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of the New Subfamily Otiothopinae  
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## A Revision of the Palpimanid Spiders of the New Subfamily Otiiothopinae (Araneae, Palpimanidae)

NORMAN I. PLATNICK<sup>1</sup>

"M. Latreille has somewhere said that it would be difficult to discover a spider that cannot find its place in one of Walckenaer's divisions. The truth however is that naturalists as yet know but little of *Arachnida*. Leon Dufour, Koch, and even the distinguished Walckenaer himself, are acquainted with but few extra-European forms compared with the immense variety that exist. The great majority of species are inhabitants of warm climates, and . . . are therefore rare in our collections. . . . I now place the following species before naturalists, in order to prove how little is as yet known of even that part of the class *Arachnida* which has been the most studied, namely, *Spiders*."

—W. S. MacLeay (1839, p. 1)

### ABSTRACT

The subfamily Otiiothopinae is erected for those palpimanids whose males have palpi consisting of only a bulb and embolus, without accessory terminal sclerites. Three genera (*Otiiothops* MacLeay, *Anisaedus* Simon, and *Fernandezina* Birabén), restricted to the New World, are recognized. *Compsopus* Tullgren and *Iheringia* Keyserling are placed as junior synonyms of *Anisaedus* and *Otiiothops*, respectively. The African genus *Diaphorocellus* Simon is removed from the synonymy of *Iheringia* and placed in the Chediminae. The possible phylogeny and zoogeographic history of the genera and species groups of Otiiothopinae are discussed. Eleven new species are described: *Otiiothops loris* from Peru; *O.*

*inflatus* from Paraguay; *O. baculus*, *facis*, *clarus*, and *contus* from Brazil; *O. intortus* from Trinidad; *Anisaedus pellucidus* from Chile; and *Fernandezina pelta*, *divisa*, and *acuta* from Brazil. Four specific names are newly synonymized: *Otiiothops lapidicola* Simon and *O. carpenteri* Chickering, both with *O. oblongus* Simon; *O. casobus* Chickering with *O. pentucus* Chickering; and *Anisaedus argentinus* Mello-Leitão with *A. rufus* (Tullgren). The homonym *Otiiothops amazonicus* Mello-Leitão is renamed *O. pilleus*. The male of *O. amazonicus* Simon and the females of *O. calcaratus* Mello-Leitão and *O. whitticki* Mello-Leitão are described for the first time.

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## INTRODUCTION

The present paper is the second in a series on the spiders formerly placed in the family Palpimanidae. The stenochilid genera have been removed from the family and treated elsewhere (Platnick and Shadab, 1974). Three genera comprising a new subfamily are revised here; almost all the New World palpimanids are included.

Because they have only two spinnerets (instead of the normal six), palpimanids have traditionally been placed as relatives of the Zodariidae, a highly heterogeneous assemblage of entelegyne spiders that show a similar tendency toward reduction in the number of spinnerets. As can be seen from the illustrations below, the palpimanids have haplogyne genitalia. Although in itself this does not necessarily preclude close relationship between the two groups (see Platnick [In press]), it casts strong doubt on that possibility. A general survey of available zodariid material has indicated that the only shared characters other than spinneret reduction (which could easily have occurred independently in the two lines) are those connected with heavy sclerotization of the cephalothorax, i.e., the presence of cuticular tubercles and the extension of the sternum around the coxae. These modifications occur in several unrelated families (Dysderidae, Theridiidae, Clubionidae, and others) and cannot be taken as indications of close relationship. It is far more likely that the palpimanids share a common ancestor with one or more of the other haplogyne families, perhaps with the Caponiidae.

In addition to the reduced number of spinnerets, palpimanids can be easily recognized by the greatly enlarged first legs. All segments of leg I are modified. The coxa and trochanter are elongated (fig. 9) and frequently bear dorsal tubercles. The femur is usually expanded dorsally to twice the height of femora II through IV (fig. 11). The patella is enormously elongated and usually longer than the tibia (fig. 81). The tibia, metatarsus, and tarsus bear thick prolateral scopulae composed of spade-shaped setae that may be receptors of some kind (figs. 11, 15, 16). The metatarsus is much shorter than in most other spiders, and rarely is as long as the tarsus, which is typically widened at the tip (fig. 85).

The three genera considered here differ

greatly from all other palpimanids in genitalic characters. In the other two subfamilies of Palpimanidae, provisionally named Chediminae and Palpimaninae, the palpus bears, in addition to the embolus, an elaborate conductor and often other terminal accessory sclerites; the internal female genitalia of these groups often include divided spermathecae and other elaborations. Excellent illustrations of typical forms may be found in Jézéquel (1964). In the Otiiothopinae, however, the palpus consists only of a bulb (containing a visible reservoir) and elongate embolus; no accessory terminal sclerites are present. The internal female genitalia of otiiothopines consist only of spermathecae; other elaborations are lacking. The spermathecae of otiiothopines are almost totally unsclerotized and great care must be taken in removing excess tissue surrounding them. To examine these structures, it is necessary to dissect off the entire abdominal scutum of the female. In specimens that have been preserved for many years (unfortunately including many types) the soft spermathecae are often dried, shrunken, and almost useless for taxonomic discrimination. Thus, in these genera, the determination of females unaccompanied by males is problematic. Keys have been provided only for males, and, wherever possible, decisions on allocation of species to species groups have been based on males. Mature females can be distinguished from juveniles without dissection, as their sternum and abdominal scutum are concolorous; in immatures, the scutum is much lighter than the sternum.

The question as to whether the genitalic characters on which this subfamily is based are primitive or derived cannot be answered with certainty. Although it is often comparatively easy to make this decision regarding somatic characters in spiders, the opposite is generally true for genitalic characters. Our understanding of the evolution of spider genitalia is extremely limited, because of the astounding diversity of structures and because there is a lack of knowledge as to how these structures function during copulation. It is likely that the genitalia of the Otiiothopinae are either the most primitive or the most derived forms within the family, depending on whether the ancestral forms had complicated genitalia

that have been simplified through time, or vice versa. It remains possible, then, that Otiiothopinae is a polyphyletic group; the great genitalic similarity between even the somatically most divergent genera, *Otiiothops* and *Fernandezina*, and the zoogeographic isolation and compactness of the group indicate otherwise.

Three species described from the Western Hemisphere are not included below. *Palpimanus argentinus* Mello-Leitão (1927) is a *Palpimanus* and appears to be the only representative of the Palpimaninae in the New World; it may be an introduced species. *Otiiothops lutzi* Petrunkevitch (1929), based on an immature specimen from Puerto Rico, is probably a senior synonym of *O. pentucus* Chickering (1967), but is regarded as a *nomen dubium* until mature, identifiable specimens are collected on that island. *Anisaedus levii* Chickering (1966) was based on a specimen labeled only "West Indies"; the type is an African species belonging to the Chediminae and is almost certainly mislabeled.

A possible phylogeny of the valid genera and species groups of the Otiiothopinae is presented in figure 94. As is usual in spiders, the genera are defined by somatic characters and the species groups by genitalic characters. Some major differences between the genera were probably acquired early in the history of the group; these are shown by numbers at the main branching points that refer to the acquisition of the following derived characters: (1) development of claw tufts; (2) separation of the posterior median eyes; (3) apical shift of the origin of the embolus; and (4) elongation of the abdominal scutum in males. The ancestral otiiothopine, then, is seen as a palpimanid lacking claw tufts, with the posterior median eyes contiguous or nearly so, the embolus originating basally on the palpal bulb, and without elongated abdominal scuta in males.

Among the living representatives, species of the *amazonicus* group of *Otiiothops* most closely resemble this hypothetical ancestor, although they do have claw tufts. Species of the *amazonicus* group are distributed in northern and central South America. Species density indicates that the subfamily probably originated in central South America. Four other species groups of *Otiiothops* seem to have radiated from the stock represented today by the *amazonicus* group, and some ten-

dencies in the evolution of the male palpi can be detected. In the *amazonicus* group, the embolus is a moderately wide structure originating basally from the bulb; the palp of *brevis* (figs. 61, 62) is typical of the group. One line evolved in which the embolus became wider; this stock apparently split, with one branch developing large club-shaped emboli (as in figs. 37, 38), moving into eastern Brazil, and giving rise to the *germaini* group, and the other branch developing emboli with twisted tips (as in figs. 25, 26), moving into British Guiana, Venezuela, Trinidad, and the Lesser Antilles and giving rise to the *oblongus* group. A second line diverged from the *amazonicus* stock in which the bulb of the embolus became greatly expanded and inflated (as in figs. 45, 46); this branch moved south into southern Brazil and Paraguay and gave rise to the *typicus* group. Finally a third line diverged from the *amazonicus* stock in which the embolus became both elongated and narrowed (as in figs. 21, 22); this branch gave rise to the *walckenaeri* group, which must at one time have been widely distributed across northern South America, Central America, and the West Indies. At present, the distribution of the group appears disjunct, with three species in Panama and the Greater Antilles and three species in northeastern Brazil. This may, of course, be an artifact of collecting.

The second main branch of the Otiiothopinae, which gave rise to *Anisaedus* and *Fernandezina*, seems to have dispersed primarily into southern and western South America. The ancestors of *Fernandezina* probably evolved in eastern Brazil and spread southward into southern Brazil and possibly farther west; although the genus has diverged greatly in somatic characters, the genitalia are similar to those of the hypothesized otiiothopine ancestor and the actual *amazonicus* group of *Otiiothops*. The progenitors of *Anisaedus* seem to have diverged from the proto-*Fernandezina* line, developing palpi with the embolus originating at the tip of the bulb (as in figs. 73, 75), and moving into western South America.

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British Museum (Natural History), London (BMNH). Collections of the American Museum of Natural History (AMNH) were also used. The scanning electron micrographs were obtained with the aid of Mr. R. J. Koestler of the American Museum of Natural History on a Cambridge Scientific Instruments Model S-4 purchased through a grant from the National Science Foundation. I thank Dr. M. U. Shadab of the American Museum of Natural History for providing illustrations of somatic characters, and Mr. D. K. Reynolds and Mrs. C. Thomas of the United States Department of State for their assistance in obtaining types from the Museu Nacional do Rio de Janeiro.

#### OTIOTHOPINAE, NEW SUBFAMILY

*Type genus. Otiotrops* MacLeay (1839).

*Diagnosis.* Spiders belonging to the Otiotropinae may be distinguished from all other palpimanids by the absence of a conductor and any other accessory terminal sclerites on the palpus and by the presence of only one or two soft spermathecae, without ducts or other elaborations, in the internal female genitalia.

*Description.* Total length 2-10 mm. Carapace longer than wide, oval in dorsal view, widest at coxae II, narrowed in front, deep red, tuberculate. Thoracic groove a deep pit, cephalic area elevated. Anterior eye row straight or recurved, posterior row procurved; eye rows subequal in length, occupying only two-thirds to three-fourths of cephalic width. Posterior median eyes opalescent, anterior medians dark, laterals light; medians circular or irregularly shaped, laterals oval; anterior medians largest, laterals smallest. Anterior eyes separated by their diameter or less; posterior medians separated by less than one to more than three times their diameter, by two or three times their diameter from posterior laterals. Lateral eyes almost contiguous. Median ocular quadrangle roughly square (figs. 10, 80, 84). Clypeal height more than twice the anterior median eye diameter. Chelicerae short, flattened, ridged anteriorly, light red, with two to four retromarginal teeth and promarginal series of macrosetae. Endites short, convergent, light red, with serrula. Labium triangular, depressed laterally,

tuberculate, light red. Sternum tuberculate, with enlarged lateral and posterior tubercles and raised extensions surrounding coxae (fig. 9). Abdomen brownish purple with anterior ringlike scutum (fig. 13). Tracheal spiracle slightly anterior of spinnerets, surrounded by sclerotized ring. Two short, cylindrical spinnerets; no colulus (fig. 14). All legs devoid of spines. Leg I enlarged, darkened. Coxae I with dorsal tubercles. Femur I often expanded dorsally (figs. 11, 81). Patella I elongated, metatarsus I shortened (fig. 85). Tibia, metatarsus, and tarsus I with prolateral scopulae of spade-shaped setae (figs. 15, 16). Metatarsi II-IV with distal, ventral scopulae. Tarsus I often bent retrolaterally. Tarsi with two dentate claws and protruding, sometimes clawlike, onychium. Claw tufts sometimes present. Tarsal claws and claw tufts reduced on leg I. Female palp without claw. Male palp with globose tibia lacking apophyses, long thin cymbium, protruding bulb not protected by alveolus but with visible reservoir, and long embolus; conductor and other terminal accessory sclerites lacking. External epigynum lacking. Internal female genitalia with soft spermathecae, without sclerotized connecting ducts or other elaborations.

#### KEY TO GENERA OF OTIOTHOPINAE

1. Posterior median eyes separated by their diameter or less (fig. 10). Claw tufts present (fig. 12) . . . . . *Otiotrops*  
Posterior median eyes separated by one and

- one-half or more times their diameter (figs. 80, 84). Claw tufts absent (fig. 83) . . . . . 2
- 2. Femur I greatly expanded dorsally; tarsus I much shorter than tibia I (fig. 81) . . . . .  
 . . . . . *Anisaedus*  
 Femur I only slightly expanded dorsally; tarsus I nearly as long as tibia I (fig. 85) . . . . .  
 . . . . . *Fernandezina*

OTIOTHOPS MACLEAY

*Otiotrops* MacLeay, 1839, p. 12, fig. 5 (type species by monotypy *Otiotrops walckenaeri* MacLeay).  
*Iheringia* Keyserling, 1891, p. 25, pl. 1, fig. 7 (type species by monotypy *Iheringia lutea* Keyserling; first synonymized by Simon, 1895, p. 1068, but removed from synonymy by Simon, 1903, p. 986). NEW SYNONYMY.

**Diagnosis.** Species belonging to *Otiotrops* may be easily recognized by the presence of claw tufts (fig. 12) and the closely spaced posterior median eyes (fig. 10).

**Description.** As in the subfamily except for the following: Total length 3.0-8.4 mm. Cephalic area moderately to sharply elevated. Posterior median eyes contiguous or separated by up to their diameter. Sternum with two dark, triangular elevations posteriorly (fig. 9). Abdominal scutum restricted to anterior one-fifth of abdomen. Femur I expanded dorsally, without prolatateral tubercles. Claw tufts present.

**Synonymy.** The presence of claw tufts, the closely spaced posterior median eyes, and genitalic similarity indicate that Simon (1895) was correct in synonymizing *Iheringia* with *Otiotrops*; the three American species formerly placed in *Iheringia* belong, in fact, to two different species groups of *Otiotrops*. However, Simon (1903) erred in removing *Iheringia* from the synonymy of *Otiotrops* and synonymizing with it the African genus *Diaphorocellus* Simon (1893a). The type species *Diaphorocellus biplagiatus*, although superficially similar to *Otiotrops* in general appearance, is very different in genitalic structure. *Diaphorocellus* is here transferred to the Chediminae and tentatively considered a valid genus in that subfamily.

**Discussion.** The 24 known species of *Otiotrops* are here placed in five species groups. The *walckenaeri* group is characterized by elongate, narrow emboli (as in figs. 21, 22) and includes

*walckenaeri*, *macleayi*, *pentucus*, *dubius*, *baculus*, and *contus*. The *oblongus* group is characterized by wide emboli with twisted tips (as in figs. 25, 26) and includes *oblongus*, *whitticki*, and *intortus*. In the *germaini* group, which includes *germaini*, *pilleus*, *clavus*, and *facis*, the emboli are large and club-shaped (as in figs. 37, 38). The palpal bulb is greatly inflated (as in figs. 45, 46) in the *typicus* group, which includes only *typicus* and *inflatus*. In the *amazonicus* group (*amazonicus*, *fulvus*, *loris*, *luteus*, *birabeni*, *calcaratus*, *brevis*, *setosus*, and *gounellei*) the embolus is moderately wide and has a simple tip (as in figs. 61, 62). For the reasons explained in the introduction, a key is provided only to males. Females unaccompanied by males are best identified by direct comparison with the figures of the internal genitalia and by geography.

