

ON *NOTOCHAETA* (DIPTERA, SARCOPHAGIDAE) WITH
DESCRIPTIONS OF FIVE NEW SPECIES

H. DE SOUZA LOPES

Nine species of Notochaeta, five of them proposed as new species (napoensis, flavipes, huixtlaensis, affinis and setifrons) were described and figured. Mostly of the species were obtained from the Amazon Region of Peru and Ecuador; one species was collected in Mexico and the paratype of N. panamensis Dodge was redescribed. The typical material belongs to the collections of the Biosystematics Research Institute, Ottawa and "Museu Nacional", Rio de Janeiro.

The species of *Notochaeta* from the Amazon Region of Ecuador and Peru are well represented in the Collection of the Biosystematics Research Institute, Ottawa, Canada and the study of this material is important to the knowledge of the geographic distribution of the species living in the entire Amazon Region. Besides the new species, one species described from Southern Brazil and another with large distribution from Mexico to the Brazilian Amazon were found. A new species from Mexico was proposed and *Notochaeta panamensis* Dodge was redescribed, based on a paratype. The species studied belong to the *aurata* and *comata* groups. The bionomy of *N. aurata* (Townsend) is known, the larvae living on Oligochaetae; the first instar larva of *N. distincta* Lopes, belonging to the *comata* group, is very similar to that of *aurata*. However, the first instar larva of *N. fumipennis* Lopes (Lopes, 1945, figs. 24, 25) is entirely different, demonstrating that the groups, based on chaetotaxy, are artificial groups.

Notochaeta fumipennis Lopes, 1945.
(Figs. 1 to 13)

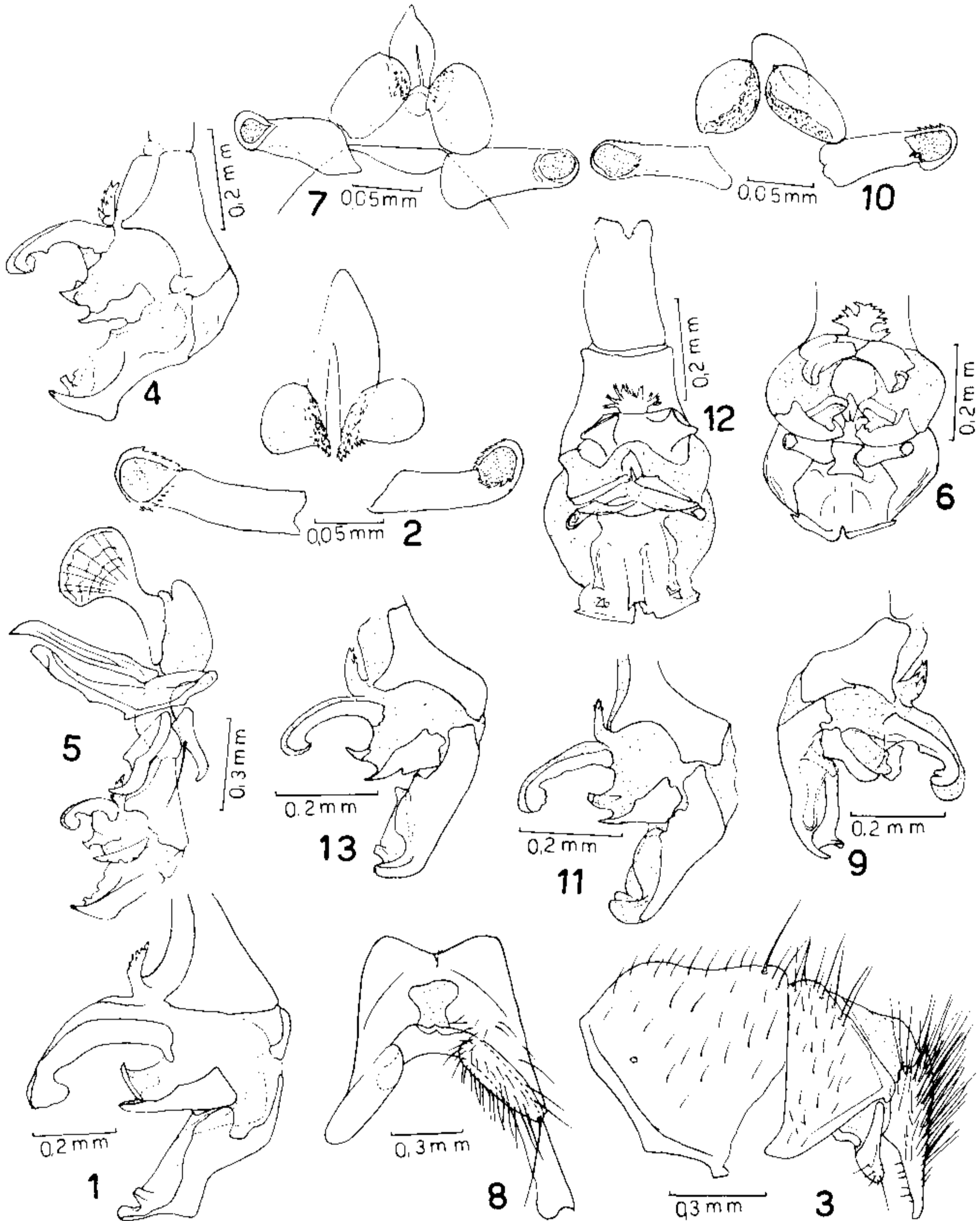
Notochaeta fumipennis Lopes, 1945:525, figs. 24-30 (Brazil, Rio de Janeiro, Parana).

