, same. 108, *G. borincana*, male, projection of apical angle of hypopygium. 109, *G. subglobulata*, female, hind margin of seventh tergum. 110, *G. succinta*, female, seventh tergum. 111, *G. nanna*, female, apex of abdomen from behind. 112, *G. amicula*, same. 113, *G. angulata*, same. 114, *G. spinicaudata*, same. 115, *G. galapagensis*, same. 116, *G. alterata*, same. 117, *G. aliena*, same. 118, *G. assanutrix*, same. 119, *G. stipitata*, same. 120, *G. panamana*, same. 121, *G. calva*, same. 122, *G. globifera*, same. 123, *G. haitiana*, same.



For explanation, see opposite page.

Abdomen on dorsal aspect slender and almost parallel-sided to base of fourth segment. Fourth segment expanding apically, apical half forming part of bulbosity. Fifth segment the widest, with subangulate, ridged very slightly produced elevation on apical two-thirds close to lateral margins. Sixth segment forming part of bulbosity, slightly shorter than fifth, narrower apically. Seventh tergum slightly narrower apically than basally, slightly shorter than sixth, apical margin very shallowly concave, apical angles slightly rounded, with a small inconspicuous median projection (fig. 107). Eighth tergum basally slightly over twice as wide as long, one-half times as long as ninth, corrugated. Ninth tergum corrugated on basal half; apical half narrower, lateral margins depressed, making it more convex than basal half, shiny, apical margin concave (fig. 124). Hind margin of sixth sternum U-shaped, longer on lateral margins than medially. Seventh sternum slightly over twice as long as sixth, apical margin broadly produced medially (fig. 50).

Overall body length 25.0 mm.

This species is close to *approximata* but can be easily separated from it by the characters in the key and also by having the bulbosity longer than wide, while this character is shorter in *approximata*. *G. pendula* and *gladiator* also have the bulbosity longer than wide but otherwise they are very different from *clavellata*.

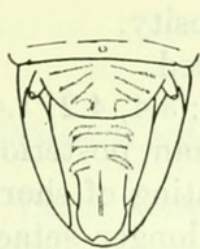
Types: Holotype, female, Kaieteur, British Guiana, July 28, 1911, AMNH. Paratypes, two females, same locality, collected August 10, and July 26, 1911, in author's collection and AMNH.

*Ghilianella fenestrata*, new species

FIGURES 25, 33, 82

MALE: Head, thorax, and forelegs dark reddish brown. Beak and antenna reddish brown. Forefemur reddish brown, with three inconspicuous lighter spots on inner side, spines of armature of femur brownish, those of outer row fading to yellowish toward apex. Middle and hind femora reddish brown, each with two yellowish annuli on apical half. Middle and hind tibiae each with inconspicuous basal yellowish band. Abdomen blackish brown, irregularly mottled with yellowish brown.

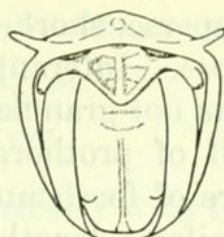
FIGURES 124-146.—124, *Ghilianella clavellata*, female, apex of abdomen from behind. 125, *G. subglobulata*, same. 126, *G. obesa*, same. 127, *G. puncticauda*, same. 128, *G. atabapo*, same. 129, *G. approximata*, same. 130, *G. glabrata*, same. 131, *G. cuneata*, same. 132, *G. productilis*, same. 133, *G. pendula*, same. 134, *G. aracataca*, same. 135, *G. minimula*, same. 136, *G. globulata*, same. 137, *G. gladiator*, same. 138, *G. varicornis*, same. 139, *G. monense*, same. 140, *G. signoreti*, same. 141, *G. grapta*, same. 142, *G. annectens*, same. 143, *G. bicaudata*, same. 144, *G. succinta*, same. 145, *G. personata*, same. 146, *G. bethei*, same.



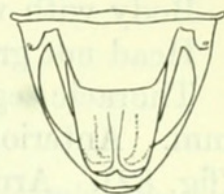
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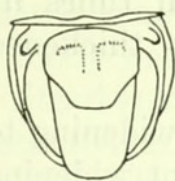
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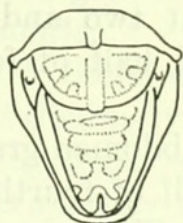
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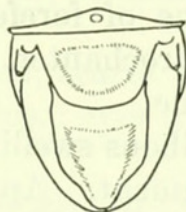
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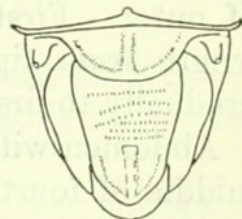
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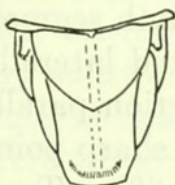
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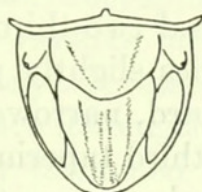
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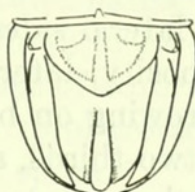
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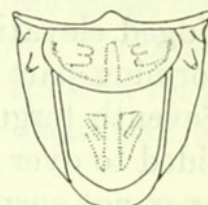
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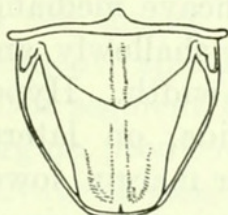
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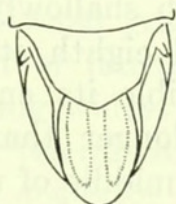
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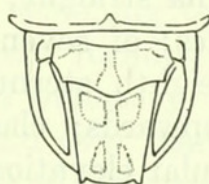
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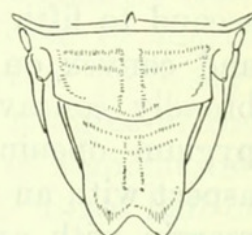
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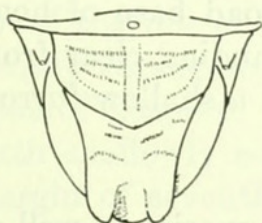
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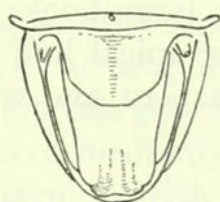
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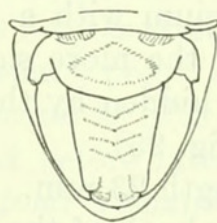
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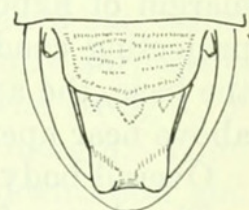
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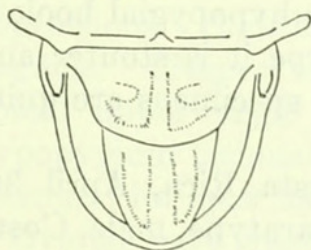
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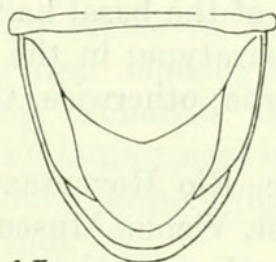
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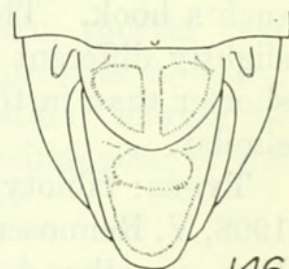
143.



144.



145.



146.

For explanation, see opposite page.

Body with very sparse, short, appressed yellowish pilosity.

Head not granulose. Interantennal spine not developed.

Thoracic segments not granulate; lengths of segments: 3.4, 4.2, 1.4 mm. Anterior half of prothorax distinctly stouter than posterior (fig. 82). Armature of forefemur with inner row consisting of short spines of nearly uniform length alternating with fine longer setae. Claws of foretarsi two, the inner short and closely appressed to base of outer. First spine of forefemur at two and one-half times its length from tip of trochanter. Basal half of forefemur thickened gradually to first spine.

Abdomen with bulbous swelling. Abdomen gradually widening to middle of fourth segment. Apical half of fourth segment widening and forming minor part of bulbosity. Fifth segment forming widest part of bulbosity, equal in length to sixth, tergum with angulate ridged elevations on lateral sides. Basal two-thirds of sixth segment forming part of bulbosity, lateral angles slightly projected laterally. Seventh tergum narrowing on basal third, narrowest portion parallel sided to over apical two-thirds, apical third tapering to a sharp point; apex not surpassing claspers, transversely corrugate (fig. 33). Terga each with wartlike elevation on hind margin. Hind margins of second to fifth sterna straight; of sixth shallowly concave medianly and convex on sides; of seventh and eighth sterna shallowly and broadly concave; eighth sternum visible its entire width. Hypopygium opening upwards; claspers longer than wide, on lateral aspect with an angular elevation near middle of upper margin, lower margin with an angular indentation near middle, upper margin as seen from behind with a U-shaped notch before apex. Upper apical margin of hypopygium with a very large hook; broad base of hook projecting caudad, the more slender apical half standing clear from the base, the apex hidden by the claspers, and with a shallow furrow above near apex (fig. 25).