KEY TO MALES OF OTIOTHOPS

- 1. Embolus long, narrow (figs. 1, 5, 17, 21, 23) . . . . . 2  
 Embolus short or widened . . . . . 6
- 2. Tip of embolus with lateral branch (fig. 5) . . . . . *macleayi*  
 Tip of embolus unbranched . . . . . 3
- 3. Embolus strongly curved (fig. 1) . . . . . *walckenaeri*  
 Embolus straight . . . . . 4
- 4. Embolus more than twice the length of palpal bulb (fig. 17) . . . . . *pentucus*  
 Embolus less than twice the length of palpal bulb . . . . . 5
- 5. Tip of embolus curved retrolaterally (fig. 23) . . . . . *contus*  
 Tip of embolus straight (fig. 21) . . . . . *baculus*
- 6. Embolus with twisted tip (figs. 25, 29, 33) . . . . . 7  
 Embolus without twisted tip . . . . . 9
- 7. Tip of embolus acutely pointed (fig. 29) . . . . . *whitticki*  
 Tip of embolus rounded . . . . . 8
- 8. Embolus bent dorsally (fig. 26) . . . . . *oblongus*  
 Embolus not bent dorsally (fig. 34) . . . . . *intortus*
- 9. Tip of embolus widened, club-shaped (figs. 37, 39, 41, 43) . . . . . 10  
 Tip of embolus not widened, club-shaped . . . . . 13
- 10. Embolus with transverse striations (figs. 37, 39) . . . . . 11  
 Embolus without transverse striations (figs. 41, 43) . . . . . 12

- 11. Tip of embolus widened prolaterally (fig. 37) . . . . . *germaini*  
 Tip of embolus narrowed prolaterally (fig. 39) . . . . . *pilleus*
- 12. Tip of embolus expanded dorsally (fig. 44) . . . . . *facis*  
 Tip of embolus not expanded dorsally (fig. 42) . . . . . *clavus*
- 13. Palpal bulb greatly inflated (figs. 45, 49) . 14  
 Palpal bulb not greatly inflated . . . . . 15
- 14. Embolus divided (fig. 46) . . . . . *typicus*  
 Embolus not divided (fig. 50) . . . . . *inflatus*
- 15. Tip of embolus whiplike (figs. 52, 54) . . . 16  
 Tip of embolus not whiplike . . . . . 17
- 16. Tip of embolus directed retrolaterally (fig. 51) . . . . . *amazonicus*  
 Tip of embolus directed prolaterally (fig. 53) . . . . . *loris*
- 17. Tip of embolus with two points (fig. 65) . . . . . *setosus*  
 Tip of embolus with one point (figs. 57, 59, 61) . . . . . 18
- 18. Tip of embolus directed distally (fig. 61) . . . . . *brevis*  
 Tip of embolus directed retrolaterally (figs. 57, 59) . . . . . 19

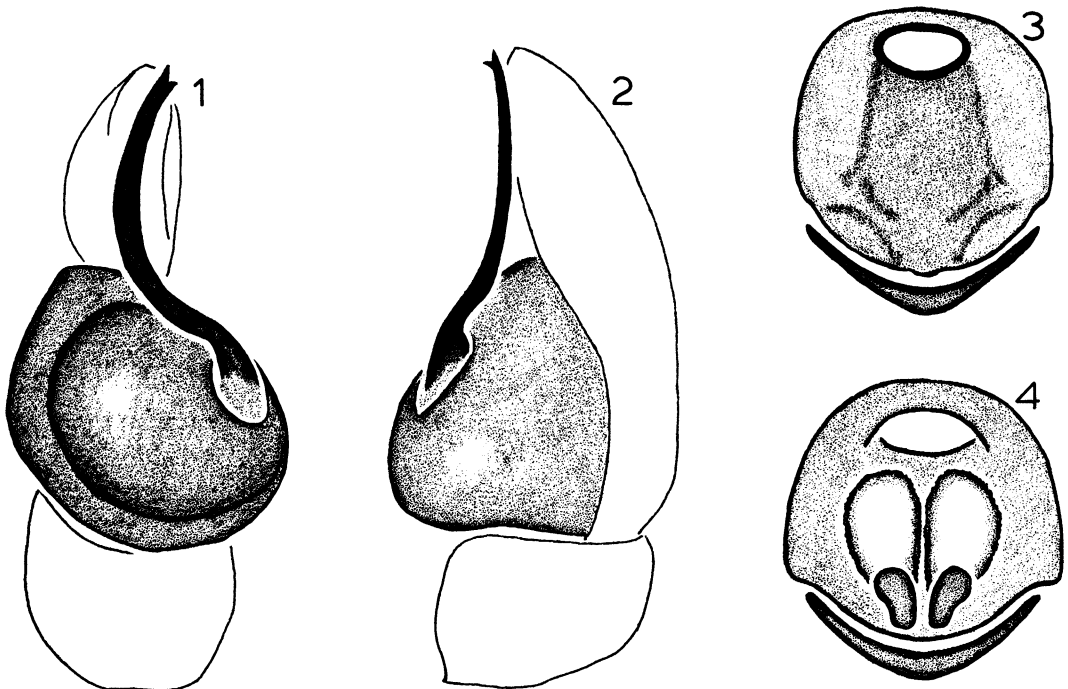
- 19. Embolus much longer than bulb (fig. 57) . . . . . *birabeni*  
 Embolus only as long as bulb (fig. 59) . . . . . *calcaratus*

*Otiothops walckenaeri* MacLeay  
 Figures 1-4; Map 1

*Otiothops walckenaeri* Macleay, 1839, p. 13, fig. 5 (female holotype from Cuba, no specific locality, depository unknown; presumed destroyed). Bryant, 1940, p. 275, fig. 15. Roewer, 1942, p. 377. Bonnet, 1958, p. 3218. Chickering, 1966, p. 215, figs. 12, 13.

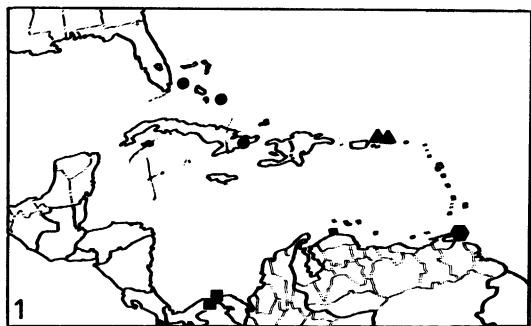
*Diagnosis.* *Otiothops walckenaeri* is closest to *macleayi* but may be distinguished by the strongly curved embolus (fig. 1) and the wide spermathecae (fig. 4).

*Male.* Total length 3.35-4.32 mm. Carapace 1.58-1.91 mm. long, 1.15-1.33 mm. wide. Femur I 1.04-1.33 mm. long, 0.54-0.58 mm. high (seven specimens). Cephalic area sharply elevated. Posterior median eyes almost contiguous. Embolus strongly curved (figs. 1, 2).



FIGS. 1-4. *Otiothops walckenaeri* MacLeay. 1. Palp, ventral view. 2. Palp, retrolateral view. 3. Abdominal scutum, ventral view. 4. Vulva, dorsal view.





MAP 1. Caribbean area, showing distribution of *Otiothops walckenaeri* (circles), *pentucus* (triangles), *intortus* (hexagon), and *macleayi* (squares).

*Female*. Total length 4.72-5.90 mm. Carapace 1.73-2.12 mm. long, 1.33-1.48 mm. wide. Femur I 1.26-1.44 mm. long, 0.65-0.72 mm. high (five

specimens). Carapace and eyes as in male. Genitalia as in figures 3, 4.

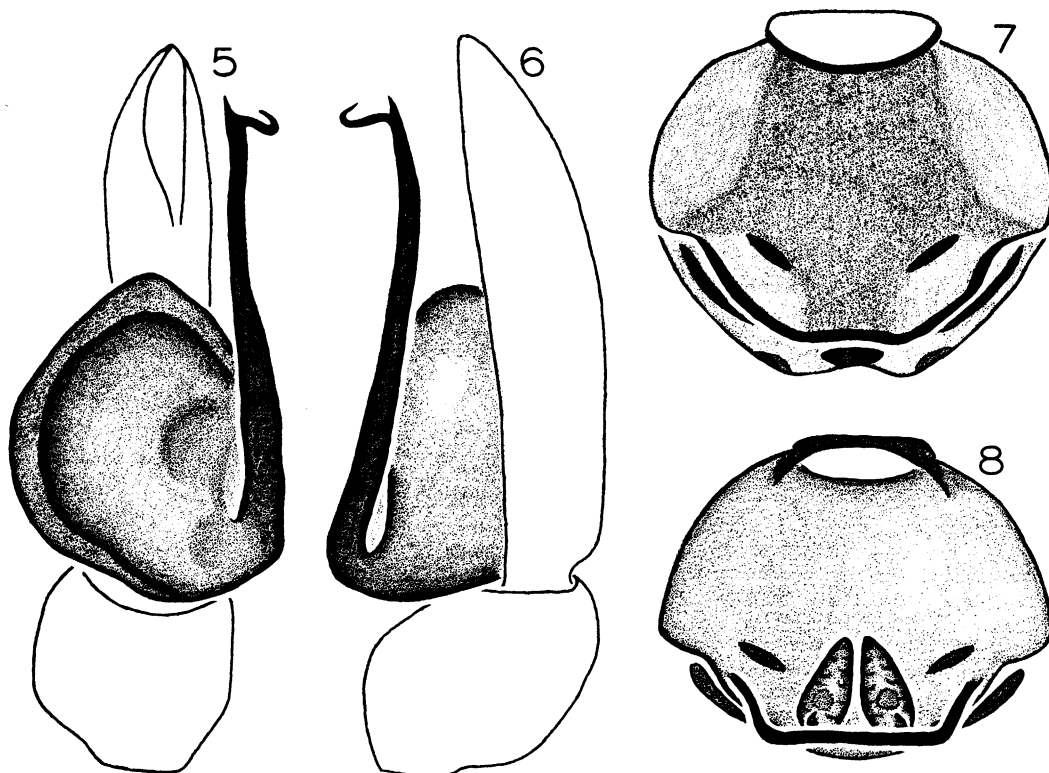
*Material Examined*. Cuba: Oriente: Soledad, Feb., 1925 (Salt and Myers, MCZ), 1 ♀; July 31, 1933 (N. A. Weber, MCZ), 1 ♀, Berlese sample from pasture; Aug. 1-11, 1934 (P. J. Darlington, MCZ), 1 ♂, 1 ♀. Bahama Islands: Great Exuma: Cays W of Green Turtle Cut, 1973 (R. Wetzler, MCZ), 1 ♂; South Bimini, May, 1951 (W. J. Gertsch and M. A. Cazier, AMNH), 5 ♂, 2 ♀.

*Distribution*. Cuba and the Bahama Islands (map 1).

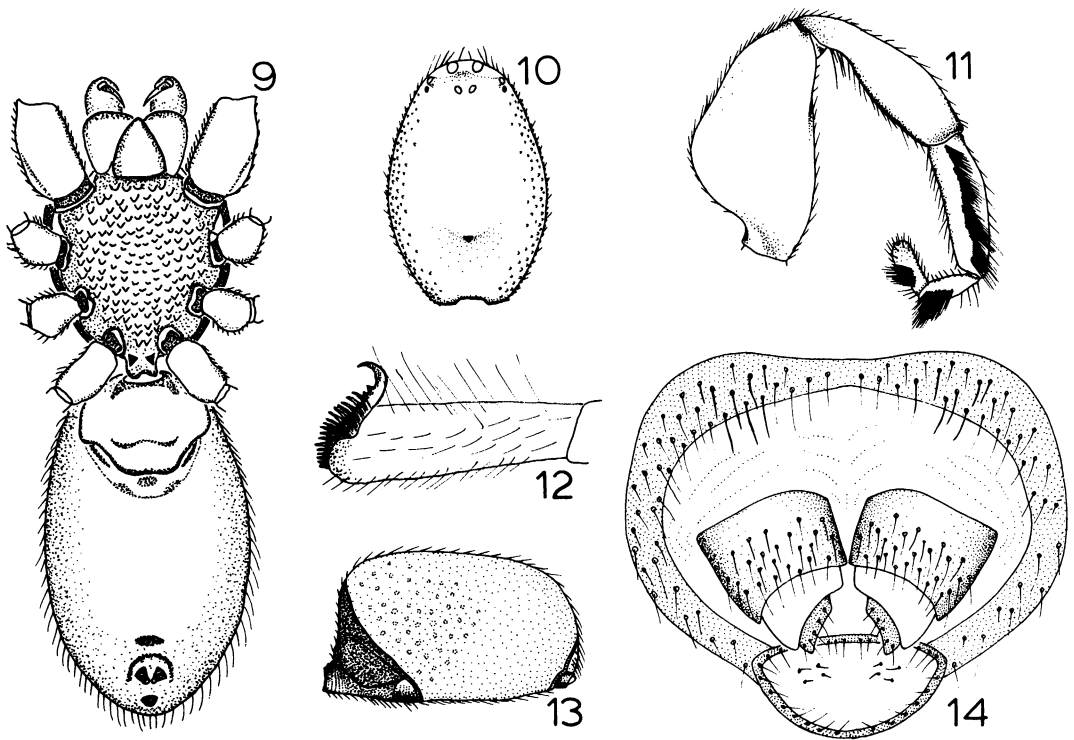
### *Otiothops macleayi* Banks

Figures 5-16; Map 1

*Otiothops macleayi* Banks, 1929, p. 55, pl. 2, fig. 26; pl. 3, fig. 42 (female holotype from Barro Colorado Island, Panama Canal Zone, in MCZ, examined). Chickering, 1942, p. 235, figs. 1-5. Roewer, 1942, p. 377. Bonnet, 1958, p. 3218.



FIGS. 5-8. *Otiothops macleayi* Banks. 5. Palp, ventral view. 6. Palp, retrolateral view. 7. Abdominal scutum, ventral view. 8. Vulva, dorsal view.



FIGS. 9-14. *Otiotrops macleayi* Banks. 9. Body, ventral view. 10. Carapace, dorsal view. 11. Left leg I, prolateral view. 12. Tarsus IV, lateral view. 13. Abdomen, lateral view. 14. Spinnerets and anal tubercle, ventral view.

**Diagnosis.** *Otiotrops macleayi* is closest to *walckenaeri* but may be distinguished by the branched tip of the embolus (fig. 5) and the narrow spermathecae (fig. 8).

**Male.** Total length  $5.50 \pm 0.51$  mm. Carapace  $2.59 \pm 0.16$  mm. long,  $1.84 \pm 0.10$  mm. wide. Femur I  $1.95 \pm 0.10$  mm. long,  $0.89 \pm 0.06$  mm. high (mean and standard deviation of 10 specimens; 84 specimens examined). Cephalic area moderately elevated. Posterior median eyes separated by their diameter. Tip of embolus with lateral branch (figs. 5, 6).

**Female.** Total length  $6.64 \pm 0.57$  mm. Carapace  $2.94 \pm 0.20$  mm. long,  $2.12 \pm 0.13$  mm. wide. Femur I  $2.15 \pm 0.13$  mm. long,  $1.02 \pm 0.10$  mm. high (mean and standard deviation of 10 specimens; 49 specimens examined). Carapace and eyes as in male. Genitalia as in figures 7, 8.

**Material Examined.** Panama: Arraiján, July 6-9, 1950 (A. M. Chickering, MCZ), 1 ♂; El Valle, July, 1936 (A. M. Chickering, MCZ), 1 ♂, 4 ♀;

Porto Bello, Aug. 11-12, 1936 (A. M. Chickering, MCZ), 4 ♂. Canal Zone: Balboa, Aug. 11, 1936 (A. M. Chickering, MCZ), 1 ♀; Barro Colorado Island, numerous collections, June 16-Aug. 19, 1934-1954 (A. M. Chickering, MCZ), 72 ♂, 39 ♀; Forest Preserve, July, 1939 (A. M. Chickering, MCZ), 3 ♂, 1 ♀; Madden Dam, Aug. 18, 1936 (A. M. Chickering, MCZ), 1 ♂, 2 ♀; Aug. 8, 1939 (A. M. Chickering, MCZ), 2 ♂, 2 ♀.

**Distribution.** Panama (map 1).

#### *Otiotrops pentucus* Chickering

Figures 17-19; Map 1

*Otiotrops pentucus* Chickering, 1967, p. 206, figs. 5-8 (male holotype from St. John, Virgin Islands, in MCZ, examined).

*Otiotrops casobus* Chickering, 1967, p. 203, figs. 1-4 (female holotype from Virgin Gorda, Virgin Islands, in MCZ, examined). **NEW SYNONYMY.**

**Diagnosis.** *Otiothops pentucus* is closest to *dubius* but may be distinguished by the extremely long embolus (fig. 17) and spermathecal branches (fig. 19).

**Male.** Total length 4.07, 4.36 mm. Carapace 1.94 mm. long, 1.48, 1.51 mm. wide. Femur I 1.30, 1.37 mm. long, 0.65, 0.68 mm. high (two specimens). Cephalic area sharply elevated. Posterior median eyes almost contiguous. Embolus extremely long (figs. 17, 18).

**Female.** Total length 5.62 mm. Carapace 2.48 mm. long, 1.76 mm. wide. Femur I 1.62 mm. long, 0.83 mm. high (holotype). Carapace and eyes as in male. Spermathecae with long branches (fig. 19).

**Material Examined.** Virgin Islands: St. John, July 22, 1966 (A. M. Chickering, MCZ), 1 ♂.

**Distribution.** Virgin Islands (map 1).

**Synonymy.** Similarities in the degree of elevation of the cephalic area and in the spacing of the posterior median eyes indicate that *pentucus* and *casobus* are male and female of the same species. As first reviser, I choose the name *pentucus* as it was based on the male.

*Otiothops dubius* Mello-Leitão

Figure 47; Map 2

*Otiothops dubius* Mello-Leitão, 1927, p. 91 (female holotype from Bahia [Salvador], Bahia, Brazil, in MNHN, examined). Roewer, 1942, p. 377. Bonnet, 1958, p. 3218.

**Diagnosis.** *Otiothops dubius* is closest to *pentucus* but may be distinguished by the shorter spermathecal branches (fig. 47).