Diagnosis: three postdorsocentral bristles spaced for three: two pairs of post-intralateral bristles (*aurata* group); ocellar bristles differentiated; no proclinate frontorbitals; thorax not metallic; preacrostichals not differentiated; preapical (discal) scutellar bristles present, inserted before the level of hind pair of marginals; apical bristles absent; legs

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Academia Brasileira de Ciências, Caixa Postal 229, 20000 Rio de Janeiro, RJ, Brazil.

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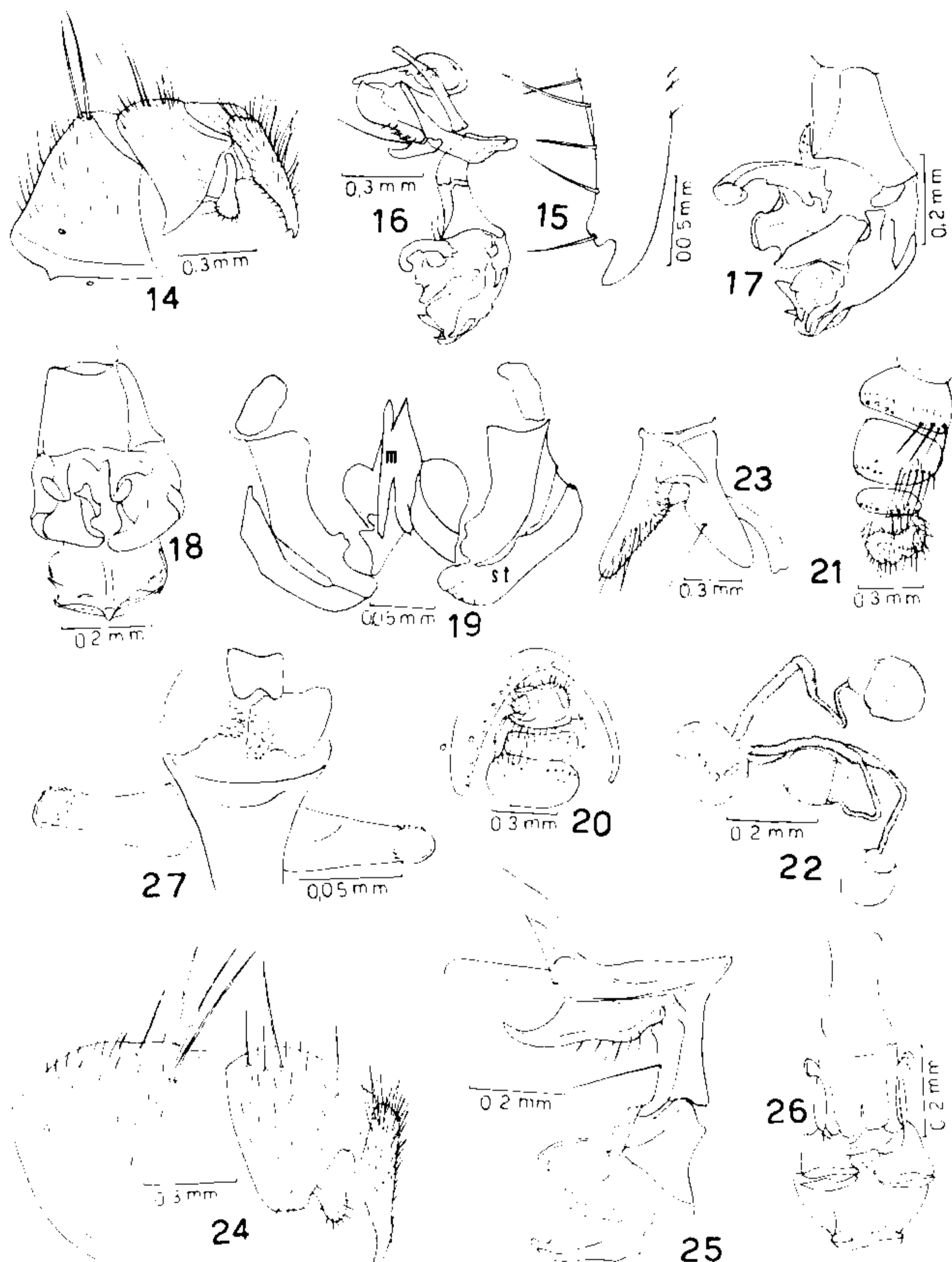
Notochaeta fumipennis Lopes, holotypo male. — Fig. 1: apex of penis, lateral view; fig. 2: glans. Males from Coca. — Fig. 3: genitalia; fig. 4: apex of penis, lateral view; fig. 5: phallic organs; fig. 6: apex of penis, ventral view; fig. 7: glans; fig. 8: fifth sternite; fig. 9: apex of penis, lateral view; fig. 10: glans; fig. 11: apex of penis, lateral view; fig. 12: idem, ventral view; fig. 13: idem, lateral view.

black, apical plate of paraphallus with membranous lobes (fig. 1); genital segments brown, first with small marginal bristles (fig. 3).