Overall body length 23 mm.

The shape of the hook of the hypopygium of this species as well as the combination of characters separate this species from others with such a hook. The shape of the basal half of the hypopygial hook is slightly different in the paratype; in the paratype it is stouter and shorter than in the holotype; otherwise, the two specimens are quite similar.

Types: Holotype, male, Rio Reventazón, Costa Rica, April 30, 1908, V. Reimoser collector, Vienna Museum. Paratype, male, Costa Rica, no other data, author's collection.

*Ghilianella gibbiventris* Champion

FIGURES 21, 46

*Ghilianella gibbiventris* Champion, 1898, p. 172.

Some material at hand agree very closely with Champion's description. A redescription of the species follows:

MALE: Blackish. Legs, beak, and antenna blackish brown. Legs inconspicuously annulate.

Body and legs with short, appressed, scarce yellowish pilosity.

Head sparsely but distinctly granulose; eyes moderately large. Interantennal spine long, decurved.

Thoracic segments sparsely but conspicuously granulate; lengths of segments: 3.0, 2.8, 1.5 mm. Armature of forefemur with inner row consisting of long and short spines and alternating longer fine setae, the setae arising from wartlike bases. Claws of foretarsi two, the inner very short and closely appressed to base of outer. First spine of forefemur at nearly twice its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

Abdomen with bulbous swelling (fig. 46). Second and third abdominal segments relatively short, the bulbosity thus strikingly close to the thorax. Abdomen gradually widening to middle of fourth segment, apical half of fourth segment forming part of bulbosity. Fifth segment forming widest part of bulbosity, the margins of the tergum produced as lateral carinae and over margin of segment, the elevations nearer to posterior margin, gibbous above. Basal half of sixth segment forming part of bulbosity, equal in length to fifth. Seventh tergum bent upward, narrowed portion beginning at basal two-fifths, one and two-thirds times as long as sixth, apical half transversely corrugate, apex ending in a sharp point, slightly surpassing apex of claspers. Hind margins of second to fifth sterna straight, of sixth shallowly concave medianly and before lateral margin. Hind margin of seventh sternum with a broad V-shaped indentation and of eighth shallowly concave. Sixth sternum one and one-half times as long as seventh. Seventh sternum with conspicuous lateral basal depressions. Eighth sternum visible its entire width, shorter near spiracle. Clasper broad to near midlength and narrower apically, apical upper angle pointing cephalad. Upper lateral margin of hypopygium bisinuate; with a large apical hook standing clear of the sternum, its apex hidden under claspers (fig. 21).

Overall body length 20.0 mm.

The lateral aspect of the hypopygial portion of this species closely resembles *uncinata*. In *gibbiventris*, the mesothorax is shorter than the prothorax, the claspers are narrower apically, and the bulbous swelling is strikingly close to the thorax.

MATERIAL EXAMINED: One male, Barro Colorado Island, Panama Canal Zone, Nov. 22, 1944, K. E. Frick collector, CAS; one male, Corozal, Panama Canal Zone, June 6, 1937, author's collection.

*Ghilianella globifera* Bergroth

FIGURES 24, 66, 87, 122

*Ghilianella globifera* Bergroth, 1906, pp. 319-320 (Venezuela, male).—McAtee and Malloch, 1925, p. 110.

FEMALE: Head and thorax brown, interantennal spine straw colored or brown. Beak and antenna darkening to blackish toward apex. Middle and hind femora brownish with three broad yellowish annuli on apical half. Middle and hind tibiae straw colored or brownish. Tarsi dark brown. Abdomen brown, irregularly spotted with black small areas.

Body and legs with scarce and very short appressed yellowish pilosity.

Head granulate; eyes moderately small. Interantennal spine long and straight.

Thoracic segments granulate; lengths of segments: 2.9, 3.7, 2.3 mm. Claws of foretarsi two, the inner shorter and closely appressed to base of outer. First spine of forefemur at nearly three times its length from tip of trochanter; basal half of forefemur gradually thickened to base of first spine. The inner row of armature of forefemur consisting of setae arising from wartlike bases.

Abdomen with elongate bulbous swelling. Abdomen parallel sided to before apex of third segment, apex of third segment slightly widening and forming minor part of bulbosity; fourth widening to before apex and constituting widest part of bulbosity; from apex of fourth to apex of abdomen gradually narrowing. Hind margin of second to fourth tergum nearly straight; of fifth shallowly concave; the others as in figure 87. Third tergum the longest, each succeeding tergum shorter than the preceding. Seventh tergum slightly broader than long, hind margin very shallowly concave. Eighth tergum nearly horizontal, hexagonal or semicircular, with a median elevation that slightly widens toward apex, shallow depressions at either side of median elevation. Ninth tergum one and one-half times as long as eighth, tapering to a round apex, margins slightly elevated, with broad inconspicuous median elevation, irregularly transversely corrugated (fig. 122). Hind margins of second and third sterna straight; of fourth with a broadly shallow V-shaped indentation; of fifth and sixth very deeply emarginate; of seventh with a round median projection. Seventh sternum over twice as long as sixth (fig. 66).

Overall body length 22.0 mm.

*G. globifera* is the only species having the fourth tergum the widest part of the bulbosity. The genitalia of the other three females at hand show slight variations from the hypotype. In one the eighth tergum is nearly semicircular, but the details of its surface agree with those of the hypotype. In another the ninth tergum is relatively shorter and broader but otherwise is similar. In the third the ninth tergum has a small notch on either side before apex. The hypotype was collected in coitu with a specimen that agrees closely with McAtee and Malloch's description.

Types: Hypotype, female, Villavicencio, M.I., Colombia, July 23, 1938, H. S. Dybas collector, CNHM. Parahypotypes, three females: one collected by H. S. Dybas, July 13, 1938, CNHM; one collected by C. H. Seevers, author's collection; and one collected January 20, 1948, PW; all three from Caño Grande, Colombia. Six males of this species have been identified, one of them, as mentioned above, was collected in coitu with the female hypotype.

*Ghilianella grapta*, new species

FIGURES 17, 34, 63, 101, 102, 141

MALE: Head, thorax, and legs brown. Abdomen blackish brown.

Body covered with sparse decumbent yellowish hairs. Abdomen with 14 patches of yellowish white hairs as follows: 2 small patches on hind margin of fourth and fifth terga, 4 near hind margin of fourth sternum, 2 more extensive near anterior margin of fifth sternum, and 4 near posterior margin of fifth sternum.

Head conspicuously granulose, eyes moderately small. Long straight interantennal spine.

Thoracic segments conspicuously granulose; lengths of segments: 2.5, 3.5, 2.2 mm. Armature of forefemur with inner row consisting of alternate long and short spines and between them longer fine setae arising from wartlike bases. Claws of foretarsi two, the inner one shorter and appressed to base of first. First spine of forefemur at slightly less than three and one-half times its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

Abdomen with bulbous swelling. Apical angles of second to fourth terga not produced. Abdomen gradually widened to apical three-fourths of fourth segment. Apical fourth of fourth segment forming minor part of bulbosity, its hind margin conspicuously convex. Fifth segment constituting major and widest part of bulbosity, the margins of the tergum produced over lateral margins of segment, the margins pointed on apical two-thirds (fig. 102). Basal third of sixth segment forming minor part of bulbosity. Seventh tergum as in figure 34, narrowed portion from basal third to apical two-thirds, apical third

tapering to a point, medianly ridged; twice as long as sixth, surpassing claspers by nearly their own length; apical two-thirds of tergum transversely corrugate. Hind margins of sixth, seventh, and eighth sterna broadly and shallowly V-shaped. Sixth and seventh sterna conspicuously medianly carinate, others slightly so. Eighth sternum visible on its entire width, except stigma that is hidden (fig. 17). Upper lateral margin of hypopygium straight; apical process of hypopygium small, inclined cephalad, hidden by claspers except at its base (which is visible beyond end of claspers), slightly widening toward apex; apex truncate and produced above claspers. Claspers with lower margin straight, upper margin with an inconspicuous indentation before apex, shortly before apex bent mesad at 90°.

Overall body length 20 mm.

**FEMALE:** Head, thorax, and legs brown. Abdomen variegated with black and yellow.

Abdomen with same 14 patches of yellowish white hairs exhibited by male and in addition 2 small spots on hind margin of third tergum and sternum. Body covered with sparse decumbent yellowish hairs. Pilosity denser on sides of neck, anterior sides of mesothorax, and dorsally on base of metathorax.