**Male.** Unknown.

**Female.** Total length 6.34 mm. Carapace 2.51 mm. long, 1.63 mm. wide. Femur I 1.76 mm. long, 0.86 mm. high (holotype). Cephalic area moderately elevated. Posterior median eyes separated by one-third their diameter. Spermathecae with short branches (fig. 47).

**Material Examined.** Only the holotype.

**Distribution.** Bahia, Brazil (map 2).

*Otiothops baculus*, new species

Figures 21, 22; Map 2

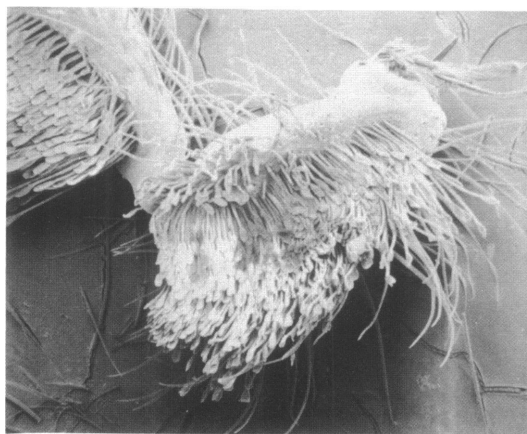
**Type.** Male holotype from Rio Gurupi, Pará, Brazil (June, 1960; B. Malkin), deposited in MSP.

**Etymology.** The specific name is from the Latin *baculus* (staff) and refers to the shape of the embolus.

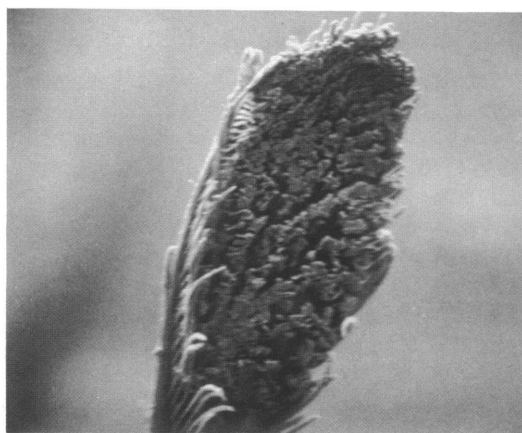
**Diagnosis.** *Otiothops baculus* is closest to *contus* but may be distinguished by the straight embolar tip (fig. 21).

**Male.** Total length 4.79, 5.44 mm. Carapace 2.27, 2.41 mm. long, 1.69, 1.74 mm. wide. Femur I 1.62, 1.87 mm. long, 0.68, 0.76 mm. high (two specimens). Cephalic area moderately elevated. Posterior median eyes contiguous. Embolus long, not bent at tip (figs. 21, 22).

**Female.** Unknown.

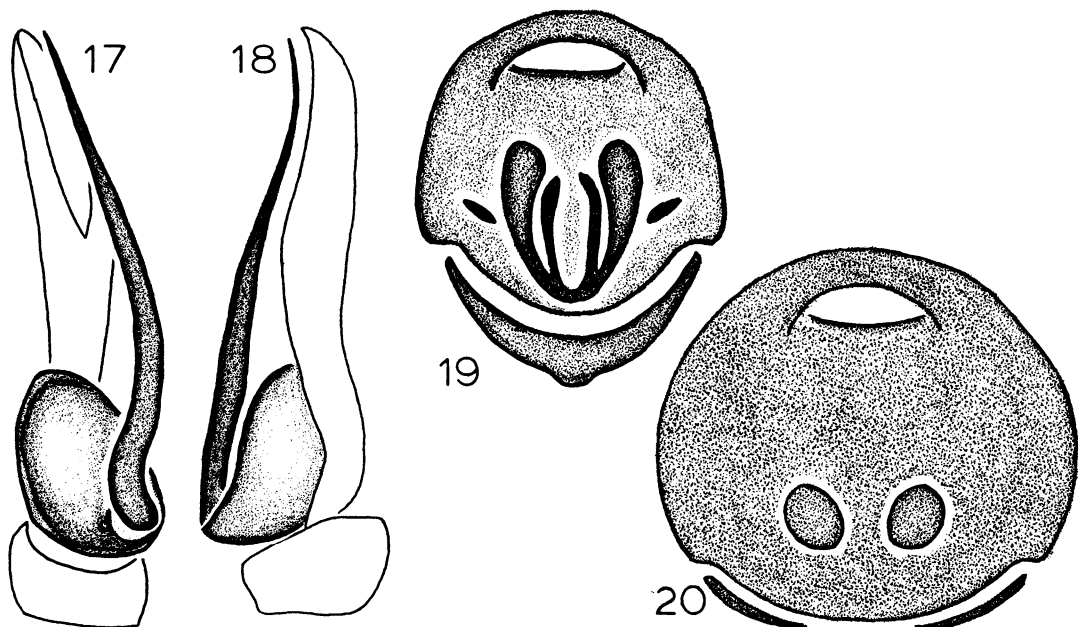


15



16

FIGS. 15-16. *Otiothops macleayi* Banks, scanning electron micrographs. 15. Metatarsus and tarsus I, showing prolateral scopula, X90. 16. Individual scopula hair, X2500.



FIGS. 17-20. 17-19. *Otiotrops pentucus* Chickering. 17. Palp, ventral view. 18. Palp, retro-lateral view. 19. Vulva, dorsal view. 20. *Fernandezina acuta*, new species, vulva, dorsal view.

*Material Examined.* Brazil: Pará: Rio Gurupi, April, 1963 (B. Malkin, MSP), 1 ♂.

*Distribution.* Pará, Brazil (map 2).

***Otiotrops contus*, new species**

Figures 23, 24; Map 2

*Type.* Male holotype from Recife, Pernambuco, Brazil (no date or collector), deposited in NMS.

*Etymology.* The specific name is from the Latin *contus* (pole) and refers to the shape of the embolus.

*Diagnosis.* *Otiotrops contus* is closest to *baculus* but may be distinguished by the curved embolar tip (fig. 23).

*Male.* Total length 3.31 mm. Carapace 1.37 mm. long, 0.97 mm. wide. Femur I 0.97 mm. long, 0.47 mm. high (holotype). Cephalic area moderately elevated. Posterior median eyes almost contiguous. Embolus long, with curved tip (figs. 23, 24).

*Female.* Unknown.

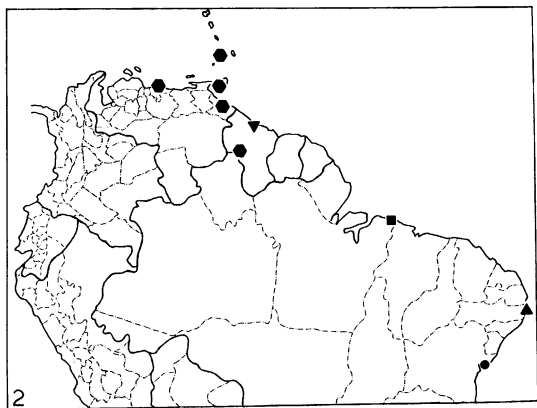
*Material Examined.* Only the holotype.

*Distribution.* Pernambuco, Brazil (map 2).

***Otiotrops oblongus* Simon**

Figures 25-28; Map 2

*Otiotrops oblongus* Simon, 1891, p. 574 (female holotype from St. Vincent, West Indies, in BMNH, examined). Roewer, 1942, p. 377. Bonnet, 1958, p. 3218.



MAP 2. Northern South America, showing distribution of *Otiotrops oblongus* (hexagons), *whitticki* (inverted triangle), *baculus* (square), *contus* (upright triangle), and *dubius* (circle).

*Otiotrops lapidicola* Simon, 1892, p. 459 (three male and three female syntypes from Caracas [Distrito Federal], Colonia Tovar [Aragua], San Esteban [Carabobo], and Valencia [Carabobo], Venezuela, in MNHN, examined). Mello-Leitão, 1927, p. 88, fig. 6. Roewer, 1942, p. 377. Bonnet, 1958, p. 3218. NEW SYNONYMY.

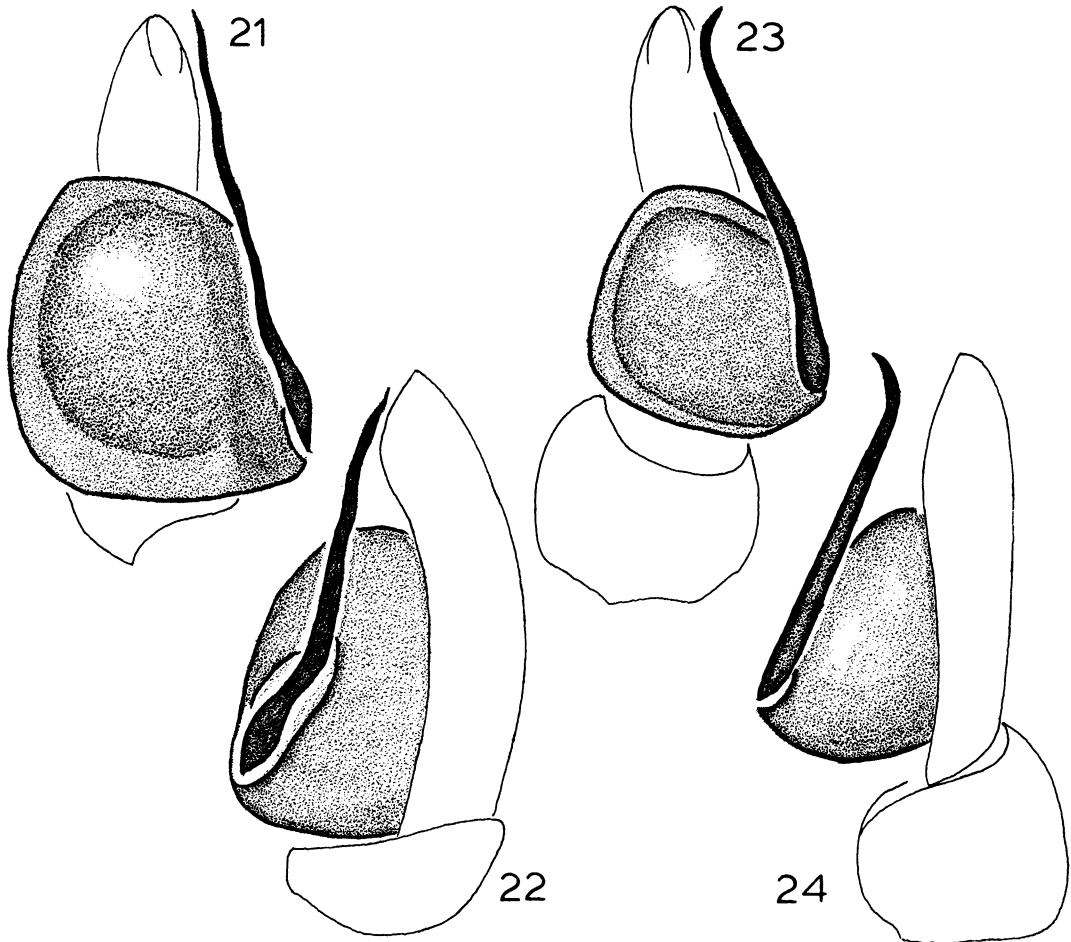
*Otiotrops carpenteri* Chickering, 1966, p. 212, figs. 7-11 (male holotype and female paratype from Caroni Swamp, Trinidad, in MCZ, examined). NEW SYNONYMY.

*Diagnosis.* *Otiotrops oblongus* is closest to *whitticki* but may be distinguished by the wider

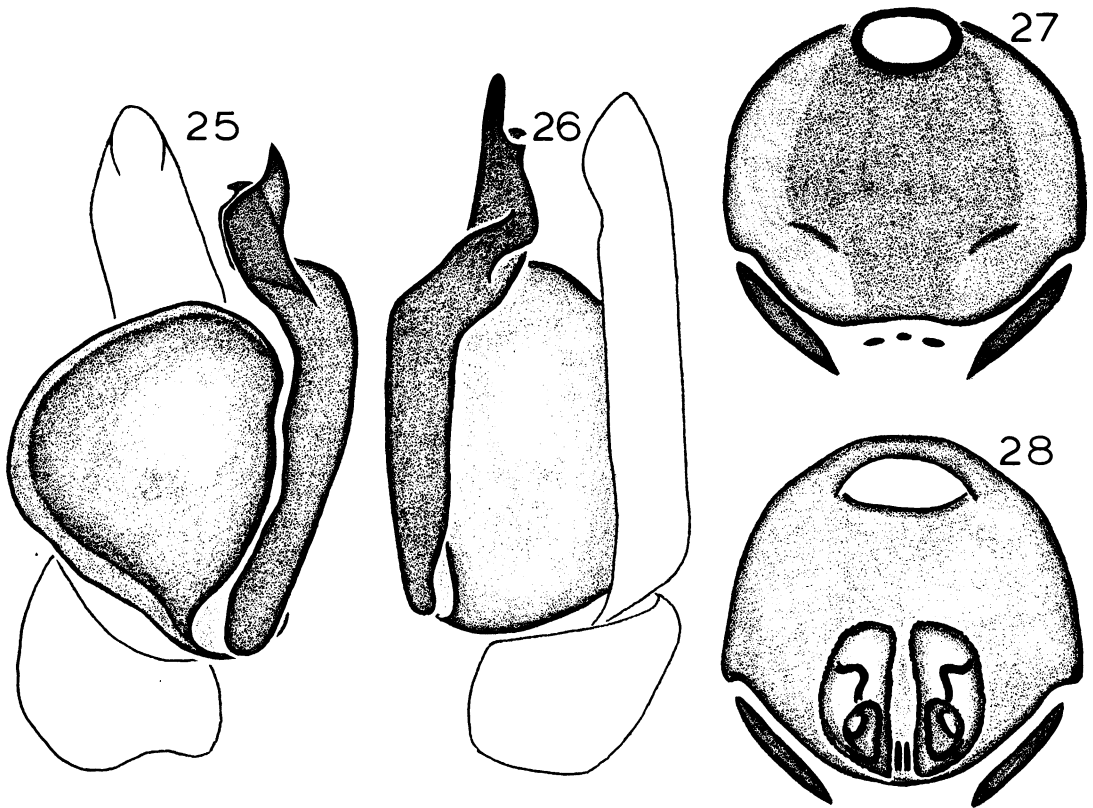
tip of the embolus (fig. 25) and the unexpanded posterior half of the spermathecae (fig. 28).

*Male.* Total length 4.86-6.01 mm. Carapace 2.05-2.56 mm. long, 1.41-1.69 mm. wide. Femur I 1.58-1.91 mm. long, 0.76-0.97 mm. high (six specimens). Cephalic area moderately elevated. Posterior median eyes contiguous posteriorly. Embolus with broad twisted tip (figs. 25, 26).

*Female.* Total length 6.56±0.75 mm. Carapace 2.67±0.20 mm. long, 1.80±0.13 mm. wide. Femur I 1.88±0.11 mm. long, 0.96±0.08 mm. high (mean and standard deviation of 10 specimens; 12 specimens examined). Carapace and eyes as in male. Genitalia as in figures 27, 28.



FIGS. 21-24. 21, 22. *Otiotrops baculus*, new species. 21. Palp, ventral view. 22. Palp, retrolateral view. 23, 24. *O. contus*, new species. 23. Palp, ventral view. 24. Palp, retrolateral view.



FIGS. 25-28. *Otiotrops oblongus* Simon. 25. Palp, ventral view. 26. Palp, retrolateral view. 27. Abdominal scutum, ventral view. 28. Vulva, dorsal view.

**Material Examined.** Trinidad: Piarco, Feb. 23, 1959 (A. M. Nadler, AMNH), 1 ♀; St. Augustine, April, 1929 (P. J. Darlington, MCZ), 1 ♂, 1 ♀. Venezuela: Carabobo: Maracay, Dec. 20, 1954 (A. M. Nadler, AMNH), 1 ♀; Delta Amacuro: Río Orinoco delta, Jan.-Feb., 1935 (N. Weber, MCZ), 1 ♂, 2 ♀. British Guiana: Upper Ireng River, Pakaraima Mountains (Myers, AMNH), 1 ♀.

**Distribution.** British Guiana, Venezuela, Trinidad, and St. Vincent (map 2).

**Synonymy.** The types of *carpenteri* show no genitalic differences from those of *lapidicola*. The spermathecae of the female holotype of *oblongus* are poorly preserved but appear to have been similar to those of *lapidicola* and *carpenteri*. Until mature males are collected on St. Vincent, it seems best to regard both *lapidicola* and *carpenteri* as junior synonyms of *oblongus*.

*Otiotrops whitticki* Mello-Leitão  
Figures 29-31; Map 2

*Otiotrops whitticki* Mello-Leitão, 1940, p. 179, figs. 2, 3 (male holotype from Moraballi River, British Guiana, in BMNH, examined).

**Diagnosis.** *Otiotrops whitticki* is closest to *oblongus* but may be distinguished by the narrow tip of the embolus (fig. 29) and the expanded posterior half of the spermathecae (fig. 31).