Ten males, Coca, Napo River, Ecuador, 14-22, 25-30. IV. 65, showing the characters of *fumipennis*, including the male genitalia; they were compared with the holotype from Rio de Janeiro. The spines of the median process of the glans are more developed

and the shape of the apical plate show some variations. Four specimens from Ecuador were figured (figs. 3 to 13) and present a considerable variation in the flies from the same locality; they were considered similar to the holotype. The structures of the penis are the same, only the membranous lobes are more or less developed and the dorsal profile is, sometimes, arcuate. All studied material belongs to the Biosystematics Research Institute.

Notochaeta napoensis n. sp.
(Figs. 14 to 22)



Notochaeta napoensis n.sp., holotype, male. - Fig. 14: genital segments; fig. 15: apex of cercus; fig. 16: phallic organs; fig. 17: apex of penis, lateral view; fig. 18: idem, ventral view; fig. 19: glans (np = median process, st = stylus). Female, paratype. - Fig. 20: genitalia; fig. 21: genital sternites; fig. 22: spermathecae. *Notochaeta flavipes* n.sp., holotype, male. - Fig. 23: fifth sternite; fig. 24: genital segments; fig. 25: phallic organs; fig. 26: penis, ventral view; fig. 27: glans.

Diagnosis: with the same characters of *fumipennis*, but abdominal sternites with a single pair of marginal bristles, apical plate largely membranous (fig. 17), cerci pointed and curved at apices; first genital segment of male with robust bristles; glans composed of double rods styli (fig. 19). Differs from *bufonivora* Lopes & Vogelsang, 1953 (Venezuela, Panama and Brazil) by having second abdominal sternite with small marginal bristles and by details of the male genitalia, including broader apical plate and different shapes of lateral plates and ventralia, the cerci being very similar.

Male, length: 6-7 mm. Head, including posterior orbits, slightly yellowish, back of head gray, frontalia velvety black, cheeks grooves pollinose, anteriorly reddish; front about 0,29 of head width; 8-9 frontal bristles, superior 1-2 directed backwards, two bristles inserted below base of antenna, reclinate frontorbital bristle with about the size of superior frontal bristle; ocellar bristles smaller than small frontals or having the same size; post-oculars a little smaller than ocellars; postverticals about the size of the scarcely differentiated outer verticals; back of head with superior black hairs and only a row of black hairs laterally, besides the post-ocular setae; postgena with pale hairs, gena with black hairs; parafacialia with about 0,33 of the distance between vibrissae and with few minute hairs; facial ridges with hairs above vibrissae, but there are sparse minute hairs occupying the inferior half; antenna grayish brown, somewhat reddish on base of third segment, reaching about 0,88 of the distance to vibrissa, second segment about 0,21 of third, arista long plumose to tip, palpi reddish brown with long hairs.

Thorax yellowish pollinose, prescutellar bristles moderate, first post-dorsocentral inserted near suture, a little shorter than second; proepisternum with sparse brown hairs; 3 bristles on katepisternum, middle one very slender, almost on same level; 8-9 bristles on meron. Wings with brown and yellow brown veins, R4+5 with hairs on about 3/4 of the distance to cross vein; costal spine not differentiated. Legs black, middle tibia without ventral bristle, hind tibia with ventral bristle dislocated to anterior side.

Abdomen with yellowish pollinosity, more intense on fifth tergite, a small median pair of bristles on third tergite, strong bristles on fourth tergite, sternites with moderately long brown hairs and a pair of small marginal bristles from second to fourth sternites; genital segments brown, first with two pairs of marginal bristles, second with some bristly hairs dorsally; surstyli rounded apically, cerci with slightly curved apices, excised in front (figs. 14, 15); sternite IX small, palpi genitalium with a series of conspicuous hairs on base (fig. 16); apical plate largely membranous (figs. 17, 18), glans with complicate styli (fig. 19).

Female, length: 6-8 mm. Front about 0,3 of head width; superior proclinate frontorbital bristle a little longer than inferior one, reclinate bristle shorter than the others; outer vertical bristle about 2/3 of inner one, antenna reaching about 0,86 of the distance to vibrissa, second segment about 0,39 of third; one specimen with 7 mm present only 2 bristles on katepisternum; sternites II to V with one or two pairs of small bristles; genital sternites with marginal rows, interrupted on middle; anal tergite represented by a pair of hairy plates (figs. 20, 21).

Holotype male, paratypes: one male, three females, Coca, Napo R., Ecuador, V. 1965, 250 m, L. Pena.