Head as in male.

Thoracic segments conspicuously granulose; length of segments: 2.6, 3.8, 2.4 mm. Armature of forefemur with inner row and claws of foretarsi as in male. First spine of forefemur at slightly less than twice its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

Abdomen with bulbous swelling. Apical angles of second to fourth terga not produced. Abdomen gradually widened to middle of fourth segment. Apical half of fourth segment forming part of bulbosity. Fifth segment constituting major and widest part of bulbosity, the margin of the tergum produced over lateral margins of segments, pointed beyond middle. Basal half of sixth segment forming part of bulbosity (fig. 101). Seventh tergum as long as wide at apex, slightly narrower basally than apically; hind margin shallowly convex, with inconspicuous median tubercle, lateral angles roundly pointed and extending beyond median tubercle. Eighth tergum nearly semicircular, slightly produced apically, on either side of median line slightly elevated. Ninth tergum medianly slightly longer than eighth, lateral margins conspicuously elevated on apical half, with narrow, median ridge on apical half, apical margin shallowly cuneate (fig. 141). Sterna medianly keeled. Hind margin of second to fifth sterna straight; of sixth sternum with broad median concavity, on sides slightly longer than medianly. Seventh sternum nearly one and one-half times as

long as sixth medianly; hind margin slightly produced medianly (fig. 63).

Overall body length 21.0 mm.

*G. grapta*, *signata*, and *ignorata* are the only species with extensive pilose spots; they can be easily separated by the characters in the keys.

Types: Holotype, male, Mérida, Venezuela, no other data, PW. Allotype, female, Mérida, Venezuela, 1883, USNM. Paratypes, two males, Venezuela, Brunner collector, one in USNM and other in author's collection.

*Ghilianella haitiana*, new species

FIGURES 1, 32, 79, 83, 88, 123

MALE: Head brownish, with paler median longitudinal band. First antennal segment with seven yellowish annuli, remaining segments uniformly brownish, last two with short silvery pilosity. First and second segments of beak with brownish basal halves, apical halves yellowish white; third segment brownish. Thoracic segments brown. Prothorax with three longitudinal yellowish brown lines above. Forelegs, middle and hind femora brownish, irregular, and conspicuously marked with stramineous; tarsi brownish. Middle and hind tibiae brownish, each with two yellowish basal bands. Abdomen brown, darker ventrally; terga inconspicuously spotted with stramineous; posterolateral angles yellowish.

Very scarce and short silvery decumbent pilosity over body.

Head as in figures 79 and 83, heavily granulose, grains behind interocular depression raised into two very short horns; interantennal spine short, pointing upward. Fourth antennal segment three times as long as third.

Thoracic segments granulate; lengths of segments: 1.9, 1.0, 0.7 mm. Prothorax on lateral aspect as in figure 83. Armature of forefemur with inner row consisting of bristles arising from wartlike bases, a strong spine at end of row. Claws of foretarsi two, the inner very short and closely appressed to base of outer. First spine of forefemur at its own length from tip of trochanter. Basal half of forefemur gradually thickening to first spine.

Abdomen without bulbous swelling, parallel sided in dorsal aspect; as seen from side deepest at middle. Apical angles of terga slightly produced. Hind margin of terga with blackish wart. First tergum slightly elevated, with median longitudinal ridge. Sixth tergum three-fourths as long as seventh, hind margin with a backward sloping tubercle. Seventh tergum with apical half transversely corrugate and roundly tapering to a sharp point, apex not surpassing hypopygium, longitudinally carinate (fig. 32). Hind margins of second to sixth and eighth sterna straight; of seventh sternum concave

laterally. Sixth sternum longer than seventh; eighth visible its entire width. Claspers parallel sided, not reaching apex of hypopygium (fig. 1).

Overall body length 12.0 mm.

FEMALE: Head brownish, darker ventrally, with inconspicuous longitudinal median yellowish stripe. First antennal segment with six or seven narrow yellowish bands; second, third, and fourth brownish, last one covered with long silvery pilosity. Thorax brownish; forelegs yellowish white, apices and bases of segments brownish; brownish areas among spines of armature of forefemur, spines yellowish white or stramineous with black points, hairs of armature brown; tarsi brownish. Middle and hind femora yellowish white, each with four or five broad brownish bands; middle and hind tibiae straw colored; middle tibia with brownish basal band; tarsi blackish brown. Abdomen brown, darker ventrally and toward apex, terga lighter medianly.

Body with very scarce silvery decumbent pilosity.

Head heavily granulose; eyes relatively small. Interantennal spine nearly straight. Fourth antennal segment four times as long as third.

Thoracic segments granulate; lengths of segments: 2.6, 1.5, 0.8 mm. Armature of forefemur with inner row consisting of setae arising from wartlike bases, a strong spine at end of row. Claws of foretarsi two; the inner very short, closely appressed to base of outer. First spine of forefemur at nearly its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

Abdomen without bulbous swelling. Posterior angles of terga produced, lateral margins shallowly concave, hind margins with median blackish wart or small projections, as in figure 88; connexivum rugose or granulose. First tergum with well-developed median longitudinal elevation. Sixth tergum medianly longer than seventh, its apex wider than that of seventh, with a backward sloping tubercle on hind margin. Seventh tergum with posterior angles produced backward, hind margin with a well-developed median spine, with longitudinal carina. Eighth tergum transversely corrugate, lateral margin slightly elevated, hind margin medianly produced and shallowly concave at either side of center, lateral angles slightly elevated. Ninth tergum nearly twice as long as eighth, disc slightly elevated, lateral margins from about middle of segment to apex raised and then curving mesad, with an almost circular elevation between them (fig. 123). Hind margins of second to fifth sterna straight; of sixth broadly and shallowly concave. Seventh sternum concave on sides, and hind margin with a narrow small median emargination; laterally compressed near middle.

Overall body length 16.0 mm.

The backward sloping tubercle on the sixth tergum, the projecting posterolateral angles of the terga, and the heavily granulated body will separate this species from the other short ones; additional information is given in the discussion of *nanna* above. There is the possibility that the sexes of *haitiana* have been erroneously associated.

**TYPES:** Holotype, male, Kenscoff, near Port-au-Prince, Haiti, Darlington collector, October 13, 1934, 4–6,000 ft. elevation, MCZ 29465. Allotype, female, Kenscoff, Haiti, April 30, 1937, Chester Rays collector, MUM.

*Ghilianella longula* McAtee and Malloch

FIGURE 3

*Ghilianella longula* McAtee and Malloch, 1925, p. 104 (female).

**MALE:** Thorax and abdomen blackish brown. Head brown. Interantennal spine and beak paler. Antenna brown, last two segments silvery where pilose. Legs light brown, unmarked; forelegs slightly paler. Mesothorax and metathorax with anterolateral paler areas due to the concentration of pilosity.

Body covered with abundant short, appressed, silvery pilosity easily discernible against the dark background.

Head very sparsely granulose; eyes small. Interantennal spine long and straight.

Thoracic segments not granulose; lengths of segments: 3.7, 3.7, 3.1 mm. Claws of foretarsi two, the inner one short and appressed to the base of the outer. Armature of forefemur with inner row consisting of long setae arising from wartlike bases.

Abdomen on dorsal aspect parallel sided. Apical angles of terga not produced, hind margins of terga with small inconspicuous blackish warts. Hind margin of sixth tergum straight. Seventh tergum shorter than sixth, not surpassing claspers, without constriction on lateral margin, tapering from about middle to a sharp caudal point, transversely corrugate, with inconspicuous median ridge. Hind margins of second to fifth sterna straight, hind margin of sixth concave on median line and convex laterally; hind margins of seventh and eighth very shallowly concave medianly. Eighth sternum visible its entire width. Hypopygium opening upwards; claspers on lateral aspect elongate, broader basally, apex sharp and pointing cephalad (fig. 3). Upper lateral margin of hypopygium shallowly concave; apical process of hypopygium receding from apical margin, its base hidden by apices of claspers, sides slightly concave, apex somewhat expanded laterally.

Overall body length 29.0 mm.

This male specimen has been considered to be *longula* because the thoracic segments very closely agree with those of a female at hand identified by McAtee & Malloch as *longula*. This species is very close to *simillima* and to *signoreti*. *G. simillima* and *longula* can be separated by the characters given in the key; besides, the hind margin of the eighth sternum in *simillima* is undulated medianly while that of *longula* is straight. *G. signoreti* has the head and thoracic segments granulose instead of smooth as in *longula*. The females of these species can readily be separated by the shape of the seventh sternum.

Types: Hypotype, male, from Santiago de Cuba, no other data, AMNH; two parahypotypes, same data as hypotype, one in AMNH and other in author's collection.

