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Weevils of the Tribe Sipalini (Coleoptera, Curculionidae, Rhynchophorinae) Part 2. The Genera *Mesocordylus* and *Orthognathus*

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INTRODUCTION AND ACKNOWLEDGMENTS

The present paper is the second in a three-part series on tropical weevils of the tribe Sipalini, subfamily Rhynchophorinae. Part 1 (Vaurie, 1970) contained a revision of the eight species of the genera *Rhinostomus* and *Yuccaborus* of the New and Old worlds; the present report deals with *Mesocordylus* (24 species) and *Orthognathus* (three species) of the New World; and the final paper will concern *Sipalinus* (seven species) of the Old World.

A short history and the characters of the tribe were presented in part 1, together with a key to the genera, a discussion of the mandibles (which differ from those of many of the Curculionidae in the absence of teeth on their inner surfaces), a table and map showing distribution of the genera, and a discussion of their relationships. The acknowledgments for the present paper are the same as those given in part 1. The names of the institutions or individuals who contributed specimens of *Mesocordylus* and *Orthognathus* for this study appear under Specimens Examined.

Mesocordylus and *Orthognathus* differ from other tribes of the subfamily

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(Rhynchophorini, Campyloscelini, Stronboscerini, and Cryptodermini) by having a combination of nonpincer-like mandibles (fig. 2), elbowed antennae with six segmented funiculus, the pygidium virtually covered by the elytra, the prosternum not channeled, the mesepimeron ascending angularly (fig. 3), the metepimeron covered by the sides of the elytra, the femora unarmed, and the tarsal claws at base widely separated. They are separable from one another as shown below.

KEY TO THE GENERA OF THE SIPALINI

1. Third tarsal segments dilated and bilobed; pronotum lacking postocular lobe; mandibles curving outward *Rhinostomus* and *Yuccaborus*¹
 Third tarsal segments narrow, linear; pronotum with postocular lobe (figs. 10, 74); mandibles extending forward 2
2. Species of Old World only *Sipalinus*²
 Species of New World only 3
3. Hind tibia not usually any wider at apex than at base, but if slightly so, then apical truncation (figs. 13, 15) is very narrow, not wider than second tarsal segment, usually not visible in profile view; beak dorsally punctate, seldom with faint median carina *Mesocordylus*, p. 3
 Hind tibia abruptly widened to apex where it is at least twice width of base, apical truncation (figs. 66, 67) wider than second tarsal segment, readily visible in profile view; beak dorsally bi- or multicarinate, seldom punctate *Orthognathus*, p. 60

The three last-named genera seem to be more closely related to one another than to the genera *Rhinostomus* and *Yuccaborus*. The species of *Mesocordylus* and *Orthognathus* are similar in size, in elongate shape, in dark coloration, and in possession of a wirelike coil in the aedeagus. They vary in length from 5 to about 30 mm., averaging about 15 mm. In addition to the characters of the beak and tibia given in the key, the species of *Orthognathus* differ from those of *Mesocordylus* by having longer, more obtuse, not so acuminate, mandibles without any visible teeth or denticles at the base or laterally. About a third of the 24 species of *Mesocordylus* differ from the solidly colored species of *Orthognathus* by having large, widely separated, white, yellow, or griseous hairy spots on the black elytra; the majority of remaining species have smaller, denser, hairy elytral spots (figs. 37-42).

¹ These genera are discussed in Vaurie, 1970, part 1 of this series.

² This genus will be discussed in part 3 of this series.

CHECKLIST OF SPECIES OF *Mesocordylus* AND *Orthognathus*GENUS *MESOCORDYLUS* LACORDAIRE

Group I

memnonius (Fahraeus)
cerinus, new species
secundus, new species
striatus (Boheman)
mexicanus, new species
cubensis, new species
spumososus, new species
cylindraceus (Boheman)
coelomerus Chevrolat, new synonymy
breyeri Bréthes, new synonymy
scutellaris (Erichson)
glaber Voss
longiclava, new species
bracteolatus (Boheman)
abditus, new species
eurytrema, new species
dispersus Champion
jamaicensis, new species

Group II

subulatus (Germar)
sphacelatus (Boheman), new synonymy
gracilis Champion
gracilicornis Waterhouse
pustulosus Champion
leprosus (Boheman)
papulatus (Fahraeus)
rugicollis (Boheman)
apiciclava, new species
porriginosus (Boheman)

GENUS *ORTHOGNATHUS* SCHOENHERR

lividus Gyllenhal
subparallelus (Chevrolat)
imaginis, new species

GENUS *MESOCORDYLUS* LACORDAIRE

Mesocordylus LACORDAIRE, 1866, p. 314. Type species, by present designation, *Calandra subulata* Germar, 1824.

DIAGNOSIS: Similar to *Orthognathus* and *Sipalinus* in some characters (widely separated eyes, narrow intercoxal spaces, narrow third tarsal segments, porrect mandibles, nondentate tibiae, and postocular lobes), but differing from *Sipalinus* in having a more elongate shape, narrower, subcylindrical elytra, nontuberculate pronotum, symmetrical spongy apex of antennal club (symmetrical also in one species of *Sipalinus*), narrowly triangular mandibles and distribution in New World. More similar to *Orthognathus*, but differing in narrow apical truncation of hind tibia, more acuminate, shorter mandibles, normal, not exaggerated first segment of hind tarsus, and more hairy ventral surface of tarsi.

DESCRIPTION OF GENUS: Length, excluding beak, 5.5 to 27 mm. Surface dull, shining when greased. Color black or dark red, a few species with enamel-like, brownish yellow coating; majority of species with pale,

buff-colored granules or spots on elytra composed of tomentose hairs. Eyes widely separated above. Mandibles (fig. 2) elongate-triangular; apices rather acuminate; each mandible with two tiny basal teeth and possibly a lateral denticle, of which all are often worn off. Beak, excluding mandibles, about same length as pronotum, its dorsal apex emarginate or truncate; base laterally with deep furrow constricting beak in front of eye, but furrow often covered with thick, yellowish coating; ventral surface at apex carinate, in some species also behind apex; scrobe or antennal groove lateral, oblique, cavernous, its posterior edge obsolete; in some species scrobes nearly meeting on under side of beak; most species with lower edge of scrobe dilated horizontally and visible in dorsal view. Antennal club with spongy apical part either scarcely visible or one-half length of club; scape long or short, widened at apex; second funicular segment longer than any of following segments; segments 3 to 6 transverse or elongate. Pronotum with postocular lobe; base margined and truncate. Scutellum elongate-oval or vaguely shield-shaped. Elytra oblong-oval, base wider than base of pronotum; humeri prominent except in *porriginosus* which has oblique humeri due to reduced inner wings. Front coxae contiguous; middle coxae narrowly separated by one-fourth or one-fifth diameter of coxa. Abdomen with suture between first and second segments straight. Femora virtually straight; inner edge near apex slightly emarginate. Tibiae linear or slightly widened to apex. Tarsi narrow; third segment not bilobed; under surface of all segments hairy or spongy-hairy except on median glabrous line; terminal segment inserted at apex of third. Aedeagus with lateral line dividing dorsal and ventral surfaces, its two long appendages attached to sides of base of aedeagus; ejaculatory duct at apex with long, sclerotized, wirelike "coil" or flagellum (fig. 23). Eighth tergum of male apically truncate or rounded.

SEXUAL DIMORPHISM: Sexual differences of *Mesocordylus*, as in *Orthognathus*, are associated with the beak. The beak of females is generally narrower and less punctate than that of males; in some species the part in front of the antennal scrobes is abruptly narrower or "pinched," and virtually impunctate. The scrobes of females are usually nearer the middle of the beak, or at least they are situated farther back than those of males; the lower edge of the scrobes of females is usually less widely dilated than that of males, in some species it is not at all dilated. The sculpture or emargination of the dorsal apex differs between the sexes in some species. The ventral apex of some females is virtually impunctate. The sides of the apex of males of four species (*abditus*, *bracteolatus*, *mem-*



FIG. 1. Distribution of the genus *Mesocordylus*.

nonius, and *secundus*) are thickened or margined instead of smoothly rounded. (See below for further discussion of the beak.)

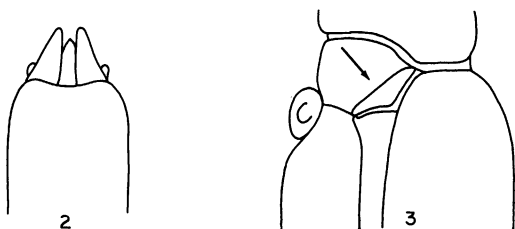
DISTRIBUTION AND ECOLOGY: The genus extends (fig. 1) from northwestern Mexico (*mexicanus*) south to extreme northeastern Argentina (*cylindraceus*), in all countries except Paraguay and Uruguay.

Of the 24 species, six occur widely, one (*bracteolatus*) in Central America, one (*gracilicornis*) in South America, and four (*dispersus*, *scutellaris*, *striatus*, and *subulatus*) in both regions (figs. 24, 43). Six species are less extensively distributed, four are found in one or two countries of South America (*apiciclava*, *eurytrema*, *longiclava*, and *secundus*), one (*pustulosus*) found sparingly in both Central and South America, and one (*porriginosus*) found in Guadeloupe and Dominica in the Lesser Antilles.

The remaining 12 species are known from one country or one area only: Cuba (*cubensis*), Jamaica (*jamaicensis*), Mexico (*mexicanus*), Panama

(*abditus*, *gracilis*), French Guiana (*cerinus*, *rugicollis*), Colombia (*leprosus*), and Brazil or northeastern Argentina (*cylindraceus*, *memnonius*, *papulatus*, and *spumosus*). Some of these species are represented in collections by only one or two specimens, but they may also occur in other areas. Of the species restricted to Brazil and northern Argentina I have seen, respectively, 46, 8, 59, and 17 specimens, and of the species restricted to Mexico, 17.

The countries having most species (six to eight) are Brazil, Bolivia, Peru, Colombia, French Guiana, and Panama. It is difficult to say why some countries have only one or two species. It may be because specimens



FIGS. 2, 3. Parts of *Mesocordylus*. 2. Mandibles, dorsal view. 3. Mesepimeron ascending.

have not been well collected or that some countries do not have suitable habitats for the species (we have seven species from French Guiana, but only one each from the other Guianas). If more were known about the ecological preferences of the species, we could explain the distributional patterns better.

Virtually nothing is known of the habits, other than that the species come to lights. Two species (*striatus* and *subulatus*), however, have been reported in palms or in the flowers of palms, *porriginosus* has been reported in the trunk of a leguminous tree (*Ormosia*) and in woods or under cut wood, and *striatus* was taken from the crop of a whippoorwill (see under species).

GENERAL REMARKS: Lacordaire (1866) erected this genus for the 11 New World species which had been included by Schoenherr (1838, 1845) with "*Sipalus*" of the Old World. The genus, now with 24 species, has been almost entirely neglected by workers of the present century. Only Champion (1910) has reviewed the genus, and he dealt with the six species (three of them new) from Central America and Mexico. One species was described by Voss (1947), who later (1954) listed six species from Peru. Hustache (1932) in his studies of the weevils of the Lesser Antilles, recorded the capture of specimens of *porriginosus*. It is not surprising that I have found as many as 10 new species, two from the

Greater Antilles where the genus was not known, one from Mexico, one from Panama, and six from South America.

Although I have borrowed specimens from many institutions and have visited many museums, the specimens I have seen total only 551. About half represent four species (*dispersus*, *papulatus*, *striatus*, and *subulatus*). Ten species are represented by fewer than five specimens each, and four of these by but one. Three species (*cubensis*, *jamaicensis*, and *rugicollis*) are known from the female only, and four (*apiciclava*, *cerinus*, *gracilis*, and *secundus*) from the male. One species (*immundus* Erichson) has been impossible to identify, and two species (*luteosignatus* Blanchard and *rubetra* Fabricius) appear not to be of this genus.¹ Three species are placed in synonymy (see Checklist of Species above). With the exception of *immundus* and *scutellaris* of Erichson, the types of all the forms have been examined. Lectotypes are designated for four species.

I have divided the genus into two groups of species, the first containing 15 species, the second, nine. The characters used vary somewhat and are not, in my opinion, sufficiently exact for subgeneric characters. (See key to the species group below.)

REMARKS ON SOME TAXONOMIC CHARACTERS

VESTITURE

Descriptions of the characteristic spots of the elytra vary from author to author. Lacordaire (1866) called them "fines goutellettes formées par un enduit blanc ou jaunâtre"; Voss (1947) wrote "greise Flecke"; Champion (1910) used "granules," "griseous or whitish spots," and "vesiculi-form spots." To me the spots are "buffy" or, in some specimens, "whitish" or "yellowish," and either flat or tomentose.

In species with flat spots (the majority of group I), the spot and the puncture seem to be synonymous, but in those with large, silky spots that are visible to the unaided eye, the puncture and its seta are in the center of the spot. In such cases, the spot is usually elevated and resembles a granule or miniature crater, and is made of a circle of tiny yellow or buffy hairs pointing inward and upward. In all species except *cylindraceus*, there are some of these granular spots on the apical declivity of the elytra even if they are not present or not visible on the discal intervals. When a specimen is greased, its granular spots may show only as black mounds, or, if it is a species with flat spots, the discal spots may be scarce-

¹ These three species are discussed at the end of the genus account.

ly visible. Treatment with carbon tetrachloride usually brings out the spotting.

Some species (*porriginosus*, *striatus*, *leprosus*), when fresh or recently degreased, have an over-all dirty, crusty, brown tomentose coating through which the punctures of the pronotum and the spots of the elytra show as setose pinpricks. In some species (*cerinus* and *pustulosus*) there is an over-all more yellowish, enamel-like glaze which is not at all tomentose.

GENITALIA

The deeply U- or V-shaped apices of the aedeagus (figs. 43-56), which are characteristic of the majority of species of group I, are quite different from the subtruncate or shallowly emarginate apices of the majority of species of group II. Several species, however, such as *spumosus*, *abditus*, and *striatus* of group I and *pustulosus* of group II, do not have the apices of their group. As the aedeagus is strongly arcuate, the dorsal aspect of its apex changes when the aedeagus is tipped farther forward or farther backward. All the species, except *porriginosus* and *gracilis*, show some slight differences in the apex; however, the apex may vary within a species, as in *scutellaris* (figs. 50, 51). In the majority of species examined, a long, sclerotized, dark wirelike process (flagellum?) was seen at the base of the aedeagus that was coiled around the terminus of the ejaculatory duct (fig. 23). This coil was found in species of *Orthognathus* also, but not in those of the other genera of the Sipalini. The aedeagus is illustrated for all species except for the three that are known from the female only (*cubensis*, *jamaicensis*, and *rugicollis*).

The eighth tergum of the female is feebly narrowed to the subtruncate apex, which is fringed with short hairs. In *dispersus* and *pustulosus* (figs. 30, 31) it is more abruptly narrowed and has a large apical tuft of hairs. The eighth tergum of males has subparallel sides and the apex more or less rounded.

ROSTRUM OR BEAK

The beak is an important character, with many aspects. The extreme apical margin behind the mandibles is feebly or strongly emarginate in all species except *dispersus*, *gracilicornis*, *striatus*, and *subulatus*, in which it is truncate, and in the first two species it appears truncate in the male only. The apex should be viewed at high magnification because the emargination may be very small. The dorsal area behind the apex presents distinct traits in the females of some species. In females of *dispersus* and *pustulosus* this area appears striate due to a longitudinal convergence

or merging of the punctures; in *leprosus*, *papulatus*, *porriginosus*, and *rugicollis* the area is bi-impressed or incised, with a carina between the impressions. Farther back on the beak is another interesting character, the dilation of the lower edge of the antennal scrobe. In five species of group I (*cubensis*, *jamaicensis*, *longiclava*, *mexicanus*, and *secundus*), and in some individuals of *gracilicornis* and *subulatus* of group II, the dilation is so feeble as to be scarcely visible when viewed from above, but in all other species it is widely dilated, either in both sexes, or at least in the male. In some males it is so large and bulbous that on the ventral side it forms two spheres with a deep hollow between them.

The ventral carina at the apex of the beak varies in almost every individual in length, height, width, and degree of sharpness. As the ventral part of the beak is difficult to see in most cases, I have not used this carina in the descriptions except for *striatus*, which is the only species in which it seems to differ radically. In *striatus*, the carina, when well marked, is double instead of single and is medially concave. The dorsal side of the ventral plate on which this carina rests is visible at the apex of the beak when the mandibles are open, as in the genera *Rhinostomus* and *Orthognathus*. On the under side of the beak of some females there are two deeply concave, longitudinal depressions extending backward from the mandibles on each side. This depression is rather short in *leprosus*, *papulatus*, and *rugicollis*, but long in *porriginosus* in which it reaches nearly to the bulge of the lower edge of the scrobes.

Additional characters of the beak are its curvature and punctuation, the extent of the yellowish coating or glaze, the shape and degree of constriction in front of the scrobes as compared with the area behind the scrobes, and the position of the scrobes (the position is also a secondary sexual character). I do not include in the descriptions a character used by Champion and others, namely, whether the base of the beak is constricted. All species apparently have this constriction, but it does not show when the deep furrow in front of the eye that causes the constriction is filled with yellowish coating.

ANTENNAE

The antennae possess good characters although their parts are difficult to measure in exact terms. In the descriptions the length of the scape is given relative to its width at the apex, but measurements might differ depending on whether the scape is in repose or standing away from the groove or covered with a crusty coating. The scape of *gracilicornis* is very long (about six times longer than wide) and bare, and that of *striatus* (about twice longer than wide) is very short, and encrusted; in most

species it is about three times longer than wide. The second funicular segment may be scarcely longer than the third or following segments, or as much as three times the length; it varies somewhat individually.

Much reliance is placed on the length of the spongy apical part of the club in comparison with the length of the entire club, and, to a lesser extent, the shape of the club (more elongate or more round). The spongy part of the club of *striatus* is so small that it is barely visible, whereas that of *gracilicornis* or *longiclava* is equal in length to the basal corneous part and thus is one-half the length of the club. The club should always be viewed distally; its spongy apex is larger on the outer side than on the inner side. Although in some species, the spongy part varies individually it is, within limits, constant for each species.

PRONOTUM

The shape of the pronotum is more or less constant within a species; it is generally longer than wide, very elongate in some species, nearly as wide as long in several. The postocular lobe is not used in the descriptions. In the majority of species it is strongly arcuate, but in *cubensis*, *longiclava*, and *mexicanus* it is quite feeble. An apical impression on the sides behind this lobe is found in almost all species, but in some the impression continues across the dorsum. It is so deeply incised in *bracteolatus* that it can be used to identify the species.

TARSI

There are differences among species in the shape and ventral vestiture of the tarsal segments, but the hairs are often worn short or clogged with some sticky substance, and the shape in specimens intermediate between the two extremes is not always obvious. The chief differences are shown in the key below. The first and second tarsal segments are actually longer than wide in all species, and the third segment is longer than wide when viewed dorsally, but the third in the species with "stout" tarsi, when viewed laterally, is nearly as long across its oblique apex as it is from base to apex; thus the depth of the segment is nearly equal to the length (figs. 32, 33). The extremely long, dense hairs of some species tend to obscure the shape of the segments.

OTHER CHARACTERS

Punctuation of the ventral side and legs is definite in all species, and has been omitted from the descriptions. The femora and tibiae are all more or less hairy on their inner margins, the tibiae being very hairy

in some species. The apex of the hind femur generally does not reach the apex of the elytra, but in *porriginosus* and *leprosus* it goes beyond the apex. The scutellum varies in shape within a species from oblong-oval to egg-shaped to rather shield-shaped. The mandibles are discussed in detail in Part 1 (Vaurie, 1970) of this series.

KEY TO THE SPECIES GROUPS OF *Mesocordylus*

- 1. Elytra either with numerous, tiny, dense, flat pale spots, or spots not visible; third tarsal segments, when viewed in profile, relatively short and deep, ventrally with short hairs; aedeagus at apex deeply emarginate (but shallowly in *abditus*, *spumosus*, and *striatus*) Species Group I, p. 16
- Elytra with a few large (in some as wide as interval), widely separated, elevated, distinctly hairy pale spots; third tarsal segments longer than wide when viewed in profile, relatively flattened (except in *subulatus* and *apiciclava*), ventrally with long hairs extending beyond apices of segments (except in *gracilicornis*); aedeagus at apex shallowly emarginate (but deeply in *pustulosus*) Species Group II, p. 44

KEY TO THE SPECIES OF *Mesocordylus*

The spongy apex of the antennal club should be viewed from the outer (distal) side where it is generally longer than on the inner side. Three species appear twice in the key because of relative differences or because of individual variation. The male and female of four species are keyed out separately because of secondary sexual characters.

- 1. Elytra with humerus obsolete, flattened (fig. 27); wings reduced to one-half normal size; pronotum confluent or densely, rugosely punctate; Lesser Antilles *porriginosus* (Boheman), p. 56
- Elytra with humerus prominent, tumid (fig. 28); wings long; pronotum various; Greater Antilles and elsewhere 2
- 2. Greater Antilles 3
- Elsewhere 4
- 3. Pronotum with postocular lobe weak; beak dorsally at apex flattened; elytra smooth, punctures flat; Cuba *cubensis*, new species, p. 26
- Pronotum with postocular lobe strong; beak dorsally at apex convex; elytra rough with mucronate punctures or granules; Jamaica *jamaicensis*, new species, p. 41
- 4(2). Species covered with glossy yellowish coating except on tibiae, antennae, and sides of beak, which are dull, tomentose; antennal club with spongy apex scarcely visible; beak arcuate; antennal scrobe with lower edge, when seen from above, widely dilated, its anterior edge, from above, in apical fourth of beak; French Guiana *cerinus*, new species, p. 17
- Species without all characters given above 5
- 5. Hind tibia expanded toward apex where it is about twice wider than at base (figs. 13, 15) 6
- Hind tibia of normal size, about same width throughout 8

6. Antennal club elongate, apical spongy part nearly one-half length of club; facies elongate; beak in front of scrobal dilation with lower edge sinuate (fig. 12) male of *secundus*, new species, p. 19
 Antennal club either nearly round, or apical spongy part less than one-third length of club; facies stout; beak in front of scrobal dilation with lower edge straight 7
7. Antennal club with spongy apex visible only as narrow line; beak and pronotum strongly punctate; second and third tarsal segments scarcely longer than wide *striatus* (Boheman) (in part), p. 21
 Antennal club with spongy apex one-third or one-fourth length of club; beak virtually impunctate, pronotum finely punctate; tarsal segments longer than wide *memnorius* (Fahraeus), p. 16
- 8(5). Elytra with discal intervals as well as intervals of apical declivity smooth, virtually impunctate, without buffy spots or granules 9
 Elytra with discal intervals either punctate, even if feebly (punctures best seen with specimen tipped), or with buffy spots or granules; if surface black and greased¹ or punctuation doubtful, then at least intervals on apical declivity show spots or granules 10
9. Antennal club with apical spongy part nearly as long as basal horny part; pronotum finely punctate; aedeagus at apex with V-shaped emargination (fig. 49) *cylindraceus* (Boheman), p. 29
 Antennal club with apical spongy part barely visible, about one-fifth length of basal part; pronotum usually strongly punctate; aedeagus at apex shallowly emarginate (fig. 48) *spumosus*, new species (in part), p. 27
- 10(8). Elytra with discal intervals punctate, spotted, or granulate in single or double rows, spots minute, smaller than punctures of pronotum, and dense (usually 20 or more on an interval from base to top of elytral declivity) 11
 Elytra with discal intervals punctate, spotted, or granulate in single rows, spots usually larger than punctures of pronotum, and hairy and sparse (from 2-15 on an interval from base to top of declivity) 20
11. Species with combination of characters as follows: pronotum behind apex deeply incised from side to side; antennal club with spongy apex so small as to be scarcely visible; beak in profile flat, straight, not arcuate, dorsal apical margin truncate, not emarginate; ventral apex medially bicarinate (fig. 4), not unicarinate; not found in Mexico
 *striatus* (Boheman) (in part), p. 21
 Species without all characters given above 12
12. Clean specimens with beak in basal two-thirds, as well as discal intervals of elytra with silky-hairy, elevated, buffy colored granules or mounds; if specimen black and greased, then beak either with dorsal apical margin truncate (male), or with apical area striate (female, as in fig. 8); not reported from Mexico *dispersus* Champion, p. 39
 Clean specimens with beak and discal intervals of elytra with flat, not visibly hairy (except for median seta), buffy colored spots (spots may be elevated on elytra of some specimens from Mexico); if specimen black and greased, then beak of both sexes with dorsal apical margin slightly

¹ Degreasing specimens in carbon tetrachloride brings out buffy spots if present.