Notochaeta flavipes n.sp.
(Figs. 23 to 27)

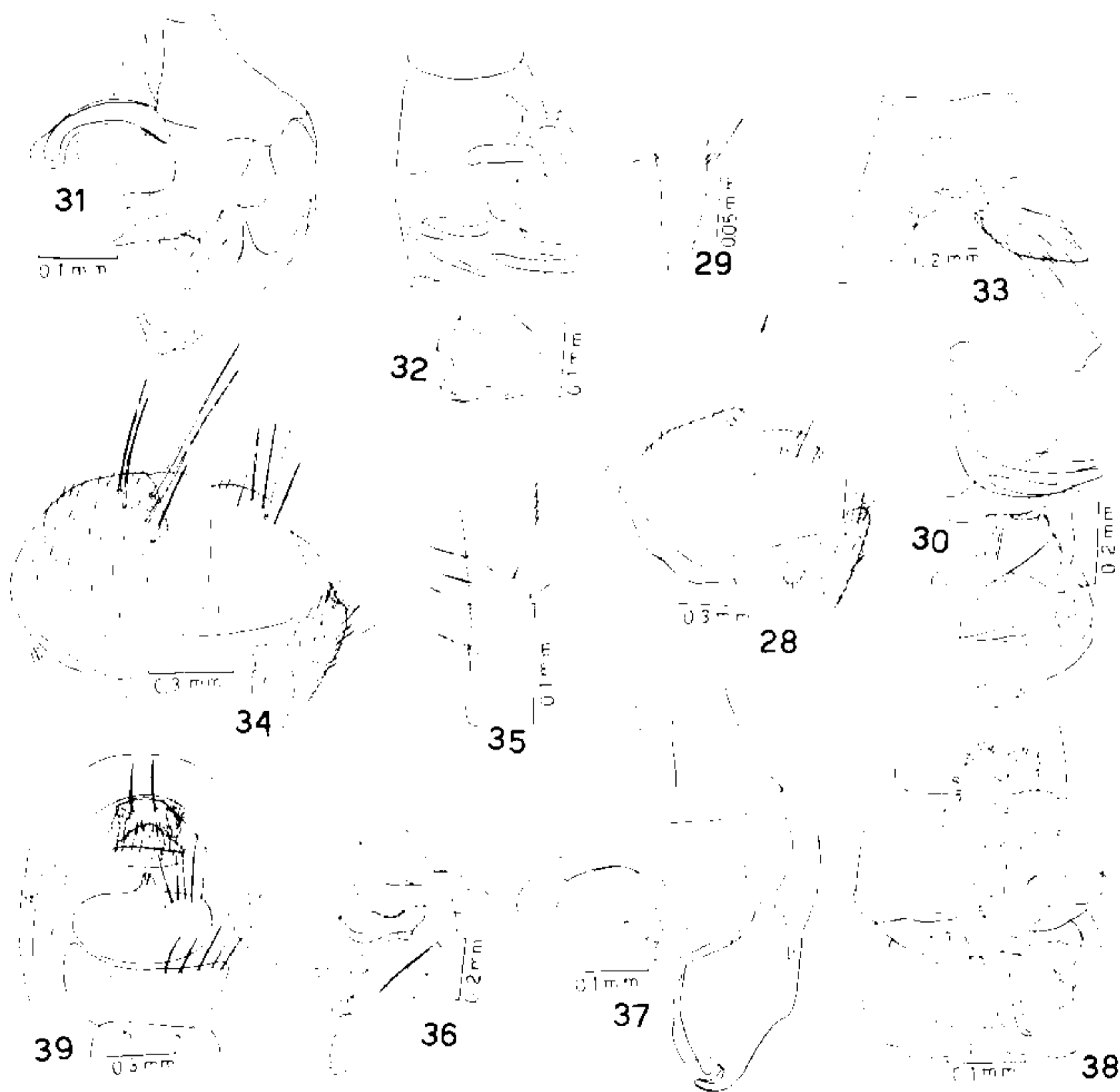
Diagnosis: with the same characters of *fumipennis* but legs yellow; besides the marginal bristles of the abdominal sternites, there are also discal bristles on second and third sternites; fifth tergite red, genital segments yellow.

Male, length: 8-9 mm. Differs from *napoensis* by having: head yellow, back of head yellowish gray, frontalia gray, reddish anteriorly; front about 0,21 of head width;

9-11 frontal bristles, superior one reclinate; ocellar bristles slender; more than one row of black hairs laterally on back of head; postgena with few black hairs anteriorly; parafacialia with about 0.5 of the distance between vibrissae; facial ridges with hairs only near vibrissa; antenna gray, base of third and basal segments reddish brown, reaching about 0.86 of the distance to vibrissa, second segment about 0.4 of third, arista long plumose above only on basal 2/3; palpi yellowish brown.

Thorax with small prescutellar bristles; first post-dorsocentral bristle with about the same size of second one; middle bristle of katapisternum inserted a little below others; costal spine scarcely differentiated. Legs yellow, tarsi and apical stripe on femora brown.

Abdomen black, fifth tergite red or reddish brown; the median longitudinal black stripe from second to fourth tergite is absent on fifth, median marginal bristles of fourth tergite not differentiated; sternites with sparse moderately long hairs, second and third with conspicuous marginal and discal small bristles; fifth with a pair of long slender bristles (fig. 23); genital segments yellow, first with 2-3 pairs of small marginal bristles; cerci curved on apices, surstyli short (fig. 24); apical plate of paraphallus with membranous apex, ventralia curved (figs. 25, 26); glans very similar to that of *fumipennis* but the connection to the apical plate is well sclerotized (fig. 27).