*Chilianella megharpacta*, new species

FIGURES 4, 31

MALE: Head, thorax, and abdomen blackish brown. Legs brown. Middle and hind femora each with three incomplete annuli on apical half.

Body and legs with scarce short, appressed silvery pilosity. The setae on abdomen in small clusters and with clear areas between them.

Head heavily granulose. Interantennal spine not well developed, a mere wart. Third antennal segment two-thirds as long as fourth.

Thoracic segments heavily granulose; lengths of segments: 3.0, 2.9, 1.3 mm. Armature of forefemur with inner row consisting of alternating long and short spines and between them fine longer setae arising from wartlike bases. Claws of foretarsi two, the inner very short, closely appressed to base of outer. First spine of forefemur at one and one-half times its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

Abdomen gradually widening to apex of fourth segment, thence parallel sided to middle of seventh. Seventh sternum slightly inflated laterally near apex and constituting widest part of abdomen. Apical angles of terga not produced laterally. Apical margin of terga straight, without median wart, with inconspicuous median ridge, with many subsquare depressions at either side of median ridge and on connexivum. Seventh tergum longer than sixth, transversely rugose, shallow constriction starting on basal third, apical third pointed and not expanded, not surpassing claspers (fig. 31). Hind margins of second to fifth sterna shallowly concave; of sixth more deeply concave medianly and convex on sides; of seventh shallowly concave; of eighth straight. Seventh sternum on lateral margins one-half as long as medianly, slightly shorter medianly than sixth. Eighth sternum visible its entire width. Hypopygium opening upwards. Claspers very large, subtriangular, hind-most margin longer than upper. Upper margin

of hypopygium with small concavity above where basal angle of clasper fits, apical process with a large hook, slightly separated from the sternum, its apex hidden by the large claspers (fig. 4).

Overall body length 18.5 mm.

The huge subtriangular claspers easily separate this species from all others.

TYPE: Holotype, male, Tingo María, Perú, 670 meters elevation, September 1947, Weyrauch collector, USNM 63092.

*Ghilianella monense* Maldonado

FIGURES 59, 61, 90, 139

*Ghilianella monense* Maldonado, 1953, p. 195 (male).

FEMALE: Brown, paler than the male. Interantennal spine straw colored. Legs somewhat paler than remaining parts of body, inconspicuously banded with yellow. Venter of abdomen irregularly variegated with blackish and brown.

Prothorax with scarce pilosity. Mesothorax caudally with slightly denser pilosity. Metathorax with heavier pilosity on sides and below. Second to fifth abdominal segments, above and on sides, with somewhat heavier pilosity on basal halves, giving the abdomen a faint banded appearance; banding difficult to see except in reflected light, less conspicuous than in the male.

Head sparsely granulate; eyes small. Long interantennal spine, slightly decurved. Fourth antennal segment twice as long as third.

Thoracic segments very sparsely granulate; lengths of segments: 3.1, 3.1, 2.6 mm. Claws of foretarsi two, the inner very short and closely appressed to outer. First spine of forefemur at three times its own length from tip of trochanter; basal half of forefemur gradually thickened to first spine. Armature of forefemur with inner row consisting of bristles arising from wartlike bases.

Abdomen almost parallel sided; posterior angles of terga not produced; terga each with low longitudinal median ridge. Hind margin of each terga straight, with small black median wart. Fifth tergum longer than sixth; sixth longer than seventh (2.9, 2.6, 1.5 mm.). Seventh tergum longer than wide, hind margin not declivate, with apical angles produced, with a median tubercle subequal to apical angles (fig. 90). Eighth tergum twice as broad as long, hind margin slightly produced medianly, corrugate, lateral margins raised, inconspicuous median ridge. Ninth tergum corrugate, apex distinctly upcurved, apical margin deeply emarginate (fig. 139). Seventh sternum shorter than sixth, inflated below near middle, hind margin produced, projection rectangular, longer than wide at base (figs. 59, 61).

Overall body length 27.0 mm.

This species is very close to *productilis*, but both sexes can be separated from *productilis* by the characters in the keys. Examination of additional males demonstrate the presence of small wartlike elevations on the hind margins of the abdominal terga. It should be added that the hind margins of the seventh and eighth sterna are convex and with a small median semicircular concavity. All the type material was collected from a very small extension of *Sporobolus virginicus* growing in the shade of white mangrove and Australian pine trees; this place is probably covered with water during the rainy season.

Types: Allotype, female, from Mona Island, Puerto Rico, J. Maldonado-Capriles collector, April 20, 1954, USNM 63091. Paratypes, five females, same data; two males, same data as allotype, one in PW and other in author's collection.

*Ghilianella nanna*, new species

FIGURES 48, 71, 91, 111

FEMALE: Head and thorax dark brown; antenna and legs brownish. Middle and hind femora with two incomplete yellowish preapical bands. Connexivial margins with apical half to just before posterior angle blackish; terga medianly much darker, with irregular pale brownish spotting, median ridge pale brown. Abdomen below blackish brown, slightly paler medianly.

Body and legs with very scarce and short appressed pilosity.

Head granulose; eyes small. Interantennal spine long, bent downward.

Thoracic segments granulate; lengths of segments: 2.0, 1.2, 0.7 mm. Claws of foretarsi two, the inner short and appressed to base of outer. First spine of forefemur at slightly over its own length from tip of trochanter. Armature of forefemur with inner row consisting of fine setae arising from wartlike bases. Basal half of forefemur gradually thickening to first spine.

Abdomen without bulbous swelling, parallel sided. Lateral margins of fifth and sixth terga shallowly concave. Apical angles of terga slightly produced; hind margins of terga without wartlike elevations. Seventh tergum slightly shorter than sixth, broader than long, hind margin concave at either side of short median projection (fig. 91). Eighth tergum over twice as broad as long, with a short median ridge, at either side of median ridge a narrow longitudinal depression not reaching hind margin. Ninth tergum with a broad median elevation, lateral margins raised (fig. 111). Hind margin of seventh sternum with a short median projection; with a median broad depression on apical half (figs. 48, 71).

Overall body length 13.0 mm.

The short projections of the posterolateral angles of the terga of *nanna* may pass unnoticed; otherwise, the characters in the key will easily separate it from *rhabdita*, *galapagensis*, *mariae*, *calva*, *haitiana*, and *nebulosa*—the other known species under or around 13.0 mm. long.

TYPE: Holotype, female, Misiones, Argentina, July 1948, Bernardo Irigoyen collector, USNM 63090.

*Chilianella obesa*, new species

FIGURES 67, 81, 93, 126

FEMALE: Head, antenna, beak, and thorax brown. Abdomen yellowish brown, darker above. Middle and hind femora with two broad yellowish bands on apical half.

Body and legs with scarce, short, appressed grayish or yellowish pilosity.

Head not granulose. Fourth antennal segment two and one-half times as long as third. Interantennal spine not developed.

Thoracic segments not granulate; lengths: 3.1, 3.4, 1.8 mm. Prothorax on lateral aspect as in figure 81. Claws of foretarsi two, the inner short and appressed to base of outer. First spine at one and one-third times its length from tip of trochanter. Armature of forefemur with inner row consisting of short and long spines alternating with longer fine setae. Basal half of forefemur gradually thickened to first spine.

Abdomen conspicuously widening to apex of third segment, thence parallel sided to before apex of sixth and narrowing to apex of seventh (fig. 93). Apical angles of third to sixth terga projected laterally. Hind margin of second to fifth terga straight, with moderately large median warts. Wart on fourth tergum larger than that on third and fifth, smaller than that on sixth. Hind margin of sixth tergum angularly produced caudad, with large caudally produced median elevation, and constituting the widest part of the abdomen. Seventh tergum slightly shorter than sixth medially, notably narrower apically than basally; hind margin medially angularly produced, tuberculate, and longitudinally ridged. Connexival areas on each tergum with several subsquare depressions. Eighth tergum notably reduced, hind margin produced, small areas of ninth tergum visible on its sides, margins strongly elevated. Ninth tergum slightly over twice as long as eighth, lateral margin with subapical elevation, with a median ridge on apical half (fig. 126). Hind margins of second to fifth sterna straight; of sixth deeply and broadly concave. Seventh sternum nearly one and one-half times as long as sixth, hind margin slightly produced medianly (fig. 67). Sterna medianly carinate. Stigma unusually separated from lateral margin.

Overall body length 21.0 mm.

In the key this species is close to *panamana*, but they can be easily separated by the mentioned characters.

TYPE: Holotype, female, Hamburg Farm, Costa Rica, March 1936, collector unknown, MCZ 29464.

*Ghilianella panamana*, new species

FIGURES 52, 92, 120

FEMALE: Head and thorax reddish brown. Antenna brown, third and fourth segments each with apical two-thirds with whitish hairs. Forelegs brownish, upper side of femur yellowish brown. Middle and hind femora brown, each with three narrow incomplete annuli on apical half. Middle and hind tibiae brown, middle tibia with a basal yellowish annulus.