**Male.** Total length 4.45 mm. Carapace 1.96 mm. long, 1.33 mm. wide. Femur I 1.55 mm. long, 0.72 mm. high (holotype). Cephalic area sharply elevated. Posterior median eyes separated by half their diameter. Embolus with narrow twisted tip (figs. 29, 30).

**Female.** Total length 5.51 mm. Carapace 2.30 mm. long, 1.56 mm. wide. Femur I 1.62 mm.

long, 0.84 mm. high (one specimen). Carapace and eyes as in male. Posterior half of spermathecae expanded (fig. 31).

*Material Examined.* British Guiana: Waterloo Field Station, Cane Grove, Apr. 24, 1946 (H. C. James, BMNH), 1 ♀.

*Distribution.* British Guiana (map 2).

**Otiotrops intortus**, new species

Figures 33-35; Map 1

*Types.* Male holotype and female paratype from Maracas Valley, elevation 400 feet, Trinidad (January-April, 1974; J. A. L. Cooke), deposited in AMNH.

*Etymology.* The specific name is from the Latin *intortus* (twisted) and refers to the shape of the embolus.

*Diagnosis.* *Otiotrops intortus* is a distinctive species easily recognizable by the flattened, twisted tip of the embolus (fig. 33) and the large, anteriorly narrowed spermathecae (fig. 35).

*Male.* Total length 6.80 mm. Carapace 2.66

mm. long, 1.80 mm. wide. Femur I 1.84 mm. long, 1.12 mm. high (holotype). Cephalic area moderately elevated. Posterior median eyes separated by their diameter. Embolar tip flattened, twisted (figs. 33, 34).

*Female.* Total length 5.36-7.27 mm. Carapace 2.59-2.99 mm. long, 1.58-1.98 mm. wide. Femur I 1.76-2.01 mm. long, 0.90-1.12 mm. high (four specimens). Carapace and eyes as in male. Genitalia as in figure 35.

*Material Examined.* Trinidad: Maracas Valley, Jan.-Apr., 1974 (J. A. L. Cooke, AMNH), 3 ♀.

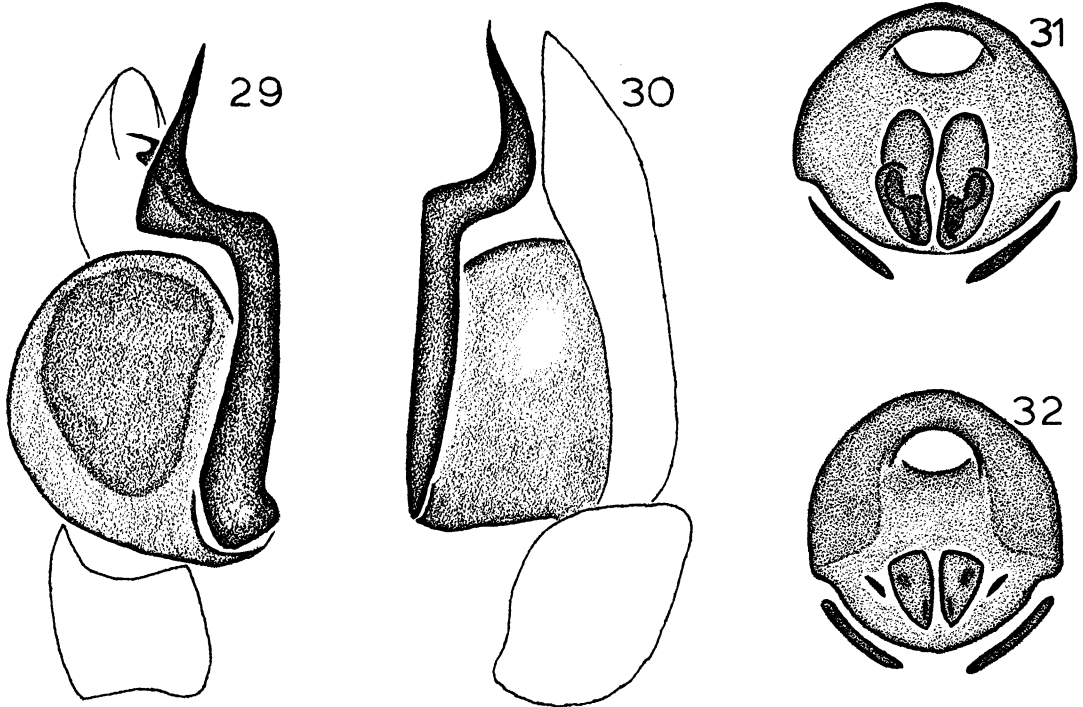
*Distribution.* Trinidad (map 1).

*Natural History.* The type series was collected under the bark of tonka bean trees and in the retreats of the tarantula *Avicularia avicularia* (Linnaeus), Theraphosidae.

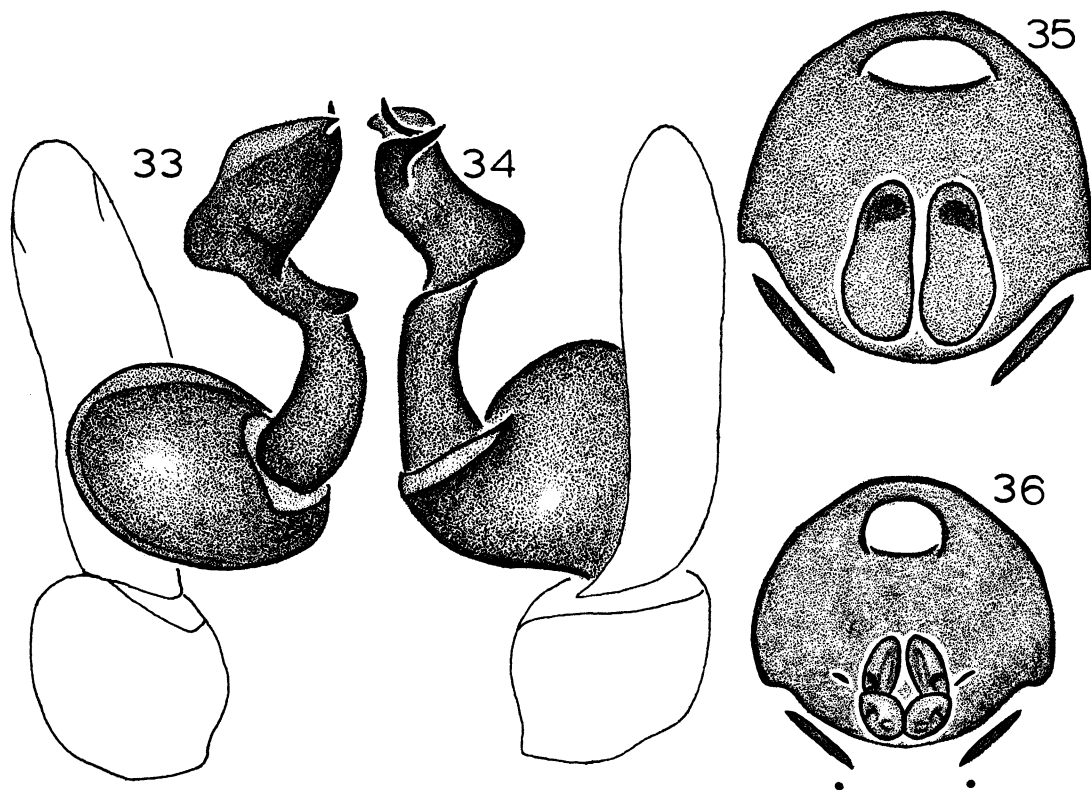
*Otiotrops germaini* Simon

Figures 36-38; Map 3

*Otiotrops germaini* Simon, in Mello-Leitão, 1927, p. 90, fig. 5 (two male and two female



FIGS. 29-32. 29-31. *Otiotrops whitticki* Mello-Leitão. 29. Palp, ventral view. 30. Palp, retrolateral view. 31. Vulva, dorsal view. 32. *O. amazonicus* Simon, vulva, dorsal view.



FIGS. 33-36. 33-35. *Otiotrops intortus*, new species. 33. Palp, ventral view. 34. Palp, retrolateral view. 35. Vulva, dorsal view. 36. *O. germaini* Simon, vulva, dorsal view.

syntypes from Mato Grosso, no specific locality, Brazil, in MNHN, examined). Roewer, 1942, p. 377. Bonnet, 1958, p. 3218.

**Diagnosis.** *Otiotrops germaini* is closest to *pilleus* but may be distinguished by the prolaterally broadened tip of the embolus (fig. 37) and the narrow spermathecae (fig. 36).

**Male.** Total length 4.61-6.62 mm. Carapace 2.09-2.59 mm. long, 1.42-1.69 mm. wide. Femur I 1.66-2.01 mm. long, 0.79-0.94 mm. high (four specimens). Cephalic area moderately elevated. Posterior median eyes separated by one-fifth their diameter. Embolus club-shaped, tip broadened prolaterally (figs. 37, 38).

**Female.** Total length 5.51-7.09 mm. Carapace 2.23-3.02 mm. long, 1.62-2.13 mm. wide. Femur I 1.80-2.02 mm. long, 0.83-1.04 mm. high (six specimens). Carapace and eyes as in male. Genitalia as in figure 36.

**Material Examined.** Brazil: Mato Grosso: Barra do Tapirapé, Dec. 1-23, 1961 (B. Malkin, AMNH), 1 ♂; Jan., 1963 (B. Malkin, MSP), 2 ♀; Jan. 1-15, 1966 (B. Malkin, MSP), 1 ♂; Tapirapé, Jan. 1-5, 1961 (B. Malkin, MSP), 1 ♀; Utiariti, 1961 (Lenko, MSP), 1 ♀.

**Distribution.** Mato Grosso, Brazil (map 3).

*Otiotrops pilleus*, new name

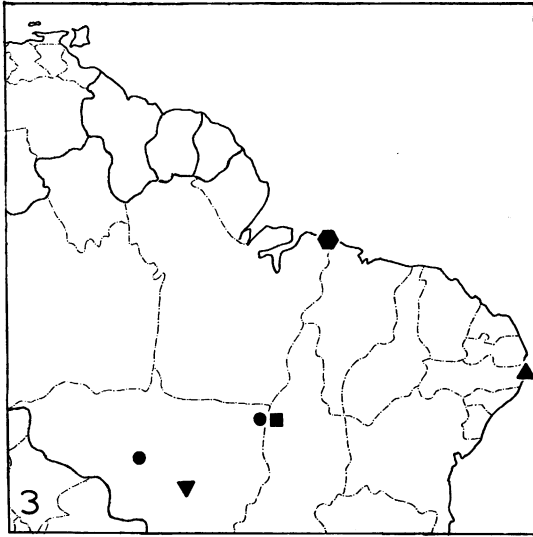
Figures 39, 40; Map 3

*Otiotrops amazonicus* Mello-Leitão, 1944, p. 7 (male holotype from Chambusá, Goiás, Brazil, in MNRJ, examined; preoccupied by *Otiotrops amazonicus* Simon, 1887).

**Etymology.** The specific name is from the Latin *pilleus* (cap) and refers to the shape of the embolus.

**Diagnosis.** *Otiotrops pilleus* is closest to *ger-*





MAP 3. Northeastern South America, showing distribution of *Otiothops facis* (hexagon), *clavus* (upright triangle), *pilleus* (square), *typicus* (inverted triangle), and *germaini* (circles).

*maini* but may be distinguished by the prolaterally narrowed tip of the embolus (fig. 39).

**Male.** Total length 4.97 mm. Carapace 1.87 mm. long, 1.30 mm. wide. Femur I 1.48 mm. long, 0.58 mm. high (holotype). Cephalic area moderately elevated. Posterior median eyes separated by one-third their diameter. Embolus club-shaped, tip narrowed prolaterally (figs. 39, 40).

**Female.** Unknown.

**Material Examined.** Only the holotype.

**Distribution.** Goiás, Brazil (map 3).

***Otiothops clavus*, new species**

Figures 41, 42; Map 3

**Type.** Male holotype from Recife, Pernambuco, Brazil (no date or collector), deposited in NMS.

**Etymology.** The specific name is the Latin *clava* (club) and refers to the shape of the embolus.

**Diagnosis.** *Otiothops clavus* is closest to *facis* but may be distinguished by the tip of the embolus not being expanded dorsally (fig. 42).

**Male.** Total length 5.34 mm. Carapace 2.46 mm. long, 1.58 mm. wide. Femur I 1.87 mm. long, 0.86 mm. high (holotype). Cephalic area moderately elevated. Posterior median eyes separated by one-fourth their diameter. Embolus club-shaped, not wrapped around cymbium (figs. 41, 42).

**Female.** Unknown.

**Material Examined.** Only the holotype.

**Distribution.** Pernambuco, Brazil (map 3).

***Otiothops facis*, new species**

Figures 43, 44; Map 3

**Type.** Male holotype from Rio Gurupi, Pará, Brazil (May, 1963; B. Malkin), deposited in MSP.

**Etymology.** The specific name is from the Latin *fax* (torch) and refers to the shape of the embolus.

**Diagnosis.** *Otiothops facis* is closest to *clavus* but may be distinguished by the dorsally expanded tip of the embolus (fig. 44).

**Male.** Total length 5.26 mm. Carapace 2.29 mm. long, 1.55 mm. wide. Femur I 1.76 mm. long, 0.81 mm. high (holotype). Cephalic area moderately elevated. Posterior median eyes separated by one-fourth their diameter. Embolus torch-shaped, wrapped around cymbium distally (figs. 43, 44).

**Female.** Unknown.

**Material Examined.** Only the holotype.

**Distribution.** Pará, Brazil (map 3).

***Otiothops typicus* (Mello-Leitão),  
new combination**

Figures 45, 46; Map 3

*Theringia typica* Mello-Leitão, 1927, p. 91, fig. 9 (male holotype from Cuiabá, Mato Grosso, Brazil, in MNHN, examined). *Lapsus*.

*Iheringia typica*: Roewer, 1942, p. 376. Bonnet, 1957, p. 2295.

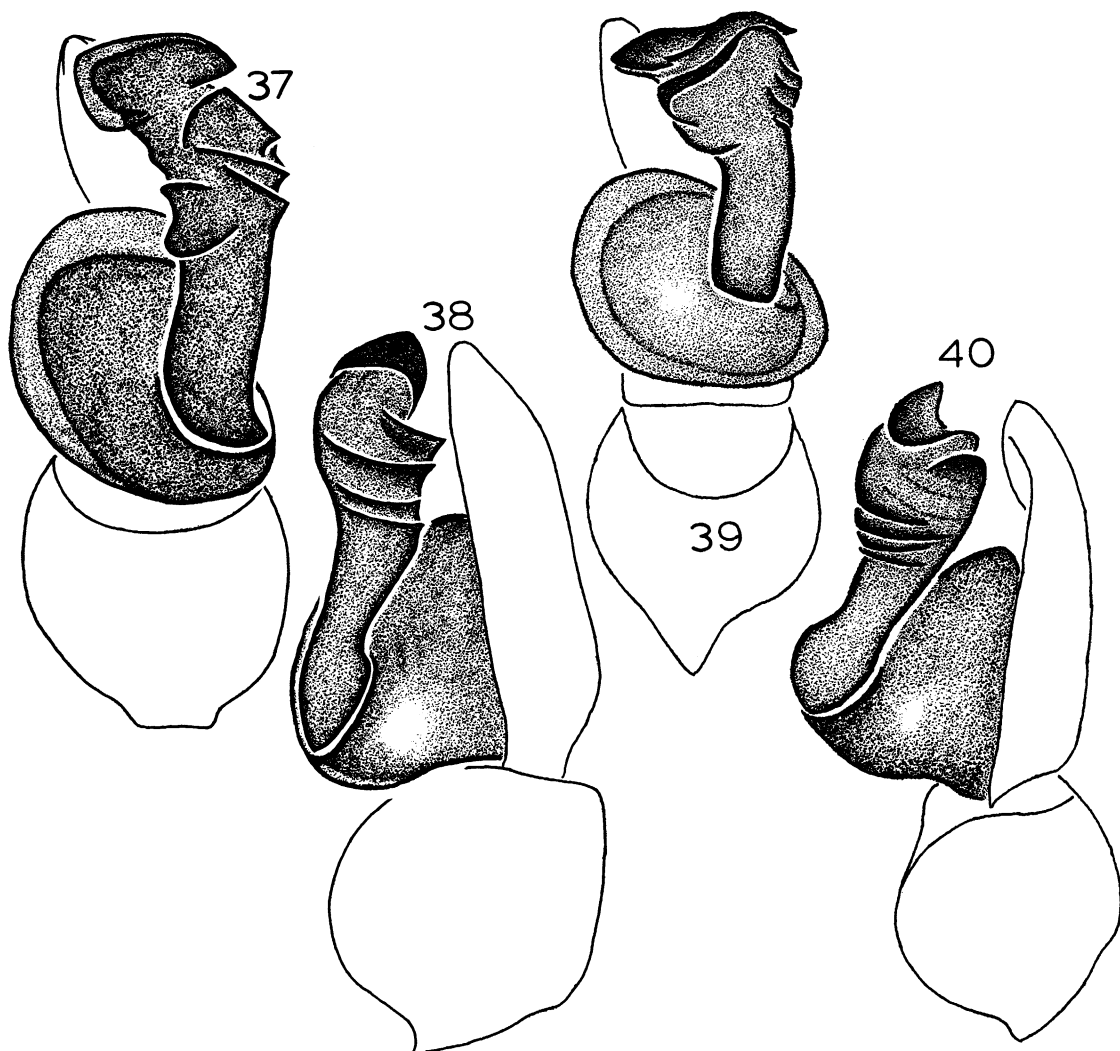
**Diagnosis.** *Otiothops typicus* is closest to *inflatus* but may be distinguished by the divided embolus (fig. 46).