- emarginate and apical area punctate; Mexico and elsewhere . . . 13
13. Pronotum behind apex incised deeply from side to side (fig. 26); Mexico; Panama . . . 14
- Pronotum behind apex not or only moderately impressed medially, but may be incised laterally; Mexico, Panama, and elsewhere . . . 16
14. Antennal scrobe with lower edge not dilated, therefore not visible from above; antennal club about as wide as long . . . 23
- Antennal scrobe with lower edge dilated and visible from above (rather feebly in some females); antennal club longer than wide . . . 15
15. Aedeagus (fig. 53) deeply V-shaped; pronotum coarsely punctate, apical incision shallowly V-shaped; beak dorsally with sides directly behind scrobes feebly angulate or sinuate as in figure 5 of *spumosus*; Mexico to Panama . . . *bracteolatus* (Boheman), p. 35
- Aedeagus (fig. 54) shallowly emarginate; pronotum finely punctate, its apical incision straight; beak with sides directly behind scrobes straight; Panama . . . *abditus*, new species, p. 36
- 16(13). Antennal club longer than wide, spongy apex as long as at least one-half length of club (fig. 18); if at all doubtful, proceed to next line . . .
- Antennal club either with spongy apex only one-third or less length of club, or with it nearly one-half of length, but club as wide as long . . . 17
17. Beak behind scrobes with dorsolateral stripes of yellowish, spongy substance covering outer third or fourth (figs. 5, 6) . . . 18
- Beak behind scrobes with spongy covering, if present, confined to extreme sides and not visible from above . . . 19
18. Aedeagus (fig. 48) at apex shallowly emarginate; beak dorsally behind scrobes with sides sinuate and thickly coated; antennal club with spongy apex only about one-fifth length of club, in some specimens barely visible; Brazil . . . *spumosus*, new species (in part), p. 27
- Aedeagus (fig. 55) at apex deeply emarginate; beak dorsally behind scrobes with sides virtually straight and thinly or partially coated; antennal club with spongy apex one-third length of club; French Guiana; Peru . . . *eurytrema*, new species, p. 37
- 19(17). Costa Rica to South America; pronotum narrow, longer than wide, sides feebly arcuate; hind tibia somewhat incurved toward apex; antennal club with spongy apex about one-third length of club; antennal scrobe with dilated lower edge visible from above . . . *scutellaris* (Erichson), p. 31
- Mexico; pronotum appearing roundish, about as wide as long, sides bulbous; hind tibia straight; antennal club with spongy apex nearly one-half length of club; antennal scrobe with lower edge not dilated, therefore not visible from above . . . *mexicanus*, new species (in part), p. 23
- 20(10). Antennal club with spongy apex minute, one-fourth or one-fifth length of club and in shape a flattened ellipse visible as narrow line (fig. 22); aedeagus (fig. 62); French Guiana; Para in Brazil . . . *apiciclava*, new species, p. 54
- Antennal club with spongy apex one-third or more length of club and nearly conical in shape . . . 21
21. Tarsal segments, viewed in profile, relatively stout, with third segment

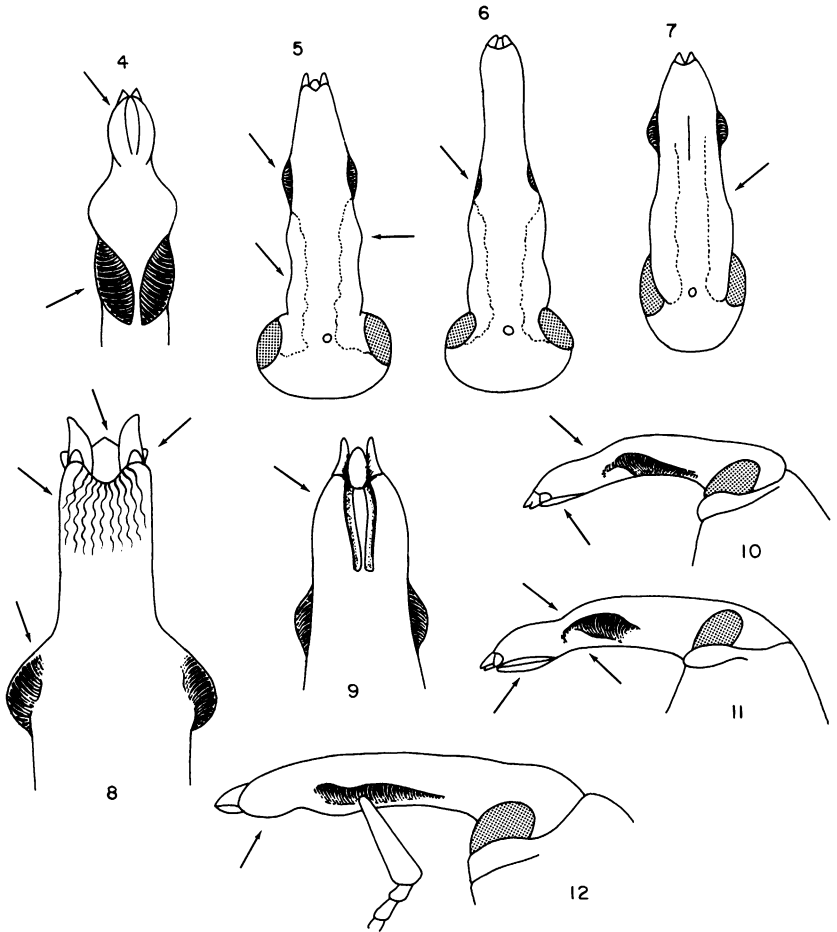


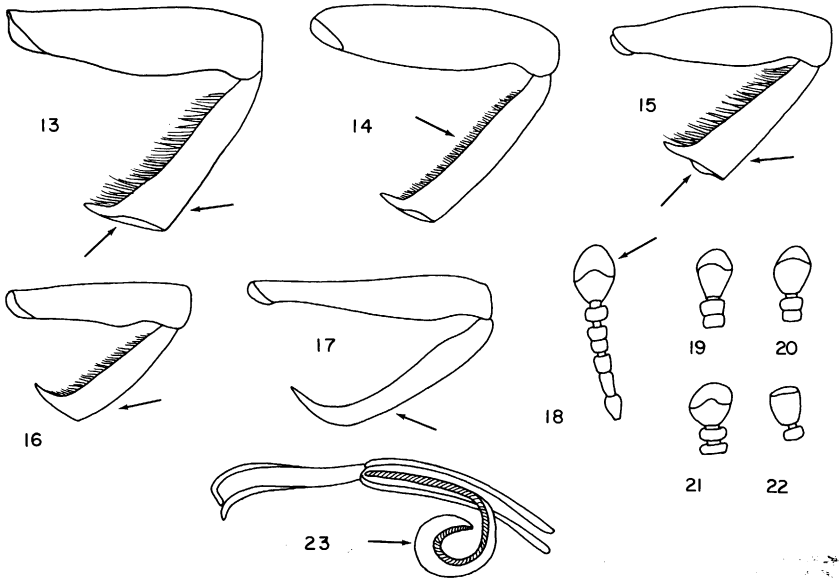
FIG. 4. Ventral view of beak of *Mesocordylus striatus*, showing double carina at apex and cavernous antennal scrobes.

FIGS. 5-9. Dorsal views of beak of *Mesocordylus*. 5. *M. spumosus*, male, showing extent of frothy coating, dilated lower edge of antennal scrobes, and angulation behind scrobes. 6. *M. spumosus*, female. 7. *M. apiciclava*, male, showing extent of coating; beak is foreshortened due to its strong curvature. 8. *M. pustulosus*, female, enlarged, showing apex of ventral plate between open mandibles, apical striations, and dilated lower edge of antennal scrobes. 9. *M. papulatus*, female, enlarged, showing two apical incisions and part of ventral plate.

FIGS. 10, 11. Lateral views of beak of females of *Mesocordylus*, showing constriction or "pinching" in front of scrobes, and longitudinal depressions ventrally at apex. 10. *M. papulatus*. 11. *M. porriginosus*.

FIG. 12. Lateral view of beak of *M. secundus*, male, showing sinuate lower edge; characteristic also of some males of *M. bracteolatus*.

- scarcely longer than deep (or high); ventrally with fringe of short, dense hairs forming hairy pads (fig. 32) *subulatus* (Germar), p. 44
- Tarsal segments, viewed in profile, elongate, flat; ventrally either "fuzzy" with hairs as long as segment itself spreading out from all sides, or, if worn, usually with wispy hairs at least at apex (fig. 34) 22
22. Beak dorsally behind apex longitudinally incised or impressed on each side of median carina (fig. 9) 23
- Beak dorsally behind apex may be striate, but not impressed or incised 25
23. Pronotum on each side at about one-third from base feebly but distinctly tumid behind round, bare spot; antennal club with spongy apex as long as corneous base; Colombia . . . female of *leprosus* (Boheman), p. 51
- Pronotum with surface uniform, not tumid; antennal club with spongy apex shorter than corneous base; Brazil; French Guiana 24
24. Pronotum longer than wide; elytra two and one-half times length of pronotum, with buffy spots and punctures of striae not noticeable; Brazil female of *papulatus* (Fahraeus), p. 52
- Pronotum about as wide as long; elytra only slightly more than twice length of pronotum, with buffy spots of striae readily visible; French Guiana female of *rugicollis* (Boheman), p. 53
- 25(22). Species with combination of characters as follows: size small (5.5 mm.); antennal club elongate and spongy apex long (nearly one-half length of club); beak stout, at middle as wide as apex of front femur; pronotum nearly as wide as long and only one-half length of elytra, (fig. 29); Panama male of *gracilis* Champion, p. 47
- Species without all characters given above 26
26. Beak dorsally at apex striate or rugose and in front of scrobes abruptly narrowed, "pinched" (fig. 8, and as in figs. 10, 11) female of *pustulosus* Champion, p. 49
- Beak dorsally at apex not striate, and in front of scrobes scarcely, if at all, narrower than behind scrobes 27
27. Beak, viewed laterally, evenly curved throughout, at apex very finely punctate, at base bare, coarsely punctate; antennal scrobe with anterior edge at about middle of beak female of *gracilicornis* Waterhouse, p. 48
- Beak, viewed laterally, nearly straight from base to apical third, strongly punctate throughout, usually with opaque coating; antennal scrobe with anterior edge in apical third or fourth of beak 28
28. Beak dorsally at apex behind mandibles virtually truncate male of *gracilicornis* Waterhouse, p. 48
- Beak dorsally at apex behind mandibles feebly or strongly emarginate (high magnification may be needed) (figs. 8, 9) 29
29. Elytra with surface between buffy spots smooth, flat; intervals from base to apical declivity usually with from 3-6 spots; impressed striae usually with spots not noticeable; aedeagus (fig. 61); Brazil male of *papulatus* (Fahraeus), p. 52
- Elytra with surface between buffy spots rather uneven, wavy; intervals from base to apical declivity usually with from 8-11 spots; impressed striae with distinct buffy spots; not reported from Brazil 30
30. Aedeagus (fig. 59); middle femur short, not reaching beyond base of



FIGS. 13-17. Left hind legs of *Mesocordylus*. 13. *M. memnonius*. 14. *M. cerinus*. 15. *M. secundus*. 16. *M. cubensis*. 17. *M. jamaicensis*.

FIGS. 18-22. Antennal club of *Mesocordylus*. 18. *M. longiclava*, male. 19. *M. scutellaris*, male. 20. *M. scutellaris*, female. 21. *M. mexicanus*, male. 22. *M. apiciclava*, male; characteristic also of *M. cerinus* and *spumosus*.

FIG. 23. *M. spumosus*, aedeagus, showing long apodemes and wirelike coil.

metasternum; pronotum not tumid on sides; Nicaragua; Peru; Bolivia
 male of *pustulosus* Champion, p. 49
 Aedeagus (fig. 60); middle femur long, overlapping base of hind femur;
 pronotum on each side about one-third from base tumid; Colombia .
 female of *leprosus* (Boheman), p. 51

SPECIES GROUP I

Mesocordylus memnonius (Fahraeus)

Figures 13, 43

Sipalus memnonius FAHRAEUS, 1845, p. 211, Brazil; lectotype, female, here designated from two female syntypes in Naturhistoriska Riksmuseum, Stockholm, examined.

DIAGNOSIS: Known from all species of genus except *secundus* by apically widened hind tibiae (fig. 13). Differing from *secundus* by having spongy part of antennal club shorter, profile of ventral apex of beak straight, not sinuate, and hind tibiae glabrous, not tomentose.

RANGE: Eastern coast of Brazil from Rio de Janeiro south to Santa Catarina. Specimens examined, eight.

DESCRIPTION: Length, 12 to 13 mm. Beak slightly curved, finely, sparsely, barely visibly punctate; sides behind scrobe slightly sinuate, bordered with yellowish, tomentose coat; in dorsal view beak gradually narrowed to apex; extreme apex emarginate; male with dilated lower edge of scrobe visible from above, anterior edge slightly in front of middle; in ventral view sides behind apex with rolled margin; female with scrobe less dilated but visible, anterior edge at middle of beak. Antenna with scape only slightly longer than twice its width; second funicular segment scarcely longer than third; club almost as wide as long, dilated toward apex; apical spongy part about one-third or one-fourth of whole. Pronotum longer than wide, densely, finely punctate; sides feebly arcuate; apex impressed, feebly in some specimens. Elytral intervals much wider than striae; suture and third interval with double, other intervals with single, rows of tiny, flat, buffy-ringed faint punctures separated longitudinally by their diameter or twice their diameter; strial punctures at least twice size of those on intervals. Hind tibia widened to apex which is one and one-half times wider than base; inner edge with long, sparse hairs (hairs almost as long as tibia is wide). Tarsi ventrally with long, sparse hairs. Aedeagus (fig. 43) at apex with U-shaped emargination.

ECOLOGY: No information.

REMARKS: Viewed from above, *memnonius*, although more elongate, resembles *Orthognathus subparallelus*, but the apically widened tibiae are not nearly so wide in *memnonius* and lack a wide truncate apex; *memnonius* differs further by having the beak smooth dorsally, without carinae or rugae. Fahraeus (1845) did not mention any widening of the tibiae, it was therefore a surprise when I saw the syntypes. Although he indicated that he had both sexes, his syntypes are labeled as males, but they are in fact both females (I dissected them partially). The only external differences between the sexes are that the antennae of the female are inserted slightly farther back on the beak, and in the male the lower edge of the scrobe is more dilated and more readily visible from above, the hind tibiae are perhaps slightly more strongly widened, and the ventral sides of the apex of the beak are thickened. Three of each sex were dissected.

Mesocordylus cerinus, new species

Figures 14, 22, 35, 44

TYPE MATERIAL: Type, male, La Forestière, Haut [Upper] Maroni,

French Guiana, July, Le Moulton Collection, in Muséum National d'Histoire Naturelle, Paris.

DIAGNOSIS: Same robust, convex shape and faint punctation as *memnonius*, but differing from it and other species by having an entire yellowish, waxy coating similar to that of species of *Orthognathus*. Very short spongy apex of club resembling that of *M. striatus* and *spumosus*, but aedeagus of those species scarcely, if at all, emarginate, whereas that of *cerinus* deeper and wider than that of other species. Female not known.

RANGE: Known only from the type locality which is about 70 kilometers north of the mouth of the Maroni River.

DESCRIPTION OF TYPE, MALE: Length, 11.5 mm. Beak arcuate, finely, sparsely punctate except toward apex where punctures larger, denser; sides behind scrobe straight and bordered with narrow, yellowish, tomentose band; dorsally as wide at apex as at base; extreme apex slightly emarginate; scrobe with lower edge widely dilated and visible from above, anterior edge in apical fourth of beak. Antennal scape slightly more than twice longer than width at apex; second funicular segment scarcely longer than third; club longer than wide, slightly dilated toward apex; apical spongy part about one-sixth length of club. Pronotum about as wide as long, although appearing longer than wide to naked eye; finely, sparsely punctate; apex feebly impressed. Elytral intervals much wider than striae; feebly convex; sutural and third intervals with double, other discal intervals with single, rows of very faint, minute, buffy-ringed punctures separated longitudinally by their diameter or as much as four or five times their diameter; strial punctures same size as those of intervals and widely spaced. Tibiae straight, with tomentose coating; inner edges with short hairs; hind tibia at apex slightly wider than at base. Tarsi rather elongate, ventrally with fairly long hairs. Aedeagus (fig. 44) at apex deeply U-shaped.

ECOLOGY: No information.

REMARKS: *Mesocordylus cerinus* agrees with *striatus* in the short sponge of the club, small mandibles, and suggestion of a widening of the hind tibia toward the apex (fig. 14), but it differs distinctly from *striatus* by having a curved, not straight, beak, strongly arcuate postocular lobe, more convex, not flattened, dorsum, and no hairy granules on the elytra. A third species with a short spongy apex of the club is *apiciclava*, which is found also along the Maroni River. This species also may have a yellowish coating, but it is a dull and dusty, not a shining, coat, and the species belongs in group II with the species that have widely separated buffy granules on the elytra. The dull, tomentose covering of the tibiae of *cerinus* is in contrast to the shining, waxy surface of the femora and of

the remainder of the body. The antennal scrobe is situated far front on the beak.

In *secundus* from Colombia and Ecuador, the middle and hind tibiae are also tomentose, but the hind tibiae are distinctly apically widened and have long hairs on the inner edges; *secundus* differs further from *cerinus* by having a longer pronotum and elytra, no waxen coat, and the aedeagus of somewhat different shape.

Mesocordylus secundus, new species

Figures 12, 15, 45

TYPE MATERIAL: Type, male, Macas, Ecuador, G. Buckley, collector, Fry Collection, British Museum (Natural History), and a male paratype, Rio Suarez, Colombia, L. Richter, collector, Frank Johnson, donor, in the collection of David Rockefeller.

DIAGNOSIS: Distinctly narrower than only other species (*memnonius*) with apically widened hind tibiae (figs. 13, 15), with different aedeagus (figs. 43, 45), longer spongy part of antennal club, and sides of beak directly behind and under apex sinuate (fig. 12), not straight. Female not known.

RANGE: Eastern slopes of the Andes in Colombia and Ecuador. Macas itself is "on the west bank of the Rio Upano near where that river emerges from the eastern foothills of the Andes . . . The forest a few kilometers away is typical of the upper Amazonian tropics." (Brown, 1941, p. 833.) The Suarez River is in Santander province, Colombia, south of Bucaramanga.

DESCRIPTION OF TYPE, MALE: Length, 12 mm. Beak uniformly densely punctate, feebly arcuate; dorsally as wide at apex as at base, laterally narrowing to apex; sides behind scrobe straight, tomentose at extreme base only; in ventral view sides behind apex sinuate and with rolled margins; extreme apex emarginate; scrobe with lower edge dilated and visible from above; anterior edge of scrobe in apical third of beak. Antennal scape about three times longer than width at apex; second funicular segment about twice longer than third; club longer than wide; sides dilated near middle; spongy part not quite one-half length of club. Pronotum distinctly longer than wide, finely punctate; punctures slightly larger than those of elytral intervals; sides feebly arcuate; apex feebly constricted, transversely impressed. Elytral intervals about twice as wide as striae; feebly convex; suture and third intervals with double, other discal intervals with single, rows of small, flat buffy-ringed punctures separated longitudinally by their diameter or twice their diameter;

strial punctures slightly larger than those of intervals and cutting into them. Front tibia slightly incurved and shining; middle and hind tibiae straight and with tomentose coating; hind tibia widened to apex; all tibiae on inner side with long, sparse hairs about as long as tibia is wide at base. Tarsi rather elongate; ventrally with long, sparse hairs. Aedeagus (fig. 45) deeply U-shaped at apex.

VARIATIONS FROM TYPE: The paratype is slightly longer (14 mm.), and much less punctate. Although it was bathed in carbon tetrachloride, it is still greasy; it scarcely shows any punctures on the elytral intervals, the intervals are flat, not convex, and are many times wider than the striae; the strial punctures barely cut into the intervals. The coating on the middle and hind tibiae is worn off at the middle.

ECOLOGY: No information.

REMARKS: *Mesocordylus secundus* is the second species known that has the hind tibia distinctly widened at the apex, although *striatus* has tibiae very feebly widened. In the rest of the tribe, the tibiae are widened slightly in one species of *Sipalinus* (*aurivilli*), and strongly in all species of *Orthognathus*. The truncate apex of the hind tibia is not so wide or readily visible as that of species of *Orthognathus*, but part of it shows in profile view (fig. 15).

The widening of the tibia is apparently not a character exclusive to males, but the sinuation under and behind the apex of the beak is. Some males of *bracteolatus* have a feeble sinuation, but males of *memnonius* do not, and they agree with *secundus* by having widened hind tibiae. In males of these species the ventral sides of the beak behind the apex, whether sinuate or straight, are margined and thickened, not smoothly rounded as in males of other species. Both sexes of species of *Orthognathus* have a similar, but more distinct and even sharper margin that extends usually farther back on the beak toward the scrobes. This character and the apically widened tibiae seem to orient *memnonius* and *secundus* toward relationship with *Orthognathus*. (For comparison of *secundus* with *cerinus*, see that species.)

A round, tomentose patch is present in the center of the first segment of the abdomen of both specimens of *secundus*. It seems to be formed by the convergence of the buffy-ringed, tomentose punctures in that area, and may not occur in additional specimens.

The apex of the aedeagus of *secundus* differs from that of other species by having no strongly sclerotized ventral part, the "U" being transparent and membranous (shown in fig. 45 as a dotted line). Both specimens were dissected.

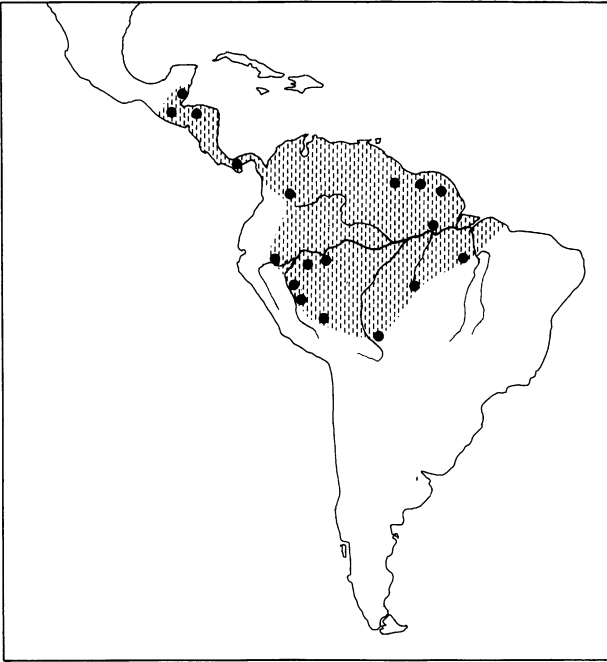


FIG. 24. Distribution of *Mesocordylus striatus*.