Body covered with short, appressed yellowish pilosity.

Head granulose; eyes moderately small; two short elevations behind interocular sulcus. Interantennal spine long, curved downward. Fourth antennal segment slightly over one and one-half times as long as third.

Thoracic segments moderately granulose; lengths of segments: 3.4, 4.5, 2.4 mm. Mesothorax with two small round elevations near posterior margin. Claws of foretarsi two, the inner short and appressed to base of outer. First spine of forefemur at nearly three times its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine. Armature of forefemur with inner row consisting of short and long spines alternating and between them longer fine setae.

Abdomen widening to middle of fourth segment and thence parallel sided to fifth, sixth widening toward apex, and seventh slightly narrower apically; the widening of sixth segment not enough to form a bulbous swelling. Hind margins of second to fourth terga straight, with inconspicuous wartlike median elevations; lateral angles of terga not produced. Fifth tergum longer than sixth, with sides slightly concave, apical margin with small shallow concavity on connexivium. Sixth tergum slightly less than twice as long as wide at base; postero-lateral angles produced, hind margin with a large conical median elevation. Seventh tergum shorter than sixth, slightly narrower apically than basally, basal margin with broad median elevation set against conical elevation of sixth; hind margin concave and declivate, with small median projection, shorter than projections of lateral angles (fig. 92). Eighth tergum narrow, leaving exposed narrow portions of ninth tergum at either side, depressed along median line, with fine transverse corrugations. Ninth tergum with broad longitudinal elevation on apical half; with a few transverse corrugations on basal half; apex narrow (fig. 120). Second to sixth sterna shallowly concave.

Seventh sternum longer medianly than sixth, longer medianly than on lateral margins, very slightly produced medianly, carinate on apical half (fig. 52).

Overall body length 24.5 mm.

Other females with similar elevation on the sixth tergum are *bulbifera*, *cuneata*, *pendula*, *bethei*, and *aracataca*, but otherwise these species are very different from *panamana*.

Types: Holotype, female, Barro Colorado, Panama Canal Zone, July 10, 1924, N. Banks collector, MCZ 29466. Paratype, same collection data, author's collection.

***Ghilianella rhabdita*, new species**

FIGURES 15, 29

MALE: Head, antenna, and thorax brownish. Forelegs yellowish brown, femur with two incomplete yellowish annuli. Middle and hind femora brownish, darker toward apex, with two preapical yellowish rings. Middle and hind tibiae brownish, with postbasal yellowish ring. Abdomen brownish, variegated with yellowish.

Inconspicuously covered with short, scarce, appressed pilosity.

Head granulose; eyes small. Interantennal spine long, decurved.

Thoracic segments granulate; lengths: 2.5, 1.6, 0.7 mm. Armature of forefemur with inner row consisting of long fine setae arising from wartlike bases. Claws of foretarsi two, the inner very short, and closely appressed to base of outer. First spine of forefemur at one and one-half times its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

Abdomen on dorsal aspect nearly parallel sided to middle of seventh segment, thence narrower to apex. Terga with apical angles not produced or elevated and hind margins without median warts. Seventh tergum longer than sixth; the narrowed portion beginning before middle, thence parallel sided to before apex; apex roundly produced, apical half transversely corrugate (fig. 29). Hind margins of second to fifth sterna straight; of sixth medianly concave and slightly convex on sides, inside the lateral convexity with a circular elevation; of seventh straight; of eighth slightly acutely produced. Sixth and seventh sterna of same median length. Seventh sternum nearly half as long on lateral margins as medianly. Eighth sternum visible on its entire width, medianly as long as seventh laterally. Spiracle pedunculate. Hypopygium opening upwards; its upper lateral margin stepped, the claspers fitting in the concavity. Claspers on lateral aspect oblong, apex inwardly curved, pointed apically (fig. 15).

Overall body length 14.0 mm.

Types: Holotype, male, Espirito Santo, Rio São Jose, Brazil, Santos Soares collector, USNM 63086.

The straight margins of the abdominal terga easily separate this small species from others 14.0 mm. or less in length. The circular elevation on either side of the sixth and the unusual length of the eighth sterna identify it.

*Ghilianella signata* McAtee and Malloch

FIGURES 16, 100

*Ghilianella signata* McAtee and Malloch, 1925, p. 120 (female).

MALE: Brownish, last four abdominal segments blackish brown.

Legs and antenna covered with short appressed scarce pilosity. Pilosity on body longer and in patches; more abundant on base of interantennal spine, frons, and sides of neck; prothorax anteriorly on sides around neck, mesothorax and metathorax anteriorly on sides; above and below abdominal segments in patches of 4 to 10 setae. Abdomen with a total of 12 extensive patches of whitish hairs and of nearly same extension as follows: 2 apically on fourth, fifth, and sixth terga; 2 apically on fourth, fifth, and sixth sterna.

Head not granulose, eyes moderately large. Interantennal spine long, slightly decurved. Fourth antennal segment slightly less than twice as long as third.

Thoracic segments not granulate; lengths of segments: 2.8, 3.7, 2.2 mm. Armature of forefemur with inner row consisting of alternate long and short spines and between them longer fine setae. Claws of foretarsi two; the inner one shorter, appressed to base of first. First spine of forefemur at four times its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

Abdomen with bulbosity. Abdominal terga conspicuously convex. Abdomen in dorsal aspect parallel to apical three-fourths of fourth segment. Apical fourth of fourth segment much wider and forming base of bulbosity. Fifth segment constituting major and widest part of bulbosity, the margins of the tergum produced over lateral margins of segment, produced in a point at about midlength of segment (fig. 100). Base of sixth segment wider than remaining portion, thence parallel sided to apex, one-third longer than fifth. Seventh tergum bent upward, longer than sixth, narrowed portion beginning at basal two-fifths and longer than either basal or apical portions; apex very slightly surpassing claspers, transversely corrugated. Hind margin of second to fifth sterna straight; of sixth and seventh shallowly concave; of seventh shortly produced medianly. Sixth sternum less than twice as long as seventh; eighth visible on its entire width. Hypopygium opening cephalad, much deeper than abdomen at sixth segment;

claspers broad (fig. 16). Upper lateral margin of hypopygium stepped, claspers fitting in the concavity.

Overall body length 24.0 mm.

*G. grapta* and *ignorata* are the only two other species with such extensive yellowish pilose spots, but can be separated from *signata* by the characters in the key.

Types: Hypotype, male, Santa Marta Mountains, Mount San Lorenzo, Colombia, 3,500 ft. elevation, June 8, 1920, F. M. Gaiger collector, MUM. Parahypotypes, three males, Vista Bella, Colombia, F. W. Walker collector, one each in USNM, author's collection, and MUM.

*Ghilianella signoreti* (Dohrn)

FIGURES 6, 73, 140

*Emesa signoreti* Dohrn, 1860, p. 227, fig. 1 (Jamaica, female).

*Ghilianella signoreti* (Dohrn), McAtee and Malloch, 1925, p. 97.—Wygodzinsky, 1951, p. 225.

MALE: Uniformly blackish brown or yellowish brown.

Body well covered with short, appressed silvery pilosity that give the insect a grayish aspect. Pilosity slightly more abundant at base of interantennal spine and at metathorax. Pilosity on first two antennal segments and on legs scarce.

Head distinctly granulose; eyes small; fourth antennal segment slightly less than twice as long as third. Well-developed interantennal spine; slightly decurved.

Prothorax slightly granulose, mesothorax and metathorax inconspicuously granulose; lengths of segments: 3.0, 3.0, 2.5 mm. Armature of forefemur with inner row consisting of fine setae arising from wartlike bases. Claws of foretarsi two, the inner shorter than the outer. First spine of forefemur at three times its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

Abdomen in dorsal aspect parallel sided. Terga with apical angles not produced; hind margin with small wart, straight. Seventh tergum very slightly shorter than sixth, constriction very shallow and somewhat long, apical half irregularly wrinkled. Hind margins of second to fifth sterna nearly straight; of sixth concave medianly and convex on sides; of seventh and eighth shallowly concave on sides and slightly convex medianly. Eighth sternum visible its entire width. Hypopygium opening upward; clasper wider near base, much narrower apically; apex curved mesad and pointing cephalad (fig. 6). Upper lateral margin of hypopygium angularly bent near middle, sides ledged; apical process of hypopygium developed, small, its apex reaching to slightly above apical upper margin of clasper, parallel sided to apex, apex very shallowly concave.

Overall body length 24 mm.