**Male.** Total length 3.60 mm. Carapace 1.69 mm. long, 1.19 mm. wide. Femur I 1.15 mm. long, 0.58 mm. high (holotype). Cephalic area moderately elevated. Posterior median eyes contiguous posteriorly. Palpal bulb inflated, embolus divided (figs. 45, 46).

**Female.** Unknown.

**Material Examined.** Only the holotype.

**Distribution.** Mato Grosso, Brazil (map 3).



FIGS. 37-40. 37, 38. *Otiothops germaini* Simon. 37. Palp, ventral view. 38. Palp, retrolateral view. 39, 40. *O. pilleus*, new name. 39. Palp, ventral view. 40. Palp, retrolateral view.

***Otiothops inflatus*, new species**

Figures 49, 50

*Theringia lutea* (misidentification): Mello-Leitão, 1927, p. 91. *Lapsus*.

*Iheringia lutea* (misidentification): Roewer, 1942, p. 376. Bonnet, 1957, p. 2295.

*Type*. Male holotype from Paraguay, no specific locality (under fallen leaves, July 18; K. Fiebrig), deposited in ZMB.

*Etymology*. The specific name is from the

Latin *inflatus* (inflated) and refers to the greatly inflated palpal bulb.

*Diagnosis*. *Otiothops inflatus* is closest to *typicus* but may be distinguished by the undivided embolus (fig. 50).

*Male*. Total length 4.32, 5.04 mm. Carapace 1.94, 2.09 mm. long, 1.32, 1.44 mm. wide. Femur I 1.37, 1.62 mm. long, 0.61, 0.71 mm. high (two specimens). Cephalic area sharply elevated. Posterior median eyes contiguous. Palpal bulb inflated, embolus not divided (figs. 49, 50).

*Female.* Unknown.

*Material Examined.* Paraguay: no specific locality (MNHN), 1 ♂.

*Distribution.* Paraguay.

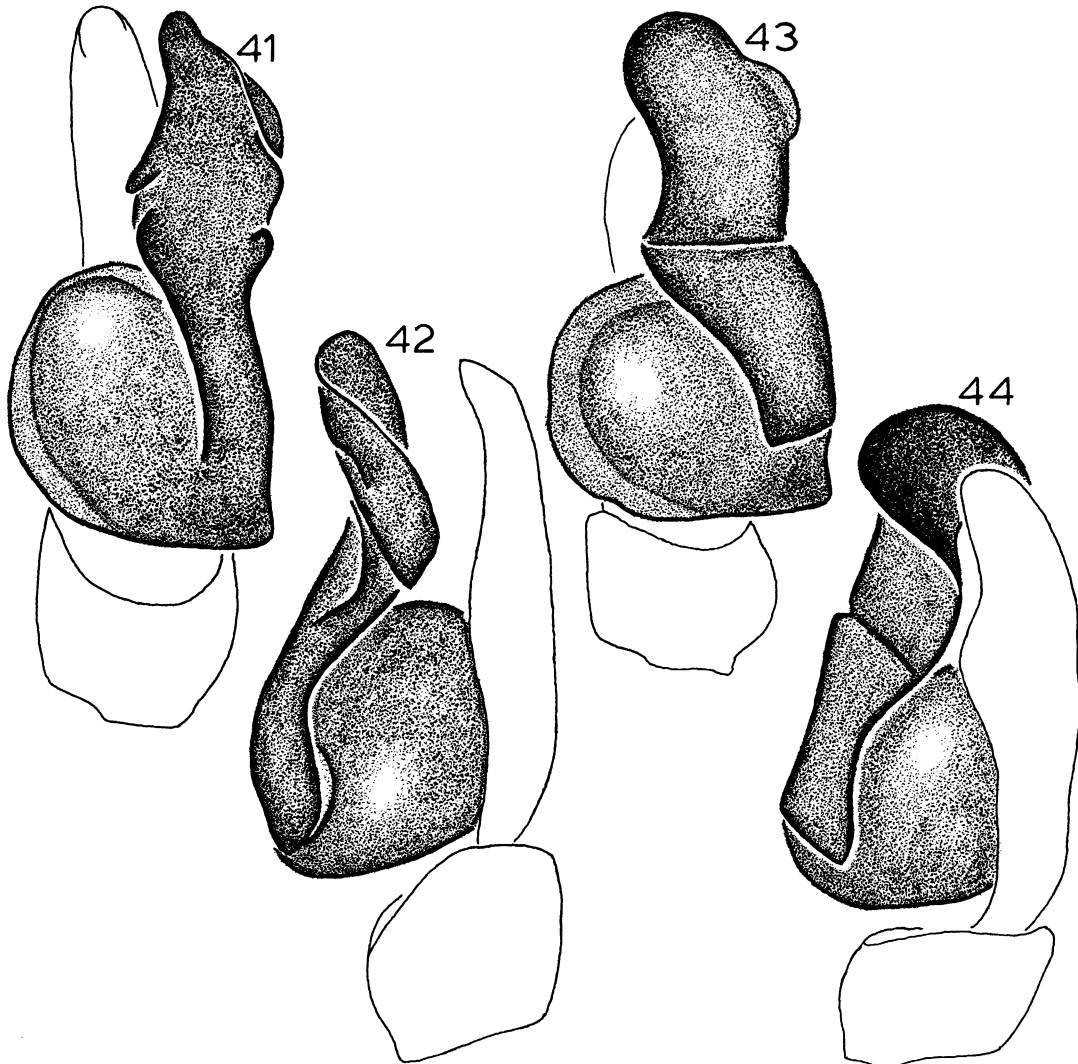
*Otiothops amazonicus* Simon

Figures 32, 51, 52; Map 4

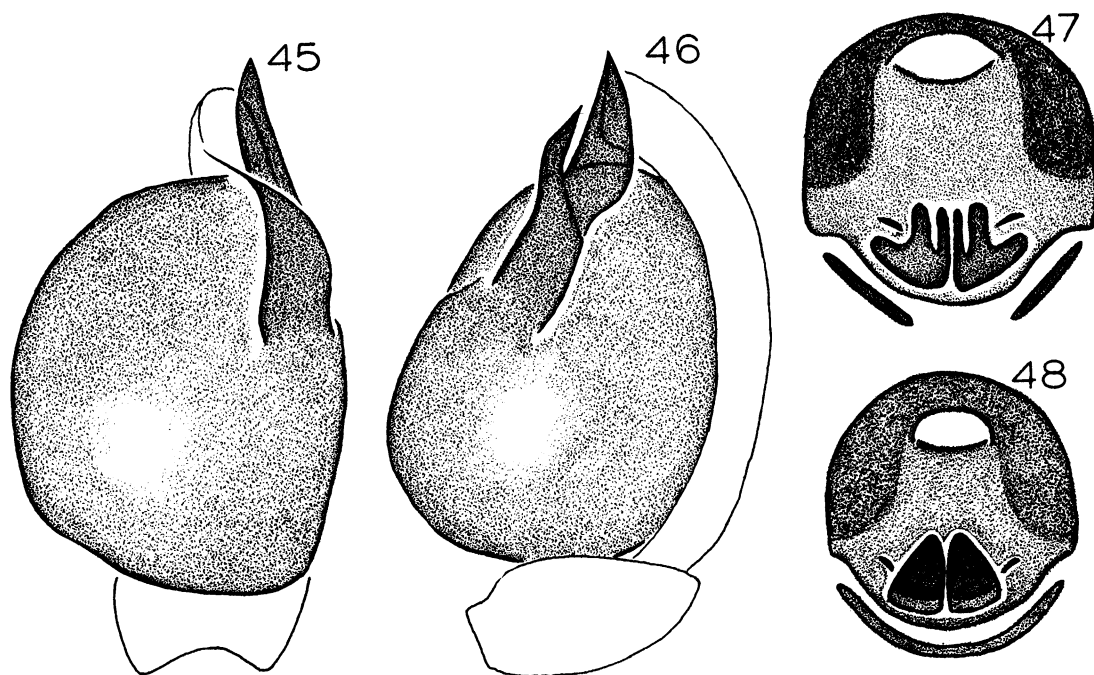
*Otiothops amazonicus* Simon, 1887, p. 274 (two female syntypes from Cametá, Pará, Brazil, in MNHN, examined). Mello-Leitão, 1927, p. 89. Roewer, 1942, p. 376. Bonnet, 1958, p. 3218.

*Diagnosis.* *Otiothops amazonicus* is closest to *fulvus* but may be distinguished by the semicircular tip of the embolus (fig. 51) and the spermathecae being widest anteriorly (fig. 32).

*Male.* Total length 3.78, 3.82 mm. Carapace 1.76, 1.84 mm. long, 1.24, 1.37 mm. wide. Femur I 1.22, 1.33 mm. long, 0.50, 0.58 mm. high (two specimens). Cephalic area sharply elevated. Posterior median eyes separated by three-fourths their diameter. Tip of embolus semicircular (figs. 51, 52).



FIGS. 41-44. 41, 42. *Otiothops clavus*, new species. 41. Palp, ventral view. 42. Palp, retrolateral view. 43, 44. *O. facis*, new species. 43. Palp, ventral view. 44. Palp, retrolateral view.



FIGS. 45-48. 45, 46. *Otiotrops typicus* (Mello-Leitão). 45. Palp, ventral view. 46. Palp, retrolateral view. 47. *O. dubius* Mello-Leitão, vulva, dorsal view. 48. *O. fulvus* (Mello-Leitão), vulva, dorsal view.

*Female*. Total length 5.62, 5.87 mm. Carapace 2.25, 2.27 mm. long, 1.62, 1.66 mm. wide. Femur I 1.60, 1.62 mm. long, 0.77, 0.79 mm. high (syntypes). Carapace and eyes as in male. Spermathecae widest anteriorly (fig. 32).

*Material Examined*. Brazil: Pará: Cametá (MNHN), 2 ♂.

*Distribution*. Pará, Brazil (map 4).

*Otiotrops fulvus* (Mello-Leitão),  
new combination  
Figure 48; Map 4

*Iheringia fulva* Mello-Leitão, 1932, p. 68 (female holotype from Itatiaia, Rio de Janeiro, Brazil, in MNRJ, examined). Bonnet, 1957, p. 2295.

*Diagnosis*. *Otiotrops fulvus* is closest to *amazonicus* but may be distinguished by the spermathecae being widest posteriorly (fig. 48).

*Male*. Unknown.

*Female*. Total length 8.35 mm. Carapace 3.60 mm. long, 2.52 mm. wide. Femur I 2.66 mm. long, 1.19 mm. high (holotype). Cephalic area

sharply elevated. Posterior median eyes contiguous. Spermathecae widest posteriorly (fig. 48).

*Material Examined*. Only the holotype.

*Distribution*. Rio de Janeiro, Brazil (map 4).

*Otiotrops loris*, new species  
Figures 53-55; Map 4

*Types*. Male holotype and female paratype from Estirón, Rio Ampiyacu, Loreto, Peru (November 13-December 9, 1961; B. Malkin), deposited in AMNH.

*Etymology*. The specific name is from the Latin *loris* (whip) and refers to the shape of the tip of the embolus.

*Diagnosis*. *Otiotrops loris* is closest to *luteus* but may be distinguished by the whiplike tip of the embolus (fig. 54) and the medially widened spermathecae (fig. 55).

*Male*. Total length 3.74 mm. Carapace 1.91 mm. long, 1.33 mm. wide. Femur I 1.48 mm. long, 0.61 mm. high (holotype). Cephalic area moderately elevated. Posterior median eyes sepa-



MAP 4. Northern South America, showing distribution of *Otiothops loris* (closed upright triangle), *calcaratus* (open circle), *brevis* (open square), *amazonicus* (closed circle), *setosus* (open triangle), *gounellei* (open hexagon), *fulvus* (closed square), *luteus* (closed hexagon), and *birabeni* (closed inverted triangle).

rated by slightly less than their diameter. Tip of embolus whiplike (figs. 53, 54).

*Female*. Total length 5.58 mm. Carapace 2.27 mm. long, 1.62 mm. wide. Femur I 1.62 mm. long, 0.79 mm. high (paratype). Carapace and eyes as in male. Spermathecae widened medially (fig. 55).

*Material Examined*. Only the types.

*Distribution*. Loreto, Peru (map 4).

*Otiothops luteus* (Keyserling),  
new combination  
Figure 56; Map 4

*Itheringia lutea* Keyserling, 1891, p. 26, pl. 1, fig. 7 (female lectotype here designated from Blumenau, Santa Catarina, Brazil, in BMNH, examined). Roewer, 1942, p. 376. Bonnet, 1957, p. 2295.

*Itheringia lutea*: Mello-Leitão, 1927, p. 91, fig. 8.  
*Lapsus*.

*Diagnosis*. *Otiothops luteus* is closest to *loris* but may be distinguished by the more closely spaced spermathecae (fig. 56).

*Male*. Unknown.

*Female*. Total length 4.10 mm. Carapace 1.94 mm. long, 1.33 mm. wide. Femur I 1.30 mm. long, 0.61 mm. high (lectotype). Cephalic area sharply elevated. Posterior median eyes separated by four-fifths their diameter. Spermathecae approximate (fig. 56).

*Material Examined*. Only the lectotype.

*Distribution*. Santa Catarina, Brazil (map 4).

*Note*. Keyserling's other syntype, an immature specimen from Rio Grande, Rio Grande do Sul [?], Brazil, does not appear to belong to this species, judging by the eye arrangement.

*Otiothops birabeni* Mello-Leitão  
Figures 57, 58; Map 4

*Otiothops birabeni* Mello-Leitão, 1945, p. 228, fig. 4 (male holotype from Aguapey, Corrientes, Argentina, in MLP, examined).

*Diagnosis*. *Otiothops birabeni* is a distinctive species easily recognizable by the abruptly narrowed tip of the embolus (fig. 58).

*Male*. Total length 4.43 mm. Carapace 1.91 mm. long, 1.33 mm. wide. Femur I 1.30 mm. long, 0.59 mm. high (holotype). Cephalic area sharply elevated. Posterior median eyes contiguous. Tip of embolus abruptly narrowed (figs. 57, 58).

*Female*. Unknown.

*Material Examined*. Only the holotype.

*Distribution*. Corrientes, Argentina (map 4).

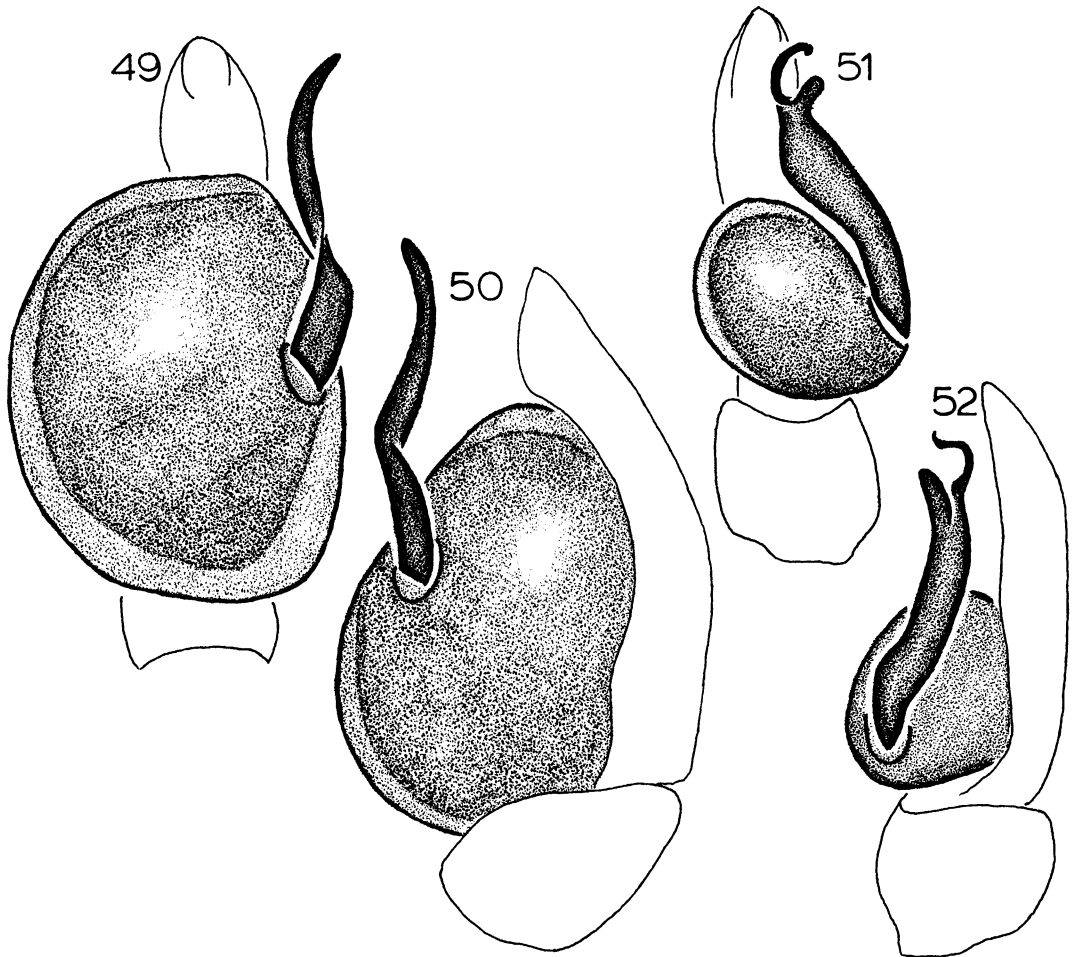
*Otiothops calcaratus* Mello-Leitão  
Figures 59, 60, 64; Map 4

*Otiothops calcaratus* Mello-Leitão, 1927, p. 89, fig. 2 (male holotype from Bogotá, Cundinamarca, Colombia, in MNHN, examined). Roewer, 1942, p. 377. Bonnet, 1958, p. 3218.