Mesocordylus striatus (Boheman)

Figures 4, 24, 46

Sipalus striatus BOHEMAN, 1838, p. 805, Cayenne [French Guiana]; type, female, in Naturhistoriska Riksmuseum, Stockholm, examined. BLANCHARD, 1846, p. 203, pl. 18, fig. 5. CHAMPION, 1910, p. 172, pl. 8, figs. 13, 13a.

DIAGNOSIS: A robust species having almost square, strongly punctate, apically incised pronotum. When in fresh condition, has characteristic yellowish, dusty, opaque coating on elytra showing double rows of minute, dense, buffy granules. Distinguished from related species by combination of straight beak, short tarsal and funicular segments, short spongy apex of club, short mandibles, shallowly emarginate apex of aedeagus, and double, not single, median apical carina under beak (fig. 4).

RANGE: Widespread throughout Central and most of South America, particularly in the lowlands and along rivers, but not reported from Mexico (fig. 24). Specimens examined, 48.

DESCRIPTION: Length, 10 to 20 mm. Beak virtually straight; densely

punctate except for dorsal, median, glabrous line, some specimens with short impressed line over scrobes; sides of base with tomentose, yellowish coating; in dorsal view beak in front of scrobes decidedly narrower than basal part; extreme apex truncate; male with dilated lower edge of scrobe visible from above, its anterior edge in front of middle of beak; female with scrobe scarcely dilated or visible from above, and anterior edge at middle of beak. Antenna with scape scarcely longer than twice its width; second funicular segment scarcely longer than third; club about as wide as long, its sides scarcely dilated to apex; apical spongy part on outer side visible only as narrow line, about one-sixth length of club. Pronotum about as wide as long; well punctate, more densely on sides; sides strongly arcuate from about middle to apex; apex deeply creased or impressed. Elytral intervals much wider than striae, with double or single rows of dense, tiny, buffy-ringed punctures (granules), those on apical declivity covered with tomentosity; striae punctures, if visible, minute, dense; fresh specimens with grayish-yellow coating. Hind tibia of some specimens slightly widened to apex; that of male slightly incurved, of female virtually straight, of both sexes with short hairs on inner edge. Tarsi stout, tomentose; second segment scarcely longer than wide; ventrally with short hairs. Aedeagus (fig. 46) at apex slightly, shallowly emarginate; middle of apex transparent.

ECOLOGY: A specimen from Santa Cruz, Bolivia, was taken in November "in palm," and a male and female from the Sierra de las Minas, Zacapa, Guatemala, from the crop of a whippoorwill.

REMARKS: Although the species is recorded from 11 countries, there are no long series from any one locality, and specimens in collections are relatively few.

In shape *striatus* resembles *mexicanus*, differing as stated under that species. The hind tibiae are not apically widened so much as those of *memnonius* or *secundus* (in many specimens they are scarcely widened at all), but they are wider than those of *mexicanus*, for instance. *Mesocordylus striatus* differs further from *memnonius* by having dense punctures on the beak and hairy granules on the elytra. The dorsal apex of the beak is truncate in *striatus* and *dispersus*, but emarginate in the majority of species. The ventral apex, which is readily visible in *striatus* because of the straight, not arcuate, beak, is bicarinate and longitudinally concave in *striatus*, but unicarinate in other species. It may appear unicarinate in *striatus* if the concavity becomes filled in or worn flat, but even in such an event, the resulting "carina" is more of a wide platform than a carina. The mandibles of *striatus* are very short, not longer than an antennal segment. Four males were dissected.

Mesocordylus mexicanus, new species

Figures 21, 25, 36, 47

TYPE MATERIAL: Type, male, Tehuantepec, Oaxaca, Mexico, June 11, 1964, J. C. and D. Pallister, collectors, and a male and female paratype with the same data in the American Museum of Natural History; a male with same data to be deposited in British Museum (Natural History); other paratypes as follows, all from Mexico: N. [North or Near?] Guadalajara, Jalisco, July, 1957, J. Maris, collector, one female in collection of E. L. Sleeper; Tecoman, Colima, December, 1960, Ray Houk, collector, one female in Texas A M University; Venedio, Sinaloa, August 10, 1918, Van Dyke Collection, two females in California Academy of Sciences; Mazatlan, Sinaloa, July 17, 1962, E. Sleeper, R. Anderson, A. Hardy, and R. Somerby, collectors, one female in collection of E. L. Sleeper; 5 miles north of Mazatlan, July 24 to 29, August 5 to 7, and 9, 1964, H. F. Howden, and Howden and Lindquist, collectors, two males and three females in Canadian National Collection; Rio Piaxtla [north of Mazatlan], one mile west of highway 15 [no date], E. L. Sleeper, R. C. Anderson, collectors, one male in collection of E. L. Sleeper; Minas Nuevas [near Alamos], Sonora, August 7, 1952, C. and P. Vaurie, collectors, two females in the American Museum of Natural History.

DIAGNOSIS: Similar to *striatus* by having rather robust form, with proportionally short, stout elytra, and wide pronotum with strongly arcuate sides, but differing by having wider, deeper elytral striae, deeply U-shaped, not shallowly emarginate, apex of aedeagus, and longer apical spongy part of antennal club. Characterized further by having convex elytral intervals and no horizontal dilation of antennal scrobes.

RANGE: Western Mexico from southern Sonora south to the Isthmus of Tehuantepec, chiefly at or near the coast (fig. 25).

DESCRIPTION OF TYPE, MALE: Length, 12 mm. Beak scarcely curved, punctate more densely and finely at apex than at base; sides at extreme base somewhat tomentose; laterally and dorsally beak only feebly narrowed to apex; extreme apex emarginate; sides just behind scrobes very feebly angulate; scrobe with lower edge not dilated, anterior edge slightly in front of middle of beak. Antennal scape nearly three times longer than wide; second funicular segment about twice longer than third; club (fig. 21) about as wide as long; sides dilated at middle; apical spongy part nearly one-half length of club. Pronotum almost as wide as long, densely punctate; sides strongly, evenly arcuate; apex impressed feebly. Elytral intervals rather convex or elevated above striae, about

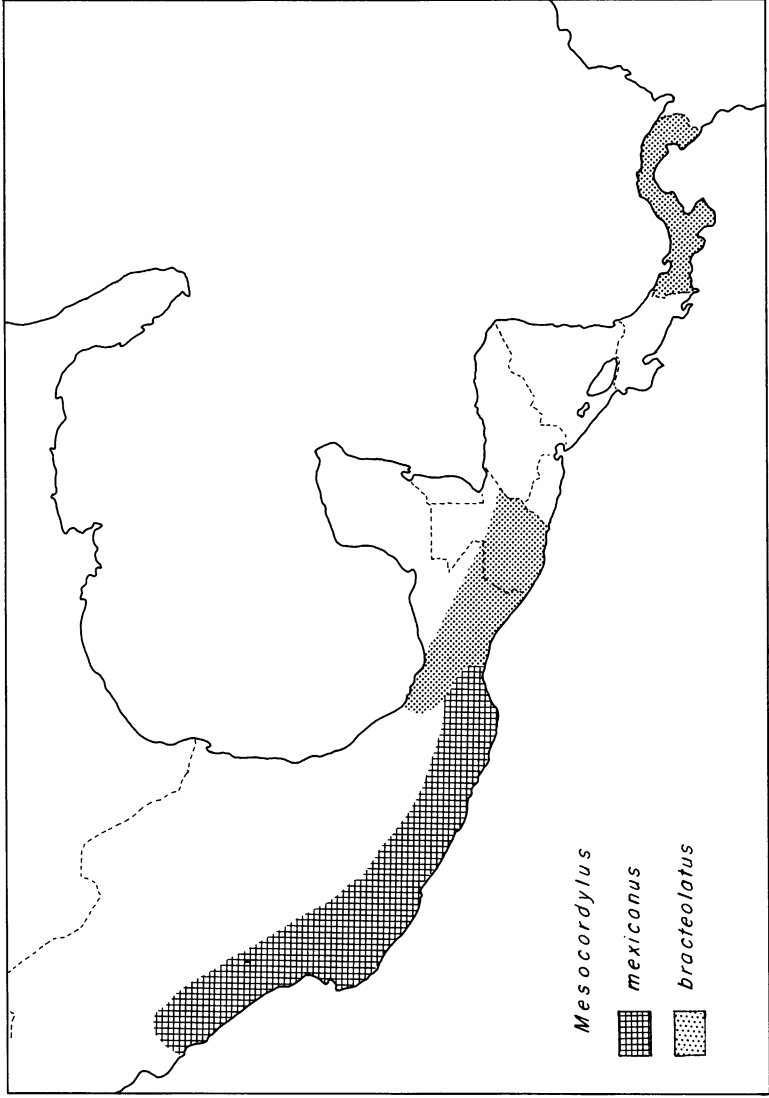


FIG. 25. Distribution of *Mesocordylus mexicanus* and *bracteolatus*; only one specimen of *bracteolatus* has been examined from "Panama."

twice as wide as striae, with single (double on suture) rows of buffy-ringed, tiny, dense punctures, those on apical declivity covered with tomentosity, forming hairy granules; striae punctures larger than buffy spots of intervals. Tibiae straight; inner side with short hairs. Tarsi rather stout; ventrally with long, sparse hairs. Aedeagus (fig. 47) at apex deeply U-shaped.

VARIATIONS FROM TYPE: The paratypes range in size from 7 to 16 mm., the largest specimen being from the type locality. Some of the paratypes are reddish when seen under the light of a stereoscopic microscope; in some the transverse impression at the front of the pronotum is more noticeable; the pronotum may be as wide as long; the second funicular segment may be shorter; the spongy apex of the club is shorter in some specimens, and the tibial hairs longer.

The females differ from the type by having the anterior edge of the antennal scrobe situated at about the middle of the beak, slightly farther back than that of the male; they also have the beak, when seen in dorsal view, slightly narrower and with fewer and smaller punctures in the apical part. The ventral side of the apex of the beak is not punctate in the female, but is in the male.

ECOLOGY: One specimen was collected at black light at Rio Piaxtla, Sinaloa.

REMARKS: *Mesocordylus mexicanus* extends farther north (Sonora) than any of the other species and is the only one known to be restricted to Mexico. There is only one other species (*bracteolatus*) that occurs even as far north as Mexico.¹ Although *mexicanus* comes from western Mexico and *bracteolatus* from eastern Mexico and Central America, both species have been collected not far apart in Oaxaca, the former on the Pacific side at Tehuantepec, and the latter from about halfway across the isthmus, at Tolosa. *Mesocordylus mexicanus* resembles *bracteolatus* in the dense spotting of the elytra, but does not have any deep impression at the apex of the pronotum or widely dilated antennal scrobes or V-shaped apex of the aedeagus. It is surprising that Champion did not know this species for the "Biologia."

The aedeagus is similar to that of a number of species (*memnonius*, *scutellaris*, *longiclava*), but differs slightly. The sexes are not readily differentiated externally because the difference in the position of the antennal insertion is not great; the ventral side of the beak, which is smooth in the female and rough and carinate in the male, is often difficult to see.

¹ One specimen of *spumosus* was taken in southern Mexico, but it might have been an escape from a tropical garden (see that species).

The eighth tergum of the female has, in the middle of the apex, a minute V-shaped nick which I have not noted in other species. Three males, including the type, and three females were dissected.

Mesocordylus cubensis, new species

Figure 16

TYPE MATERIAL: Type, female, 14 kilometers north of Viñales, Cuba, September 16 to 22, 1913, in the collection of the American Museum of Natural History.

DIAGNOSIS: Resembles *mexicanus* in having wide strial punctures of elytra, non-dilated antennal scrobe, feeble postocular lobe, and short, almost bulbous femora, but beak, antennal club, spongy apex, and elytra and pronotum proportionally longer, not at all stout. Male not known.

RANGE: KNOWN from the type specimen only. Viñales is in a wide, deep valley in the province of Pinar del Rio in western Cuba.

DESCRIPTION OF TYPE, FEMALE: Length, 11 mm. Beak virtually straight, sparsely, finely punctate; laterally and dorsally narrowing gently from base to apex; sides behind scrobes straight, with narrow borders of tomentose, yellowish coating; scrobe with lower edge scarcely dilated and scarcely visible from above, anterior edge slightly in front of middle of beak; extreme apex emarginate. Antenna with scape about three times longer than width at apex; second funicular segment only slightly longer than third; club longer than wide, sides dilated near middle; spongy apical part about one-half length of club. Pronotum longer than wide, finely punctate; punctures of disc of same size as those of elytral intervals; sides feebly arcuate; apex slightly constricted and impressed. Elytral intervals about twice width of striae, feebly convex; suture and third interval with double, other discal intervals with single, rows of tiny, flat, buffy-ringed punctures separated longitudinally by from two to four times their diameter, those on apical declivity denser; strial punctures much larger than those of intervals and cutting into them. Tibiae straight; inner side sparsely hairy; hairs as long as one-half of width of tibia. Tarsi ventrally with long, abundant hairs. Eighth tergum apically rounded.

ECOLOGY: No information.

REMARKS: A single female of a new species from Jamaica and the female from Cuba described above represent the first records of the genus for the Greater Antilles.

Viewed from above, *cubensis* in its elongate shape, reddish color, and punctuation of the pronotum and elytra is almost exactly like the type

of *secundus* from Ecuador. I believe, however, that *cubensis* is not the female of that species, because *secundus* differs by having the hind tibia widened apically, which is a specific not a sexual character in the other species (*memmonius*) with widened tibiae. Furthermore, the Cuban species (fig. 16) has shorter tibial hairs, a somewhat longer spongy apex to the antennal club and a feeble, not strong, postocular lobe. The geographic distribution from Ecuador and Colombia to the island of Cuba does not seem reasonable.

The type was dissected. It was labeled "*Mesocordylus*, n. sp." by L. L. Buchanan in 1935.

***Mesocordylus spumosos*, new species**

Figures 5, 6, 22, 23, 28, 48

TYPE MATERIAL: Type, male, Rio Branco, Acre, Brazil, October, 1954, M. Alvarenga, collector, and two male and one female paratypes with same data in Departamento de Zoologia, São Paulo; two male paratypes with same data in the American Museum of Natural History; 10 paratypes from Brazil: São Paulo, one male in the American Museum of Natural History; Ipiranga, São Paulo, January, 1928, R. Spitz, collector, one male, and Fazenda Japuiba, Angra dos Reis, Rio de Janeiro [no date], A. Travassos, collector, two females, all in Departamento de Zoologia; Rio [de Janeiro], "30.11.12," two males in Muséum National d'Histoire Naturelle, Paris; Santa Thereza, Espirito Santo, December 14, 1928, Conde, collector, one male in Zoologisches Museum, Berlin; Corupa (Hansa Humbolt), Santa Catarina, Reitter, collector, one male in Zoologisches Staatssammlung, Munich, and November, 1944, A. Maller, collector, one female in the American Museum of Natural History; one male, "Brazil," in British Museum (Natural History).

DIAGNOSIS: Spongy, frothy, yellowish coating on sides of beak more exaggerated in *spumosos* than in other species of group; also extends farther onto dorsum of beak (figs. 5, 6), more sinuate, even bulbous on sides, and thicker.

RANGE: Southeastern Brazil northwest as far as Acre. ?Mexico. Two specimens not included in the type series are a male from Iqueri [Rio Iquiry?], Acre, October, 1951, in Departamento de Zoologia, São Paulo, and a female from Fortin de las Flores, Veracruz, Mexico, July 10, 1959, B. and B. Valentine, collectors, in the collection of Barry D. Valentine. I questioned the locality of Mexico, but Valentine wrote me that his specimen was correctly labeled and that he had never collected in Brazil. He added, however, that in Mexico he was collecting at a combination

motel and commercial horticulturist establishment with tropical gardens, and that it is possible that the specimen came out of some Brazilian tree in the gardens.

DESCRIPTION OF TYPE, MALE: Length, 9 mm. Beak slightly curved; more densely punctate apically than basally; sides behind scrobe sinuate, and covered, about one-third onto dorsum, with thick, yellowish, porous coating; in lateral and dorsal view beak gradually narrowed to apex; scrobe with widely dilated lower edge readily visible from above, anterior edge in front of middle of beak; extreme apex emarginate. Antenna with scape as long as about twice its width; second funicular segment scarcely longer than third; club only slightly longer than wide; sides feebly dilated to apex; apical spongy part on distal side about one-sixth length of club, visible only as narrow line. Pronotum distinctly longer than wide; densely punctate with large, buffy-colored punctures except for median impunctate line; sides more strongly arcuate in front of middle; apex feebly impressed. Elytral intervals appearing smooth and flat, many times wider than striae, with single rows of faint, buffy-ringed, tiny punctures separated longitudinally by their diameter or by five or six times their diameter, those on apical declivity also indistinct; striae punctures of about same size as those of intervals. Tibiae virtually straight, tomentose; inner edge with very short hairs. Tarsi stout, with short ventral hairs. Aedeagus (fig. 48) at apex shallowly but distinctly emarginate.

VARIATIONS FROM TYPE: The paratypes range in size from 7 to 17 mm. The elytral spots are fainter in some of the paratypes, but in three of the five from the type locality they are even stronger than those of the type, and have in addition rather oval-shaped, large, buffy rings around the punctures. The punctures of the pronotum in several specimens are smaller on the disc than at the sides, but the majority are uniformly large as in the type. The spongy glaze on the sides of the beak, although distinctly present in all 17 specimens examined, is partially torn away in a few. In some paratypes the antennal club appears proportionally narrower, and the hind tibiae feebly incurved. The specimen from "Iqueri" mentioned above as not being included as a paratype, has a slightly different aedeagus, otherwise it seems to be *spumosus*.

Females differ from males by having the scrobes much less dilated, scarcely visible from above, and set farther back on the beak (fig. 6); the apical part of the beak is more cylindrical, not flattened, more finely punctate, and abruptly narrower than the basal part whether viewed from above or from the side. Because of its curvature, the beak shown in the figures is somewhat foreshortened.

ECOLOGY: The female from Fortin de las Flores mentioned above was collected at black light.

REMARKS: *Mesocordylus spumosus* is similar to a number of species. I have seen specimens determined as *memnonius*, which also has two bands of frothy coating at the base of the beak, but differs notably by having the aedeagus deeply emarginate and the tibiae widely expanded to the apex. It resembles *bracteolatus*, but differs by having a barely visible spongy area (fig. 22) at the apex of the antennal club, and a not, or only feebly, impressed apex of the pronotum. Greased specimens that appear to have no buffy spots on the elytra might be mistaken for *cylindraceus*, but that species has a long apical spongy part to the club, more finely punctate pronotum, and more emarginate aedeagus. *Mesocordylus spumosus* is the only species of this group, except for *striatus* and *abditus*, that has the apex of the aedeagus (figs. 46, 48, 54) shallowly emarginate instead of deeply U- or V-shaped; it agrees with *striatus* in the scarcely visible spongy part of the club, but differs by having the antennal scape somewhat longer, the beak rather arcuate, not straight, the elytral intervals faintly, sparsely punctate, and the apex of the pronotum not incised. Finally, it resembles *eurytrema* in the coating on the sides of the beak and in the small spongy part of the club, but the sides of the beak are not sinuate in *eurytrema* and the spongy part of the club is longer than a narrow line. The female of *spumosus* differs further from females of *eurytrema* by having the rostral dilation scarcely visible from above, and the male from males of *eurytrema* by having a shallow emargination on the aedeagus. Seven males, including the type, and one female were dissected.

Mesocordylus cylindraceus (Boheman)

Figure 49

Sipalus cylindraceus BOHEMAN, 1845, p. 212, Brazil; lectotype, male, here designated from five syntypes in Zoologisches Museum, Martin-Luther-Universität, Halle, examined.

Mesocordylus coelomerus CHEVROLAT, 1880, p. cxxv, Brazil; type, male, in Naturhistoriska Riksmuseet, Stockholm, examined. New synonymy.

Mesocordylus Breyeri BRÉTHES, 1910, p. 227, Misiones, Argentina; type, male, in Museo Argentino de Ciencias Naturales, Buenos Aires, examined. New synonymy.

DIAGNOSIS: An elongate, narrow species about same shape as *scutellaris*, but differing from it and other species by having no buffy spots or punctures visible on elytral intervals. Differing from those *spumosus* in which spots and punctures appear to be lacking as stated in key and in table 1.

RANGE: Eastern Brazil from Minas Gerais south to Rio Grande do Sul

and to Misiones in northeastern Argentina. Specimens examined, 46.

DESCRIPTION: Length, 10 to 18 mm. Beak slightly arcuate, finely, shallowly punctate; sides at base with yellowish, tomentose coating or glaze; sides behind scrobes sinuate or straight; extreme apex emarginate; in dorsal view about same width in front of as behind scrobe; male, lower edge of scrobe widely dilated and visible from above, its anterior edge in apical third of beak; female, beak in front of scrobe virtually impunctate; lower edge of scrobe scarcely dilated, and just visible from above, its anterior edge in front of middle of beak, but not so far front as that of male. Antennal scape a little more than three times longer than widest part; second funicular segment twice as long as third; club dilated at middle; apical spongy part nearly one-half of club. Pronotum distinctly longer than wide, densely, finely punctate; sides feebly arcuate; apex deeply impressed transversely. Elytral intervals much wider than striae; punctures not visible; strial punctures vaguely visible. Tibiae straight; inner edge with long, sparse hairs almost as long as tibiae are wide. Tarsi very slender, elongate, with short ventral hairs. Aedeagus (fig. 49) at apex with V-shaped emargination.

ECOLOGY: No information.

REMARKS: Fortunately, through the kindness of the three institutions which have them in their collections, I was able to examine the types of *cylindraceus*, *coelomerus*, and *breyeri*. Otherwise I could not have guessed that they were the same species. Chevrolat said that his *coelomerus* (15 mm.) was similar to *cylindraceus*, although shorter and wider, but it appears in the catalogues (Csiki, 1936; Blackwelder, 1947) as a species of *Orthognathus*. (The tibiae on the type are not widened as they are in species of *Orthognathus*.) Bréthes found *breyeri* (11 mm.) near *papulatus* Fahraeus, but more punctate; these two species have the same elongate shape, but *papulatus* has widely spaced, buffy-ringed punctures on the elytra. Boheman said that *cylindraceus* (lectotype, 15 mm.) was similar to *memnonius*, but half again as large, but *memnonius* has apically widened tibiae, whereas *cylindraceus* does not. Of the five specimens of "*cylindraceus*" sent by the museum in Halle, one is *scutellaris* (Erichson); the specimen I chose as the lectotype has under it a tiny dark, square label.

After a bath in carbon tetrachloride one or two specimens, when viewed at high magnification, revealed on the elytral intervals single rows of widely separated, minute setae. These setae probably emerge from punctures, but the majority of individuals show nothing on the intervals, not even on the apical declivity. Seven males, including the lectotype and syntypes, were dissected.

Mesocordylus scutellaris (Erichson)

Figures 19, 20, 50, 51

Sipalus scutellaris ERICHSON, 1847, p. 136, Peru; type not found.*Mesocordylus glaber* VOSS, 1947, p. 62, figs. 3, 4, Tingo Maria, Peru; type, male, in British Museum (Natural History), examined. Synonymized by Kuschel, 1955, p. 281.

DIAGNOSIS: Resembling *cylindraceus* in shape, but differing when not greased by having buffy spots on elytra and more strongly punctate pronotum; in spots and punctation resembles *bracteolatus*, but differs by having less pronounced impression at apex of pronotum; differs from both species by having spongy part of antennal club shorter or club itself more round, less elongate.

RANGE: Nicaragua south to Colombia, French Guiana, Peru, and Ecuador, the majority of specimens seen being from Peru. Specimens examined, 34.