Notochaeta panamensis Dodge, paratype, male. — Fig. 28: genital segments; fig. 29: apex of cercus; fig. 30: phallic organs; fig. 31: apex of penis, lateral view; fig. 32: idem, ventral view. *Notochaeta huixtlaensis* n.sp., holotype, male. — Fig. 33: fifth sternite; fig. 34: genital segments; fig. 35: apex of cercus; fig. 36: phallic organs; fig. 37: apex of penis, lateral view; fig. 38: idem, ventral view. Female, paratype. — Fig. 39: genitalia.

Holotype and paratype, males, Cuenca, 2.200 m, Azuay, Ecuador, 10-20. III. 1965, L. Pena.

Notochaeta panamensis Dodge, 1968.
(Figs. 28 to 32)

Notochaeta panamensis Dodge, 1968: 441, figs. 57, 61, 62.

Diagnosis: with the characters of *fumipennis* but smaller size, abdominal sternites with erect small bristles, apical plate, ventralia and spiny lobe of ventralia showing different shapes.

Male first genital segment with two pairs of bristles and some bristly hairs on margin; cerci slightly curved, excised in front, surstyli rounded distally (figs. 28, 29). Apical plate of paraphallus largely membranous with an apical curved apophysis; lateral plates well sclerotized; ventralia with elongate arms, anomalous in the specimen examined, styli conspicuous, with terminal spines (figs. 30-32). Some differences between the drawings of Dodge and the genitalia examined, were noted. The second apophysis of the apex of apical plate and the shape of the ventralia seems somewhat different. In the specimen studied the ventralia is anomalous having a right arm directed to the left side (fig. 32). However I think that the figures of Dodge were based on dry specimen.

Redescription based on male paratype, Barro Colorado I., Canal Zone, Panama, 9. VII. 56 (not VIII), n^o 2110, C.W. & M.F. Rettenmeyer, "from over swarm of *Eciton vagans*".

Notochaeta huixtlaensis n. sp.
(Figs. 33 to 39)

Diagnosis: with the characters of *fumipennis* but abdominal sternites without bristles, covered with dense hairs; third abdominal tergite with median marginal bristles.

Male, length: 9 mm. Differs from *napoensis* as follows: head yellow, back of head yellowish gray; cheek grooves reddish brown; front about 0,17 of head width; 11-14 frontal bristles, all directed inwards, superior one a little backwards; white hairs on back of head limited to a few ones below neck; parafacialia about 0,28 of the distance between vibrissae; facial ridges with hairs on lower third; antenna reaching about 0,86 of the distance to vibrissa, second segment about 0,4 of third.

Thorax very slightly yellowish pollinose, prescutellar bristle long; proepisternum with few hairs on center; middle bristle of katepisternum only a little shorter than others; 7-8 bristles on meron.

Abdomen bluish black with gray pollinosity, median marginal bristles on third tergite well developed; sternites II and III with long, dense hairs; IV with moderately long hairs, fifth sternite broad (fig. 33); genital segments reddish brown, first with marginal and discal bristles, second with some small dorsal bristles, cerci almost straight (figs. 34, 35); sternite IX moderately developed (fig. 36); apical plate of paraphallus well sclerotized, with apical curved apophysis, lateral plates conspicuous, ventralia shortened, membranous median lobe of ventralia composed of two lobes (figs. 36-38), styli small, median process composed of a pair of rounded processes (fig. 38).

Female, length: 8 mm. Front about 0,29 of head width, anterior proclinate frontorbital bristle a little stronger than posterior one; second antennal segment about 0.43 of third; genital tergite slender, sternite VIII with a median sclerotized projection, sternite IX well sclerotized, with small bristles, anal tergite represented by a pair of bristles.

Holotype, male, paratypes, male and female, Mexico, Chis (Chiaspas), 17 mi N Huixtla, 3. VI. 1969, W.R.M. Mason.

Notochaeta affinis n. sp.
(Figs. 40 to 45)

Diagnosis: with the characteristics of *fumipennis* but ocellar bristles well developed, a pair of strong proclinate frontorbital bristles; apical plate of paraphallus with two apical apophyses (fig. 43). Differs from *frontalis* Dodge by having marginal bristles on abdominal sternites and by various structures of the male genitalia.

Male, length: 6 mm. Difers from *napoensis* as follows: frontalia reddish gray, cheek grooves reddish; front about 0,28 of head width; 7 frontal bristles, superior one directed backwards; ocellar bristles stronger than frontals, postvertical bristles smaller than ocellars; outer vertical bristle about one third of inner one; back of head with two irregular rows of black hairs, the remaining hairs pale; gena with sparse black hairs; parafacialia about 0,21 of the distance between vibrissae; facial ridges with hairs on inferior fourth; antenna very large, reaching about 0,93 of the distance to vibrissa, second segment about 0,15 of third which is very broad; palpi slender.

Thorax gray, slightly yellowish pollinose; prescutellar very small; proepisternum with few sparse hairs; meron with 5 bristles.

Abdomen uniformly yellowish pollinose, no median marginal bristles on third tergite; sternite II with some moderately long pile, III and IV with decumbent sparse hairs; genital segments brown, first with a pair of marginal bristles, second with some bristly long hairs; cerci curved at apex (figs. 40, 41); sternite IX small (fig. 42); apical plate sclerotized, with two pairs of apical apophyses, lateral plates conspicuous (figs. 43, 44); styli somewhat curved, median process composed of a pair of rounded plates and a median plate (fig. 45).