*Diagnosis*. *Otiothops calcaratus* is closest to *brevis* but may be distinguished by the straight embolus (fig. 59) and the elongate spermathecae (fig. 64).

*Male*. Total length 6.91 mm. Carapace 3.46 mm. long, 2.66 mm. wide. Femur I 2.46 mm. long, 1.24 mm. high (holotype). Cephalic area sharply elevated. Posterior median eyes separated by their diameter. Embolus straight (figs. 59, 60).

*Female*. Total length 7.45 mm. Carapace 3.92 mm. long, 2.77 mm. wide. Femur I 2.59 mm.



FIGS. 49-52. 49, 50. *Otiotrops inflatus*, new species. 49. Palp, ventral view. 50. Palp, retrolateral view. 51, 52. *O. amazonicus* Simon. 51. Palp, ventral view. 52. Palp, retrolateral view.

long, 1.22 mm. high (one specimen). Carapace and eyes as in male. Spermathecae elongate (fig. 64).

*Material Examined.* Colombia: Cundinamarca: Páramo de Monserrate, Nov., 1968-Mar., 1969 (H. Sturm, AMNH), 1 ♀, Barber trap.

*Distribution.* Cundinamarca, Colombia (map 4).

*Otiotrops brevis* Simon  
Figures 61-63; Map 4

*Otiotrops brevis* Simon, 1892, p. 459 (male and female syntypes from Caracas [Distrito Federal] and San Esteban [Carabobo], Vene-

zuela, in MNHN, examined). Mello-Leitão, 1927, p. 88, fig. 3. Roewer, 1942, p. 377. Bonnet, 1958, p. 3218.

*Diagnosis.* *Otiotrops brevis* is closest to *calcaratus* but may be distinguished by the curved embolus (fig. 62) and short spermathecae (fig. 63).

*Male.* Total length 3.02 mm. Carapace 1.51 mm. long, 1.15 mm. wide. Femur I 1.12 mm. long, 0.50 mm. high (syntype). Cephalic area sharply elevated. Posterior median eyes contiguous. Embolus curved (figs. 61, 62).

*Female.* Total length 4.17 mm. Carapace 1.98 mm. long, 1.33 mm. wide. Femur I 1.22 mm. long, 0.58 mm. high (syntype). Carapace and

eyes as in male. Spermathecae short, separated (fig. 63).

*Material Examined.* Only the syntypes.

*Distribution.* Carabobo and Distrito Federal, Venezuela (map 4).

*Otiotrops setosus* Mello-Leitão  
Figures 65-67; Map 4

*Otiotrops setosus* Mello-Leitão, 1927, p. 90, fig. 4 (one female and two male syntypes from Serra Communitaty, Pernambuco, Brazil, in MNHN, examined). Roewer, 1942, p. 377. Bonnet, 1958, p. 3218.

*Diagnosis.* *Otiotrops setosus* is closest to *gounellei* but may be distinguished by the doubly pointed embolus (fig. 65) and the thin spermathecae (fig. 67).

*Male.* Total length 6.34, 6.55 mm. Carapace 2.63, 2.76 mm. long, 1.73, 1.79 mm. wide. Femur I 2.20, 2.21 mm. long, 0.90, 1.01 mm. high (syntypes). Cephalic area moderately elevated. Posterior median eyes separated by one-third

their diameter. Embolus with two points (figs. 65, 66).

*Female.* Total length 7.34 mm. Carapace 3.32 mm. long, 2.23 mm. wide. Femur I 2.38 mm. long, 1.09 mm. high (syntype). Carapace and eyes as in male. Spermathecae with two thin branches (fig. 67).

*Material Examined.* Only the syntypes.

*Distribution.* Pernambuco, Brazil (map 4).

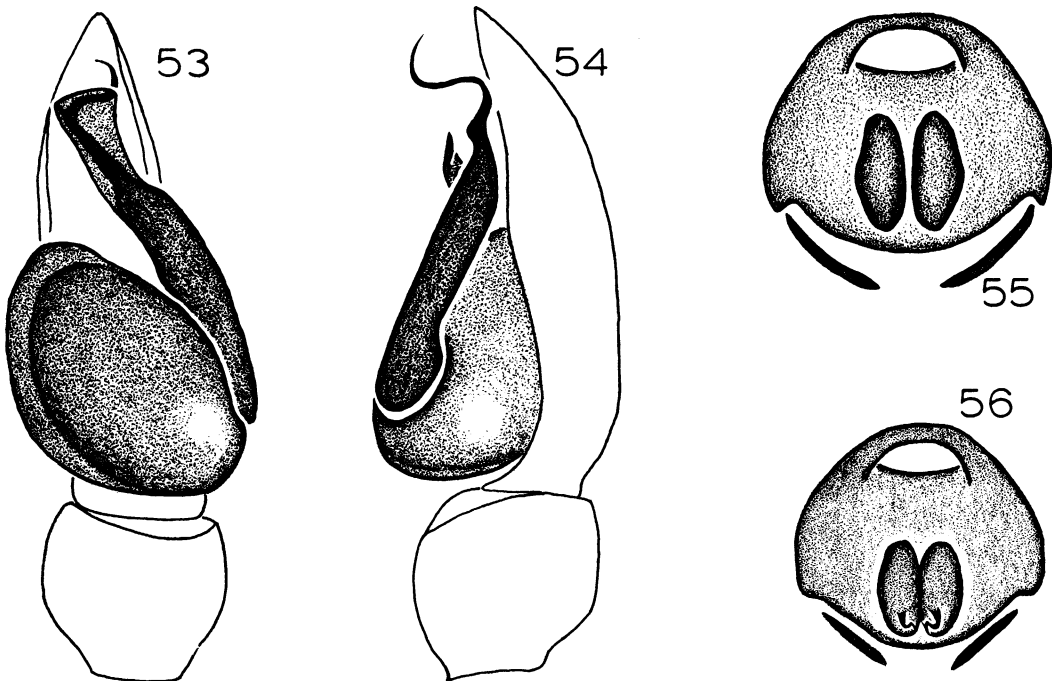
*Otiotrops gounellei* Simon  
Figure 68; Map 4

*Otiotrops gounellei* Simon, 1887, p. 275 (female holotype from Salobro, Bahia, Brazil, in MNHN, examined). Mello-Leitão, 1927, p. 88. Roewer, 1942, p. 377. Bonnet, 1958, p. 3218.

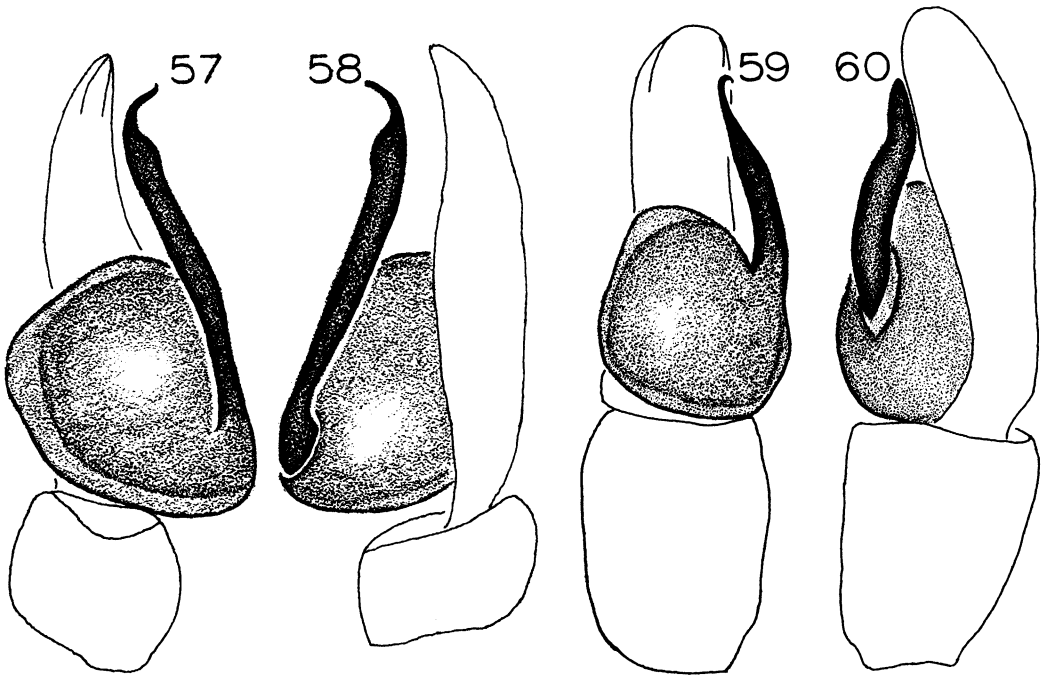
*Diagnosis.* *Otiotrops gounellei* is closest to *setosus* but may be distinguished by the thick spermathecae (fig. 68).

*Male.* Unknown.

*Female.* Total length 6.48 mm. Carapace 3.17 mm. long, 2.14 mm. wide. Femur I 2.20 mm.



FIGS. 53-56. 53-55. *Otiotrops loris*, new species. 53. Palp, ventral view. 54. Palp, retrolateral view. 55. Vulva, dorsal view. 56. *O. luteus* (Keyserling), vulva, dorsal view.



FIGS. 57-60. 57, 58. *Otiothops birabeni* Mello-Leitão. 57. Palp, ventral view. 58. Palp, retrolateral view. 59, 60. *O. calcaratus* Mello-Leitão. 59. Palp, ventral view. 60. Palp, retrolateral view.

long, 1.01 mm. high (holotype). Cephalic area sharply elevated. Posterior median eyes separated by one-fifth their diameter. Spermathecae thick (fig. 68).

*Material Examined.* Only the holotype.

*Distribution.* Bahia, Brazil (map 4).

#### ANISAEDUS SIMON

*Anisaedus* Simon, 1893a, p. 405, figs. 361, 365 (type species by original designation *Anisaedus gaujoni* Simon).

*Compsopus* Tullgren, 1905, p. 25, pl. 2, fig. 6 (type species by monotypy *Compsopus rufus* Tullgren). NEW SYNONYMY.

*Diagnosis.* Species belonging to *Anisaedus* may be distinguished from *Otiothops* by the widely spaced posterior median eyes (fig. 84) and from *Fernandezina* by the dorsally expanded femur I (fig. 81).

*Description.* As in the subfamily except for the following: Total length 5.5-10.1 mm. Cephal-

ic area sharply elevated. Posterior median eyes separated by three times their diameter. Chelicerae with stridulating tubercles on lateral margins. Sternum with two recurved elevations posteriorly (fig. 82). Femur I often with prolateral tubercles (fig. 81), always expanded dorsally. Claw tufts absent. Abdominal scutum restricted to anterior one-fifth of abdomen.

*Synonymy.* Similarities in the eye arrangement, the sternal elevations, the structure of femur I, the shared absence of claw tufts, and the genitalic structure of *rufus* and the other *Anisaedus* indicate that the maintenance of a separate genus for that species is unwarranted.

*Discussion.* Both *Anisaedus aethiopicus* Tullgren and *A. levii* Chickering belong to as yet undetermined genera of Chediminae. The four known species of *Anisaedus* fall into two groups. In *gaujoni* and *stridulans* the embolus bears three distinct points, whereas in *rufus* and *pellucidus* the embolus bears a translucent ventral flange. For the reasons explained in the introduction, a



key is provided only to males. Females unaccompanied by males are best identified by direct comparison with the figures of the internal genitalia and by geography.

KEY TO MALES OF *ANISAEDUS*

- 1. Embolus with three distinct points distally, without a translucent flange (figs. 69, 73) . . . . . 2
- Embolus with one or two distinct points distally, with a translucent flange (figs. 75, 76) . . . . . 3
- 2. Prolateral point of embolus straight (fig. 73) . . . . . *stridulans*
- Prolateral point of embolus bent prolaterally (fig. 69) . . . . . *gaujoni*
- 3. Translucent flange of embolus pointed proximally (fig. 76) . . . . . *pellucidus*
- Translucent flange of embolus pointed distally (fig. 75) . . . . . *rufus*

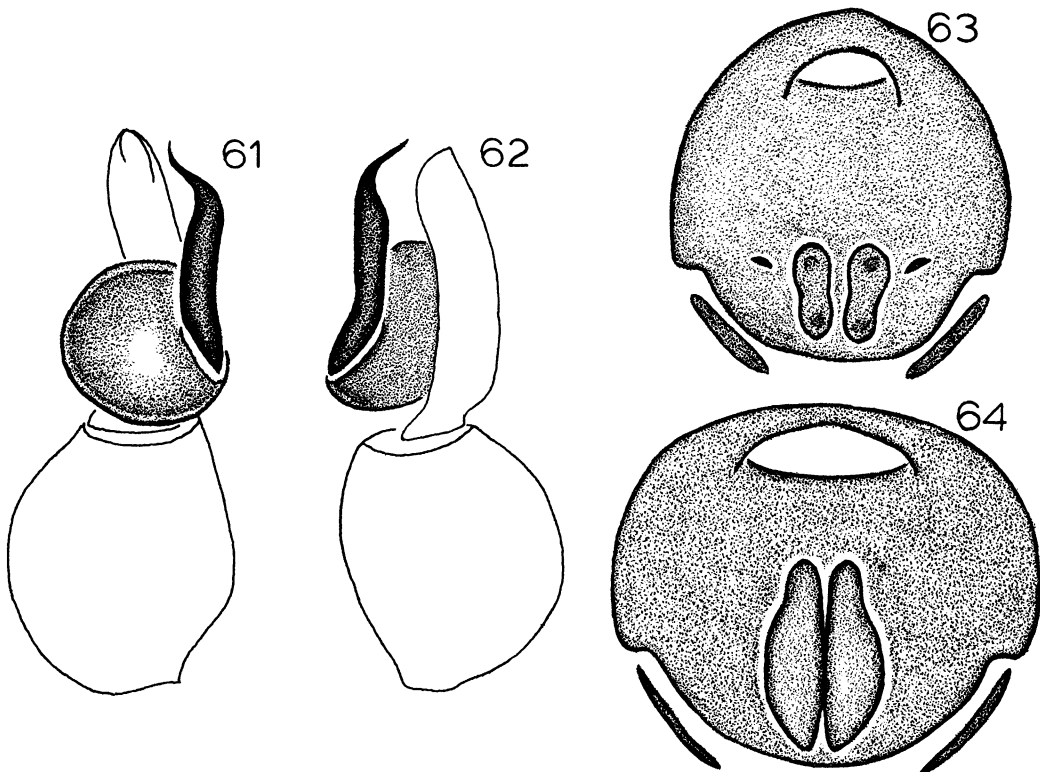
*Anisaedus gaujoni* Simon

Figures 69-71; Map 5

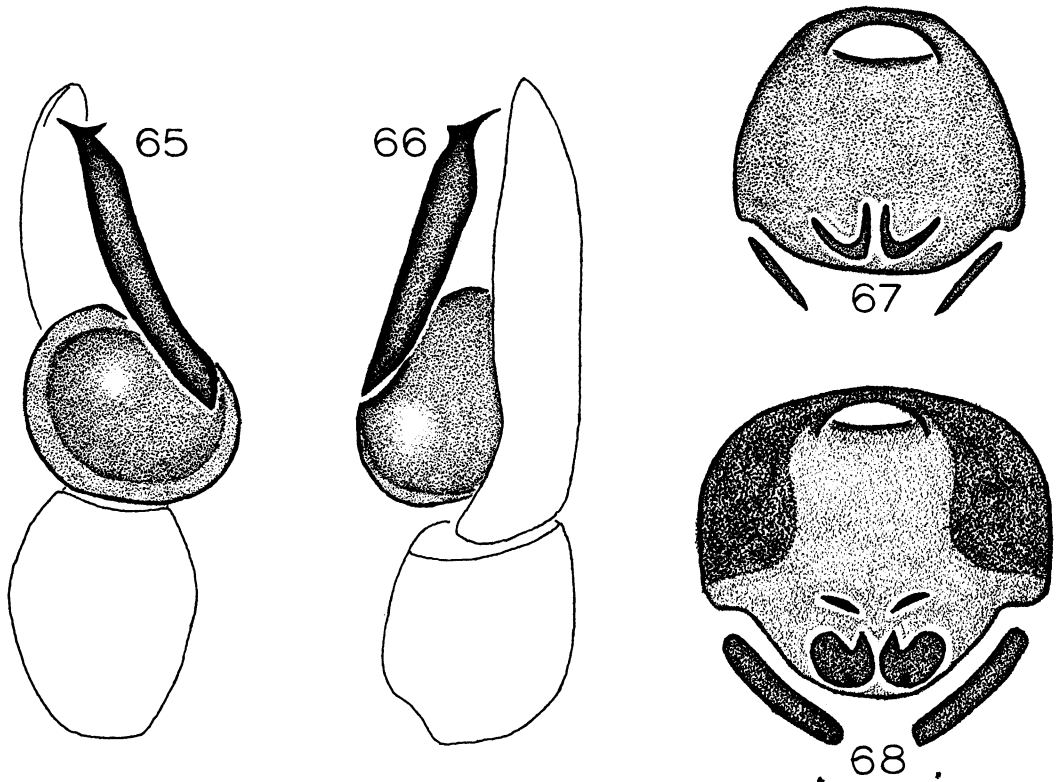
*Anisaedus gaujoni* Simon, 1893a, p. 405, figs. 361, 365 (one male and two female syntypes from Amaluza, Ecuador, in MNHN, examined). Simon, 1893b, p. 314. Mello-Leitão, 1927, p. 87, fig. 7. Roewer, 1942, p. 375. Bonnet, 1955, p. 327.