DESCRIPTION: Length, 11 to 17 mm. Beak gently arcuate, more densely, finely punctate at apex than at base; sides behind scrobe slightly sinuate; extreme base somewhat tomentose; extreme apex emarginate; male, lower edge of scrobe dilated and visible from above, and anterior edge in apical third of beak; in dorsal view beak slightly narrower in front of scrobe than behind; female, dorsal view, apex impunctate or nearly so, and distinctly narrower than part behind scrobe; lower edge of scrobe scarcely dilated or visible; anterior edge slightly in front of middle of beak. Antennal scape about three times longer than wide; second funicular segment about twice as long as third; club about as wide as long, dilated at middle, its spongy apex about one-third or less length of club (figs. 19, 20). Pronotum longer than wide, densely punctate; sides feebly arcuate; apex impressed in some specimens more than in others. Elytral intervals much wider than striae; suture with double, other intervals with single, rows of minute, flat, buffy-ringed punctures separated longitudinally by about twice their diameter; punctures on apical declivity covered with tomentosity, forming hairy granules; strial punctures as large as buffy spots of intervals. Hind tibia at apex somewhat incurved; inner edge not, or scarcely hairy. Tarsi stout with short ventral hairs. Aedeagus (figs. 50, 51) at apex with U-shaped emargination somewhat deeper in some specimens.

ECOLOGY: No information.

REMARKS: It is not absolutely certain that the specimens identified as *scutellaris* are actually that species, as the type cannot now be found. The specimens I have, however, agree with the type and six male and four

TABLE 1
COMPARISON OF SOME CLOSELY ALLIED SPECIES OF *Mesocordylus*^a

Species	Spongy Apex of Antennal Club ^b	Apical Impression of Pronotum	Sides of Beak Behind Scrobes	Buffy Colored Spots of Elytra	Apical Emargination of Aedeagus ^c	Range
<i>spumosus</i>	Very short	Feeble	Strongly sinuate	Flat	Shallow U	South America
<i>scutellaris</i>	Short	Feeble	Slightly sinuate	Flat	Deep, square-based U	Central and South America
<i>bracteolatus</i>	Short	Deep	Sinuate	Flat or granulate	Deep, narrow V	Mexico, Central America
<i>eurytremata</i>	Short	Feeble	Straight	Flat	Deep, wide V	South America
<i>dispersus</i>	Short	Feeble	Straight	Granulate	Deep, narrow V or U	Central and South America
<i>gylindraceus</i>	Long	Deep	Sinuate or straight	None visible	Deep V or U	South America
<i>longiclava</i>	Long	Feeble	Straight	Flat or granulate	Deep, square-based U	South America
<i>abditus</i>	Long	Deep	Straight	Flat	Shallow U	Central America

^a The species are arranged according to the length of the apex of the club.

^b Short = one-third or less of length of club; long = about one-half length of club.

^c See figures 48-56.

female paratypes of *glaber* Voss (Tingo Maria, Peru), which Kuschel (1955) synonymized with *scutellaris*. The specimens in the type series of *glaber* are more or less reddish and the surface is rather dirty so that the buffy elytral spots are not in evidence except at the apex of the elytra. The tibiae are rather curved and do not have long hairs; the antennal club has a very short apical spongy area. These characters are present in the specimens I am calling *scutellaris*, and they separate *scutellaris* from *longiclava*, which has a similar facies (see also table 1). The aedeagus of *scutellaris* is deeply emarginate and U-shaped, as it is also in *longiclava*, *memnonius*, and *mexicanus* (figs. 43, 47, 50-52), but in the two last-mentioned species, the apices are more acuminate and the base of the "U" is more round, less truncate. Six males, including the type of *glaber*, and one female were dissected.

Mesocordylus longiclava, new species

Figures 18, 52

TYPE MATERIAL: Type, male, Colombia, Felipe Ovalle Collection, one male paratype with same data, and one female paratype, Colombia, F. C. Nicholas Collection, all in the American Museum of Natural History; six additional paratypes: from Colombia, Villa Elvira, 1600 meters [not located], "2-7-1908," Pape, collector, two males, and from Ibague, Fr. Claver, collector, one female, all in Muséum National d'Histoire Naturelle; from Bolivia, Cochabamba, El Limbo, 2000 meters, January to April, 1962, F. H. Walz, collector, one male in collection of Charles W. O'Brien; from Venezuela, one male, Fry Collection, British Museum (Natural History), and one male, René Lichy, collector, collection of David G. Kissinger.

DIAGNOSIS: This species at first glance could be mistaken for *scutellaris* or *bracteolatus* because it has a similar narrow, elongate form, tiny, flat buffy spots on elytral intervals, and similar shape of beak in both sexes. It differs from them chiefly in the distinctly longer apical, spongy part of antennal club (fig. 18).

RANGE: Venezuela, Colombia, and Bolivia apparently at fairly high altitudes. A tenth specimen has been examined and dissected, a male with a handwritten label that seems to say "Las Tibages," in the Zoologisches Museum, Berlin, but no such locality was found.

DESCRIPTION OF TYPE, MALE: Length, 14 mm. Beak slightly arcuate at apex, punctate more densely and finely apically than basally; sides at base straight, not sinuate, slightly tomentose, but without opaque coat; laterally and dorsally beak only feebly narrowed to apex; dorsally

vaguely unicarinate; scrobe with dilated lower edge visible from above, but not very widely dilated; anterior edge of scrobe in about apical third of beak; extreme apex emarginate. Antenna with scape about three times longer than wide; second funicular segment about twice as long as third; club longer than wide; sides dilated at middle; spongy apex about one-half the length of club. Pronotum longer than wide; densely punctate except for median line and for two lateral areas which are impunctate; sides feebly arcuate; apex constricted or creased on sides only. Elytral intervals much wider than striae; suture and third intervals with more or less double, other intervals with single, rows of flat, minute, buffy-ringed punctures separated longitudinally by their diameter or by three or four times their diameter; punctures on apical declivity covered with tomentosity, forming hairy granules; striae punctures about same size as buffy spots of intervals. Hind tibia on inner side with dense hairs nearly as long as tibia is wide. Tarsi slender, elongate, with long, dense ventral hairs. Aedeagus (fig. 52) at apex with U-shaped emargination.

VARIATIONS FROM TYPE: The two female paratypes differ by having the antennae inserted nearer the middle of the beak, the anterior edge of the scrobe being about at the middle instead of in the apical third, the lower edge of the scrobe scarcely dilated and thus scarcely visible from above, the beak more evenly curved, the apical part of the beak in front of the scrobes very feebly and finely punctate, and noticeably narrower, viewed both laterally and dorsally, than the basal part. There is no such contrasting width in the beak of the male. In some males the scrobe is more widely dilated than that of the type. The slight carina of the beak and the impunctate areas of the pronotum are not present in several of the paratypes. The paratype from Bolivia and one of the two paratypes from Villa Elvira, Colombia, are reddish instead of black and their buffy elytral spots can scarcely be discerned. On the specimen from Colombia the fourth and fifth elytral striae on each side near the base are interrupted and joined together. The size of the paratypes ranges from 11 to 16 mm.

ECOLOGY: No information.

REMARKS: As can be seen from a comparison of the detailed descriptions above, there is very little difference in appearance between *longiclava* and *scutellaris* (Erichson). The differences lie in the club, as stated in the diagnosis, the tibiae, which in *longiclava* have long, not short hairs on the inner side, and are straight, not rather incurved, and the more widely dilated scrobes of the antennae of males of *scutellaris*. The aedeagus is essentially the same in both species, although the depth of the emargination varies somewhat in *scutellaris*. Two other species (*memnonius* and

mexicanus) of the group have rather similar aedeagus, but the apices of the "U" are narrower, more acuminate.

Mesocordylus bracteolatus and *cylindraceus* (Boheman) are also quite similar to *longiclava*, but they differ by having the apex of the aedeagus V- not U-shaped, the pronotum apically more constricted and transversely creased, and they occur in different areas (see table 1). The only other species of the group that have such a long spongy apex of the club are some *cylindraceus*, *abditus*, and two species from the Antilles. Four males, including the type, and one female were dissected.

Mesocordylus bracteolatus (Boheman)

Figures 12, 25, 26, 37, 53

Sipalus bracteolatus BOHEMAN, 1838, p. 809, Vera Crux [=Veracruz], Mexico; type, male, in Naturhistoriska Riksmuseum, Stockholm, examined. CHAMPION, 1910, p. 174, pl. 8, figs. 17, 17a.

DIAGNOSIS: Deep impression, almost an incision, across apex of pronotum, often shaped like a shallow "V," large, dense, confluent punctures of robust pronotum uniseriately arranged (except on sutural interval), quite dense, buffy spots of elytra, subcarinate beak, short spongy apex of club, and distribution in Mexico or Central America should sufficiently characterize this species.

RANGE: Southeastern Mexico from Veracruz south through Guatemala (fig. 25); and one specimen from Panama. Specimens examined, 40.

DESCRIPTION: Length, 8 to 20 mm. Beak slightly arcuate; apex more finely and densely punctate than base; each side right behind scrobe feebly angulate; sides at base with tomentose coating; middle of beak subcarinate; apex emarginate; male, ventral view, some individuals with sides behind apex sinuate and margined, fresh individuals with "beard" on sides and venter of apex; scrobe with anterior edge in about apical third of beak; dorsal view, about as wide in front of scrobe as behind, lower edge of scrobe dilated and visible from above; female, beak in front of scrobe scarcely punctate, in dorsal and lateral view distinctly narrower than part behind scrobe; lower edge of scrobe scarcely dilated or visible from above, anterior edge at middle of beak. Antennal scape about three times longer than widest part; second funicular segment distinctly about twice as long as third; club longer than wide; sides dilated at middle, apical spongy part about one-third length of club, or slightly more than one-third. Pronotum slightly longer than wide, densely punctate; sides feebly or strongly arcuate; apex deeply incised

dorsally and laterally. Elytral intervals much wider than striae, mostly with single rows of tiny, granular, buffy-ringed punctures separated longitudinally by their diameter or more; punctures on apical declivity covered with tomentosity, forming hairy granules; strial punctures in some specimens as large as buffy spots of intervals. Hind tibia in some males rather incurved to apex; inner edge slightly hairy. Tarsi stout, with short, dense ventral hairs. Aedeagus (fig. 53) at apex with deep, V-shaped emargination.

ECOLOGY: No information.

REMARKS: For comparison with the only other species recorded from Mexico, see *mexicanus*. Champion (1910) said that the beak is shallowly sulcate on each side of the median carina and that this is one of the differences between *bracteolatus* and *dispersus* Champion. The sulci, however, are rarely visible either due to greasing or to the presence of the tomentose coating. The beak of *bracteolatus* is much less stout than that of *dispersus*, and it is not covered with hairy granules; the beak of the female differs strongly (see *dispersus* and table 1). Three males and two females were dissected.

Mesocordylus abditus, new species

Figure 54

TYPE MATERIAL: Type, male, Chiriqui, [Panama], in Zoologisches Museum, Berlin, and paratype, female, vicinity of Boquete, Panama, July, 1939, J. R. Slevin, collector, in California Academy of Sciences, San Francisco.

DIAGNOSIS: Can readily be mistaken for *bracteolatus* from which it differs in part by having narrower than normal pronotum and proportionally more elongate elytra with larger strial punctures. It is one of three species of group I with shallowly, not deeply, emarginate apex on aedeagus.

RANGE: Both localities are in the province of Chiriqui, Boquete is on the slopes of the Volcan de Chiriqui and Chiriqui on the Pacific slope east of David. It is possible that the "Chiriqui" is not the village, but the volcano.

DESCRIPTION OF TYPE, MALE: Length, 11.5 mm. Beak slightly arcuate, densely punctate; viewed dorsally, sides behind scrobes straight; base flattened and covered, except on glabrous median carina, with partially abraded, hairy, crater-like punctures; beak as wide in front of scrobes as behind; apex slightly emarginate; ventrally, sides behind apex margined; scrobe with lower edge dilated and visible from above, its anterior edge

in apical third of beak. Antennal scape about three times longer than width at apex; second funicular segment twice as long as third; club lacking. Pronotum longer than wide, densely punctate with punctures of same size as those of elytral striae; sides feebly arcuate; apex deeply incised dorsally and laterally. Elytral intervals twice as wide as striae, with single rows of tiny, flat, buffy-ringed punctures separated by twice or more their diameter; punctures on apical declivity tomentose and granular; striae punctures two or three times larger than punctures of intervals. Tibiae straight, inner edge with short hairs. Tarsi rather slender, with dense, short (probably worn) ventral hairs. Aedeagus (fig. 54) at apex shallowly emarginate.

VARIATIONS FROM TYPE: The female paratype is 16 mm. in length, and differs by having the anterior edge of the antennal scrobe slightly farther back on the beak, but in front of the middle nevertheless, and the tarsal segments more slender, flat, and elongate, with long hairs extending beyond the apices of the segments. The beak in dorsal view is very finely punctate in front of the scrobes where it is also slightly narrower than behind the scrobes, and at the extreme base it is widened angularly. The lower edge of the scrobe is less dilated than that of the male, but is visible from above. The median carina of the beak is sharper than that of the male. The antennal club, which is missing in the male, is dilated at the middle and the spongy apex is nearly one-half of the length of the club.

ECOLOGY: No information.

REMARKS: Superficially *abditus* resembles *bracteolatus* (partly because of the apically impressed pronotum), but the aedeagus differs radically, being deeply V-shaped in *bracteolatus* (fig. 53) and shallowly emarginate in *abditus* (fig. 54). *Mesocordylus abditus* differs further by having the spongy apex of the club longer, the tarsi more slender and with long ventral hairs, and the sides of the beak straight. (See table 1.)

***Mesocordylus eurytrema*, new species**

Figure 55

TYPE MATERIAL: Type, male, Cayenne [French Guiana], "Ex. Mus. Dema." [Demerara?], Fry Collection, in British Museum (Natural History), two paratypes from French Guiana, a male, Maroni, in the American Museum of Natural History, and a female, St. Laurent du Maroni, Le Moutt Collection, in Muséum National d'Histoire Naturelle, and a male paratype from "Peru," Fry Collection, in British Museum (Natural History).

DIAGNOSIS: Most similar dorsally and in aedeagus to *bracteolatus* Boheman from farther north, but with apex of pronotum only feebly, if at all, impressed, pronotum with larger punctures, antennal scape shorter and apex broader, antennal club almost round, not elongate, and strial punctures of elytra wider and deeper.

RANGE: French Guiana and Peru, probably eastern Peru.

DESCRIPTION OF TYPE, MALE: Length, 14 mm. Beak slightly arcuate, more densely punctate apically than basally; in dorsal view not much narrower at apex than at base; sides behind scrobe straight and covered about one-fourth of way onto dorsum of beak with thin, yellowish, porous coating; scrobe with widely dilated lower edge readily visible from above, anterior edge in apical third of beak; extreme apex emarginate. Antennal scape two and one-half times longer than wide; second funicular segment about twice as long as third; club about as wide as long, sides dilated to middle, and apical spongy part on distal side about one-third length of club. Pronotum scarcely longer than wide, densely punctate with large, buffy-colored punctures; sides strongly, evenly arcuate; apex feebly impressed. Elytral surface rather uneven, wavy; intervals only twice as wide as striae, laterally indented by large, invading, round or oval strial punctures; punctures of intervals tiny, flat, ringed with buffy, arranged in two rows on suture and third interval, in single rows elsewhere, and separated longitudinally by their diameter or by five or six times their diameter, those on apical declivity slightly tomentose and granular; strial punctures much larger than those of intervals. Hind tibia slightly incurved to apex; inner side with short hairs. Tarsi stout, with short, dense ventral hairs. Aedeagus (fig. 55) at apex with V-shaped emargination.

VARIATIONS FROM TYPE: The specimens range in length from 15 to 19 mm. The pronotum of the male paratype from Peru is longer than wide, more so than that of the type, whereas the pronotum of the other paratypes from French Guiana is perhaps as wide as long; one paratype has an impunctate, shining spot at the center of the pronotal disc; the paratype from Peru has the elytral punctures very tiny. Although they were degreased, the paratypes from Peru and Maroni show no buffy spots on the elytral disc, but when tipped forward show distinct punctures and some tiny spots on the elytral declivity. In the paratypes from French Guiana the apex of the pronotum is distinctly impressed.

The single female differs from the males by having the beak more strongly arcuate, and in front of the scrobes more abruptly and strongly narrowed and less punctate than at the base of the beak, and the anterior edge of the scrobe situated near the middle of the beak.

ECOLOGY: No information.

REMARKS: Very large strial punctures have been seen elsewhere in the group in *abditus* and *mexicanus*, which differ from *eurytrema* by having the spongy part of the club longer, as in figure 21, and *mexicanus* differs further by having the lower edge of the antennal scrobe not dilated. Some individuals of *scutellaris* have proportionally large strial punctures, but it is a much narrower species than *eurytrema*, not so robust, and its aedeagus is deeply U-shaped, not broadly V-shaped. The aedeagus is similar to that of *cylindraceus*, but the punctuation and elytral spotting differ. The differences between *eurytrema* and *spumosus* are given in the key and in the remarks under *spumosus*. (See also table 1.) All four specimens were dissected.

Mesocordylus dispersus Champion

Figures 30, 33, 56

Mesocordylus dispersus CHAMPION, 1910, p. 174, pl. 8, figs. 18, 18a; type locality not stated, lectotype, male, Panama, here designated, in British Museum (Natural History).

DIAGNOSIS: A large species (up to 25 mm.) with heavy, stout, basally flattened beak and widely dilated antennal scrobes of both sexes. Differing from most other species of group I by having crater-like, tomentose granules on top of beak. Female differing further by having apex of beak striate as in figure 8, and male by having most deeply emarginate aedeagus (fig. 56).

RANGE: From British Honduras (Champion, 1910) south through Central America to western South America from Colombia to Bolivia. Specimens examined, 103.

DESCRIPTION: Length, 14 to 25 mm. Beak densely, finely punctate, more finely in front of scrobe; in dorsal view at base flattened, in some specimens feebly uncarinate also, and covered with granular punctures surrounded by tomentose hairs; sides behind scrobe straight; lower edge of scrobe widely dilated and visible from above; male, beak straight at base, bent down at apex; fresh individuals with "beard" on sides and venter of apex; anterior edge of scrobe in apical third of beak; in dorsal view apical part in front of scrobe as wide as or wider than basal part; extreme apex truncate; female, beak evenly arcuate; anterior edge of scrobe slightly farther front; in dorsal view part in front of scrobe abruptly narrower than part behind scrobe; extreme apex slightly emarginate, right behind apex longitudinally striate; in profile apex as wide as base. Antennal scape about three times longer than wide; second

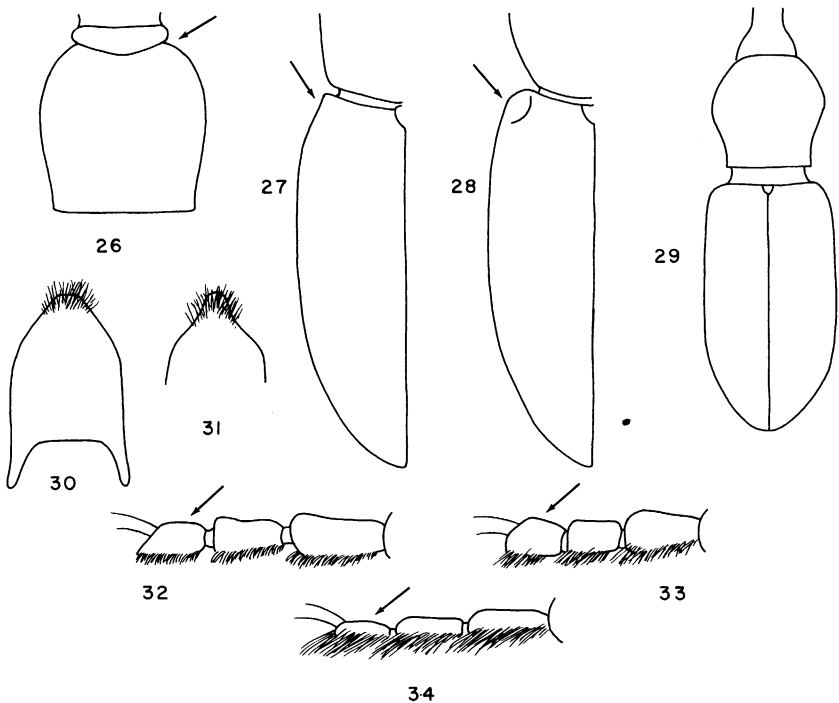


FIG. 26. Apically incised pronotum of *Mesocordylus bracteolatus*.

FIGS. 27, 28. Humerus of left elytron. 27. *M. porriginosus*, flightless, with humerus flat. 28. *M. spumosus* and other species, fully winged, humerus tumid.

FIG. 29. *M. gracilis*, unique type.

FIGS. 30, 31. Eighth tergum of females. 30. *M. dispersus*. 31. *M. pustulosus*, apex only.

FIGS. 32-34. Lateral views of front tarsus. 32. *M. subulatus*, showing short, deep third segment with short hairs. 33. *M. dispersus*, showing short third segment with longer hairs. 34. *M. papulatus*, showing long, flat third segment with very long hairs.

funicular segment about two and one-half times longer than third; club longer than wide, dilated at middle; spongy apex one-third or less length of club. Pronotum longer than wide, densely punctate; sides strongly or feebly arcuate; apex feebly, if at all, impressed. Elytral intervals much wider than striae, with irregular, more or less single rows of granular, buffy-ringed punctures separated longitudinally by from two to six times their diameter; punctures on apical declivity tomentose, forming hairy granules; strial punctures in some specimens about as large as buffy spots of intervals. Hind tibia of male rather incurved; inner edge with dense hairs as long as one-half width of tibia; of female

straight, not hairy. Tarsi stout, with short, dense ventral hairs. Aedeagus (fig. 56) at apex with deep, rather V-shaped emargination.

ECOLOGY: No information.

REMARKS: This species (*dispersus*) and two species of the other group (*gracilicornis* and *subulatus*) are the largest of the genus. This species, *subulatus*, and *striatus* seem to be the most numerous in collections. In these four species the dorsal apex of the beak is truncate or subtruncate, whereas in other species it is feebly or strongly emarginate. Although the elytral punctures and spots are small in *dispersus* as in others of the group, in some specimens they are quite sparsely set on the intervals; I have seen a specimen with only 13 spots on one of the discal intervals.

The beak of the female is unusual, not only because the dorsal apex is striate, but also because the scrobes are set about as far forward on the beak as those of the male, and the beak in profile view is as thick as that of the male. Ventrally, the part under the scrobes is deeply concave in both sexes. Dorsally, however, the beak of the female is abruptly narrowed in front of the scrobes, whereas that of the male is widened. The eighth tergum of the female is of an unusual shape and is hairy at the apex (fig. 30).

Except for the beak, *dispersus* is not unlike *bracteolatus*, but the apex of the pronotum, as a rule, is scarcely impressed, whereas it is deeply incised in *bracteolatus*; the male of *dispersus* has a fringe of long hairs on the inner side of the hind tibia. (See table 1.)