Holotype, male, Avispas, Madre de Dios, Peru, 1-15.X.1962, L. Pena, 400 m.

Notochaeta distincta Lopes, 1947.
(Figs. 46 to 53)

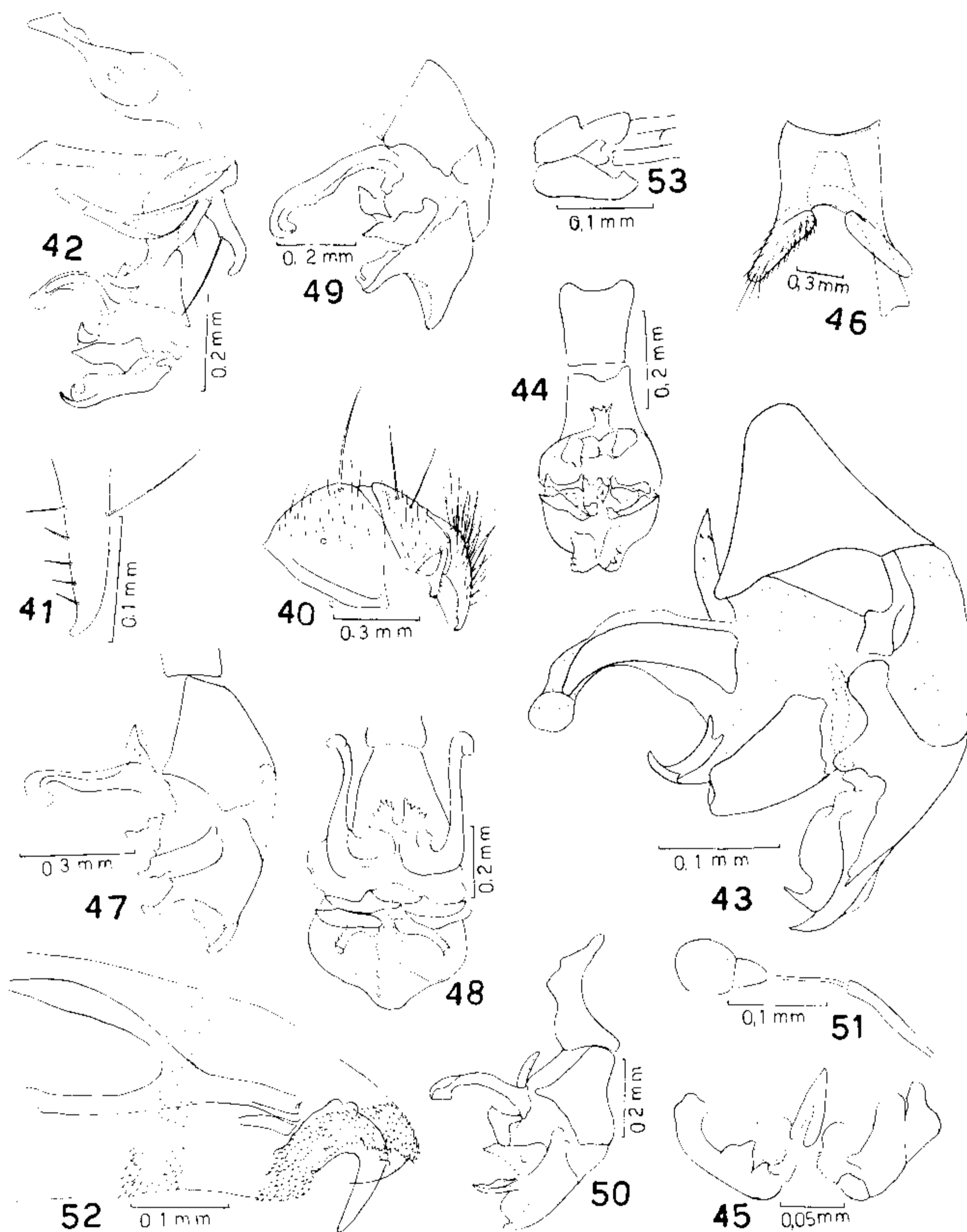
Notochaeta distincta Lopes, 1947 :378, figs. 4-8 (male, female, Brazil, Amazon).

Diagnosis: three post-dorsocentral bristles, one post-intralalar (*comata* group), male without proclinate frontorbital bristles, 3 bristles on katepisternum, ocellar bristles well developed, apical plate of paraphallus with a median and two lateral apophyses (figs. 47, 48); cerci gently curved on apex (Lopes, 1947, fig. 4).

This species differs from *comata* Aldrich, in the chaetotaxy, mostly by having the first post-dorsocentral bristle inserted behind the middle of the distance from suture to second post-dorsocentral. In *comata* Aldrich, *uniseta* Lopes, *setifrons* n.sp., *sinopi* Lopes & Tibana and *palpalis* Dodge the first dorsocentral bristle is inserted near suture.