*Diagnosis.* *Anisaedus gaujoni* is closest to *stridulans* but may be distinguished by the bent prolateral point of the embolus (fig. 69) and the narrow spermatheca (fig. 71).

*Male.* Total length 5.51, 7.99 mm. Carapace 3.13, 3.67 mm. long, 2.38, 2.88 mm. wide. Femur I 2.02, 2.77 mm. long, 0.86, 1.15 mm. high (two specimens). Femur I with distal prolateral tuberculate knob. Palp with long setae prolaterally; embolus with three distal points; prolateral point bent (figs. 69, 70).



FIGS. 61-64. 61-63. *Otiotrops brevis* Simon. 61. Palp, ventral view. 62. Palp, retrolateral view. 63. Vulva, dorsal view. 64. *O. calcaratus* Mello-Leitão, vulva, dorsal view.



FIGS. 65-68. 65-67. *Otiotrops setosus* Mello-Leitão. 65. Palp, ventral view. 66. Palp, retro-lateral view. 67. Vulva, dorsal view. 68. *O. gounellei* Simon, vulva, dorsal view.

*Female*. Total length 6.98, 7.52 mm. Carapace 2.88, 3.24 mm. long, 2.27, 2.52 mm. wide. Femur I 2.09, 2.41 mm. long, 0.90, 1.12 mm. high (syntypes). Femoral tubercles reduced. Spermatheca narrow (fig. 71).

*Material Examined*. Peru: Piura: Quebrada Mogollón, June 18, 1942 (H. Exline, WBP), 1 ♂.

*Distribution*. Ecuador and northern Peru (map 5).

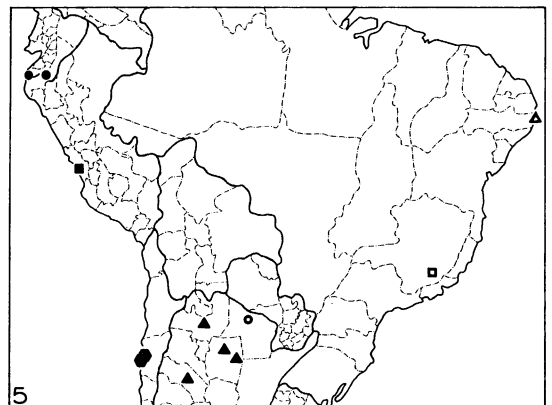
*Anisaedus stridulans* González

Figures 73, 74; Map 5

*Anisaedus stridulans* González, 1956, p. 76, figs. 1-12 (male holotype and female allotype from Pachacamac, Lima, Peru, in INS, destroyed).

*Diagnosis*. *Anisaedus stridulans* is closest to *gaujoni* but may be distinguished by the straight pro-lateral point of the embolus (fig. 73).

*Male*. Total length 5.90 mm. Carapace 3.20



MAP 5. Northern South America, showing distribution of *Anisaedus gaujoni* (closed circles), *stridulans* (closed square), *pellucidus* (hexagons), and *rufus* (closed triangles); and of *Fernandezina pulchra* (open circle), *acuta* (open triangle), and *pelta* and *divisa* (open square).

mm. long, 2.56 mm. wide. Femur I 2.20 mm. long, 1.04 mm. high (one specimen). Femur I with distal prolateral tuberculate knob. Palp with long setae prolaterally; embolus with three distal points, prolateral point straight (figs. 73, 74).

*Female.* Unavailable; described by González (1956).

*Material Examined.* Peru: Lima: Quebrada Verde, elevation 200-300 m., Aug., 1948 (W. K. Weyrauch, AMNH), 1 ♂.

*Distribution.* Lima, Peru (map 5).

*Anisaedus rufus* (Tullgren), new combination  
Figures 72, 75; Map 5

*Compsopus rufus* Tullgren, 1905, p. 26, pl. 2, fig. 6 (female holotype from Salta, Salta, Argentina, in NRS, examined). Roewer, 1942, p. 376. Bonnet, 1956, p. 1197.

*Anisaedus argentinus* Mello-Leitão, 1942, p. 390, fig. 3 (male and female syntypes from Luján, Santiago del Estero, Argentina, in MLP, examined). NEW SYNONYMY.

*Diagnosis.* *Anisaedus rufus* is closest to *pel-*

*lucidas* but may be distinguished by the distally pointed translucent flange of the embolus (fig. 75) and the wider tip of the spermatheca (fig. 72).

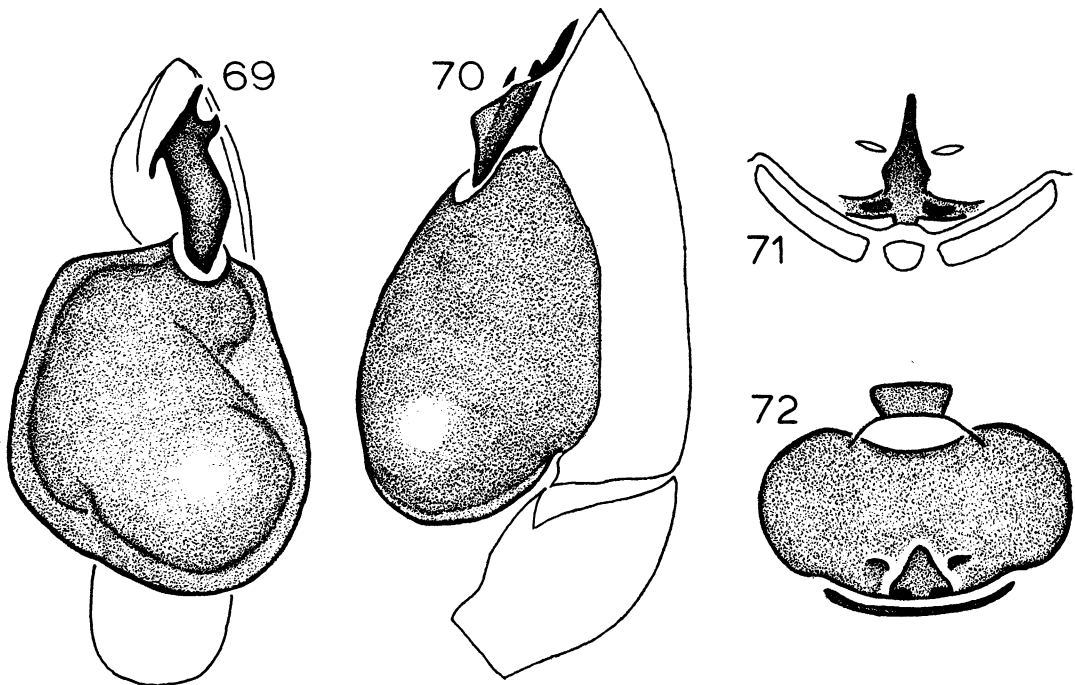
*Male.* Total length 7.09, 7.88 mm. Carapace 3.35, 3.55 mm. long, 2.52, 2.88 mm. wide. Femur I 2.84, 3.20 mm. long, 1.12, 1.18 mm. high (two specimens), Femur I without pronounced prolateral tubercles. Palp without long prolateral setae. Embolus with distally pointed proximal translucent flange (fig. 75).

*Female.* Total length 7.70-10.04 mm. Carapace 2.77-4.43 mm. long, 2.02-3.28 mm. wide. Femur I 1.98-3.28 mm. long, 0.86-1.26 mm. high (three specimens). Femur I as in male. Palp with long prolateral setae. Genitalia as in figure 72.

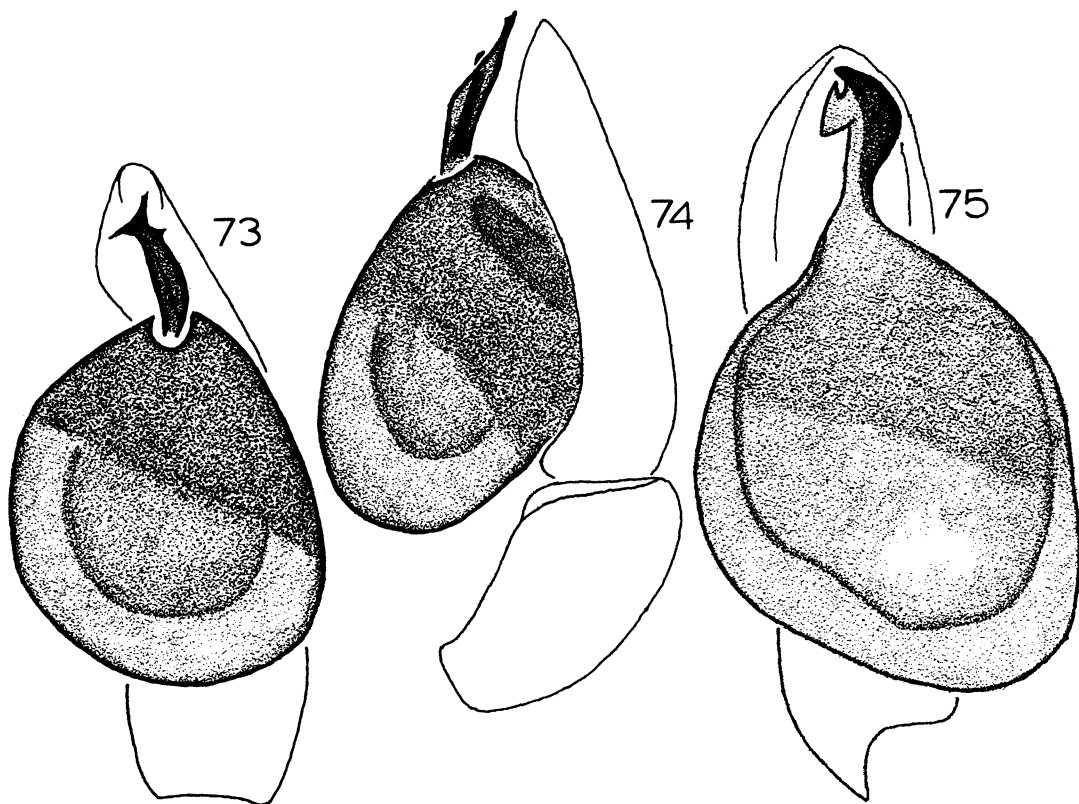
*Material Examined.* Argentina: La Rioja: Ascha (MACN), 1 ♂; Santiago del Estero: Quimilí (MB), 1 ♀.

*Distribution.* Northern Argentina (map 5).

*Synonymy.* Although the female syntype of *argentinus* is somewhat larger than the holotype of *rufus*, they show no genitalic differences.



FIGS. 69-72. 69-71. *Anisaedus gaujoni* Simon. 69. Palp, ventral view. 70. Palp, retrolateral view. 71. Vulva, dorsal view. 72. *A. rufus* (Tullgren), vulva, dorsal view.



FIGS. 73-75. 73, 74. *Anisaedus stridulans* González. 73. Palp, ventral view. 74. Palp, retro-lateral view. 75. *A. rufus* (Tullgren), palp, ventral view.

***Anisaedus pellucidus*, new species**

Figures 76-79, 81-84; Map 5

*Types.* Male holotype from Quebrada de Hueso, east of Taltal, Antofagasta, Chile (January 28-February 4, 1941; J. Bird) and female paratype from Quebrada San Ramón, Antofagasta, Chile (February 6, 1942; J. Bird), deposited in AMNH.

*Etymology.* The specific name is from the Latin *pelluceo* (shine through) and refers to the translucent flange of the embolus.

*Diagnosis.* *Anisaedus pellucidus* is closest to *rufus* but may be distinguished by the proximally pointed translucent flange of the embolus (fig. 76) and the narrower tip of the spermatheca (fig. 79).

*Male.* Total length 5.51, 6.44 mm. Carapace 2.92, 3.60 mm. long, 2.20, 2.81 mm. wide. Femur I 2.63, 3.13 mm. long, 0.90, 1.22 mm. high

(two specimens). Femur I with pronounced pro-lateral tubercles. Palp with long prolateral setae. Embolus with proximally pointed proximal translucent flange (figs. 76, 77).

*Female.* Total length 7.63 mm. Carapace 3.64 mm. long, 3.23 mm. wide. Femur I 2.77 mm. long, 1.19 mm. high (paratype). Femoral tubercles reduced. Palp without long prolateral setae. Genitalia as in figures 78, 79.

*Material Examined.* Chile: Atacama: Río Copiapó, June 13, 1968 (L. Peña, MCZ), 1 ♂.

*Distribution.* Northern Chile (map 5).

**FERNANDEZINA BIRABEN**

*Fernandezina* Birabén, 1951, p. 545, figs. 1-3 (type species by original designation *Fernandezina pulchra* Birabén).

*Note.* Unfortunately, neither of the unique types of the two previously described species of

*Fernandezina* have been available for study. Consequently, a key to species is omitted and the generic diagnosis and description given below is limited to characters shown by the three available species.

**Diagnosis.** Species belonging to *Fernandezina* may be easily recognized by the dorsally unexpanded femur I (fig. 85) and the elongate abdominal scutum of males (fig. 80, but see comment on *Fernandezina birabeni*).

**Description.** As in the subfamily except for the following: Total length 2.1-3.1 mm. Cephalic area moderately elevated. Posterior median eyes separated by one and one-half or more times their diameter. Lateral and posterior sternal tubercles enlarged. Femur I unexpanded dorsally (fig. 85). Claw tufts absent. Abdominal scutum of males elongated, covering three-fourths of dorsum (fig. 80).

*Fernandezina pulchra* Birabén

Map 5

*Fernandezina pulchra* Birabén, 1951, p. 546, figs.

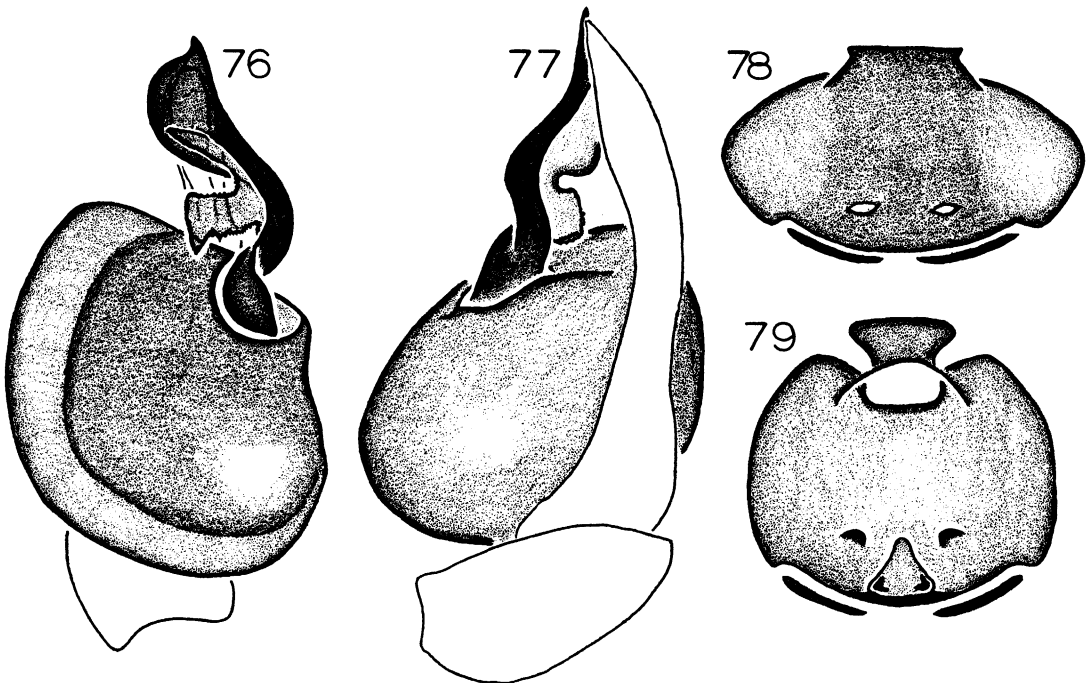
1-3 (male holotype from Laguna Yema, Formosa, Argentina, originally in MB, may now be among unsorted material from that collection in MLP, unavailable).