The lengths of the thoracic segments have been used to associate the male specimens with the females. This species is very close to *simillima* and *longula*; it can be distinguished from them by the shorter thoracic segments, the slightly greater length of the prothorax compared with the mesothorax, the granulation of the head and thorax, and the shape of the hind margin of the seventh and eighth sterna. The ninth tergum of the female (figs. 73, 140) has a close resemblance to that of *bicaudata*, but otherwise these two species are very different. This species seems to be very variable.

Types: Hypotype, male, Portland Ridge, Clarendon, Jamaica, July 22, 1955, T. H. Farr collector, IJ. Parahypotypes, seven males, from different localities in Jamaica, one in USNM and another in author's collection. Five females were also identified, all from Jamaica, one in author's collection. These females agree very closely with the description given by Wygodzinsky (1951).

*Ghilianella spinata*, new species

FIGURES 28, 47, 69, 80, 84, 85

MALE: Overall color yellowish brown or brown. Head, forelegs, second and third abdominal segments, and apex of seventh tergum darker, brownish. Antenna stramineous to yellowish brown; first segment with four or six yellowish annuli; second segment darker, with four or five more or less equidistant broad yellow annuli; third and fourth segments brownish. Forefemur with many irregular small yellowish areas, spines of outer row of armature yellowish white and black tipped. Middle and hind femora each with basal half stramineous, apical half brownish with two broad yellow annuli. Middle tibia with three broad yellowish annuli, apical portion of segment paler than basal. Middle and hind tarsi blackish brown. Spiracles yellow. Body and legs with very scarce short appressed golden pilosity.

The male paratype has very striking longitudinal lines of yellow pilosity along the inner margin of the conexivium on the bulbosity. These lines may have been rubbed off in the holotype.

Head from side as in figure 80, granulose; eyes small; two well developed spines behind interocular depression. Interantennal spine poorly developed, a mere wart.

Prothorax granulose, mesothorax and metathorax sparsely granulate. Lengths of thoracic segments: 3.4, 4.4, 2.1 mm. Apical half of prothorax narrower than basal, dorsally with two long spines where segment begins to narrow, small elevation on anterior dorsal angle (fig. 85). Mesothorax twice as long as metathorax, with two long spines above at about their own length from caudal margin. Metathorax dorsally with two long spines closer to caudal margin (fig. 84).

Armature of forefemur with inner row consisting of spines with fine setae between them. Claws of foretarsi two, the inner very short and closely appressed to base of outer. First spine of forefemur at nearly twice its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine.

Abdomen with bulbosity (fig. 47); gradually widening to basal half of fourth segment, apical half of segment forming minor part of bulbosity, lateral angles of hind margin slightly produced, with a long median spine bent cephalad. Apical margin of fifth tergum widest part of bulbosity, lateroposterior angles each produced into long spine that surpasses lateral margins of segment, with a long median vertical spine. Sixth tergum narrower apically, posterior angles produced caudad, with a median short, nearly horizontal spine. Seventh tergum twice as long as sixth, broader basally, suddenly narrowed before apex and then produced into a tapering stout spine, surpassing claspers by three times their length, transversely corrugate on apical half. Hind margin of second to fourth sterna straight; of fifth and sixth sterna broadly and shallowly concave; of seventh notched medianly, lateroposterior angles produced into long spines. Eighth sternum visible its entire width, hind margin straight. Upper margin of hypopygium sloping downward at  $45^\circ$ ; clasper parallel sided; longer than wide, apex curved cephalad and slightly bent upward (fig. 28). Apical process of hypopygium slightly developed, its base exposed between the claspers.

Overall body length 24.5 mm.

FEMALE: Head and thorax brown. Last four abdominal segments darker. The specimen is not well preserved and no further color details can be given.

Head as in male; granulose; eyes relatively small; two long spines after interocular depression. Interantennal spine slightly more developed than in the male.

Granulations and length of thoracic segments as in the male. Prothorax parallel sided to before middle, thence narrowed to apex; with four radiating spines above at end of broader portion, dorsolateral angle slightly raised, more so than in the male. Mesothorax and metathorax as in the male. Inner row of armature of forefemur and fortarsal claws as in male. First spine of forefemur a little less than twice its own length from tip of forefemur. Basal half of forefemur gradually thickened to first spine.

First abdominal tergum raised into a caudally bent spine. Second and third abdominal segments gradually widening; apical half of fourth tergum forming part of bulbosity, posterior margin straight. Caudal margin of fifth tergum forming widest part of bulbosity, lateroposterior angles produced into long spine surpassing lateral

margins of segment, with a median vertical long spine. Sixth tergum narrower apically, posterior angles produced laterally into short broad spines with a median short vertical spine; apical half of lateral margin strongly depressed. Seventh tergum subequal to sixth, basal half slanting downward to horizontal apical half; caudal margin straight (fig. 69). Eighth tergum with basal margin roundly produced, apical margin with shallow median indentation, with longitudinal median depression, on either side of this depression roundly elevated, transversely corrugate. Basal half of ninth tergum transversely corrugate; apical half with lateral margins strongly elevated and with a shorter small median longitudinal ridge, area between these ridges smooth and shiny. Seventh sternum longer than sixth, with a small round median notch. Hind margins of remaining sterna straight.

Overall body length 24.0 mm.

This is the only species of *Ghilianella* with such long spines on the head, thorax, and abdomen.

Types: Holotype, male, St. Thomas Baths, Jamaica, March 29, 1937, collector Chester Rays, 500 ft. elevation, MUM. Allotype, female, St. Thomas Baths, Jamaica, collector Mrs. Swainson, IJ. Paratype, male, same data as holotype, author's collection. Paratype, male, St. Andrews, Jamaica, October 1955, collector T. H. Farr, USNM. One female paratype, St. Thomas, Jamaica, IJ.

*Ghilianella spinicaudata*, new species

FIGURES 70, 76, 78, 89, 114

FEMALE: Head, thorax, and legs light reddish brown. Tibiae either without or each with two basal brownish bands. First antennal segment dark brown, with eight or nine narrow yellowish annuli, second segment dark brown, third and fourth grayish on account of the pilosity. Abdomen dark brown to blackish.

Body with very scarce short appressed pilosity.

Head as in figure 76; granulose, granulations small. Interantennal spine long, slightly pointing upward, straight.

Thoracic segments very sparsely granulate; lengths of segments: 3.8, 2.7, 1.3 mm. Prothorax as in figure 78. Claws of foretarsi two, the inner very short, closely appressed to base of outer. Armature of forefemur with inner row consisting of alternating fine setae and short spines, the setae arising from wartlike bases. Outer row of spines similarly arranged but with more spines; with five or six longer spines forming a third row more to the outside, and four still longer spines forming a fourth row on the outside. No other species has the spines of the armature of the forefemur arranged in four rows. First spine of forefemur slightly curved, at slightly over its own length from tip of trochanter; basal half of forefemur gradually thickened to first spine.

Abdomen noticeably thicker than wide; without bulbous swelling; parallel sided to middle of sixth tergum, thence widening to apex. First tergum with well developed caudally inclined projection. Posterolateral angles of third to sixth terga produced laterally; hind margin of terga angularly produced caudad and with median wart, each successive wart bigger than the preceding; surface of terga not smooth, somewhat verrucose or granulate. Seventh tergum at median length shorter than sixth, narrower basally than apically; posterolateral angles sharply produced, with a long median spinelike projection (fig. 89). Eighth tergum broader than long, quadrangular, caudal angles slightly produced. Ninth tergum short, narrower toward apex; basal half finely corrugate, with a narrow median elevation reaching to middle of segment; apical half roundly swollen (fig. 114). Seventh sternum four-fifths as long as sixth, apical and basal margin shallowly concave, longer medianly than on sides (fig. 70). Hind margin of remaining sterna straight. All sterna finely and transversely corrugate.

Overall body length 22 mm.

The armature of the foreleg is strikingly different from that of the other known species. No other species has the median spine of the hind margin of the seventh tergum so long and well developed.

TYPE: Holotype, female, Portland near Hardwar Gap, Jamaica, West Indies, March 14, 1954, T. H. Farr collector, IJ.

*Ghilianella varicornis* (Dohrn)

FIGURES 2, 37, 39, 42, 51, 75, 86, 138

*E. [mesa] varicornis* Dohrn, 1860, pp. 226–227 (Puerto Rico, female).

*Ghilianella varicornis* (Dohrn), Bergroth, 1906, p. 317.—McAtee and Malloch, 1925, p. 101.—Barber, 1939, p. 387.

MALE: Head and thorax blackish brown. Head with distinct stramineous median line from interocular depression backward; darker underside. Interantennal spine stramineous. First segment of beak stramineous, second brown with narrow stramineous apical annulus. First antennal segment brown, with eight narrow yellowish annuli, remaining antennal segments brownish. Forelegs dark brown, femur paler and with many yellowish spots above, spines of armature yellowish white and black tipped. Middle femur brownish with many broad and narrow complete and incomplete yellowish annuli; middle tibia dark brown, with five or six broad yellowish annuli; tarsi dark brown. Hind and middle femora similar, conspicuous yellowish annuli irregularly spaced; tibia and tarsi as in middle leg. Abdomen blackish brown, with many yellowish small areas above and below, these spots more concentrated and conspicuous on hypopygium.