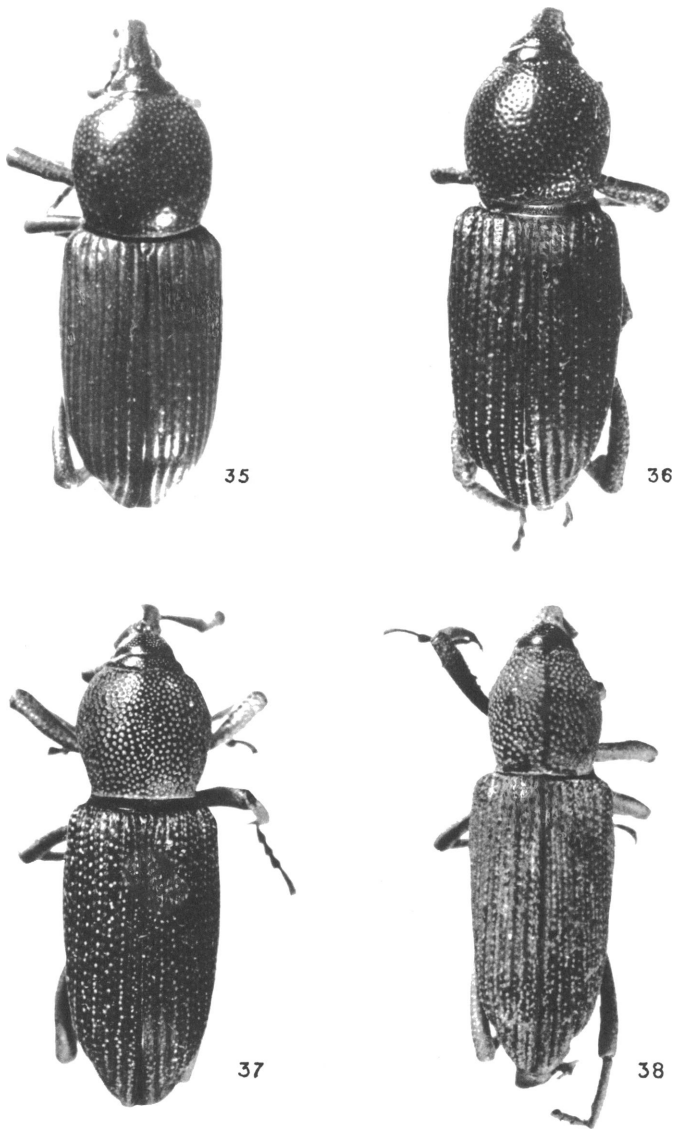
This species was collected in some of the same localities in Peru as *scutellaris*, a small, narrow species, at Rio Toro, Chanchamayo, Quince-mil, and on the same date at Cuzco.

I have not examined the male lectotype from Panama, but I have examined one of the males from Chontales, Nicaragua, in Champion's original series at the British Museum. R. T. Thompson wrote (in letter) that the specimen from Panama is from the Pascoe Collection, is the species figured by Champion, and bears Champion's label. It therefore seems a proper specimen to serve as the lectotype of *dispersus*. Champion's other specimens were from British Honduras, Nicaragua, Costa Rica, Panama, Colombia, and Peru. Eight males and three females were dissected.

Mesocordylus jamaicensis, new species

Figures 17, 38

TYPE MATERIAL: Type, female, Hardwar Gap, Jamaica, West Indies, 4000 feet, July 23, 1966, Howden and Becker, collectors, in Canadian National Collection, Ottawa.



FIGS. 35-38. *Mesocordylus*. 35. *M. cerinus*. 36. *M. mexicanus*. 37. *M. bracteolatus*. 38. *M. jamaicensis*.

DIAGNOSIS: Characterized by being the only species from Jamaica, and by having more punctures more closely spaced on elytra than those

of other species; on second interval from base to apex of elytral declivity there are at least 50 buffy granules, many virtually touching. Male not known.

RANGE: Known from the type specimen only. Hardwar Gap is in the Blue Mountains inland from Kingston.

DESCRIPTION OF TYPE, FEMALE: Length, 11 mm. Beak only feebly arcuate toward apex; laterally and dorsally scarcely narrowed from base to apex; sides behind scrobes straight; base of beak flattened and covered, except on glabrous, median carina, with tomentose, yellowish coating interspersed with crater-like punctures; apical part finely, sparsely punctate; scrobe with lower edge scarcely visible from above due to feeble dilation, anterior edge in about apical third of beak; extreme apex slightly emarginate. Antennal scape about five times longer than width at apex; second funicular segment twice as long as third; club longer than wide; sides dilated near middle; apical spongy part a little more than one-half length of club. Pronotum longer than wide; densely punctate except for median impunctate line; sides feebly arcuate; apex not constricted or impressed. Elytral intervals about twice as wide as striae; rather convex, with single, in some parts double, rows of tiny, dense, buffy-ringed punctures (some punctures touching), all elevated, crater-like, resembling hairy granules; strial punctures slightly larger than buffy spots of intervals. Legs with granules as on elytra. Tibiae (fig. 17) slightly incurved, tomentose; inner side scarcely hairy. Tarsi slender, elongate, with short, dense ventral hairs. Eighth tergum apically rounded.

ECOLOGY: No information.

REMARKS: This is the first record of this genus for Jamaica, which may serve as an excuse for describing a species from a single female. In fact, this species and another from Cuba described in the present paper are the first records for the Greater Antilles. The only other species (*porriginosus*) known from the Antilles is from farther south, from Guadeloupe and Dominica.

Mesocordylus jamaicensis is as elongate and narrow as *papulatus* of the group of species with widely separated elytral spots, the elytra being two and one-half times longer than the pronotum (figs. 38, 42). The antennae are long, the scape being almost as long as that of *gracilicornis* Waterhouse, and the club has a slightly longer spongy apex than that of *longiclava*. *Mesocordylus jamaicensis* differs from the female type specimen of *cubensis*, which is about the same size (11 mm.), by having much longer, narrower femora and tibiae (figs. 16, 17), and granular, not flat, buffy spots on the beak, pronotum, and elytra. The hind femur reaches the

apex of the elytra, whereas that of the species from Cuba reaches only to the front of the last abdominal segment. The basal part of the beak is flattened and granular as in *abditus* and *dispersus*, and subcarinate as in *bracteolatus*. The type was dissected partially.

Thomas H. Farr of the Institute of Jamaica kindly searched the collection in the Science Museum, but found no specimens of this genus.

SPECIES GROUP II

Mesocordylus subulatus (Germar)

Figures 32, 39, 57

Calandra subulata GERMAR, 1824, p. 301, Brazil; lectotype, male, here designated from two syntypes in Martin-Luther-Universität, Halle, examined. CHAMPION, 1910, p. 173, pl. 8, figs. 15, 15a.

Sipalus sphacelatus BOHEMAN, 1838, p. 808, Carthagenia [Colombia]; type, male, in Naturhistoriska Riksmuseet, Stockholm, examined. New synonymy. BLANCHARD, 1846, p. 203, pl. 18, fig. 4.

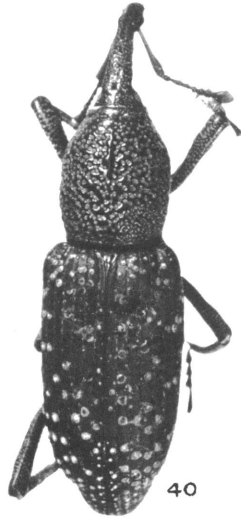
DIAGNOSIS: Similar to *gracilicornis* in large, silky, golden elytral spots (figs. 39, 40), but rather stouter in all characters, especially antennal scape and tarsi. Differing from other species of group by having no long hairs on soles of tarsi, but having spongy-hairy pads.

RANGE: From Nicaragua south in western South America to Peru and Bolivia, also in the east in French Guiana and eastern Brazil. Specimens examined, 108.

DESCRIPTION: Length, 8 to 21 mm. Beak gently arcuate; sides at base tomentose; lower edge of scrobe dilated and visible from above; sides just behind scrobes slightly angulate; extreme dorsal apex truncate; male, beak densely punctate, punctures much larger at base than toward apex; in dorsal view of same width in front of, as behind, scrobes; median carina over scrobes feeble; anterior edge of scrobe in apical third of beak; female at base with large, dense punctures, but apical punctures very fine or obsolete; in dorsal view abruptly narrower in front of, than behind, scrobes (beak in front only one-half width of base when base thickly tomentose); anterior edge of scrobe slightly in front of middle of beak; dorsal apex with inconspicuous short carina or tubercle. Antennal scape two and one-half or three times longer than wide; second funicular segment about twice length of third; club scarcely longer than wide, its spongy apex only third or less length of club. Pronotum in majority of specimens longer than wide, but as wide as long in a few specimens; densely punctate except in vague median area where often impunctate, punctures usually smaller than buffy spots of elytra; sides arcuate, in



39



40



41



42

FIGS. 39-42. *Mesocordylus*. 39. *M. subulatus* (Brazil). 40. *M. gracilicornis*. 41. *M. pustulosus*. 42. *M. papulatus*.

some specimens strongly arcuate; apex impressed at sides only. Elytral intervals on disc from base to declivity with single rows of from four to

eight widely spaced, tomentose, buffy-ringed punctures separated longitudinally by from two to 10 times their diameter; buffy spots in many specimens as wide as intervals; striae punctures minute, dense. Hind tibia straight; inner side with short hairs. Tarsi stout, with short, dense ventral hairs not visible from above. Aedeagus (fig. 57) at apex emarginate.

ECOLOGY: Blanchard (1846, p. 203) reported "*sphacelatus*" in the flowers of palm trees in Guarayos Province, Bolivia.

REMARKS: This species (*subulatus*) and *striatus* and *dispersus* occur widely throughout Central and South America; I have seen more specimens of *subulatus* (108) than of the others. It agrees with the other species of its group in the elytral spotting and the aedeagus (rather shallowly emarginate), but does not agree in the tarsi which have short, stout segments and very short hairs as in the species of group I (figs. 32, 33).

Although the type and allotype of *sphacelatus* (Boheman) differ slightly from the lectotype and syntypes of *subulatus* (Germar), I believe they represent only one variable species. While trying to determine specimens as one or the other "species," I found that some characters were not constant. First, it may be noted that two are constant, i.e., the aedeagus is identical in shape in nine males from different localities in Panama, Colombia, Peru, and Brazil, and in all the females the dorsal apex of the beak is slightly carinate, although the carina may be very short, more of a tubercle. The characters that vary are connected with the pronotum, elytral spots, and the club. In Boheman's two original specimens of "*sphacelatus*" the distinctly "bulbous" pronotum is almost as wide as long, with strongly arcuate sides, and at its widest is as wide as the elytra. In Germar's series of *subulatus*, on the other hand, the pronotal sides are rather feebly arcuate, the pronotum is longer than wide, and is as wide as, or narrower than, the elytra. However, the pronotum of some individuals, although bulbous and with the sides strongly arcuate, is nonetheless slightly longer than wide, and the pronotum of other individuals although more elongate is equally as wide as the elytra. Thus we have a merging of the pronotal characters of both "species." These differences, in any case, are slight and, being relative ones, are difficult to assess. Pronotal widths vary also among individuals of *bracteolatus* and other species.

In the syntypes or paratypes of the two forms described, the spots of the elytra are of about the same size, being narrower than the intervals, but they may be as wide as the intervals in some individuals. The difference in size may be due in part to the wearing off of the tomentosity, or the spots may be greased and so appear smaller. As for the number of spots on an interval, one side of the elytra may have a different num-

ber from the other. The type of *sphacelatus* has only four spots on the third interval; the lectotype of *subulatus* has three on one elytron, but seven on the other. In other specimens, from the base of the elytra to the declivity there are as few as two or three spots on at least one of the intervals. Champion (1910, p. 173) wrote that the specimens from Costa Rica and Nicaragua "have the scattered, rounded, whitish, asymmetrically arranged spots on the elytra a little larger and not quite so numerous as in most of the South American examples I have seen." His specimen from Nicaragua has only four or six very large spots on each interval, but I have seen similarly spotted specimens from Ecuador, Peru, and Brazil. Nine males were dissected.

Mesocordylus gracilis Champion

Figures 29, 63

Mesocordylus gracilis CHAMPION, 1910, p. 173, pl. 8, figs. 14, 14a, Volcan de Chiriqui, Panama; type, male, in British Museum (Natural History), examined.

DIAGNOSIS: One of the smallest of all species, it has very slender legs and tarsi, a stout beak twice as wide at middle as apex of front femur. Agreeing with *gracilicornis* and *subulatus* in spotting of elytra, but differing in short, wide, not elongate, pronotum, and from *subulatus* in elongate antennal club with long spongy apex. Female not known.

RANGE: Known only from the type locality.

DESCRIPTION: Length, 5.5 mm. Beak gently arcuate; dorsally base with dense, elevated, crater-like punctures; apex with elongate, shining punctures bisected in region over scrobes by carina; lower edge of scrobe dilated and visible from above; sides behind scrobe straight; extreme apex slightly emarginate; area in front of scrobes slightly wider than area behind; anterior edge of scrobe in apical third of beak. Antennal scape about five times longer than wide; second funicular segment two and one-half times length of third; club distinctly longer than wide, spongy apex nearly one-half length of club. Pronotum scarcely longer than wide, densely punctate except on slightly raised, short, median line; punctures smaller than elytral spots; sides strongly arcuate at middle; apex not impressed. Elytral intervals on disc from base to declivity with single rows of from four to seven, widely separated, tomentose, buffy-ringed punctures about as wide as intervals. Hind tibia slightly incurved, very narrow; inner edge not noticeably hairy. Tarsi elongate, narrow, flat, with sparse, but long lateroventral hairs extending beyond apices of segments. Aedeagus (fig. 63) at apex very slightly emarginate.

ECOLOGY: No information.

REMARKS: Champion considered his unique specimen of *gracilis* "somewhat immature," and compared it with *papulatus* and *leprosus*. I do not find it immature in any way, but I do see a number of similarities to the two species mentioned. The aedeagus is rather similar to that of *papulatus*, but more similar still to that of *porriginosus*, a species with reduced wings. The elongate antennal club with its long, spongy apex resembles that of *leprosus*, but *gracilis* has a proportionally much stouter, shorter beak, less elongate pronotum, and shorter elytra. The elytra of *gracilis* are only twice longer than the pronotum (fig. 29) whereas those of *papulatus* and *leprosus* are about two and one-half times longer. The only other species of this group (species with widely separated elytral spots) that have a club similar to that of *gracilis* and *leprosus* are *gracilicornis*, *pustulosus*, and *porriginosus*.

Champion's illustration of the beak (1910, pl. 8, fig. 14a) shows very well the spicules, or crater-like elevations in the basal part, and the elongate nearly confluent punctures toward the apex.

Mesocordylus gracilicornis Waterhouse

Figures 40, 58

Mesocordylus gracilicornis WATERHOUSE, 1879, p. 425, Medellin, Colombia; type, male, in British Museum (Natural History), examined.

DIAGNOSIS: One of the largest species, it has long, narrow, confluent punctate pronotum with median glabrous line, very long antennae, long club and long spongy apex on club; lacks opaque glaze at base of beak present in most species. Large, elevated, hairy, widely separated buffy spots of elytra and shape of beak of female similar to those of *subulatus* (figs. 39, 40).

RANGE: Western South America from Colombia to Bolivia. Specimens examined, nine.

DESCRIPTION: Length, 13 to 25 mm. Beak on sides of base not tomentose; dilated lower edge of scrobe visible from above but less so in female; in male, beak in profile straight at base, strongly arcuate at apex; anterior edge of scrobe in apical third of beak; in dorsal view beak behind scrobe densely, coarsely punctate, in front of scrobe finely punctate; beak narrowing feebly from base to scrobes; apex about as wide as base; extreme dorsal apex virtually truncate; female, beak strongly arcuate from base to apex; behind scrobe densely, coarsely punctate, in front of scrobe virtually impunctate; in lateral and dorsal view narrower from scrobe to apex than at base; anterior edge of scrobe in front of

middle of beak; extreme apex emarginate. Antennal scape about six times longer than wide (in one specimen only four times longer); second funicular segment twice length of third; club longer than wide; sides dilated to middle; spongy apex one-half length of club. Pronotum distinctly longer than wide, confluent, reticulately punctate except at center where short, elevated line, also several irregular, glabrous, elevated areas; sides feebly arcuate; apex vaguely, if at all, transversely impressed. Elytra discal intervals from base to declivity with single rows of from six to 10 (in one specimen 17) widely spaced, large (in some specimens as wide as interval), round, tomentose, often silky, spots surrounding punctures; striae punctures minute. Hind tibia slightly incurved, that of two males on inner side with long, dense hairs. Tarsi elongate, with only a few lateroventral hairs visible from above and extending beyond apices of segments. Aedeagus (fig. 58) at apex slightly emarginate.

ECOLOGY: No information.

REMARKS: Although the antennal scape, as denoted by the scientific name, is longer and narrower than that of other species, its length is nonetheless too relative for use in the key to the species. The beak of the male is quite distinctive; when viewed from above, it is narrowest behind the scrobe instead of toward the apex, and the scrobe is situated far forward where the apex turns downward, so that, when viewed laterally, the basal three-fourths of the beak is long and straight.

In addition to the characters of the tarsi and the antennae, *gracilicornis* differs further from *subulatus* by having usually more numerous spots on the elytra, the pronotum more elongate and with raised, shining parts due to the merging of the punctures, the beak of the female less widened at the base. Two small females of 13 and 14 mm. (one of each species) from the same locality (Cochabamba-Chapare, Bolivia) were directly compared and they differ as stated above. I have only one female of *gracilicornis*; it is much smaller than the other specimens, has rather fewer spots on the elytra, and a less elongate pronotum. I have seen a male and female of *pustulosus* Champion also from Cochabamba, but from a higher altitude. There is no opaque, buffy coating on the beak or body of specimens of *gracilicornis* as there is on degreased or fresh specimens of *pustulosus*. The pronotum of these two species is similar, but the elytral spots and striae, as well as the aedeagus, differ. One male and three females were dissected.

Mesocordylus pustulosus Champion

Figures 8, 31, 41, 59

Mesocordylus pustulosus CHAMPION, 1910, p. 173, pl. 8, figs. 16, 16a, Chontales,

Nicaragua; type, male, in British Museum (Natural History), examined.

DIAGNOSIS: When fresh or well degreased, this species is covered with yellowish, opaque coating somewhat similar to, but less rough than, that of *porriginosus* and *leprosus*. Differing from former by having full wings and prominent humerus, and from *leprosus* by having pronotum more elongate and smooth, not tumid, and middle femur shorter.

RANGE: Known at present from Nicaragua, Peru, and Bolivia. Specimens examined, seven.

DESCRIPTION: Length, 15 to 19 mm. Beak covered with tomentose coating interspersed with elevated, hairy granules (granules and coating lacking on front part of beak of female); dilated lower edge of scrobe well visible from above; male, beak straight in basal two-thirds, bent downward at apex; anterior edge of scrobe in apical third of beak; in dorsal view same width from base to scrobes, thence slightly narrower in front of scrobes; extreme apex minutely emarginate; female, beak nearly straight, but in front of scrobe abruptly narrowed and constricted (fig. 8); in dorsal view apex about one-half width at base; extreme apex striate longitudinally (in one female carinate from apex to scrobe); anterior edge of scrobe about as in male; sides and venter of apex hairy. Antennal scape about four times longer than wide; second funicular segment two and one-half times longer than third; club longer than wide; sides dilated at middle; spongy apex about one-third length of club. Pronotum distinctly longer than wide, densely, in part confluent, punctate, but with impunctate median line (line faint in type specimen); punctures about equal in size to buffy spots of elytra; sides feebly arcuate; apex not impressed. Elytral intervals on disc from base to top of declivity with single rows of from six to 15 widely spaced, buffy-ringed punctures about as wide as interval in most specimens, often difficult to count due to presence of opaque coating and rather uneven surface between punctures; stria punctures small, some ringed with buffy. Hind tibia at apex slightly incurved; inner edge with fringe of short hairs. Tarsi elongate, with dense, lateroventral hairs visible from above and extending beyond apices of segments. Aedeagus (fig. 59) at apex deeply, narrowly emarginate.

ECOLOGY: No information.

REMARKS: A pair from Peru without further locality has an identification label signed by Heller saying *immundus* Erichson. As the type of *immundus* has not been found, and as the description could apply equally to a number of species, I have put *immundus* in *incertae sedis*.

The type of *pustulosus* was cleaned by Champion with caustic potash which did not remove, he said (1910, p. 174) the "subopaque, pale

greyish-brown incrustation." I had been unable to identify any such species until I degreased in carbon tetrachloride several specimens from Bolivia and Peru which I thought were a new species. From a greasy black, these specimens (fig. 41) became nearly the color of Champion's illustration of *pustulosus* from Nicaragua. Subsequently, R. T. Thompson of the British Museum (Natural History) kindly compared my specimens with the type and he assured me that they are indeed *pustulosus*. Although I have no specimens from areas between Nicaragua and Peru and Bolivia, the species probably occurs in the intervening area.

The beak of the female is the same shape as that of females of *leprosus*, *papulatus*, *porriginosus*, and *rugicollis*, but the female of *pustulosus* differs from the others by having the dorsal area immediately behind the mandibles striate or wrinkled, not longitudinally bi-impressed.

The aedeagus is more deeply emarginate than that of other species of the group; it is more similar to that of *cylindraceus* and other species of group I. Two males and one female were dissected.

Mesocordylus leprosus (Boheman)

Figure 60

Sipalus leprosus BOHEMAN, 1838, p. 810, Antioquia, Colombia; type, male, in Naturhistoriska Riksmuseum, Stockholm, examined.

DIAGNOSIS: Distinguished from its relatives, *papulatus* and *rugicollis*, (which agree with *leprosus* in apically bi-impressed beak of female, and long-haired tarsi) by combination of long, not short, spongy apex of elongate antennal club, long middle femora that overlap base of hind femora, and longer antennal scape.

RANGE: Colombia. Specimens examined, two.

DESCRIPTION: Length, 14 to 17 mm. Beak straight in basal two-thirds, bent downward at apex; punctures at apex fine, dense, on remainder of beak coarser and covered with tomentose coating interspersed with elevated, hairy granules; dorsally with median carina over scrobes; extreme apex emarginate; dorsally about same width throughout except where widely dilated scrobe projects; anterior edge of scrobe in apical third of beak, a little farther front in male than in female; female with dorsal apex of beak deeply incised on each side of narrow median "island" as in figure 9; beak in lateral view abruptly constricted in front of scrobe. Antennal scape five or six times longer than wide; second funicular segment three times longer than third; club distinctly longer than wide, spongy apex about one-half length of club. Pronotum longer than wide, densely but unevenly punctate, rather rugose; on each side

of middle, two vague depressions in front of tumid areas; apex transversely impressed. Elytral intervals uneven, roughened, with single rows of buffy-ringed, hairy craters covering punctures; craters about as wide as interval, separated longitudinally by twice or more than twice their diameters; discal intervals from base to top of declivity having six to 10 craters; striae punctures smaller, dense, buffy-ringed. Hind tibia virtually straight, very narrow; inner edge with very short hairs. Middle femur long, overlapping base of hind femur. Tarsi elongate, with dense, latero-ventral hairs visible from above and extending beyond apices of segments. Aedeagus (fig. 60) with tiny, V-shaped apical emargination covered by transparent truncate membrane.

ECOLOGY: No information.

REMARKS: The tumidities of the pronotum given for *leprosus* in the key to the species are present in both specimens seen, but additional specimens may not be so heavily encrusted. In the type, which I have not degreased, the pronotum appears black and roughened and no punctures are visible; in the female, confluent punctures show through parts of the muddy incrustation.

At first sight the apex of the aedeagus appears to be truncate, but when the specimen is tipped under the light of a stereoscopic bisecting microscope, it is evident that the truncate part is membranous and transparent, and that there is a tiny emargination behind it. The female was not dissected.

Mesocordylus papulatus (Fahraeus)

Figures 9, 10, 34, 42, 61

Sipalus papulatus FAHRAEUS, 1845, p. 213, Brazil, near Nova Friburgo [Rio de Janeiro]; type, female, in Naturhistoriska Riksmuseum, Stockholm, examined.