Small differences were observed in the apical plate of paraphallus in the specimens from Quincemil, Peru (figs. 47, 48), Coca, Ecuador (fig. 49) and Chiaspas, Mexico (fig. 50).

First instar larvae were obtained from a female collected in Pompeya, Ecuador showing, like *aurata* (Townsend) (see Lopes, 1945, figs. 47-49, 51, 54) a condensed ring of spines on anterior margin of first thoracic segment and maxillae strongly curved (figs. 52, 53). A new figure of the spermatheca is published (fig. 51)

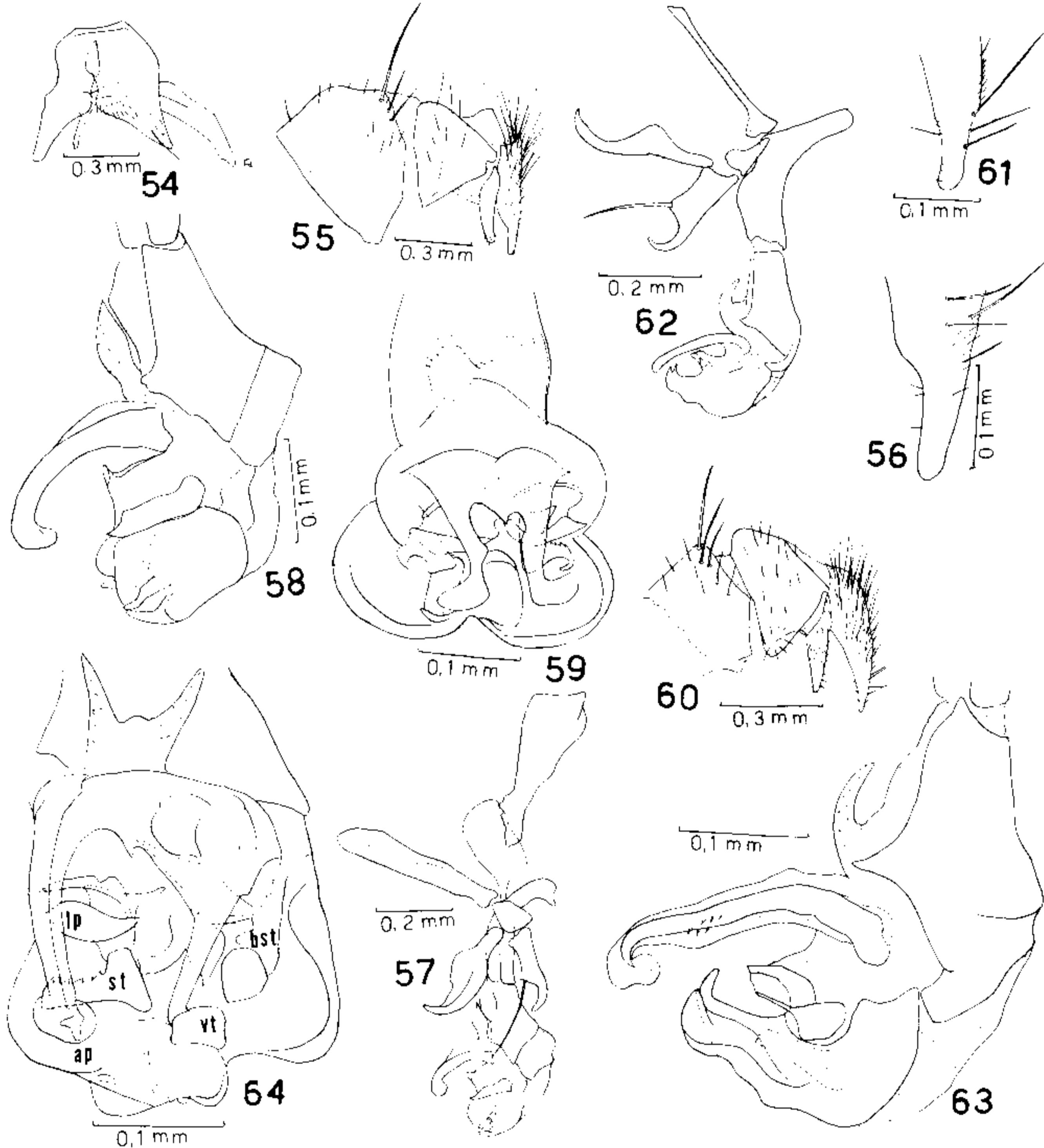


Notochaeta affinis n.sp., holotype, male. — Fig. 40: genital segments; fig. 41: apex of cercus; fig. 42: phallic organs; fig. 43: apex of penis, lateral view; fig. 44: idem, ventral view; fig. 45: glans. *Notochaeta distincta* Lopes, male, Pompeya. — Fig. 46: fifth sternite; fig. 47: apex of penis, lateral view; fig. 48: idem, ventral view. Male, Coca. — Fig. 49: apex of penis, lateral view. Male, Vera Cruz. — Fig. 50: apex of penis, lateral view. Female, Pompeya. — Fig. 51: spermatheca. First instar larva, Pompeya. — Fig. 52: anterior end, lateral view; fig. 53: mandible and maxillae, dorsal view.

Geographical distribution: Mexico, Peru, Ecuador, Brazil (Amazon).