Scarce short, appressed, silvery pilosity over body.

Head distinctly granulose. Fourth antennal segment twice as long as third. Interantennal spine, short, straight.

Thoracic segments very sparsely granulate; lengths of segments: 3.5, 2.8, 1.8 mm. Claws of foretarsi two, the inner very short, closely appressed to base of outer. First spine of forefemur at twice its length from tip of trochanter. Basal half of forefemur gradually thickened to first spine. Armature of forefemur with inner row consisting of long setae arising from wartlike bases, with a strong spine before apex.

Abdomen on dorsal aspect practically parallel sided from apex of third segment to seventh. Apical angles of terga very slightly produced, hind margin of terga with small blackish wart, wart on sixth larger. Hind margin of sixth tergum medianly produced caudad. Seventh tergum slightly shorter than sixth, not surpassing claspers, with constriction beginning at middle; constriction shorter than basal half, transversely corrugated on apical half, medianly ridged (fig. 37). Hind margins of second to fifth sterna straight; of sixth shallowly concave; of seventh deeply concave; of eighth very shallowly concave (fig. 75). Sixth sternum twice as long as seventh. Eighth sternum visible its entire width. Hypopygium opening upward; exposed part of clasper on lateral aspect short, longer than wide, apex sharp, pointing cephalad and rising above upper margin of clasper; with a shallow lateral longitudinal furrow (figs. 2, 39). Upper lateral margin of hypopygium stepped; apical process of hypopygium short, vertical, not receding from caudal margin, relatively broad, with a deep V-shaped apical notch (fig. 42).

Overall body length 23-24 mm.

The striking appearance of the apical process of the hypopygium easily separates the males of this species from all the others. Only *borincana* has a somewhat similar process. The similarity of the length of the thoracic segments to those of the female has been used to associate the sexes. Figures 51, 86, and 138 show three aspects of the end of the abdomen of the female of this species. The ninth tergum in profile can be as in figure 2 or straight to the apex.

**TYPES:** Hypotype, male, Mayagüez, Puerto Rico, September 29, 1947, collector J. A. Aguiló, USNM 63088. Parahypotypes, three males, same locality and date. Additional females studied and identified: three females, Ponce, Puerto Rico, collected from a mosquito animal bait trap, March 1948, collector J. Maldonado-Capriles; three females, two from Mayagüez, Puerto Rico, and one from Aguadilla; all in the collection of the College of Agriculture and Mechanical Arts, Mayagüez, Puerto Rico.

## Additional Material Examined

*Ghilianella aliena* McAtee and Malloch

*Ghilianella aliena* McAtee and Malloch, 1925, p. 106.

Figure 117 is of the female holotype in the Paris Museum.

*Ghilianella alterata* McAtee and Malloch

*Ghilianella alterata* McAtee and Malloch, 1925, pp. 107–108.

Figure 116 is of the female holotype in MNHN. The first spine of the forefemur is distant three times its length from the tip of the trochanter.

*Ghilianella (Ploeodonyx) amicula* McAtee and Malloch

*Ghilianella (Ploeodonyx) amicula* McAtee and Malloch, 1925, pp. 127–128.

Figure 112 is of the female holotype in MNHN. This species is very close to *insidiatrix*. Besides the characters given in the key and by the authors to separate these two species, it can be added that the abdomen of *amicula* is widest at the end of the sixth tergum. Material examined: one ♀, Marowyne River, September 1939, in the collection of PW.

*Ghilianella angulata* (Uhler)

*Ghilianella angulata* Uhler, 1893, pp. 717–718.

Figure 113 is of a female deposited in USNM, from Balthazar, windward side, Grenada, West Indies. On page 129 of their revision, McAtee and Malloch mention that this female may well be a distinct species from the true *angulata* of St. Vincent.

*Ghilianella annectens* McAtee and Malloch

*Ghilianella annectens* McAtee and Malloch, 1925, pp. 125–126.

Figures 95 and 142 are of the following material examined: two ♀, Barro Colorado Island, Panama, January 1934, Zetek collector, in USNM. One ♀, July 1938, Williams collector, in CNHM.

*Ghilianella approximata* McAtee and Malloch

*Ghilianella approximata* McAtee and Malloch, 1925, p. 117.

Figures 12, 45, 58, 99, and 129 are of male and female paratypes in USNM. Additional material examined: 13 specimens all from Peru: one ♀ and one ♂, Valle Chanchamayo, 800 meters elevation, January 1939, Weyrauch collector; one ♀, Tingo María, December 1946, Kuschel collector; two ♂, Tingo María, 1,670 meters elevation, November 1947, Weyrauch collector; all in PW's collection. Three ♂, Tingo María, 2,200 ft. elevation, Pallister collector (Johnson

donor), in AMNH. One ♂, from Río Pachitea, 1923, Standinger and Bang Haas collectors, in MUM. One ♀, Puerto Inca, Río Pachitea, Bloete collector, in PW collection. One ♀, 1,000 meters elevation, May 1906, Iconnicoff collector, in USNM. One ♂, Río Ucayali, November 1923, Bassler collector; one ♀, Pucalpa Loreto 660 ft. elevation, November 1946, Pallister collector; one ♀, Madre de Dios, Garlepp collector, all in AMNH.

***Ghilianella aracataca* McAtee and Malloch**

*Ghilianella aracataca* McAtee and Malloch, 1925, pp. 112-113.

Figures 5, 30, 62, 106, 134 are of the following material examined: five ♂, and nine ♀, from Río Frío, Colombia, one ♂, collected by G. Salt, the rest labeled W. L. McAtee collection, 1942, all in USNM.

***Ghilianella assanutrix* Bergroth**

*Ghilianella assanutrix* Bergroth, 1906, pp. 314-315.

Figures 104 and 118 are of CAS specimens. Additional material examined: one ♂, from Yaracey, Venezuela, determined by McAtee and Malloch, February 1920, J. and E. B. Williamson collectors, in MUM. Four ♀, San Esteban, Venezuela, April 1940, Anduze collector, in CAS.

***Ghilianella bethei* Dohrn**

*Ghilianella bethei* Dohrn, 1863, pp. 68-70.

Figures 97 and 146 are of a specimen deposited in CM and determined by McAtee and Malloch. Additional material examined: one ♀, Costa Rica, Reinoser collector, deposited in the VM.

***Ghilianella colona* McAtee and Malloch**

*Ghilianella colona* McAtee and Malloch, 1925, p. 112.

Figure 20 is of the male holotype in CM. Additional material examined: one ♂, Tela, Lancetilla Creek, Honduras, March 1923, Hubbell collector, in MUM.

***Ghilianella cuneata* McAtee and Malloch**

*Ghilianella cuneata* McAtee and Malloch, 1925, pp. 113-114.

Figures 57 and 131 are of a female paratype in USNM.

***Ghilianella filiventris* Spinola**

*Ghilianella filiventris* Spinola, 1850, p. 103.

Material examined: Brazil: three ♂, from Santarem, July 1927, Zerny collector, in VM. One ♂, Pará, June 1944, PW collection. Two ♀, Santarem, June 1919, Klages collector, USNM 6324. One ♀,

Pará, Fordlandia, June 1931, Shannon collector, in USNM. Also one ♂, from Cumbase, Peru, in USNM.

***Ghilianella galapagensis* Heideman**

*Ghilianella galapagensis* Heideman, 1901, pp. 367-368.

Figures 55 and 115 are of the female holotype in the USNM.

***Ghilianella glabrata* McAtee and Malloch**

*Ghilianella glabrata* McAtee and Malloch, 1925, p. 128.

Figures 54 and 130 are of the female holotype in the USNM.

***Ghilianella gladiator* McAtee and Malloch**

*Ghilianella gladiator* McAtee and Malloch, 1925, p. 115.

Figures 96 and 137 are of a female paratype in the USNM. Additional material examined: one ♀ examined, Trinidad, 1939, Mann collector, in USNM.

***Ghilianella globulata* McAtee and Malloch**

*Ghilianella globulata* McAtee and Malloch, 1925, pp. 118-119.

Figures 98 and 136 are of a female paratype in the USNM. Additional material examined: three ♂ and three ♀, from Honduras, six different localities, collected by Hubbel, in MUM. One ♂, Honduras, San Antonio, June 1931, White collector, in PW. One ♀, intercepted in New Orleans in bananas from Mexico, July 1936, in USNM. One ♀, Yurimaguas, Peru, June 1930, Parish collector, in USNM. One ♀, Iquitos, Peru, February 1920, Parish collector, in USNM. Two ♀, Guatemala, intercepted one each in New Orleans and Mobile, 1936, in USNM. One ♂, St. Thomas Izabel, Guatemala, April 1934, Mandel collector, in author's collection.