Although no specimens of this species have been available for study, Birabén's excellent illustrations leave no doubt that the three new species described below are congeneric with *pulchra*.

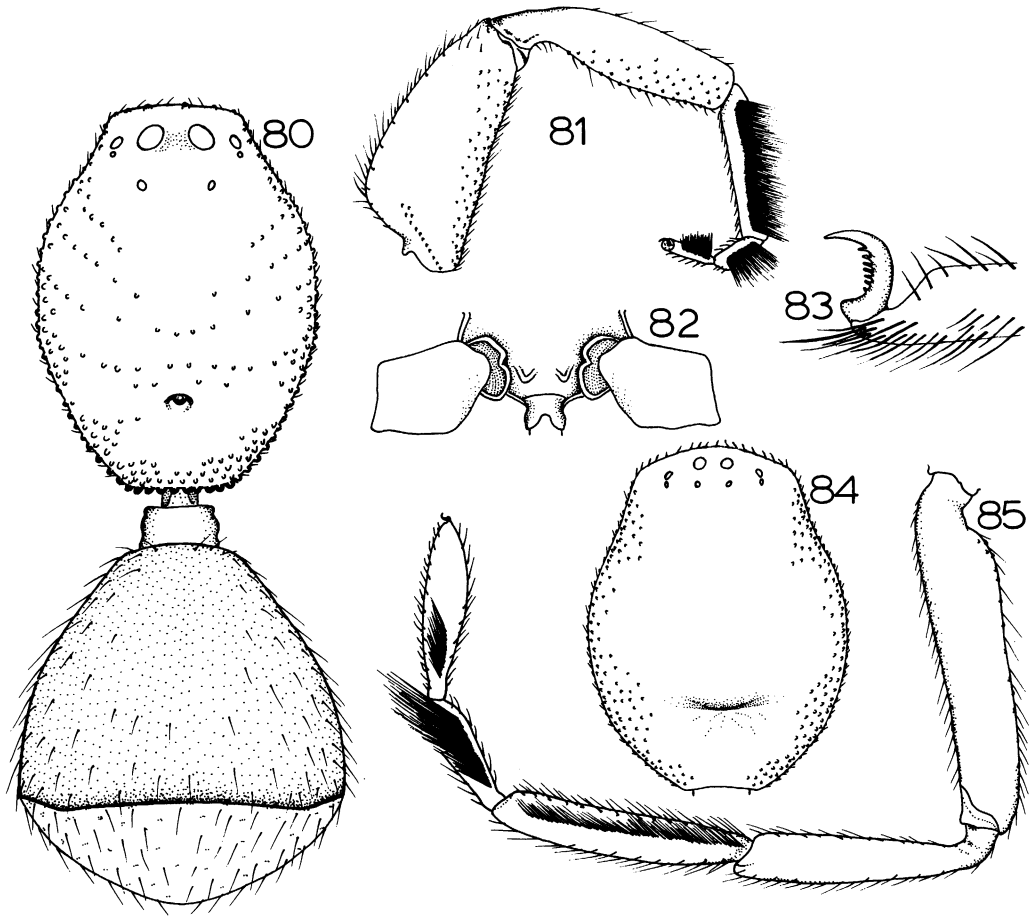
*Fernandezina birabeni* Zapfe

*Fernandezina birabeni* Zapfe, 1961, p. 141, figs. 1-7 (male holotype and female paratype from Quebrada de La Plata, Santiago, Chile, may be in the Centro de Investigaciones Zoológicas, Santiago, unavailable).

Zapfe's indication that the male of *Fernandezina birabeni* does not have an elongated abdominal scutum makes it seem likely that the species actually belongs to *Anisaedus* or *Otiotrops*. For this reason the type locality has not been mapped and the species has not been included in figure 94.



FIGS. 76-79. *Anisaedus pellucidus*, new species. 76. Palp, ventral view. 77. Palp, retrolateral view. 78. Abdominal scutum, ventral view. 79. Vulva, dorsal view.



FIGS. 80-85. 80, 85. *Fernandezina pelta*, new species, 80. Body, dorsal view. 85. Left leg I, prolateral view. 81-84. *Anisaedus pellucidus*, new species. 81. Left leg I, prolateral view. 82. Sternum and coxae IV, ventral view. 83. Tarsus IV, lateral view. 84. Carapace, dorsal view.

***Fernandezina pelta*, new species**

Figures 80, 85-89; Map 5

*Types.* Male holotype and female paratype from Viçosa, Minas Gerais, Brazil (July 6, 1933; Hambleton), deposited in AMNH.

*Etymology.* The specific name is from the Latin *pelta* (shield) and refers to the shieldlike abdominal scutum.

*Diagnosis.* *Fernandezina pelta* is a distinctive species easily recognizable by the prolaterally widened embolus (fig. 86) and large, rounded spermathecae (fig. 89).

*Male.* Total length 2.16 mm. Carapace 1.15 mm. long, 0.83 mm. wide. Femur I 1.08 mm. long, 0.22 mm. high (holotype). Posterior me-

dian eyes separated by three times their diameter. Embolus widened prolaterally, with basal ridge (figs. 86, 87).

*Female.* Total length 3.06 mm. Carapace 1.33 mm. long, 0.98 mm. wide. Femur I 1.33 mm. long, 0.29 mm. high (paratype). Eyes as in male. Genitalia as in figures 88, 89.

*Material Examined.* Only the types.

*Distribution.* Minas Gerais, Brazil (map 5).

***Fernandezina acuta*, new species**

Figures 20, 90, 91; Map 5

*Types.* Male holotype and female paratype from Recife, Pernambuco, Brazil (no date or collector), deposited in NMS.

*Etymology.* The specific name is from the Latin *acutus* (pointed) and refers to the shape of the embolus.

*Diagnosis.* *Fernandezina acuta* is a distinctive species easily recognizable by the folded lateral ridge of the embolus (fig. 90) and the small, round spermathecae (fig. 20).

*Male.* Total length 2.95 mm. Carapace 1.37 mm. long, 0.96 mm. wide. Femur I 1.37 mm. long, 0.29 mm. high (holotype). Posterior median eyes separated by one and one-half times their diameter. Embolus sharply pointed, with folded retrolateral ridge (figs. 90, 91).

*Female.* Total length 2.92, 3.02 mm. Carapace 1.24, 1.30 mm. long, 0.90, 0.97 mm. wide. Femur I 1.22, 1.33 mm. long, 0.36, 0.38 mm. high (two specimens). Eyes as in male. Genitalia as in figure 20.

*Material Examined.* Brazil: Pernambuco: Recife (NMS), 1 ♀.

*Distribution.* Pernambuco, Brazil (map 5).

***Fernandezina divisa*, new species**

Figures 92, 93; Map 5

*Type.* Male holotype from Viçosa, Minas Gerais, Brazil (May 12, 1930; Hambleton), deposited in AMNH.

*Etymology.* The specific name is from the Latin *divido* (divide) and refers to the apically divided embolus.

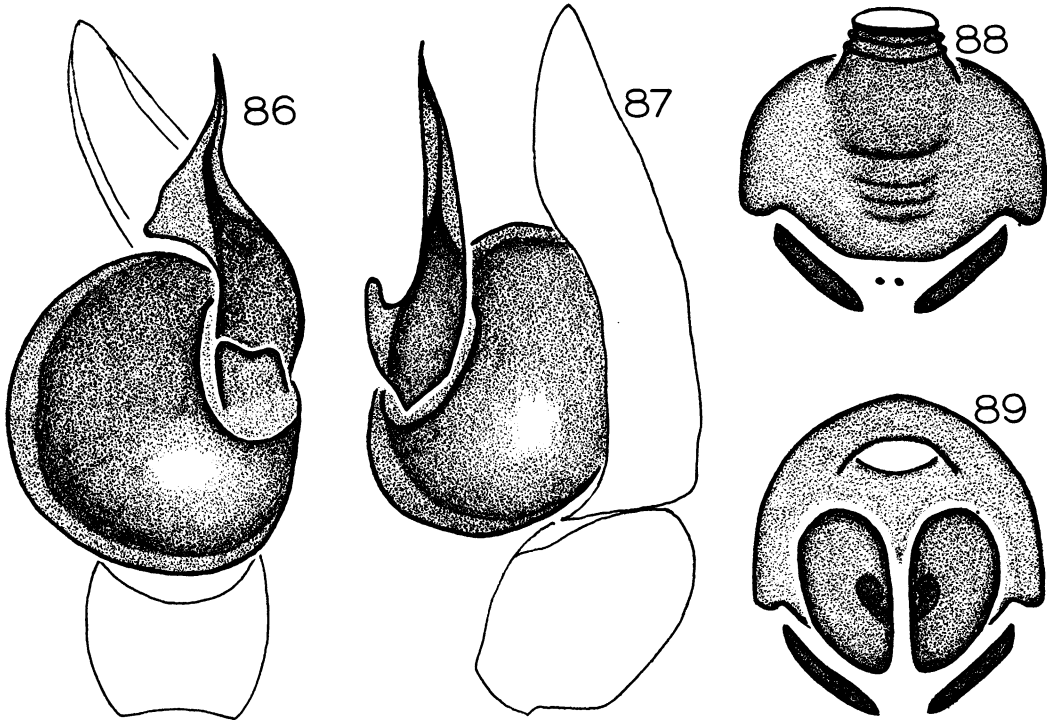
*Diagnosis.* *Fernandezina divisa* is a distinctive species easily recognizable by the apically divided embolus (fig. 92).

*Male.* Total length 2.12 mm. Carapace 1.04 mm. long, 0.79 mm. wide. Femur I 1.03 mm. long, 0.23 mm. high (holotype). Posterior median eyes separated by three times their diameter. Embolus acutely bent, divided apically (figs. 92, 93).

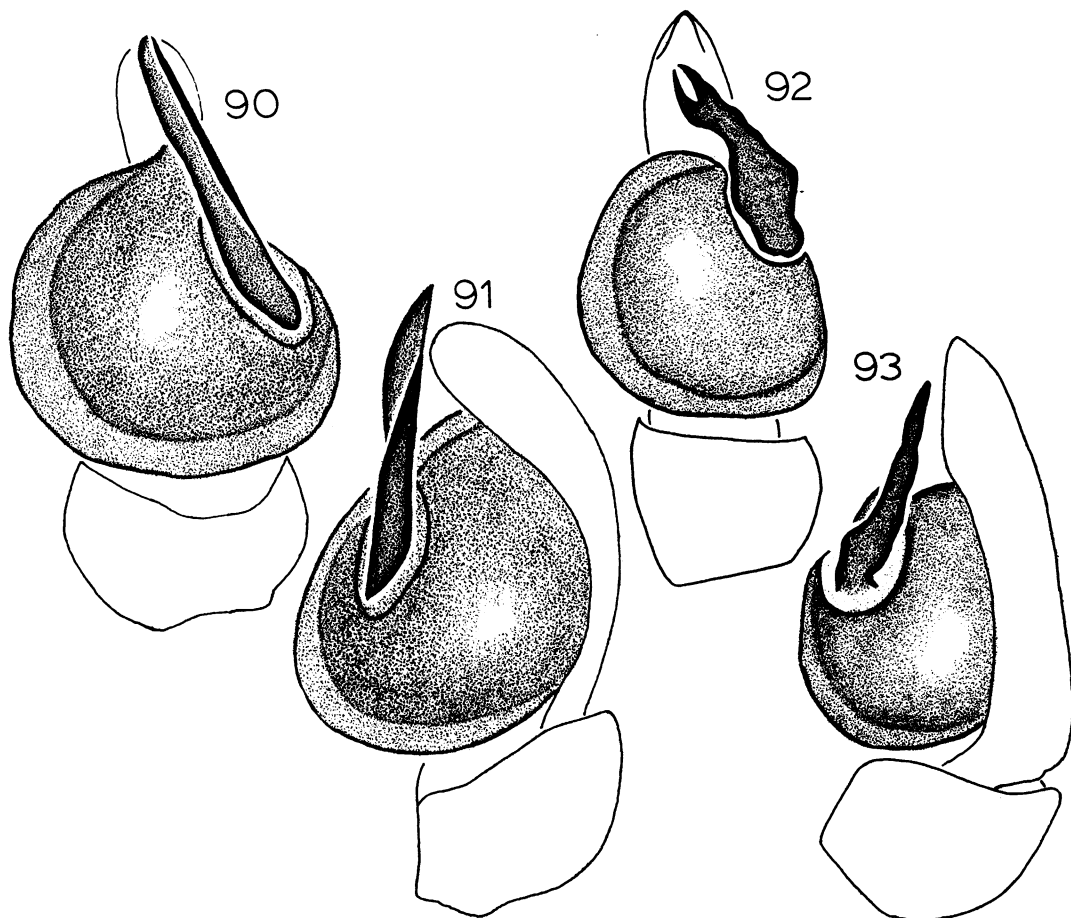
*Female.* Unknown.

*Material Examined.* Only the holotype.

*Distribution.* Minas Gerais, Brazil (map 5).



FIGS. 86-89. *Fernandezina pelta*, new species. 86. Palp, ventral view. 87. Palp, retrolateral view. 88. Abdominal scutum, ventral view. 89. Vulva, dorsal view.



FIGS. 90-93. 90, 91. *Fernandezina acuta*, new species. 90. Palp, ventral view. 91. Palp, retrolateral view. 92, 93. *F. divisa*, new species. 92. Palp, ventral view. 93. Palp, retrolateral view.



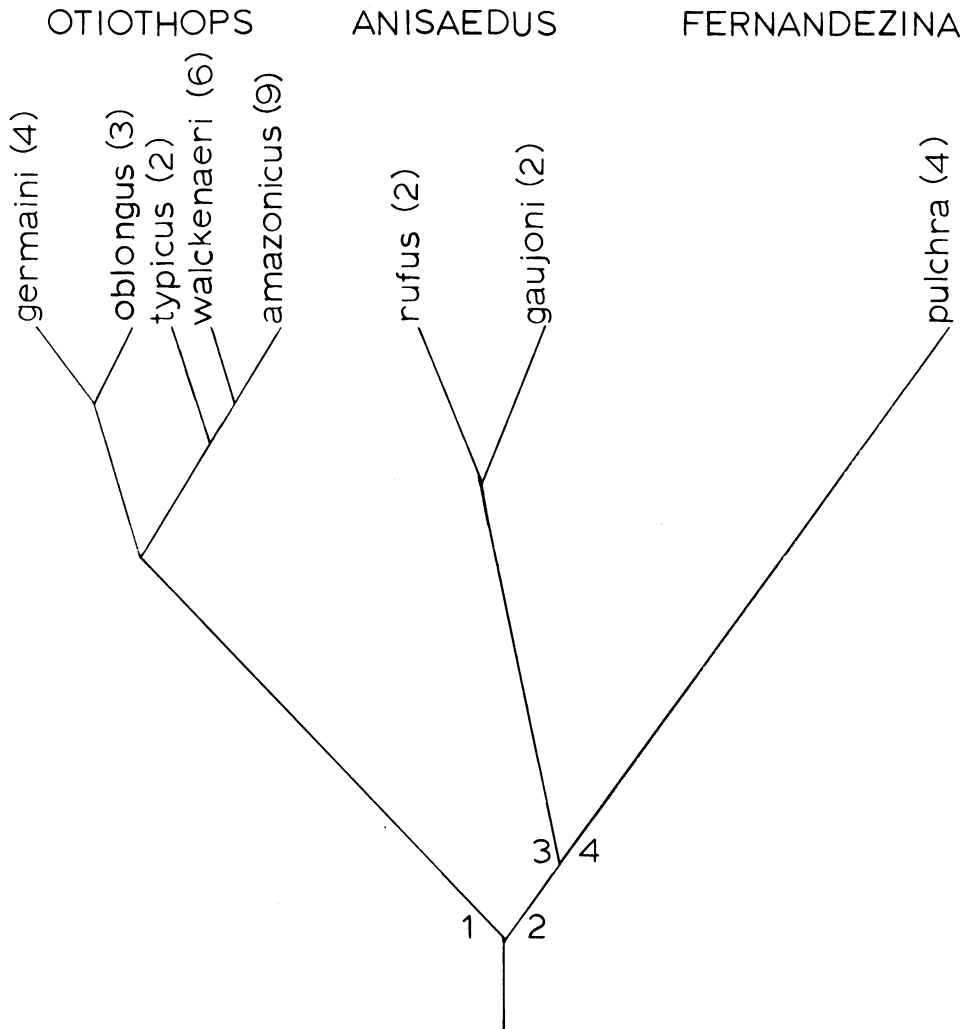


FIG. 4. Possible phylogeny of the genera and species groups of Otiiothopinae. Numbers in parentheses give the number of species in each group. Numbers at base refer to the acquisition of derived characters (see Introduction).

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