DIAGNOSIS: Generally smaller and narrower than two preceding species, *leprosus* and *pustulosus*, and with fewer, smaller, buffy spots on elytra, but with same long-haired tarsi; female having same bi-impressed apex of beak as that in *leprosus*.

RANGE: Eastern Brazil from Bahia south to Santa Catarina. Specimens examined, 59.

DESCRIPTION: Length, 9 to 14 mm. Beak densely punctate, in some specimens slightly carinate medially; sides in basal two-thirds heavily tomentose; scrobe with widely dilated lower edge well visible from above, its anterior edge in apical third of beak, but that of male slightly farther forward than that of female; male, beak straight at base, slightly curved downward at apex; in dorsal view slightly narrower in front of scrobes

than behind; female, virtually straight, but upper edge of beak, in lateral view, in front of scrobe abruptly constricted so that apex narrower than basal portion (fig. 10); in dorsal view (fig. 9) apical portion distinctly narrower than that behind scrobe; dorsal apex deeply incised on each side of median carina or "island" which itself in some specimens is depressed at center. Antennal scape about four times longer than wide; second funicular segment two and one-half times longer than third; club longer than wide; sides dilated at middle; apical spongy part about one-third length of club. Pronotum distinctly longer than wide, much narrower than elytra; densely, rugosely, in some specimens confluent, punctate; punctures about equal in size to buffy spots of elytra; sides feebly arcuate; apex transversely impressed. Elytral intervals on disc from base to top of declivity with single rows with three to six widely spaced, buffy-ringed punctures, which are not quite so wide as interval; striae punctures much smaller. Hind tibia at apex slightly incurved; inner edge with short hairs; front tibia in some specimens with longer hairs. Tarsi elongate, with dense, lateroventral hairs visible from above and extending beyond apices of segments. Aedeagus (fig. 61) at apex slightly, shallowly emarginate.

ECOLOGY: No information.

REMARKS: Specimens of *papulatus* have been seen which were identified as *subulatus* and *cylindraceus*, but *papulatus* differs from the former by having long-haired feet (fig. 34) and by being much narrower and more elongate, and from *cylindraceus* by having a shorter spongy part on the antennal club and buffy spots on the elytra. The females differ from those of both these species by having the apex of the beak bi-impressed.

The pronotum is much more elongate than that of *rugicollis*; the elytra are flatter and smoother between the buffy spots than those of *pustulosus* and *leprosus*, and the elytral striae punctures are not generally visible. The rounded apex of the aedeagus with its shallow emargination is rather similar to that of others of the group except for *pustulosus*. Four males and two females, including the type, were dissected.

Mesocordylus rugicollis (Boheman)

Sipalus rugicollis BOHEMAN, 1845, p. 214, Cayenne [French Guiana]; type, female, in Naturhistoriska Riksmuseum, Stockholm, examined.

DIAGNOSIS: Elytra similar to those of *leprosus* and *pustulosus*, and female with apically bi-impressed beak as in *leprosus*, *papulatus*, and *porriginosus*, but pronotum as wide as long, not elongate, antennal club and apical spongy part short, not long, and species known from female only.

RANGE: Cayenne. Specimens examined, two.

DESCRIPTION: Length, 10 to 13 mm. Beak rather straight, but in lateral view constricted in front of scrobe as in figure 10, punctate; sides just behind scrobes straight; sides at base tomentose on type, but in other female all of basal two-thirds covered with elevated, tomentose granules; in dorsal view, type with apex scarcely narrower than base; other female with it much narrower; widely dilated lower edge of scrobe well visible from above, its anterior edge in front of middle of beak; dorsal apex broadly impressed on each side of sharp median carina; apex in lateral view bulbous in type. Antennal scape about three times longer than wide; second funicular segment two and one-half times longer than third; club of type scarcely longer than wide; of other female longer than wide; sides dilated at middle; apical spongy part about one-third of whole in type, perhaps slightly more in other female. Pronotum about as wide as long; densely, rugosely, confluent punctate; punctures equal in size to elytral craters; sides strongly arcuate; apex feebly, transversely impressed. Elytral intervals on disc from base to top of declivity with single rows of four to six widely spaced (by three to five times their diameter), hairy craters; craters covering punctures, about as wide as interval; striae punctures smaller, denser, but well marked. All tibiae slightly incurved, with dense, short hairs on inner edge. Tarsi elongate, with dense, latero-ventral hairs visible from above and extending beyond apices of segments.

ECOLOGY: No information.

REMARKS: The second female differs slightly from the type, as shown in the description above, but I believe these are the same species. The short carina at the apex of the beak is present in both specimens, and it is not divided as it is in females of *papulatus* and *leprosus*; furthermore, the impression on each side of the carina is broader than those of the other species.

When I relaxed the type to make sure it was a female, the head, pronotum, and one hind leg parted company, and these parts are now glued together.

Mesocordylus apiciclava, new species

Figures 7, 22, 62

TYPE MATERIAL: Type, male, St. Laurent du Maroni, French Guiana, Le Moutt Collection, in Muséum National d'Histoire Naturelle, Paris, one male paratype, same data, in the American Museum of Natural History, and one male, Para, [Brazil], in the British Museum (Natural History).

DIAGNOSIS: Only species of group II with such a small spongy area at apex of antennal club (fig. 22), although some *subulatus* have it nearly as small. Most similar to *rugicollis* from which it differs in club, pronotum, and stouter tarsi. Beak and scape of antenna proportionally stout also. Dorsum with brownish, opaque coating. Female unknown.

RANGE: Northeastern South America.

DESCRIPTION OF TYPE, MALE: Length, 12 mm. Beak gently arcuate, densely punctate; sides, when viewed dorsally, in basal two-thirds sinuate (fig. 7) and covered about one-third of way onto dorsum of beak with thick, brownish, tomentose coating on which are crater-like punctures; coating so thick on each side of middle that beak seems longitudinally bi-impressed; median third of beak also with crater-like punctures; dorsally in front of scrobes beak scarcely narrower than behind them; scrobe with widely dilated lower edge visible from above, anterior edge in apical third of beak; extreme apex slightly emarginate. Antennal scape a little more than twice longer than wide; second funicular segment two and one-half times longer than third; club only slightly longer than wide, scarcely dilated; apical spongy part about one-fifth length of club. Pronotum slightly longer than wide, with dense, flat, buffy-ringed punctures; medially from base to apex a slightly elevated, narrow line; sides gently arcuate; apex with impressed line. Elytral intervals on disc from base to top of declivity with single rows with six to nine widely spaced (by three to six times their diameter), hairy craters; craters covering punctures and nearly as wide as intervals; striae punctures minute, only a few visible. All tibiae slightly incurved; inner edge with two rows of dense, short hairs. Tarsi with hairs coagulated, but apparently rather stout and with long, dense lateroventral hairs extending beyond apices of segments. Aedeagus (fig. 62) at apex subtruncate; sides behind apex sinuate.

VARIATIONS FROM TYPE: The paratype from French Guiana is 11 mm. in length, but otherwise almost exactly like the type. The paratype from Brazil, however, differs by being only 9 mm. in length and in lacking the dusty, brownish coating; it is blackish with buffy spots; there is less coating on the sides of the beak, and over the scrobes is a feeble median carina. The dorsum of the beak of this specimen does not have the two sulci which are caused in the other specimens by the thick coating.

ECOLOGY: No information.

REMARKS: Possibly this species (*apiciclava*) is the male of *rugicollis* (Boheman), also from French Guiana, but there are a number of differences that separate them, at least according to the few specimens available. Additional material may, of course, show variation in the

characters. (I do not mention differences in the beak as it differs sexually in almost all species of the genus.) The spongy area of the club is much smaller in *apiciclava*, but in *rugicollis* it is smaller in the type than it is in the second specimen. The tarsi of *rugicollis* are distinctly flattened and elongate and have very long hairs, as shown in figure 34 of *papulatus*, whereas those of *apiciclava* seem stout and with less long hairs, as shown in figure 33 of *dispersus*. Unfortunately, it has been impossible to clean the tarsi of *apiciclava* thoroughly in spite of repeated soakings in carbon tetrachloride. The pronotum is more elongate than that of *rugicollis*, with a smooth, not confluent punctate, dorsal surface, and with a median impunctate line.

The brownish coating on the two specimens from French Guiana resembles that of degreased specimens of *pustulosus* Champion, a larger species differing in the aedeagus, the club, and the narrower pronotum. This coating is thin and readily abraded; it is not the same as the glossy, enamel-like, solid coating of *cerinus* and of species of *Orthognathus*. The barely visible apical spongy area of the club is found also in *spumosus*, *cerinus*, and *striatus* of group I.

All three specimens are in bad condition. The type, which I degreased two or three times, still bears traces of grease; it lacks two legs on one side, and all but one of the claws. The paratype from French Guiana lacks one front leg, and the abdomen is entirely empty within. The third specimen came apart when dissected and is now glued together somewhat precariously. Two names are written on each side of a label under the type, one above, reading "*memnonius*" and one below, "*gracilis*," both of which are quite different species.

Mesocordylus porriginosus (Boheman)

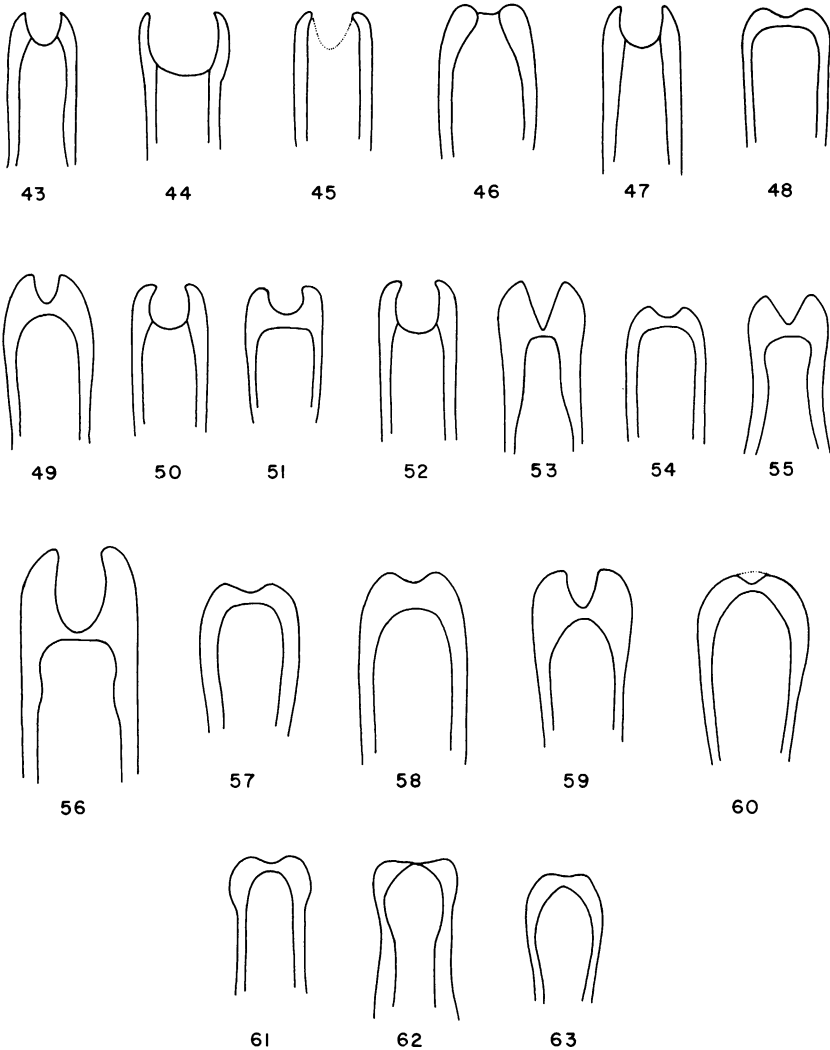
Figures 11, 27, 63

Sipalus porriginosus BOHEMAN, 1838, p. 811, [island of] Guadeloupe; type, male, in Naturhistoriska Riksmuseum, Stockholm, examined.

DIAGNOSIS: Differs from other species in distribution, being from Lesser Antilles, and by having reduced wings, (a condition concomitant with flattened humerus), longer, less sharply delimited elytral declivity, short elytra, short metasternum, and very long femora.

RANGE: Islands of Guadeloupe and Dominica, and perhaps other islands in the Lesser Antilles. Specimens examined, 31.

DESCRIPTION: Length, 8 to 17 mm. Beak encrusted with tomentose glaze, medially carinate near apex or behind scrobes; widely dilated lower edge of scrobe well visible from above, anterior edge in front of middle of beak, but farther front in male than in female; dorsally, part



FIGS. 43-63. Dorsal apex of aedeagus of *Mesocordylus*. 43. *M. memnonius*. 44. *M. cerinus*. 45. *M. secundus*. 46. *M. striatus*. 47. *M. mexicanus*. 48. *M. spumosus*. 49. *M. cylindraceus*. 50. *M. scutellaris*. 51. *M. scutellaris*, less emarginate variant. 52. *M. longiclava*. 53. *M. bracteolatus*. 54. *M. abditus*. 55. *M. eurytrema*. 56. *M. dispersus*. 57. *M. subulatus*. 58. *M. gracilicornis*. 59. *M. pustulosus*. 60. *M. leprosus*. 61. *M. papulatus*. 62. *M. apiciclava*. 63. *M. porriginosus*, characteristic also of *M. gracilis*.

in front of scrobe scarcely narrower than that behind; male, beak gently, evenly arcuate; female, near¹ straight, but upper and lower edges of

beak in front of scrobe abruptly constricted (fig. 11); dorsal apex deeply impressed on each side of median carina. Antennal scape from four to six times longer than wide; second funicular segment about three times longer than third; club distinctly longer than wide, slightly dilated toward apex where spongy part about one-third length of club. Pronotum longer than wide, densely, reticulately, confluent punctate (in type entirely tomentose); sides almost parallel, very feebly arcuate; apex not noticeably impressed. Elytra, in contrast to those of other species, with humerus oblique, flattened, not prominent (fig. 27); wings reduced to only three-fourths length of elytra and very narrow; subapical callus obsolete; intervals roughened by subsidiary granules and by single rows of hairy craters surrounding punctures; craters about as wide as interval, widely separated longitudinally by as much as four to six times their diameter, and from base to top of declivity numbering from five to nine craters; strial punctures small, dense, surrounded by buffy spots. Hind tibia straight, narrow, with very short hairs on inner side. Middle femur extending beyond trochanter of hind femur; hind femur extending beyond apex of elytra. Tarsi elongate, with dense, lateroventral hairs visible from above and extending beyond apices of segments. Aedeagus (fig. 63) shallowly emarginate.

ECOLOGY: Hustache (1932, p. 135) reported *porriginosus* in Guadeloupe from the trunks of the "Caconnier" (*Ormosia dasycarpa*), the bead or necklace tree with bright scarlet seeds, of the family Leguminosae, and in the trunks also of other trees; also in the forests, and under cut wood.

REMARKS: *Mesocordylus porriginosus* is very similar to *rugicollis*, *papulatus*, and *leprosus*, especially the females, all having a bi-impressed dorsal apex to the beak. On the ventral side of the apex, however, the female of *porriginosus* has a much longer and deeper longitudinal impression which extends farther backward, almost to the scrobes. The sides of the impression are visible in a lateral view (fig. 11). The apex of the aedeagus of three of the species (the male of *rugicollis* is not known) varies slightly (figs. 60, 61, 63). The atrophied wing of *porriginosus* was dissected from two females. It is very narrow, about as wide near the base as the third interval of the elytra, and extends a little more than halfway to the apex of the elytra; there are large veins present.

The type and many other specimens are encrusted throughout with a brownish, yellowish, rough coating of tomentose hairs, and the elytra, in addition, have large, crater-like, hairy punctures as in the other species mentioned. The pronotum underneath the coating is densely, confluent punctate. Two males, including the type, and two females were dissected.

INCERTAE SEDIS

Sipalus immundus ERICHSON, 1847, p. 135, Peru; no type found in Zoologisches Museum, Berlin.

Lacordaire (1866) mentioned among others *immundus* and *scutellaris* Erichson when he described his new genus *Mesocordylus*.

ORIGINAL DESCRIPTION: "S. elongatus, niger, griseo-indutus, rostro basi constricto, apice subulato; prothorace oblongo, dense rugoso-punctato, linea longitudinali laevi; elytris subtiliter punctato-striatis; interstitiis griseo-leprosis."

Unfortunately, Erichson did not say whether the griseous spots were close together or widely separated. Therefore *immundus* cannot be assigned to either of my two groups of species of *Mesocordylus*. There is also no mention of the antennal club, which might have helped in determining the species. Champion (1910, p. 172) remarked that *Orthognathus subparallelus* "has long been known in collections under the name of *Mesocordylus immundus*, Er., a Peruvian insect with the elytral interstices 'griseo-leprosis.'" *Orthognathus subparallelus*, however, is quite shining throughout, without any whitish spots. I have seen a specimen of *pustulosus* Champion from "Hoch Peru" determined by Heller as *immundus*. It may be that these names are synonymous, but apparently Heller did not see the type of *immundus*, only some specimens identified by Kirsch as *immundus* (letter from Dr. R. Hertel, Dresden). Champion's *dispersus* could also be said to agree with Erichson's description. Both of Champion's species were described from Nicaragua, but both occur widely in Peru.

Sipalus luteo-signatus BLANCHARD, 1843 [= 1846], p. 203, pl. 18, fig. 6, Corrientes, Argentina; type in Muséum National d'Histoire Naturelle, Paris, examined.

The type bears a label "Patagonie (Patagones) D'Orbigny 1834." With the type are three additional specimens, one without locality, one from Jatahy, Brazil, and one from Guarayos, Bolivia.

Although it appears in the catalogues (Csiki, 1936; Blackwelder, 1947) in *Mesocordylus*, this species does not belong in that genus or in any genera of the Sipalini because the pygidium is not covered by the elytra. The exposed pygidium is characteristic of the tribe Rhynchophorini in which *luteo-signatus* can be placed. According to the pattern of the elytra, it is either a synonym of *Eucalandra setulosa* Gyllenhal, or a species very close to it.

Curculio rubetra OLIVIER [not Fabricius], 1790, p. 476, Cayenne [French Guiana]; no type found or designated; 1807, p. 85 [as *Calandra*]; 1808, pl. 4, figs. 34a, b, c.

SYNONYM: *Rynchophorus gagates* HERBST, 1795, p. 26, pl. 61, fig. 8, Cayenne. Synonymized by Schoenherr, 1838.

Olivier's *rubetra* is under *Mesocordylus* in the catalogues (Csiki, 1936; Blackwelder, 1947), but I believe it is not this genus. Probably it is *Metamasius* (Rhynchophorini), as in 1807 Olivier gave three characters (the elytra a little shorter than the abdomen, the base of the beak and the hind tibia at middle toothed) which are diagnostic for some species of *Metamasius*. At that time he used the generic name *Calandra* and compared *rubetra* with other "*Calandra*," now *Metamasius*. These characters, unfortunately, do not show in the illustrations of Olivier and Herbst (both authors evidently illustrated the same specimen), and the tooth under the beak was not mentioned in the description until 1807. Olivier was no doubt not aware that he was describing a new species, because in 1790 and 1807 he cited *Curculio rubetra* Fabricius, 1787, p. 97, and gave Fabricius' short original description. But Fabricius' species is an entirely different weevil, *Cleogonus rubetra* in the Cryptorhynchinae, a small, oval weevil with "femoribus sulcatis." This weevil, of which, according to Zimsen (1964) there is no type extant in the Fabrician collection, has as synonym *Curculio gagates* Olivier, 1790, p. 480; 1807, p. 117; 1808, pl. 9, fig. 104, which was illustrated also by Herbst, 1795, p. 141, pl. 69, fig. 6 as *Curculio rubetra* Fabricius. Thus we have two weevils named *rubetra* with two synonyms named *gagates* (although *rubetra* means reddish and *gagates* means black), and each weevil was illustrated and discussed by the same two authors between 1790 and 1808.

The name *rubetra* Olivier became associated with *Mesocordylus* through Schoenherr (1838) who, although he had not seen the species, listed it at the end of his genus *Sipalus* from which Lacordaire (1866) removed the New World species, including *rubetra*, to the genus *Mesocordylus*.

GENUS *ORTHOGNATHUS* SCHOENHERR

Orthognathus SCHOENHERR, 1838, p. 812. Type species, by monotypy, *Orthognathus lividus* GYLLENHAL, 1838.

Sphaenognathus SCHOENHERR, 1845, p. 215. New name for *Orthognathus*, but substituted in error.

DIAGNOSIS: Differing from *Mesocordylus* and *Sipalinus* in shape and size of mandibles; wide, not narrow apical truncation of hind tibia; strongly, abruptly widened hind tibia; dilated or somewhat triangular first segment of hind tarsus; dorsally carinate beak; and secondary sexual characters. Resembling stouter species of *Mesocordylus* in shape.

DESCRIPTION OF GENUS: Length, excluding beak, 5 to 17 mm. Surface shining or dull. Color black or dark red; fresh specimens with an enamel-

like, brownish yellow (testaceous) coating that readily becomes dark from greasing. Eyes widely separated above. Mandibles, dorsal view, elongate, devoid of lobes or teeth; apices obtuse; inner surfaces nearly straight (fig. 69). Beak, including mandibles, shorter than pronotum, virtually straight, but upper edge arcuate; punctures not visible in all specimens; dorsally beak either feebly bicarinate or strongly multicarinate; extreme apex emarginate; ventrally unicarinate or tricarinate and with side margins behind apex strongly margined; scrobe lateral. Antennal club not longer than wide, dilated apically; apical spongy part one-third or less than one third length of club; scape widened at apex, scarcely reaching to eye, robust, shorter than funiculus; second funicular segment scarcely longer than any of following segments; segments three to six wider than long. Pronotum with postocular lobe bordered behind by deeply impressed line which extends onto dorsum; base margined and truncate. Scutellum and elytra oblong-oval; elytra strongly striate. Front coxae contiguous; middle coxae narrowly separated. Abdomen with suture between first and second segments somewhat arcuate so that second segment is wider at middle than at sides. Femora short; apex of middle femur not reaching base of metasternum. Tibiae with outer edges subcarinate, inner edges abundantly ciliate; inner apex with spur, or lobe, or strong hook; front tibia (fig. 71), outer apex either angulate or lobed; hind tibia strongly widened to apex (figs. 66, 67); apex truncate and very wide throughout, not narrower on one side; truncation visible on outer face. Tarsi narrow except for first segment of hind tarsus which is dilated on inner side (fig. 68); third segment not bilobed; under surface of all segments glabrous except for lateral or apical hairs; terminal segment inserted at apex of third. Aedeagus with lateral line dividing dorsal and ventral surfaces, its two long apodemes attached to sides of base of aedeagus; ejaculatory duct at apex with long, sclerotized, wirelike "coil" as shown in figure 23 of *Mesocordylus*. Eighth tergum of male at apex truncate, hairy.

SEXUAL DIMORPHISM: The secondary sexual characters are associated with the beak, and to a lesser degree with the postocular lobe and the hind tibia (see the species).

DISTRIBUTION AND ECOLOGY: According to present knowledge, the three species of this genus are allopatric. The most northern species (*subparallelus*) extends from the southwestern United States (Arizona) south through Mexico and Central America to Panama. A more southern species (*lividus*) is recorded from French Guiana and eastern Brazil, also Bolivia; and one species, described as new, has been taken in Ecuador near the coast (fig. 64).