***Ghilianella ica* McAtee and Malloch**

*Ghilianella ica* McAtee and Malloch, 1925, p. 111.

Figure 41 is of the male holotype in MNHN.

***Ghilianella ignorata* Dohrn**

*Ghilianella ignorata* Dohrn, 1860, pp. 238-239.

Material examined: one ♂, from Gamboa, Panama, Canal Zone, May 1937, Bliss collector, in author's collection, from PW. One ♂ from Nueva Granada, collected and determined by Signoret, in USNM.

***Ghilianella insidiatrix* Bergroth**

*Ghilianella insidiatrix* Bergroth, 1922, pp. 219-220.

Figures 7, 35, and 74 are of a male determined by Wygodzinsky, from Paramaribo, Brazil, Leiskes collector, May 1938, in PW. Additional material examined: two ♂, Trinidad, Cedros, October 1921, Busk collector, in USNM. One ♂, from Trinidad, Caparo, Klages collector, in USNM. One ♀, determined as *longipes* by Signoret, in author's collection.

***Ghilianella maculata* McAtee and Malloch**

*Ghilianella maculata* McAtee and Malloch, 1925, p. 108.

Figures 18 and 44 are of the male holotype in the USNM.

***Ghilianella mariae* Wygodzinsky**

*Ghilianella mariae* Wygodzinsky, 1953, pp. 292-295.

Material examined: two ♀ from Peru in USNM.

***Ghilianella minimula* McAtee and Malloch**

*Ghilianella minimula* McAtee and Malloch, 1925, p. 105.

Figures 10 and 135 are of the type material in CM. This species appears to be fairly common; 14 ♂ and 12 ♀ from PW collection and 2 ♀ from USNM were examined. All the specimens have different localities in Brazil. The projection of the posterior angle of the hypopygium is moderately developed, parallel sided, and with a shallow apical depression.

***Ghilianella patruela* McAtee and Malloch**

*Ghilianella patruela* McAtee and Malloch, 1925, p. 119.

Material examined: two ♂, Nicaragua, in AMNH. Figure 27 is of one of these specimens. They differ from McAtee and Malloch's description in that the posterior margin of the hypopygium is not so markedly bisinuate, and the seventh sternum is shorter on the margins than medianly.

***Ghilianella pendula* McAtee and Malloch**

*Ghilianella pendula* McAtee and Malloch, 1925, pp. 116-117.

Figures 49 and 133 are of a female paratype in the USNM.

***Ghilianella personata* McAtee and Malloch**

*Ghilianella personata* McAtee and Malloch, 1925, pp. 108-109.

Figures 8 and 145 respectively are of a male paratype and the female allotype in CM.

*Ghilianella productilis*, Barber

*Ghilianella productilis* Barber, 1914, pp. 502–503.

Figures 22, 68, 105, 132 are of specimens identified by Barber and deposited in the USNM. Additional material examined: two ♂, from Nassau, Bahamas, in AMNH. One ♂ and one ♀, Big Pine, Florida, Barber collector; one ♂, Soledad, Cuba, Myers collector, in MCZ. One ♂, from Vinales, Cuba, August 1931, Vaurie collector, in AMNH. One ♂, Florida, 1920, Parrish collector, in USNM. One female from Haiti in USNM runs to this species in the key, but additional material should prove it to be a different species.

*Ghilianella recondita* McAtee and Malloch

*Ghilianella recondita* McAtee and Malloch, 1925, pp. 119–120.

Material examined: one ♂, from San José de Guilla, Venezuela, Vogl collector, in CNHM.

*Ghilianella simillima* McAtee and Malloch

*Ghilianella simillima* McAtee and Malloch, 1925, p. 102.

Figure 11 is of the male holotype in MNHN. Additional material examined: two ♂, Agua Azul, Lake Yojoa, Honduras, August 1948, Hubbell collector, in MUM. One ♂, Aguan River Valley, Malon Farm, Honduras, April 1923, Hubbell collector, determined by McAtee and Malloch, in MUM. One ♂, Sierra de los Organos, Cuba, May 1946, Acuña, USNM.

*Ghilianella stipitata* McAtee and Malloch

*Ghilianella stipitata* McAtee and Malloch, 1925, p. 116.

Figure 119 is of the female holotype in MNHN. The head and thoracic segments are granulose; the first spine of the forefemur is four times its length from the tip of the trochanter; the connexivium is lighter than the remaining parts of the terga.

*Ghilianella subglobulata* McAtee and Malloch

*Ghilianella subglobulata* McAtee and Malloch, 1925, pp. 121–122.

Figures 19, 43, 109, and 125 are of the holotype and allotype in MNHN. Additional material examined: one ♂, from Patanemo, Venezuela, March 1940, Anduze collector, in CAS.

*Ghilianella succinta* McAtee and Malloch

*Ghilianella succinta* McAtee and Malloch, 1925, p. 105.

Figures 65, 110, and 144 are of the female holotype in CM.

*Ghilianella uncinata* McAtee and Malloch

*Ghilianella uncinata* McAtee and Malloch, 1925, p. 122.

Material examined: two ♂, Panama, February 1936, Gertsch collector, in AMNH. One ♂, Panama, April 1929, Zetek collector, in USNM. One ♂, Barro Colorado Island, Panama Canal Zone, January 1947, Krauss collector, in USNM. One ♂, Barro Colorado Island, Panama Canal Zone, July 1924, in PW.

## Previously Described Species Not Included in the Keys

*Ghilianella analis* (Dohrn)

*Emesa analis* Dohrn, 1860, pp. 229-230, fig. 5 (Surinam).

*Ghilianella analis* (Dohrn), McAtee and Malloch, 1925, p. 96.

This species runs to couplet 25 of the key to the males, as Dohrn's illustration shows that the hypopygium is not inflated. This condition places it close to *ica* and *pachitea*. The seventh tergum of these two species scarcely surpasses the hypopygium while in *analis*, the seventh tergum seems to surpass the claspers by twice their length.

*Ghilianella angulata* (Uhler)

*Emesa angulata* Uhler, 1893, pp. 717-718.

*Ghilianella angulata* (Uhler), McAtee and Malloch, 1925, pp. 128-129.

This species was not included in the key to females because one female deposited in USNM described as this species by McAtee and Malloch may well be another species. The specimen runs to couplet 29 of the key. These characters place it close to *insidiatrix* and *amicula*. Since these two species belong to the subgenus *Ploeodonyx*, they can be easily separated from *angulata*, which is in subgenus *Lissonyx*.

*Ghilianella annulata* (Dohrn)

*Emesa annulata* Dohrn, 1863, pp. 65-66 (South America?).

*Ghilianella annulata* (Dohrn), McAtee and Malloch, 1925, p. 96.

McAtee and Malloch state: "Closely related to *analis*, 'last dorsal segment scarcely petiolate'. This indicates that the species is to be compared with *aracataca* and may possibly be identical."

*Ghilianella gerstaeckeri* (Dohrn)

*Emesa gerstaeckeri* Dohrn, 1860, pp. 223-224 (Haiti).

*Ghilianella gerstaeckeri* (Dohrn), McAtee and Malloch, 1925, p. 97.

McAtee and Malloch state: "The present species is said to have the sixth (that is seventh) segment bispinose apically."

*Ghilianella granulata* Champion

*Ghilianella granulata* Champion, 1898, pp. 171-172, pl. 10., fig. 19 (British Honduras).

As the terminal segments of the type are missing, this species is therefore unidentifiable.

*Ghilianella imbecilla* (Dohrn)

*Emesa imbecilla* Dohrn, 1860, pp. 228-229 (Para).

*Ghilianella imbecilla* (Dohrn), McAtee and Malloch, 1925, p. 97.

According to McAtee and Malloch, this species may not be identifiable. "Mid and hind femora each with three pale rings; described from a specimen with collapsed abdomen."

*Ghilianella servillei* (Spinola)

*Emesa servillei* Spinola, 1837, pp. 90-95.

*Ghilianella servillei* (Spinola), Wygodzinsky, 1949, p. 29.

According to Wygodzinsky, this species belongs to *Ghilianella*. The male described by Spinola is insufficiently characterized to be run in the key. The prothorax is the longest thoracic region, and the abdomen is parallel sided.

*Ghilianella spinolae* Dohrn

*Ghilianella spinolae* Dohrn, 1860, p. 238 (Amazon River).

According to McAtee and Malloch (1925, p. 97): "Abdominal segments 1-3 yellow and longer even than in *filiventris* indicates a species distinct from any here described."

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