Material examined: five males, 8 females, Coca, Napo R., Ecuador, 12-30. IV 1965, 250 m, L. Pena; 3 males, 2 females, Cumbaratza, Zamora, Ecuador, 30-31. III.

1965, 700 m, L. Pena; 2 males, Jumboe Riv., Zamora, Ecuador, 1-2. IV. 1965, 1200 m, L. Pena; 2 males, 10 females, Pompeya, Napo R., Pastaza, Ecuador, 14-22. V. 1965, L. Pena; male, female, Rio Frio, Balao, Chico, Ecuador, 26-30. IV. 1965, L. Pena; male, 9 females, Avispas, Madre de Dios, Peru, 1-15. X. 62, L. Pena, 400 m; male, Quincemil, Cuzco, Peru, 1-15. XI. 1962, L. Pena, 700 m; male, Mexico, Ver. 19. VI. 1969, U. Mex. Biol. Res., Sontecomapan, 400 ft, W.R.M. Mason; female, Jet. Hays. 190-195, Chiaspas, Mex. 6. VI. 1969, H.F. Howden.



Notochaeta uniseta Lopes, — Fig. 54: fifth sternite; fig. 55: genital segments; fig. 56: apex of cercus; fig. 57: phallic organs; fig. 58: apex of penis, lateral view; fig. 59: idem, ventral view. *Notochaeta setifrons* n.sp., holotype, male. — Fig. 60: genital segments; fig. 61: apex of cercus; fig. 62: phallic organs; fig. 63: apex of penis, lateral view; fig. 64: idem, ventral view (ap = apical plate, bst = base of stylus, lp = lateral plate, st = stylus, vt = ventralia)

Notochaeta uniseta Lopes, 1950.
(Figs. 54 to 59)

Notochaeta uniseta Lopes, 1950: 357, figs. 8-10 (Banos, Ecuador).

Diagnosis: with the characters of *distincta* but with a single bristle on katepisternum, prescutellar bristle absent, apical plate of paraphallus rounded apically. Differs from *monochaeta* Dodge by the absence of prescutellar bristle.

Male, length: 8-8,5 mm. Front about 0,21 of head width, antenna reaching about 0,84 of the distance to vibrissa, second segment about 0,48 of third; parafacialia about 0,31 of the distance between vibrissae.

The specimens examined were considered as belonging to *uniseta* based on a single male collected also in Banos, in spite the broader front, shorter antenna and narrower parafacialia. There are, also some small differences in the apex of apical plate of paraphallus between the holotype and the specimens now studied. However, all belong to the same species. New figures are presented (figs. 54-59) in order to complete the characterization of this interesting species, very curious by its elongate body and legs.

Two males, Ecuador, Tunguragua, Banos, 1965, L. Pena, 2-4. VII.

Notochaeta setifrons n. sp.
(Figs. 60 to 64)

Diagnosis: with the characters of *distincta* but reduced in size, male with two pairs of proclinate frontorbital bristles, two bristles on katepisternum, ocellar bristles small, apical plate of paraphallus mostly membranous, with 2 curved apophyses on each side; lateral plates reduced, ventralia elongated.

Male, length: 4,5 mm. Differs from *napoensis* as follows: head gray pollinose with slightly yellowish tinge; frontalia reddish gray; front about 0,28 of head width; 5 frontal bristles, all directed inwards, one bristle inserted below base of antenna, the proclinate frontorbital bristles longer than reclinate one and with about the same size of the outer vertical bristles which measure about 2/3 of inner one; ocellar and postcellar bristles smaller than smallest frontal bristle; back of head with scarce black hairs and some pale hairs around neck and below; parafacialia with about 0,26 of the distance between vibrissae, hairs of the facial ridges limited to near vibrissa; antenna reaching about 0,89 of the distance to vibrissa, second segment about 0,32 of third, which is yellowish gray.

Thorax very slightly yellowish pollinose; prescutellar bristles small; proepisternum with 1-2 pale hairs; katepisternum with 2 bristles; meron with 4 bristles; R_{4+5} with hairs a little more than basal half of the distance to cross vein; ventral bristle of hind tibia inserted a little behind middle, not displaced.

Abdomen with yellowish gray pollinosity, median marginal bristles of fourth tergite long; sternites I, II with some moderately long pile, III and IV with short sparse decumbent hairs; genital segments reddish brown, with pollinosity, first with a bristle and some long bristly hairs on hind margin, second with sparse hairs, cercus slightly curved forwards, surstylus very elongate (figs. 60, 61); apical plate of paraphallus largely membranous, lateral plates reduced, ventralia elongate, styli conspicuous (figs. 52-64).

Holotype, male, Avispas, Madre de Dios, Peru, 10-20. IX. 1962, 400 m, L. Penna.

RESUMO

São estudadas e figuradas nove espécies de *Notochaeta*, cinco das quais novas (*napoensis*, *flavipes*, *huixtlaensis*, *affinis* e *setifrons*). O material estudado provém principalmente da Região Amazônica do Peru e Equador; uma espécie foi colecionada no México e o paratipo de *N. panamensis* Dodge, foi redescrito. O material típico pertence às

coleções do "Biosystematics Research Institute", Ottawa e Museu Nacional, Rio de Janeiro.

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