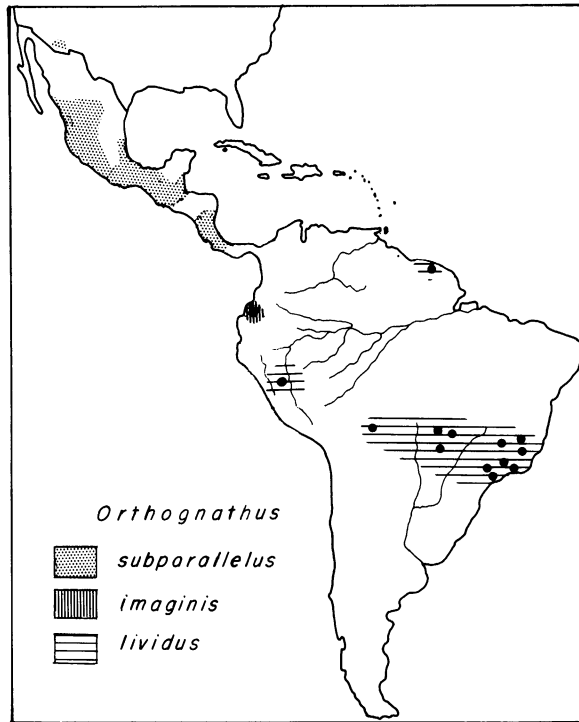


FIG. 64. Distribution of the genus *Orthognathus*.

Specimens of *subparallelus* are found at lights, but nothing else is known of the habits of the species except for the surprising remark by Chevrolat (1880) that *subparallelus* lives on human excrement. This was quoted by Champion (1910) and Costa Lima (1956), but without any supporting evidence. Some weevils, however, are coprophagous, as Zwölfer and Bennett (1969, p. 122, footnote) reported two species of *Tentegia*, subfamily Cryptorhynchinae, that "exploit the dung of Australian marsupials."

SYNONYMY AND GENERAL REMARKS: The new name given by Schoenherr for the genus was not necessary, as pointed out by Lacordaire (1866, p. 311, footnote 1); *Orthognathus* had not previously been used, as Schoenherr thought, for a lucanid beetle.

In the catalogues (Csiki, 1936; Blackwelder, 1947) *coelomerus* Chevrolat was listed under *Orthognathus*, but it is a synonym of *Mesocordylus cylindraceus* (Boheman). The monotypic genus, *Nudoderes* Hustache, was listed in the same subtribe as *Orthognathus*, but Kuschel (1955) saw the type species and synonymized it with *Ithaura* in the Hylobinae. Aside

from the excellent account of its first species by Lacordaire (1866), *Orthognathus* has received little attention. Champion (1910) discussed it for the second species (*subparallelus*), which occurs in Central America, and Costa Lima (1956) mentioned the genus and presented two photographs of *lividus*. Lacordaire erected a separate group for the genus, his Orthognathides, as opposed to his "true" Sipalides (*Sipalinus*, *Mesocordylus*, *Rhinostomus*), but intensive study of many more species of *Mesocordylus* than those known to Lacordaire shows that the species of *Orthognathus* are not as distinctive as first noted. He separated the two groups on the apically widened hind tibiae, but some species of *Mesocordylus* (*memnonius*, *secundus*, and some *striatus*) and one species of *Sipalinus* (*aurivilli*) also have apically widened tibiae, although not nearly so strongly widened as those of *Orthognathus*. Lacordaire, however, had only *O. lividus*, which is different from the other species and has some truly bizarre characters.

The name of the genus means "straight mandibles." The mandibles are not only straight, but they are also very large, usually longer than the antennal club, and are devoid of dentations. They are larger than the straight mandibles of species of *Mesocordylus*, and have blunt, not acuminate, apices. On the ventral side of the beak is a long, flat, longitudinally carinate, more or less triangular process which Lacordaire called "la saillie." This plate fits under the mandibles and extends nearly to their apices, thus hiding the other organs of the buccal cavity. The apex of the plate is visible from above when the mandibles are open. The plate is present also in *Mesocordylus*, but it is not carinate throughout in all species, and the carinae are lacking in the females of some species. The wide, shallow, truncated apex of the hind tibia of *O. lividus* is wider than that of the two other species, and is equipped at its inner apex with a large, rounded or squarish, flat lobe that is not present in the other species. The truncate apex in species of *Mesocordylus* is much narrower, and only in *M. memnonius* and *secundus* is it wide enough to be barely visible in a profile view. The modifications of the hind tarsus do not occur in *Mesocordylus*; they are more extreme for *lividus* than for the other two species of *Orthognathus*.

The majority of specimens examined are greasy black or dark red, but degreased or fresh specimens are clothed in an enamel-like, testaceous coating, which is found also in several species of *Mesocordylus*. This is the "jaune testacé livide" which Lacordaire mentioned for *lividus*. A soaking in carbon tetrachloride brings out not only the enamel-like coating or glaze, but the punctation as well. Each puncture then appears as yellowish or whitish and contrasts with the coating. Degreasing, however, does not always get good results and may have to be repeated. The aedeagus

is of the same type as that of *Mesocordylus* and also has the "coil" (fig. 23). The eighth tergum is about the same shape in both sexes, i.e., the sides subparallel and the apex more or less rounded-truncate.

The types of both described species and about 200 specimens have been examined. A third species is added. The sexual differences are given after the formal description.

KEY TO THE SPECIES OF *Orthognathus*

1. Front and hind tibia at inner apex broadly lobed (figs. 67, 71); beak dorsally mostly smooth or with two vague, blunt carinae in apical part; club usually wider than long (fig. 77) *lividus* Gyllenhal, p. 64
All tibiae at inner apex with spurs or hooks, no lobes; beak dorsally with three or more carinae and in some individuals many rugae; club about as wide as long (fig. 76) 2
2. Tibiae at inner apex with recurved, obliquely truncate hook (fig. 66)
. *subparallelus* (Chevrolat), p. 66
Tibiae at inner apex with straight or slightly curved spur
. *imaginis*, new species, p. 68

Orthognathus lividus Gyllenhal

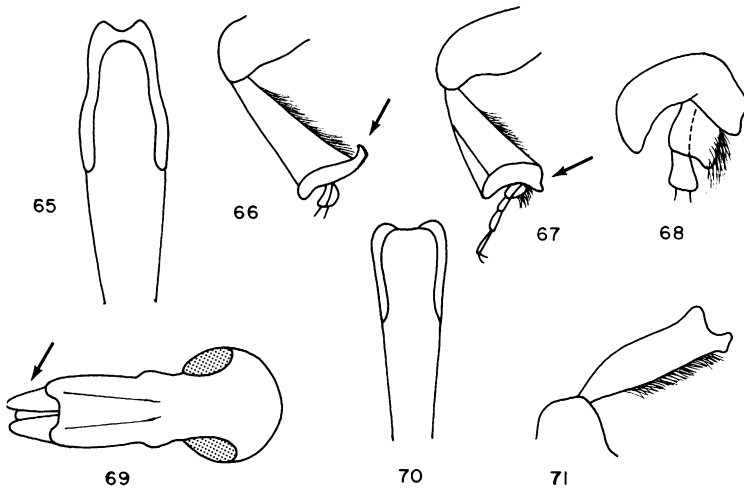
Figures 67-71, 73, 75, 77

Orthognathus lividus GYLLENHAL, 1838, p. 813, Brazil; type, female, in Naturhistoriska Riksmuseet, Stockholm, examined. COSTA LIMA, 1956, p. 258, figs. 211, 212.

DIAGNOSIS: Differing from other two species, in addition to characters given in key, by having pronotum, elytra, and antennal club proportionally wider; club slightly asymmetrical; mandibles somewhat longer (one-fourth length of beak); hind femur shorter, more bulbous; metepisternum wider and shorter; first segment of hind tarsus widely dilated and flattened on side nearest body; aedeagus of different shape; male with different secondary sexual characters.

RANGE: South America, in French Guiana, eastern Brazil to Bolivia, and Peru east of the Andes. Specimens examined, 64.

DESCRIPTION: Length, 5 to 14 mm. Dark red, with or without brownish yellow, enamel-like coating. Beak dorsally in apical two-thirds broadly, shallowly depressed between two vague, V-shaped carinae (fig. 69); scrobe with posterior edge distinct in some specimens and distant from eye by about width of scape; scrobe with lower edge not at all dilated horizontally. Antennal club distinctly wider than long, slightly dilated toward one side; apical spongy part on inner side about one-fourth length of club, on outer side scarcely visible. Pronotum slightly wider than long; sides rounded from base to apex and rugosely punctate



FIGS. 65, 66. *Orthognathus subparallelus*. 65. Aedeagus. 66. Right hind tibia, male.
 FIGS. 67-71. *O. lividus*. 67. Right hind tibia and tarsus, female. 68. Enlargement of truncate apex of hind tibia and of first tarsal segment. 69. Dorsal view of head, beak, and mandibles. 70. Aedeagus. 71. Left front tibia, showing emarginate apex.

on margin which is therefore conspicuous; on disc evenly, finely punctate, but in greased specimens apparently impunctate. Elytra about one and one-half times longer than pronotum, in some specimens narrower than widest part of pronotum; intervals slightly convex, with single or double rows of tiny punctures, but appearing impunctate when greased. Front tibia at apex emarginate, divided into two lobes which may be worn down in some specimens; middle tibia at apex obliquely truncate, its inner apex with straight spur; hind tibia at apex about four times wider than at base, its inner apex with large, blunt or irregular lobe; hind femur wider and more bulbous than other femora; hind tarsus with first segment much dilated to one side and flattened to sharp edge from which emerges row of long hairs, there being no apparent ventral surface to this segment (figs. 67, 68). Aedeagus (fig. 70), viewed dorsally, with sides straight; apex feebly emarginate and at center not sclerotized.

SEXUAL DIMORPHISM: The male has two pendant angles or teeth (fig. 75), like dewlaps, underneath the beak, which are actually downward extensions of the anterior edge of the antennal groove. In females this part is straight. The postocular lobe of males is more angular, and projects slightly outward away from the eye, whereas that of the female is arcuate and pressed close to the eye.

REMARKS: The striking sexual difference in the beak is noted here for the first time. Gyllenhal's type specimen, as well as the second known specimen, both of which were examined by Lacordaire (1866), were females. Neither author knew the sex of the specimens concerned. Champion (1910) also probably never saw a male as he stated that the sexual characters of the genus were very feeble. (He also did not mention the disc under the beak of the male of *subparallelus*.)

There are so many differences between *lividus* and the other two species (see Diagnosis) that one might consider them in separate genera. On the other hand, most of the unusual characters of *lividus* are either secondary sexual characters, or they differ only in degree from equivalent characters present in the other species. Thus the apical truncated area of the hind tibia of the other species is wide, but that of *lividus* is wider (fig. 67); the inner apical angle of the tibia, which has a spur or a hook in the other species, is widened into a large lobe on the front and hind tibiae of *lividus*, but on the middle tibia *lividus* has a straight spur as in *imiginis*. The flattened and dilated first hind tarsal segment of *lividus* is less exaggerated in *subparallelus* and scarcely recognizable as such in *imiginis*. The antennal club (fig. 77) of *lividus* is asymmetrical, but the club in this tribe can vary within the genus. In *Sipalinus*, for example, the club of one species is symmetrical, and that of the other species asymmetrical. The metepisternum of *lividus* appears to be slightly wider than that of the other species, but the difference is slight and difficult to assess. Two males and one female were dissected.

Orthognathus subparallelus (Chevrolat)

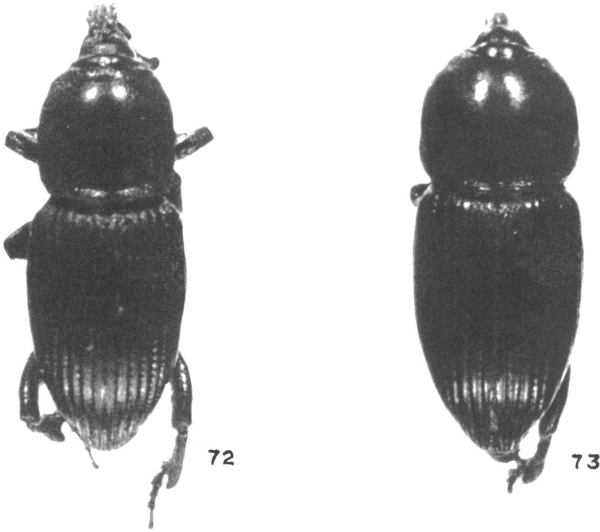
Figures 65, 66, 72, 74

Mesocordylus subparallelus CHEVROLAT, 1880, p. cxxiv, Mexico; type, probably female, in Naturhistoriska Riksmuseum, Stockholm, examined. CHAMPION, 1910, p. 171, pl. 8, figs. 12, 12a, 12b.

DIAGNOSIS: Differing from other species by having inner apical angle of tibiae (fig. 66) furnished with obliquely truncate, recurved hooks instead of straight spurs or large lobes. Agreeing with *imiginis* and differing from *lividus* by having pronotum elongate, hind femora not bulbous, beak dorsally multicarinate, club symmetrical, and under side of beak of male with semilunar disc.

RANGE: Panama north to southeastern Arizona. Specimens examined, 133.

DESCRIPTION: Length, 7 to 17 mm. Black or dark red, some specimens with brownish yellow, enamel-like coating. Beak dorsally with from



FIGS. 72, 73 *Orthognathus*. 72. *O. subparallelus*. 73. *O. lividus*.

three to five sharp, longitudinal ridges or wrinkles of varying lengths and strength; scrobe with posterior edge obsolete in most specimens, and oblique, cavernous. Antennal club symmetrical, scarcely, if at all, wider than long, apical spongy part either one-fourth length of club or scarcely visible. Pronotum slightly longer than wide; sides more or less parallel; evenly punctate on disc, coarsely and confluent toward sides where margin emphasized by wrinkles. Elytra as described for *lividus*. Tibiae at inner apices with strong, recurved hook; front tibia at outer apical angle slightly lobed; hind tibia at apex about three times wider than at base; hind femur not bulbous, not notably wider than other femora; hind tarsus with first segment triangular, dilated on side nearest body, not entirely flattened as ventral surface is visible; ventral hairs very long. Aedeagus (fig. 65), viewed dorsally, with sides sinuous and apex distinctly emarginate.

SEXUAL DIMORPHISM: Although the hind tibia of the male is perhaps more expanded at the apex, the sexes are more readily distinguished by several differences in the beak. The male has a semilunar disc underneath the beak slightly in front of the scrobe (fig. 74), whereas in the female the disc is reduced to a feeble sinuation. In some small males, however, the disc is not very noticeable, and in some large females the sinuation is large enough to be visible in a profile view. The antennae of

males are inserted farther front on the beak than those of females, and the lower edge of the scrobe is dilated horizontally in males, whereas that of females is not dilated and thus is not visible from above. In some males the lower edge of the beak behind the mandibles is rather sinuate, but this part in females is straight. The sculpture of the dorsal part of the beak is quite variable and is also subject to greasing which tends to obliterate the characteristic carinae or wrinkles, but, in general, both sexes have three long carinae, and males have additional short ones toward the front.

REMARKS: *Orthognathus subparallelus*, as Champion (1910) said, superficially resembles *Mesocordylus memnonius*, which also has apically widened hind tibiae, but it differs in the other generic characters. It is the only species of the Sipalini, with the exception of *Yuccaborus frontalis*, that is known from the United States. It was first reported from north of Mexico by Kissinger (1960) who collected specimens at the lights of the Southwestern Research Station of the American Museum of Natural History, near Portal, Arizona. Since that time many more examples have been taken in the same area, but there is a large collecting gap between Arizona and the next locality to the south (Canelas, Durango) where the species occurs (fig. 64). Guérin recorded (1953, p. 220) *subparallelus* from Brazil, but probably this is an error for *lividus*. The majority of specimens examined are heavily greased. The type of *subparallelus* is in bad condition, having lost both hind legs, the club of both antennae, the funiculus of one antenna, and most of the tarsi. The diagnostic inner hook of the tibiae, however, is present. Four males and five females were dissected.

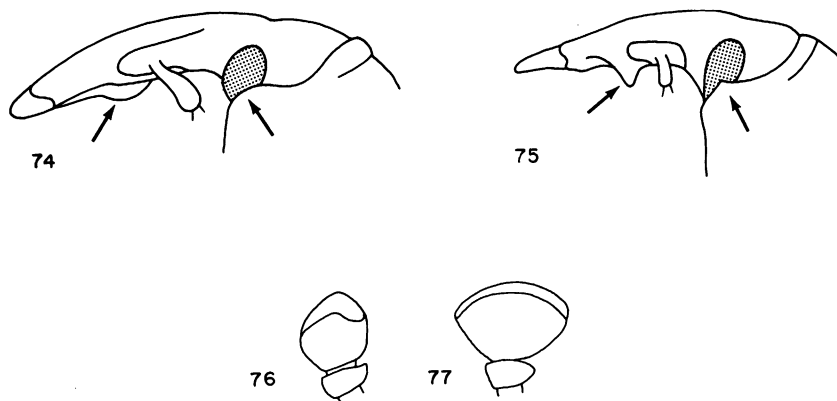
Champion (1910) gave a catalogue name of Sturm (1843) as a synonym of *subparallelus*, but Sturm's name has no description with it and is a *nomen nudum*.

***Orthognathus imaginis*, new species**

Figure 76

TYPE MATERIAL: Type, male, Hacienda Coffea Robusta, Canton Balzar, Guayas [Province], Ecuador, 90 meters, January to March, 1956, A. von Buchwald Zuñiga and Nelson Rockefeller, collectors, in the collection of David Rockefeller.

DIAGNOSIS: At first glance, almost a mirror image of *subparallelus*, with which it agrees further in aedeagus and beak (its dorsal carinae; long, open antennal scrobe; and semilunar disc of male), but differing by having straight spurs, not hooks, on inner apices of tibiae; elytra, hind



FIGS. 74, 75. Beak and postocular lobe of males of *Orthognathus*. 74. *O. subparallelus*. 75. *O. lividus*.

FIGS. 76, 77. Antennal club. 76. *O. imaginis*. 77. *O. lividus*.

femora, and hind tibiae more elongate, hind tibiae not quite so widely expanded.

RANGE: Known from the type locality only; Balzar itself is on the Daule River north of the port of Guayaquil, in the province of Guayas.

DESCRIPTION OF TYPE, MALE: Length, 12 mm. Dark red, but when degreased, most of surface with brownish yellow, enamel-like coating. Beak dorsally tricarinate from base to beyond middle where carinae subdivided into additional carinae; sides of beak behind apex with lower edge slightly sinuate; ventrally, median semilunar disc feeble, scarcely visible in lateral view; scrobe oblique, cavernous; its posterior edge obsolete, its anterior edge slightly in front of middle of beak, its lower edge dilated horizontally and visible from above. Antennal club virtually symmetrical, almost as wide as long; apical spongy part about one-third length of club (fig. 76). Pronotum longer than wide; sides more or less parallel; evenly, finely punctate throughout. Elytra as described for *lividus*, but proportionally slightly longer. Tibiae at inner apices with curved (front tibia) or straight spurs; front tibia with outer apex slightly angulate; hind tibia at apex about three times wider than at base; hind femur not bulbous or notably wider than other femora; hind tarsus with first segment somewhat triangular and, on side nearest body, slightly dilated and with longer ventral hairs than those on outer side. Aedeagus about as shown in figure 65 of *subparallelus*, but sides less sinuous and emargination slightly shallower.

SEXUAL DIMORPHISM: Although I have no female, the male characters

are undoubtedly associated with the beak as are those of the other species. In the present species the semilunar disc under the beak of the male is quite feeble, so that it would probably be lacking in the female. The female probably has the antennae inserted farther back on the beak.

REMARKS: The type has lost most of the tarsal claws, but is otherwise in good condition. Before I degreased it, it was dark red, and half of the elytra and part of the under side are still dark red, but the remainder has the shiny, brownish yellow gloss typical of fresh specimens of the genus.

As the characters of *subparallelus* seem less extreme than those of *lividus*, so do the characters of *imaginis* appear less extreme than those of *subparallelus*. The armature of the inner apices of the tibiae consists of a spur or tooth as in most Sivalini, not a hook as in *subparallelus*; the truncate apex of the hind tibia is slightly narrower, and the male disc under the beak is not so strong. Both species are more elongate, less stocky, than *lividus*, with the pronotum elongate, not bulbous and nearly round. The sides of the pronotum of *imaginis* are not emphasized by confluent punctures as they are in the other two species, and the spongy part of the antennal club is longer.

SPECIMENS EXAMINED

For convenience, the species, as well as the countries under each species, are listed alphabetically. All species are listed. In the parentheses the name of the collector, if known, is followed by the letters indicating the institution or individual to which the specimens belong. These letter symbols are as follows:

- A.M.N.H., the American Museum of Natural History
- A.U.C., Atlantic Union College, South Lancaster, Massachusetts
- B.M., British Museum (Natural History)
- C.A.S., the California Academy of Sciences, San Francisco
- C.B., Carlos Bordon, Caracas, Venezuela, private collection
- C.N.C., Canadian National Collection, Ottawa
- C.O'B., Charles O'Brien, University of California at Berkeley, private collection
- D.G.K., David G. Kissinger, South Lancaster, Massachusetts, private collection
- D.Z.S.P., Departamento de Zoologia, São Paulo, Brazil
- E.L.S., Elbert L. Sleeper, Long Beach, California, private collection
- F.M., Field Museum, Chicago, Illinois
- M.C.N., Museo de Ciencias Naturales, Buenos Aires, Argentina
- M.C.Z., Museum of Comparative Zoology, Cambridge, Massachusetts
- M.L.U., Martin-Luther Universität, Halle, Germany
- M.N.H.N., Muséum National d'Histoire Naturelle, Paris
- N.R., Naturhistoriska Riksmuseum, Stockholm

O.S.U., the Ohio State University, Columbus
 P.B., Padre Pio J. Buck, Porto Alegre, Brazil, private collection
 T.A.M., Texas Agricultural and Mechanical College, College Station
 U.C.D., University of California at Davis
 U.M., University of Michigan, Ann Arbor
 U.Z.M., Universitetets Zoologiske Museum, Copenhagen
 Z.I.A.N., Zoologichesky Institut, Academia Nauk, Leningrad
 Z.M.B., Zoologisches Museum, Berlin
 Z.S.M., Zoologische Staatssammlung, Munich

GENUS *MESOCORDYLUS* LACORDAIRE

Mesocordylus abditus, new species

Panama: (see under the species in the text).

Mesocordylus apiciclava, new species

Brazil, French Guiana: (see under the species in the text).

Mesocordylus bracteolatus (Boheman)

Guatemala: Panzos, 3 ♂, 2 ♀ (M.N.H.N.). *Mexico*: 8 (M.C.Z., M.N.H.N.); Chiapas: 1 ♀ (M.C.Z.). Oaxaca: Temascal, June 30, Aug. 6, 1964, 1 ♂, 3 ♀ (Raske, Janzen, C.O.'B.); Tolosa, Sept. 1, 1947, 1 ♂ (Malkin, A.M.N.H.). Veracruz: 1 ♂ (type, N.R.); Lake Catemaco, Aug., 1960, 1 ♂, 2 ♀ (H. Howden, C.N.C.); Santiago Tuxtla, July, 1963, 1 ♀ (Doyen, C.O.'B.); Cordoba, June, 1964, 1 ♂ (Johnson, C.O.'B.); La Buena Ventura, July, 1909, 2 ♂, 1 ♀ (A.M.N.H.); Los Tuxtlas Range, July 7, 1961, 1 ♀ (T.A.M.); 18 miles north of San Andres, June, 1954, 1 ♀ (Kissinger, D.G.K.); El Fortin, July, 1959, 1 ♀ (Valentine, B.V.), July, 1941, 2 ♀ (Dybas, F.M.), July, 1962, 1 ♂ (Janzen, C.O.'B.); Motzorongo, 3 ♂, 2 ♀ (Z.M.B.). *Panama*: 1 ♀ (M.N.H.N.).

Mesocordylus cerinus, new species

French Guiana: (see under the species in the text).

Mesocordylus cubensis, new species

Cuba: (see under the species in the text).

Mesocordylus cylindraceus (Boheman)

Argentina: Misiones, 1 ♂ (type of *breyeri*, M.C.N.), May, 1960, 1 ♂ (Viana, M.C.N.). *Brazil*: 3 ♂ (lectotype and syntypes of *cylindraceus*, M.L.U.), 1 ♂ (type of *coleomerus*, N.R.), 1 ♀ (syntype of *cylindraceus*, M.L.U.), 2 ♂ (M.C.Z., M.N.H.N.). Minas Gerais: Serra Caraça, Nov., 1961, 2 ♂ (Martins, Silva, D.Z.S.P., A.M.N.H.). Espirito Santo: Santa Thereza, Dec., 1928, 1 ♂ (Conde, Z.M.B.). Rio de Janeiro: 1 ♂ (M.C.Z.); Corcovado, Mar., 1961, 1 ♂ (Alvarenga, D.Z.S.P.); Itatiaia, Jan., 1954, 1 ♀ (Alvarenga, D.Z.S.P.). São Paulo: 1 ♂; Ipiranga, 1 ♀; Itapira, Dec., 1935, 1 ♂ (all D.Z.S.P.). Parana: Ponta Grossa, Dec., 1938, Jan., 1939, 2 ♂, 2 ♀

(Camargo, D.Z.S.P.). Santa Catarina: 1 ♂ (M.N.H.N.); Corupa (Hansa Humbolt), 2 ♂, 1 ♀ (Reitter, Z.S.M.), Nov., Dec., 1944, 2 ♂, 2 ♀ (Maller, A.M.N.H.); Caviuna, Dec., 1946, 1 ♀ (Maller, A.M.N.H.); Rio Natal, Jan., Feb., 1945, 2 ♂, 2 ♀ (Maller, A.M.N.H.); Rio Vermelho, Dec., 1944, Jan., Mar., 1945, 3 ♂, 3 ♀ (Maller, A.M.N.H.). Rio Grande do Sul: São Francisco de Paula, Jan., 1939, Feb., 1940, 1 ♂, 1 ♀; Vila Oliva, Apr., 1967, 1 ♂; Itapiranga, Nov., 1934, Mar., 1950, 2 ♀ (all P.B.).

Mesocordylus dispersus Champion

Bolivia: Santa Cruz, 1 ♀ (M.N.H.N.). *Brazil*: Rio Yaro and Rio Purus, 1 ♂ (Moeckel, Duhaut, Z.M.B.). *Colombia*: 1 ♂, 1 ♀ (M.N.H.N.). *Costa Rica*: Guapiles, Limon Province, June 17, 25, 26, 1965, 3 ♂, 2 ♀ (Noonan, E.L.S.); San Carlos, 1 ♂ (Schild-Burgdorf, M.C.Z.), 2 ♂ (Z.M.B.). *Ecuador*: Aguamo, 1 ♂, 2 ♀ (Haensch, Z.M.B.); Pucay, Nov., 1905, 2 ♂, 1 ♀ (Ohs, Z.M.B.); Macas, June, 1960, 1 ♀ (Walz, C.O'B.); Guayaquil, May, Nov., 1905, 9 ♂, 3 ♀ (Ohs, Z.M.B.), 1 ♂ (Godling, C.A.S.); La Chima, 1893, 14 ♂, 10 ♀ (de Mathan, M.N.H.N.); Loja, 8 ♂, 1 ♀ (Abbé Gaujon, M.N.H.N.); Santo Domingo, 1 ♂ (Benoist, M.N.H.N.). *Nicaragua*: Chontales, 1 ♂ (B.M.). *Panama*: Barro Colorado, June, 1962, 2 ♂ (Ruckes, A.M.N.H.); Chiriqui, 5 ♂, 2 ♀ (M.N.H.N.), Mar., 1899, Apr., 1907, 2 ♂ (Eddy, M.C.Z.). *Peru*: 2 ♂, 2 ♀ (Z.M.B., Z.S.M.); Chanchamayo, 1 ♀ (M.N.H.N.); Tarpoto, 1886, 1 ♂ (de Mathan, M.N.H.N.); Ekin-Uruhuasha, San Martin, Mar., 1947, 2 ♂, 2 ♀ (Woytkowski, A.M.N.H.); Quincemil, Cuzco, Apr., 1947, 1 ♂, 1 ♀ (Pallister, A.M.N.H.); Rio Toro, Chanchamayo, 6 ♂, 4 ♀ (Z.M.B.); Rio Oxapampa, Chanchamayo, 2 ♂, 1 ♀ (Z.M.B.). *Peru* or *Brazil*: Upper Amazon, 1 ♀ (Dietz, M.C.Z.).

Mesocordylus eurytrema, new species

French Guiana, Peru: (see under the species in the text).

Mesocordylus gracilicornis Waterhouse

Bolivia: Cochabamba-Chapare, Alto Palmar, Sept.-Nov., 1960, 1 ♀ (Walz, C.O'B.). *Colombia*: 1 ♀ (M.N.H.N.); Medellin, 1 ♂ (type, B.M.); Fusagasuga, 1920, 1 ♂ (M.N.H.N.). *Ecuador*: 1 ♂ (Buckley, B.M.); El Partidero, Mar., 1936, 1 ♀ (MacIntyre, A.M.N.H.); Vicinity of Baños, Rio Blanco, Oct., 1937, 1 ♂, 1 ♀ (Clark and MacIntyre, A.M.N.H.). *Peru*: Lima, July, 1948, 1 ♀ (Woytkowski, A.M.N.H.).

Mesocordylus gracilis Champion

Panama: Volcan de Chiriqui, 1 ♂ (Champion, type, B.M.).

Mesocordylus jamaicensis, new species

Jamaica: (see under the species in the text).

Mesocordylus leprosus (Boheman)

Colombia: Antioquia, 1 ♂ (type, N.R.); Ibague, 1 ♀ (Fr. Claver, M.N.H.N.).

Mesocordylus longiclava, new species

Bolivia, Colombia, Venezuela: (see under the species in the text).

Mesocordylus memnonius (Fahraeus)

Brazil: 2 ♀ (lectotype and cotype, N.R.), 1 ♀ (M.C.Z.). Rio de Janeiro: 1 ♂ (A.M.N.H.); Corcovado, Rio Guanabara, Nov., 1958, 1 ♂ (Alvarenga, Seabra, D.Z.S.P.). São Paulo: Barueri, Dec., 1961, 1 ♂ (K. Lenko, D.Z.S.P.); Mairiporã, Jan., 1967, 1 ♀ (C. Costa, D.Z.S.P.). Santa Catarina: Hansa Humboldt, 1 ♀ (Reitter, Z.S.M.).

Mesocordylus mexicanus, new species

Mexico: (see under the species in the text).

Mesocordylus papulatus (Fahraeus)

Brazil: 1 ♀ (type, N.R.), 3 ♂, 1 ♀ (B.M., M.C.Z.). Bahia: Terra Nova, 1885, 2 ♂ (Gounelle, M.N.H.N.). Minas Gerais: Serra Caraça, Nov., 1961, 3 ♂, 2 ♀ (Kloss, Lenko, Martins, Silva, D.Z.S.P.); Ipatinga, Nov., 1965, 1 ♀ (D.Z.S.P.). Rio de Janeiro: 2 ♂, 1 ♀ (B.M., A.M.N.H.); Novum Friburgum, 1 ♀ (M.C.Z.). São Paulo: Casa Grande de S. P., 1 ♂ (B.M.); Estação Biol. Boraceia, Salesopolis, Feb., 1963, 1 ♂, 1 ♀ (Werner, Reach, D.Z.S.P.); Eugenio Lefevre Pindamonhangaba, Oct., 1962, Jan., 1963, 1 ♂, 1 ♀ (D.Z.S.P.); Alto da Serra, Nov., 1 ♀ (D.Z.S.P.); Ipiranga, 3 ♂ (D.Z.S.P.); Paranapiacaba, Nov., 1927, 1 ♂, 1 ♀ (D.Z.S.P.). Parana: Ponta Grossa, Dec., 1938, Jan., 1939, 10 ♂, 10 ♀ (Camargo, D.Z.S.P.). Santa Catarina: 1 ♀ (Maller, M.N.H.N.); Corupa (Hansa Humboldt), Feb., Mar., Apr., Dec., 1946, 1947, 3 ♂, 1 ♀ (A. Maller, A.M.N.H.); Rio Natal, Mar., 1945, 1947, 2 ♀ (A. Maller, A.M.N.H.); Rio Vermelho, Mar., 1945, 1 ♀ (A. Maller, A.M.N.H.). *No Locality*: 1 ♂, 2 ♀ (M.N.H.N., Z.M.B.).

Mesocordylus porriginosus (Boheman)

Dominica: Long Ditton, June, 1911, 1 ♀ (A.M.N.H.). *Guadeloupe*: 1 ♂ (type, N.R.), 4 ♂, 4 ♀ (Vitrac, Delauney, A.M.N.H., M.N.H.N.); Forêt de Matouba, Nov., 1965, 1 ♀ (J. Bonfils, A.M.N.H.); Gourbeyre, 2 ♂ (Dufau, Hustache, M.N.H.N.); Trois Rivières, 1904, 6 ♂, 10 ♀ (Dufau, M.N.H.N.), 1890, 1900, 2 ♂ (M.N.H.N.).

Mesocordylus pustulosus Champion

Bolivia: Cochabamba, El Limbo, Jan–Apr., 1962, 1 ♂, 1 ♀ (Walz, C.O'B.). *Nicaragua*: Chontales, 1 ♂ (type, B.M.). *Peru*: 1 ♂, 1 ♀ (M.N.H.N.); Valley of Cosñipata, Department of Cuzco, Jan., Dec., 1952, 1 ♂, 1 ♀ (D.G.K.).

Mesocordylus rugicollis (Boheman)

French Guiana: Cayenne, 1 ♀ (type, N.R.), 1 ♀ (M.C.Z.).

Mesocordylus scutellaris (Erichson)

Colombia: 1 ♂, 1 ♀ (A.M.N.H., M.C.Z.); Rio Guayuriba, Meta, Dec., 1946, 1 ♂

(Richter, A.M.N.H.); Alto Rio Opon, Santander, Apr., 1948, 1 ♀ (Richter, A.M.N.H.). *Costa Rica*: Hamburg Farm, Mar., 1930, 1 ♂ (Dodge, M.C.Z.); Reventazon Valley, 1 ♂ (Reark, B.V.). *Ecuador*: Guayaquil, 1 ♀ (Goding, C.A.S.); Santo Domingo, 1 ♂ (M.N.H.N.). *French Guiana*: St. Laurent du Maroni, 2 ♂ (M.N.H.N.); Nouveau Chantier, Bas Maroni, 1 ♀ (M.N.H.N.). *Peru*: Chanchamayo, 1 ♂ (M.N.H.N.); Chontilla, Aug., 1946, 1 ♂ (Sleeper, E.L.S.); Hera (Jera), Moyobamba, San Martin, June, 1947, 1 ♂ (Woytkowski, A.M.N.H.); Upper Rio Marañon, Oct., 1924, 1 ♂ (Bassler, A.M.N.H.); 25 km. below Carpish, Chinchao, Huanuco, Sept., 1946, 1 ♀ (Woytkowski, A.M.N.H.); Rio Toro, Chanchamayo, 1 ♀ (Z.M.B.); Napo River, July, 1 ♀ (H. Parish, C.A.S.); Quincemil, Cuzco, Apr., 1947, 1 ♀ (Pallister, A.M.N.H.); Tingo Maria, 1 ♂ (type of *glaber*, B.M.), 6 ♂, 4 ♀ (paratypes of *glaber*, B.M.). *No Locality*: 1 ♀ (M.C.Z.).

Mesocordylus secundus, new species

Colombia, Ecuador: (see under the species in the text).

Mesocordylus spumosus, new species

Brazil, ?Mexico: (see under the species in the text).

Mesocordylus striatus (Boheman)

Bolivia: Quatro Ojos, Sept., 1, 1917, 1 ♀ (M.N.H.M.); Santa Cruz, 4 (C.N.C., M.N.H.N.); Buenavista, Santa Cruz, 1 ♂ (D.G.K.). *Brazil*: Benjamin Constant, Amazonas, Mar., 1942, 3 ♂, 1 ♀ (Rabaut, A.M.N.H.); Rio Autaz, Amazonas, 1 ♀ (N.R.); Teffe, 1 ♂ (A.M.N.H.); Aragarças, Goiás, Nov., 1965, 1 ♀ (Alvarenga, D.G.K.); Boca do Cumina-Miri, Oriximina, Para, Jan., 1968, 2 ♂, 1 ♀ (D.Z.S.P.); Campuã, Mato Grosso, Oct., 1967, 1 ♂ (P.B.). *British Guiana*: Kartabo, Bartica District, Mar., 1922, 1 ♂ (A.M.N.H.). *British Honduras*: Belize, 1 (M.C.Z.). *Colombia*: Villavicencia, 1 (M.N.H.N.). *French Guiana*: Cayenne, 1 ♂ (allotype, N.R.), 1 ♀ (type, N.R.), 3 (B.M., M.C.Z.); Roches de Kourou, 3 ♂, 1 ♀ (M.N.H.N.). *Guatemala*: Santa Rosalia, Sierra de las Minas, Zacapa, Jan., 1942, 1 ♂, 1 ♀ (Field Museum Botanical Expedition, F.M.). *Honduras*: Tela, Guaimas District, May, 1923, 1 ♀ (Hubbell, U.M.). *Panama*: 2 ♂ (B.M.). *Peru*: 2 ♂ (Z.M.B.); Avispas, 150 km. west of Puerto Maldonado, Madre de Dios Department, Inambari River, 1962, 1 ♀ (D.G.K.); Pucallpa, Loreto, Oct., 1922, 1 ♀ (Schunke, E.L.S.); Rio Marañon, 1929, 1 ♂ (Bassler, A.M.N.H.); Upper Rio Marañon, Apr., 1929, 1 ♀ (Bassler, A.M.N.H.); Satipo, 1945, 1 ♂ (Johnson, A.M.N.H.). *Surinam*: Langaman Kondre, Marowijne District, Aug., 1965, 1 ♂ (Malkin, D.Z.S.P.). *No Locality*: 2 (M.C.Z.). *Country ?*: Obispo, 4 (Z.I.A.N.).

Mesocordylus subulatus (Germar)

Bolivia: Guarayos, 1834, 1 ♂ (D'Orbigny, M.N.H.N.); Cochabamba-Chapare, Alto Palmar, Sept.-Nov., 1960, 1 ♀ (Walz, C.O.'B); Buenavista, Ichilo Province, Jan., 1950, 1 ♀ (Martinez, D.Z.S.P.). *Brazil*: 1 ♂, 1 ♀ (lectotype and syntype of *subulatus*, M.L.U.), 5 ♂, 4 ♀ (A.M.N.H., F.M., M.C.Z., Z.M.B., D.Z.S.P., Z.S.M.). Upper Amazon, May, 1904, 1 ♂, 1 ♀ (Zikan, F.M.). Amazonas: Benjamin Constant, Nov., 1962, 2 ♂, 1 ♀ (Silva, D.Z.S.P.); Tabatinga, Nov., 1958, Apr., 1959,

2 ♀ (C.B.). Ceara: Serra de Baturite, 1895, 1 ♀ (Gounelle, M.N.H.N.). Goyaz: Anapolis, 1 ♀ (D.Z.S.P.); Leopoldo Bulhões, Dec., 1933, 1 ♀ (Spitz, D.Z.S.P.); Mineiro, 1 ♂ (M.N.H.N.). Minas Gerais: Porto Alegre, 1 ♀ (D.Z.S.P.). Parana: Londrina, 1 ♀ (M.N.H.N.). São Paulo: Barueri, Nov., 1962, 1 ♂ (Lenko, D.Z.S.P.); Ipiranga, 1 ♂, 1 ♀ (D.Z.S.P.); Piracicaba, Oct., Nov., 1965, 1 ♂, 1 ♀ (Triplehorn, O.S.U.); Pirassununga, Oct., 1946, 1 ♂ (D.Z.S.P.); Ribeirão Preto, 1896, 1 ♀ (D.Z.S.P.); Val du Rio Pardo, 1898, 4 ♂, 2 ♀ (Gounelle, M.N.H.N.). Rio de Janeiro: Corcovado, Nov., 1958, Feb., Dec., 1961, Jan., 1962, 2 ♂, 2 ♀ (Alvarenga, Campos Seabra, D.Z.S.P.); Montagnes des Orgues, 1902, 1 ♀ (Wagner, M.N.H.N.). Santa Catarina: Corupa, 1944, 1948, 2 ♂, 7 ♀ (Maller, A.M.N.H.); Hansa Humboldt, 1 ♀ (Reitter, Z.S.M.). Rio Grande do Sul: Itapiranga, June, 1934, 1 ♂ (P.B.). *Colombia*: 1 ♂ (B.M.), 1 ♂ (Deyr, M.C.Z.). N.G. [= New Grenada]: 1 ♂ (M.C.Z.); Muzo, 3 ♀ (M.N.H.N.); Villavicencia, Aug., 1918, 1 ♂ (M.N.H.N.); Carthagena, 1 ♂, 1 ♀ (type and allotype of *sphacellatus*, N.R.). *Costa Rica*: 1884, 1 ♂ (de Lafon, M.N.H.N.). *Ecuador*: Macas, 1 ♀ (Z.M.B.). *French Guiana*: 1913, 1 ♀ (Bongrand, M.N.H.N.); Maroni, 1 ♂, 1 ♀ (M.N.H.N.). *Nicaragua*: Chontales, 1 ♂ (B.M.). *Panama*: Barro Colorado Island, June, 1962, 1 ♀ (H. Ruckes, A.M.N.H.), May, 1967, 3 ♂ (DeLong and Triplehorn, O.S.U.), July, 1938, 1 ♂ (F.M.); Chiriqui, 2 ♂, 1 ♀ (Z.M.B.). *Peru*: Pebas, 1880, 5 ♂, 4 ♀ (de Mathan, M.N.H.N.); Chanchamayo, 1 ♀ (M.N.H.N.); Tingo Maria, Oct., 1946, 1 ♀ (Pallister, A.M.N.H.); Pozuzo, 2 ♂, 4 ♀ (Z.M.B., M.N.H.N.); Rio Toro, 1 ♂ (Z.M.B.); Rio Oxapampa, Chanchamayo, 1 ♀ (Z.M.B.); Satipo, Oct., 1944, 1 ♂ (Paprzycki, A.M.N.H.); Upper Rio Tapiche, Feb., 1928, 2 ♂ (Bassler, A.M.N.H.). *No Locality*: 3 ♂, 4 ♀ (M.C.Z., Z.M.B., M.L.U.).

GENUS *ORTHOGNATHUS* GYLLENHAL

Orthognathus imuginis, new species

Ecuador: (see under the species in the text).

Orthognathus lividus Gyllenhal

Bolivia: Santa Cruz, Nuflo de Chavez, Ascencion, 500 m., Nov., 1963, 4 ♀ (Walz, C.O'B.). *Brazil*: 2 ♂, 2 ♀ (Z.M.B., M.N.H.N.), 1 ♀ (type, N.R.). Goyaz: Aragarças, Nov., 1965, 3 ♂, 6 ♀ (A.U.C.); 2 ♀ (Alvarenga, C.O'B.); Jatahy, Pujol, 8 ♂, 7 ♀ (B.M., M.N.H.N.); Viannopolis, Nov., 1931, 2 ♂, 1 ♀ (Spitz, A.U.C.). Minas Gerais: 1 ♂, 1 ♀ (B.M.); Belo Horizonte, Apr., 1948, Nov., 1945, 2 ♂ (A. Costa, Jr., A.M.N.H.); Lagoa Santa, 10 (Reinhardt, U.Z.M.); Pirapora, 1 ♀ (A.U.C.). Rio de Janeiro: 2 ♀ (B.M.); Barra do Pirahy, Nov., 1934, 1 ♂ (Worontzow, A.U.C.). São Paulo: Piracicaba, 1 ♂, 1 ♀ (Z.I.A.N.), Nov., 1965, 1 ♂, 1 ♀ (Triplehorn, O.S.U.). State ?: Tijuca, 1 ♂, 1 ♀ (M.N.H.N.). *French Guiana*: Maroni, 1 ♀ (M.N.H.N.). *Peru*: Boqueron del Padre Abad, 470 m., Loreto, Aug., 1946, 1 ♀ (Woytkowski, A.M.N.H.).

Orthognathus subparallelus (Chevrolat)

British Honduras: Punta Gorda, June, 1934, 1 ♀ (J. J. White, A.M.N.H.). *El Salvador*: Quezaltepeque, Aug., 1961, 1 ♀ (M. Irwin, U.C.D.). *Guatemala*: El Tumbador, 1 ♂ (Riedel, Z.M.B.); Moca, Suchitepequez, Aug., 1947, 2 ♂ (C. and P.

Vaurie, A.M.N.H.). *Mexico*: 3 ♀ (including type, N.R., others B.M., Z.M.B.). Chiapas: Soconusco, Aug., 1 ♀ (Z.M.B.); Tapachula, 1 ♀ (Z.M.B.). Coahuila: Saltillo, 1 ♀ (Palmer, M.C.Z.). Durango: Canelas, 3 ♂, 3 ♀ (Z.M.B.); Refugio, 2 ♂, 1 ♀ (A.M.N.H., B.M.). Michoacan: Between San Juan Por [?] and Zirosto, June, 1947, 1 (Hubbell, U.M.); Uruapan, July, 1949, 1 ♂ (C.O'B.). Nayarit: El Cora, Tepic, 3 ♂, 3 ♀ (Z.M.B.). Oaxaca: Temascal, June, 1964, 1 ♂ (Raske, C.O'B.); Juquila Mixes, 1 ♂, 1 ♀ (W. S. Miller, A.M.N.H.). Puebla: Necaxa, 1 ♂ (Heine, M.N.H.N.); V[illa] Juarez, May, 1963, 1 ♀ (Morse, C.O'B.). Sinaloa: 44 miles northeast of Villa Union, 2 ♀ (E.L.S.). Veracruz: Cordoba, July, 1941, 1 ♀ (Dybas, F.M.), July, 1964, 1 ♂ (E.L.S.); Coyame, Lake Catemaco, 1 ♀ (Kissinger, D.G.K.); San Andres, 1953, 2 ♀ (Kissinger, D.G.K.). Zacatecas: Monte Escobedo, 1 ♂ (Brewer, F.M.). *Panama*: Chiriqui, 1 ♀ (M.N.H.N.). *United States*: Arizona: Portal, Aug., 1958, 1 ♂ (Schuster, U.C.D.); Southwestern Research Station, 5 miles west of Portal, July, Aug., 1955–1964, 22 ♂, 14 ♀ (A.M.N.H.). Also about 28 additional specimens from Costa Rica, Guatemala, Mexico, Nicaragua, and Panama (B.M.). *Country*?: Volcan San Martin, southeast slope, 3000 to 3500 feet, July, 1959, 1 ♀ (Lund, B.V.).

SUMMARY

The New World genera *Mesocordylus* and *Orthognathus* are revised. Keys are given to the species of these two genera and to the genera of the tribe Sipalini. Following a diagnosis and detailed description of each species, the sexual dimorphism, distribution, ecology, and synonymy are discussed. A checklist of the species is given. Ten new species of *Mesocordylus* and one of *Orthognathus* are described from the Antilles, Mexico, Central and South America. Three indeterminate species are discussed following the accounts of *Mesocordylus*. The approximately 700 specimens examined and the collection to which they belong are listed.

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